

# Sheringham Shoal Offshore Wind Farm Onshore Substation Reapplication Environmental Statement Addendum Non-Technical Summary

Scira Offshore Energy Limited



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9R8482

## **INTRODUCTION**

### **Scira Offshore Energy Limited**

Scira Offshore Energy Limited (Scira) is proposing to construct and operate an offshore wind farm, known as Sheringham Shoal, located off the north Norfolk coast.

Scira is a project specific company owned by StatoilHydro (50%) and Statkraft (50%).

### **Sheringham Shoal Offshore Wind Farm**

The Sheringham Shoal Offshore Wind Farm will be located approximately 17 to 23km offshore from the north Norfolk coastal town of Sheringham. The wind farm will have 88 wind turbines and will be operational for a period of 40 years.

In order to construct and operate the offshore wind farm, Scira made an application in May 2006 for a number of regulatory consents to the Department for Business, Enterprise & Regulatory Reform (DBERR) (now the Department for Energy and Climate Change; DECC), which led the consent process in association with the Department for Environment, Food and Rural Affairs (Defra). The offshore wind farm project was subject to an Environmental Impact Assessment (EIA). The findings of the EIA were reported in an Environmental Statement report, which was submitted in support of the offshore consent applications to DBERR.

The wind farm received the necessary offshore consents in August 2008. These covered the wind farm, the interconnecting cables, the sub-sea export cables, a landfall point at Weybourne, and a small element of associated onshore works, consisting of a buried cable connection or 'jointing' pit, a short section of underground cabling and a new switch station building at the Muckleburgh Collection museum in Weybourne (although it should be noted that this building is no longer required).



### **The Need for Renewable Energy**

The central aim of the UK Government's energy policy is to establish a supply of energy that is diverse, sustainable and secure and is offered at competitive prices. Key to this goal is a 60% reduction of carbon dioxide emissions by 2050. The development of renewable energy plays a key role in the Government's strategy for carbon reduction. In 2000, the Government proposed an initial ten year strategy, which included a target to generate 10% of the UK's electricity from renewable sources by 2010. Revised targets have proposed that 15% of the UK electricity supply should come from renewable sources by 2015, with an aspiration of 20% by 2020.

The Government's targets for renewable energy will help the UK to meet its international obligations, but also obtain greater security of energy supply. The construction of wind farms (both on- and offshore) is expected to be the largest contributor to the renewable energy sector and wind energy will provide the greatest contribution to the 2010 target of all the renewable energy technologies.

The Sheringham Shoal wind farm is expected to produce enough energy to power up to 220,000 homes with renewable energy each year. Over its 40 year lifetime, the wind farm will contribute to a reduction of many thousands of tonnes of carbon dioxide per annum, which would otherwise be released into the atmosphere if the electricity generated had been produced by a conventional coal-fired power station.

## Onshore Grid Connection

In order to feed the electricity generated by the wind farm into the national distribution network, an onshore grid connection is required between the landfall point at Weybourne and a suitable connection point. An existing electricity substation at Salle, near Cawston, which is owned and operated by EDF Energy (EDFE), has been selected as the preferred connection point by Scira. A separate EIA was completed for the onshore grid connection, which included two main components:

- An underground cable system between Weybourne and the substation at Salle (approximately 21.3km in length).; and
- A new substation adjacent to the existing EDFE substation at Salle.

In August 2007, Scira submitted applications for full planning permission from the two local planning authorities within which the onshore components of the project were located; North Norfolk District Council (NNDC) and Broadland District Council (BDC). The planning applications were submitted with an Environmental Statement which reported the findings of the Onshore Grid Connection EIA. Three separate planning permissions were received as follows:

- Full planning permission was received from NNDC on 28 January 2008, to construct and operate the buried cable system within the North Norfolk district;
- Full planning permission was received from BDC on 29 November 2007, to construct and operate the buried cable system within the Broadland district; and
- Full planning permission was received from BDC on 20 February 2008, to construct and operate the substation within the Broadland district.

## Onshore Substation Reapplication

Once the substation received full planning permission, further investigations and site surveys were carried out to progress the detailed design. This process revealed the need to alter the site boundary and the design of the building and external electrical equipment. Consultation with BDC confirmed that a new application for planning permission would be required.

