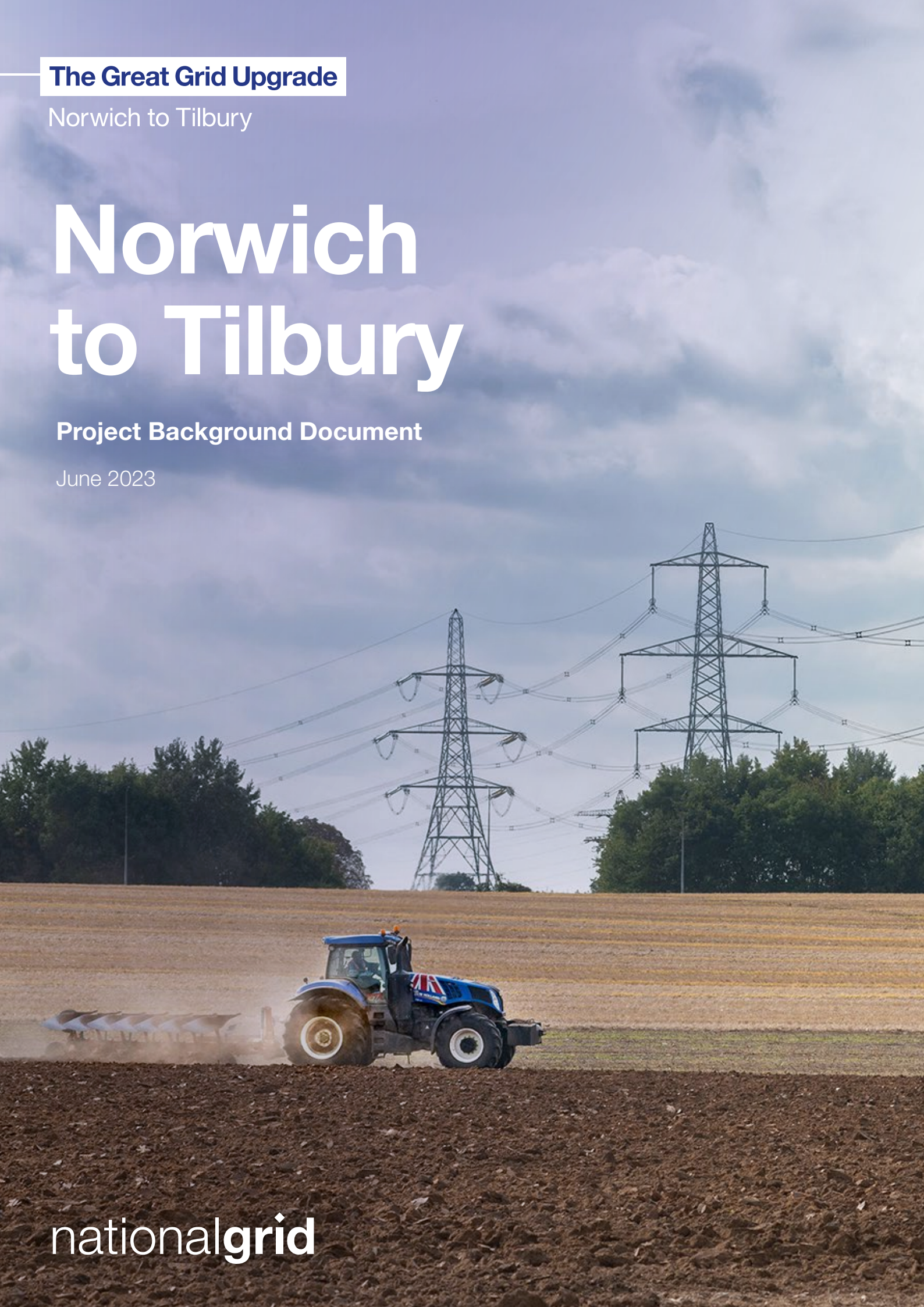
The Great Grid Upgrade

Norwich to Tilbury

Norwich to Tilbury

Project Background Document

June 2023



nationalgrid

This Project Background Document (2023) sets out our current draft proposals for a potential new high voltage reinforcement between Norwich and Tilbury. The proposals also include work at existing substations in Norwich, Bramford and Tilbury and a new substation in Tendring. This document updates the Project Background Document published in 2022.

Norwich to Tilbury was formerly known as East Anglia Green Energy Enablement (GREEN). We've changed the name to make it clear that this project is part of The Great Grid Upgrade, the largest overhaul of the grid in generations.

Feedback from our consultation in 2022, along with ongoing environmental surveys and stakeholder engagement, has helped to inform our proposals.

This Project Background Document has been prepared to support the non-statutory public consultation which runs from 27 June to 21 August 2023.

Contents

Executive summary

The way we generate electricity in the UK is changing rapidly, and we are transitioning to cheaper, greener and more secure sources of energy like new offshore windfarms.

The UK Government has set out a commitment to achieve net zero emissions by 2050. This means achieving a balance between the greenhouse gases put into the atmosphere and those taken out. The energy industry plays a key part in this transition, from developing renewable energy generation, to upgrading the existing electricity transmission network to allow communities across the country to benefit from this clean energy. We are presenting some plans in your local area to help that transition and make sure the grid is ready. These proposals are part of The Great Grid Upgrade, the largest overhaul of the grid in generations.

Decarbonising the energy system and delivering cheaper and more secure energy supplies is one of the biggest challenges facing our world. At National Grid Electricity Transmission (NGET) we have a critical role to play in the acceleration towards a cleaner future.

In Great Britain, we are in the middle of a transformation, with the energy we use increasingly coming from cleaner, greener sources. In 2019, for the first time since the industrial revolution, most of our electricity came from low-carbon sources. NGET is at the heart of that energy transformation – investing around £1.3bn each year to adapt and develop our transmission network to connect new sources of low-carbon and green energy to our homes and businesses.

While it is vital that more of the energy we use comes from low-carbon and renewable sources, both NGET and the Government recognise it is also important to keep the impact as low as possible on bills, people, communities and our natural environment. NGET is committed to finding the right balance between these factors to ensure our projects have a sustainable, positive impact.

[1] Wind Energy Statistics, Renewable UK renewableuk.com/general/custom.asp?page=UKwedhome

[2] Policy paper – British energy security strategy, Department for Business, Energy & Industrial Strategy and Prime Minister's Office, April 2022 gov.uk/government/publications/british-energy-security-strategy/british-energysecurity-strategy

[3] Powering up Britain, Department for Energy Security and Net Zero, March 2023 assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147340/poweringup-britain-joint-overview.pdf

The UK already has 13.6 gigawatts (GW) of offshore wind energy in operation.[1] The Government's recent British Energy Security Strategy[2] outlines the ambition to increase energy from offshore wind to 50 GW by 2030 – more than enough to power every home in the UK. In Powering up Britain,[3] the Government explains that the grid needs to be expanded at an unprecedented scale and pace to deliver more clean power and increase our energy security.

Delivering the infrastructure needed to achieve this ambition will boost local economies, provide jobs and opportunities to learn new skills and bring vital investment to towns right across the country.

Norwich to Tilbury would allow the UK to decarbonise its energy system in a meaningful way that will not only meet net zero targets but, perhaps more urgently, will deliver a more secure and resilient energy system that improves affordability through connection of renewable energy. Delivering a clean energy transition is the surest way to lower bills in the long term.

Norwich to Tilbury is a proposal by NGET to reinforce the high voltage power network in East Anglia. The reinforcement is needed because our existing power lines do not have sufficient capacity for all the new energy we expect to connect to the network over the next ten years and beyond. Building Norwich to Tilbury would play an important part in meeting this future energy transmission.

We are consulting on our proposals, which at present include building a new 400,000 volt (400 kV) electricity transmission line, work at existing substations and building a new substation to connect new proposed offshore windfarms and interconnectors to the energy transmission network.

The Norwich to Tilbury project would support the UK's net zero target through the connection in East Anglia of new low-carbon energy generation, and by reinforcing the region's transmission network.

Our public consultation

Our commitment to you

Input from communities and stakeholders is important to the development of our proposals. We want to ensure that everyone has the opportunity to comment on draft proposals at key stages of development.

In 2022, we held our first consultation to introduce the project, to present our preferred draft route corridor and the process that we had been through to identify it, and to gather public feedback. Since the end of that consultation, we have considered all feedback received, undertaken further reviews and technical studies, and continued to develop our proposals.

Between **Tuesday 27 June and Monday 21 August 2023**, we are holding a further non-statutory public consultation to present our current proposals and invite feedback. While we are very much still at an early stage of the proposed project, we have started to develop a preferred draft alignment which shows potential positions for overhead line and associated pylons, underground cables, cable sealing end (CSE) compounds and connection substations.

This document sets out information on our latest plans, what we are consulting on and how you can get involved. It also signposts where we are publishing more detailed technical information.

It is important that we hear the views of local people. Knowing what matters to you, matters to us, so please share your feedback to help us shape and develop our proposals further.

The choice of technology and other routeing matters also remain open to further consideration. Any decisions will be subject to an ongoing backcheck and review process.

We will carry out further consultation on our project as it develops. We will record all feedback received and report it in a Feedback Report which will also set out how we have had regard to your comments.

As our current plans propose more than 2 km of overhead line, we expect the project to be classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. This means we would need to prepare and submit a Development Consent Order (DCO) application to the The Planning Inspectorate. They would consider our proposals and make a recommendation to the Secretary of State for Energy Security and Net Zero, who would decide on whether development consent should be granted. Local planning authorities, along with others, remain important consultees in the process.

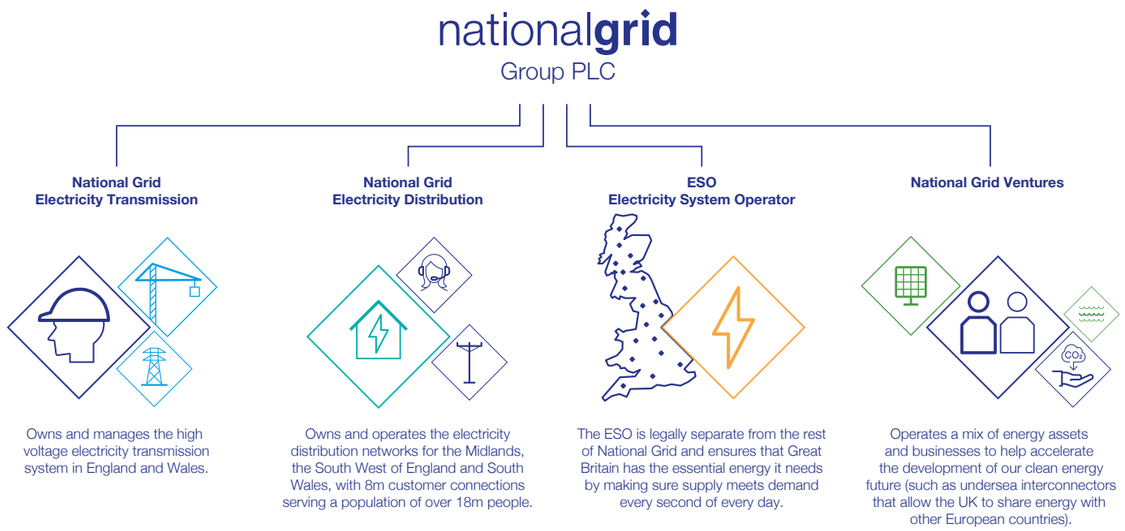
About National Grid

National Grid sits at the heart of Britain's energy system, connecting millions of people and businesses to the energy they use every day. We bring energy to life – in the heat, light and power we bring to our customers' homes and businesses; in the way that we support our communities and help them to grow; and in the way we show up in the world. It is our vision to be at the heart of a clean, fair and affordable energy future.

National Grid Electricity Transmission owns, builds and maintains the network in England and Wales. It is National Grid Electricity Transmission that is developing plans for Norwich to Tilbury.

Within the National Grid Group there are four distinctly separate legal entities, each with their individual responsibilities and roles. These are shown in the diagram below.

Each of the different entities within the National Grid Group are working to build a cleaner, fairer and more affordable energy system that serves everyone – powering the future of our homes, transport and industry.



Our General Duties

Under the Electricity Act 1989, National Grid ESO and National Grid Electricity Transmission must develop transmission network proposals in an efficient, coordinated and economical way, and in a way which considers people and places. Options to deliver additional network capability and the options we take forward are evaluated against these statutory duties.

How we will meet our amenity responsibilities and involve stakeholders and communities is outlined in our commitments when undertaking works in the UK.[4]

1. Establishing need

We only seek to build new electricity infrastructure where existing infrastructure cannot be upgraded; forecasted increases in demand cannot be met by other means; customer connections are required; or existing infrastructure has been identified for replacement.

2. Involving stakeholders and communities

We promote genuine and meaningful engagement, meeting and, where appropriate, exceeding the requirements for consultation or engagement.

3. Routeing networks and selecting sites

If we need to build new infrastructure, where possible, we seek to avoid areas which are nationally or internationally designated for their landscape, wildlife or cultural significance.

4. Minimising the effects of new infrastructure

When we are developing new infrastructure, we seek to reduce the effect of our work on communities by having regard to safety, noise and construction traffic.

5. Mitigating effects of works

We carry out relevant environmental investigations and report on these when we apply for consent for new works. Additionally, we use best practice environmental impact assessment techniques to assess possible effects of our works and identify opportunities for mitigation measures.

