

Indicative appearance of Keadby 3 in the context of existing Keadby Power Stations and the Keadby Windfarm

THE KEADBY 3 LOW CARBON GAS POWER STATION PROJECT

Stage 2 Consultation

Keadby 3 will be a highly efficient combined cycle gas turbine power station located on land at and near the Keadby Power Station site in North Lincolnshire. It will use natural gas as its fuel and will be fitted with a carbon capture plant to remove carbon dioxide from its emissions. The carbon capture plant would connect into infrastructure being developed through the Zero Carbon Humber Partnership.

Stage 2 consultation for the Keadby 3 project will run until **5pm on Wednesday 20th January 2021**.

As well as this newsletter we are providing the following consultation materials:

- Our Statement of Community Consultation ('SoCC');
- Our Preliminary Environmental Information Report ('PEIR') and its Non-Technical Summary ('NTS'); and
- A plan showing the location of the Proposed Development Site.

These can be viewed at:

- Our virtual exhibition which will be open from **10am on Wednesday 25th November** at keadby3.consultation.ai;
- The project website at www.ssethermal.com/keadby3; and
- In alternative formats (see page 8).

We are also holding online webinar sessions with members of the project team to introduce the consultation materials. Each will include a presentation from the project team followed by an opportunity for questions from participants. Each webinar will have the same presentation so you can join on any date from the list below. The presentation will start at the times shown and further instructions are provided on page 8.

- Tuesday 1st December 1pm
- Monday 7th December 3pm
- Wednesday 6th January 1pm
- Thursday 3rd December 10am
- Wednesday 9th December 10am
- Friday 8th January 10am

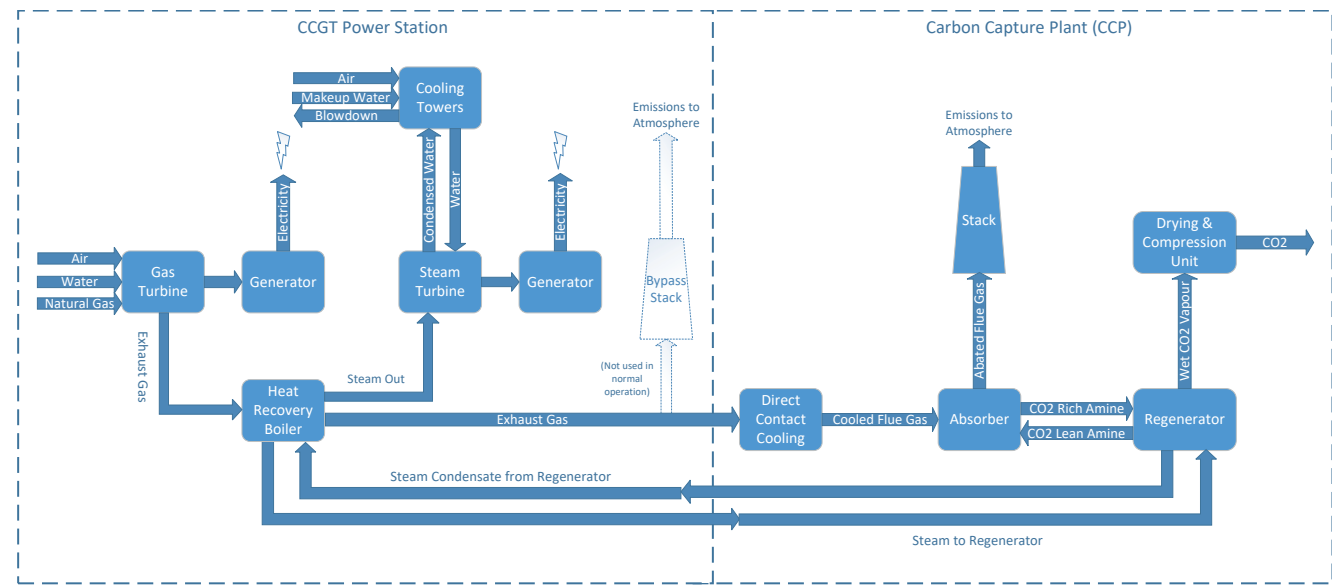
Have your say

Stage 1 consultation took place from June to August and since this time our project team have been working to further develop the proposals, having regard to the feedback that was received.