The findings of the original EIA have been revisited in order to assess the environmental impacts of the revised substation scheme. An Environmental Statement Addendum has been prepared to report the findings of the reassessment.

This document forms a Non-Technical Summary of the Environmental Statement Addendum. For further details of the findings of the EIA, reference should be made to the full Environmental Statement Addendum document. Details of how to view the full Environmental Statement are given at the back of this document.

An overview of the wind farm, onshore cable system and onshore substation location is shown as **Figure 1**. Further information regarding the Sheringham Shoal Offshore Wind Farm can also be found on Scira's website ([www.scira.co.uk](http://www.scira.co.uk)).



## **REGULATORY REQUIREMENTS AND THE EIA PROCESS**

### **Regulatory Consents and Need for EIA**

In order to construct and operate the proposed substation at Salle, Scira must first reapply for and obtain full planning permission under the Town and Country Planning (England and Wales) Act 1990 from Broadland District Council for the revised scheme.

The revised scheme is also subject to an EIA in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

### **The EIA Process**

#### *EIA and the Environmental Statement*

EIA is a procedure that must be followed for certain types of development before they can be given development consent. The procedure is a means of drawing together an assessment of a project's likely significant environmental effects. The process takes into account each stage of the development, from the planning of the design, through to construction, operation and eventual decommissioning.

The results of the EIA are documented within an Environmental Statement (ES) report, which contains the following:

- Description of the proposed development, including any alternatives considered;
- Description of the existing environment at the site and its environs;
- Prediction of potential impacts on the existing human, physical and natural environment at the site and assessment of subsequent effects;
- Description of mitigation measures to avoid or reduce such effects;
- Description of monitoring requirements; and
- Non-Technical Summary.

The following stages are typically included in an EIA:

- Screening determination of whether a development proposal needs an EIA
- Scoping determination of the issues to be addressed by the EIA;
- Consultation and public participation;
- Original data collection and surveys where necessary to fill data gaps;
- Impact identification and evaluation;
- Identification of mitigation and residual impacts;
- Identification of monitoring requirements;
- Submission of the ES to the relevant authorities as part of the consents process;
- Liaison and consultation to resolve matters or representations/objections; and
- Decision on whether the proposed development should proceed.

### *Site selection and consideration of alternatives*

The identification of a location for Scira's proposed new substation focused in and around the existing EDFE substation at Salle, near Cawston. The selected site is located immediately adjacent to the south-eastern side of the existing substation and was chosen as the preferred option, based primarily on; space availability; proximity to the substation for grid connection; and landscape and visual impact (as the site is naturally shielded to some degree by the existing vegetation and topography). The substation and screening have been designed to limit impact on the environment and blend with existing landscape and features.

Scira is confident that the detailed and iterative process adopted for the EIA, has taken due account of all environmental and technical considerations in order to propose a new substation with minimal impact upon the natural, human and physical environment.

### *Scoping and Consultation*

As part of the original EIA process, a scoping exercise was carried out to identify the main issues to be addressed during the EIA. A scoping opinion was sought from both North Norfolk District Council and Broadland District Council for the overall onshore grid connection project.

Extensive consultation was carried out during the scoping stage and throughout the original EIA process, with statutory and non-statutory bodies in order to identify key concerns and issues regarding the project. Consultees have included North Norfolk District Council, Broadland District Council, Norfolk County Council, parish councils, the Environment Agency, Natural England, English Heritage, Norfolk Landscape Archaeology, Norfolk Wildlife Trust, the local community, and other local organisations and individuals, including landowners and tenants.

### *Original data collection and surveys*

A series of detailed surveys, data collection exercises and desk-based studies were carried out as part of the original EIA to collect site specific information about the area. These are discussed in detail in the original Environmental Statement and include:

- Ecological survey programme to identify important habitats and any protected species; supplemented with ecological data searches to collate any previous records and a review of any designated nature conservation sites;
- Archaeological desk-based assessments to identify any features of cultural heritage significance such as Scheduled Monuments and Listed Buildings, as well as any previously recorded archaeological finds or features;
- Desk-based assessments and site reconnaissance visits to collate information on the geology, hydrology and hydrology of the area, as well as any data on possible contaminated land;
- Identification of landscape designations and a landscape and visual character assessment;
- Calculation of traffic movements and vehicle types during construction and operational stages;
- Desk-based noise and vibration studies with reference to British Standards and other current relevant guidance;
- Desk-based assessments with reference to existing air quality and monitoring data held by the local planning authorities and the National Air Quality Information Archive (NAQIA);
- Desk-based assessments with reference to local maps and data sources to identify features relating to local land use and local community, as well as any tourism or recreational features, including a review of any Rights of Way; and
- Additional site visits to ground truth the findings of various surveys and studies.