6. Offsetting where mitigation is not practicable

When we cannot mitigate the impacts of our proposals, we offset these impacts in practical and sustainable ways that are developed through engagement with local stakeholders.

7. Enhancing the environment around our works

When undertaking works, we consider what practicable measures can be taken to enhance nearby and surrounding areas for the benefit of local communities and the natural and historic environment.

8. Monitoring and learning for the future

We monitor, evaluate and review our engagement processes to learn from previous experiences to improve our working practices.

9. Reviewing our commitments

We review these commitments at least every five years and make additional revisions in response to new legislation, policy and guidance.

10. Working with others

We require other organisations working on our behalf to demonstrate these same commitments and continue to create an environment where we can share and deliver best practice.

[4] National Grid's commitments when undertaking works in the UK: Our stakeholder, community and amenity policy, National Grid, December 2019 nationalgrid.com/sites/default/files/documents/National%20Grid_s%20commitments%20when%20undertaking%20works%20in%20the%20UK.pdf

Many other organisations also have a key role to play in delivering a cleaner energy future.

Department for Energy Security & Net Zero

The Department for Energy Security and Net Zero (DESNZ) is the ministerial department with primary responsibility for energy.

In November 2020, the Prime Minister set out a Ten Point Plan for a Green Industrial Revolution.[5] This was followed by a white paper, which set out the Government's proposals for future legislation. The Energy White Paper, entitled Powering our Net Zero Future, set out how, as a country, we will transform the way we produce and use energy to tackle climate change, meet net zero emissions by 2050 and build back greener.

The white paper focuses on the Government's ambitions to increase energy generation from offshore wind and increase interconnector capacity, as well as on hydrogen, carbon capture utilisation and storage (CCUS), heat and transport decarbonisation. Building on the white paper, the Government also published the British Energy Security Strategy in April 2022, increasing the 2030 ambition for offshore wind from 40 GW to 50 GW.

DESNZ, working with input from National Grid ESO, is also conducting a review of how offshore wind is connected, with the aim of removing barriers to achieving Government ambitions for offshore wind.[6]

The Secretary of State for DESNZ is also the ultimate decision-maker for new electricity transmission network proposals under The Planning Act 2008.[7]

Planning Inspectorate

The Planning Inspectorate is the government agency responsible for examining proposals for (NSIP). In energy terms, these include offshore wind farms, new nuclear power stations and new overhead lines greater than 2 km in length.

If the Norwich to Tilbury reinforcement continues to contain significant elements of overhead line then it is likely to meet the threshold to be an NSIP.

ofgem

Ofgem (the Office of Gas and Electricity Markets) is the government regulator for gas and electricity markets in Great Britain. Ofgem is a non-ministerial government department and an independent national regulatory authority, whose role is to protect consumers as a greener, fair, energy system is delivered. Ofgem works with government, industry and consumer groups to help deliver net zero from an energy perspective at the lowest possible cost to consumers.

In December 2022, Ofgem confirmed that Norwich to Tilbury has been targeted with an optimal delivery date of 2030 as part of the Accelerated Strategic Transmission Investment (ASTI) framework.

nationalgridESO

National Grid ESO is the electricity system operator for the whole of Great Britain. National Grid ESO ensures electricity is always available where it is needed and the network remains stable and secure in its operation.

Generators apply to National Grid ESO when they wish to connect to the network and National Grid ESO leads the work to consider how the network may need to evolve to deliver a cleaner, greener future.

In April 2019, National Grid ESO, the electricity system operator, became a legally separate business within the National Grid PLC family and is regulated independently by Ofgem.

[5] The Ten Point Plan for a Green Industrial Revolution, UK Government, November 2020 www.gov. uk/government/publications/the-ten-point-plan-for-a-greenindustrial-revolution

[6] Offshore Transmission Network Review terms of reference, Department for Business, Energy & Industrial Strategy, updated 24 August 2020 - www.gov.uk/government/publications/offshore-transmission-network-review

[7] Planning Act 2008, UK Government, December 2020 www.legislation.gov.uk/ukpga/2008/29/contents

Moving towards net zero

The world we live in is changing, and the UK is at a turning point as we embrace the enormous opportunities a cleaner, greener future brings. The Government has made it clear that its net zero targets are an important milestone in creating a cleaner, greener future.

The UK has set a world-leading target for tackling climate change, which is to achieve net zero by 2050. Put simply, this means that we will remove the same amount of greenhouse gases from the atmosphere as we produce.

As a country, we are already making progress. The UK has the largest offshore wind capacity in the world, with some 13.6 GW in operation and a further 8 GW under construction.

Recent years have been record-breaking for renewables on the GB transmission network. Summer 2020 saw the longest run since the industrial revolution without burning coal, stretching almost 68 days. Solar power set new records with 10.1 GW of power being produced in April 2023. In January 2023, wind power generated more than it ever has, with 21.6 GW contributing to meeting our energy needs.

The way we generate electricity in the UK is therefore changing rapidly. We are transitioning to cleaner technologies like new offshore windfarms. That means we need to make changes to the grid so the whole country has access to the clean electricity from these new renewable sources.

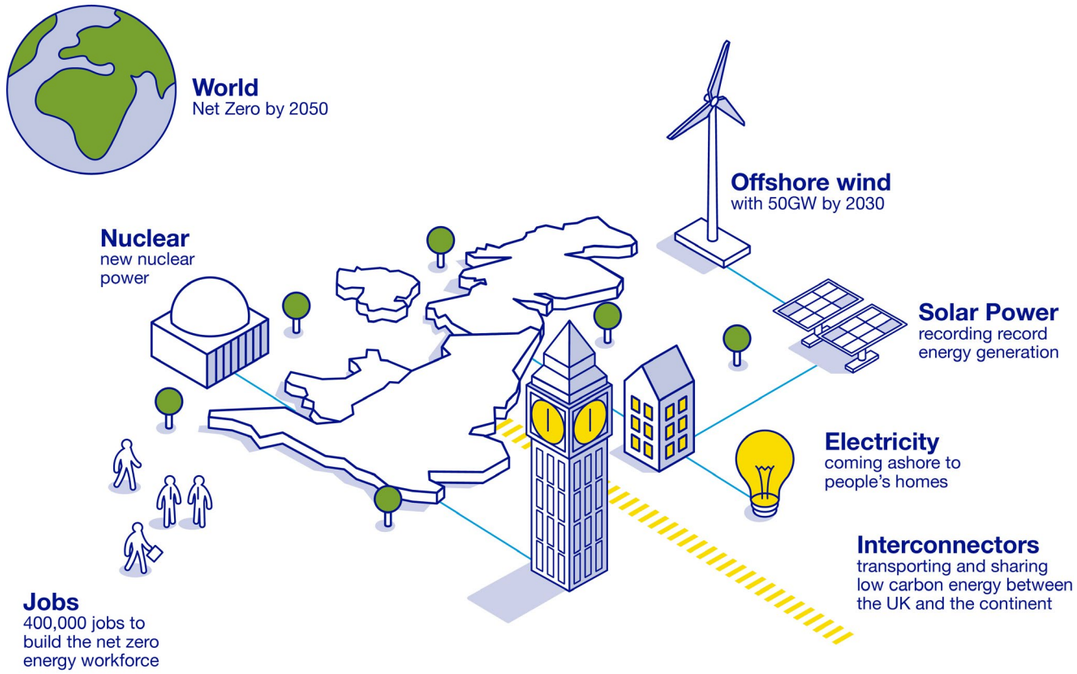
Decarbonising the energy system means replacing – as far as it is possible to do so – fossil fuels with clean and low-carbon energy technologies such as wind turbines and nuclear power for electricity production. Growth in energy generated from offshore wind is a key part of achieving net zero and the Government's Energy White Paper sets an ambitious target to deliver 50 GW of offshore wind connected to the network by 2030 – enough to power every home in the UK.

The Climate Change Committee anticipates that electricity demand will at least double by 2050 as we shift to clean energy to drive electric vehicles, heat our homes and power our industry.[8] The committee's Sixth Carbon Budget[9] published in December 2020 recommends deployment of renewables at scale, including up to 50 GW of offshore wind by 2030, and sustaining that build rate to support deployment up to 140 GW of offshore wind by 2050, further increasing opportunities for growth and job creation.

As well as helping to reach net zero, the UK government suggests that investment in onshore network infrastructure could support up to 130,000 jobs and contribute an estimated £4bn–£11bn of GVA (gross value added) to Great Britain's economy in 2050.[10]

Our mission at National Grid is to support these aims. We believe that by acting now, the UK can become the world's first major clean economy, with net zero carbon emissions by 2050, creating growth and jobs for communities across Britain.

Our Norwich to Tilbury proposals would help the transition to clean energy, making sure the grid is ready. This reinforcement is part of The Great Grid Upgrade, the largest overhaul of the grid in generations. It involves making changes and improvements to the existing lines, pylons, cables and other infrastructure that make up the national grid, so we can make the most of its capability, as well as building some new infrastructure where it is needed.



[8] Net Zero – The UK's contribution to stopping global warming, Committee on Climate Change, May 2019 theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/

[9] The Sixth Carbon Budget – The UK's Path to Net Zero, Committee on Climate Change, December 2020 theccc.org.uk/publication/sixth-carbon-budget/

[10] The Great Grid Upgrade, National Grid, May 2023 www.nationalgrid.com/the-great-grid-upgrade

The project

National Grid Electricity Transmission is proposing to upgrade the transmission network between the existing substations at Norwich Main in Norfolk, Bramford in Suffolk and Tilbury in Essex, as well as to connect new offshore wind generation into a new substation on the Tendring Peninsula.

We are proposing to achieve this through the construction and operation of new electricity transmission reinforcement over a distance of approximately 183 km and a new connection substation. These are shown on the plans on pages 34-47.

Our current proposals comprise mostly of overhead line and pylons, along with some underground cables from Flowton to Bramford substation, from the Capel St Mary area through the Dedham Vale Area of Outstanding Natural Beauty (AONB) and continuing to the proposed new substation near Lawford, and in the Great Horkesley and Fairstead areas.

Cable Sealing End (CSE) compounds would be required to connect sections of underground cable with the overhead lines. Each CSE compound would be fenced and would contain electrical equipment, support structures, a small control building and a permanent access track.

We are proposing the new substation would be located in Tendring District and, known as the East Anglia Connection Node (EACN). It would connect clean energy from offshore wind generation so it can be transported to homes and businesses. It would be fenced and would include a permanent access road and parking areas. It would contain high voltage electrical equipment, such as transformers, circuit breakers and shunt reactors, support structures and control buildings.

Work would be required at the existing 400,000 volt (400 kV) substations at Norwich, Bramford and Tilbury.

Other ancillary activities would be required to facilitate the construction and operation of the project. These include, but are not limited to:

- temporary use of land to facilitate construction activities including working areas for construction equipment and machinery, site offices, welfare, storage and access; and
- land required for mitigation, compensation and enhancement of the environment.

More information on these will be available at a future consultation.

Change of project name

Norwich to Tilbury was formerly known as East Anglia Green Energy Enablement (GREEN). We've changed the name to make it clear that this project is part of The Great Grid Upgrade, the largest overhaul of the grid in generations.

All our projects that are part of The Great Grid Upgrade will include specific locations in their names to make it easy for people to understand what and where we are proposing to build new grid infrastructure.

We believe Norwich and Tilbury are the most appropriate start and end points for this upgrade. They will be subject to assessments and an ongoing backcheck and review process as we continue to develop the project.

The name of our project may have changed but our focus remains the same – to bring new sources of renewable energy to homes and businesses across East Anglia and the rest of England and Wales.

The Great Grid Upgrade will play a big part in the UK Government's plan to boost homegrown power. It will help the UK switch to clean energy and make sure our electricity network is fit for the future; carrying more clean, secure energy from where it's generated to where you need it.

Why we need to build Norwich to Tilbury

East Anglia's 400,000 volt (400 kV) electricity transmission network was built in the 1960s to supply regional demand, centred around Norwich and Ipswich. With the growth in new energy generation from offshore wind, nuclear power and interconnection with other countries, there will be more electricity connected in East Anglia than the network can currently accommodate.

The existing network in East Anglia currently carries around 4,500 MW of electricity generation. By 2031 we expect between 14,000 MW and 18,500 MW of new generation and interconnection to connect in the region.

Our existing power lines do not have sufficient capacity to accommodate this new generation. We are already carrying out work to upgrade the existing transmission network in East Anglia, however even with these upgrades the network will not be sufficient. Norwich to Tilbury is a key part of our wider investment programme to upgrade our electricity transmission network in East Anglia to ensure we meet this future energy transmission demand. In the next few years, new connections are expected to feed into substations at Necton, Norwich Main, Bramford, Friston and Sizewell.

In addition, two offshore wind farm projects and one interconnector have agreements in place to connect into the new EACN substation. The two offshore wind farms – Five Estuaries and North Falls - and Tarchon Interconnector are currently in development. If they are consented, they are expected to be operational by the end of the decade.

Delivering a cleaner, greener future

To meet the 2050 net zero target and move to a low-carbon future using energy from offshore wind, nuclear power and interconnectors, we need to transport that energy from where it is produced or comes ashore to where it is needed.

The transmission grid is the network of lines and cables running overhead, underground and offshore, carrying electricity across the country. The grid moves electricity from where it's generated to where it's needed – our homes, businesses and communities.

The existing network was designed to connect and transport energy from coal, nuclear and gas-fired power stations. In many parts of the country those power stations located close to the larger centres of population, with power flowing mostly north to south around the country.

