

Design Principles Document December 2014

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Summary

This Design Principles Statement has been prepared in support of the application for a Development Consent Order submitted by Progress Power Limited. It sets out Design Principles in accordance with which the Power Generation Plant, Above Ground Infrastructure and Electricity Connection Compound proposed by the Applicant will be constructed.

Purpose of this Statement

This statement supports the application for a Development Consent Order (DCO) submitted by Progress Power Limited for the development of a 299MW gas fired power station consisting of three main elements: the Power Generation Plant, Gas Connection (comprising a Gas Pipeline and Above Ground Installation) and Electrical Connection (comprising an underground Cable, Access Road and Electrical Connection Compound).

The purpose of this document is to facilitate early engagement with the parties involved in the detailed design process and in particular to describe a set of outline design principles in order to support the discharge of Requirement 3 of the DCO.

This Statement should be read alongside the Design and Access Statement (Document reference 10.2), and in the event of a conflict, this document should prevail.

Design Parameters

The Design and Access Statement (DAS) describes the factors that will influence the appearance of the Power Generation Plant and associated Electrical Connection Compound.

This document 'Design Principles Statement' is to be read in conjunction with the Design and Access Statement (Document reference 10.2), the Interim Landscape Mitigation Strategy (Document reference 10.6) (LMS) and the Outline Lighting Strategy (OLS) submitted to PINS for examination in order to demonstrate compliance with National Policy Statements (NPSs).

It provides design guidelines for the Power Generation Plant and Above Ground Installation (AGI) located on land within the former Eye airfield and Electrical Connection Compound proposed on farmland to the west of the A140. The principles contained in this document have been discussed with Suffolk County Council, Mid Suffolk District Council and the relevant Town and Parish Councils within the vicinity of the proposed development.

Guidance Documents

The DAS submitted with the DCO application in March 2014, has been informed by relevant guidance including CABE's guidelines 'A Design-led Approach to Infrastructure', and the findings of the Environmental Impact Assessment – in particular the landscape and visual impact assessment (refer to document 6.2, Environmental Statement section 11). This document takes into consideration all the documents noted above.

As stated in the National Policy Statement EN-1, 'good design is also a means by which impacts can be mitigated'. The proposed Gas Fired Power Station and associated development at Eye is likely to have some residual impact and therefore the design, materials and massing of the proposed buildings, as well as mitigation measures, must demonstrate good design in respect of landscape and visual amenity.

Additional Design Considerations

The Eye Airfield Development Framework approved by Mid Suffolk District Council in February 2013 contains planning design and access principles and makes recommendations in relation to the choice of building materials. In November 2013 Mid Suffolk District Council adopted the Eye Airfield Planning Position Statement (Non-Statutory Planning Guidance) which confirmed the Council's decision that the Eye Airfield Development Framework should guide future development on the airfield for both employment and housing on an interim basis.

The Position Statement explains the constraints in the centre of Eye Airfield related to the existing Gas Compressor Station. The Power Generation Plant Site is identified on Map 4 of the Position Statement as 'Potential Infill Area – 'safeguarded' for 'Energy Park that may include (a) Nationally Significant Infrastructure Project (NSIP) (Gas-fired Power Station and/or (b) SCC Waste Core Strategy EFW [Energy from Waste] site', the former in recognition of the emerging Progress Power proposals.

Public involvement and engagement

PPL is committed to engagement with the local councils and residents, Mid Suffolk District Council and Suffolk County Council on the detailed design and landscaping proposals. This engagement will take the form of at least two workshop sessions, jointly hosted by PPL and the District Council, and facilitated by an independent design professional.

The initial workshop, to be held on appointment of the preferred contractor, would develop the understanding of local expectations for the quality and character of the new development which would be taken forward to the subsequent workshop which would consider draft detailed designs for each of the component parts of the development. These workshops would be undertaken prior to the application to discharge the DCO Requirements for detailed design (Requirements 3 and 4). Annex 1 contains a diagram which sets out the stages involved in discharging these DCO requirements.

