



Retford Circular Economy Project Environmental Statement Addendum - Volume 3 Technical Appendices

Technical Appendix 9.1: Revised Water
Environmental Management Plan

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1. INTRODUCTION

This revised Outline Water Environmental Management Plan (WEMP) forms an Appendix to the Environmental Statement Addendum (ESA) Volume 1, Chapter 9 Hydrology, Hydrogeology and Flood Risk for the Retford Circular Economy Project (RCEP) comprising the extraction of PFA contained in former disposal lagoons, progressive restoration, processing and export. In particular, the updated WEMP reflects the amendment to the method of extracting the PFA within Area A (Main Extraction Area) which avoids any excavation into the underlying sandstone aquifer that would result in upwelling of groundwater into the excavation.

1.1 Purpose and Scope

This WEMP sets out environmental protection measures that would be put in place during the construction, operational and restoration phases of the project to minimise the pollution risk to surface water and groundwater. It is a working document, currently in draft form, that would be updated in line with the Environmental Permit application for the Amended Proposed Development. In particular, the surface water and groundwater monitoring regime would be designed following more detailed risk assessment and analytical modelling that would be undertaken as part of the environmental permitting process, likely with further detail also secured by a suitable planning condition.

Under the Amended Proposed Development, it is proposed that the PFA would be extracted to approximately 0.2-0.5 m above the top of the sandstone aquifer, with some PFA remaining at the base of the excavation to act as a confining layer (as occurs currently) over the sandstone aquifer.

When the excavation reaches the water table within the PFA the material would be stripped in thin horizons to allow the water level in the working area to reach an equilibrium within the surrounding groundwater. This would prevent a significant buildup of head and would prevent basal heave, e.g. if 500 mm of material is stripped, assuming a PFA porosity of approximately 33%, the water level within the excavation would drop by approximately 335 mm. The excavation would then be left until the water level within the excavation has stabilised (inflows from leaching through of the sides and base of the excavation, rainfall and surface water run off) and reached an equilibrium with the surrounding groundwater before taking the next strip. The exact thickness of each strip would be determined during detailed design based on local hydrogeological conditions at each phase.

Once excavated the PFA would be placed along the side of the excavation onto in-situ PFA to allow any perched water within the PFA to drain naturally back into the excavation.

There would be no active abstraction of groundwater.

The extracted PFA would be dried at the Main Processing Site (Area C). Any condensate removed would be tested and treated, if required, before being discharged to the soakaway, sewer, tanker and/or used on-site, e.g. as part of the dust suppression regime. It is anticipated that no treatment should be necessary. However, should testing determine that it is necessary, treatment prior to discharge would depend on the concentrations of any contaminants recorded in the discharge water and could include treatment options such as reverse osmosis or ion-exchange. Provision for a water treatment plant has been made between the filter beds and the soakaway in Area A, and also within Area C.

This document takes into account activities to be undertaken during the construction and operational phase of the Amended Proposed Development, including:

- Construction and operation of access roads;
- Optimisation period temporary processing plant;
- Extraction, processing, storage, removal, and transportation of the Pulverised Fuel Ash (PFA) on and from the Site; and
- Construction and operation of hardstanding areas and buildings at Area C.

The identified potential sources of pollution as a result of the construction and operational phases of the Amended Proposed Development, based on the findings of the ESA Report, are as follows:

- Water draining from the PFA during extraction, processing and handling;
- In-situ PFA lagoons;
- Runoff from exposed ground and material stockpiles;
- Runoff from access roads and haul routes;
- Plant washings / vehicle washing areas;
- Fuel and chemical storage; and
- Leaking / vandalised equipment.

2. SITE DRAINAGE

This section addresses the management of sediment and surface water runoff generated during construction and operation as well as water draining from the PFA at Area C together with any condensate from the drying plant.

A preliminary site drainage management plan has been developed and is included in the ES Addendum, Volume 3 Appendix 9.3. This would be updated at the detailed design stage, likely secured by a suitable planning condition, following consultation with the EA and in line with the Environmental Permit application.

2.1 Extraction area

Excavated material would be placed adjacent to the excavation within the relevant micro-phase and any perched water within the PFA would be allowed to drain naturally back into the excavation.

Where necessary bunds would be constructed around the perimeter of the active area in order to segregate overland flows (clean water) from surrounding grassland areas from the water in the active excavation; although it is anticipated that the existing lagoon embankments, lower level working and retaining levels around the edge of the Site would fulfil much of this function. Currently surface water infiltrates and runs off, and the surface water scheme would seek to maintain this passive drainage approach where practicable.

To reduce the interaction with groundwater during operation of the Amended Proposed Development, major excavation works would be minimised during heavy precipitation events. If possible, excavation below groundwater would be undertaken during dryer months.

2.2 Use of existing drainage systems on Site

The site drainage management plan allows for the utilisation of the existing drainage system at Area C (part of Bellwood Industrial Estate) for disposal of all surface water runoff from Area C that has not come into contact with PFA, with the foul water from the offices and welfare facilities being discharged to the existing septic tank.

Prior to construction a detailed condition survey of the existing drainage system, including the septic tank, would be undertaken to determine their suitability for the Amended Proposed Development. This would include estimating the likely discharge quantities to ensure there is sufficient capacity in the current system and where necessary upgrading the outfall structures to the unnamed tributary of the River Idle.

If required, additional below ground storage and interceptors would be retrofitted into the existing drainage system local to ancillary buildings, processing plant and car parking areas to ensure that there is no adverse impact on the quality and quantity of drainage entering the receiving watercourse.

A regular monitoring and sampling regime for the surface water outfall would be established.