This newsletter provides information about the Keadby 3 project, a freepost return feedback form and information about where you can find more detailed information such as our PEIR. We encourage you to provide feedback and have provided a range of convenient methods for this. Please turn to page 8.

What is Keadby 3?

The Keadby 3 Low Carbon Gas Power Station Project is a high efficiency combined cycle gas turbine (CCGT) power station with a capacity of up to 910MW electrical output, including a post combustion carbon capture plant to be built on land adjacent to Keadby 1 and 2 near Scunthorpe.



Schematic of CCGT Power Plant and Carbon Capture Plant

The inclusion of a carbon capture plant in the project means that the carbon dioxide emissions from the power station can be captured and directed via a pipeline to an offshore geological store. The pipeline and geological store will be developed through the Zero Carbon Humber Partnership and Northern Endurance Partnership respectively. SSE Thermal is part of the Zero Carbon Humber Partnership, working with other leading companies in the Humber area to decarbonise industry and power generation in the region. Please see the enclosed leaflet for more information on Zero Carbon Humber. The Northern Endurance Partnership has been established to develop offshore carbon dioxide storage facilities in the UK North Sea, which projects in the Humber will seek to use.

The Project also includes natural gas, electricity and cooling water connections and associated development required to construct and operate the power station.

In order to develop Keadby 3 we must apply for a Development Consent Order (DCO) from the Secretary of State for Business, Energy and Industrial Strategy (BEIS). If granted, this DCO will permit the construction and operation of the Keadby 3 project and set out measures that must be adopted to minimise any potential environmental impacts or effects. The DCO if granted could also include other powers, such as the temporary acquisition of land or permanent easements within defined areas: these are called the Order Limits and we expect these to be similar to the red line boundary in the Location Plan (and in the figure opposite).

Needs and Benefits

The UK has legislated to cut national carbon emissions to Net Zero by 2050. This will require a major transition in how we generate and use energy.

We believe efficient gas-fired generation is essential to delivering Net Zero emissions by 2050, providing the flexibility needed to back up a system based on renewables.

This is also the view of the Committee on Climate Change, which identified in 2019 that to meet Net Zero by 2050 there is a need for new gas-fired electricity generation with Carbon Capture and Storage. The amount required has been estimated by the National Infrastructure Commission at more than 18GW - equivalent to building twenty Keadby 3 projects around the country by 2050.

Keadby 3 will only be built with a clear route to decarbonisation which will be achieved by including a carbon capture plant to connect into the carbon dioxide pipeline coming forward as part of the Zero Carbon Humber Partnership proposals.

Project Components

Keadby 3 Low Carbon Gas Power Station Project would comprise a low carbon gas fired power station with a gross electrical output capacity of up to 910 megawatts (MW) and associated buildings, structures and plant.

A carbon capture enabled power station including a Combined Cycle Gas Turbine plant with integrated cooling infrastructure, a carbon capture plant, carbon dioxide compression equipment, water treatment plant, wastewater treatment, firefighting equipment, emergency diesel generator, control room, workshops, stores and gatehouse, a permanent laydown area, chemical storage, pipework and auxiliaries, other minor infrastructure, and natural gas receiving facility along with a new surface water drainage system and above ground installation for connection to the carbon dioxide pipeline (all located in the **Proposed Power and Carbon Capture Site**).

A natural gas pipeline connection within the Keadby Power Station site to connect the **Proposed Power and Carbon Capture Site** to the existing National Grid high pressure gas pipeline.

Electrical connection works between the **Proposed Power and Carbon Capture Site** and the existing National Grid 400kV Substation (**Electrical Connection Area to National Grid 400kV Substation**) and option to connect to the existing Northern Powergrid 132kV Substation (**Electrical Connection to Northern Powergrid 132kV Substation**).

