

LUBRIZOL LIMITED

**WATER FRAMEWORK DIRECTIVE
RISK ASSESSMENT**

JANUARY 2020

Prepared for:

**Lubrizol Limited
Mostyn
Holywell
Flintshire
CH8 9HE**

ExCAL Limited

EXCAL House, Capel Hendre Industrial Estate,
Ammanford, Carmarthenshire, SA18 3SJ
Tel: 01269 831606
Fax: 01269 841867



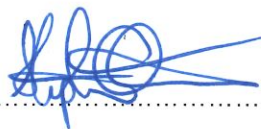
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PREPARED BY:

S Owen:



APPROVED BY:

A Davies:



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LUBRIZOL LIMITED
WATER FRAMEWORK DIRECTIVE
RISK ASSESSMENT

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1.0 INTRODUCTION

Lubrizol (formerly Warwick International Chemicals) operate a chemical manufacturing site which discharges effluent to the Dee estuary via a pipe and diffuser arrangement under permit EPR/BU2357IP. Due to dredging in the local vicinity, silt build up from the dredging has compromised the efficiency at which the diffuser arrangement disperses the effluent.

For this reason, Natural Resources Wales (NRW) has issued an improvement notice to Lubrizol regarding the dispersion of the effluent into the estuary.

The works proposed and outlined in this document aims to improve the dispersion via a new diffuser arrangement installed on the line of the existing outfall, above the Mean Low Water mark, to disperse the effluent. It should be noted; the effluent to be discharged through the new arrangement is not changing and is covered in permit EPR/BU2357IP.

This assessment considers the impact of the works on the local waterbodies and highlights actions to mitigate any impacts.

2.0 ENVIRONMENTAL RECEPTORS

As per the Water Framework Directive Assessment (WFD) the environmental receptors as sourced from NRW data are considered below. This section highlights the receptor and its indicated status along with a potential risk impact to the works being carried out.

2.1 Cycle 1 Rivers and Waterbodies

This section of the assessment identifies the receptors in the vicinity of the works as identified using the NRW maps as found at:

<https://nrw.maps.arcgis.com/apps/webappviewer/index.html?id=a5ee986133c14b998f82e10bd06e987f>

Criteria	Indicated Status	Potential Impact
Management Catchments	Dee	
River catchments	Moderate	Unaffected due to no ingress/egress of effluent into river system
Groundwater	Poor	Unaffected due to no ingress/egress of effluent into groundwater
Lakes	None	N/A
Transitional waters	Dee Estuary – Moderate	Effluent will discharge to this water body as it is currently doing under permit.
Coastal Waters	N/A - due to being transitional	

2.2 Cycle 2 (2015 and 2018) Rivers and Waterbodies

This section of the assessment identifies the receptors in the vicinity of the works as identified using the NRW maps as found at:

<https://nrw.maps.arcgis.com/apps/webappviewer/index.html?id=2176397a06d64731af8b21fd69a143f6>

Criteria	Indicated 2015 Status	Indicated 2018 Status	Potential Impact
Revised Bathing Waters Directive 2015 Compliance	Nearest receptor – West Kirby, Wirral	Nearest receptor – West Kirby, Wirral	Low – Receptor is 4 miles from discharge site
Nitrate Venerable Zones (NVZs)	N/A	N/A	No zone indicated in work area
Groundwater Quality Monitoring Network	N/A	N/A	No Groundwater ingress/egress envisaged during works
Surface Water Monitoring Network	Monitored Chemistry for	Monitored Chemistry for	Low – Discharge constituents not changing, being discharged under permit
River Basin District	Dee	Dee	
Natura 2000 Sites and monitoring network	SAC	SAC	Low – the working area is not within the SAC, discharge will be performed as per the existing permit
Drinking Water Protected Area (Lake)	N/A	N/A	
Drinking Water Protected Area (River)	N/A	N/A	
Targeted Waterbodies	N/A	N/A	
Management Catchments & Summaries	Wrexham	Wrexham	Low – Effluent to be discharged as per current permit

