Paper Mill Facility, Plot C Airfields, Northern Gateway

Industrie Cartarie Tronchetti (ICT) UK Limited and Crag Hill Estates Limited (CHEL)

Water Framework Directive Clearing the Waters for All Assessment

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1 Introduction

1.1 Background

Arcadis Consulting (UK) Limited ('Arcadis') has been commissioned by Industrie Cartarie Tronchetti UK Limited (ICT) to undertake an assessment to review compliance of the proposed development of a tissue paper processing and production facility with the Water Framework Directive (WFD).

The proposed facility would be located at the Airfield Site, part of the Northern Gateway in Queensferry, Flintshire, and would discharge treated process effluents to the neighbouring Dee estuary. The assessment has therefore been undertaken in accordance with the "Clearing the Waters for All" guidance[1] on assessing activities in estuarine and coastal waters.

In consultation with Natural Resources Wales (NRW) it was agreed that both the operational discharge of treated process effluent and construction activities, in particular construction of the discharge outfall headwall, should be subject to review, using the WFD scoping template (Environment Agency, 2017[1]).

1.2 Site Overview

The proposed paper mill site is located at approximate National Grid Reference (NGR) 332172, 369910 to the north of the River Dee. Adjacent to the site, the Dee is canalised between substantial earth embankments and its flow regime is tidally dominated. The Dee estuary is a designated nature conservation site comprising a Special Area of Conservation (SAC), Special Protection Area (SPA) and Site of Specific Scientific Interest (SSSI).

The effluent from the paper mill would be treated on site and discharged from a single outfall to the Dee estuary. The proposed discharge outfall location is shown in Figure 1 and the proposed outfall headwall arrangement is illustrated in Drawing C1405-207 in Annex A.

[1] Water Framework Directive assessment: estuarine and coastal waters - GOV.UK (www.gov.uk)

Figure 1 Site Boundary and Discharge Location

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2 WFD Waterbodies and Status

As illustrated in Figure 1, the proposed development is in proximity and would discharge to the Dee estuary. In this location the WFD waterbody comprises the Dee N. Wales (Waterbody ID GB531106708200) which is managed under the Dee River Basin Management Plan (RBMP) [2]. The Dee N. Wales is classified as a Heavily Modified Waterbody (HMWB) due to its use for navigation, ports and harbours.

The current WFD overall status of the waterbody is Moderate, with an ecological status of Moderate and a chemical status of Fail. The target status for the waterbody is to achieve 'Good' by 2021.

Further detailed information on the status of the Dee N. Wales waterbody is provided in the scoping templates in Annex B.

[2] https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3127

3 WFD Scoping Outputs

Scoping checklists (Annex B) have been prepared for general construction activities and construction of the proposed outfall headwall, in addition to the proposed operational discharge to the Dee N. Wales waterbody. The outputs of the scoping reviews are summarised below.

3.1 Construction Activities

Construction has the potential to open new pollution pathways, impacting water quality, as well as to cause physical disturbance to waterbodies and effects (e.g. through generation of noise) on the biological quality elements of waterbodies.

At the proposed development site key construction activities would include:

- Cut/fill and earthworks to create a development platform,
- Establishment of new utilities infrastructure and surface water drainage features,
- Creation of laydown and materials storage areas and a temporary haul road,
- Construction of several buildings and car parking facilities,
- Construction of a new headwall and outfall to the Dee N. Wales waterbody.

A full description of the proposed development is provided in Part I of the Environmental Statement.

These construction activities have been screened for the potential to impact on the WFD status of the Dee N. Wales waterbody using the checklist (Annex B) and Table 1 presents a summary of the scoping conclusions.

