

REPORT

Boston Alternative Energy Facility

Response to Environment Agency's queries on Critical Infrastructure and Levels across the Application Site

Client: Alternative Use Boston Projects Ltd

Planning Inspectorate Reference: EN010095

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Date: 06 December 2021



Note / Memo

HaskoningDHV UK Ltd.
Industry & Buildings

To: National Infrastructure Planning
From: Alternative Use Boston Projects Limited
Date: 06 December 2021
Our reference: PB6934-RHD-ZZ-XX-NT-Z-4073
Reference: 9.40
Planning Inspectorate: EN010095
Reference:
Classification: Project related
Checked by: Matthew Hunt
Approved by: Paul Salmon

Subject: Boston Alternative Energy Facility Examination: Deadline 3 Response to Environment Agency queries on Critical Infrastructure and Levels across the Application Site

1 Introduction

In the Environment Agency's Deadline 2 submission for the Boston Alternative Energy Facility examination, dated 11 November 2021 (REP2-038), it was confirmed that the Environment Agency's position in relation to flood risk issues remained the same as that set out in its Deadline 1 Written Representations document, dated 19 October 2021 (REP1-051). Therefore, the clarifications from the Environment Agency which relate to flood risk are reproduced in **Section 1.1** below for reference.

1.1 Environment Agency Deadline 1 Written Representation on Flood Risk (REP1-051)

- “3.2 *We have had further discussions with the Applicant regarding the content of the FRA (APP-106, Document 6.4.13, Environmental Statement Appendix 13.2) as set out in paragraph 3.8 of our Relevant Representations. Whilst they have agreed to provide further information on these matters, we have not yet received sufficient information to confirm that the development will be safe from flooding.*
- 3.3 *We require details of finished site levels including assessment of any impact on the flow of water over the site. The Applicant has indicated to us that approximately 0.5 m of surface material will be removed and replaced with 0.8 m of surcharged material across the main site. This gives a net gain of 0.3m over the whole site. We require further assessment of the impact on flood risk to third parties through the displacement of flood waters.*
- 3.4 *Notwithstanding paragraphs 13.1.127 to 13.1.133 of the FRA (document reference 6.4.13, APP-106), we do not consider that the impacts of flooding on any critical infrastructure within the site has been adequately considered. We require further clarification about what aspects of the development are considered critical, and what mitigation measures are in place to protect them. We recommend that any features considered to be critical infrastructure should be raised above the predicted flood level to ensure it is protected in the event of a flood.*
- 3.5 *We therefore maintain that the development does not pass the Exception Test as set out in Paragraph 5.7.16 of the Overarching National Policy Statement for Energy (EN-1), or the*

requirements of 5.8.18 of the Draft Overarching National Policy Statement for Energy in that it has not reduced flood risk overall."

It is noted by the Applicant that there is no direct response to be provided to Paragraph 3.2 of the Environment Agency's Written Representations (REP1-051), other than acknowledging that the Applicant continues to provide information in relation to flood risk to provide the clarification sought by the Environment Agency. The Applicant notes that this Technical Note comprises part of this supporting information.

In addition, the Applicant notes that a response to Paragraph 3.3 and Paragraph 3.5 of the Environment Agency's Written Representations (REP1-051) was provided at Deadline 2 in the Applicant's Comments on Written Representations (document reference 9.22, REP2-006).

No additional response by the Applicant to Paragraph 3.5 of the Environment Agency's Written Representations (REP1-051), beyond that previously provided is considered necessary at the current time.

Therefore, the information contained within this Technical Note aims to:

- Provide further clarification on the response previously provided at Deadline 2 in the Applicant's Comments on Written Representations (document reference 9.22, REP2-006) to Paragraph 3.3 of the Environment Agency's Written Representations (REP1-051); and
- Address the items raised in Paragraph 3.4 of the Environment Agency's Written Representations (REP1-051).