### *Impact identification and evaluation*

Impact identification and evaluation was carried out via a number of methods and techniques, including reference to guidelines, research, literature review and consultation. In order to provide a consistent framework for considering and evaluating impacts, significance levels have been assigned to each impact. To assess the significance of an impact, it is necessary to identify the magnitude of the effect and also the sensitivity of the receptor. The resulting significance is a balance of the two.

The assigned definitions for assigning significance are set out in the following table.

#### **Terminology for classifying environmental impacts**

<b>Impact Significance</b>	<b>Definition</b>
No impact	There is an absence of one or more of the following: impact source, pathway or receptor.
Negligible	The impact is not of concern.
Minor adverse	The impact is undesirable but of limited concern.
Moderate adverse	The impact gives rise to some concern but is likely to be tolerable (depending on the scale and duration).
Major adverse	The impact gives rise to serious concern; it should be considered as severe.
Minor beneficial	The impact is of minor significance but has some environmental benefit.
Moderate beneficial	The impact provides some gain to the environment.
Major beneficial	The impact provides a significant positive gain.

### *Mitigation, monitoring and residual impacts*

Where potentially significant adverse impacts are identified, mitigation measures to avoid, reduce and minimise these impacts are outlined, either as part of the design, or as a measure implemented during construction or operational phases. Good practice measures are also identified in order to minimise the impact of the proposed development further. Scira has agreed to these mitigation measures and they are, therefore, expressed as commitments. If required, monitoring initiatives have also been identified. The level of significance assigned to an impact, is the **residual** impact following successful implementation of the stated mitigation methods, good construction or operational practice or relevant regulations and guidelines, and is shown in **bold** in each section.

### *Assessment of cumulative effects*

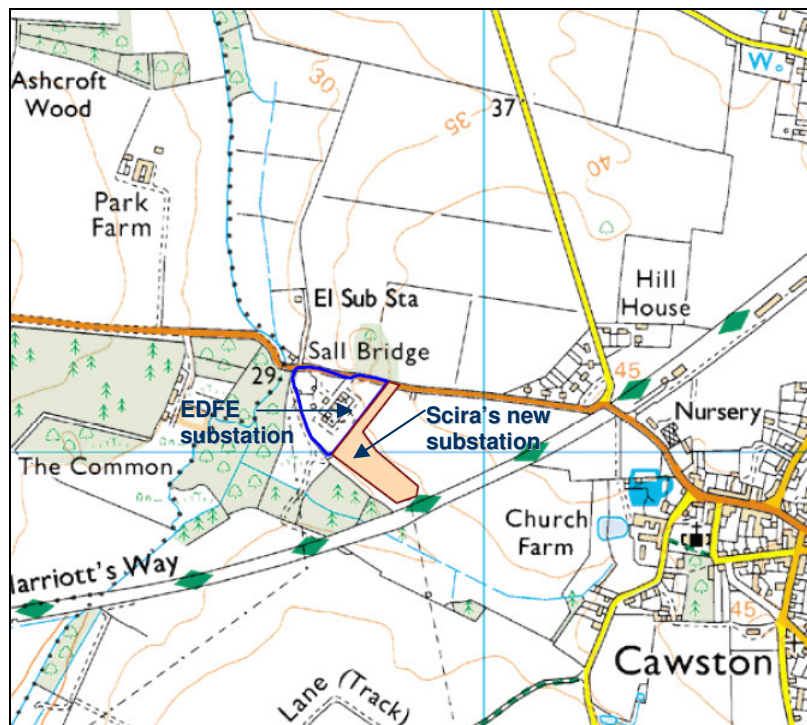
In order to connect the offshore wind farm to the electricity grid network, EDFE would also need to install additional electrical equipment within their substation compound. Although this work does not form part of Scira's substation reapplication, this work has been discussed in the Environmental Statement Addendum in order to provide the 'whole picture'. In addition, the potential for cumulative impacts have been assessed where appropriate.

