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First Written Question Responses – Appendix 2 Optical Regeneration Station Design Approach (MG1.1.4)

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1. THE ORS AND DESIGN POLICY IN NPS EN-1

1.1. INTRODUCTION

1.1.1.1. Written Question MG1.1.4 stated the following:

"Explain the design approach and design credentials of the Optical Regeneration Stations. Reference should be made to the objectives in section 4.5 of NPS EN-1 and how the proposed development seeks to address or exceed the expectations of good design set out in the National Design Guide."

1.1.1.2. The Applicant has prepared this document to address the query raised in relation to the design approach and design credentials of the Optical Regeneration Stations ('ORS').

1.1.1.3. The Secretary of State's s35 Direction (APP-039) directed that NPS EN-1 has effect in relation to the application for development consent. The text in bold is the Applicant's emphasis. NPS-EN 1 section 4.5 states:

"*4.5.1 The visual appearance of a building is sometimes considered to be the most important factor in good design. But high quality and inclusive design goes far beyond aesthetic considerations.* ***The functionality of an object — be it a building or other type of infrastructure — including fitness for purpose and sustainability, is equally important.*** *Applying "good design" to energy projects 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.* ***It is acknowledged, however that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area.***

4.5.2 Good design is also a means by which many policy objectives in the NPS can be met, for example the impact sections show how good design, in terms of siting and use of appropriate technologies can help mitigate adverse impacts such as noise.

4.5.3 In the light of the above and given the importance which the Planning Act 2008 places on good design and sustainability, ***the [SoS] needs to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable***

(including taking account of natural hazards such as flooding) as they can be. In so doing, the [SoS] should satisfy itself that the applicant has taken into account both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located) as far as possible. Whilst the applicant may not have any or very limited choice in the physical appearance of some energy infrastructure, there may be opportunities for the applicant to demonstrate good design in terms of siting relative to existing landscape character, landform and vegetation. *Furthermore, the design and sensitive use of materials in any associated development such as electricity substations will assist in ensuring that such development contributes to the quality of the area.*

4.5.4 For the [SoS] to consider the proposal for a project, applicants should be able to demonstrate in their application documents how the design process was conducted and how the proposed design evolved. Where a number of different designs were considered, applicants should set out the reasons why the favoured choice has been selected. In considering applications ***the [SoS] should take into account the ultimate purpose of the infrastructure and bear in mind the operational, safety and security requirements which the design has to satisfy.***

4.5.5 Applicants and the [SoS] should consider taking independent professional advice on the design aspects of a proposal. In particular, Design Council CABE can be asked to provide design review for nationally significant infrastructure projects and applicants are encouraged to use this service.

4.5.6 Further advice on what the IPC should expect applicants to demonstrate by way of good design is provided in the technology-specific NPSs where relevant."

1.2. ASSESSMENT OF THE OPTICAL REGENERATION INFRASTRUCTURE AGAINST THE DESIGN POLICIES IN NPS EN-1

1.2.1.1. The Updated Design and Access Statement ('DAS') submitted with this document (APP-114 rev002) describes in. section 3.2.2 the site selection process for the ORS, with reference to its impact on visual amenity and the immediate environment.

1.2.1.2. Section 6.3 defines Design Principles to mitigate the impact of the facility on visual amenity and the immediate environment

1.2.1.3. The updated DAS at paragraphs 3.1.3.4 and 3.1.3.7 describes the site context and analysis for the ORS:

"*There are a number of residential properties to the north, northeast and west of the site. These are a mixture of houses and three storey flats ranging in ages from late 50's to more recent developments in early C2,000's. Fort Cumberland Road which leads to Eastney Marina is the only local road which borders to the Landfall to the*

north. Southsea Holiday Home, Lodge and Leisure Park with static caravans bounds the site to the south and west and there is a small children's play area to the west of the car park's entrance.

The Fort Cumberland Scheduled Monument (a Georgian fortification) lies approximately 225 m to the east of the ORSs at the Landfall and to the west north of Fort Cumberland Road and Halliday Crescent and includes one Grade II Listed Building and three Grade II Listed Buildings; Eastney Sewage Pumping Station Scheduled Monument. In addition, the World War II Anti-Tank defences at Eastney Beach Listed Building is located within 300 m southwest of the ORSs at the Landfall and the caravan park"*.