1.2 Applicant's Response on Key Outstanding Flood Risk Items

As set out above the information contained within this Technical Note aims to provide clarification on finished site levels across the Application Site, as well as the elements of the development which are considered to be critical infrastructure and the mitigation measures in place to ensure that they remain safe throughout the lifetime of the development.

1.2.1 Response to Paragraph 3.3 of the Environment Agency's Written Representations

With regard to the issues set out in Paragraph 3.3 of the Environment Agency's Written Representations (REP1-051), the finished site ground levels will be subject to minor variations across the Application Site. Existing ground levels to the riverward side of the Roman Bank / secondary defence (but landward of the primary flood defence) are between approximately +3.2m AOD and +3.5m AOD, whilst ground levels across the Principal Application Site to the rear of the Roman Bank / secondary defence are approximately +2.5m AOD.

As noted by the Environment Agency, the Applicant has confirmed the need to remove approximately 0.5m of surface material and replace this with approximately 0.8m of surcharged material during construction. This will aid in the levelling of the site and setting out of the buildings. This approach is in accordance with that adopted for the adjacent Boston Biomass No. 3 site. Principally, buildings within the Application Site will be set at ground level (with machinery / equipment elevated inside the buildings), although the Applicant also notes that for key buildings there will be a requirement to provide localised slabs / platforms upon which the buildings and equipment will be mounted. Details related to site levelling, access roads

and slabs for buildings will be confirmed during the detailed design process, post-consent. However, the Applicant can confirm that minimum levels related to the siting of machinery and plant within the buildings will be adopted in accordance with those set out in **Table 1** of this Technical Note and which have been discussed further in **Section 1.2.2**.

Further to the above, with reference to the concerns expressed in Paragraph 3.3 by the Environment Agency (REP1-051) related to the displacement of flood waters, the Applicant notes that the Facility is to be located behind the existing flood defences which provide significant protection not only to the Application Site, but also the wider area including the town of Boston.

As indicated in the Applicant's Comments on the Examining Authority's First Written Questions (document reference 9.24, REP2-008) the present day flood risk to the Application Site is classed as a residual risk, due to the presence of the existing defences. As such during the present day extreme event water would not affect the Application Site and therefore the development of the Facility would not result in the displacement of flood water from The Haven.

In terms of the Facility, the Applicant also notes that the presence of the existing flood defences, subject to recent improvement works by the Environment Agency as part of the Haven Banks Project, will provide protection throughout the lifetime of the development. This will ensure that the flood risk to the Application Site and the surrounding area remains a residual risk into the future.

Furthermore, the Applicant notes in the Comments on Written Representations (document reference 9.22, REP2-006) that the Facility will be protected by the new flood defence along the frontage of the Principal Application Site, which will be set to +7.2m AOD (i.e. the maximum level of that proposed for the wider Haven Banks Project) from the outset of the Project.

Therefore, the Applicant notes that, unlike defences along the wider Haven Banks frontage, there will be no requirement to increase the crest height of the new flood defence as part of the Environment Agency's wider adaptive management approach. Until such time as the adaptive management approach is fully implemented the Project provides improved protection against flooding compared with that provided in the wider area.

Based on the above, in response to the concerns expressed in Paragraph 3.3 of the Environment Agency's Written Representations (REP1-051), the Applicant does not consider there is any further assessment required in terms of potential impact on flood risk to third parties. The presence of both the existing and improved defences, to be delivered as part of both the Boston Combined Strategy and the development of the Facility, ensures there will be no displacement of flood waters during an event, up to and including the 1 in 300 year event in 100 years' time.

1.2.2 Response to Paragraph 3.4 of the Environment Agency's Written Representations

With regard to the clarifications raised in Paragraph 3.4 of the Environment Agency's Written Representations (REP1-051), a review of the various elements of the Facility has been undertaken by the Applicant. Within this Technical Note, the clarification from the Environment Agency has been considered within the context of the impact of flooding to the Facility only.

Section 4.4 of the Outline Surface Water Drainage Strategy (REP1-017) provides details of the surface water pollution control measures that are embedded within the design in order to manage the risk of pollution, during operation of the Project.

