

# **Permitting decisions**

### **Bespoke permit**

We have decided to grant the permit for Hermitage Quarry Waste Treatment Facility operated by Gallagher Aggregates Limited.

The permit number is EPR/LP3134YU.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

### Purpose of this document

This decision document provides a record of the decision making process. It:

highlights key issues in the determination

summarises the decision making process in the <u>decision checklist</u> to show how all relevant factors have been taken into account

shows how we have considered the consultation responses.

Unless the decision document specifies otherwise we have accepted the Applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit. The introductory note summarises what the permit covers.

## Key issues of the decision

Gallagher Aggregates produces 350,000 tonnes of quarry fines (Hassock fines) per annum at the Hermitage Quarry Waste Treatment Facility site. This permit allows the use of Advanced Hydration Technology in the recycling of the Hassock fines by mixing them with Air Pollution Control Residues (APCr) and Paper Sludge Ash (PSA). The Operator also proposes to use alternative wastes such as Cement Kiln Dust (CKD), Cement By-pass Dust (CBPD) and Spent Fluid Catalytic Cracking Catalyst to supplement PSA when there is low availability of the PSA. The proposed treatment and storage activities fall under Sections S5.3 Part A(1)(vi), Sections S5.4 Part A(b)(iii) and S5.6 Part A(1)(a)(i) of the Environmental Permitting Regulations 2016.

The Advanced Hydration Technology is a treatment process that converts the lime based compounds commonly found in the waste constituents of APCr and PSA into a cementitious compound when mixed with quarry fines; whilst at the same time, locking up and stabilising the heavy metals present in the APCr and PSA in the crystal formation Ettringite.

The operations are designed to take place in two stages. The first stage of the process involves blending of the Hassock/quarry fines with the PSA in a rapid continuous mixer. The mixture is left to react and to semidry the hassock fines. After 12 to 24 hours, the blended mixture is passed through vibrating screens to separate the mixture into <2mm (Hydraulic Bound Mixture) and >2mm (Limestone Aggregate) fractions. The intention of the Operator is to seek end of waste status for the Limestone Aggregate and to subject the Hydraulic Bound Mixture to further treatment. The second stage involves mixing the Hydraulic Bound Mixture with APCr, Portland cement and water to produce a Hydraulically Bound Aggregate (HBA) that is subsequently granulated and pelletised. The Operator also intends to seek end of waste status for the HBA.

The authorised activities in this permit will be commissioned in a staged manner as detailed in Sections 2.3, 2.4 and 2.5.3 of the document titled 'Supporting Document for Permit Application EPR-LP3134YU-A001 AMENDED 071217 & 120118'. The Stage 1 operations cover initial trials using a limited quantity of waste to determine exact addition rates for PSA and APCr to the process to meet the technical specifications of the intermediary and final products. The quantity of the waste input is also limited during the Stage 2 operations – the annual throughput of Hassock is limited to 200,000 tonnes. The Stage 3 operations involve full commissioning of the plant. The Operator is authorised to take up to the maximum annual throughput of Hassock fines (350,000 tonnes) authorised in the permit during the Stage 3 operations. Additions of plant are to be made to the production area at each Stage. In Stage 2 additional silos will be added for APCr and in Stage 3 further silos and a screening line will be added.

#### Mixing ratio and reaction chemistry

The mixing ratio of waste materials is subject to the Stage 1 trials; the exact addition rates of PSA and APCr will be determined and agreed with the Environment Agency at the end of the trials. Notwithstanding the trials, it is expected that the maximum addition rates of PSA to Hassock fines will not exceed 15%; the addition rate of APCr to the Hydraulic Bound Mixture will be in the region of 30%. The proposal is to use alternative wastes such as Cement Kiln Dust (CKD), Cement By-pass Dust (CBPD) and Spent Fluid Catalytic Cracking Catalyst to supplement or replace PSA during periods of low availability or non-availability of the PSA. The suitability of the PSA substitutes will be assessed as part of the Stage 1 trials.

The Advanced Hydration technology being applied to these waste materials is a treatment process that converts the lime and alumina based compounds commonly found in the waste constituents of APCr and PSA into a cement compound, whilst, at the same time, locking up and stabilising the heavy metals present in the APCr and PSA in the crystal formation Ettringite.

The first two reactions occur between the calcium oxide in the PSA and water in the Hassock to convert calcium oxide to calcium hydroxide and then reacting with CO2 to produce calcium carbonate. The moisture in the Hassock fines also reacts with the calcium oxide and calcium aluminates to create an exothermic reaction, driving off moisture during the mixing process and during the next 24 hours.