1.2.1.4. The ORS, by virtue of their necessity and the need to be secure results in a functional structure with limited opportunity to alter the aesthetics, as confirmed in paragraph 4.2.1.1 of the DAS. However, that is not to say that they have been designed without thought for the local context and, in particular, key issues of flood risk/climate change and cultural heritage.

1.2.1.5. The DAS sets out the need for the ORS within sections 5.5.1 and the requirements for the ORS and how they influence the design at 5.5.2, with the Design Principles for the ORS in section 6.3.1.

1.2.2. LOCAL CONTEXT

1.2.2.1. The Sequential Test and Exception Test Addendum (Appendix 9 of the Environmental Statement ('ES') document reference 7.8.1.9) provides additional detail in respect of the comparison of potential ORS sites within suitable proximity to landfall. The proposed site was chosen for its lack of adverse impacts on residential amenity and cultural heritage, lack of environmental designations as well as its size.

1.2.2.2. With an acknowledgement of the context of the location in which the ORS is to be located and noting that external lighting is not required from an operational perspective, the ORS will not be illuminated other than in the event of an emergency.

1.2.3. FLOOD RISK

1.2.3.1. Post-submission, in January 2020, the EA issued an updated Flood Map for Planning (Environment Agency, gov.uk, 2020) which resulted in the proposed location of the ORS to change from Flood Zone 2 to Flood Zone 3. Consequently, a Sequential and Exception Test Addendum has been produced by the Applicant (Appendix 9 of the ES document reference 7.8.1.9), which demonstrates that the Proposed Development is essential utility infrastructure and is therefore acceptable in this location.

1.2.3.2. The DAS (APP-114 rev002) states at paragraph 5.5.2.8 and 5.5.2.9 that in order to be resilient to climate change, the ORS(s) has two key design considerations within the existing parameters:

- A raised external threshold to 0.95 m above existing ground level; and
- Raising electrical equipment internally by 300 mm.

1.2.3.3. It was not necessary to amend the parameters of the ORS to take account of the revised flood zone, as the existing parameters already provided for adequate resilience to protect from flood risk events.

1.2.3.4. Surface water generated from the impermeable ORS footprints would be managed in a sustainable manner, where feasible, for events up to and including the 1 in 100-year return period pluvial event with a 40% allowance of climate change. Further details are provided within the Flood Risk Assessment (APP-439).

1.2.4. CULTURAL HERITAGE

1.2.4.1. With regard to cultural heritage, Fort Cumberland Scheduled Monument, as stated above, includes both Grade II and II* Listed Buildings. In its relevant representation (RR-199) Historic England ('HE') expressed concerns about possible changes to a view looking out from the asset's Western Ravelin (triangular fort outwork) across open ground towards the proposed ORS, particularly the historic sightline along Fort Cumberland Road (which extends north-west landfall carpark). HE considered the proposed ORS buildings to potentially have an adverse impact on the significance of the asset in terms of changes to its setting and how the asset is understood and appreciated.

1.2.4.2. Further to ongoing discussions with HE since the submission of their relevant representation, an additional visualisation (Appendix 10 Figure 5 within the ES Addendum (document reference 7.8.1.10)) has been undertaken to demonstrate the impacts of the ORS on the key view from the Western Ravelin. The visualisation shows that the building parameters would be lower than the nearby houses and the line of tall trees from the holiday park which have already compromised the open coastal plain when looking from the Western Ravelin out towards the landfall. Based on the existing context of the urban fabric of the modern housing estate (comprising 3-4 story buildings) and the holiday park, the overall impact on the setting of Fort Cumberland is considered **negligible** and the conclusion of **negligible** effect as presented in the Cultural Heritage and Archaeology assessment submitted for the DCO Application (APP-136) is considered appropriate and therefore remains valid.

1.2.5. LANDSCAPE AND VISUAL AMENITY

1.2.5.1. In terms of landscape the presence of the ORS buildings in an otherwise open landscape will generate an impact on the sense of openness, the buildings are

deliberately sited close to existing built form rather than intruding onto Fort Cumberland area of open space which is also an SINC.