Section 13.1.127 of the Flood Risk Assessment (APP-106, Document 6.4.13, Environmental Statement Appendix 13.2) confirms that the majority of Refuse Derived Fuel (RDF) will be stored in a sealed RDF bunker within the main facility, situated behind both the primary and secondary flood defences. This will remove the risk of the waste material being washed away during a flood event.

Section 4.4 of the Outline Surface Water Drainage Strategy confirms that a number of additional mitigation measures will be incorporated within the design and operating philosophy for the Facility, and these are summarised as follows:

- The RDF bales would be unloaded into a contingency storage area with a sealed drainage system, or onto a covered conveyor system and from there into the bale shredding plant. The surface of the wharf will be set at +7.2m AOD i.e. above the 1 in 200 year water level; however it would also be graded to ensure that any potentially contaminated drainage flows away from The Haven and into the sealed site drainage system. Water collected from the sealed drainage system would be used in the processing of Lightweight Aggregate.
- All fuels and liquid chemicals will be stored within bunded storage tanks with 110% capacity of the stored liquids. These bunds are designed to be watertight to ensure that there is neither flood water ingress nor escape of the fuel / chemicals contained therein.
- During an emergency situation, fire water will be managed through the use of penstocks, with additional retention made through use of the natural retaining walls of the Roman Bank (at +6.2m AOD) to the west and the flood defence along the Haven (at +7.2m AOD). This attenuation would be used to isolate the piped networks in the event of a fire and prevent contaminated fire water entering the surface drainage network.

Clarification in this Technical Note, with regards to flood risk to the Facility has been considered within the context of the guidance set out in Paragraphs 54 – 60 of the Planning Policy Practice Guidance (Department of Levelling Up, Housing and Communities, 2021) in relation to the need to make a development safe from flood risk and specifically the design of buildings and the inclusion of flood resilience and resistance measures.

As part of the review, the Applicant has identified those elements of the Facility that are classed as 'critical' to its ongoing operation and function, those that are sensitive to water ingress, as well as those with a long lead time should there be a need for replacement, for example following a flood event.

In addition to those identified as 'critical infrastructure', the review confirmed those elements considered to be 'significant' to the Facility (although not critical to its operation) and also 'other' elements. These 'critical infrastructure' elements include, but are not limited to, the Energy from Waste Plant Stack, Turbine Generator Hall, Bale Shredders, Control Room and Lightweight Aggregate Plant.

Each of these elements of the Facility has been compared with the 1 in 200 year maximum water level, in accordance with the guidance set out in Paragraph 55 of the Planning Policy Practice Guidance (Department of Levelling Up, Housing and Communities, 2021).

The conservative (Upper End climate change allowance) 1 in 200 year maximum water level in 2055 i.e. end of the operational life for the Facility is +6.44m AOD as set out in the Flood Risk Assessment (document reference 6.4.13, APP-106). This maximum water level has been compared with the identified elements of the Facility to ensure that, where appropriate, mitigation measures have been adopted to ensure their ongoing safety and / or operation.

To aid in the clarification required by the Environment Agency, a summary of the main buildings and elements of the Facility is provided in **Table 1**, including whether they are classed as ‘critical infrastructure’, ‘significant infrastructure’ or ‘other’ and also their siting level in comparison with the maximum water level. These elements are also shown on Drawing Number PB6934-RHD-01-ZZ-DR-4030 entitled Regulation 5(4) – Deadline 3 Identification of Critical Infrastructure Plan accompanying this Technical Note. Where indicated in **Table 1**, key equipment will be installed either on plinths or from support steelwork, as applicable, to remain above the maximum water level.

It can be seen from the information presented in **Table 1** that all elements of the Facility which are classed as ‘critical infrastructure’ (highlighted in red) have been sited such that equipment is located above the 1 in 200 year maximum water level. This aligns with guidance set out in the Planning Policy Practice Guidance (Department of Levelling Up, Housing and Communities, 2021) and addresses the concerns raised by the Environment Agency and their recommendation with regard to the setting of critical infrastructure above the predicted flood level.

