Mark Oxford
Environment Agency
Via email

Thursday 22 May 2025

Ref: 14-K6157-ENV-LT-001

Re: Folly Farm Waste Management Facility, Suffolk – K6157
Duly Making Response

Dear Mark,

Please find below responses to your request for further information issued on 8th May 2025. For ease we have included the information requested below in grey and italics and our response beneath. The submission deadline for the response is 22nd May 2025.

1. *Form Part C4 – Provide a completed form C4 as you are amending your waste operations on site.*

Form Part C4 has been sent with this submission.

2. *Provide updated versions of the following documents that exclude references to water from the washing operations sump being directed to the on-site reed bed for discharge.*
    a. *Environmental Risk Assessment, (14-K6157-ENV-R003 ERA 26.07.2024)*
    b. *Non-Technical Summary (14-K6157-ENV-R002 Permit Var App Report 26.07.24)*
    c. *Technical standards document (14-K6157-ENV-R004 Technical Standards 26.07.2024 COMP)*

    I have discussed the matter of the use of the reed bed for the potential treatment or water via the reed bed and discharge to the brook. The A7 activity within the permit is a Directly Associated Activity to the installations (landfill) activity meaning that it authorises the treatment and discharge of the surface water from the surface water management of the landfill operation only, and not the waste operations.
    Water that has come into contact with waste is likely to pick up contaminants and may be considered as a trade effluent. This would require an appropriate water discharge consent.
    As long as the relevant documents are amended to be clear that waters from the washing plant and associated sealed drainage system are not transferred to the reed bed and discharged into the brook, the existing discharge can be dealt with as a compliance issue.

References to water from the washing operations sump being directed to the on-site reed bed for discharge have been removed from the Environmental Risk Assessment (ERA), Non-Technical Summary (NTS) and Technical Standards (TS).

Surface water runoff from the hardstanding area used to house the soil washing plant and stockpiles will either be:

1. harvested and re-used within the soils washing plant process; or
2. tankered off site for treatment at an appropriate facility.

3. *Updated your Environmental Risk Assessment to include consideration for the site being within a Source Protection Zone 3.*

The ERA has been updated to include reference to the Source Protection Zone (SPZ) 3. The site is at the edge of the SPZ3, and the host aquifer unit that forms the SPZ3 designation terminates immediately downgradient of the site and there is no downgradient continuity. Monitoring has been in place for over 20 years, which can identify any changes in groundwater quality following the introduction of soil washing.

There will be no additional point source emissions. The Soil Wash Plant (SWP) operates by a closed water system to reduce water emissions and abstracted water consumption. during soil and aggregate processing, there will be a small amount of water entrained within the screened aggregate product with any releases being captured by drainage and fed back to the plant. During operational maintenance in all or part of the process, water will be tankered offsite to an appropriate treatment facility. Unsuitable excess process water will also be tankered offsite to an appropriate facility for treatment

The impermeable surface is also located above a Stable Non-Reactive Hazardous Waste (SNRHW) cell liner.

These controls will prevent any potential impact to the SPZ 3.

4. *Provide a layout plan for the new washing plant area showing the storage of inputs and outputs, specific location of the plant, drainage of the impermeable surface.*
   Note: that we consider hardstanding to be a layer of crushed aggregate. An impermeable surface such as concrete should not be described as hardstanding for clarity. Based on the description we are assuming the washing plant and surrounding area will be on an impermeable surface with sealed drainage.
   We would expect the storage of any silt produced by the wash plant to be stored on an impermeable surface with sealed drainage.

An updated Site Layout and Plant Layout plans have been sent with this submission (drawing reference: E2186-PD-003-02 and E2186-PD-003-01).

The soil wash plant, input and product bays are to be located above an impermeable surface, with sealed drainage for water capture.

The Soil Wash Plant (SWP) and output water management is a self- contained water management process.

The design aims to:

- Retain the majority of the water within the process and not be exposed to the environment *i.e.* it will be retained within the pipework and tanks;
- Capture any plant washing water emissions for reuse.
- Store dry filter press cake undercover at all times before being taken off site.
- Construct perimeter kerbing to prevent water ingress from peripheral adjacent landfill into the SWP area

- Construct an impermeable surface design gradient with drainage channels which separates the soil wash area (and output stockpiles) from contiguous areas to prevent excess rainfall water entering the SWP area at all times.

