New water resources are required

As a region and as a water company we face a time of great uncertainty and change. We face four pressing and interlinked challenges.

The East of England is one of the driest regions in the country, with only two thirds of the average rainfall and a delicate environmental balance. It is also one of the fastest growing, with potential population growth of a million people by 2045.

Population growth

- We serve 20% more properties now than we did in 1998.
- Regional population is expected to increase by 20% over the next 25 years.

Climate change

- Climate change is one of the most significant threats we face.

Environmental protection

- Our region is environmentally sensitive and home to many internationally important wetland ecosystems.
- We need to reduce the amount of water we take from the natural environment to prevent actual or potential environmental harm.

Drought resilience

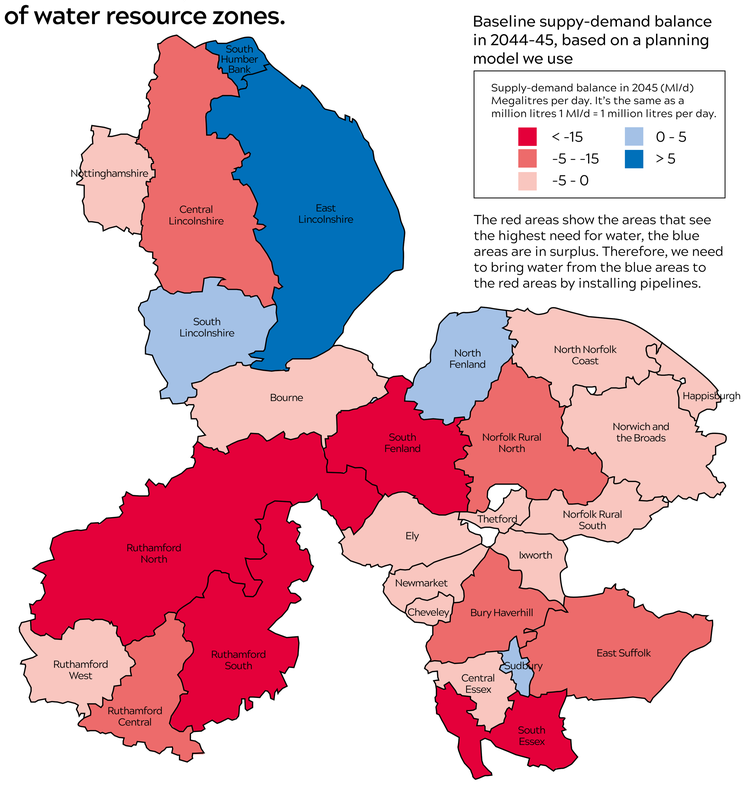
- Our customers have told us that the use of severe restrictions is not appropriate or acceptable.
- But parts of our system are vulnerable to severe drought, so we need to act now to reduce this risk.

The scale of the challenge

Together, these challenges make our region particularly vulnerable to the impacts of climate change, including drought and flood. The East of England is officially classed as ‘water stressed’, meaning we must make careful use of this most precious resource to balance supply and demand.

To tackle the challenge we will take a twin-track approach to our planning. We will reduce the demand for water for example, though reducing leakage, installing smart meters and investing in water efficiency measures. We must also look at new ways to supply water.

Within our area, we have a number of water resource zones.



As shown in the map above, some water resource zones are affected more than others.

Our plan includes new water resources

Our 25-year Water Resources Management Plan sets out how we will manage water across our region. We consulted widely during 2018 / 2019 and have support from customers and regulators for our plans. We will be investing in our network to make the best use of water resources whilst minimising the impact on the wider environment - our twin-track approach.

A new pipeline

Within the plan is a programme to install a series of interconnecting pipelines to move water across the region by 2025. These new pipelines will play a key role in meeting long-term water demands. The new Lincoln to Ancaster pipeline is part of this programme.