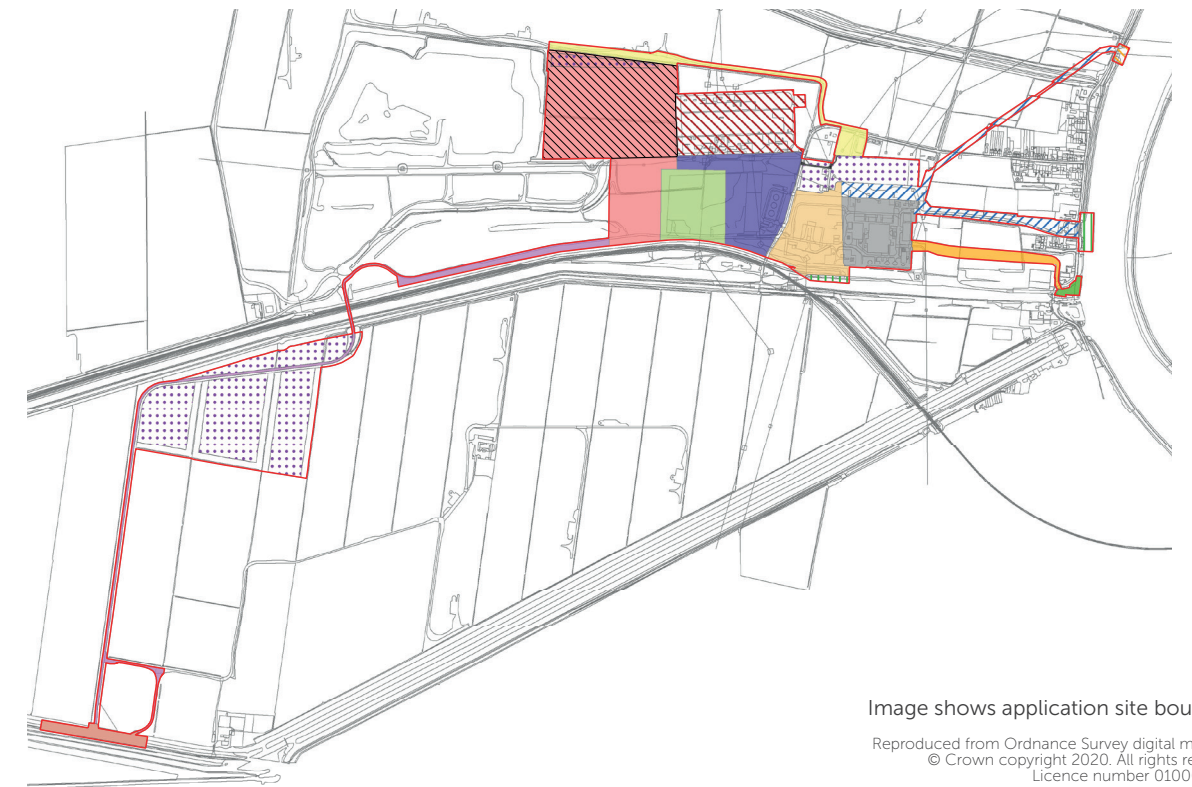


Image shows application site boundary

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Water Connection Corridors including either a water intake for cooling and process purposes within the Stainforth and Keadby Canal (**Canal Water Abstraction Option**) or if not available an intake from the River Trent (**River Water Abstraction Option**), both; Disposal of used cooling water to the River Trent (**Water Discharge Corridor**); and a mains water supply within the Keadby site.

Associated development including: temporary construction phase **Laydown Areas**; the use of the existing **Waterborne Transport Offloading Area** and **Additional Abnormal Indivisible Load Route** used for the Keadby 2 project; site preparation works; pipeline and cable connections between parts of the site; landscaping and biodiversity provision, internal access roads, roadways and footpaths; gatehouses, security and fencing; and lighting.

How would the site be accessed?