With around 60 per cent of all offshore wind developments looking to bring their energy onshore along the East Coast, we need to rewire the network for a different, low-carbon future; one where we deliver offshore energy from the East Coast to the entire UK population.

To achieve this, it will be critical to strike the right balance between the need to connect the growing amount of offshore wind power, the cost to UK consumers and the impact on local communities and the environment. Our aim is to work with stakeholders and the communities who will host this infrastructure to balance the needs of the UK, the environment and the regions we directly work in.

How the need for network reinforcement is identified

National Grid ESO considers how much energy needs to be carried on the network in the future, and where network capability needs to be improved to accommodate supply.

National Grid ESO reviews how the network needs to adapt:

1. It prepares a range of Future Energy Scenarios[11] which are discussed with stakeholders and published each summer. **Future Energy Scenarios** represent different credible scenarios for how quickly we might make the transition to a cleaner, greener energy future as we strive towards net zero by 2050.
2. The Future Energy Scenarios inform the analysis in the **Electricity Ten Year Statement**,[12] and sets out National Grid ESO's view of future transmission requirements and where the capability of the transmission network might need to be addressed over the next decade.
3. Each Transmission Owner, which for England and Wales is NGET, then responds with solutions to address the requirements identified in the Electricity Ten Year Statement. We work with energy consumers in mind, making sure we focus on transmission system proposals that offer the best value and can be delivered in an efficient and coordinated way. National Grid ESO assesses and publishes its recommendations as to which proposals should proceed in a **Network Options Assessment (NOA)** report each year. Last year, a refreshed NOA[13] was published in summer alongside the System Operator's **Pathway to 2030 Holistic Network Design (HND)**,[14] setting out a blueprint for the connection of the offshore wind needed to meet the Government's 2030 targets.

In planning and operating the network, transmission licence holders – onshore and offshore – are required by their licences to comply with the National Electricity Transmission **Security and Quality of Supply Standard[15] (SQSS)**. This sets out criteria and methodologies for planning and operating the network in Great Britain – in essence, minimum requirements designed to ensure secure and stable electricity supplies.

What is the Network Options Assessment (NOA) and what does it mean for this project?

The (NOA) and 2021/22 Refresh was published in July 2022. This presented an annual report from National Grid ESO which outlines its recommendations for which network reinforcement projects need to be taken forward and when. The report also recommendsthe most economically suitable investment strategy for these reinforcements and outlines the pathway to 2030 and beyond.

This project, along with others, is a priority because the Midlands, South and East of England – which covers areas spanning from the Humber in the North to East Anglia and the Thames Estuary in the south – have been identified as areas in need of network reinforcement to enable the connection of more offshore wind on the East Coast.

The System Operator has identified this and other reinforcements in NOA as 'HND essential' to deliver the **Pathway to 2030 Holistic Network Design**-connecting offshore wind needed to meet the Government's 2030 target.

Norwich to Tilbury forms an important part of our plans for this region – helping increase power flows across East Anglia and facilitating the connection of offshore wind and interconnectors.

[11] Future Energy Scenarios 2022, National Grid ESO, July 2022 nationalgrideso.com/document/263951/download
[12] Electricity Ten Year Statement 2022, National Grid ESO, November 2022 nationalgrideso.com/document/275611/download
[13] Network Options Assessment Refresh 2021/22, National Grid ESO, July 2022 nationalgrideso.com/document/262981/download
[14] Pathway to 2030 Holistic Network Design, National Grid ESO, July 2022 nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design
[15] Security and Quality of Supply Standard, National Grid ESO nationalgrideso.com/industry-information/codes/security-and-quality-supply-standard-sqss/sqss-code-documents

The need for reinforcement in East Anglia

The network today in East Anglia

Like much of the high voltage electricity transmission network across the country, the network in East Anglia was largely developed in the 1960s. It was built to supply regional demand, centred around Norwich and Ipswich, and fed from our Bramford substation.

A large loop runs from Walpole in the north of the region to Pelham and Rayleigh/Tilbury in the south, via Norwich and Bramford. Two 400,000 volt (400 kV) overhead lines connect Sizewell B.

Growth in offshore wind generation and interconnectors to Europe has seen a significant number of connections planned in the East Anglia and south-east coastal areas of England.

The existing transmission network infrastructure in the East Anglia and south-east areas was not originally designed to accommodate such large volumes of generation capacity and the network will require significant reinforcements in the form of new substations and transmission circuits to provide both connections for these new customers and to ensure that power can be transferred securely to the onshore demand centres to meet the needs of electricity consumers in Britain.

Current generation and demand in East Anglia

To understand current and future demands on the electricity network, the concept of network boundaries is used. A boundary splits the system into sections and shows where there are high power flows between parts of the network. When flows across a network boundary are forecast to be above the capability of the network, there are two options to manage this:

1. pay electricity generators on one side of the boundary to reduce the energy they produce (and in turn pay generators on the other side of the boundary to compensate for the shortfall). This then reduces the flows of electricity across the boundary. When National Grid ESO pay generators to do this, these are called ‘constraint payments.
2. increase the capability of the network to allow more electricity to flow.

Management of constraint costs in the short term may be in the interests of consumers, but ultimately the SQSS requires the capability of boundaries to be reinforced to accommodate power flows and prevent constraint costs being incurred on a long-term basis. Details of generation connected in the region are available in the Strategic Options Backcheck and Review (SOBR).

The Security and Quality of Supply Standard

The network is planned and operated under a set of standards designed to ensure there are no widespread electricity supply interruptions, even if two circuits are out of service.

Each line of pylons on the network carries two electrical circuits.

For example, if one circuit is switched out for planned maintenance and another is impacted by a fault at the same time, the SQSS is designed to ensure:

- the electricity system frequency is maintained within statutory limits
- no part of the network is overloaded beyond its capability
- voltage performance stays within acceptable statutory limits
- the system remains electrically stable.

National Grid ESO oversees the standards, and they are approved by a Security and Quality of Supply Standard panel and Ofgem.

Future generation and demand

Although the network in East Anglia can accommodate the level of generation and demand that there is today, this situation will change over the next decade. New connections for new offshore wind and nuclear power generation projects, and for interconnectors, are expected into East Anglia by 2030. These are being constructed or are expected to connect into substations at Necton, Norwich Main, Bramford, Friston and Sizewell.

Additionally, agreements are in place with Tarchon Energy for a 1400 MW interconnector between the UK and Germany, along with the North Falls and Five Estuaries offshore wind farms for connection into the new East Anglia Connection Node substation (EACN).

National Grid ESO assessments have concluded that the existing high voltage electricity network in East Anglia requires reinforcement to ensure the network continues to meet the SQSS.

Increasing the capability of the existing network

Before we consider building new parts of the network, we first must consider whether we can achieve more capability by upgrading and strengthening the existing network.

This can involve changing the conductors/wires on some of our existing overhead lines and adding smart power control devices to control the flow of electricity on parts of the network to transport it to where it is needed.

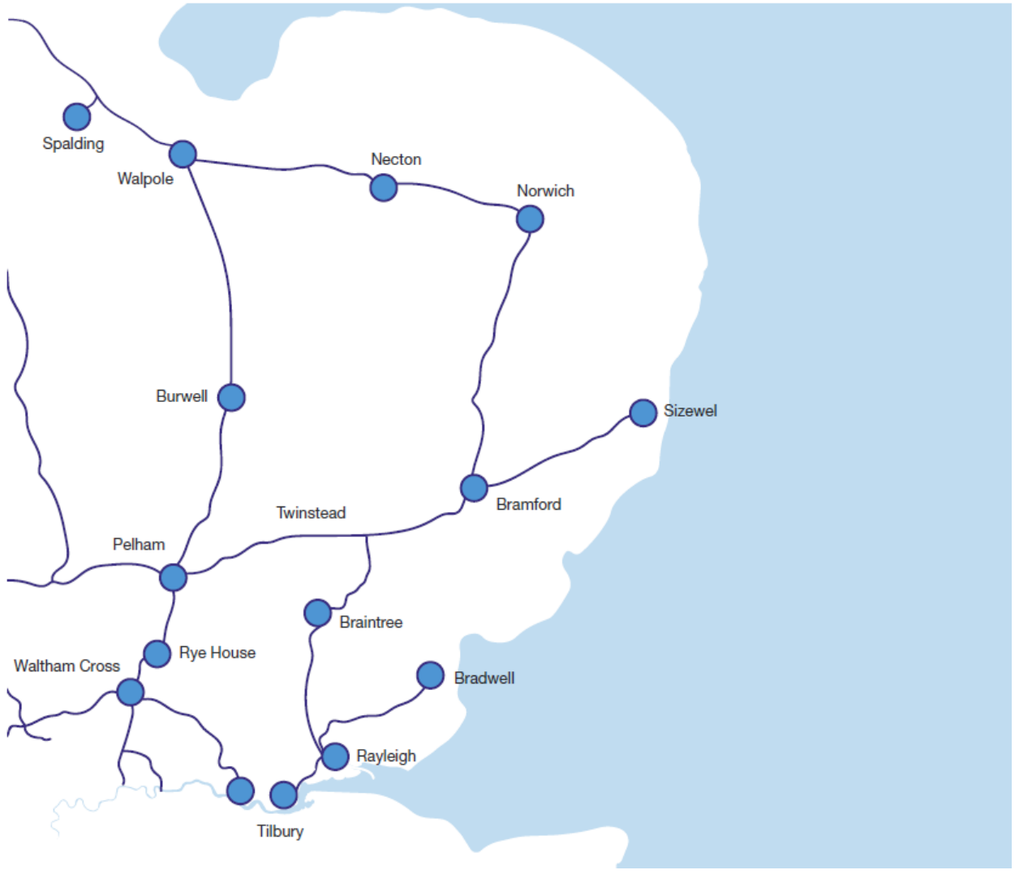


Figure 1 The existing high voltage transmission network in East Anglia

In East Anglia we are:

- installing power control devices at main substations in the region – at Pelham, Rye House and Waltham- Cross, to make more use of an existing route to the west of the region
- increasing the voltage of a section of line from Waltham- Cross south into London to 400 kV to increase the capability of that part of the network into the capital
- rewiring existing overhead lines with conductors that can carry more power – for example, on the existing overhead lines from Bramford to Braintree to Rayleigh to Tilbury, Twinstead and Pelham, and between Norwich and Bramford.

Making these improvements will increase the capability of the existing network, but it is still insufficient to deliver the capability required under SQSS and as advised by National Grid ESO.

Table 1 The work needed on the network in the south-east over the next decade as identified in the NOA published in 2022.[16]

Option Description	EISD*	RISD**	Earliest optimal delivery date
A new 400 kV double circuit in north East Anglia	2030		2030
A new 400 kV double circuit in south East Anglia	2030		2030
Install new MSCs at Burwell Main	2022		2022
Reconductor the newly formed second Bramford to Braintree to Rayleigh main circuit	2028		2028
Reconductor remainder of Bramford to Braintree to Rayleigh route	2023		2023
A new 400 kV double circuit between Bramford and Twinstead	2028		2028
Reconductor Bramford to Norwich double circuit	2023		2023
New Offshore HVDC link between Suffolk and Kent option 1	2030		2030
Elstree to Sundon reconductoring	2024		2024
Elstree to Sundon 2 circuit turn-in and reconductoring	2026		2029
Thermal upgrade for Sundon and Wymondley 400 kV substation	2024		2025
Turn-in of the Pelham – Sundon 400 kV circuit into Wymondley substation	2024		2028
Commercial solution for East Anglia – stage 1	2025		2025
Commercial solution for East Anglia - stage 2	2025		2025
Thermal upgrade for Bramford and Norwich 400 kV substations	2025		2028
Power control device north of Tilbury 400 kV	2024		2024
225 MVAr MSCs at Pelham	2024		2024
225 MVAr MSCs at Pelham	2024		2024
225 MVAr MSCs at Rye House	2024		2024
225 MVAr MSCs at Rye House	2024		2024
Reconductor remainder of Rayleigh to Tilbury circuit	2022		2022
Reactive compensation protective switching scheme	2024		2024
Power control device along Tilbury to Grain	2024		2024
Power control device along Tilbury to Kingsnorth	2024		2026
Tilbury to Grain and Tilbury to Kingsnorth upgrade	2028		2028
Upgrade Wymondley, Waltham Cross and Tilbury 275 kV to 400 kV	2033		2033
225 MVAr MSCs at Walpole	2025		2025

In addition to Norwich to Tilbury, National Grid is developing two new reinforcements in East Anglia:

- Bramford to Twinstead Reinforcement – a new 400 kV double circuit line between Bramford in Suffolk and Twinstead Tee in Essex
- Sea Link –a new offshore high voltage DC link between Suffolk and Kent.

The Bramford to Twinstead Reinforcement was included as part of the baseline network configuration when the need for the Norwich to Tilbury project was assessed.

[16] Network Options Assessment Refresh 2021/22, National Grid ESO, July 2022 nationalgrideso.com/document/262981/download

Government's review of offshore coordination

The Government's Offshore Transmission Network Review (OTNR) is currently looking at how the offshore electricity transmission network can be delivered in a more coordinated way to deliver net zero emissions by 2050.

We fully support that work and will work closely with Government, stakeholders and local communities to ensure we play our part to deliver the infrastructure needed to achieve net zero in a way that reduces impacts on communities.