Furthermore, the Applicant confirms that by embedding these mitigation measures in the design and operating philosophy (i.e. raising the key equipment) the Applicant can, should there be a need, safely shut down the Facility in a controlled sequenced manner.

For the elements of the Facility that are classed as ‘significant’ (highlighted in yellow), it is noted that a number of these elements have also been lifted above the +6.44m AOD level. This is not always possible due to layout, statutory clearances and building height restrictions but where it can be adopted within the design the embedded mitigation measure related to the siting level has been incorporated.

It is important to reiterate that regardless of the adoption of elevated siting levels to provide greater resilience to the Facility, all elements are protected from flooding by the presence of the flood defences, as part of the Boston Combined Strategy, up to and including the 1 in 300 year event in 100 years’ time.

The remaining elements of the Facility (shown as white) are not considered significant to the ongoing operation of the Facility in a potential flood event. These are not elevated above the maximum water level. For a number of elements level access is required, and these will be designed to be resilient to any potential impact of flooding i.e. ensuring they can be returned to use quickly following an event and / or any damaged equipment can be easily replaced.

Based on the above, in response to the concerns expressed in Paragraph 3.4 of the Environment Agency’s Written Representations (REP1-051), the Applicant believes that the impact of flooding on critical infrastructure elements has been adequately considered. By adopting raised levels for these elements the Applicant notes that sufficient mitigation measures have been included within the design and operating philosophy to ensure that the Facility will be protected from potential damage, should there be a breach in the flood defences during an event.

