



Immingham Green Energy Terminal

9.76 Hydrogen Production Facility Building Design
Code

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1 Introduction

- 1.1.1 This document relates to the Immingham Green Energy Terminal and associated development including the hydrogen production facility (“the Project”), which is the subject of an application for development consent submitted by Associated British Ports (“the Applicant”). It has been prepared in response to the Examining Authority’s (“ExA’s”) Written Questions 2 (ExQ2 DAS 2.1). Its purpose is to support applications to North East Lincolnshire Council (“NELC”) to discharge the **draft Development Consent Order (“DCO”) Requirement 4(1) [REP3-004]** which requires details of the external materials of specified non-operational buildings to be submitted to and approved by NELC before those buildings are constructed above ground floor slab.
- 1.1.2 The document identifies the relevant non-operational buildings¹ within the hydrogen production facility to be constructed by Air Products (BR) Limited (“Air Products”) and outlines the relevant planning policy context. It also considers the character and setting of the area and the design parameters relevant to the construction and safety of the buildings which could affect the choice of external materials. Based on this analysis, considerations for the external materials and finishes at the detailed design are identified and a design code is set out which must be followed.
- 1.1.3 The approach to design is explained in detail in the **Applicant’s Responses to the Examining Authority’s First Written Questions (Responses to “Q1.4. Design”) [REP1-025]**.

¹ ‘Non-operational’ buildings refer to normally occupied support buildings that do not form part of the direct process infrastructure.

2 Identification and Indicative Locations of Non-Operational and ‘Public Facing’ Buildings

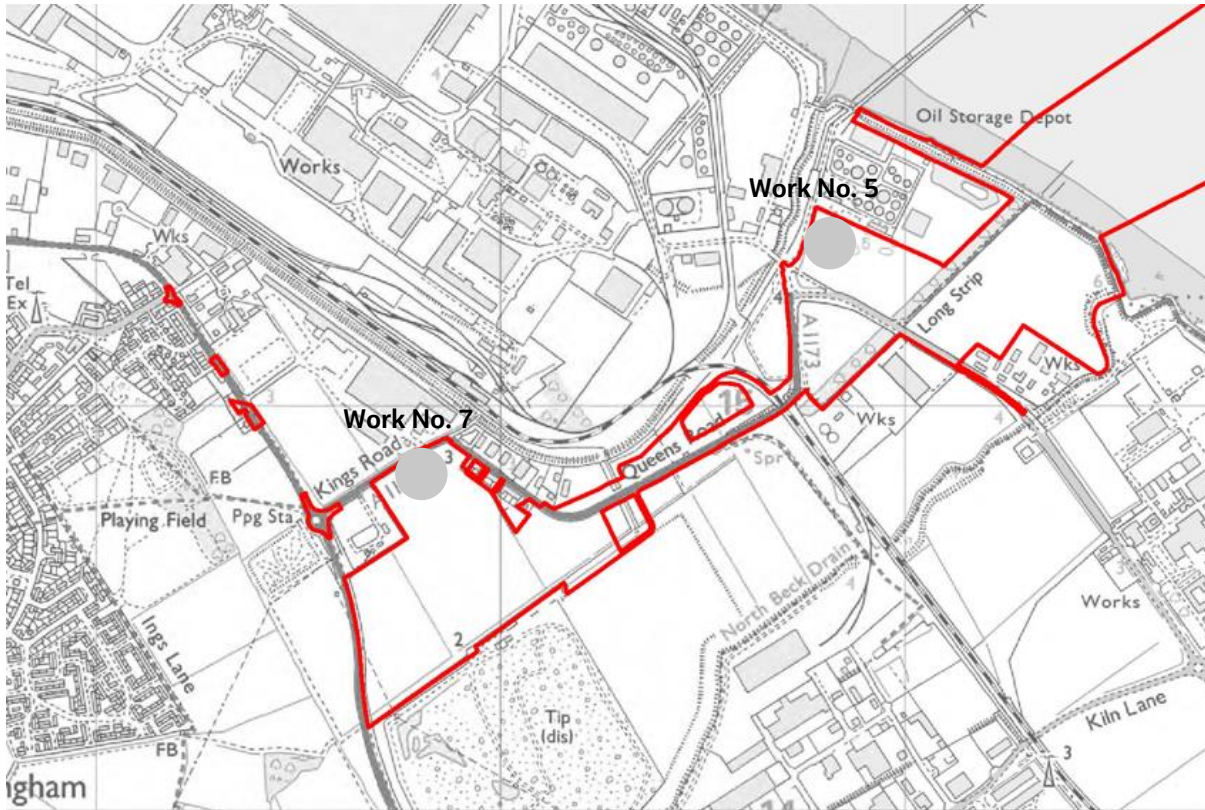
2.1.1 The buildings covered by the design code are those that are both non-operational and ‘public facing’. These buildings play a supporting role to the hydrogen production processes and are anticipated to be located on the outer extents of the application site and visible from the surrounding public realm and existing buildings.