1.2.5.2. Visual impacts will be experienced by immediate residents overlooking the structures including residents of properties immediately north, Southsea Holiday Home, Lodge and Leisure Park to the south west and recreational users.

1.2.5.3. To minimise the impacts, landscape proposals retain the existing ash tree on the corner of Fort Cumberland car park and integrate this into further proposed planting in the form of native trees and hedgerows to screen the ORS buildings northern elevation. This is reflected in Figure 15.50 Indicative Landscape Mitigation Plan (Landfall) (APP-283) and Design Principle 4 within the Design and Access Statement (APP-114) which states that *"the proposals for landscaping will be developed and approved in accordance with the illustrative landscape mitigation plan."*

1.2.5.4. Post submission the wirelines associated with the Landfall have been updated to reflect Option A and B for the buildings and further details of these are included within the ES Addendum (document reference 7.8.1) .

1.2.6. NOISE

1.2.6.1. The DAS states at paragraph 5.5.2.11 that noise modelling and assessment have been completed to assess noise from the HVA/C units at the ORS buildings. To ensure noise effects are minimised, the HVA/C equipment is to be positioned on the south-eastern façade of the ORS buildings, thereby facing away from the nearest noise sensitive receptors on Fort Cumberland Road. As explained in section 24.6.11 of Chapter 24 (Noise and Vibration) of the ES Volume 1 (APP-139), the operational noise effects from the ORS are expected to be negligible.

1.2.7. FINAL DESIGN APPROVAL

1.2.7.1. The parameters of the ORS are detailed in Table WN 6 of the draft DCO (APP-019) to which Requirement 6 (Detailed design approval) also relates. Requirement 6 states:

"(4) The construction of any phase of Works No.5 (excluding the optical regeneration stations) must not commence until written details of the –

(a) layout;

(b) scale

(c) proposed finished floor levels

(d) external appearance and materials;

(e) hard surfacing materials;

(f) vehicular access, parking and circulation areas;

(g) proposed services above and below, ground, including drainage, power and communications cables and pipelines, manholes and supports;

relating to that phase of those works have been submitted to and approved in writing by the relevant planning authority."

1.2.7.2. The ORS design would be in accordance with the Design Principles, as set out in paragraph 6.3.1 of the DAS. (APP-114 rev002) including minimising land take, the need to meet operational and security requirements and gravel or hardstanding compounds.

1.2.8. CONCLUSION IN RESPECT OF EN-1

By their nature, the ORS buildings are required to be functional, with limited opportunity to alter the aesthetic. Rather than focusing on enhancement of the local environment, design development has concentrated on limiting impact. Consideration has been given to the following (with reference to sections above):

- (1.2.1.1 and 1.2.2.5) Site selection to minimise the impact on visual amenity and environment; and reduce proximity to residential properties.
- (1.2.3) Flood risk and climate change.
- (1.2.4) Cultural heritage – site location and building heights to reduce the impact of the ORS buildings on views from Fort Cumberland.
- (1.2.5) Landscape and visual amenity – positioning of buildings and landscape screening to minimise impact on views from residential and leisure facilities.
- (1.2.6) Noise impact.

2. NATIONAL DESIGN GUIDE (MHCLG 2019)

2.1. INTRODUCTION

2.1.1.1. The National Design Guide ('NDG') was published by MHCLG on 1 October 2019 and sets out the characteristics of well-designed places and demonstrates what good design means in practice, by outlining and illustrating the Government's priorities for well-designed places in the form of 10 characteristics.

2.1.1.2. Given the breadth of development which the NDG has been produced to relate to, and noting that the NDG is in many respects an overarching design guide which focuses on the delivery of well-designed places, rather than the design of individual buildings, and in particular buildings which form part of infrastructure projects such as those comprised in the Proposed Development, there is difficulty in applying the ten characteristics to the ORS in a meaningful way.

2.1.1.3. Nonetheless, the Applicant has considered all ten characteristics which are detailed within Part 2 of the NDG, their relevance to the ORS, and where they are relevant how the ORS performs in relation to them.