The third reaction occurs between the hydraulic bound mixture (produced from the Hassock fines and PSA), the APCr, Portland cement and water. Portland cement is required in the second part of the process that produces the Hydraulically Bound Aggregate as it plays a part in the required chemical reaction between the materials. Ettringite is created through the chemical reaction between calcium sulphate and calcium aluminate; the former is present in the cement and the latter is present in both the PSA in the Hydraulic Bound Mixture and the Portland cement. When water is added to the combination of Portland cement and PSA, ettringite starts to form immediately and will continue to develop for over 24hrs increasing the percentage of Ettringite to 16-20%. The formation of Ettringite is essential for the hydraulically bound aggregate.

Due to the chemical reactions between the waste materials we are satisfied that the proposed process is an appropriate form of treatment for the proposed waste materials and that this will be assessed/demonstrated further through the Stage 1 trials prior to full commissioning of the permitted facility.

#### Potential receptors

The site is within the location criteria of the Oaken Wood SSSI Site, and North Downs Woodlands and Peter's Pit (SAC) Sites. The application site is about 1.8km to the Oaken Wood SSSI Site and 6.4km to the North Downs Woodlands and Peter's Pit (SAC) Sites and is immediately adjacent to the Oaken Wood Barming ancient woodland/local wildlife site. There are also no pollutant pathways between the application site and the SSSI and SAC Sites. There are human receptors within 700m South East and South of the installation boundary. There is also a designated Air Quality Management Zone (for PM<sub>10</sub>/NO<sub>x</sub>) within 1km of the proposed installation boundary.

#### Environmental risks and control measures

The potential environmental risks associated with the proposed operations include noise emissions, potential release of particulates to air, release of contamination water to surface and groundwater.

PSA, APCr and Portland cement are delivered to site by powder tanker and stored in a dedicated silos where they are maintained in enclosed systems until they are mixed with other materials and water. There is the potential for point source emissions of dust from the vents of the silos. Delivery from tankers are through an on-board relief valve and filtration system. Silos are fitted with automatic cut-offs in the event of pressurisation and audible and/or visible high-level alarms or volume indicators to warn of overfilling. The silo vents have in-built filters.

All dust prone operations (storage and transfer of powder materials) are undertaken within enclosed systems (silos and enclosed conveyors). Dust emissions from the silos are controlled through integrated filters that are designed to capture dust back to the silos during periods when the over-pressure valves are released. Minimal dust emission is expected from the treatment operations as all materials are conditioned with water during processing.

All operations at the site are carried out with buildings (with the exception of the Hassock/PSA blending plant and silo storage). The conveyors and the Hassock/PSA blending plant are enclosed. The screening, granulating and pelletising plant are housed inside the buildings to minimise dust and noise impact. The vibrating screen is a fully enclosed Rotex Apex vibrating screen that has the capacity to contain any dust that may occur during screening.

The hassock/PSA blend is typically wet and is emptied from the rapid continuous mixer into a tipper and transferred to dedicated bays on the bunded/impermeable hardstanding area. The material is stored for 12-24 hours within the bay to achieve a semi-dry form through exothermic reaction that is triggered by the presence of PSA in the mix.

The hassock/PSA blend is transferred from the bay using a front-end loader to 2 consecutive vibrating screens to separate the material into two screen sizes; >2mm (Limestone Aggregate) and <2mm (Hydraulic Bound Mixture). The outputs of the screening operation are conveyed to the storage locations through covered conveyors.

There are procedures in place to continually check the integrity of the seals of all vessels that are used in the treatment process. There are also spill management procedures to ensure that accidental release of raw materials, products and waste materials are minimised.

The whole operations at the site are carried out on an impermeable surface with a 300mm perimeter bund. The operational slab surface area will be inspected prior to installation of process equipment and prior to first operation, thereafter monthly inspections will be conducted with inspection results recorded in a site register. Inspections will be undertaken to check the condition and integrity of the surface slab, containment bund and joints between the surface slab and containment bund.

There are wheel-wash and vehicle washing facilities at the site to prevent the release of mud on to public roads. All wastewater collected at the site is directed and stored within a sealed underground tank. Recovered effluent from the treatment operations will be tested at the end of each operational session and will be either reused in the process or disposed appropriately off-site by tanker based on the EWC code assigned to the waste water. The storage tank will be a Kingfisher 19000 litre Rainwater V tank produced from high strength polyethylene, installed underground with a polythene liner and a waterproof concrete surround. The water level will be checked at the end and start of each day and compared to confirm no leakage. The tank will be emptied annually, cleaned out to remove any silt and entered either manually (following confined spaces procedures) or remotely with an inverted laser scanner suspended in the tank to perform a visual check of the condition of the tanks inner face. Any silt removed will be tested, assigned an EWC code and disposed of appropriately.