In meeting that challenge there are two key considerations. The first is the way in which the growth of offshore wind farms and interconnectors and how they connect to the electricity transmission network is coordinated as cables come ashore. The second is the network reinforcements required further inland to accommodate the increased demand on the network and to ensure we can effectively transport the power to where it is needed across Great Britain.

This offshore coordination work by the Government is ongoing. As explained in the Energy White Paper, the Government will be looking to redesign the current regime to bring more extensive coordination and mitigate environmental, social and economic costs for the 2030s and beyond.

Developers are being encouraged, where early opportunities for coordination exist, to consider becoming pathfinder projects. National Grid ESO explains in the NOA Refresh 2021/22 that onshore reinforcement is still needed alongside the recommended offshore design to connect 50 GW of offshore wind by 2030.

Norwich to Tilbury is among those reinforcements that have been identified as 'essential' to deliver on the ambition of 50 GW of offshore wind by 2030 (NOA Refresh 2021/22, page 31). We will continue to backcheck and review our options in light of the outcomes of the ongoing offshore coordination.

Holistic Network Design (HND)

In summer 2022, National Grid ESO published the Holistic Network Design (HND) report. The HND provided a recommended offshore and onshore design for a 2030 electricity network to help facilitate the Government's ambition for 50 GW of offshore wind by 2030.

The HND enables investment in and delivery of infrastructure, including at locations in North and South Wales, the Scottish Islands and West Coast, and the East Coast of Scotland and Aberdeenshire, Lancashire, North-East England, and Yorkshire and the Humber, opening the door for more jobs and economic growth in these regions.

The recommended design in the HND has equally considered four different objectives to make sure the most appropriate approach is taken forwards. These are:

- cost to consumer
- deliverability and operability
- impact on the environment
- impact on local communities.

We worked in consultation with the UK, Scottish and Welsh Governments, other Transmission Owners, offshore wind developers and environmental stakeholders to facilitate the production of the HND. The HND primarily includes offshore wind projects that secured seabed leases through The Crown Estate's Offshore Wind Leasing Round 4 and Crown Estate Scotland's ScotWind Leasing Round. It also assumes 1 GW of floating wind from the upcoming Celtic Sea leasing round and some additional projects that are due to connect at a similar place and time to others in scope.

Further reinforcements in electricity transmission network infrastructure, beyond those set out in the HND, will be required to achieve net zero. These includes the additional onshore and offshore infrastructure required to unlock ScotWind's full potential, with details of these infrastructure requirements expected to be published by National Grid ESO in early 2023 as a follow-up exercise to the HND.

Offshore Coordination Support Scheme

National Grid Electricity Transmission is working together with other developers to explore the potential for offshore coordination with Sea Link, as part of the Offshore Transmission Network Review (OTNR) "Early Opportunities" workstream. Offshore coordination could reduce, but not avoid, the need for new onshore infrastructure and reinforcement of the existing network.

In December 2022, Government announced the Offshore Coordination Support Scheme (OCSS). The OCSS will provide grant funding to projects that are further developed than those eligible for the HND to explore potential coordination options for offshore transmission infrastructure.

National Grid has engaged in the OCSS. Applications to the OCSS closed on 28 February 2023 and are currently being assessed by Government. The OCSS is set to conclude in late July 2023, when final funding to successful applicants will be confirmed and made available.

ESO review

National Grid ESO has committed to carrying out an independent study to take a fresh look at the drivers for the network reinforcements in East Anglia, alongside the various considerations that need to be taken into account.

When the National Grid ESO review concludes, we will carefully consider its findings and backcheck our proposals against any recommendations.

Regardless of how offshore coordination is developed, major onshore development and electricity network reinforcement is likely to still be necessary. To put this into perspective, successfully delivering the Government's 50 GW of offshore wind ambition will require around 500 km of new onshore and around 400 km of new offshore electricity transmission network being consented and delivered within this decade across the east side of the country.

Ofgem Accelerated Strategic Transmission Investment (ASTI) framework

In 2022, Ofgem held a consultation on how it could support the accelerated delivery of the strategic electricity transmission network upgrades needed to meet the Government's 2030 renewable electricity generation ambitions.

As part of the Accelerated Strategic Transmission Investment (ASTI) framework, Norwich to Tilbury has been targeted with an optimal delivery date of 2030. We've been given an ambitious target because this grid upgrade is needed urgently to support a fairer, greener and cleaner energy system, and to contribute to more affordable energy bills.

In ASTI and the NOA, Norwich to Tilbury is referred to as AENC (Norwich to Bramford) and ATNC (Bramford to Tilbury).

Identifying the strategic proposal for Norwich to Tilbury

We considered a range of connection points on the existing network and the use of different technologies to identify how we should provide the additional capacity needed in East Anglia.

We identified a total of 23 reinforcement solution options. These included various combinations of both onshore and offshore developments, the use of alternating current (AC) and direct current (DC) technologies, and some uprating of existing lines to 400 kV.

These solutions fell into three main geographical themes:

- Eastern - transporting power from the north of East Anglia into the south-east England area and connecting with existing substations such as Tilbury and Grain.
- Northern - creating additional capacity by connecting into the north of the existing London area network and then into the south-east England area and connecting with existing substations such as Wymondley, Pelham and Waltham Cross.
- Western - creating additional capacity by transporting power westward around London and down into the south-east England area and connecting with existing substations such as East Claydon and West Weybridge along with additional reinforcement to the south of London.

To narrow down the options to take through to detailed appraisal, we carried out further appraisals for each of the options. The factors considered included:

- the deliverability of the option
- the system benefit which each option would provide
- environmental impacts
- socio-economic impacts
- a cost-benefit analysis.

Taking all the above factors into account, we concluded that the reinforcement solution that would provide the highest overall value to consumers combines both offshore and onshore connections with three distinct elements:

- offshore reinforcement between the south coast and East Anglia (Sea Link)
- onshore reinforcement between Tilbury and Grain*
- onshore reinforcement between Norwich and Tilbury (Norwich to Tilbury).

Strategic Options Backcheck and Review 2023

The Norwich to Tilbury Strategic Options Backcheck and Review (SOBR) has been prepared by NGET as part of the ongoing strategic options assessment and decision-making process involved in promoting new transmission projects.

The SOBR explains that, without reinforcement, the transmission system in East Anglia will have insufficient capacity to accommodate contracted and predicted growth in generation connecting in the area.

The SOBR has been prepared in accordance with NGET's document 'Our Approach to Consenting'[17],which was published in April 2022. The Norwich to Tilbury SOBR appraises the ability of both onshore and offshore options to meet the system need while balancing cost, technical performance and environmental and socio-economic effects. The SOBR revisits the conclusions of the April 2022 Corridor and Preliminary Routeing and Siting Study (CPRSS), which was substantively complete at the point the approach was adopted.

The Norwich to Tilbury SOBR concludes that we should continue to take forward an onshore combination of options:

- overhead line from Norwich Main to Bramford
- overhead line from Bramford via a new substation to Tilbury, and underground through the Dedham Vale AONB.

[17] Our Approach to Consenting, National Grid Electricity Transmission, April 2022 nationalgrid.com/electricity transmission/document/142336/download

* The ESO's NOA 2022 subsequently identified that onshore reinforcement between Tilbury and Grain should not proceed and identified other options to reinforce the network in this area.

Identifying a preferred draft corridor

Ahead of our 2022 consultation, we defined a study area informed by factors including:

- the preliminary connection end points identified in the CPRSS
- the location of large towns and other built-up areas
- the location of physical features such as estuaries, or protected sites like AONBs, National Parks or nature conservation areas relevant to the nature of potential electricity transmission technology.

With the strategic option being put forward, we then identified a suitable study area within which we looked at potential routeing options.

In the development of these routes, we considered a number of factors, including:

- the location of large towns and other built-up areas
- the location of physical features such as estuaries, or protected sites like AONBs, National Parks or nature conservation areas
- features that may be sensitive in terms of ecology, heritage and landscape
- features that present planning and technical constraints.

All route options were then appraised by engineers, environmental experts, town planners and other specialists using their professional judgement to consider the implications of each option.

With a preferred draft corridor selected, we then produced a graduated swathe, which was presented at our 2022 consultation. This indicated where an alignment had good potential to be routed, with darker shaded areas where we considered an alignment was more likely to be located than those areas in the lighter parts of the swathe based on the information available to us at that time. This was to aid the 2022 consultation and would aid the iterative development of our proposed project. This graduated swathe was indicative and has been subject to further assessment work and the feedback we received at the 2022 consultation. The choice of technology and other routeing matters remain open to further consideration.

Identifying our preferred draft alignment

For the purposes of this initial assessment, the preferred draft alignment as presented in this document reflects the use of standard lattice pylons and where we might locate pylons, underground cables, cable sealing end (CSE) compounds (where underground cables join with overhead lines) and the new connection substation. The use of other pylon designs is still under consideration, if an overhead line route is progressed.

A number of design principles and technical considerations were applied to identify the preferred draft alignment and specific pylon locations. These included:

- Seeking an alignment that is compatible with the Holford Rules and siting substation and CSE compounds to be compatible with the Horlock Rules.
- Avoiding or minimising impact on statutory, locally important environmental designations and socio-economic constraints. These can also include non-designated considerations such as:
    - landscape character
    - non-designated heritage assets
    - ecological resources (woodland, habitats etc.)
    - recreational features (parks, lakes, sports facilities etc.)
    - commercial activities including aviation
    - residential properties (existing and proposed), maximum separation practicable while noting other constraints.
- the typical minimum distances from the pylon centre point (where practicable) are:
    - watercourses: 40 m
    - hedgerows: 30 m
    - roads: 40-50 m (to enable erection of scaffolding for stringing process)
    - railway lines: at least pylon height falling distance between the pylon and any railway fence line
    - public rights of way: 20 m.

The preferred draft corridor in the CPRSS was consulted on at a non-statutory consultation in 2022, following the optioneering process and the identification of the Strategic Proposal routeing and siting stage.

We have since carried out a backcheck and review exercise on the preferred draft corridor to identify what has and has not changed since the CPRSS was produced, and to confirm, or otherwise, that the preferred draft route corridor and draft substation location options identified in the CPRSS continue to be appropriate in light of our ongoing assessments and review.

The backcheck and review has considered whether changes to any of the following would have resulted in a different outcome for the 2022 CPRSS:

- changes to project assumptions and parameters
- changes proposed in feedback to the 2022 non-statutory consultation
- changes to the baseline situation.

Identifying a preferred connection substation site

Following mapping and initial site appraisal, we shortlisted 19 areas in total that were suitable for further assessment.

This analysis considered whether all necessary infrastructure could be co-located within one area, or whether areas in close proximity to each other (approximately 1 km) could combine to accommodate all infrastructure.

The CPRSS identified a zone and graduated swathe for the substation location (see Figure 2).

The restriction of the area of search for the preferred location of the EACN to the Tendring Peninsula was based upon the customer connections for North Falls and Five Estuaries making landfall near Clacton (CPRSS Sections 1.3 pp. 22–23 and 6.1).

Since November 2022, National Grid has an additional signed customer agreement to facilitate the connection of a 1400 MW interconnector between the UK and Germany. This interconnector is being developed by Tarchon Energy. The connection would be made at the EACN substation.

Options appraisal, options selection and subsequent development of the graduated swathe (CPRSS Sections 6.4, 6.5 and 6.6) were undertaken to identify the preferred options for National Grid infrastructure to be taken forward to consultation.

Since our 2022 consultation, we have undertaken a backcheck and review of our work to date on identifying the location for the EACN. This work has been published in the Strategic Options Backcheck and Review (SOBR), where further information can be found. The SOBR concludes that the selection of the preferred zone and the graduated swathe remains valid.

If there is a change to the customer connections at the EACN, Norwich to Tilbury would still be required to reinforce the transmission system boundaries in East Anglia.

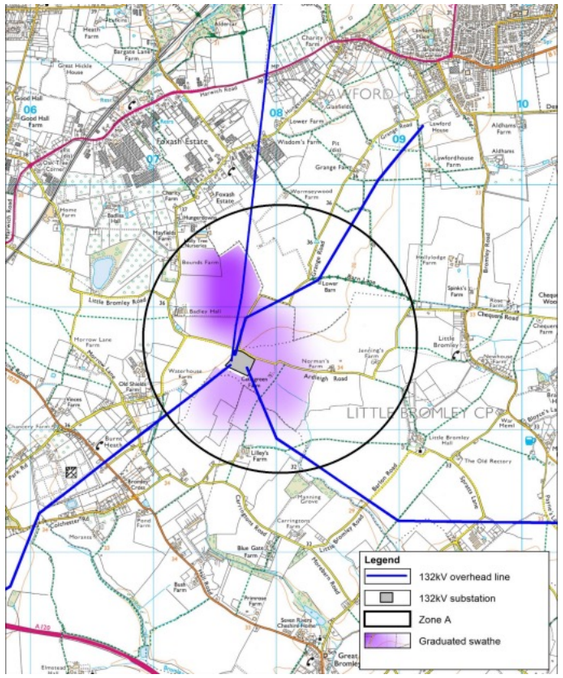


Figure 2 EACN Graduated Swathe

2022 public consultation

Between April and June 2022, we held a non-statutory consultation on our preferred draft corridor and graduated swathe.

The objectives of the consultation were to:

- introduce and provide an overview of the project to the public
- explain the need to build the reinforcement
- set out the options considered and how the preferred draft corridor and graduated swathe were arrived at and what assessments we had undertaken
- present and explain the preferred draft corridor and graduated swathe
- present and explain the preferred draft substation site
- ensure all stakeholders had the opportunity to provide feedback to influence our proposals
- outline the next steps, the programme and how proposals would be developed further.