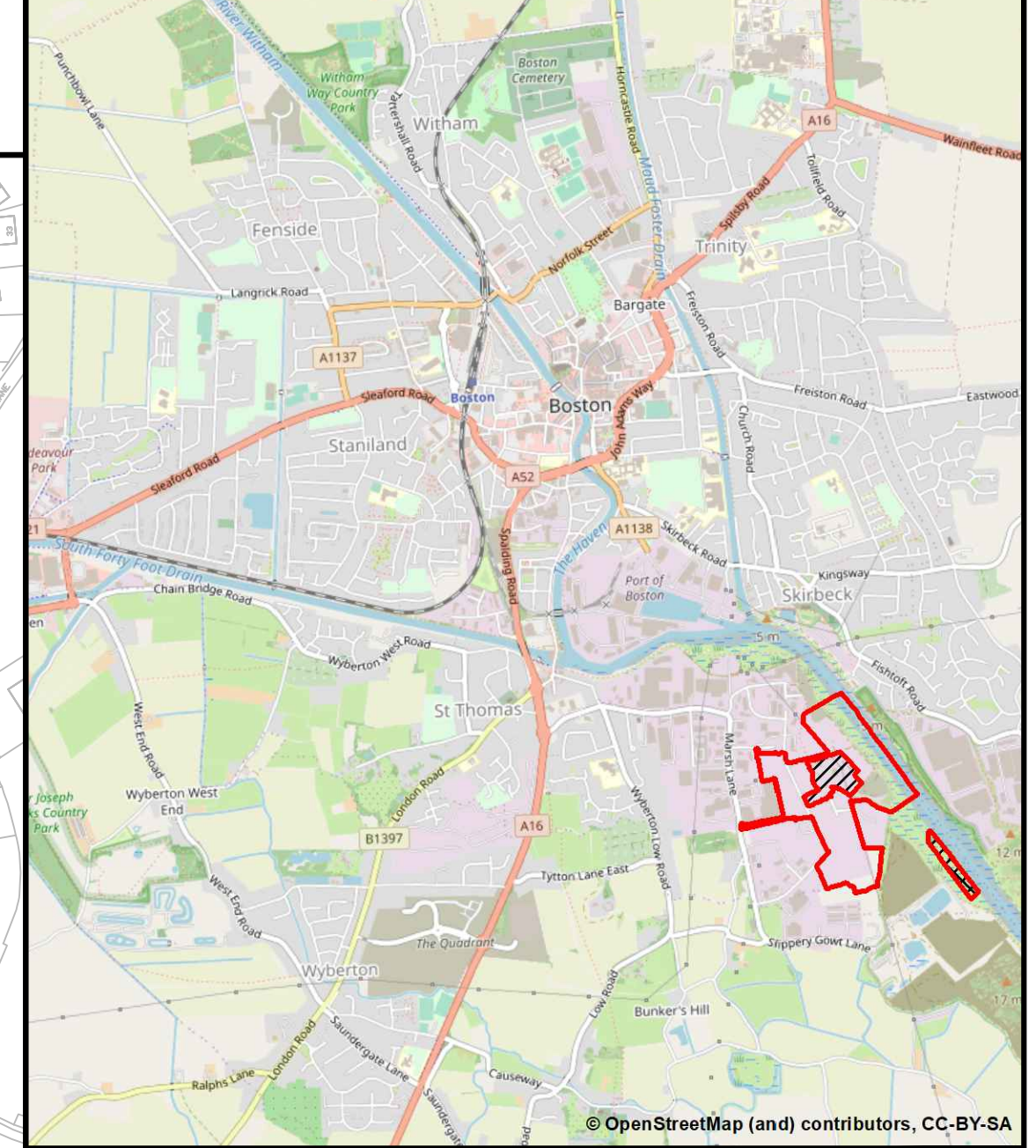
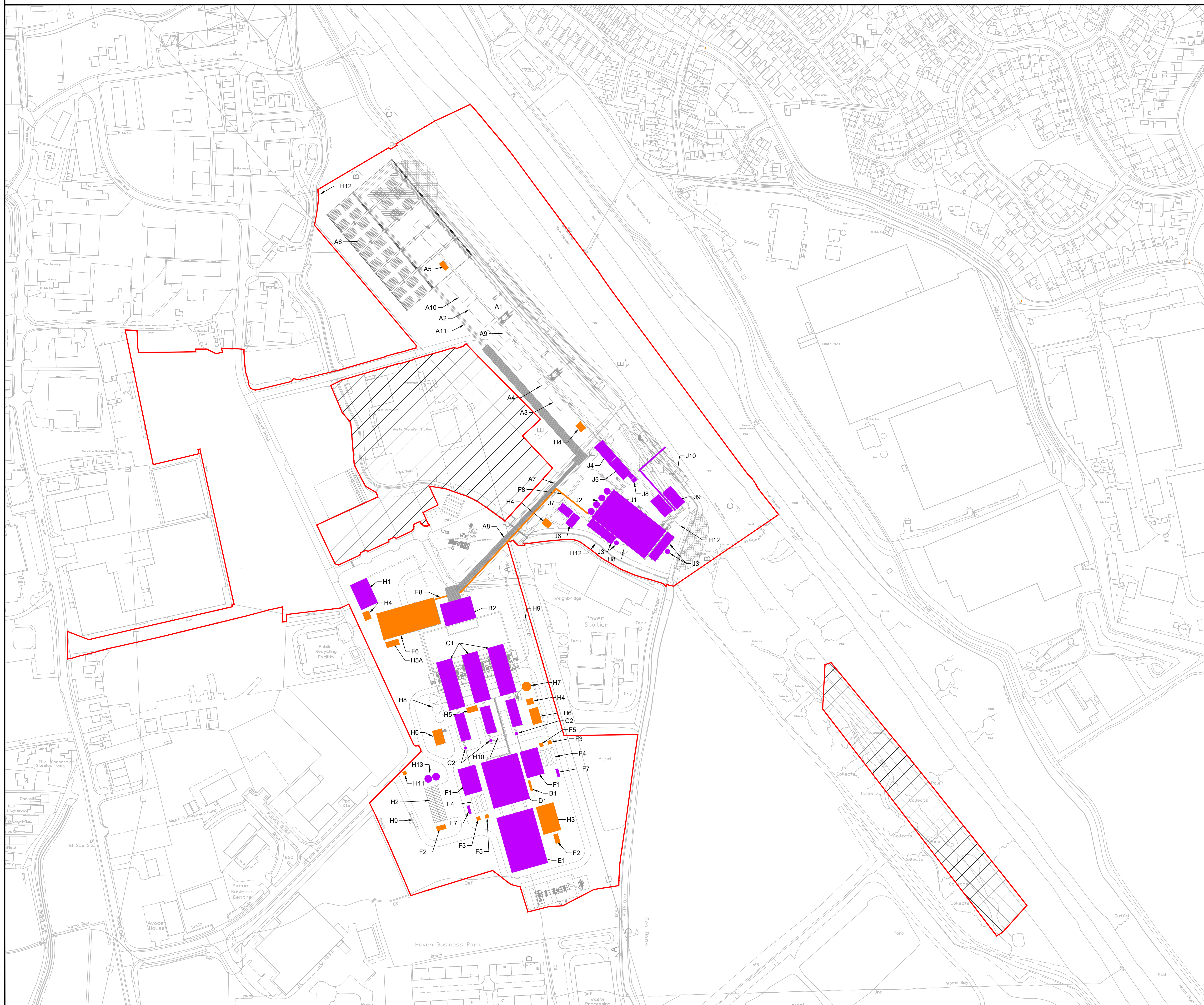
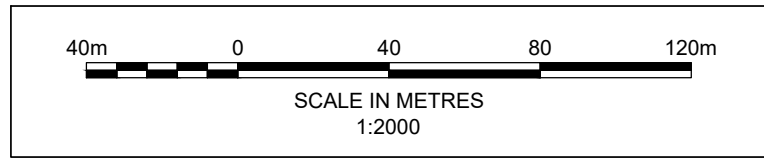
Table 1: Classification of Infrastructure within the Facility and Proposed Siting Levels