This new pipeline will connect into existing infrastructure and make it easier for us to move water to where it is needed. This pipeline will increase the reliability of the local water supply and reduce the number of homes and businesses, in the communities between the south of Lincoln and Ancaster, which rely on a single pipeline for all their water needs.

We've been planning this route for a while. We've listened to customers and stakeholders about their concerns and reviewed findings from ecological and archaeological surveys too. As a result, we have made some changes to the original proposed route. We have worked hard to make sure that our revised preferred route minimises the impact on the environment and we will continue to work with local communities and landowners while we finish the design and construct the pipeline.

We have legal powers to lay new pipelines and we are working very closely with the local planning authorities to agree the best way forward for the pipeline and a new pumping station at Waddington.

The preferred pipeline route

We have worked hard to plan a pipeline route which minimises the impact on the environment and we will continue to work with local communities and landowners throughout the construction and commissioning of this scheme. We have planned the route to avoid most of the urban areas and villages to minimise disruption to you and your communities.

What has changed?

This 25km pipeline was originally part of a bigger scheme called the Lincoln to Grantham pipeline. Following a review of the scheme, we've decided to divide up the scheme to allow us to bring the pipeline into service earlier, providing resilience to the existing water supply to customers in south Lincolnshire.

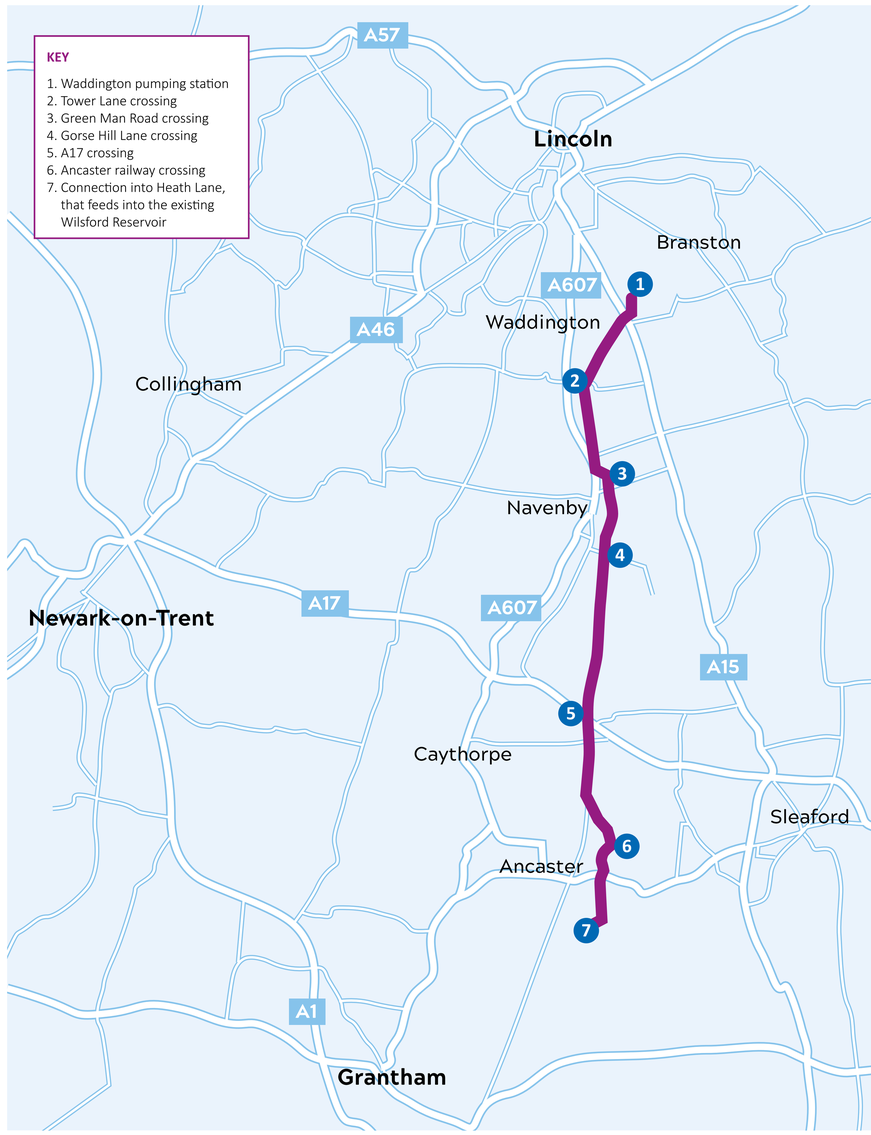
The revised Lincoln to Ancaster pipeline will eventually join up with future pipelines to connect new supplies from the north of Lincoln with communities around Grantham. The first phase is to build the pipeline between Lincoln and Ancaster to meet the local need for water.