2.1.2 The non-operational and ‘public-facing’ buildings identified are included within Work No. 5 and Work No. 7. As outlined in **Environmental Statement (“ES”) Chapter 2: The Project [REP3-022]**, Work No. 5 is the ‘East Site’ Hydrogen Production Facility, with up to three hydrogen production units and associated plant to be constructed along with additional buildings. Work No. 7 refers to the ‘West Site’ which includes up to four hydrogen liquefiers and vessels for the temporary storage of the liquid hydrogen. The buildings and their respective functions are as follows:

- **Process Control Building (Work No. 5)** – process control room for Work No. 5
- **Control Building (Work No. 7)** – process control room and administration for overall facility
- **Workshop (Work No. 7)** – maintenance workshop (attached to control building)
- **Security and Visitor Building (Work No. 7)** – main visitor reception and security building
- **Contractor Building (Work No. 7)** – base for contractors employed for facility maintenance activities
- **Warehouse (Work No. 7)** – warehouse for storage of spare parts and other items

2.1.3 The indicative locations for each of the buildings grouped by Work No. are shown in **Figure 2-1** below.

Figure 2-1: Indicative locations of non-operational buildings that are ‘public facing’

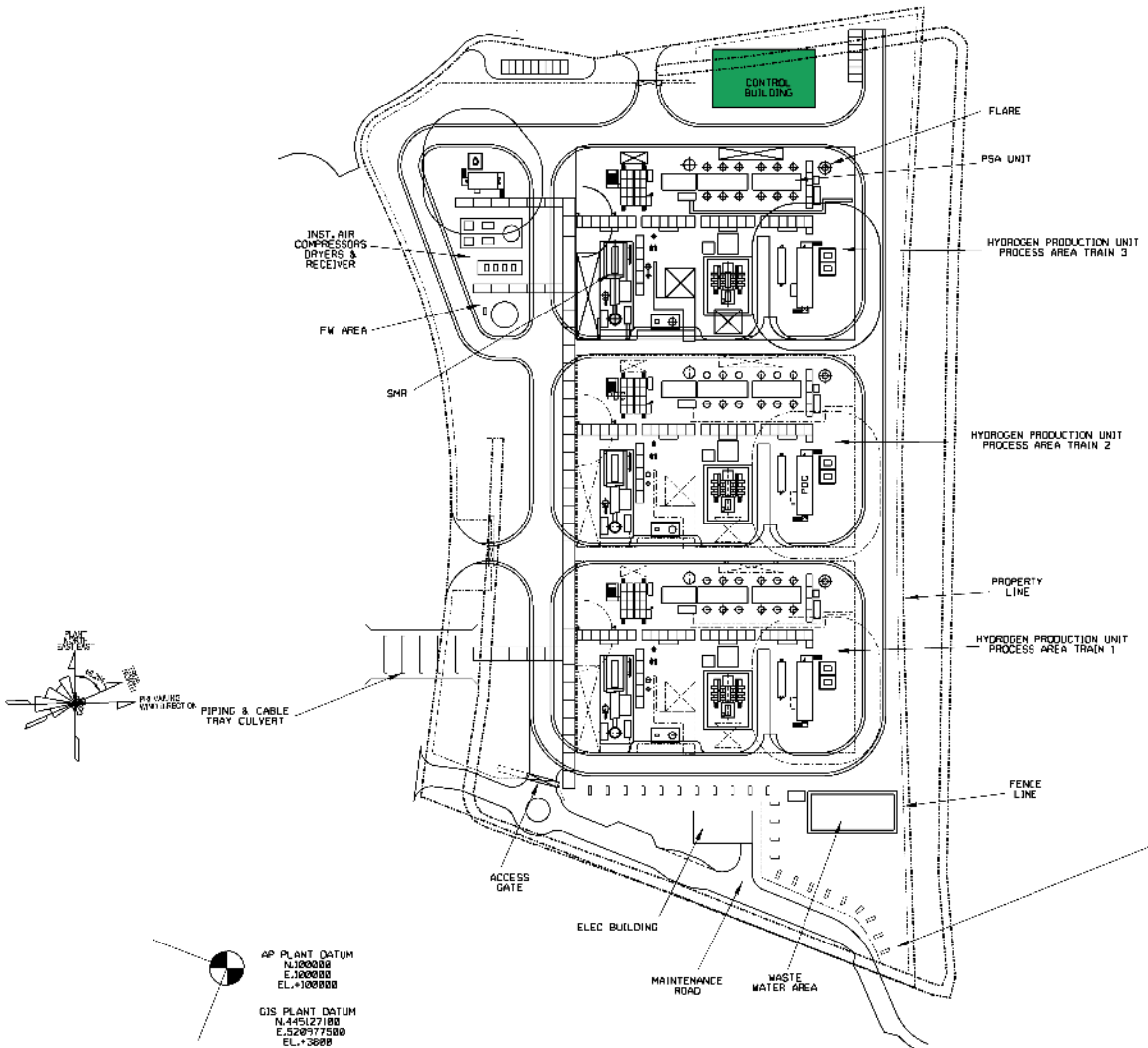


2.1.4 The anticipated location of the relevant non-operational buildings within the East Site and West Site are shown in the following **Figure 2-2** and **Figure 2-3**. These have been provided for illustrative purposes only in support of the application as **Illustrative Layouts [REP3-013]** (the detailed layout of the West Site and East Site is not for approval).

2.1.5 It can be seen in **Figure 2-2** that the Process Control building is anticipated to be sited at the northern access point of Works No. 5. **Figure 2-3** shows that the identified non-operational buildings in Work No. 7 are anticipated to be located on either side of the proposed site tanker entrance on Kings Road. The anticipated siting and context of the buildings is considered further within **Section 4**.