(Note: For all table items - Primary tidal flood protection is provided by the new flood defence which is set at +7.2m AOD)

Infrastructure Elements		Critical / Significant / Other	Minimum equipment height (m AOD)	Above the 1 in 200 Year Upper End scenario water level (+6.44m AOD)
A1	NEW MULTI PURPOSE WHARF AND PRIMARY FLOOD DEFENCE	Critical	+7.2	Flood defence
A2	RE-BALING FACILITY	Other	+4.2	-
A3	FUEL WHARF PERSONNEL FACILITY	Other	+4.2	-
A4	FUEL WHARF WC – UNISEX	Other	+4.8	-
A5	FUEL WHARF – MOBILE PLANT REFUELING	Significant	+4.8	No
A6	EXTERNAL BALE STORAGE	Other	+3.2	-
A7	BALE TRANSFER ROLLER CONVEYORS OPEN & COVERED	Other	+4.25	-
A8	BALE TRANSFER BELT CONVEYORS COVERED	Other	+4.25 to +10.55 (sloping)	-
A9	DAMAGED BALE STORE	Other	+4.2	-
A10	MOBILE PLANT WORKSHOP INCLUDING WC	Other	+4.2	-
A11	BALE TRANSFER FLAT BELT OPEN CONVEYORS	Other	+4.2	-
B1	MAKE UP WATER FACILITY	Significant	+4.2	No
B2	BALE SHREDDERS	Critical	+10.2	Yes
C1	EFW PLANT 3 LINES	Critical	+7.5	Yes
C2	EFW PLANT STACK	Critical	+7.5	Yes
D1	TURBINE GENERATOR HALL	Critical	+9.0	Yes
E1	AIR COOLED CONDENSOR	Critical	+ 7.6 (on plinth)	Yes
F1	ASCO PLANT – CARBON CAPTURE	Critical	+ 7.6 (on plinth)	Yes
F2	60,000 LITRE BUNDED DIESEL TANK	Significant	+4.0 (bunded)	No
F3	6.5 Mw CHILLER	Significant	+4.6 (plinth)	No
F4	200 TONNE CO2 TANK	Other	+4.8 (plinth)	-
F5	TANKER FILLING CONTROL STATION	Significant	+4.8 (plinth)	No