Design Review

In accordance with National Policy Statement EN-1 the detailed design of the development components will be subject to Design Review before any detailed submission is made to Mid Suffolk District Council. The submission will therefore be accompanied by evidence to show how having regard to any engineering/operational constraints, the design principles have been applied to the proposals, by an independent design review body with appropriate expertise.

Design Principles

The following design principles shall be applied, in addition to those set out in pages 39 – 43 of the DAS, to the detailed design of all aspects of the development. These principles should be read in conjunction with the LMS and the OLS in particular.

| Genera | l Design Principles – these apply to all works | | | | |
|---|--|--|--|--|--|
| 1 | PPL is committed to undertaking a Design Review and to actively engaging with the local councils and residents, Mid Suffolk District Council and Suffolk County Council on the detailed design and landscaping proposals. | | | | |
| 2 | The detailed siting, design and layout of the proposed buildings and structures shall be undertaken in such a manner as to respond positively to the receiving environment. | | | | |
| 3 | The resultant buildings, structures and means of enclosure shall be sensitive to place and involve the use of appropriate recessive materials to minimise the visual impacts as far as possible though the careful use of colour and finishes. All materials to be used shall be durable and functional for the 25 year operational period of the power station / electrical substation. | | | | |
| 4 | A Sustainable Drainage Strategy (SuDS) will be developed in accordance with DCO Requirement 8 relating to surface and foul water drainage and section 5 of the flood risk assessment. | | | | |
| 5 | A Lighting Scheme will be developed in accordance with DCO Requirement 18 relating to the control of artificial light emissions and the OLS. | | | | |
| Power Generation Plant and Above Ground Installation Design Principles – these apply to works | | | | | |
| No. 1A | , 1B, 1C, 1D, 2A, 2B and 3A | | | | |
| 6 | Structures within the PGP and AGI will be sited so as to minimise visual impacts from sensitive receptors. In the event that less than five stacks are proposed at the PGP, consideration will be given to the arrangement and/or grouping of stacks so as to minimise visual impact by taking advantage of existing landscape features wherever possible. | | | | |
| 7 | The use of a single large building to accommodate the gas turbines shall be avoided so as to minimise the overall mass of the Power Generation Plant. | | | | |

| 8 | The height of the exhaust stacks shall be kept to the absolute minimum required for |
|----------|---|
| | operational purposes and shall not in any event exceed 30m height. The colour and finish |
| | of the stacks will be neutral to avoid glare. At no time shall the exhaust stacks be |
| | illuminated except for recognised safety purposes and at no time shall they display signage or other forms of advertisement. |
| 0 | |
| 9 | The height of all buildings and structures shall be kept to a minimum and careful |
| | consideration will be given to roof lines and forms to minimise the visual impact of the |
| 10 | upper elements of buildings and structures on the skyline. All signage for the purposes of identification at the permanent access(es) will be designed |
| 10 | and sited to avoid creating a distraction to users of the highway and to respect the |
| | amenities of the locality. |
| 11 | Vehicle parking and external storage areas shall be laid out and screened so as to minimise |
| 11 | low level visual clutter and improve the outward appearance of the development. |
| 12 | Consideration will be given to the use of architectural details, curved forms and screening |
| 12 | within the site to soften the appearance of buildings and structures. |
| Flectric | cal Connection Compound Design Principles- these apply to works No 5 and 7 |
| 13 | The electricity sub-station and its associated buildings, structures and means of |
| 10 | enclosure shall be sensitive to place and the receiving landscape to minimise its visual |
| | impact. It shall be designed so as to minimise its impact upon agricultural activities, |
| | heritage assets, and ecological interests. |
| 14 | AIS Variant |
| | The design of the AIS compound will be such that it minimises visual impact by: |
| | siting infrastructure as far as is operationally practicable to provide a silhouette |
| | within the landscape; |
| | using non reflective insulators; and |
| | setting security fencing behind the landscaping. |
| | |
| 15 | GIS Switchgear and Administration Buildings |
| | In order to reduce the impact of the overall building composition consideration will be |
| | given to breaking up the facades and roof profiles into vertical sections through the use |
| | of materials and design details. |
| 16 | GIS Switchgear and Administration Buildings |
| | The external materials and shall be recessive in colour in order to assimilate the buildings |
| | into the surrounding landscape. The roof material should be non-reflective and the colour |
| | and finish should minimise glare. |
| 17 | GIS Switchgear and Administration Buildings |
| | Consideration will be given to the incorporation of architectural features to add visual |
| | interest while acknowledging the need for simplicity in the form and design of the |
| _ | buildings to respect the surrounding landscape. |
| 18 | Access Road |
| | The access road will be designed according to National Grid's standards and laid out in |
| | such a manner so as not to prejudice on-going farming operations. Reasonable effort shall |
| | be made to ensure that the surfacing treatment responds to the local context to minimise |
| | landscape and visual effects. |
| | |