Canals	N/A	N/A	
NRW Operation Zone		Yes	Low – NRW Representatives are involved in the consultations and will be present during works
Rivers	N/A	N/A	
Lakes	N/A	N/A	
River Catchments	Not Assessed	Not Assessed	Low – Effluent to be discharged as per current permit
Coastal	N/A	N/A	
Transitional	Moderate	Moderate	Low – Effluent to be discharged as per current permit
Groundwater (Quantitative)	Good		Low – Provisions to be made in work area to prevent any contaminants entering groundwater
Groundwater (Chemical)	Poor		Low – Provisions to be made in work area to prevent any contaminants entering groundwater

It can be considered the works being carried out will have a negligible impact on receptors due to the installation being above the Mean Low Water.

3.0 METHOD STATEMENT

This section of the assessment outlines the method of the works being completed. It outlines measures to be taken to protect the local watercourses from being contaminated during the works itself. A detailed risk assessment will follow later in the document.

1. Self-contained site welfare facilities to be set up within the Lubrizol fence line;
2. Delivery area to be established and cordoned, spill kits to be located within the area;
3. Pneumatic breaker with generator to be installed and double bunded at the top of the site;
4. Workers to wear 5 point PPE (boots, gloves, hard hat, hi-vis and safety glasses) and begin by breaking out existing concrete using pneumatic breaker, removing spoil as it becomes available;
5. Once a sufficient amount of pipe has been exposed, the pipe will be cut using a battery powered angle grinder to expose the pipe face, any offcuts to be removed from the work area and deposited back at the site lay down area;
6. HDPE sleeve to be installed by hand over the exposed section of pipe;
7. Holes to be drilled under sleeve to allow for anchorage for the head wall;
8. Wooden formwork to be installed and secured in place using wooden stanchions;
9. Quickset concrete to be brought to site in cement mixer lorry. Lorry to remain in the bunded lay down area. Pump to be bunded and clean hoses to be connected to the lorry. Hose to be positioned at the proposed head wall location;
10. Cement to be pumped to form head wall. Once crust has formed formwork to be removed and taken back to the lay down area;
11. Steps 8-10 to be performed as close as possible to a retreating tide to minimise the chance of any contamination to the waterway;
12. Once concrete has set, holes to be drilled using 24v Drill to allow fixing for the diffuser manifold onto the head wall;
13. Diffuser arrangement to be pre-constructed onto manifold in the lay down area and carried to the work area;
14. Diffuser manifold to be bolted onto headwall, height adjustable legs to be erected and fixed with bolts;
15. Snagging, final checks and clean up on work area to be completed.

4.0 SCREENING

By screening out activities involved in the works will assist in identifying which elements of the works will have an effect on the local watercourses.

The WFD guidance provided indicates tasks which can be screened out which include, but are not limited to: -

- a self-service marine licence activity or an accelerated marine licence activity that meets specific conditions;
- maintaining pumps at pumping stations – if you do it regularly, avoid low dissolved oxygen levels during maintenance and minimise silt movement when restarting the pumps;
- removing blockages or obstacles like litter or debris within 10m of an existing structure to maintain flow;
- replacing or removing existing pipes, cables or services crossing over a water body – but not including any new structure or supports, or new bed or bank reinforcement;
- 'over water' replacement or repairs to, for example bridge, pier and jetty surfaces – if you minimise bank or bed disturbance.

As the works being carried out are to be completed above the 'Mean Low Water Mark' it could be considered a WFD is not required for the completion of the works as the WFD covers "From the mean low water mark up to one nautical mile from shore.", However, for good practice the works will be assessed in line with the WFD Assessment.

Removing a section of pipe for the new diffuser system to be installed would qualify to be screened out and therefore, not require assessing.

The installation of the diffuser system does not qualify to be screened out so will be considered in the following section of this report.

5.0 SCOPING

The scoping assessment has been completed using the scoping template which can be found on the Gov.uk website, under the WFD guidance notes.

A completed assessment can be found overleaf.