Infrastructure Elements		Critical / Significant / Other	Minimum equipment height (m AOD)	Above the 1 in 200 Year Upper End scenario water level (+6.44m AOD)
F6	TANKER FILLING AND DRIVER FACILITIES	Significant	+4.8 (plinth)	No
F7	BOTTOM ASH STORAGE AND PROCESSING PLANT	Critical	Two Trapezium mills on plinths above +6.44 Stockpile +5.0	Yes partially
F8	FINE ASH TRANSFER	Significant	+5.0	No
H1	OFFICES, VISITORS CENTRE AND CONTROL ROOM	Critical	+7.5 (first floor for the Control Room)	Yes
H2	PLANT WORKSHOPS	Other	+4.0	-
H3	BLACK START DIESEL GENERATORS	Significant	+ 7.2 (plinth)	Yes
H4	11KV TRANSFORMER AND PEN	Significant	+8.5 (plinth) MCC first floor	Yes
H5	EfW MCC ROOM FIRST FLOOR COMPRESSOR ROOM GROUND FLOOR	Significant	+8.5 (plinth) MCC first floor	Yes
H5A	BOTTOM ASH PROCESSING MCC ROOM	Significant	+8.5 (plinth) MCC first floor	Yes
H6	ADDITIVES FOR FINAL EMISSIONS FILTERING	Significant	Silo on legs / plinth	Yes
H7	BUNDED FUEL OIL TANK	Significant	+4.0 (bunded)	No
H8	FIRE FIGHTING WATER TANK	Other	+4.5	-
H9	WEIGH BRIDGE	Other	+4.4	-
H10	SITE WC - UNISEX	Other	+4.2	-
H11	SEWER PUMP HOUSE	Significant	+7.7 (on legs)	Yes
H12	EXISTING SEA BANK AND PUBLIC RIGHT OF WAY	Other	-	-
H13	3 DAY WATER STORAGE TANKS	Critical	+7.8 (plinth & bunded)	Yes
J1	LIGHTWEIGHT AGGREGATE PLANT	Critical	+8.8	Yes
J2	ASH SILOS	Critical	+9.8	Yes

Infrastructure Elements		Critical / Significant / Other	Minimum equipment height (m AOD)	Above the 1 in 200 Year Upper End scenario water level (+6.44m AOD)
J3	FILTER BANK AND STACK	Critical	+9.8	Yes
J4	DELIVERED SILT STORAGE AND DRAINING	Critical	+8.5	Yes
J5	DELIVERED CLAY STORAGE AND DRAINING	Critical	+8.5	Yes
J6	OFFICES AND CONTROL ROOM	Critical	+9.5	Yes
J7	WORKSHOPS FOR LWA PLANT ONLY	Critical	+8.5	Yes
J8	BUNDED OIL STORAGE TANK	Critical	+9.5	Yes
J9	AGGREGATE PELLET STORAGE	Critical	+9.5	Yes
J10	CLAY AND SILT DELIVERY AND AGGREGATE EXPORT	Critical	+8.3	Yes



Key

- Order limits
- Habitat Mitigation Area
- Land outside Order limits
- Critical infrastructure
- Significant infrastructure not critical to operation

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REV	DATE	DESCRIPTION	BY	CHK	APP
0	30/11/2021	FOR SUBMISSION		MCP	AG PS

TITLE
**BOSTON ALTERNATIVE ENERGY FACILITY
 DEVELOPMENT CONSENT ORDER
 Regulation 5(2)(c) - Deadline 3 Identification of Critical Infrastructure Plan
 BOSTON BOROUGH COUNCIL
 SHEET 1 OF 1**

Application Number EN010095					
DRAWN	MCP	CHECKED	AG	APPROVED	PS
DATE	30/11/2021	SCALE	AT A1 1:2000	REF.	PB6934
DRAWING No.	PB6934-RHD-01-ZZ-DR-4030			SUITABILITY	REVISION
				S0	0