5. *Provide a process diagram showing the journey of the wate that enters the washing plant to its end, including details of the water treatment and re-use, and silt outputs from the plant.*

A process flow diagram has been produced, attached as Appendix A. The soil wash process is actually a grading process for non-hazardous soils. Soils are received within the wider waste operations at the site. The incoming soils will be dry and hence the only potential scenario for a liquor to be formed is during a significant rainfall event which exceeds the moisture absorption capacity of the soils. However, the incoming storage bay will be operated and designed to prevent egress of any waters formed from the incoming material. The bays will be inspected routinely during operations and after rainfall events to further minimise the likelihood of egress and mixing with the graded products.

The wash process is intended to add value to the soils by producing clean washed aggregate factions and graded sands which can be demonstrated to meet the various protocols such as:

- WRAP 2013 Aggregates from inert waste. End of waste criteria for the production of aggregates from inert waste

The silt output is produced as the solid product from a hydraulic silt press. The silt press is an entirely enclosed unit which produces a dewater solid product and a clarified water stream. The silt press will be emptied separately from the wider aggregate and sand products, then held as a dried product within either a covered bay (to prevent rainfall entering) or sealed and covered container until removed from the site.

6. *Provide details of how the wash water be me managed to ensure that it remains suitable for washing other wastes, i.e. that it does not become contaminated from materials washed and transfers contaminants between loads. This should include frequency of monitoring, location(s) of monitoring, determinants tested for, thresholds and/or actions levels applied. This may also be extended to the silt produced.*
   ***Note:** The silt produced from the washing plant must be coded as 19 02 05* or 19 02 06 as it is a waste, depending on its characteristics. This material cannot be used within the landfill operation unless assessed and included as a suitable waste stream.*

The washing process should properly be described as a wet grading process, that separates aggregates and sands to produce added value and reuse of soil forming materials. The process will be applied to non-hazardous soils which have undergone pre-acceptance checks as part of sites wider waste acceptance procedures.

The site is within a generally rural area, with limited industrial history compared with other areas of the country, such as the midlands, the northeast and the northwest. Consequently, there is not an expectation of a wider range of hazardous soils as found in these areas. This conclusion is also drawn from over 30 years of site operations processing a consistent non-hazardous soil throughput, which can be supported by soil sampling and WAC protocol testing whereby hazardous substance concentrations are low.

The wash plant agitates, separates and grades the aggregate. Hazardous substances are not expected to accumulate within the wash water as a detergent is not being applied that could mobilise contaminants into the water phase, and persistent contaminants are expected to remain within their host solid phase / adsorbed surface. After sand and aggregate separation, silt and residual hydrocarbon (if any) laden waters are passed to a thickening tank for mixing with a flocculant and then settlement of silts and clay particles.

Settlement takes place in a low agitation tank regime; whereby light materials float to the surface and is skinned from the surface. This will include plastics, wood fragments and any low density hydrocarbons, with the materials managed separately, as for example a Refuse Derived Fuel (RDF) which is exported from the site. Heavier mass hydrocarbons can be retained by the flocculated solids, which are thickened, then the thickened sludge dewatered within the filter press

Although site specific data is not available, Ayesa (formerly ByrneLooby) do have experience with soil washing plants located within industrialised areas of the country, and a testing regime has been proposed based on permitted systems, including from the use of filter press systems. Both the wash water and filter press will be sampled in accordance with the below regimes. Ad hoc testing should also be undertaken in response to significant changes in the types of soils processed as identified from the pre-acceptance checks.

Table 1 – Wash Water Monitoring

Location	Determinands	Frequency
Wash water	Visual (for hydrocarbon)	Daily (when operational)
	pH, Electric Conductivity, Total Suspended Solids, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Organic Carbon, Total Alkalinity, Total Oxidised Nitrogen, Ammoniacal Nitrogen, Chloride, Arsenic, Boron, Cadmium, Calcium, Total Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Potassium, Sodium, Sulphate and Zinc Mecoprop, Dichlorprop	Annually

Table 2 – Filter Press Monitoring

Location	Determinands	Frequency
Filer Press	Antimony, Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Chromium, Zinc, Barium, pH, Loss on Ignition (LOI, 450°C & 440°C), Chloride, Fluoride, Sulphate, Phenol, TPH and Asbestos	Annually
	Full WAC Analysis (inclusive of total concentration, BTEX, PAH etc and leaching testing)	

We note your comment that the filter cake / silt produced is a physico/chemical treatment process residue and its uses are dependent on its physical characteristics and chemical composition. Testing will be undertaken on a routine basis as per Table 2, as well as

undergo Waste Acceptance testing protocol[1], as well as other testing to determine an appropriate removal route from site or other suitable recovered use.