ANNEXES

| Annex 1 | Process Diagram for the discharge of the DCO Requirements |
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| Annex 2 | A3 Design Sheet – Power Generation Plant |
| Annex 3 | A3 Design Sheet – Electrical Connection Compound |

Annex 1

Process Diagram for the discharge of the DCO Requirements



Annex 2

Power Generation Plant Design Sheet















- Breaking down the expanse of into smaller elements.
- The cladding scale and colour will be arranged to ensure the buildings are grounded into the surrounding landscape and at the same time minimise the long distance visual impact.
- The colour and profile of cladding will reflect the horizontal strata of the landscape.
- The colour and finish of the stacks will be neutral and avoid glare.
- Recognition of the horizontal strata of existing landscape foreground and up to a raised platform which incorporates mature tree lines and hedgerows in the far distance and then above that the backdrop of the skyline.
- Breaking the site layout up into a series of smaller fragmented elements allow a more responsive approach in terms of site layout appreciate and respond to visual impact from various directions.
- This fragmented approach allows a common material and colour approach to each element maintaining and therefore avoiding any
 overall bulky building enclosure.
- This approach celebrates the mechanics & working elements of the building.
- Hard wearing robust materials recognise the hardworking industrial nature of the site to utilising colours particularly at the lower levels reflecting the mature landscape backdrop.



Annex 3

Electrical Connection Compound Design Sheet



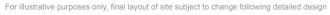














- The colour tones and profile orientation of the cladding will assist in blending the building into the surrounding landscape.
- The Cladding scale and colour will be arranged vertically to ensure the buildings are grounded into the surrounding landscape and
 particularly against dense tree cover around the site boundary. This will also assist in minimise the long distant visual impact.
- The colour and profile of cladding will reflect the agricultural and rural nature of the surrounding landscape setting. The use of more earthy colours.
- The colour and finish will be neutral in finish and avoid glare.
- Recognition of the horizontal strata of existing landscape foreground and up to a raised platform which incorporates mature tree lines and hedgerows in the far distance.
- The visual reference for this design mitigation approach is that of agricultural farm building structures in the wider landscape.
- Hard wearing robust materials recognise the hardworking industrial nature of the site to utilising colours particularly at the lower levels reflecting the mature landscape backdrop.
- Perimeter landscaping and land modelling around the perimeter assist in the visual mitigation particularly from mid and long distances.