Concluding the assessment indicates an impact assessment of the works is required in relation to the Biology.

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will: -

- take place in or affect more than one water body, complete a template for each water body;
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment.

The [WFD assessment guidance for estuarine and coastal waters](#) will help you complete the table.

Your activity	Description, notes or more information
Applicant name	Lubrizol Limited
Application reference number (where applicable)	CML1958
Name of activity	Installation of Diffuser system
Brief description of activity	<i>install a new diffuser system to improve dispersion of effluent</i>
Location of activity (central point XY coordinates or national grid reference)	53.318319, -3.259239
Footprint of activity (ha)	0.0008
Timings of activity (including start and finish dates)	9/3/19 – 28/3/19, Daylight working hours only
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	2m ³ pumped quickset concrete. 3m x 1m stainless steel manifold bolted into concrete head wall.
Use or release of chemicals (state which ones)	none

Water body ¹	Description, notes or more information
WFD water body name	Dee Estuary
Water body ID	GB111067056930
River basin district name	Dee River Basin District
Water body type (estuarine or coastal)	Estuarine
Water body total area (ha)	225100
Overall water body status (2015)	Moderate
Ecological status	Moderate
Chemical status	Fail
Target water body status and deadline	Good 2021
Hydromorphology status of water body	Supports Good
Heavily modified water body and for what use	Yes – Navigation, Ports and Harbours
Higher sensitivity habitats present	<i>Mussel beds 36.77ha, Polychaete reef 1.29ha, Saltmarsh 2647.83ha</i>
Lower sensitivity habitats present	<i>Cobbles , gravel and shingle 4.29ha, Intertidal soft sediment 8239.72ha, Rocky Shore 44.17ha, Subtidal Rocky reef 0.86, Subtidal Soft Sediments 679.37ha</i>
Phytoplankton status	<i>Moderate</i>
History of harmful algae	Yes
WFD protected areas within 2km	SAC,

¹ Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	Yes	No	Hydromorphology risk issue(s)
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status		Impact assessment not required	
Could significantly impact the hydromorphology of any water body		Impact assessment not required	
Is in a water body that is heavily modified for the same use as your activity		Impact assessment not required	

Record the findings for hydromorphology and go to section 2: biology.

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

Higher sensitivity habitats ²	Lower sensitivity habitats ³
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

² Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.

³ Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.

Consider if the footprint ⁴ of your activity is:	Yes	No	Biology habitats risk issue(s)
0.5km ² or larger	Yes to one or more – requires impact assessment		Within 500m of any higher sensitivity habitat
1% or more of the water body's area			
Within 500m of any higher sensitivity habitat			
1% or more of any lower sensitivity habitat			

⁴ Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary		Go to next section	Installation is above MLW on the shore. No risk to fish.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)		Impact assessment not required	As above
Could cause entrainment or impingement of fish		Impact assessment not required	As above

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	Yes	No	Water quality risk issue(s)
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)		Impact assessment not required	Materials used are inert
Is in a water body with a phytoplankton status of moderate, poor or bad		Impact assessment not required	Work is above MLW on the shore not in water body
Is in a water body with a history of harmful algae		Impact assessment not required	

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	Yes	No	Water quality risk issue(s)
The chemicals are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	No Chemicals required for works
It disturbs sediment with contaminants above Cefas Action Level 1		Impact assessment not required	Works being carried out on rocks in place of existing outfall

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list		Impact assessment not required	N/A

⁵ Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include: -

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area ⁶	Requires impact assessment		SAC within 2km

⁶ Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include: -

- materials or equipment that have come from, had use in or travelled through other water bodies;
- activities that help spread existing INNS, either within the immediate water body or other water bodies.

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS		Impact assessment not required	

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	
Biology: habitats	Yes	Within 500m of SAC
Biology: fish	No	
Water quality	No	
Protected areas	No	
Invasive non-native species	No	

If you haven't identified any receptors at risk during scoping, you don't need to continue to the impact assessment stage and your WFD assessment is complete.

If you've identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity's regulator as part of your application for permission to carry out the activity.