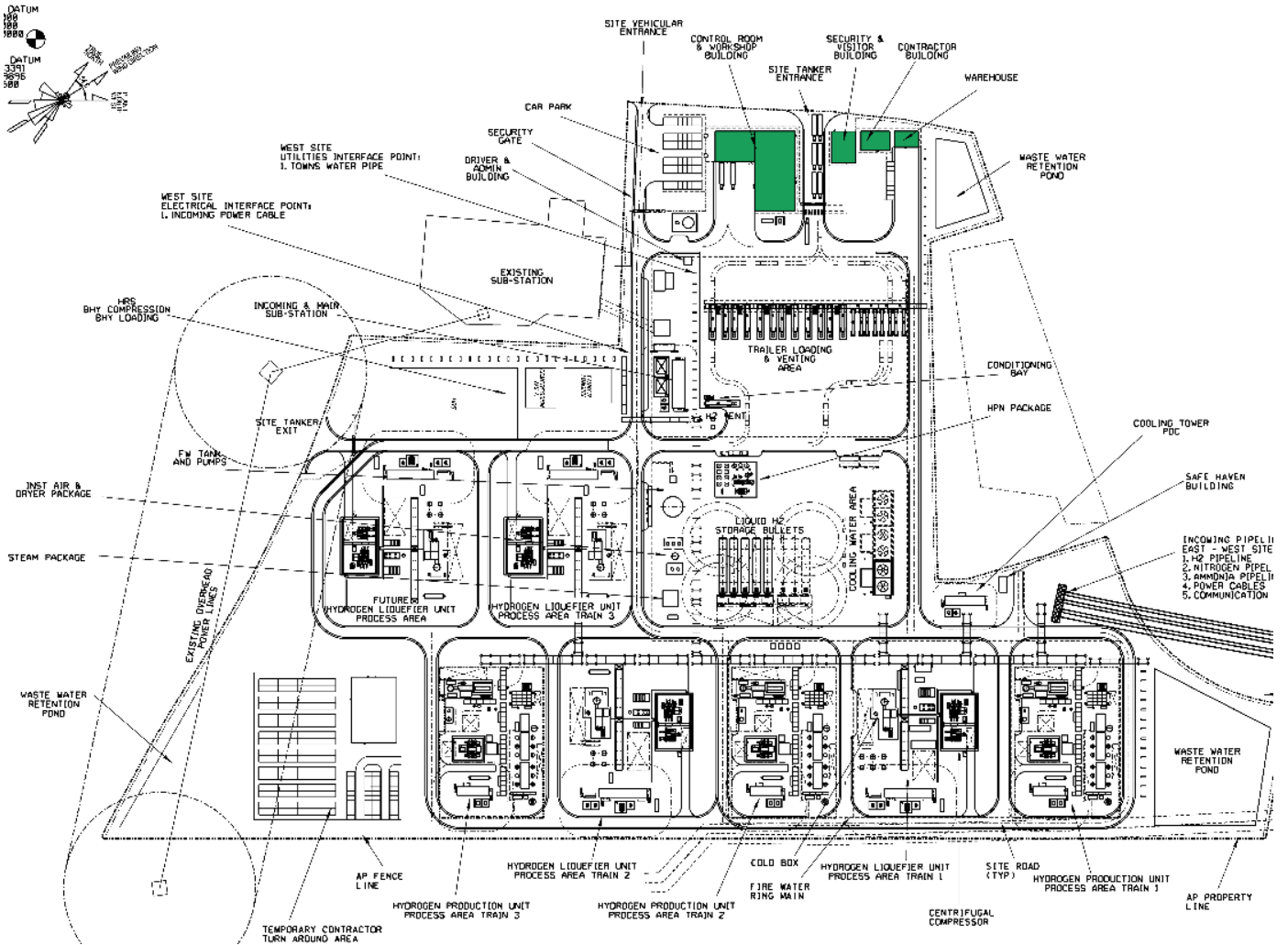
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Figure 2-2: Anticipated location of control building indicated in green (Work No. 5)



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Figure 2-3: Anticipated location of non-operational buildings facing Kings Road indicated in green (Work No. 7)



3 Relevant Planning Policy and Guidance

3.1 Overview

3.1.1 This section sets out key policies of relevance to design.

3.2 National Policy Statement for Ports (2012)

3.2.1 The National Policy Statement for Ports (“NPSfP”) outlines that “*applying 'good design' should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible*” (Para 4.10.1). It is further elaborated that applicants should consider both functionality (fitness for purpose and sustainability) and aesthetics (contribution to the quality of the area in which it would be located) as far as possible in the proposed development (Para. 4.10.3).

3.2.2 The NPSfP identifies that the applicant may have no or limited choice in the physical appearance of some infrastructure, but that there may be opportunities to demonstrate good design “*relative to existing landscape character, landform and vegetation*”. These matters have been key design considerations for Air Products across all non-operational structures and have informed the Design Code in this document.

3.3 National Planning Policy Framework (2023)

3.3.1 It is noted in Paragraph 131 of the National Planning Policy Framework (“NPPF”) that “*good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities*”. It is also highlighted in Paragraph 41 of the National Design Guide (“NDG”) that “*well-designed new development responds positively to the features of the site itself and the surrounding context beyond the site boundary*”. Paragraph 42 of the NDG highlights that proposed designs of new developments should be “*shaped by an understanding of the context*” of the site, informing the “*nature, size and sensitivity of the site and proposal*”, and allowing it to be “*integrated into its wider surroundings, physically, socially and visually*”. The robust site and baseline analysis, set out in **ES Chapter 2 [REP3-022]**, demonstrates that the proposed design is adequately contextualised and fits within the existing environmental constraints and surrounding uses of the site.