2.3 Drainage ditches

An unlined ditch system would be established along the Maintenance Road for interception of surface water runoff. Prior to construction the operator would produce a method statement for the construction of drainage ditches. If required, flow controls such as semi-permeable check dams would be implemented to improve silt retention.

2.4 Water Treatment Plant

Any water draining from the PFA at Area C, together with any condensate from the drying plant, would be discharged via pumping to settlement ponds and a water treatment plant within Area A and/or Area C before being discharged to soakaway ponds, sewer, tanker and/or for use on-site.

Final selection of the treatment technology and optimisation of the treatment process would be undertaken once formal discharge limits have been established and agreed with the Environment Agency (EA) via the bespoke Permit Application process for discharge to groundwater, as is standard practice.

2.5 Monitoring

A groundwater and surface water monitoring programme is already in place at the Site, and would be developed further and agreed with the EA. This would include monitoring prior to construction to establish baseline conditions for surface waters and groundwater. Ongoing monitoring of surface water and groundwater throughout the life cycle of the Amended Proposed Development would enable any deviations from the baseline to be identified and rectified through water management measures. Monitoring would continue for a period of time to be agreed with the EA post-restoration.

Monitoring at the outlet from the water treatment plant would be undertaken to ensure compliance with any discharge standards set out in the Environmental Permit. Appropriate threshold trigger values, aligned with any discharge standards and emergency response procedures would be established prior to operation.

As a minimum the surface water monitoring regime would include surface water monitoring at locations on the River Idle upstream and downstream of the Amended Proposed Development and would be supplemented with regular visual inspections.

3. MANAGEMENT OF EXCAVATED PFA

The following preventative measures would be implemented to control erosion and sediment runoff from stockpiles throughout the operation of the Amended Proposed Development:

- Material would be stockpiled for as short a time as practicable;
- Exposed ground would be open for as short a time as practicable with the area excavated and restored progressively in phases to ensure this;
- Only a small micro-phase would be subject to extraction at any given time, amounting to no more than 1.0 hectare and less than 1% of the Site;
- All stockpiled and banded material would be stored at least 20 m from any artificial drains and waterbodies to reduce wash-off of sediments; and
- If runoff of sediment is observed onsite silt fences and/or mats would be employed.

Good practice measures would be adopted during construction to control the generation and dispersion of dust such that significant impacts on neighbouring habitats would not occur. The hierarchy for mitigation would be prevention, suppression then containment and would include regular wheel washing of wagons/vehicles and ensuring that vehicle loads are covered.

Further details for the control and suppression of dust are provided in ES Addendum Volume 3, Technical Appendix 13.7 Revised Dust Management and Monitoring Plan.

4. SPILL RESPONSE PLAN (SRP)

The detailed SRP would be based on a risk assessment to be undertaken once the detailed design is finalised. This assessment would address such matters as:

- The material the Amended Proposed Development would require for construction and operation;
- How and where the materials would be delivered, stored, transferred, and used within the Site;
- The nature of activities that would use the materials; and
- The nature and location of receptors that are vulnerable to leaks and spills.

The results of the risk assessment would provide the basis for planning and prioritising protection and contingency measures.

Once the sources of potential spills and leaks and the resources at potential risk have been identified, the detailed SRP would set out specific protective and management measures for the different sources. These measures would specify such matter as:

- Specifications for reception and storage facilities (e.g. tank size, base material, bunding capacity, secondary containment);
- Procedures for use of potentially hazardous materials;
- Separation distances between hazards and vulnerable receptors;
- Procedures for working near vulnerable receptors when this cannot be avoided;
- Training of personnel; and
- Other good practice measures as required.

Based on the risk assessment the detailed SRP would identify the most likely leak and spill scenarios, together with the procedures to be adopted in each case and the equipment and materials required on-site to facilitate the response. This would address such matters as:

- Training of personnel;
- Communicating and reporting incidents;
- Use of vehicular spill kits;
- Inventories for larger spill stations and their locations; and
- The response procedures.

The detailed SRP would set out relevant monitoring, inspection and auditing actions relating to spill response. This would include clearly designating the person(s) responsible for these activities.

The detailed SRP would set out procedures for providing evidence of implementation and maintenance of the SRP such as the reporting of monitoring, inspection, and auditing activities, and the format and frequency of reporting.

The detailed SRP would also set out incident internal and external reporting protocols.

The detailed SRP would set out the internal and external triggers and process for the plan to be maintained up to date and relevant, for example lessons-learned procedures in the event of an incident.

5. OTHER POLLUTION PREVENTION MEASURES

5.1 Vehicles

All onsite vehicles would be regularly maintained offsite to ensure that there is minimal potential for fuel or oil leaks / spillages to occur. If onsite maintenance is required, it would be conducted on suitable absorbent spill pads to minimise the potential for groundwater and surface water pollution. All machinery would be equipped with drip pans to contain minor fuel spillage or equipment leakages. All vehicles would be refuelled offsite.

5.2 Chemical storage

Potentially contaminating chemicals stored on site would be kept within a secure bunded area to prevent any accidental spills from affecting hydrological resources. Construction compounds would have a bunded area underlain by impermeable ground membrane layer. The bunded areas would have 110% capacity to attenuate stored liquids.

The chemicals storage area would be kept secure to prevent theft or vandalism. A safe system for accessing the storage area would be implemented by the Construction Contractor.

Further details of chemical storage are presented in Section 5 Spill Response Plan.

5.3 Dust suppression and control

Further details of the dust suppression and control policy are provided in ES Addendum, Appendix 13.7 Dust Management and Monitoring Plan.

**ERM has over 160 offices across more 40
countries and territories worldwide**

ERM's York Office

1C Swinegate Court East

3 Swinegate

York

YO1 8AJ

T: +44 1904 715470

www.erm.com