6.0 IMPACT ASSESSMENT

This section of the report breaks down the tasks outlined in the method statement and assesses the risk to the local watercourses. Mitigating measures are highlighted and show the reduction in risk. The Risk Assessment will follow a 5x5 Matrix as below: -

Risk Assessment Matrix						
LIKELIHOOD	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
	0	1	2	3	4	5
CONSEQUENCES						

The main assessment can be seen overleaf.

Task	Hazard	Potential Harm	Severity	Likelihood	Risk Factor	Mitigation Measures	Severity	Likelihood	Risk Factor
Site Set up									
Delivery of materials	Contaminants from roads on delivery vehicles	Pollutants could enter waterways and affect local water quality affecting local flora and fauna	3	3	9	Any surface water will be collected on site and passed through existing interceptors before being treated in the onsite treatment facility	3	2	6
	Fuel/Oil Leak from delivery vehicle	Pollutants could enter waterways and affect local water quality affecting local flora and fauna	3	3	9	Any surface water will be collected on site and passed through existing interceptors before being treated in the onsite treatment facility	3	2	6
Installation and maintenance of Welfare Facilities	Waste from welfare facilities leaking/spilling	Pollutants could enter waterways and affect local water quality affecting local flora and fauna	2	3	6	Welfare facilities to be inspected before use and regularly throughout the works. Units to be self contained and to be emptied by a qualified specialist. Spill kits to be on hand during emptying. Maintenance.	2	2	4
Construction Works									
Working with pneumatic breaker	Oil/Lubricant spill during operation/Maintenance	Pollutants could enter waterways and affect local water quality affecting local flora and fauna	3	3	9	Any maintenance on equipment to be carried out in site set up area. All fluids to be kept in sealed containers. Spill kits to be on hand during maintenance/operation	3	2	6
Installing Generator for use with breaker	Oil/Fuel spill during maintenance/Operation	Pollutants could enter waterways and affect local water quality affecting local flora and fauna	4	3	12	Any maintenance on equipment to be carried out in site set up area. All fluids to be kept in sealed containers. Spill kits to be on hand during maintenance/operation. When not in setup area, generator to be housed in impermeable plastic double bunded tray. Area to be inspected regularly for leaks.	4	1	4
Removal/Breakout of concrete	Spoil could fall into the water	Concrete rocks could fall into the water and potentially impact fish/crustaceans. Potentially impact on habitats	4	3	12	Concrete to be broken into small sections for removal by hand immediately after becoming loose. Toolbox talk before work starting to highlight the importance of protecting the water. Spoil to be removed immediately from the shore.	4	2	8
Removal of existing pipe	Sections of pipe could fall into the water	Steel pieces could fall into the water and potentially impact fish/crustaceans. Potentially impact on habitats	4	3	12	Steel to be broken into small sections for removal by hand immediately after becoming loose. Toolbox talk before work starting to highlight the importance of protecting the water. Spoil to be removed immediately from the shore.	4	2	8
	Power tools could fall into the water	Tools could fall into the water and potentially impact fish/crustaceans. Potentially impact on habitats	4	3	12	Tools to be clipped onto toolbelt and tethered to prevent falling. Toolbox talk to cover importance of protecting the water before works.	4	2	8
Installing Wooden formwork for concrete	Wood could become dislodged and drift away from the work area	Floating wood could become harmful to the water quality with degradation.	4	2	8	All formwork to be double secured on the work area. Formwork to be installed on an outgoing tide to reduce the contact with water. Formwork to be tethered. Marine grade ply to be used to minimise any chemical impact upon contact with water	3	1	3
Pouring concrete	Concrete could contaminate the water	Concrete could fall into the water and potentially impact habitats. Chemicals in the concrete could compromise water quality	4	4	16	Concrete to be pumped through a hose to ensure maximum containment. Quick set concrete to be used to ensure no contamination with the water. Concrete to be poured on a retreating tide to allow maximum setting window. Minimum amount of concrete to be used to reduce risk of contamination.	3	3	9
Installing Diffuser	Bolts could fall into water	Bolts could fall into water and impact the estuary bed	3	2	6	Magnetic trays to be used when installing bolts. As much of the assembly to be assembled in the lay down area.	3	1	3