Given the control measures and operating procedures proposed we are satisfied with the Applicant's assessment that the overall risks to human receptors, habitat, nature conservation sites, surface and groundwater from the proposed operations are not significant.

#### Point source emission

We have considered that the silo vents constitute point source emissions to air. We have not asked the Applicant to model these emissions because we have considered that the intermittent emissions are not likely to be significant, especially with the filters that are fitted to the vents. The vents are fitted with pressure release valves to control over-pressure in the silos. Dust emissions from the vents when the valves are released are captured in filters. The filters will be checked and cleaned or replaced quarterly. We have specified in the permit that there shall be no visible dust emissions. The assessment of dust shall be by visual observation.

#### Waste pre-acceptance, acceptance and sampling procedures

When an enquiry is made to accept a new waste on site a record is to be raised on the Waste System assigning the enquiry with its own unique reference number. All information pertaining to the waste from this point will be cross-referenced to this unique number. Unless a sample and analysis has already been completed by a third party with sufficient written information, a representative sample(s) must be obtained from the Producer.

Prior to arrangements being put in place to accept a waste, the waste is passed through a screening stage to determine the suitability of the waste for the activity. Part of the screening is the review of analysis derived from representative samples to verify the EWC code of the waste, confirm the composition and hazards associated with the waste and identify verification parameters that can be used to test the waste when it arrives at site. A representative sample of at least 200kg is required to fully characterise waste coming from a producer's site. A verification audit of the Producer sampling techniques and how the sample was taken will be initiated if for any reason it is believed that a sample may not be representative.

When waste arrives at the site, initial sampling is carried out at the reception point of the installation. A sample of approximately 500g will be taken from the delivery vehicle prior to unloading, the sample will then be taken to the on-site laboratory for initial analysis; further portions of the sample will be sent to the identified support laboratories for further analysis. If the analysis shows the load to be suitable the tanker driver will be directed to the silo for unloading. If the load is deemed unsuitable then it will be rejected in line with the Non-Conformance and Rejection Procedure.

During the treatment process, visual inspection will take place to ensure that the right grade of product and correct moisture levels are maintained throughout the treatment process.

After curing has taken place, representative samples will be taken to the on-site laboratory for initial testing. The cured samples will then be portioned out and sent to external test laboratories to be analysed.

The technical appraisal of the sampling and analysis will be overseen by a suitably qualified and experienced member of staff who understands the capabilities of the site, who has a minimum qualification of a degree in chemistry (or equivalent).

The level of testing will be subject to agreement with the Environment Agency and the scale of testing shall be scaled during the lifetime of the activity subject to an approval from the Environment Agency. The limestone aggregate, hydraulic bound mixture and hydraulically bound aggregate shall be treated as subpopulations and analysed for the combined identified hazards and recorded and reported.

Each sample shall be subjected to series of tests:

- X-ray Fluorescence (XRF) to determine the chemical Composition
- Inductively Coupled Plasma Mass Spectrometry (ICP MS) & Inductively Coupled Plasma Optical Emission Spectrometry (ICP OES) for elemental and leachate analysis
- X-ray Diffraction (XRD) for mineral composition
- Gas Chromatography Mass Spectroscopy GCMS High Resolution for the highly toxic compounds (i.e. Dioxins, PCBs and Furans etc.).

Whilst it is the intention of the Operator to seek is to produce materials that meet an end-of-waste (EoW) specifications, this permit determination makes no judgement as to whether or not the material produced by the proposed treatment processes can achieve EoW status.

#### List of wastes

The Operator amended the list of wastes requested in the original application in their response to the Schedule 5 Notice dated 08/11/2017. The updated list of wastes is contained in the document titled 'Supporting Document for Permit Application EPR-LP3134YU-A001 Amended 071217 & 120118'.

#### Shared weighing and wheel wash facilities

Waste will enter the installation from 2 different sources:

- Hassock Fines via a dumper from the Gallagher Quarry in which the installation is situated
- All other waste materials will enter by tanker from external suppliers

The Hassock fines will be loaded into a loading hopper for each batch production run and at this point the material will be weighed in a plant weigh bin; this weight will recorded each time that the mixture is made (batched). The cumulative weights of the batches will be recorded and is available at specified intervals.