Table 1 – Summary of WFD Scoping for Construction Activities

Receptor	Potential risk to receptor?	Risk Issue(s) for Impact Assessment
Hydromorphology	No	Waterbody is not at High status and is not heavily modified for the same use as the proposed activity.
Biology: habitats	Yes	Higher sensitivity habitat (saltmarsh) within 500m of the proposed outfall.
Biology: fish	Yes	The proposed activity has potential to cause temporary noise disturbance to fish and change in water chemistry.
Water quality	Yes	The proposed activities carry a risk of temporarily impacting water clarity and releasing chemicals that are on the Environmental Quality Standards Directive (EQSD) list.
Protected areas	Yes	Proximity of Dee Estuary SAC and SPA
Invasive non-native species (INNS)	Yes	Headwall construction activity could introduce or spread INNS.

3.2 Operational Discharge

Waste water from the paper manufacturing process would be treated on site prior to discharge to the Dee N. Wales waterbody via a new outfall. This activity has been screened for the potential to impact on the WFD status of the Dee N. Wales waterbody using the checklist (Annex B and Table 2 presents a summary of the scoping conclusions.

Table 2 – Summary of WFD Scoping for Proposed Operational Discharge

Receptor	Potential risk to receptor?	Risk Issue(s) for Impact Assessment
Hydromorphology	No	The maximum discharge rate (60l/s) is insufficient to cause scour or other changes to the hydromorphology of the waterbody, which is not at High status and is not heavily modified for the same use as the proposed activity.
Biology: habitats	Yes	Higher sensitivity habitat (saltmarsh) within 500m and footprint (temperature plume) potentially exceeding 0.5km.
Biology: fish	Yes	The proposed activity has potential to change water chemistry.
Water quality	Yes	The proposed activities carry a risk of impacting water clarity and releasing chemicals that are on the Environmental Quality Standards Directive (EQSD) list.
Protected areas	Yes	Proximity of Dee Estuary SAC and SPA
Invasive non-native species	No	Proposed activity carries no risk of introducing or spreading INNS.

The potential construction and operational risks that have been scoped in have been taken forward to detailed assessment, reported in the following sections.

5 Control Measures and Mitigation

The activities that have been scoped in due to having potential to affect the status of the Dee N. Wales waterbody would be subject to a series of control and mitigation measures that would act to eliminate pollution pathways and reduce the scale of effects where they cannot be fully avoided.

A suite of construction and operational phase mitigation measures have been identified in the Environmental Statement, specifically outlined in Water Environment Technical Paper 3. Those specific to this WFD assessment are presented below.

5.1 Construction Phase Control and Mitigation Measures

The potential for effects on biological quality was scoped in, associated with disturbance to habitats and fish in the Dee N. Wales waterbody during construction of the new headwall and outfall. It is proposed to install a coffer dam to create a dry working area, which would require piling. These activities carry a risk of disturbance / injury to fish from acoustic sources generated by piling activities, as well as potential to cause changes to water chemistry/water clarity due to generating a silt plume and/or releasing other pollutants, such as oils or hydrocarbons from construction plant.

The control measures proposed are linked to programming these activities to avoid critical periods, for example March to mid-June when smolt migration occurs and August to October when there is adult migration back to freshwaters. Site set up and the proposed piling methodology will also reduce noise generation and pollution risks.

The site of the cofferdam construction would be set up on the outside (landward) of the existing flood protection wall and the equipment for the construction of the cofferdam would largely be operated in the area already protected by the existing flood defence sheet pile wall. A working platform would be created on the north side of the existing sheet piled wall from which a crane would initially install steel support stanchions at the edge of the low tide, beyond the extent of the required sheet piled cofferdam. This installation would be undertaken utilising a pile press technique. The stanchion, which would be subsequently used to support the cofferdam, would be installed during low tide and using soft start technology, starting at low energy and slowly increasing this over a set duration.

The crane would then install the upstream wall of the cofferdam perpendicular to the existing sheet piled wall into the river embankment. This would be installed with the use of a silent pile press, a crane and a telehandler located on the River Dee footway. As with the installation of the stanchion, these works would be carried out at low tide.

On completion of the upstream sheet pile wall, a steel support frame would be fixed to the end of the upstream sheet pile wall and across onto the previously installed vertical support stanchion. Finally, the downstream cofferdam wall would be completed and sealed onto the existing sheet pile wall.