| Analysis Component | | Design Principle | Eye Airfield Principle |
|---------------------------------|---------------|--|---|
| Built Form, Uses and Activities | \rightarrow | Specify or design items of larger plant with consideration to their visual appearance in the local and wider landscape. | The proposed buildings, structures and perimeter security fencing shall be of high quality design. Materials used for cladding shall above all need to be durable and functional for operation for 25yrs in a power station environment. The design should be such that it minimises visual impact and blends with the background and foreground as far as possible, with recessive colouring. |
| Built Form, Uses and Activities | | Reinstate the routes of the gas and electrical connections with appropriate planting for their wider and local landscape and habitat setting, taking into account the need to avoid damage from roots. | Consideration should be given to cladding in scale & grades of colour appropriate to the local surroundings, for the largest buildings, to minimise visibility in long distance views whilst adding visual interest at street level. Soft planting along connection routes should be reinstated in accordance with soil handling and reinstatement strategy to be developed as part of project CEMP and restored agricultural use. Where existing trees or soft planting are lost, and cannot be replaced through tree planting due to restrictions above and adjacent to the pipeline. |
| Built Form, Uses and Activities | | The use of soft landscaping should be maximised within the Power Generation Plant Site | Appropriate planting should be reinstated to retain the linear feature and provide connectivity for wildlife. Where inside the permanent easement of the Gas Connection, only shallow-rooting tree/shrub species should be used in order to avoid interfering with the installed Gas Connection. Amenity planting should be used to enhance the character of the industrial estate. The design of perimeter security fencing and its alignment inside |
| | | where safety and operational considerations allow. | boundary structure planting should provide a 'soft' edge to the industrial development, and connect with adjacent trees and vegetation. Where safe and operationally feasible to do so, further planting within the interior of the site should be considered where it provides amenity to both passers by and users of the site itself. |



Eye Airfield Principle Analysis Component Design Principle Built Form, Uses and Activities A landscaping scheme should be developed The approach to screen planting should seek to improve the amenity of the that ensures the site is designed and landarea and enhance biodiversity, and be carried out in accordance with the scaped to complement the local and wider Landscape Strategy. Belts of trees along both western and southern edges setting, and screen in identified views. of the site should be planted. The southern edge tree planting will link with the already mature adjacent plantation along the eastern boundary of the site. To the north of the site shrub planting will be planted. All re-instate-Good quality trees shall be retained. ment planting should be native species. Built Form, Uses and Activities Lighting shall be appropriate to the local The scheme of lighting should minimise detrimental visual and context, to create visual interest at the street environmental impacts. This would be achieved through appropriate level if appropriate but avoid placing, directionality, and technology of lighting and a preference for a greater number of lower level, building mounted lamps. Design choices lighting impacts upon identified habitats, neighbouring occupiers, and the wider for lighting should be made with a view to minimising the impact. Any landscape. development west of the A140 should be unlit, except for security and emergency purposes. Built Form, Uses and Activities Stacks should be designed at a height which The height of all plant should be minimised. The design of the project causes minimum visual impact whilst also utilises technology (SGCT) that allows a significant reduction in stack height allowing for adequate dispersion of stack compared to other technology types. Stack shall be between 25m - 30m emissions height and shall not be illuminated or contain signage or branding unless necessary for a recognised safety / operational requirement.



| | 7 | | ı | |
|---------------------------------|---|--|---------------|---|
| Analysis Component | | Design Principle | | Eye Airfield Principle |
| Built Form, Uses and Activities | | The Power Generation Plant Site shall be laid out and maintained in a safe and attractive manner and which supports a positive public perception of the operation. | | The main entrance and other permanent accesses shall have high quality branded signage so that visitors and passers-by can understand the use of the site. |
| | | | | Vehicle parking, storage areas and smaller structures shall be laid out and screened so as to minimise visual clutter and improve the safety and perception of safety of the site operation. |
| | | | \rightarrow | The visual impact of low level clutter should be effectively minimised through design, layout, bunding and planting. |
| | | | | The CEMP shall include measures for the maintenance of a tidy and contained site compound during construction |
| Built Form, Uses and Activities | | The site layout shall consider the need to minimise noise and vibration impacts on the wider area. | \rightarrow | Detailed design shall ensure that noise is mitigated as far as possible, through the Project Site layout and consideration of the orientation of plant items associated with higher sound power levels. Inherently quiet plant items shall be selected wherever practicable. Consideration shall be given to the use of silencers and housing plant items in acoustic enclosures where practicable. |
| Built Form, Uses and Activities | | Consideration shall be given to the most appropriate choice of materials. Materials should be agreed with the local planning authority. | | Materials chosen shall be robust, high quality and cost-effective. The architectural design, use of raw materials and colours of the buildings and structures on the Eye Airfield Site shall be designed to reduce glare and assimilate the Project into the surrounding landscape. |
| Movement and Connections Access | | Ensure that access routes are appropriate for the vehicles that shall use them during site | | Re-use existing entrances to provide adequate operational and safety access. |
| | | construction and operation | \rightarrow | Design of new access track for the AGI shall minimise hard standing area and grassland loss whilst remaining clear for the necessary vehicles to access. |
| | | | | Where removed for construction works, roadway and footpath shall be reinstated with a durable and well-finished surface |
| Movement and Connections Access | | The design should be accessible to existing public transport routes and mitigate any significant transport impacts | | Vehicle parking shall be adequate for workers and visitors to the site and shall include a fully accessible space for a disabled worker or visitor, and be proximate to buildings they serve. |
| | | | | |