Each load of in-coming waste will be accompanied by relevant paperwork from the produce (i.e. a hazardous waste consignment note or waste transfer note). The consignment note will be handed to the reception area on arrival and the net weight as specified on the consignment note will be entered into the Waste System and used as the in-coming weight. In addition the tanker will be weighed in and out of the Installation at the Quarry Weighbridge to calculate a net weight of material delivered and compared to the consignment note weight, ensuring that all material has been delivered from the tanker.

All vehicles used to transport out-going waste materials will be weighed on the Quarry Weighbridge empty and then again on exiting the site once loaded with the waste material. Depending on the EWC code of the waste, the weights will either be used to complete a hazardous waste consignment note or a duty of care waste transfer note before the vehicle leaves site. The weights will also be entered into the Waste System.

All vehicles used to transport wastes to the site will pass through the wheel wash facility before leaving the site

The Quarry Weighbridge and the wheel wash facilities are shared between the quarry, the inert landfill and Installation and are located outside the boundary area of the Installation. The principal user of the facilities is the Quarry site.

#### Baseline soil and groundwater data

The Applicant confirmed that the site area is located at the base of an active quarry and that no soil is present at the site for sampling purpose. The Applicant also confirmed that the installation facility will be constructed directly on the quarry base rock comprising the Hythe Beds strata. The Hythe Beds are underlain by Atherfield Clay and groundwater is present within the Hythe Beds beneath the application site. The Applicant provided groundwater quality data from boreholes that are located outside the installation boundary. We considered that the groundwater quality data provided is not representative enough. The data submitted is for the whole quarry site and not specifically for the area covered by this permit. We advised the Applicant that without providing further data it would be assumed that the site is completely uncontaminated prior to operations, irrespective of its previous history.

This means that any contamination by substances used at, produced or released from the installation that is discovered when they apply to surrender the permit would be considered to have resulted from their operation and that they would potentially, be liable for remediation work, and will be unable to surrender their permit until the remediation is satisfactorily completed

#### Pre-operational conditions

We have included a pre-operational condition in the permit that requires the Operator to submit a report on the baseline conditions of soil and groundwater at the installation prior to the commencement of the authorised activities. The report must contain the information necessary to determine the state of soil and groundwater contamination so as to make a quantified comparison with the state upon definitive cessation of activities provided for in Article 22(3) of the IED. The report shall contain information, supplementary to that already provided in application Site Condition Report, needed to meet the information requirements of Article 22(2) of the IED.

We have also added a pre-operational condition that requires the Operator to submit a Commissioning Plan prior to the commencement of Stages 1 and 2 operations as well as the report of the Stage 1 operations. The report shall include but not be limited to information on the chemical composition of the wastes, mixing ratios, waste acceptance criteria/limits, criteria/specification for the treated materials, results of the leaching tests carried out on the treated materials (limestone aggregates and hydraulically Bound Aggregates), revised sampling and testing procedures for incoming wastes and treated materials (hydraulically bound aggregate, limestone aggregate), updated/finalised procedures for waste pre-acceptance and acceptance. The Operator is also required to demonstrate that the PSA substitutes are similar in composition and properties as the hazardous PSA and can react in the same form (with the Hassock fines) as the hazardous PSA and are compatible to be stored together in the same silo.

We have asked the Operator to notify us prior to the acceptance of wastes from a new source (other than those included in the permit application supporting documents) and commencement of the Stage 1 operations.

#### Improvement condition

We have included an improvement condition in the permit that requires the Operator to submit a report of the commissioning operations, including;

- a summary of the environmental performance of the plant as installed against the design parameters set out in the application;
- details of any modifications made during commissioning that change the details included within the application; and
- a review of the performance of the facility against compliance with the conditions of this permit.

The commissioning report will enable us (the Environment Agency) to verify the design operations of the treatment systems against the permit requirements.

# **Decision checklist**

Aspect considered	Decision	
Receipt of application		
Confidential information	A claim for commercial or industrial confidentiality has not been made.	
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.	
Consultation		
Consultation	The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement. The application was publicised on the GOV.UK website.	
	<ul> <li>Public Health England</li> <li>Director of Public Health</li> <li>Health and Safety Executive</li> <li>Local Planning Authority</li> <li>Environmental Health</li> </ul>	
	The comments and our responses are summarised in the <u>consultation</u> <u>section</u> .	
Operator		
Control of the facility	We are satisfied that the applicant (now the Operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal Operator for environmental permits.	
The facility		
The regulated facility	We considered the extent and nature of the facilities at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation'.	
	The extent of the facilities are defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.	
The site		
Extent of the site of the facility	The Operator has provided plan which we consider is satisfactory, showing the extent of the site of the facility. The plan is included in the permit.	
Site condition report	The Operator has provided a description of the condition of the site, which we consider is not satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive.	
	We have advised the Operator what measures they need to take to improve the site condition report.	