Over 3,400 feedback submissions were received during the consultation period from local communities, stakeholders and other consultees. This feedback comprised paper response forms, online response forms, emails and letters.

Feedback was carefully considered in the context of environmental and socio-economic constraints and opportunities, engineering feasibility and cost, and planning policy considerations.

A number of requests for changes to the initial project proposals were made, some of which have been adopted by National Grid and taken into consideration in the further development of the project.

There were several common themes received as part of the feedback, including the potential to underground cables at additional locations along the route, concern at disruption caused to the environment by underground cables, different pylon design options and the impact on property prices.

We have published a feedback report summarising the feedback and themes received during our 2022 consultation and explaining how it has influenced our proposals.

Our consultation in numbers

12
public information events

2,821
information event attendees

23
public and parish council webinars

456
webinar attendees

3,400
individual feedback responses

Our proposals for 2023 public consultation

The feedback received from our non-statutory consultation in spring 2022 has helped to shape and guide the development of our proposals.

As a result of feedback and further assessments that have been carried out, we have made some changes to our proposed plans, both inside and outside the 2022 preferred draft corridor.

These changes have been considered in the development of the preferred draft alignment which is being presented for consultation. These are summarised below.

Changes outside the 2022 preferred draft corridor:

- diverting to the east of Wortham Ling before re-joining the preferred corridor to the south-west of Diss. This change is referred to as **East of Wortham Ling**
- diverting to the east, south of Offton, then running alongside the existing 132 kV overhead line to the north and east of Flowton to Bramford substation. This change is referred to as **North of Flowton**
- an alternative route to the north and east of Notley Enterprise Park and at the northern edge of the Dedham Vale AONB. This change is referred to as **West of Great Wenham**
- straightening the draft alignment slightly west of Writtle. This change is referred to as **West of Writtle**
- an alternative route to the east of Ingatestone. This change is referred to as **Further east at Ingatestone**

Areas where the preferred draft alignment would be routed within the preferred draft corridor presented in 2022:

- broadly paralleling the existing 132 kV overhead line to the north-west of Barking and Barking Tye
- avoiding potential oversailing of properties and gardens at Aldham
- an alignment further east within the corridor south of Bramford near Burstall
- increasing the extent of underground cables from south of the Dedham Vale AONB through to the EACN. This also allows for an adjustment of the overhead line alignment near Ardleigh.
- change of technology from overhead line to underground cable near Great Horkesley for a distance of approximately 5.3 km
- change of technology from overhead line to underground cable to cross under the existing 400 kV overhead line north of Fairstead
- passing to the east of Bushy Wood to increase distance from properties
- reduced interaction with the Dunton Hills Garden Village development by restricting the alignment to the eastern edge of the proposed corridor
- change of technology from overhead line to underground cable from the north of the Lower Thames Crossing proposals into Tilbury substation.

Further details on the changes above, and the further development of the project design since the 2022 non-statutory consultation, is provided in the Design Development Report 2023.

Ongoing development

Pylon design

We will be carrying out further assessments on pylon design. Our assessments will include visual impacts and mitigation, environmental and ecological considerations, construction and lifetime maintenance effects.

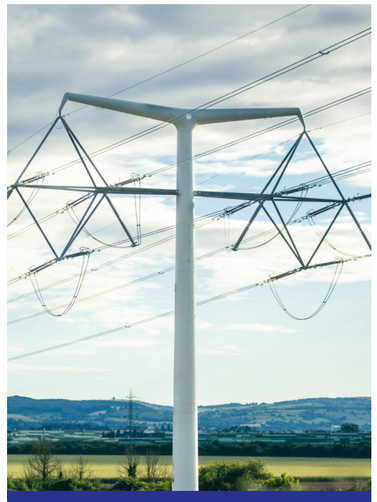
Different designs in use in the UK include:

- standard lattice
- lower height lattice
- T-pylons.

For the purposes of this initial assessment, the preferred draft alignment as presented in this document reflects the use of standard lattice pylons. The use of other pylon designs is still under consideration, if an overhead line route is progressed.

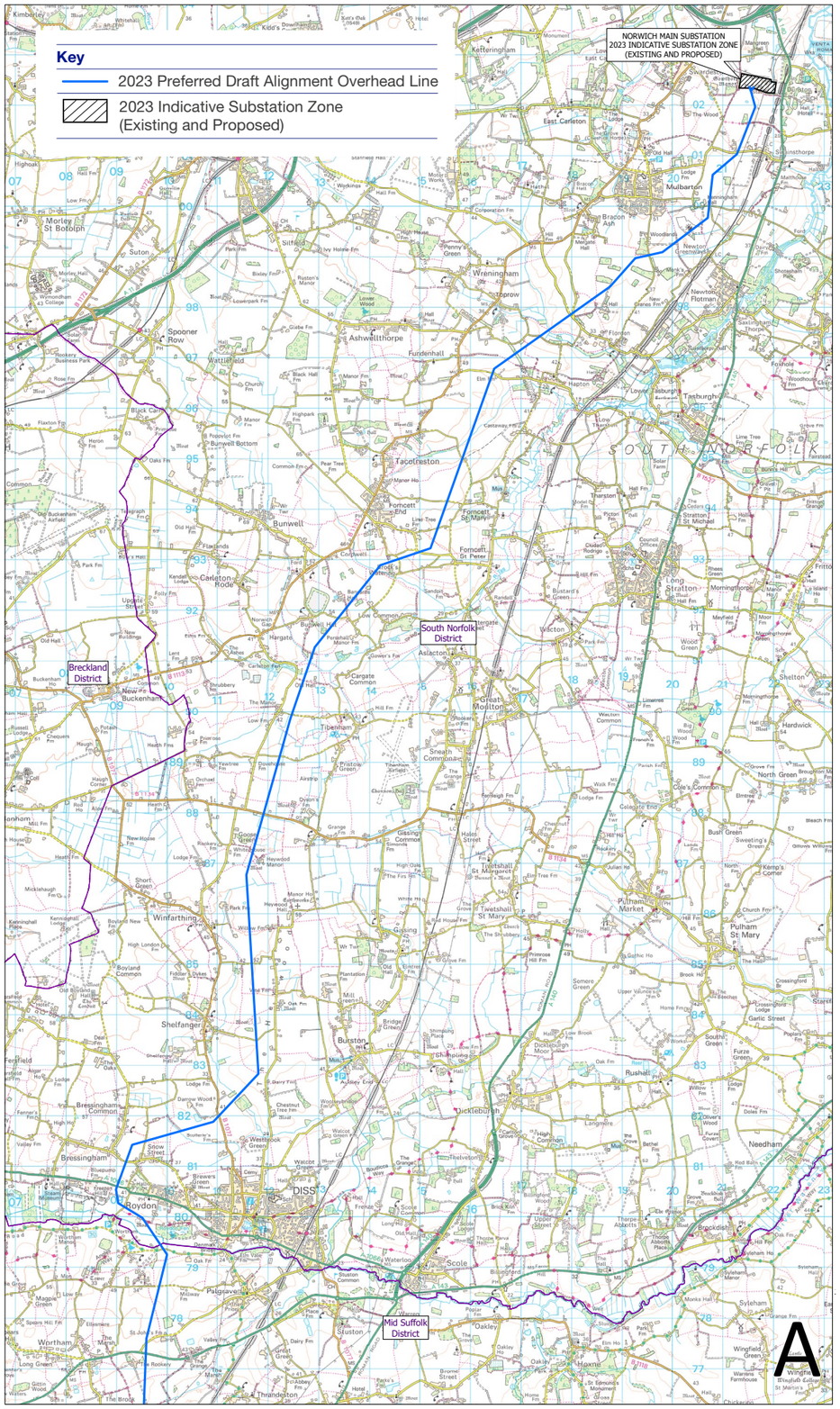
We will present the findings from our assessments at our statutory consultation.

Standard lattice pylon



T-pylon

Lower height lattice pylon



Section A – South Norfolk

Our plans in this section

The proposed new reinforcement would start at Norwich Main substation in Norfolk. Out of Norwich Main, we are proposing to build an overhead line which would head south, running to the east of Mulbarton, Tacolneston and Shelfanger before routeing to the west of Roydon on the border with Mid Suffolk.

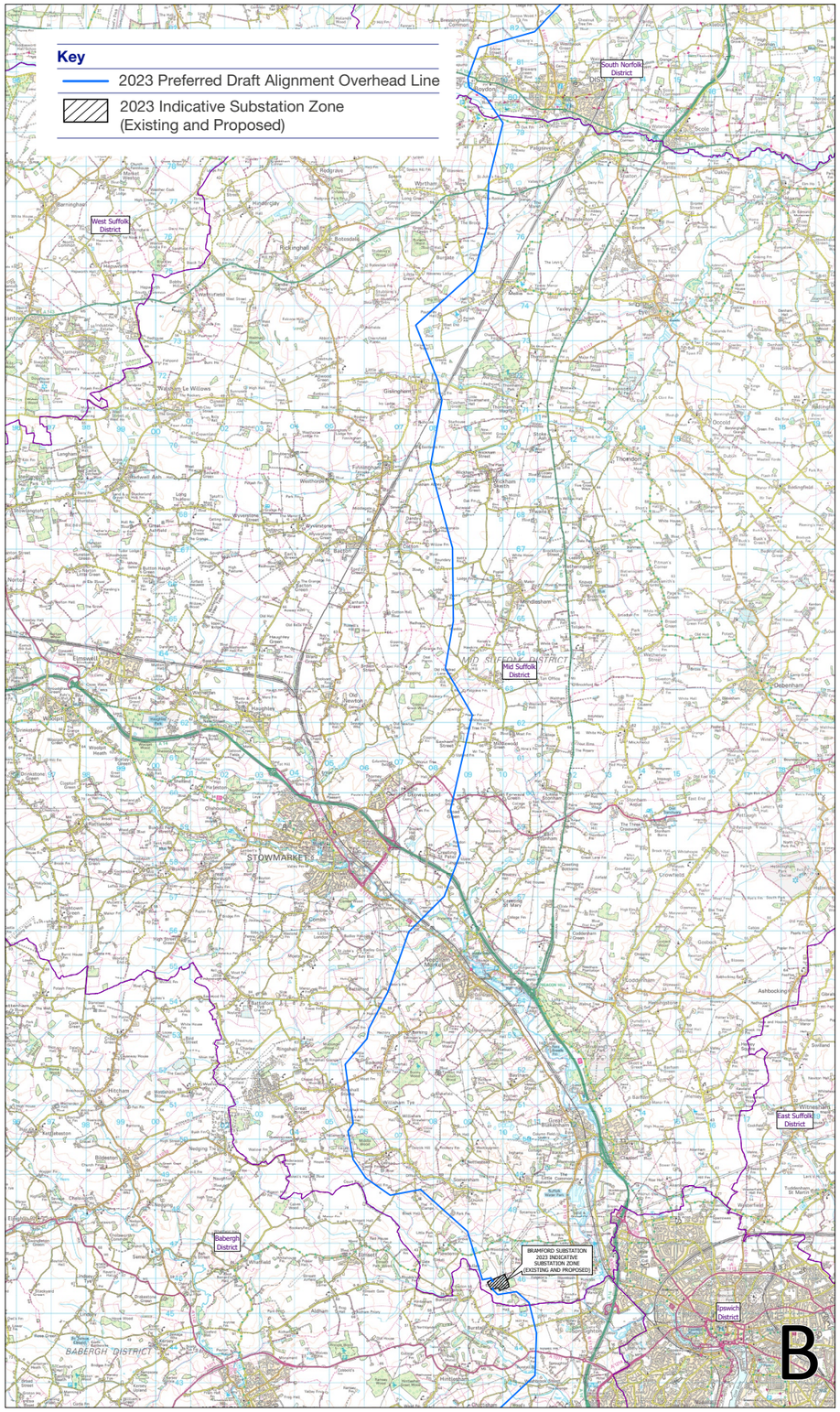
Two new wind farms (Equinor's Sheringham Shoal and Dudgeon extensions, and Orsted's Hornsea 3), will connect into Norwich Main over the next few years. To enable this, we would need to extend the substation. The extension would also provide space for the connection of Norwich to Tilbury.

We will submit plans for the extension for approval through the Town and Country Planning Act (TCPA) process. We will publish more information and hold a separate consultation when the plans have been developed.

Changes since our last consultation

Changes outside the 2022 preferred draft corridor

West of Roydon and immediately south of the A1066, the alignment would diverge from the preferred draft corridor presented in 2022. The alignment would now turn to the east of Wortham Ling, before continuing into Section B. This change is referred to as **East of Wortham Ling.** This change was made to reduce potential impacts on heritage assets, business activity and woodland.



Section B – Mid Suffolk

Our plans in this section

From the county boundary between South Norfolk and Mid Suffolk, the overhead line alignment would run south, passing to the west of Mellis and to the east of Gislingham before crossing the railway.

The draft alignment would then continue south past Stowupland and Needham Market, where it crosses back over the railway, before it turns eastwards at Offton, runs north of Flowton and connects into Bramford substation.

We would need to carry out some work at the Bramford substation to connect the new line into it.

From the substation, the overhead line alignment would run south-east for a short distance to the border with Babergh district.

Changes since our last consultation

Changes outside the 2022 preferred draft corridor

In this section, there are two changes to the alignment outside of the 2022 preferred draft corridor.

