

REPORT

Boston Alternative Energy Facility

Lightweight Aggregate Technical Note

Client: Alternative Use Boston Projects Ltd

Planning Inspectorate
Reference: EN010095

Document Reference: 9.53

Pursuant to: APFP Regulation: N/A

Reference: PB6934-RHD-ZZ-XX-NT-Z-4081

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Date: 13 December 2021



Note / Memo

HaskoningDHV UK Ltd.
Industry & Buildings

To: National Infrastructure Planning
From: Alternative Use Boston Projects Limited
Date: 13 December 2021
Our reference: PB6934-ZZ-XX-NT-Z-4081
Reference: 9.53
Planning Inspectorate: EN010095
Reference:
Classification: Project related
Checked by: BDB Pitmans
Approved by: Paul Salmon

**Subject: Boston Alternative Energy Facility: Deadline 4 - Lightweight Aggregate
Technical Note**

1 Introduction

- 1.1.1 This technical note sets out brief details of the Lightweight Aggregate (LWA) Plant contained within the proposed Boston Alternative Energy Facility (the Facility). Information is provided that show the LWA plant is not new or novel technology, and that other, similar plants operate under an Environmental Permit (EP) within the United Kingdom. This information has been prepared in response to matters raised by the Environment Agency at the Issue Specific Hearing 2 (ISH2) into Environmental Matters in relation to the environmental permitting of the LWA.
- 1.1.2 As set out in Environmental Statement (ES) Chapter 5 Project Description (document reference 6.2.5, APP-043) states that the LWA plant will comprise four kiln lines, two filter banks with stacks, storage silos for incoming ash, Air Pollution Control residues (APCr), and binder material (clay and silt), a dedicated berthing point at the wharf, silt storage and drainage facility, clay storage and drainage facility, LWA workshop, interceptor tank, LWA control room, aggregate storage facility and plant for loading aggregate / offloading clay or silt. Further information on the LWA plan can be found in paragraphs 5.6.75 to 5.6.94 of ES Chapter 5.

2 Other Permitted LWA Plants

- 2.1.1 There are a number of LWA plants that have been permitted in the UK:
- RTAL Aggregate Plant at Tilbury, Essex; - 4 Trefoil sintering kiln lines (original process and same site for the process when WID regs came into force.)
 - Lytag at Drax, North Yorkshire Sinter band oven process;
 - Carbon8 at Avonmouth and Suffolk – artificial aggregation process producing another type of product with less crush strength for a different niche market section.

- 2.1.2 The RTAL Aggregate Plant at Tilbury, Essex (developed by Terry Green who is leading the design of the LWA plant for the Facility) was permitted originally by the Environment Agency (EA) (Permit Number BK2518 / BK2518) and subsequently also re-permitted (Permit Number BK2518IX Variation FP3939LC) when The Waste Incineration Directive (WID) became law. Copies of the original front sheet of both EA permits are provided in **Appendix A** of this note.
- 2.1.3 This LWA plant was only taken out of use, when the adjacent Tilbury B Power Station sold their land, from which sewage sludge (used as a binding agent as part of the process) was sourced, with this site now being part of Tilbury 2 Port.
- 2.1.4 There are other permitted LWA plants in operation, including one within the Drax Power station site in North Yorkshire operated by Lytag¹, producing a similar LWA. This plant uses a less efficient sinter belt technology than the proposed Boston LWA plant. The sinter belt is a longer kiln than the Trefoil kiln proposed for the Facility, but similar to a rotating cement kiln in overall length. The Trefoil kiln is a patented design, reducing the footprint and raising the thermal efficiency of the plant.
- 2.1.5 The addition of APCr ash to the incinerator bottom ash at the Facility will have a fluxing effect which improves the sintering in addition to the glass in the bottom ash. If the ash streams are not mixed the efficiency gains will not be enabled in combining the ash streams. The sinter band at Drax has lower heat transfer compared to the Trefoil kiln.
- 2.1.6 There is the potential for a site visit to the Lytag plant if the EA request such a visit.
- 2.1.7 The other plants are owned by Carbon8 and take bottom ash streams from Aley EfW and London Heathrow Airport Lakeside EfW. The Carbon8 processes is an accretion process and produces lower strength granules than the sintered granules the Boston LWA plant will produce which will sinter the granules, which requires greater energy to produce a different product to Carbon8. Both have a specific niche in the lightweight aggregate market place, the Facility product is an engineered product with higher strength and requires additional energy inputs to produce the product which combines recovered fly ash from the Pulverised Fly Ash ((PFA) also known as APCr ash) harvested from the lagoons on site into the mix to form the final product.
- 2.1.8 Lakeside and Aley ash streams are treated either at Carbon8 Aggregates facilities at Suffolk or Avonmouth.

3 Conclusion

- 2.1.9 Whilst there are differences in the existing LWA plants to that proposed for the Facility, it is noted that the site at Drax produces a similar end product. The Applicant continues to liaise with the EA regarding the combining of the bottom ash and the APCr, to increase the sintering effect, and turning these wastes in to a useful product (i.e. lightweight

¹ Secondary Aggregate plant opens at Drax, The Construction Index, October 2013

aggregate) thus displacing the need to produce further primary aggregate from quarrying etc. As recognised by the Environment Agency in their evidence at Issue Specific Hearing 2 (Environmental Matters), “taking two waste streams and making a viable product is good circular economy” (EV4-007) and the Applicant will provide the Environment Agency with the information required as part of the Environmental Permitting process.

- 2.1.10 The energy consumption for the Facility’s LWA plant is required to produce a stronger lightweight aggregate product compared to many other existing products and this services a known requirement in the aggregates market place. The Applicant proposes to use an efficient Trefoil kiln technology to raise the thermal efficiency in order to produce the energy needed, noting that this is a more efficient process than that used at the currently permitted Drax LWA plant.

Appendix A

Front Cover Sheets of Other LWA Environment Agency Permits



Variation Notice with introductory note

Pollution Prevention and Control Regulations 2000

**RTAL Aggregate Plant
RTAL Limited
Fort Road
Tilbury
Essex
RM18 8UL**

Variation Notice number

FP3939LC

Permit number

BK2518IX



Permit with introductory note

Pollution Prevention and Control Regulations 2000

**RMC TILBURY
AGGREGATES LTD.**

Fort Road
Tilbury
Thurrock
Essex RM18 8UL

Permit number

BK2518 / BK2518