3.4 North East Lincolnshire Local Plan 2013–2032 (2018)

3.4.1 The Project also takes into account the requirements set out in Policy 22 of the NELC Local Plan. The policy stipulates requirements for “*a high standard of sustainable design*” in all developments, taking into consideration the site’s “*built and natural environment, and social and physical characteristics*”. In its response to the first round of written questions [REP1-071], NELC agreed that the information set out by the Applicant will enable acceptable design outcomes to be achieved. NELC also clarified that the first aspect of Policy 22 is understanding the context of the area in which the site is located and what the Local Plan allocates the land for. The West Site and East Site of the Project are either allocated as an existing employment site within the operational port where port related use will be supported (East Site) or a proposed employment allocation indicated as supporting the ports and logistics sector (West Site).

3.5 Design North East Lincolnshire: Places and Spaces Renaissance (2008)

3.5.1 As highlighted by Section 2 of the Design North East Lincolnshire: Places and Spaces Renaissance (“DNEL 2008”), heavy industrial uses dominate the landscape and skyline at the Port of Immingham on the Humber Estuary, which is a key gateway into Immingham from the north-west. The area’s historic context and contribution towards local employment are seen as key strengths to be harnessed by future developments.

3.5.2 In relation to design, Section 3 of DNEL 2008 recommends that although industrial units are usually economical constructions, they should “*look to contribute positively to the urban area and landscape*”. As such, there should be “*more emphasis on making an architectural statement*” for corner units or units at gateways to an industrial area. There should also be “*at least one high quality facade for all industrial units*”, which “*should always be on the frontage fronting the street*” as an active frontage. To aid with legibility, “*less attractive industrial, warehouse and port units and compounds should be set back from roads*” and these should be buffered with “*bold landscape screening of trees and planting and if necessary, mounding*”.

3.5.3 It is also suggested that “*a range of materials may be appropriate depending on their location*”, including “*profiled metal, steel and glazing systems*” which are all deemed suitable. Additionally, it is recommended that all new industrial buildings / structures should be in light grey colours to reduce their impact when viewed against the backdrop of the sky, and darker earth tones if viewed against the backdrop of surrounding landscape. To help break down the massing of industrial units, it is recommended for buildings to use different materials to better articulate “*the form of the elevations and roof profiles*”. The scale of any industrial unit should also be in proportion to its immediate surroundings. DNEL 2008 further highlights that due to the remote locations and temporary nature of industrial port units, “*there is an opportunity for innovative, bold and above all imaginative responses that can create ‘place’ and distinctiveness*” for the area.

3.6 Purpose of a Design Code

- 3.6.1 A design code is a set of simple, concise, illustrated design requirements that are visual and numerical wherever possible to provide specific, detailed parameters for the physical development of a site or area (National Model Design Code, 2021). Design Codes are usually prepared in relation to residential and mixed-use development and are not an approach which is referenced specifically in the NPSfP in respect of ports and related development. However, the approach is considered relevant to the non-operational and 'public-facing' buildings within the Project. The Design Codes set out within this document therefore ensure that the choice of external materials and finishes for these buildings will demonstrate good design that is aesthetically coherent, durable, and sustainable within the site's port and industrial context.

4 Site and Surrounding Context

- 4.1.1 The application site is located in an area that is dominated by the infrastructure of the Port of Immingham and related industrial uses. The Port and associated works are located directly to the north of the site of the Project and contain large buildings and structures which create a strong sense of industrial character. This character is continued by the industrial estate and the land-fill site to the south.
- 4.1.2 The site lies partly within the existing Operational Port Area – where port related use will be supported – and on land allocated for future employment use. Given the industrial and port related nature of the location, much of the surrounding area is occupied by large industrial buildings that use steel and concrete as materials, the primary example being the Knauf building (see **Figure 4-1**) directly opposite the part of the Project where the majority of visible non-operational buildings are likely to be located.