East of Wortham Ling

The alignment would change to continue from the border between South Norfolk and Mid Suffolk and would run south, rejoining the 2022 preferred draft corridor east of Wortham. This change has been made to reduce impacts on heritage assets, business activity and woodland.

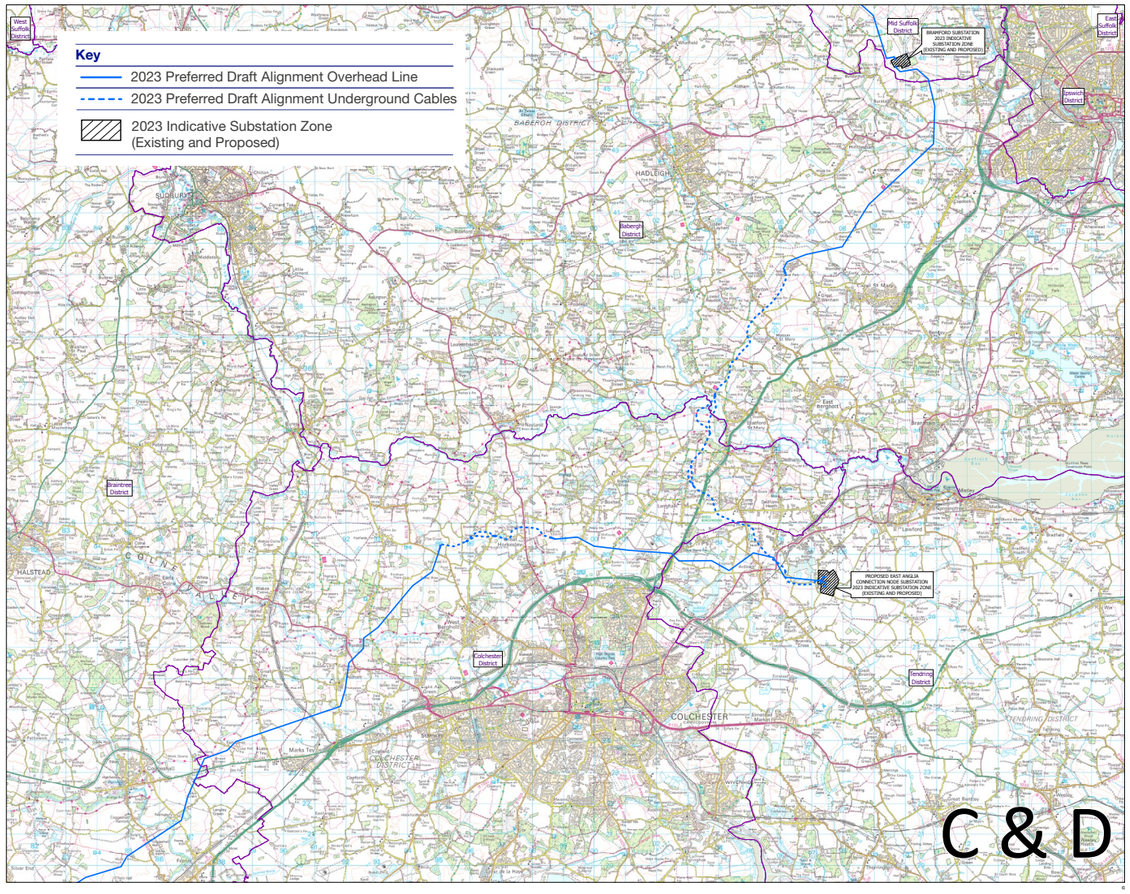
North of Flowton

South of Offton, the alignment would run further east of the 2022 preferred draft corridor, south of Somersham and north of Flowton. This would broadly follow the route of the existing 132 kV overhead line that connects into Bramford substation. This change has been made to reduce potential impacts on heritage assets, residential amenity and cumulative effects.

Changes within the 2022 preferred draft corridor

There is a further change to the north-west of Barking and Barking Tye where the preferred draft alignment would be routed within the preferred draft corridor presented in 2022 but in an area thought less likely as shown by the graduated swathe. Here the alignment would run to the northern half of the preferred draft corridor, broadly parallel with the existing 132 kV overhead line. The graduated swathe presented at the non-statutory consultation in 2022 showed that a route using the southern and eastern section of the 2022 preferred draft corridor was more likely.

This change has been made to reduce potential impacts on residential amenity, heritage assets and Wattisham Flying Station activities.



Section C and D – Babergh, Tendring and Colchester

Our plans in this section

From Bramford substation, the proposed draft overhead line alignment would cross immediately into the district of Babergh. It would run south-easterly, passing to the west of Washbrook and Copdock and Little Wenham and passing the north side of Notley Enterprise Park. Here the overhead line would transition to underground cable at a CSE compound adjacent to the south-western corner of Notley Enterprise Park. The underground cable alignment would then run to the east of Raydon and west of Holton St Mary. It would cross the border into the Colchester district briefly, running past the east of Langham and crossing the A12.

The underground cable alignment would then cross into the Tendring district, turning eastwards into the Tendring Peninsula, passing the north of Ardleigh and crossing the railway to the site of the East Anglia Connection Node (EACN) substation.

We are proposing to use underground cables in this section as we cross the designated Dedham Vale AONB.

From the EACN, the overhead line alignment would head west out of the substation, crossing back over the A12 towards Great Horkesley. Here the overhead line would transition to underground cable at a CSE compound sited to the north-east of Horkesley plantation. Due to limited space and to reduce the extent of tree removal, the underground cable alignment is expected to require a split corridor arrangement to the south of Knowles' Farm before reaching another CSE compound to the west of Crabtree Lane, where the underground cable would transition to overhead line.

From here, the overhead line alignment would continue south-west, passing to the west of West Bergholt before crossing the A12, running north of Marks Tey and into the Braintree district.

Changes since our last consultation

Changes outside the 2022 preferred draft corridor

West of Great Wenham

Instead of passing directly south between Great Wenham and Capel St Mary, the alignment would separate from the 2022 preferred draft corridor north of Little Wenham, running to the west of Great Wenham. The alignment would transition to underground cable at a CSE compound, to the south of Notley Enterprise Park. The overhead line to Bramford would continue to the west and north of Notley Enterprise Park and then continue east towards Bramford substation, rejoining the preferred corridor south-east of Wenham Grange. This change has been made to reduce potential impacts on heritage assets, residential amenity and the Dedham Vale AONB, and to locate the CSE compound next to other large-scale buildings.

Changes within the 2022 preferred draft corridor

There are further changes where the preferred draft alignment would be routed within the preferred draft corridor presented in 2022 but in an area thought less likely, as shown by the graduated swathe.

South of Bramford substation, the alignment would be located in the east of the corridor, an area previously indicated as less preferred, to reduce impacts on residential amenity in Burstall.

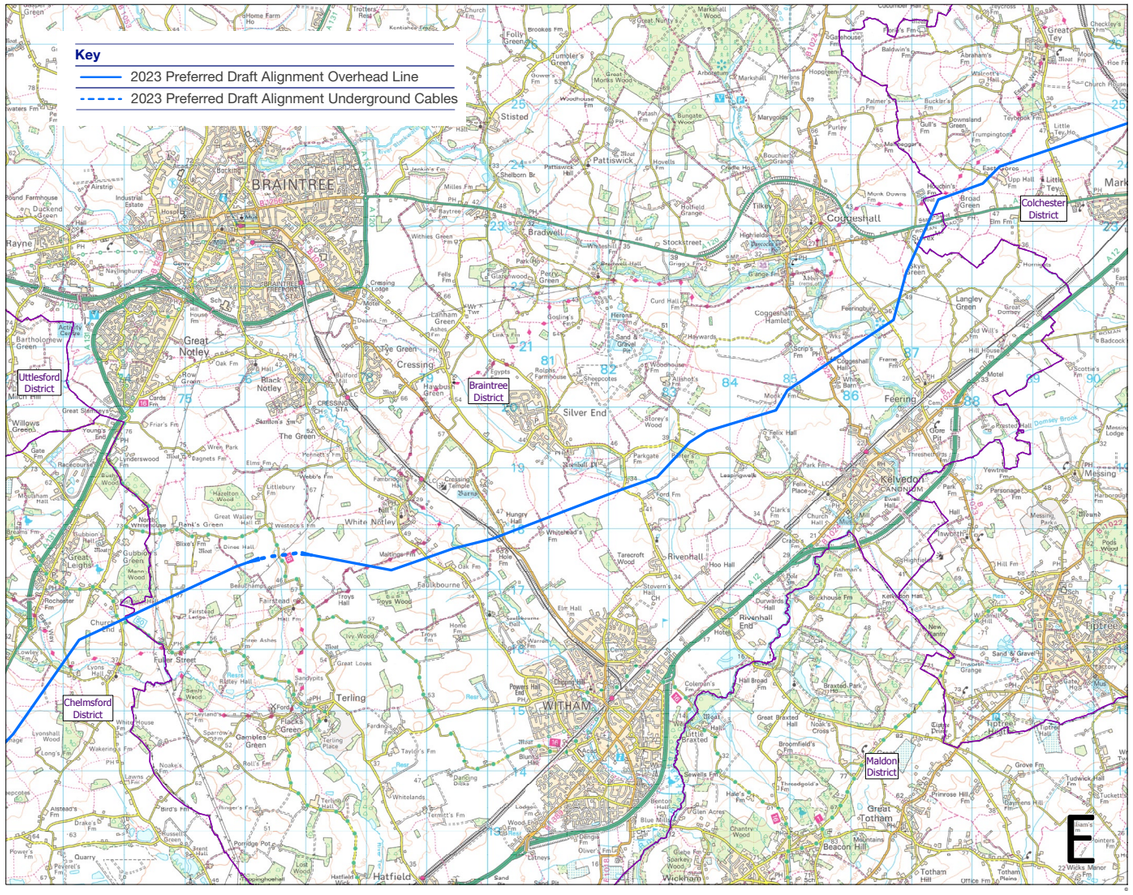
Similarly the alignment at Aldham would now sit in the southeast of the preferred corridor to avoid the potential oversail of properties and gardens to the north.

Due to limited space a split corridor arrangement is required at the crossing of the River Stour and at a second location where we would cross Black Brook.

The change to cable through the AONB to the EACN would reduce the effects on residential amenity and heritage assets by avoiding the need for two overhead lines and would enable us to separate the overhead line (EACN to Tilbury) further from the village of Ardleigh.

There is a further change to the south of the AONB where the alignment crosses into the Tendring district, turning eastwards into the Tendring Peninsula, passing the north of Ardleigh and crossing the railway to the site of the EACN substation.

We have introduced a further underground cabling section near Great Horkesley, near the Dedham Vale AONB, between a CSE compound sited to the north-east of Horkesley plantation and a CSE compound sited near the junction of Crabtree Lane and the B1508. Due to limited space and to reduce the extent of tree removal, the underground cable alignment is expected to require a split corridor arrangement to the south of Knowles' Farm. This change has been made to reduce potential impacts on the Dedham Vale AONB.



Section E – Braintree

Our plans in this section

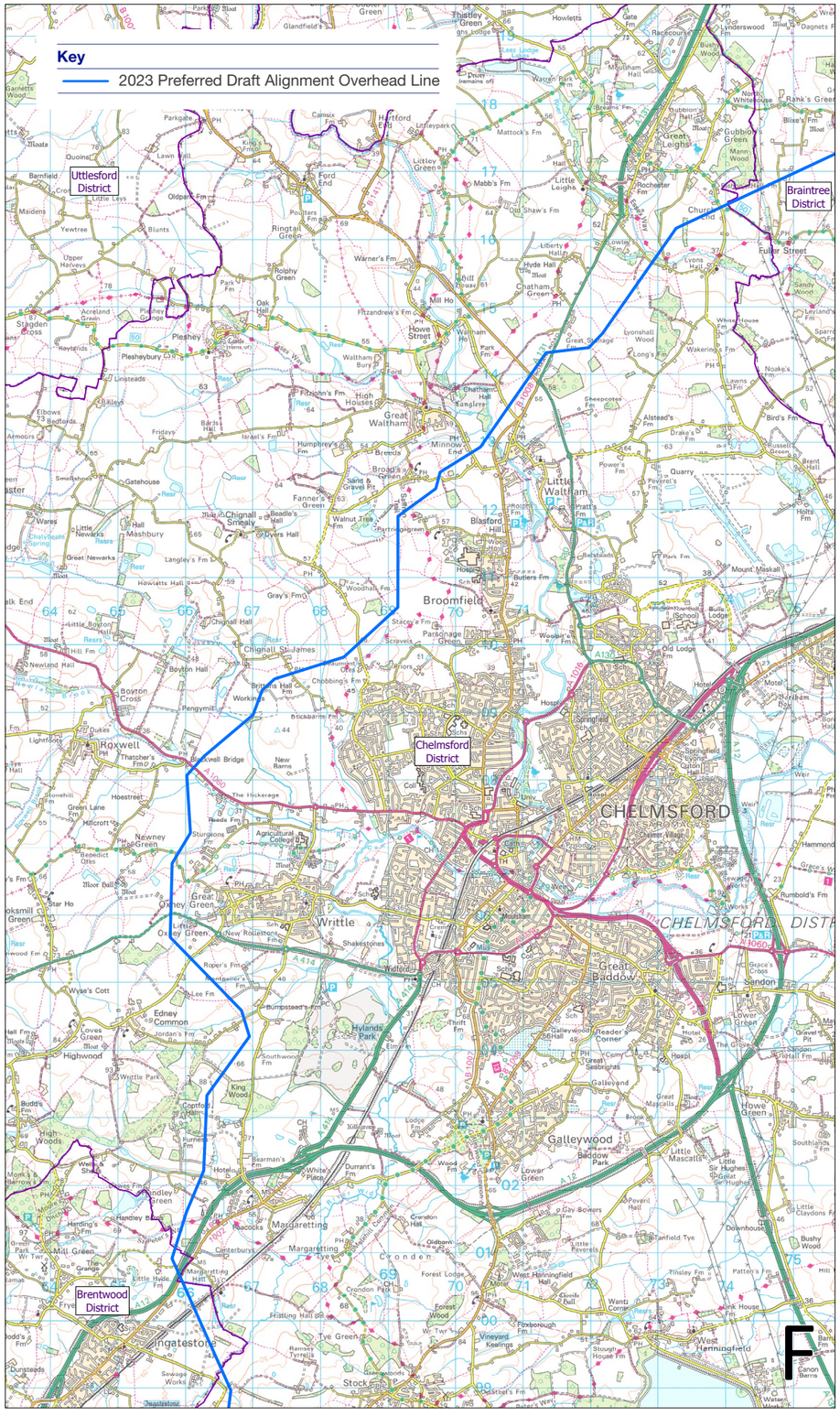
After crossing into the Braintree district, the overhead line alignment would continue south-west. The alignment would pass to the north of Witham and the south of Silver End before crossing the railway, again heading south-west into Chelmsford district.