Aspect considered	Decision		
Biodiversity, heritage, landscape and nature conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.		
	The site is within the location criteria of the Oaken Wood SSSI Site, and North Downs Woodlands and Peter's Pit (SAC) Sites. The application site is about 1.8km to the Oaken Wood SSSI Site, 6.4km to the North Downs Woodlands and Peter's Pit (SAC) Sites but there are no pollutant pathways between the application site and the SSSI and SAC Sites. The site is also immediately adjacent to the Oaken Wood Barming ancient woodland/local wildlife site.		
	We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process.		
	We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.		
	We have not consulted Natural England on the application. The decision was taken in accordance with our guidance.		
Environmental risk assessment			
Environmental risk	We have reviewed the Operator's assessment of the environmental risk from the facility.		
	The Operator's risk assessment is satisfactory.		
	The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment, all emissions may be categorised as environmentally insignificant		
Operating techniques			
General operating techniques	We have reviewed the techniques used by the Operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.		
	The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.		
Permit conditions			
Waste types	We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.		
	We are satisfied that the Operator can accept these wastes for the following reasons:		
	<ul> <li>they are suitable for the proposed activities</li> </ul>		
	<ul> <li>the proposed infrastructure is appropriate</li> </ul>		
	<ul> <li>the environmental risk assessment is acceptable.</li> </ul>		
	see <u>key issues</u> section above.		
	We made these decisions with respect to waste types in accordance with the		

Aspect considered	Decision
	risk assessments and Sector Guidance - S5.06 – 'Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste'.
Pre-operational condition	Based on the information in the application, we consider that we need to impose pre-operational conditions.
	We have imposed pre-operational condition on the permit that requires that Operator to submit to us:
	<ul> <li>A Commissioning Plan prior to the commencement of Stage 1 and Stage 2 operations</li> </ul>
	<ul> <li>A report of the Stages 1 operations prior to the commencement of Stage 2 operations.</li> </ul>
	<ul> <li>A report on the baseline conditions of soil and groundwater at the site.</li> </ul>
	<ul> <li>A notification prior to the acceptance of wastes from a new source (other than those included in the permit application supporting documents and commencement of the Stage 1 operations.</li> </ul>
	<ul> <li>A report of an assessment carried out to demonstrate that the PSA substitutes are similar in composition and properties as the hazardous PSA</li> </ul>
	See <u>key issues</u> section above.
Improvement programme	Based on the information on the application, we consider that we need to impose an improvement programme.
	We have imposed an improvement programme to ensure that the Operator provides a report of the commissioning operations to us prior the commencement of the Stage 2 Activity
	See <u>key issues</u> section above.
Emission limits	We have decided that emission limits are not required in the permit.
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.
Reporting	We have specified reporting in the permit.
	The reporting is in relation to process monitoring.
	We made these decisions in accordance with the guidance – S5.06 - Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste.
Operator competence	
Management system	There is no known reason to consider that the Operator will not have the management system to enable it to comply with the permit conditions.
	The decision was taken in accordance with the guidance on Operator competence and how to develop a management system for environmental permits.

Aspect considered	Decision
Technical competence	Technical competence is required for activities permitted.
	The Operator is a member of an agreed scheme.
	We are satisfied that the Operator is technically competent.
Relevant convictions	The Case Management System and National Enforcement Database have been checked to ensure that all relevant convictions have been declared.
	No relevant convictions were found. The Operator satisfies the criteria in our guidance on operator competence.
Financial competence	There is no known reason to consider that the Operator will not be financially able to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit.
	Paragraph 1.3 of the guidance says:
	"The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation."
	We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.
	We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

# Consultation

The following summarises the responses to consultation with other organisations, our notice on GOV.UK for the public and the way in which we have considered these in the determination process.

#### Responses from organisations listed in the consultation section

#### Response received from

Public Health England (PHE)

#### Brief summary of issues raised

PHE has no significant concerns regarding risk to health of the local population from this proposed activity, providing that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice.

PHE recommends that any Environmental Permit issued for this site should contain conditions to ensure that the following potential emissions do not impact upon public health: fugitive dust / particulate matter from the delivery, storage and processing of waste.

#### Summary of actions taken or show how this has been covered

We have included in the permit, appropriate conditions to ensure that fugitive emissions are monitored, controlled and minimised.