We may improve the current Keadby 2 construction route to allow it to be used for both the construction phase and operational staff traffic for Keadby 3 (**Construction and Operational Access Route**) meaning that traffic relating to operations for Keadby 3 would not need access to Keadby. The use of the A18 access for operational traffic would involve constructing a new gatehouse and parking and may include junction works (**A18 Junction Improvement Option**). There would also be a permanent **Emergency Vehicle Access Road** between the **Proposed Power and Carbon Capture Site** and Chapel Lane.

We welcome your feedback on the use of the A18 access for operational traffic as part of this consultation. You can use the enclosed feedback form to provide this.

What has changed since your Stage 1 Consultation?

We have made a number of technical decisions about the project components since Stage 1 Consultation, including the layout, which avoids plant rich habitats on part of the SSE landholding, and the selection of hybrid cooling towers rather than air cooled condensers.

Furthermore, hydrogen is not being progressed as an option for the fuel supply. Instead, natural gas with post-combustion carbon capture will be deployed. The Project would connect to the existing natural gas pipeline supplying the Keadby site, and export carbon dioxide to third party pipeline infrastructure.

Environmental Impact Assessment

A Preliminary Environmental Impact Report (the PEIR) has been produced, along with a Non Technical Summary (the PEI Report NTS). This sets out the findings to date of our Environmental Impact Assessment (EIA) work.

We have carried out a number of surveys, including habitat and species surveys, water monitoring and landscape and visual impact baseline photography.

The PEIR has considered the potential adverse and beneficial environmental impacts and effects of the Project. Worst case assessments have been carried out, and further evaluation is ongoing. Based upon the preliminary findings, a summary of the potential effects is provided below:

Topic	Construction	Operation
Air quality	Through the use of a Construction Environmental Management Plan (CEMP) and construction traffic management plans, no significant adverse effects are predicted.	The majority of pollutants released would result in negligible adverse impacts at human health and ecological receptors. Based on screening assessments, potentially significant air impacts could occur from the release or formation of amine degradation products although no air quality standards or guidelines are predicted to be exceeded. Ammonia emissions from the process cannot at this stage be screened out as insignificant although no significant adverse effects are considered unlikely. Work is ongoing to determine the level of significance of effect and whether additional mitigation is required. This will be established prior to submission of the DCO application.
Noise and Vibration	If not properly managed, construction effects at certain residential receptors may be significant adverse for certain noisier activities, particularly at night-time should such works be required. However, through appropriate scheduling of construction activities, and restrictions on those activities taking place outside core working hours so they do not exceed the relevant limits, significant adverse effects can be avoided.	Significant adverse daytime and night-time operational noise effects are predicted at certain noise sensitive receptors unless additional mitigation measures are applied. Potential design mitigation options are being considered to reduce effects such that they are considered not significant. These will be determined prior to submission of the DCO and presented in the ES.
Landscape and Visual Amenity	During construction, temporary significant adverse effects are expected to occur at a number of nearby visual receptors including residential properties and users of the canal and towpath.	During opening and operation, significant adverse effects on a small number of visual receptors including residential properties and users of the canal and towpath are predicted. The design of the Project will aim to minimise adverse effects through optimised design and layout as well as appropriate use of materials and finishes.
Flood Risk and Water Resources	Through the use of a Construction Environmental Management Plan (CEMP), no significant adverse effects are predicted.	Two small drainage ditches will be lost as a result of the Project. Through the implementation of habitat creation opportunities, including use of sustainable urban drainage systems (SuDS) within the surface water collection system, no significant effects are predicted.
Biodiversity and Nature Conservation	Through the use of a Construction Environmental Management Plan (CEMP), and adherence to relevant protected species legislation, no significant adverse effects are predicted.	No direct effects on protected species or designated sites are predicted for the Project. There is some potential for adverse air quality effects on habitats containing species sensitive to ammonia, where levels at these sites are already above relevant thresholds. Ongoing assessments will determine whether additional mitigation is required and what biodiversity enhancement measures can be included within the DCO application.