It is expected that all installations would take no longer than four working days and all works would be undertaken at low tide. Once the cofferdam is complete, the water within it would be pumped out and excavation works would commence inside the cofferdam to create the required working space to construct the headwall and associated discharge pipe work.

Arisings would be lifted over the existing sheet pile wall. Where possible, precast headwalls would be utilised and all pipe work would be preassembled offsite and bolted together onsite.

Potential impacts on water quality associated with general construction activities would be reduced by following a series of good practice techniques, complying with all relevant pollution prevention guidance provided in Guidance on Pollution Prevention: Works and maintenance in or near water: EGPP 5[3]. Details are set out in Appendix 7 of the Draft Construction Ecological Management Plan (CEMP) and in summary include:

- Measures to prevent the generation of dust or silted run-off from stockpiles, for example storing excavated materials in line with DEFRA Good Practice Guidance for Handling Soils guidance and use of an on-site wheel cleaner and/or off-site road sweeper to remove debris;
- Storing fuels in accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001, for example siting storage on impervious bases and surrounded by impervious bund walls.

[3] gpp-5-works-and-maintenance-in-or-near-water.pdf (netregs.org.uk)

The volume of the bunded compound will be at least equivalent to the capacity of the tank plus 10%;

- Refuelling, repairing and maintaining plant and vehicles within a bunded area with drip trays placed under standing machinery whilst refuelling to avoid pollution from spillages and leaks;
- Washing down or cleaning plant and equipment in a designated area away from the surface water drainage system;
- Ensuring supply of absorbent material (spill kits) on site and provision of training (tool box talks) in dealing with spillage incidents;
- Managing water pumped from foundation excavations in accordance with a Drainage Management Plan to ensure appropriate treatment prior to discharge into any watercourse or drain, if samples of water from excavations are unnaturally discoloured or have an unusual odour the water will be pumped to suitable containers, or removed by vacuum tanker, and then taken to a licensed waste disposal site.
- Providing temporary storage facilities for wastewater to suit the scale of construction and the construction phasing.

Proposed mitigation for INNS focuses on the prevention of the spread of these species through appropriate controls that are documented within a Marine Biosecurity Plan, provided as Appendix 8 of the CEMP. All workers on site during the construction phase would be advised of the potential presence of Chinese mitten crabs during a site induction (tool box talks) and would be taught how to identify this species. All plant or machinery which is used within the Dee N. Wales waterbody, or in the adjacent riparian zone, would be subject to visual inspection for crabs and thoroughly cleaned with water sprays to ensure that any crabs in the planktonic stage are washed off and are not transferred to other areas prior to exiting the watercourse zone and being used elsewhere. Any Chinese mitten crabs found will be humanely destroyed. A check sheet system would be implemented regarding the checking and washing down of any machinery exiting the Dee N. Wales waterbody at the end of each working day and upon leaving the watercourse / bankside area.

All of the measures described above would provide for protection of the integrity of the WFD designated sites within the study area.

5.2 Operational Control and Mitigation Measures

The wastewater generated from the manufacturing process would be treated at an on-site facility. A brief summary of the treatment proposals is provided below.

Wastewater would be discharged by pumps through a screen to a homogenising tank. The homogenising tank would pump water to the flotation equipment. Submersed agitators inside the tank would assure good mixing of the waste water and pH would be controlled to ensure suitable values for the correct performance of subsequent biological treatment processes.

Fine solids present in the waste water, composed of small fibres from the production process, would be removed and the sludge generated would fall by gravity into a sludge tank.

The waste water would flow by gravity, to a biological activated sludge treatment or a MBBR (Moving Bed Biofilm Reactor) system. The technology used involves biological oxidation. After the biological reaction the mixed liquid is sent by pumps to the final floatation or sedimentation unit, to separate biological sludge from clarified water. The clarified effluent is discharged by gravity into a treated water tank and would then be discharged to the Dee N. Wales waterbody in accordance with the conditions set out in a bespoke consent to discharge, issued by Natural Resources Wales (NRW) under the Environmental Permitting Regulations 2016. The dewatered sludge would be stored in a sludge container, ready for transport and disposal to a licensed facility.