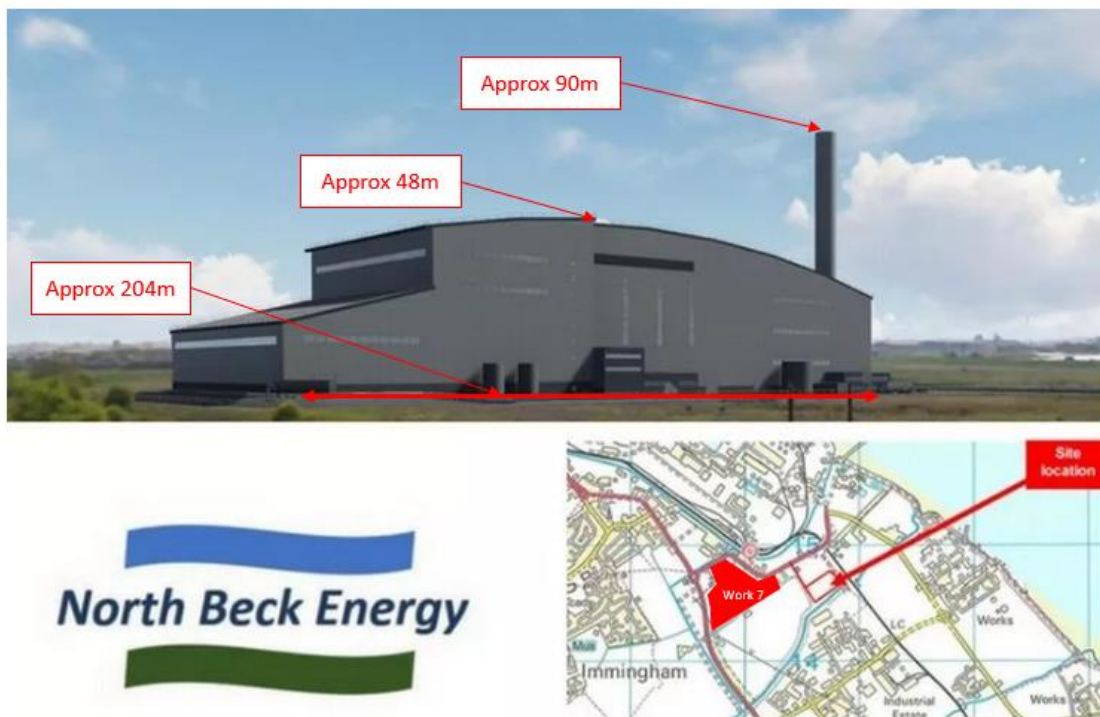
Figure 4-1: Image of the Knauf building (image source: Google Streetview)



- 4.1.3 A number of significant industrial developments have been approved and benefit from extant planning permissions in the surrounding area. These include the following:
1. The North Beck Energy Recovery Facility on land south of Queens Road, Immingham – DM/0026/18/FUL (An illustration from the application is provided in **Figure 4-2** below)
 2. Waste to energy generation facility at the Immingham Rail Freight Terminal on Scandinavian Way, Immingham – DM/0628/18/FUL
 3. The South Humber Bank Power Station on land at Hobson Way, Immingham –DM/1070/18/FUL

4. The Velocys sustainable transport fuels facility on land at Hobson Way, Immingham DM/0664/19/FUL
5. Stallingborough Interchange Business Park on land off Kiln Lane DM/0105/18/FUL
6. NEL Energy Park on land at Mauxhall Farm, Immingham DM/1145/19/FUL
7. Solar Farm and battery energy storage site on land off Margaret Street, Immingham DM/0108/24/FUL

Figure 4-2: Approved development adjacent to site



- 4.1.4 The West Site (Work No. 7) borders existing industrial uses on both Kings Road and Queens Road. In terms of material usage, prefabricated steel finishes are prevalent in the context of the already heavily industrialised area. The existing structures such as the Knauf building located directly opposite the Project on Kings Road are substantial in scale. The proposed non-operational buildings on the West Site are anticipated to be smaller in massing and height. This can create a more human scaled development that is welcoming to contractors and visitors. The buildings would also partially screen and lessen views from Kings Road onto the proposed operational structures associated with hydrogen production.
- 4.1.5 The relevant part of the East Site (Work No. 5) borders the existing industrial uses associated with the port. The immediate context is heavily industrialised with a number of operational structures and large warehouses. The southern access point to Work No. 5 is proposed on Laporte Road and the northern access point is proposed from a private port road with restricted access. The identified non-operational building is anticipated to be located at the northern access point. The building would be visible from the restricted access road that serves the existing jetty and the associated industrial activities.