Topic	Construction	Operation
Cultural heritage	Significant adverse effects could occur from piling and any ground remediation required, which may result in the partial removal of prehistoric peat deposits in areas of the Proposed Power and Carbon Capture Site. However, further appraisal of the likely presence of these assets will be undertaken with the aim of defining impact avoidance measures. With appropriate mitigation, residual effects are likely to be not significant.	There will be no significant effects on archaeology and cultural heritage during operation.
Socio-economics	A significant beneficial effect related to direct and indirect employment created by the construction phase of the Project is predicted on the economy.	No significant effects are predicted.

Where can I find out more or provide feedback on the full PEIR or the PEIR NTS?

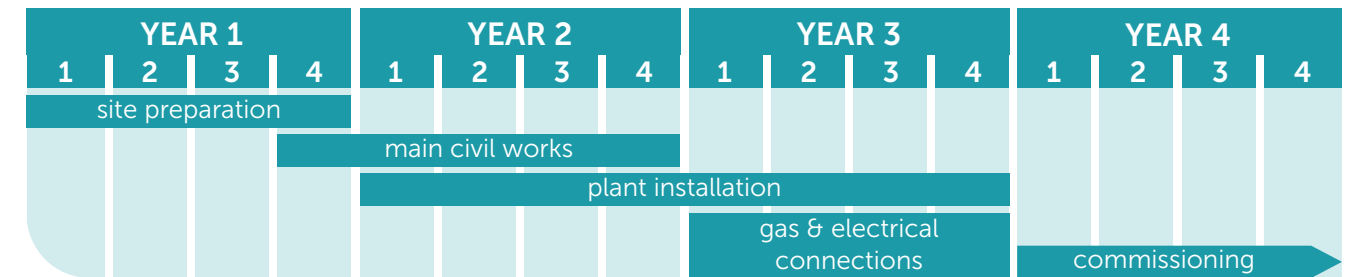
The PEIR NTS has been designed as an easy to read digital document and can be viewed on the project website or the virtual exhibition room for the entire consultation period, along with the full PEIR and its figures and appendices. Following the closure of the Stage 2 consultation a PDF version of the PEIR documents and NTS will be available on the project website.

If you have technical questions about the PEIR we encourage you to join one of our webinars and ask the project team.

Please turn to page 8 for details of how to book onto a webinar or request alternative formats of the PEIR.

Construction

Construction of the Project could potentially start as early as Quarter 3 2022, with construction activities to be completed within three years followed by commissioning. The figure below shows an indicative programme.



Haul Routes and Laydown Areas

Where possible, facilities used for the construction of Keadby 2 will be reused to minimise disruption. For example, the principal access during construction would be via the existing road access from the A18 used for Keadby 2. This road passes over the Stainforth and Keadby Canal and the Scunthorpe to Doncaster rail line via Pilsfry Bridge. It then links to Bonnyhale Road and onwards towards to the Project Site along existing private access roads.

Abnormal Indivisible Loads (AIL) would arrive at the Waterborne Transport Off-Loading Area and be offloaded using retained lifting equipment. AIL would enter the site via the Keadby 2 Additional AIL Route. It may also be necessary to bring a small number of AIL through Ealand, via Bonnyhale Road, as has been

the case with the construction Keadby 2. The routing of ALL would be subject to controls as part of a Construction Traffic Management Plan, which will be a requirement of the DCO.

Laydown areas required will depend upon the final choice of technology and contractor. At this stage, laydown requirements have been estimated and assessed using worst-case assumptions. The figure on page 3 of this newsletter shows the areas of land under consideration for construction laydown and contractors' compounds. Subject to final selection, the laydown areas would be secured by fencing and gates, levelled and underlain by a permeable membrane.



Keadby 2 turbine arriving via the Keadby Wharf

Earthworks and Connections

Some earthworks may be required to reprofile the site. As far as practicable, excess spoil will be reused as part of the construction works although some movement of materials to and from the site may necessary. Soils will be stored away from watercourses and areas of higher flood risk, if required.