6 Impact Assessment

6.1 Construction Activities

Detailed assessment of effects on the scoped in receptors of construction activities, accounting for the control and mitigation measures set out in Section 5, is presented in Table 3.

Table 3 – Detailed Assessment for Construction Activities

Receptor	Impact Assessment - Residual Risk of Waterbody Deterioration
Biology: habitats and fish	Negligible Risk – Headwall and outfall construction to take place within a cofferdam using a pile press technique reducing noise disturbance and at low tide to reduce risks of temporary water quality detriment/change to water chemistry.
Water quality	Negligible Risk – Headwall and outfall construction to take place within a cofferdam and works to construct the coffer dam (4 days duration) would be undertaken at low tide to reduce risks of water quality detriment.
Protected areas	Negligible Risk – integrity of protected areas safeguarded by all the measures described in Section 5.1.
Invasive non-native species (INNS)	Negligible Risk – introduction and spread INNS prevented by implementing a Marine Biosecurity Plan.

The assessment concludes that the control measures proposed, centred on the commitment to good practice piling and pollution prevention methodologies, secured through the CEMP, would be sufficient to prevent detriment or deterioration of any of the elements that make up the overall status of the Dee N. Wales waterbody. Also, these activities are such that they would not prevent achievement of the defined status objective for this waterbody.

6.2 Operational Discharge

Detailed assessment of effects on the scoped in receptors associated with the proposed operational discharge, accounting for the control and mitigation measures set out in Section 5, is presented in Table 4.

The operational discharge to the Dee N. Wales waterbody has been subject to the H1 Screening Tests and 1D hydraulic and temperature modelling. These assessments are reported on in a Marine Discharges Assessment Report (Appendix 3.2 of the Environmental Statement).

Table 4 – Detailed Assessment for Operational Discharge

Receptor	Impact Assessment - Residual Risk of Waterbody Deterioration
Biology: habitats and fish	Negligible – detailed assessment in according with the H1 Screening methodology has concluded no risk of changes to water chemistry. All of the parameters tested were screened out and, therefore, no further tests are required as part of the H1 risk assessment procedure. Temperature modelling has been undertaken to assess the impact of the discharge during winter and summer seasons and under spring and neap tidal conditions. The modelling results confirm a maximum increase in ambient temperature of 0.15 degrees (winter, spring tide), with a plume extending 5km downstream and 9.2km upstream of the proposed outfall location.
Water quality	Negligible – detailed assessment in according with the H1 Screening tests methodology has concluded no risk of changes to water chemistry. All the parameters tested were screened out and, therefore, no further tests are required as part of the H1 risk assessment procedure.
Protected areas	Negligible – results of temperature modelling and water quality (H1 risk assessment) calculations demonstrate no risk of impact on the integrity of the WFD protected areas associated with the Dee N. Wales waterbody

The assessment concludes that the control measures proposed, centred on treatment of process effluents prior to discharge, secured through a bespoke NRW consent to discharge, would be sufficient to prevent detriment or deterioration of any of the elements that make up the overall status of the Dee N. Wales waterbody. Also, this activity would not prevent achievement of the defined status objective for this waterbody.

7 Summary and Conclusions

A WFD assessment has been undertaken, using the Clearing the Waters for All methodology, in relation to the proposed development of a tissue paper processing and production facility in Queensferry, Deeside, against WFD objectives.

The WFD waterbody that was screened in was limited to the Dee N. Wales (GB531106708200), an estuarine waterbody that flows in proximity to and would receive an operational discharge from the proposed development site.

The scoping review of the development components concluded the potential for negative effects linked to some specific construction activities and during operation. These activities were taken forward to detailed assessment.

The detailed assessment has concluded negligible residual effects on the waterbody status following implementation of the mitigation and control measures outlined in Section 5 of this report.

This assessment concludes that the proposed development is compliant with the objectives of the WFD and on this basis, no further assessment is proposed.

Annex A

Drawings

Annex B

Scoping Checklists

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