| Analysis Component | | Design Principle | | Eye Airfield Principle |
|--------------------------------------|-----------|--|---------------|---|
| Landscape/ Environmental suitability | a | andscaping proposals should be approprite to the context of the individual elements of the scheme. | \rightarrow | Landscaping around the Electrical Connection Compound should minimise the visual intrusion and complement local landscape character; particularly in relation to species choice. Orientation of the planting must complement and enhance the historic boundary pattern of the receiving landscape. Landscaping around the Power Generation Plant should be designed to ensure visual continuity with the planting scheme used to conceal the National Grid Gas Compressor Station. |
| | | | | Wider opportunities to reinforce the character of the landscape and reduce visual impacts within the Project Site boundary should be explored. Opportunities for offsite landscaping will be investigated to provide both additional landscape and visual amenity enhancement measures. |
| Landscape/ Environmental suitability | waa | Retain and reinforce boundary tree planting where trees are found to be of good/retain-lble quality. The design shall take into account the | \rightarrow | The design of perimeter security fencing and its alignment inside boundary structure planting shall provide a 'soft' edge to the industrial development, and connect with adjacent trees and vegetation. Amenity planting shall be used to enhance the character of the industrial |
| | р | provision of robust fencing around the site to ensure safety of the site. | | estate. Natural surveillance shall be facilitated through the location of the gate-house and the use of chain link or weld mesh fence where safe to do so, in preference to solid hedge or wall. |
| | ightarrow | | \rightarrow | Trees should be maintained/selected to have a canopy no lower than around 1.8m to allow some short / angled views in and out of the site whilst acting as screening to taller and more distant structures within the site. |



| Analysis Component | Design Principle | Eye Airfield Principle |
|--------------------------------------|---|---|
| Landscape/ Environmental suitability | Minimise impacts on existing habitats and species within the site. | The design of landscape planting should enhance the area's biodiversity through: the retention of existing trees & bushes; the planting of belts of broadleaved woodland to increase the amount of natural green landscape in the area; the reinstatement of planting where possible and appropriate; and careful management of soils. The routeing and installation of the utility connections should minimise the impact on existing landscape and ecological features and the sterilisation of land – careful routing and/or Horizontal Direct Drilling (HDD) or similar methods should be used where possible. |
| Landscape/ Environmental suitability | The layout and landscaping shall be designed to minimise all aspects of water usage where operationally appropriate, thus process, sanitation and irrigation water usage. | The design of the site shall include the strategic placement of soil bunds and design considerations for access roads in order to avoid funnelling surface water or affecting surface water quality off site. Sustainable drainage systems will be used to manage surface water runoff and if possible create new habitat for wildlife. Water use should be minimised. Irrigation systems, making use of captured rainfall, may be included within the landscaping to ensure that it is effective. |
| Landscape/ Environmental suitability | The layout and landscaping design to take of cognisance historical and established topography and landscape pattern. | Landscaping proposals should be sympathetic to the historic character of the landscape, in their alignment, scale and composition. The impact on the setting of listed buildings and conservation areas should be fully evaluated and mitigated for. |