All gas connection works would be located within the Keadby Power Station site on SSE land. The water abstraction point would either be on the Stainforth and Keadby Canal adjacent to the Keadby 2 abstraction point or on the River Trent as an upgrade or renewal of the Keadby 1 abstraction point. In either instance, a temporary cofferdam would be built in the waterway to provide safe and ecologically appropriate working conditions and allow the construction of a concrete apron extending from the bank of the waterway. Whichever abstraction option is selected, a pipeline would be constructed using open cut methods from the intake to the Proposed Power and Carbon Capture Site. If the River Water Abstraction Option is selected, some of the existing pipework may be able to be reused but this will need to be extended to the Proposed Power and Carbon Capture Site.



Cofferdam under construction at Keadby 2

Construction Phase Mitigation

We would require our contractor to produce and maintain a Construction Environmental Management Plan to control construction activities to minimise, as far as reasonably practicable, impacts on the environment and amenity. This would include industry best practice measures and specific measures set out in our Environmental Statement. A Framework Construction Environmental Management Plan will be produced in support of our DCO Application and will set out the core working hours, key management and monitoring activities to be carried out by the contractor.

A phase of commissioning would be required following construction to test the performance and installation of the process equipment.

Design

We are considering how the appearance of the site and the larger buildings could be enhanced through the use of alternative forms or materials, appropriate colours, and boundary treatments.

Technical and functional requirements

The key influences and constraints on the design are:

Scale

The largest buildings and structures are the CCGT and its heat recovery steam generator, the carbon capture plant, and the hybrid cooling towers. Some ducting, supports and ancillary structures are placed on the surface of the CCGT building. The hybrid cooling towers are lesser in scale than the air cooled condensers shown in the imagery at Stage 1 consultation. Additional overhead line towers ('pylons') are unlikely to be required.

Layout

This is determined by the availability of land, proximity to electrical and cooling infrastructure, environmental considerations such as existing habitats, the location of existing structures and plant such as the existing National Grid sub-station and gas supply pipeline, and the anticipated location of the carbon dioxide export pipeline. The CCGT and carbon capture plant and their hybrid cooling towers are close-coupled for efficiency. Different types of hardstanding are installed between items of plant, to provide good visibility and safe working conditions in normal and 'outage' situations.

Perimeter

A secure perimeter is required, without overhanging trees or obscured visibility, along with suitable access and emergency egress points.

Durability

The project will be constructed using engineering components and materials that will ensure that Keadby 3 operates safely, cost effectively and efficiently for at least 25 years.

Design Opportunities

We are considering how to improve the appearance of the larger structures compared to a more functional design, considering the appearance in long distance views. Nearer to the site, we are looking at how to soften the appearance of smaller structures, reinforcing local character through material selection and finish, and design attractive and welcoming gateways.

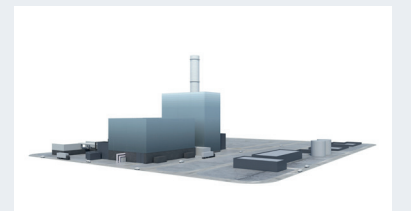
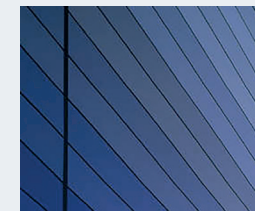
Building Finish

On the CCGT building the metal cladding could use banding, 'fading' from dark at ground floor to light at roof level to reduce the apparent mass. Colour or texture (such as mesh panel) could alternatively be used to highlight certain areas, or ancillary structures, to create focal points and add depth. The existing Keadby 1 power station uses a mixture of cladding and colour: grey lower sections, white upper sections, between which a red band encircles all the buildings. Keadby Bridge (King George V Bridge) and Piffrey Bridge have a dark green finish which could be considered for bridges and lower sections of buildings. Alternative materials and uplighting are not considered appropriate for larger buildings, noting the unlit metal finish of other power infrastructure in the area.

Boundary Treatments and Accesses

The security perimeter can incorporate amenity planting to provide visual interest and a degree of screening of lower structures. Wildlife features such as native species hedgerow, earth bunds, and drainage ditches or ponds can also have visual benefits and where space allows the boundary treatment will deliver on multiple objectives. Perimeter lighting and CCTV columns can be integrated into the fence construction and signage will also be grouped to minimise clutter and aid wayfinding. Open areas such as visibility splays, entrance gateways and areas of parking will use a mix of hard and soft surfacing, and accessibility will be maximised through surfacing, contrasting materials, lighting and wayfinding.