2.2. OVERARCHING COMMENTS ON ORS DESIGN IN THE CONTEXT OF THE NDG

2.2.1.1. Paragraph 4 of the introduction to the NDG states the long standing principles for good design as follows:

"The long-standing, fundamental principles for good design are that it is: fit for purpose; durable; and brings delight. It is relatively straightforward to define and assess these qualities for a building. We can identify its activities and users, the quality of detail, materials, construction and its potential flexibility. We can also make judgements about its beauty."

2.2.1.2. In Vitruvian terms (utility, durability and delight) the proposed ORS buildings have utility and durability, they are highly functional buildings that must meet operational requirements in the delivery of nationally important infrastructure and have therefore been designed to be fit for purpose. They are resilient to flood risk events and climate change, built to last for their expected lifetime and are secure, and as such the ORS are durable. The ability of the ORS to delight is limited by the requirements in relation to their function, but, as described above, account has been taken of the local context and of the amenity of nearby residents and how the ORS appear in this context.

2.2.1.3. Whilst not mentioned in the NDG, another well-established general design principle is 'form follows function' (Bauhaus). In that regard the ORS buildings are highly functional, minimalist and with a clear emphasis on technology and resilience.

2.2.2. CONTEXT – ENHANCES THE SURROUNDINGS

2.2.2.1. It is important to note that the location of the ORS is driven by the need for it to be located in proximity to the Landfall for the Proposed Development, which is driven by considerations in relation to the location of the Converter Station and how this is to be arrived at from the coast where the cable circuits come ashore, being the Onshore Cable Route. In this regard, the information on factors influencing site selection provided by NPS EN-5 is of relevance, and the relationship of that information to the Proposed Development is detailed in the Position Statement on EN-5 (document reference 7.7.12). The consideration of the potential locations for the ORS in proximity to the Landfall is also further explained in the Sequential and Exception Test Addendum (Appendix 9 of the ES document reference 7.8.1.9).

2.2.2.2. Sub-principle C1 provides that development should understand and relate well to the site and its local and wider context. Paragraph 40 of the NDG goes on to provide that "*well-designed new development responds positively to the features of the site itself and the surrounding context beyond the site boundary. It enhances positive qualities and improves negative ones*".

2.2.2.3. Physical features in relation to a site identified and which are considered to be of relevance by the Applicant to the design of the ORS include:

- Existing built development;
- Local heritage;
- Landscape character, drainage and flood risk;
- Environment – including landscape and visual impact, flood risk, noise and air quality
- Views

2.2.2.4. The non-physical features are not considered to be relevant to the design of the ORS.

2.2.2.5. Paragraph 41 of NDG identifies that the extent to which the design of development proposals are shaped by an understanding of their context is proportionate to the nature, size and sensitivity of the site and proposal, and further that a simple analysis will be appropriate for small scale proposals. It is considered that the ORS is such a small scale proposal and therefore a simple analysis of how the design of the ORS has considered the physical features of its context outlined above is provided below:

- Existing built environment: The ORS buildings are located to minimise the impact on views from nearby residential and leisure facilities

- Local heritage: The location and height of the ORS buildings has been considered to minimise the impact on Fort Cumberland
- Landscape character, drainage and flood risk: Appropriate landscaping is included to screen the ORS buildings and enhance the immediate environment. The buildings will be designed to minimise flood risk
- Views: selection of the site and inclusion of landscape screening to minimise impact on views

2.2.2.6. Considerations in relation to local heritage, landscape character, visual impact and views in the context of the design of the ORS are set out above. It is therefore not considered necessary to consider sub-principle C2 of NDG, on the basis that the relevant considerations have already been set out.

2.2.3. IDENTITY – ATTRACTIVE AND DISTINCTIVE

2.2.3.1. As set out above, the ORS are highly functional buildings with limited opportunity to alter the aesthetic. NPS EN 1 (which is applicable to the application) acknowledges in paragraph 4.5.1 that the nature of much energy infrastructure development will often limit the extent to which it can contribute to the enhancement of the quality of the area. However, sub characteristics have been addressed as follows:

- **I1** Respond to existing local character and identity: The site selection has been considered to minimise the impact on the local area and landscaping using local species is included to respond to the immediate environment.
- **I2** Well designed high quality and attractive: The ORs buildings will be designed to fully meet the functional requirements and minimise the visual impact on the surrounding environment
- **I3** Create character and identity: this sub characteristic is not relevaNt to the ORS buildings as they are located and designed to minimise impact and be as unobtrusive as possible. Built form – a coherent pattern of development.