Changes since our last consultation

Changes within the 2022 preferred draft corridor

There is a change to the proposals north-west of Fairstead where the preferred draft alignment would be routed within the preferred draft corridor presented in 2022 but in an area thought less likely, as shown by the graduated swathe. We are proposing to underground a small section of the route north of Fairstead, with CSE compounds at either end, to cross beneath the existing 400 kV overhead line.

The location of this crossing has moved to an area within the 2022 corridor previously considered less likely to be used in response to feedback and to reduce effects on residential amenity.



Section F – Chelmsford

Our plans in this section

The overhead line alignment would enter the district from the north-east and would run to the north of Chelmsford. From there it would head south on the western side of the town, and to the west of Writtle.

The alignment would then continue south, passing to the west of Margaretting, and crossing over the A12 to the north of Ingatestone on the Brentwood district border, it briefly re-enters Chelmsford district to the south associated with the change East of Ingatestone described in Section G.

Changes since our last consultation

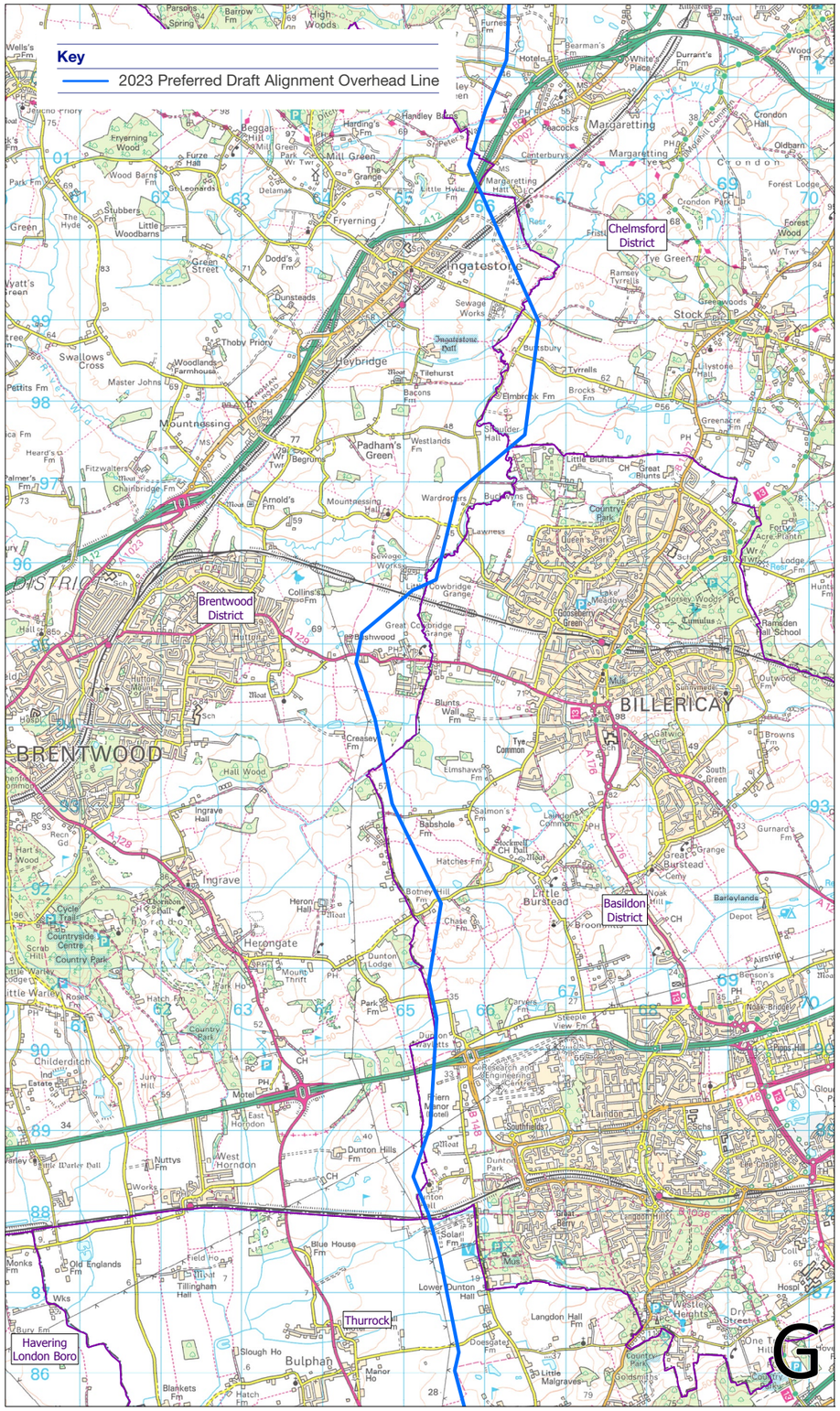
Changes ouside 2022 preferred draft corridor

The preferred draft alignment has been straightened slightly west of Writtle and would deviate outside the 2022 preferred draft corridor by up to approximately 110 m for a distance of approximately 400 m. This change is referred to as **West of Writtle.**

This change has been made to avoid a historic landfill site south-east of Newney Green and to avoid positioning pylons on unsuitable ground. Straightening the alignment is also consistent with the Holford Rules and would reduce the need for large angle pylons in this area.

Changes within the 2022 preferred draft corridor

At Bushy Wood, the alignment would now pass to the east to increase the distance from properties on Woodhall Hill Road. This is a change where the preferred draft alignment would be routed within the preferred draft corridor presented in 2022 but in an area thought less likely, as shown by the graduated swathe.



Section G – Basildon and Brentwood (and Chelmsford east of Ingatestone)

Our plans in this section

Passing to the north and east of Ingatestone, the overhead line alignment would cross the A12 and the railway in the north of the Brentwood district. It would then travel directly south, crossing multiple times between the Chelmsford, Basildon and Brentwood districts. Passing to the east of Brentwood and the west of Billericay, the alignment would continue south, crossing the A127 and railway on the border of the Thurrock district.

Changes since our last consultation

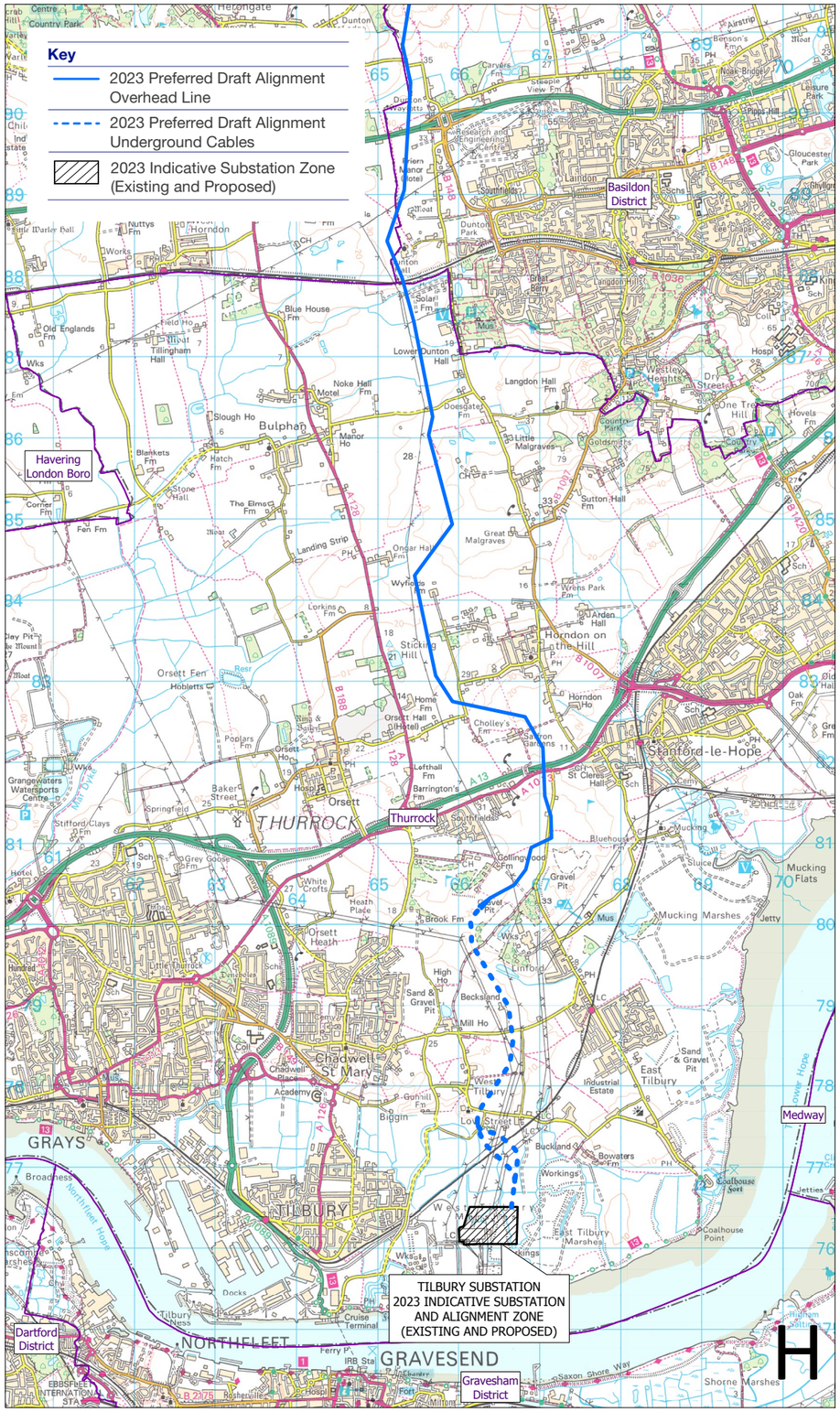
Changes outside the 2022 preferred draft corridor

Further East of Ingatestone

The overhead line alignment would now pass further east of Ingatestone, diverting from the crossing of the A12 to the east of Stock Lane, continuing south passing to the east of the wastewater treatment works, rejoining the preferred corridor north of the crossing of Rayleigh Road. This change is referred to as **Further East of Ingatestone** and has been made to reduce the impacts on the Grade 1 listed Ingatestone Hall and St Giles Church.

Changes within the 2022 preferred draft corridor

Between West Horndon and Basildon, the alignment would now run along the eastern edge of the 2022 preferred draft corridor. This would reduce interaction with the Dunton Hills Garden Village proposals. This is a change where the preferred draft alignment would be routed within the preferred draft corridor presented in 2022 but to the very eastern edge of the graduated swathe.



Section H – Thurrock

Our plans in this section

The overhead line alignment would continue south, passing Bulphan to the west and Horndon on the Hill to the east. The overhead line alignment would then head east, then south, crossing the A13 to the north-east of Southfields, before heading south, to the west of Linford. Here, the overhead line would transition to underground cable at a CSE compound, proposed to be sited to the north of the Lower Thames Crossing proposals. The underground cable alignment would then run south into Tilbury substation.

Works would be required at Tilbury substation to connect the new reinforcement into the substation here.

Changes since our last consultation

Changes within the 2022 preferred draft corridor

In light of feedback and information from additional studies, we are not progressing with routeing within the corridor passing to the east of East Tilbury.

We are proposing to install underground cables from the north of the Lower Thames Crossing proposals into Tilbury substation within the western corridor indicated in the 2022 consultation.

We are proposing underground cables here due to the extent of flood storage areas, and to facilitate the construction of the Lower Thames Crossing and Norwich to Tilbury as efficiently as possible.

How to find out more

Consultation is open from Tuesday 27 June to Monday 21 August 2023.

We are seeking your views on our proposed preferred draft alignment for the project, to ensure we capture the views and knowledge of local people before developing our plans further.

Our commitment to you

As we upgrade the Grid and develop proposals to allow more energy to flow on our network, we will continue to work with a wide range of stakeholders and experts.

Feedback from stakeholders and local communities gives us valuable insight as we develop our proposals and look to minimise any impacts.