Limits are not set within permits for other sites processing non-hazardous soils using the same technology, and are not considered necessary here, as these do not see a continued accumulation of hazardous or non-hazardous pollutants. Nevertheless monitoring data will be compared with a) non-hazardous thresholds for the filter cake product and b) the Maximum Allowable Concentration (MAC), Annual Average (AA) water quality standards and Drinking Water Standards for the circulated water to determine if there is a potential to cross contaminant the soils being processed (*i.e*. a sufficient water bearing load to cause a change in status of the solids). Sulphate in soils is in the form of gypsum, a natural mineral, whereby sulphate concentrations are at the calcium sulphate solubility limit. Concentrations do not then increase over time, and do not contribute to sulphate loading on successive batches of soils being processed. Sulphate therefore is not a contaminant of concern in these circumstances for process purposes, and the process waters will be indistinguishable from that of the underlying landfill with respect to sulphate. Therefore there is no potential to increase the risk to groundwater downgradient of the site.

7. *Provide details of how the produced silt will be dewatered.*

The silt bearing waters are passed into a thickening tank, where a flocculent is added. The flocculated silt (clay and silt minerals) settles to the bottom of a cone thickening tank and then the thickened sludge is passed to a silt press.

Fine particulate sedimentation to the bottom of the tank ensures approximately 90% of the process water is available for immediate return to the process.

Sedimentation is accelerated by the addition of a flocculant using an automatic dosing station. The flocculant used is Kemeria Superfloc A-100 an anionic water-soluble polyacrylamide, approved for use in potable water treatment. Superfloc A-100 is non-hazardous it contains no components considered to be either persistent, bioaccumulative and toxic, or very persistent and very bioaccumulative at levels of 0.1% or higher.

The press is a Terex system filter press which is an entirely enclosed and operates using a hydraulic ram to compress the sludge into a filter cake on a batch process which extrudes the moisture from the sludge for recovery and increases water recovery to 95%. Plate shakers are fitted to aid the removal of the filter cake from the hydraulic press.

Provide details of how you will confirm the 19 12 12 produced on site is suitable for washing as it appears it will be produced by the treatment of multiple waste streams.

The materials to be processed through the soil wash plant will be derived from either

- 17 05 04 Soil and Stones (other than those mentioned in 17 05 03)
- 17 01 07 Mixtures of concrete, bricks, tiles and ceramics (other than those mentioned in 17 01 06); or

[1] https://www.gov.uk/guidance/dispose-of-waste-to-landfill

- 17 09 04 Mixed construction and demolition wastes (other than those mentioned in 17 09 01, 17 09 02 and 17 09 03)

This is confirmed within the provided reports which in relation to 19 12 12 notes '*specifically construction and demolition waste already treated at the existing transfer station via a trommel / screener / crusher / picking station*'.

Incoming waste is generally separated into heavy and light fractions on the basis of weight and EWC and are thereafter managed separately.

The heavy fraction is managed via a dry screening, manual and mechanical sorting operation to grade suitable recyclate (secondary aggregates) material. It is only the fraction below <55mm (soil, stone and brick) that will be used for feedstock to the soil wash plant.

This process also removes the majority of other waste which could be incorporated within the construction and demolition mixture including wood, plastic and paper, metals, paint and adhesive containers. However, a small fraction of organic waste will inevitably be included in the <55mm soil wash plant feedstock. This will be removed on trash screens as part of the soil wash plant process and this material will be returned to form part of the RDF waste managed elsewhere on site.

Other mechanically separated 19 12 12 produced from general mixed waste skips (which are not the "heavy fraction" from construction and demolition) are not suitable and therefore not included within the soil wash plant process.

Closure
We trust the above is satisfactory. Please do not hesitate to contact us if you require any further information in support of the enclosed documents.

Yours sincerely
For Ayesa,
Craig A Fannin
_____
Dr Craig Fannin PhD MSc BSc CSci Chem MRSC FGS
Technical Director

Byrne Looby Partners (UK) Ltd. Registered in UK, No. 7991280.
9 The Courtyard, Phoenix Square Wyncolls Road, Colchester, CO4 9PE, Essex, United Kingdom
Tel: +44 (0) 1206 858600
sthelens@ayesa.com
www.ayesa.com/en

Appendix A – Process Flow Diagram

Byrne Looby Partners (UK) Ltd. Registered in UK, No. 7991280.

9 The Courtyard,
Phoenix Square
Wyncolls Road,
Colchester, CO4 9PE,
Essex, United Kingdom

Tel: +44 (0) 1206 858600

sthelens@ayesa.com
www.ayesa.com/en

Appendix B – Other requested documents

Byrne Looby Partners (UK) Ltd. Registered in UK, No. 7991280.

9 The Courtyard,
Phoenix Square
Wyncolls Road,
Colchester, CO4 9PE,
Essex, United Kingdom

Tel: +44 (0) 1206 858600

sthelens@ayesa.com
www.ayesa.com/en