### *Environmental Statement Addendum*

The Environmental Statement Addendum reports upon the changes to the original assessment carried out for the approved substation scheme, in relation to the new substation application proposal. In order to assess the changes, the same approach outlined in the EIA methodology for the approved substation scheme has been adopted for the new substation application proposal.

## PROJECT DETAILS

The proposed location for the new substation lies adjacent to the south-east boundary of the existing EDFE Salle substation and is shown on **Figure 2**. The site is currently a field under arable cultivation.



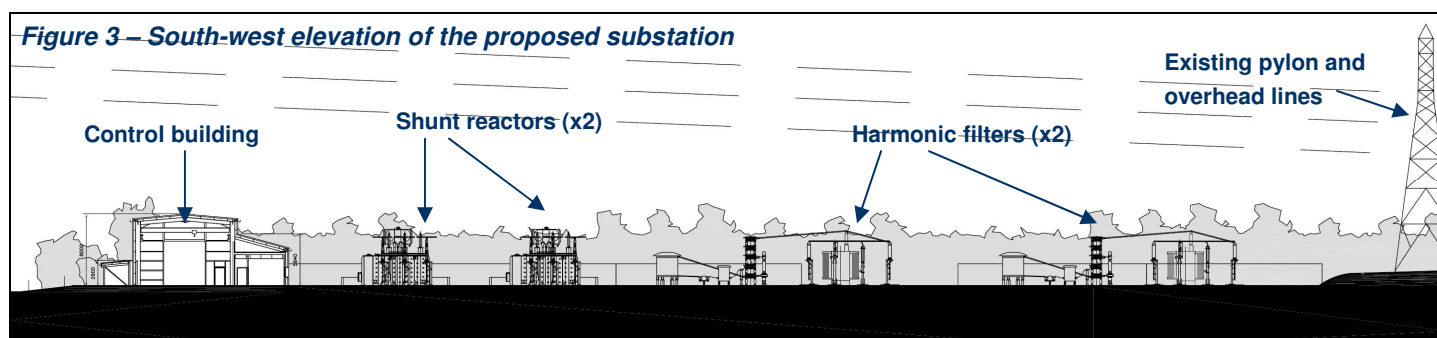
**Figure 2 – Location of the proposed substation**

Scira's new substation would house indoor and outdoor equipment necessary to connect the offshore wind farm to the electricity grid network and would include:

- A building containing the switch gear for the wind farm. The dimensions of the building would be 11.0m in width and 17.0m in length. The overall above ground height would be 8.15m with an eave height of approximately 7.5m;
- A second 'L' shaped building positioned along two sides of the switch gear building. This building would house the control room, store room, toilet and shower room, mess room and office. The dimensions of the building would be 6.1m wide with lengths of 17.0m and 16.5m;
- A cable canopy add-on to the main building to protect the above ground cables entering the building;
- Outdoor electrical equipment, including two shunt reactors, which would be up to 6.6m in height, and two sets of harmonic filters and associated equipment (if required), which would be up to 6.7m in height; and
- Associated access, hard standings, security fencing and tree planting.

The south-west elevation showing the revised substation layout is shown in **Figure 3**.

The construction of the onshore substation is expected to take 18 months.



**Figure 3 – South-west elevation of the proposed substation**

## SUMMARY OF ENVIRONMENTAL IMPACTS

### Introduction

The following sections summarise the potential environmental impacts associated with the construction and operation of the revised onshore substation scheme for the Sheringham Shoal Offshore Wind Farm. The following environmental topics have been reassessed:

- Nature conservation and ecology
- Archaeology and cultural heritage;
- Geology, hydrology and hydrogeology;
- Landscape and visual assessment;
- Noise and vibration;
- Air quality and dust; and
- Local community, land use, tourism and recreation.

The assessment of effects relating to construction traffic has been carried out as part of the noise and vibration; air quality and dust; and local community, land use, tourism and recreation assessments.



### Nature conservation and ecology

The substation has been located to ensure that there is **no impact** to any international, European, or nationally designated nature conservation sites, areas of woodland listed on Natural England's Ancient Woodland Inventory and County Wildlife Sites (CWS).

The substation is sited on arable land of low ecological value. The new substation application proposal has been extended to the east within the same agricultural field, with the additional site area also of low ecological significance. Overall, the loss of habitat associated with the proposed substation has been assessed to have **no impact**.