5 The Overarching Design Principles for the Buildings

5.1.1 As set out in the **Applicant's Responses to the Examining Authority's First Written Questions (Responses to "Q1.4. Design")** [[REP1-025](#)] the overarching design principles that have driven the design process for the overall Project are:

1. Meeting operational requirements – matters relating to ensuring that the Project is able to be operated for the purposes envisaged, i.e. does it do what it needs to do?
2. Meeting technical requirements – matters relating to ensuring that the Project is able to meet necessary safety and regulatory requirements
3. Taking account of environmental requirements and matters – matters and requirements over and above those already considered in 1. And 2. Which seek to minimise the adverse environmental impacts of the Project, including matters relating to landscape and visual impacts and the impacts of the Project on designated sites

- 5.1.2 Although the identified buildings are described as non-operational (in that they are not directly used as part of the processes comprised in hydrogen production, storage and distribution), they must meet a number of fundamental operational and technical (including safety and regulatory) requirements. Of the relevant buildings, the process control building, control building, the workshop, the security and visitor building, and the contractor building will need to be blast proof in line with the site safety requirements. The process control building, control building, security and visitor building, and the contractor building need to provide toxic safe havens.
- 5.1.3 The design and the choice of materials must therefore support these requirements through robust construction, with thick walls, limited external glazing and sealed windows.
- 5.1.4 As summarised in **ES Chapter 2 [REP3-022]**, the various buildings across all sites will be either prefabricated and transported to site, or constructed on site in a traditional manner, using steel frame or steel cladding.
- 5.1.5 The walls will be designed to resist external blasts and transmit blast loads to the foundations as appropriate.
- 5.1.6 Prefabrication is likely to be the preferred approach and typically involves manufacturing building components in a controlled factory environment, which leads to higher efficiency and safety with less waste compared to on-site construction. This method also reduces the need for multiple deliveries and contractor journeys to the construction site, minimising transportation emissions. Additionally, factories can implement stringent recycling and waste management practices more effectively than on-site projects. The result of this is a more sustainable construction in both the short term and the long term which helps achieve the objectives of the Project set out in **Paragraph 1.2.1 of the ES Chapter 2: The Project [REP3-022]**.
- 5.1.7 This approach is aligned with the NPSfP, Paragraph 4.10.1 which states that *“applying ‘good design’ should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation”* and further validates the desire of Air Products to use a highly efficient and sustainable prefabricated model.
- 5.1.8 **Table 5-1** provides illustrative details of the identified non-operational buildings. **Appendix A** includes an image of a recently constructed prefabricated building meeting the above design requirements.

Table 5-1: Illustrative details of non-operational buildings (measurements in metres)

Work Area	Building	Length (m)	Width (m)	Height (m)	Exterior materials	Colour	Other design requirements
5	Process Control Building	35	20	4.5	Profiled Steel wall panels	Window Gray (RAL 7040)	Single Storey construction, pitched roof

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Work Area	Building	Length (m)	Width (m)	Height (m)	Exterior materials	Colour	Other design requirements
7	Control Building	50	25	4.5	Profiled Steel wall panels	Window Gray (RAL 7040)	Single Storey construction, pitched roof
7	Workshop	19	25	7	Profiled Steel wall panels	Window Gray (RAL 7040)	Single Storey construction, pitched roof
7	Security and Visitor Building	20	15	4.5	Profiled Steel wall panels	Window Gray (RAL 7040)	Single Storey construction, pitched roof
7	Contractor Building	18	12	4.5	Profiled Steel wall panels	Window Gray (RAL 7040)	Single Storey construction, pitched roof
7	Warehouse	15	10	4.5	Profiled Steel wall panels	Window Gray (RAL 7040)	Single Storey construction, pitched/ flat roof

6 Considerations for Further Detailed Design of External Materials

6.1 Overview

6.1.1 Within the framework set by the overarching design principles, there is scope to develop the external appearance of the buildings in terms of their colour and finish as well as potentially through the addition of non-structural cladding. The following paragraphs provide some design principles and guidance for the detailed design of the buildings that support the design code which follows.