7.0 CONCLUSION

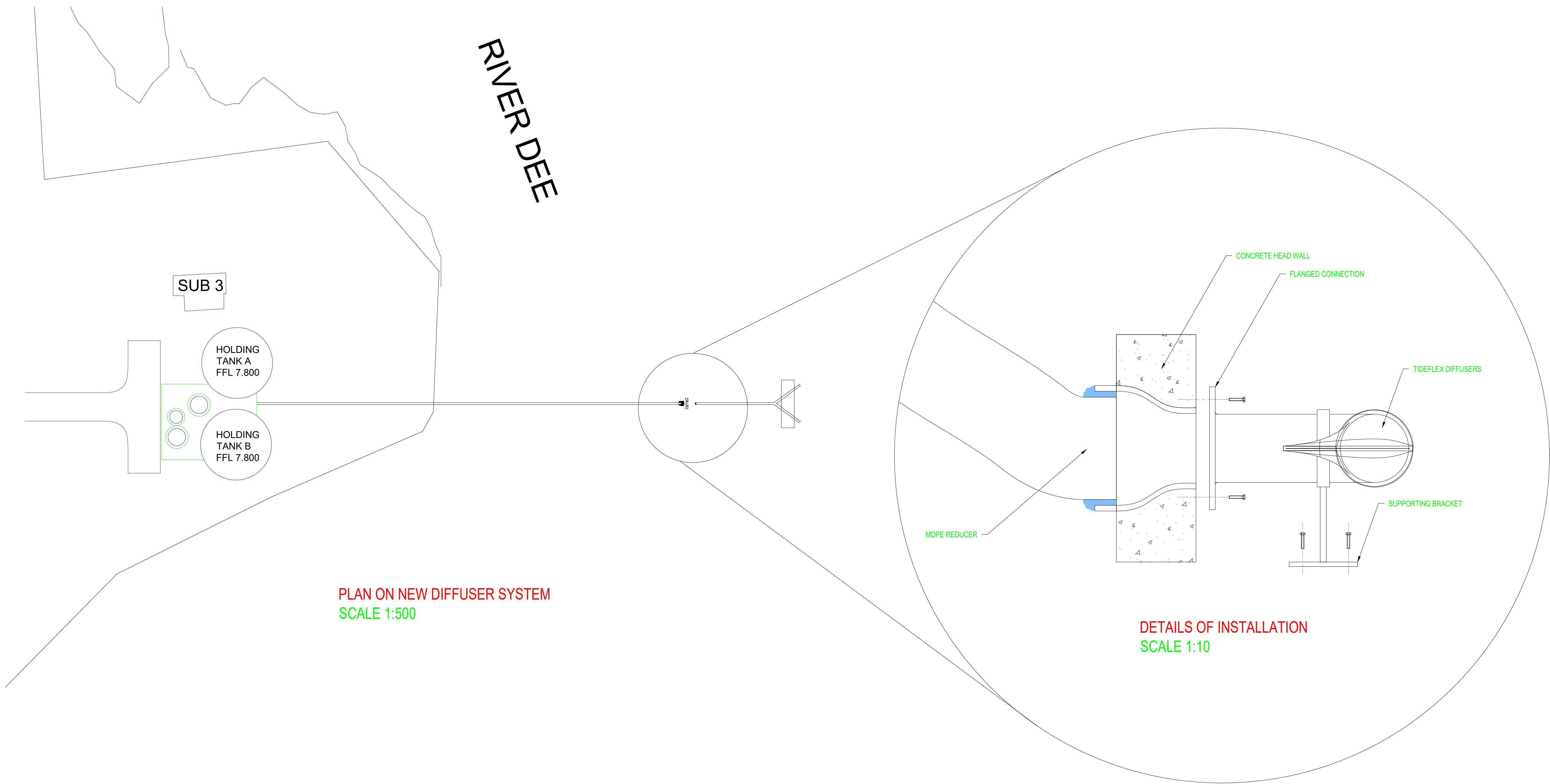
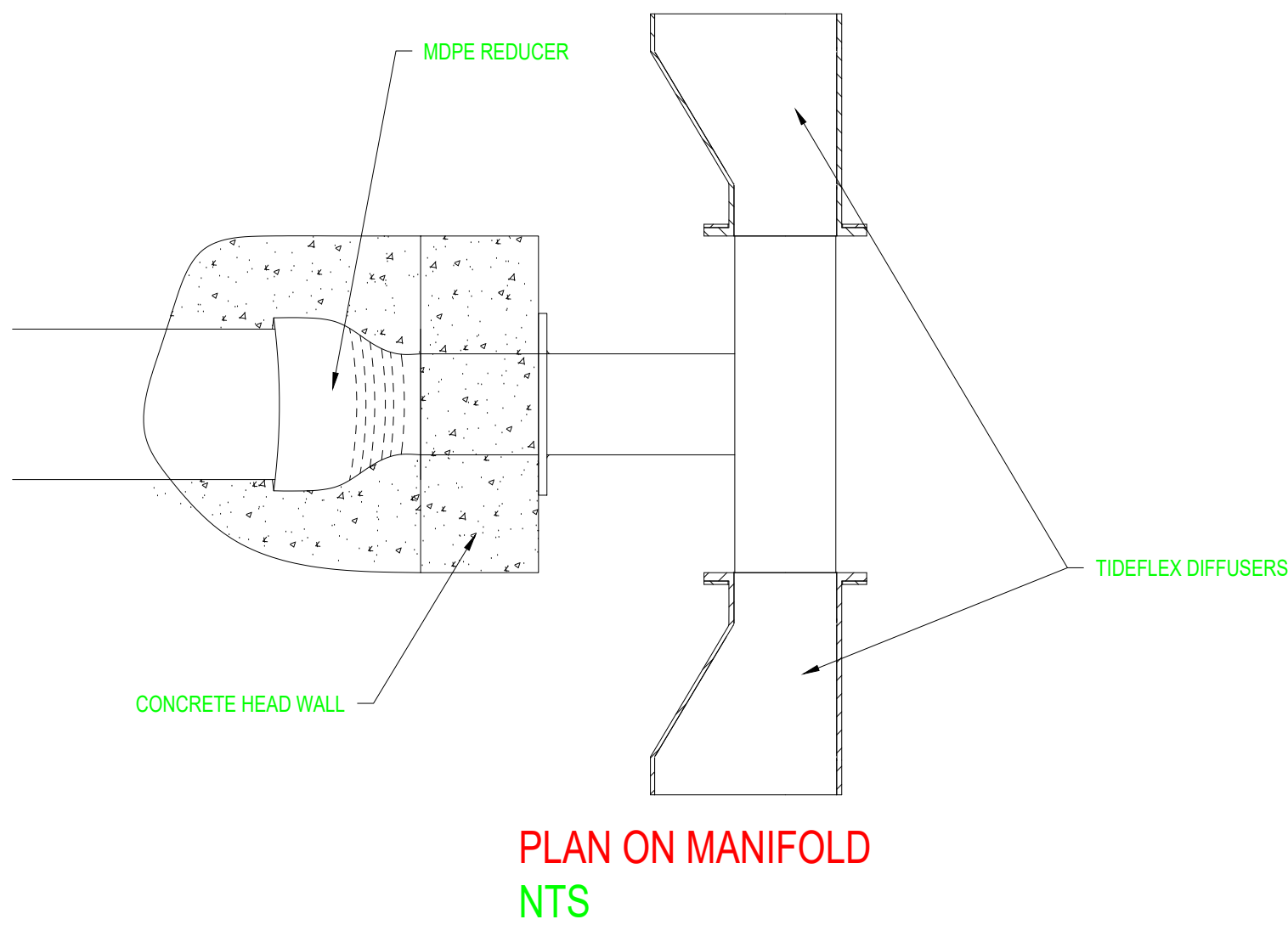
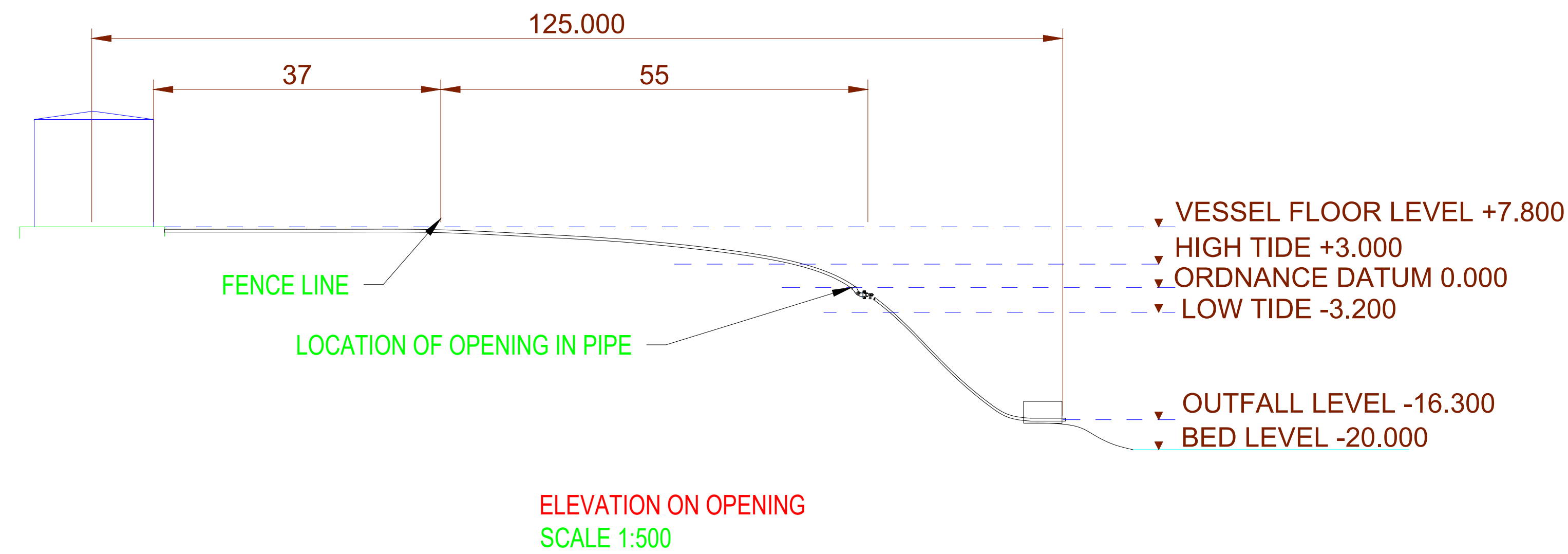
In conclusion, the WFD assessment shows the overall risk to habitats and water quality to be low. By using industry best practices from the design to implementation of the works, the risk proposed by the works can be kept to a minimum.

Provided the works are carried out with the safety measures outlined in the risk assessment, there will be no cross contamination between the constituents contained within any of the materials used, and working practices will ensure there is minimal impact to the receptors adjacent to the working area.

The overarching principle of this document is to identify risks before the works is carried out to minimise any impact the works has on the local waterbodies. By using the provisions outlined in this document, there will be no adverse effects caused by carrying out the works.

APPENDIX A

Drawing



Issued for Comment

Job:
Lubrizol

Title:
Proposed Outfall Diffuser Details

Date: June 2019

Scale: As Shown @ A1

Drawn by: AJD

Checked by: AD



ExCAL House,
Capel Hendre Ind. Est.,
Ammanford,
Carmarthenshire,
SA18 3SJ
Tel: 01269 831606
Fax: 01269 841867
Website: www.excaluk.com
E-mail: info@excaluk.com

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