Targeted protected species surveys were carried out during the original EIA process and remain valid for the purpose of assessment of impacts for the new substation application proposal. These surveys found that no badgers, otters or water vole were present in the area of the proposed substation, therefore **no impact** is predicted to these species. Surveys confirmed the presence of great crested newts in a pond to the north of the site, along with potential habitat for breeding birds and roosting bats surrounding the site. Following mitigation, **no impact** is envisaged to these species.

**No impact** to any features of ecological significance would occur during the operational phase.



## Archaeology and cultural heritage

No archaeological sites were identified from the desk-based assessment carried out during the original EIA in the area of the proposed substation. In addition, previous archaeological investigations carried out in the area in relation to other construction works did not record any archaeological finds or features.



Since approval of the original planning permissions for the onshore grid connection project, a Written Scheme of Investigation (WSI) has been prepared and agreed with Norfolk Landscape Archaeology (archaeological advisors to BDC) to agree any further archaeological surveys and investigations required for both the cable system and the substation. As part of the WSI, fieldwalking and metal-detecting surveys have been carried out and some trial trenches have been excavated at the substation site.

These additional studies have confirmed that the substation site has been heavily disturbed by modern landscaping and there is little archaeological interest at the site. As a precaution, it has been agreed with Norfolk Landscape Archaeology that an archaeological watching brief will be undertaken during parts of the construction phase, to record any finds or features which may be present. Following this agreed mitigation and recording, the residual impact of the substation construction is assessed to be **negligible**.

During the operation of the onshore substation, there would be no further ground disturbance. Therefore, there would be **no impact** to archaeology and cultural heritage during operation.

## Geology, hydrogeology, hydrology and land quality

A 'Conceptual Site Model' has been used to assess the potential environmental risks in relation to the proposed substation. The risk assessment has been used to design suitable mitigation measures in order to reduce these risks. The residual impacts of the development with respect to geology, hydrology and land quality were found to be **negligible**.

The impact on groundwater was considered to be of **minor adverse** significance at the substation site. This is due mainly to the number of piled foundations being drilled in the saturated zone, close to a potable water abstraction. This may result in a short term increase in the sediment loading of the groundwater due to disturbance of the ground. Mitigation measures, in addition to those detailed in the original Environmental Statement will include, completing each foundation pile as quickly as possible to reduce the exposure of groundwater to contaminating substances and regular maintenance of the septic tank system.

## Landscape and visual character

The effects predicted for landscape features, the character of the local countryside, views across the landscape and the possible cumulative effects of the new substation application proposal (in combination with the work required in the existing EDFE substation) have been addressed. The assessment has focused on a comparison between the new proposals and the approved substation scheme.

The new substation application proposal is a similar arrangement of access road, control building and electrical equipment outside. The changes concern increases in the level and size of the site (extended east), the design of the building (particularly the roof) and the form, size and number of the electrical components.

The site level has been raised by less than a metre. However, this is combined with increases in the height of some electrical equipment making it more visible. This is offset by a reduction in the number of tall 'boxy' components and the fact that the substation would be contained in a wooded valley with tall trees on all sides. There will also be improved screening of the existing EDFE substation.

The new substation application proposal will have **moderate adverse** effects for certain views across the landscape as well as a **moderate adverse** effect on the character of the area, as previously assessed for the approved substation scheme. These aspects concern a fairly small area of countryside in a triangle between Sall Bridge, Marriott's Way and Cawston.

## **Noise and vibration**

The noise and vibration impact of the proposed onshore substation has been assessed with reference to British standards and other guidance. Impacts were predicted for the closest potential noise sensitive receptor to the substation site. Day time noise levels were predicted to be acceptable and were assessed as having **minor** to **moderate adverse** impacts. Night time activities such as generators and pumping operations are likely to have a **negligible** impact at the receptor.

To minimise the day time construction noise impacts, best practice working methods will be used, along with the quietest equipment available. These methods will ensure that noise levels at the receptor are reduced such that no more than a **minor adverse** mitigated impact occurs. Additionally, a public relations programme will keep the public informed of the construction works, so that the subjective perception of noise is reduced.