6.2 Appearance and Materials

6.2.1 The appearance of the identified buildings will be minimal and efficient, drawing upon their role in bringing forward modern technology in the form of a hydrogen production facility. The proposed finishes will constitute surfaces composed of modern materials compatible with modular, prefabricated construction, such as an engineered cladding material.

6.2.2 Overall, the prefabricated steel design of the non-operational buildings should foster a safe, efficient, durable, flexible, and legible environment for contractors and visitors. The robust materials and construction reflect the proposed industrial uses within an already heavily industrialised area, populated with steel-clad structures. The detailed design including the cladding specification and colour palate is expected to provide a good quality, modern industrial appearance.

6.3 Colour Palette

6.3.1 With the minimalist building form, the development of a colour palette would add to the overall aesthetic. The colour palette should reflect the contextual environment and could support wayfinding within the site. The consideration of the colour palette should have regard to the principles established in the Design North East Lincolnshire: Places and Spaces Renaissance (“DNEL 2008”) as set out above in **Section 3**. Further detailed design cues can be taken from the function of the Project as an industrial green energy site.

6.4 Wayfinding

6.4.1 These buildings should assist wayfinding as they provide arrival points to their respective sites. The identified buildings in Work No. 7 will provide a gateway to the main access of the West Site. The Process Control Building in Work No. 5 will provide a gateway to the northern access of the East Site. The material finishes should reflect their gateway function to enable wayfinding and orientation within and towards the site.

6.5 Fenestration

- 6.5.1 Within the technical and operational constraints, the design and positioning of windows should contribute to and enhance the appearance of the minimalist elevational finishes where practicable. This will also provide passive surveillance along the adjacent roads and the site perimeter. This will be of particular benefit to the peripheral buildings in Work No. 7 (Control Building, Workshop, Security and Visitor Building, Contractor Building, and Warehouse) to create a cohesive linear frontage articulated along Kings Road.

7 Design Code

7.1.1 The following design code for external materials will ensure that the above identified non-operational buildings are constructed efficiently, durable, easy to maintain, visually appropriate for the context. In discharging **Requirement 4(1)**, the submitted details should comply with the principles set out in the design code in **Table 7-1**.

Table 7-1: Design code to apply to the external materials of the identified non-operational ‘public-facing’ buildings identified in Requirement 4(1)

	Construction
DC.01	The external materials must meet all operational and technical (including safety and regulatory) requirements for the hydrogen production facility.
DC.02	Ensure where relevant that all relevant external components are manufactured to high-quality standards in a controlled environment to minimise defects and ensure build quality.
	Durability and maintenance
DC.03	The materials used to construct the buildings will be good quality, robust and low maintenance to ensure that the visual quality of the development is maintained over time.
DC.04	The buildings will employ robust and easily replaceable materials, appropriate for the industrial environment, so that in the case of damage, the materials can easily be replaced.
DC.05	Where relevant, the buildings will be designed to withstand blast effect and provide toxic safe havens and the materials will be suitable to meet those requirements.
	Appearance
DC.06	The buildings will be of a good quality and reflect the style of the surrounding industrial context. The buildings will utilise clean lines and modern design elements for a professional and contemporary appearance. The external materials will reflect these requirements.
DC.07	The façade treatments will be of an appropriate visual quality and respond to the surrounding context by adopting material finishes to the building that minimise impact from reflective materials.
DC.08	The choice of a colour palette will be considered in alignment with the Project and the surrounding environment.
DC.9	The buildings on the Kings Road frontage should be designed as a cohesive group with a consistency in elevational treatments.
DC.10	Except for the warehouse and workshop, buildings should be designed with windows facing onto the street and into the site where practicable to create active frontages and views outwards.
DC.11	The materials including fenestration should complement the modern design of the buildings. This should create a cohesive external appearance for the building and the buildings as a group while meeting the operational and technical requirements and considering internal uses, daylight needs and providing clear views of the perimeter fence.
DC.12	The external and internal appearance should support a positive work environment such as through the use of materials, finishes, and colour.
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DC.13	Incorporate energy-efficient systems, such as insulated panels, energy-efficient windows, and high-efficiency heating, ventilation, and air conditioning systems.
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Appendix A

Figure 7-1: Examples of recent blast proof modular control buildings