Smaller structures at edge locations could adopt a similar shape or roofline as the larger buildings, to signify the link with the power station site, but could be finished in traditional materials that relate to its surroundings. For example the potential new gatehouse on the access road could echo the form of the larger buildings while using red bricks as seen on the nearby farm access and in the villages.



We would encourage you to provide your feedback on the design ideas above. We will take this into account in finalising our DCO application, which will include written guidance ("design principles") to guide building finish and boundary treatments at the detailed design stage and ensure that the project will be both functional and attractive.

Accessing the Virtual Exhibition and Webinars

Our virtual exhibition room has been designed by industry experts to be user friendly, and an instruction video is available on the page to provide a guide. However if you have any difficulty using it please leave a message using the 'ticket' function in the bottom, right corner of the screen.

The room will include a number of information banners (similar to this newsletter), along with drone flyover video footage of the proposed site and access routes, links to our PEIR and SoCC, and more information about how SSE Thermal is involved in working towards the country's Net Zero goal.

The room can be accessed from all devices, including smartphones, tablets and desktop devices and you can access it as many times as you would like during the consultation period. Log in any time from **10am on the 25th November 2020** until the consultation closes on **Wednesday 20th January 2021**.

We are also holding webinars on six dates (see page 1 of this newsletter). To attend one of these:

- Firstly visit [keadby3.consultation.ai](https://www.keadby3.co.uk/consultation) and click on the link for your preferred date to add the joining instructions as an appointment in your desktop/tablet/smartphone calendar.
- Then a few minutes before the start time on your chosen date, click the link (or dial the telephone number) in the joining instructions. The link will open in a browser window, or in Microsoft Teams if it is installed on your device.
- Each webinar will be around one hour in length and will include a presentation followed by a question and answer session. Those joining the session online will be able to use the 'Chat' function to submit questions which will be logged and covered during the question and answer section. Those joining via telephone will be given the opportunity to ask questions at the end of the session.
- The webinar sessions will be public events so please be aware that your name/username will be visible to all other attendees.

If you require any additional support or would like to discuss joining a webinar please call the project helpline on 0800 211 8194 leaving a message including your name and contact details.

Alternative Formats

If you require assistance with the above methods, or would like a paper copy or USB stick of our consultation materials please ring 0800 211 8194, submit a 'ticket' via the virtual exhibition room, or send an e-mail to consultation@keadby3.co.uk. We can provide a USB stick, or a paper copy of the newsletter, SoCC, PEIR NTS and plan, free of charge, but reserve the right to charge for a paper copy of the full PEIR document to reflect the costs of printing and distribution.

Please allow at least a week from requesting a paper copy or USB stick.

Providing Feedback

We encourage you to provide feedback on our proposals. There are a number of different methods you can use:

- The feedback form – enclosed along with a freepost return envelope but also available on our project website www.ssethermal.com/keadby3 and as part of our virtual exhibition at [keadby3.consultation.ai](https://www.keadby3.co.uk/consultation)
- By post to **Freepost Keadby 3**
- By email at consultation@keadby3.co.uk
- Leave a message including your name and number at 0800 211 8194

Postal services may take longer at present due to coronavirus. Please observe all relevant precautions.

We cannot guarantee consideration of feedback provided via methods not listed above (such as on social media).

All feedback must be received by 5pm on Wednesday 20th January 2021

Your Privacy

Any information you provide to us (SSE Thermal) via the methods described in this newsletter will be treated in accordance with the General Data Protection Regulation and in line with our privacy policy, available at www.ssethermal.com/keadby3.

What happens next?

Once our stage 2 consultation has closed the project team will consider the responses received and pull together all of the information needed to prepare the DCO application. Our submission of the DCO application is expected to take place later in quarter 1 of 2021. More information about the DCO application procedure, and how DCO applications are examined in public, is available at: infrastructure.planninginspectorate.gov.uk/the-process/.