The maximum construction related traffic on the B1145 is likely to be six Heavy Goods Vehicles (HGVs) per hour. Additional traffic noise associated with the construction traffic was assessed to have a **negligible** impact. Although the assessment concluded that no mitigation of construction traffic noise will be required, good practise suggests that controls should be placed on the speed and times of operation of construction-related traffic. These controls will ensure that noise impacts from the construction traffic will be minimised.

## **Air quality and dust**

Air quality monitoring has shown that local background concentrations of nitrogen dioxide (NO<sub>2</sub>) and fine particles (PM<sub>10</sub>) would achieve air quality objectives in 2007 and 2010. The development is not expected to exceed UK air quality objectives

All non-road mobile machinery (NRMM) used for the development will comply with current or previous European Union Directive Staged Emission Standards. This will help to minimise the impact on air quality through techniques such as the use of ultra low sulphur diesel, fitting all machinery with Diesel Particulate Filters (DPF), and using energy saving methods whilst operating the machinery. The residual impact of NRMM during construction has been assessed as **negligible**. Additional traffic added by the construction phase is predicted to be low compared to existing traffic levels on the local road network. Background local air quality is good and vehicle movements generated during the construction phase of the substation are predicted to have a **negligible** impact on local air quality.

An air quality assessment found that the construction of the substation is likely to cause a **minor adverse** impact on local air quality, in terms of dust emissions. This impact will be reduced by following the Code of Construction Practice techniques to minimise dust emissions. The residual impact on air quality during construction (for sensitive receptors), in terms of dust, has been assessed to be of short term, **minor adverse** significance.

Once the substation is operational, it has been assessed that there would be **no impact** on local air quality.

## **Local community, land use, tourism and recreation**

The location of the proposed substation is privately owned agricultural land. The construction of the substation will have a **minor adverse impact** on surrounding agricultural practices. The temporary disruption to the local road network will be minimised by mitigation measures such as consultation with the Highways Authority (Norfolk County Council) to ensure suitable diversion

routes, and scheduling construction traffic at off-peak times of the day. The resulting impact on the road network will be **minor adverse** during periods of high traffic movement, and **negligible** at other times. **No impact** on tourism or recreation is envisaged in relation to the proposed substation construction. The increase in construction workers using local hotels, restaurants and shops during the construction of the substation is likely to have a short-term **minor beneficial impact** on the local economy.

The operation of the substation has also been assessed to have **no impact** during operation.

## CONCLUSIONS

The location, layout and design of the proposed substation have been carried out in a way to minimise the effects on the landscape and visual character of the area.

A detailed EIA has been carried out which has assessed the impact of the proposed substation to the natural, physical and man-made environment. The EIA process has also involved consultation with statutory and non-statutory organisations, and the local community. Overall, given the successful implementation of the stated mitigation measures as committed to by Scira, it is predicted that the onshore substation would have no long-term unacceptable impacts.

Following planning consent, an Environmental Action Plan (EAP) will be prepared to ensure that the mitigation measures committed to by Scira as part of the Environmental Statement and best practice are implemented correctly on site and as part of the construction contract.

The project is an essential part of the overall Sheringham Shoal Offshore Wind Farm, and would therefore make a significant contribution to both regional and national renewable energy targets and CO<sub>2</sub> emission reductions.



An operational offshore wind farm

## **FURTHER INFORMATION**

Further information on the Sheringham Shoal Offshore Wind Farm can be obtained from Scira's website at [www.scira.co.uk](http://www.scira.co.uk).

The full Environmental Statement can be viewed during the statutory consultation period at the following locations:

- Broadland District Council, Council Offices, Thorpe Lodge, 1 Yarmouth Road, Thorpe St. Andrew, Norwich NR7 0DU; and
- Copies will also be provided to Salle and Cawston Parish Councils.

Requests for copies of the full Environmental Statement should be made in writing to Royal Haskoning, 4 Dean's Yard, Westminster, London SW1P 3NL, or by email to [info@london.royalhaskoning.com](mailto:info@london.royalhaskoning.com) (a fee will be applicable which would be confirmed upon application). Additional copies of this Non-Technical Summary can be obtained free of charge from this address. The Non-Technical Summary is also available to download from Scira's website ([www.scira.co.uk](http://www.scira.co.uk)).

Please note, if you wish to make any comment on the planning applications, these must be made in writing, directly to Broadland District Council using the addresses given above, marked 'Planning Administration'.