2.2.3.2. In relation to B1 Compact form of development, the ORS is comprised of two small buildings symmetrically placed within a small compound (DAS Plate 5.33) to keep the overall mass and footprint to a minimum.

In relation to B2 Appropriate building types and forms, the ORS buildings are appropriately designed to meet functional requirements, as described in section 5.5.2 of the DAS. B3 Destinations is deemed irrelevant as there is no public access to the ORS.

2.2.4. MOVEMENT – ACCESSIBLE AND EASY TO MOVE AROUND

2.2.4.1. This characteristic is deemed irrelevant as the ORS is an unmanned facility with no public access, however access to and around the facility for installation and maintenance to meet operational requirements has been appropriately considered

2.2.5. NATURE – ENHANCED AND OPTIMISED

2.2.5.1. N1 and N2 are deemed irrelevant to the ORS design as there is no public access and no opportunity to enhance water management

2.2.5.2. N3 has been considered by the landscape mitigation proposals illustrated on the illustrative landscape mitigation plan (Plate 7.11 ORS Location Plan) in the DAS (APP-114 rev002) which include proposed native hedgerows, proposed native hedgerow trees and proposed reinstated grassland scrub to both soften the appearance of the buildings by providing screening and assimilate with the adjacent locally designated Site of Importance for Nature Conservation ('SINC'). Landscape proposals will also contribute to biodiversity enhancement. As such, the ORS, located within the existing gravelled car park, has no negative impact on the adjacent SINC, with minor complimentary enhancements provided through the landscaping proposed to the north of the ORS and south of Fort Cumberland Road.

2.2.6. PUBLIC SPACES – SAFE, SOCIAL AND INCLUSIVE

2.2.6.1. This characteristic is not relevant as there is no public access to the ORS

2.2.7. USES – MIXED AND INTEGRATED

2.2.7.1. This characteristic is not relevant as the ORS is a single use facility with no public access, or residential components

2.2.8. HOMES AND BUILDINGS - FUNCTIONAL, HEALTHY AND SUSTAINABLE

2.2.8.1. This characteristic is deemed irrelevant as the Converter Station is an unmanned facility with no public access, however safe access for maintenance personnel to and within the ORS has been duly considered

2.2.9. RESOURCES – EFFICIENT AND RESILIENT

2.2.9.1. With regard to sub-characteristic R1 (follow the energy hierarchy), the ORS will be designed to reduce energy consumption in so far as is practicable taking into account its function, and the facility design and construction methods will adopt a sustainability approach to reduce the carbon footprint as far as possible.

2.2.9.2. With regard to sub-characteristic R2 (selection of materials and construction techniques), external materials used in the construction of the ORS will be durable and low maintenance.

2.2.9.3. With regard to sub-characteristic R3 (maximise resilience), this characteristic is not relevant as the functional requirements of the ORS do not present opportunities for passive energy saving design, and there are no public open spaces

2.2.10. LIFESPAN – MADE TO LAST

2.2.10.1. With regard to sub-characteristic L1 (well-managed and maintained), the external materials to be used will be durable and low maintenance. The ORS is functional and made to last as already demonstrated in that they have been designed to last for their expected operational lifetime and to be resilient to appropriate frequencies of flood risk events.

2.2.10.2. Sub-characteristic L2 (adaptable to changing needs and evolving technologies) is deemed irrelevant as the ORS is a single use facility

2.2.10.3. Sub-characteristic L3 (sense of ownership) is deemed irrelevant as there is no public access to the ORS.

2.2.11. CONCLUSION ON THE NDG

2.2.11.1. The Applicant considers that the ORS has taken account of the principles of good design as they relate to Nationally Significant Infrastructure Projects with the associated need for high technical specification, functional and secure buildings. Detailed above is an analysis of how the ORS proportionately responds to the characteristics set out in the NDG where relevant to it. In the context of its operational function, the ORS achieves good design.