Your views are important to us and we will carefully consider all responses we receive. They will help shape our plans as we continue to develop Norwich to Tilbury.

Our approach to public consultation

We want to ensure local communities and other stakeholders are engaged at each stage in the development of our draft proposals and that everyone has the opportunity to comment on draft proposals at key decision-making points.

This is our second non-statutory public consultation. The aim of this consultation is to:

- provide an overview of the updated proposals to the public
- present our preferred draft alignment
- explain where we have made changes to our proposals since the last consultation
- ensure all stakeholders have the opportunity to provide feedback on our work to date
- outline the next steps and the programme and how we will further develop our proposals.

Information about our proposals is available online and as paper copies.

We are holding a series of public events and online webinar events. These events are open to everyone and provide opportunities to speak to the project team and find out more about our proposals.

We are committed to engaging with all stakeholders and we recognise that some people require supported access to information or may not have access to the internet. Our consultation has been designed to ensure we understand these different needs and are accessible to everyone.

If you or anyone you know has difficulty accessing project information or providing feedback, please contact us using the details in the Contact Us section of this booklet. We are aiming to make our consultation as inclusive as possible, and our community relations team will be pleased to help.

Nationally Significant Infrastructure Projects

Certain types of energy infrastructure fall within the categories of Nationally Significant Infrastructure Projects (NSIP), which require a Development Consent Order (DCO) under the Planning Act 2008.[18] As our current plans propose more than 2 km of overhead line, we expect the project would be classified as an NSIP.

Both this consultation and the consultation held in spring 2022 are 'non-statutory'. We are delivering our consultations in line with Government guidance for consulting on NSIPs. As part of the DCO process, we would also be required to carry out a 'statutory' consultation before submitting a DCO application. All feedback received will be recorded and reported in our final Consultation Report, including how we have had regard to your comments. The Consultation Report would form part of our application for development consent.

Who are we consulting?

Our consultation is open to anyone who may have an interest in our proposals.

We are consulting with local residents, communities, landowners and local businesses and interest groups, as well as elected representatives and prescribed consultees, such as the Environment Agency, Natural England and Historic England.

During the consultation we will work to ensure that hard-to-reach groups, including younger people, and those groups identified in discussions with local authorities are able to have their views heard.

What we are asking for feedback on

We want to know your opinions on our preferred draft alignment, including pylon positions, the locations of underground cables, CSEs, the EACN substation and the changes we have made to the route since the last consultation.

We also want to know about any concerns or questions you might have about our proposals, or any local factors we should consider.

The feedback received through this consultation will inform how we develop proposals for Norwich to Tilbury moving forward.

What information is available

We have published materials to provide information on our proposals. A list of these is shown in Table 2.

Table 2 Documents available 2023

Project Background Document 2023	Providing an overview of the project and detailing our proposals and how we are consulting.
Strategic Options Backcheck and Review 2023	Providing an overview of the appraisal approach we have used to date to consider strategic options. These are reviewed and backchecked on as part of the ongoing strategic options assessment and decision-making process.
Maps of our proposals 2023	Showing the location of the preferred draft alignment and the graduated swathe.
Design Development Report 2023	An in-depth technical document detailing the work we have undertaken to date, focusing on the work since the 2022 consultation.
2022 Non-statutory Consultation Feedback Report	Summarising the feedback we received during the 2022 consultation and how it has been considered.
Community newsletter June 2023	Summarising details of the project and public consultation.
Non-statutory Consultation Feedback Form 2023	To gather consultation comments and feedback.
Website nationalgrid.com/norwich-to-tilbury	Hosting all project information, including downloadable versions of all the above documents, FAQs, an online feedback form and interactive map.

All of our 2022 consultation materials remain available to view on our website, including our **Corridor Preliminary Routeing and Siting Study** (2022). This initial study was published in spring 2022 and identifies the broad location of our proposals, resulting in a preliminary route in the form of a corridor and connection location.

[18] The Planning Act 2008 process, Planning Inspectorate infrastructure.planninginspectorate.gov.uk/applicationprocess/the-process/

How to access materials

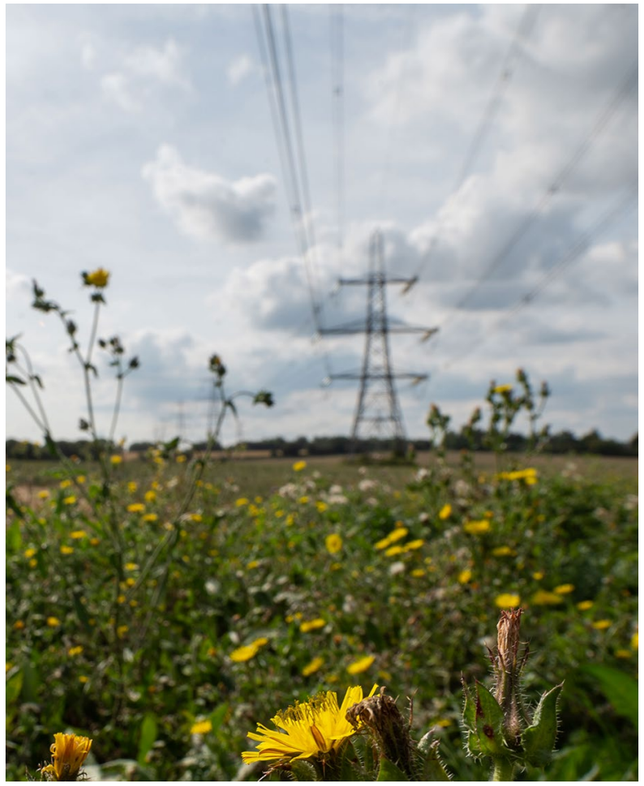
Online
All documents are available to view on our website. You can also submit your comments via our website by completing the online version of the feedback form.

Information points
Paper copies of our newsletter and feedback form are available to collect from local information points (such as libraries and council offices) during the consultation period.

The information point locations are listed on our website or you can phone or email the team for details.

Alternative formats
We are committed to making project information accessible to all users. If you need any information or documents in an alternative format, or if you would like a paper copy of any of our consultation or technical documents, please get in touch using the details in the Contact us section of this booklet.

Please note there may be a charge for printed copies of technical documents.



Consultation events

Throughout the consultation we are holding a series of face-to-face and online webinar events.

Our public information events are being held across the local area. Information about our proposals will be on display and copies of maps and technical documents will be available to view. Members of the project team will be available to talk through our proposals and answer any questions.

Table 3 Public information events

Date and time	Venue
Thursday 6 July 2-7pm	**The Brentwood Centre**, Doddinghurst Road, Brentwood, CM15 9NN
Friday 7 July 2-7pm	**Diss Youth & Community Centre**, Shelfanger Road, Diss, IP22 4EH
Saturday 8 July 11am-4pm	**Lawford Venture Centre 2000,** Bromley Road, Lawford, Manningtree CO11 2JE
Monday 10 July 1-6pm	**Tibenham Community Hall**, Pristow Green Lane, Tibenham Pristow Green, Norwich NR16 1PX
Tuesday 11 July 11am-4pm	**Blackbourne Community Centre,** 71 Blackbourne Road, Elmswell, Bury St Edmunds, IP30 9UH
Wednesday 12 July 2-7pm	**Chelmsford City Racecourse**, Chelmsford, CM3 1QP
Thursday 13 July 2-7pm	**Langham Community Centre**, School Road, Langham, Colchester, CO4 5PA
Monday 17 July 2-7pm	**The Civic Hall**, Blackshots Lane, Grays, RM16 2JU
Tuesday 18 July 1-6pm	**Tasburgh Village Hall**, Grove Lane, Tasburgh, NR15 1LR
Wednesday 19 July 2-7pm	**Copdock and Washbrook Village Hall**, Old London Road, Copdock, IP8 3JN
Thursday 20 July 2-7pm	**Witham Public Hall**, Collingwood Road, Witham, CM8 2DY
Friday 21 July 2-7pm	**Basildon Sporting Village**, Cranes Farm Road, Basildon, SS14 3GR

Webinars

Our online webinars will present the proposals followed by an opportunity to ask questions. One webinar will be supported by a British Sign Language interpreter and will be recorded and made available on the project website for those who require it.

You can register for webinars on our project website, over the phone, or by emailing us.

Table 4 Webinars

Date	Time
Wednesday 5 July	1-2pm
Tuesday 25 July	7-8pm
Saturday 12 August	10-11am
Thursday 17 August	10-11am

Have your say

How to give feedback

Our non-statutory consultation runs from **Tuesday 27 June to Monday 21 August 2023**.

We want to hear the views of local people. Knowing what matters to you, matters to us, so please find out more about our proposals and provide your feedback.

Online feedback form
An online feedback form is available on our project website for you to fill in and submit digitally.

Paper feedback forms
These are available to pick up from our public information events and the information points listed on our website at nationalgrid.com/norwich-to-tilbury

Alternatively, please get in touch with us and we will send one to you.

Please send your completed feedback form to **Freepost N TO T** (no stamp or further address details are required).

Email us
If you prefer to send us your comments via email, you can send them to us at contact@n-t.nationalgrid.com

Send us a letter
You can write to us at **Freepost N TO T** (no stamp or further address details are required).

Call us
Freephone 0800 151 0992
(lines are open Monday to Friday 9am–5:30pm)

If you would prefer to receive any information relating to the consultation through the post, or you need it in another format, please get in touch.

If you have difficulty writing down your feedback, please get in touch.

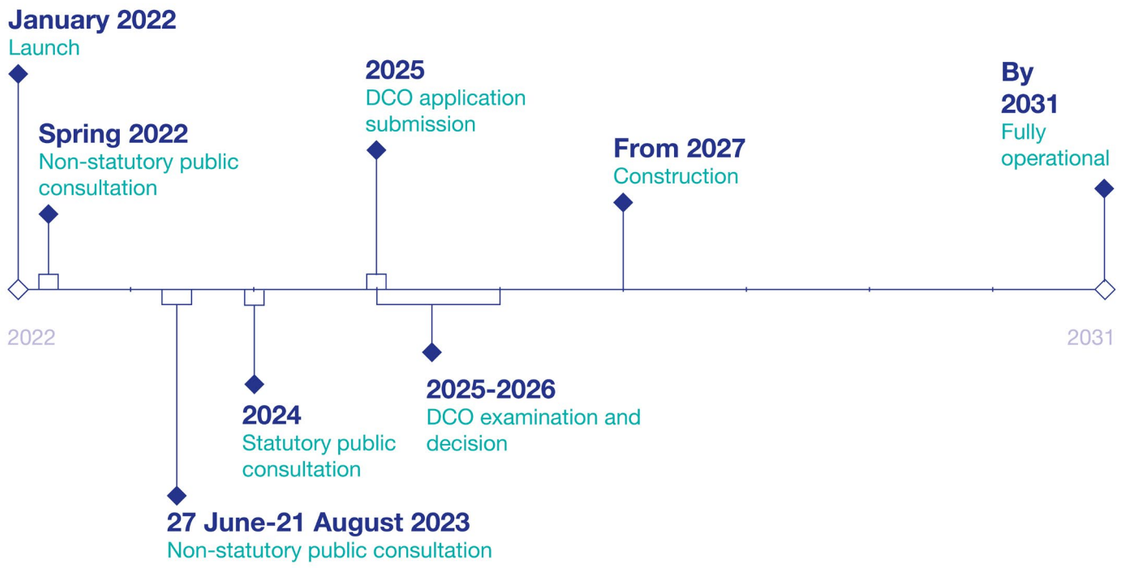
Next steps

We will review all responses to the consultation as we further develop our designs for Norwich to Tilbury.

We are continuing to carry out surveys and assessments to build detailed knowledge of the route, and we are in discussions with landowners along the route to agree access for surveys. The information we gather will help us to consider any potential environmental effects, archaeology and historic features, as well as visual impact.

The design development is an iterative process and will take into account consultation feedback, findings from our surveys and assessments, and our discussions with landowners.

We will present a more defined proposal at our next consultation. If the project is confirmed as an NSIP, this would be a statutory consultation, which we expect to hold in 2024.This proposal would be accompanied by a Preliminary Environmental Information Report (PEIR), which would provide more detail on topics such as environment, landscape and visual, traffic and transport, historic environment and cumulative effects. At statutory consultation, we would invite further comments from the local community ahead of submitting our Development Consent Order (DCO) application to the Planning Inspectorate.



Contact us

Please get in touch if you have any questions on the Norwich to Tilbury project.

- **Call our Community Helpline:** 0800 151 0992 (lines are open Monday to Friday 9am–5:30pm)
- **Email us:** contact@n-t.nationalgrid.com
- **Write to us: Freepost N TO T** (No stamp or further address details are required)

Who to contact if you need information or documents in an alternative format

We are committed to making project information accessible to all users. If you need any information or documents in an alternative format please get in touch using the above contact details.

Who to contact if you are a landowner or person with an interest in land

If you are a landowner and would like to talk to our land team you can reach them using the following details:

- **Email:** Norwich-Tilbury@fishergerman.co.uk
- **Phone:** 0808 1753 314
- **Project office address:** Norwich to Tilbury Land Team, Fisher German, Unit H2, Risby Business Park, Newmarket Road, Risby, Bury St Edmunds, IP28 6RD

Project website

All information can be found on our project website nationalgrid.com/norwich-to-tilbury.

Notes

Notes

National Grid plc
1-3 Strand
Charing Cross
London
WC2N 5EH
United Kingdom

nationalgrid.com