The section of pipeline further north between Elsham and Lincoln (which was part of the original and longer route) will now be constructed later as part of a separate scheme.

Our preferred route has been revised throughout our design process and amendments have been included where possible. The route has been refined in response to feedback from the local area including local organisations and landowners, our environmental and archaeological surveys, engineering options and water flow and water supply modelling.

Here are a few examples of how we have refined the route:

- Placing the route 100m away from High Dike Site of Special Scientific Interest
- Working with landowners to place the route alongside field boundaries or tracks where possible
- Adjusting the route where possible to minimise impacts on farmers - crops, livestock etc
- Aligning crossings underneath the Grantham to Skegness railway line to minimise disruption to landowners
- Moving away from archaeological sites around Navenby and Ancaster
- Aligning with public highways or field boundaries
- Avoiding environmental constraints such as designated nature conservation sites and woodlands, pylons, overhead lines and airfield landing lights where possible.



Summary of construction timescales

Our construction programme is outlined below. These dates are subject to change and are dependent on various matters including the weather.

Site preparation and construction is due to start in late 2020. The scheme will take approximately 3 - 4 years to complete.

Phase of work	Types of activity	Approximate timetable
Environmental investigation	Archaeological surveys and ecological monitoring	Ongoing
Enabling works (works needed prior to the start of construction)	Ecological protection for legally protected species Limited vegetation removal to aid access Ground investigation	Late 2020 to mid-2021
Construction	Site compounds set-up Cutting open trenches, laying pipes and backfilling (refilling of soil once the pipe has been installed) Trenchless pipelaying (when pipes are pushed through the ground) Construction of the pumping station Construction of temporary storage lagoons (to store water that will be used to test the pipeline after construction)	Early 2021 to late 2023
Commissioning (testing of the pipeline prior to becoming operational)	Cleaning the pipeline	Ongoing from mid-2021 to late 2023
Reinstatement after installation (the land will be reinstated to its original state where we can and with additional improvements in some areas)	Replacement of topsoil Restoration of access routes and fencing Reinstatement of road surfaces Reinstatement of drainage Replacement of vegetation	Late 2022 to late 2023

Construction

As you can imagine, there is a lot of work involved in installing a new 25km pipeline. We'll develop a Construction Management Plan with our contractors, which will set out our working methods and mitigation measures.

We will work with the local authorities, parish councils, landowners and all contractors to deliver the scheme with minimal disruption until the pipeline is operational in 2023.

Early construction activities

Construction will start at the end of this year. We will start by creating access for the main construction works. Before the installation of the pipe can start we need to complete the following:

- Pre-construction enabling activities e.g. detailed survey work, hedge removal outside of the bird nesting season and creating access to site.
- Pre-construction land drainage - maintaining and protecting the existing land drainage for farmers and protecting the working area from flooding.
- Compounds/site storage - setting up compounds and site storage for pipes and other equipment. There will be smaller site storage compounds every 2km to store the pipes.

  Two main construction compounds are located at:

  B1178 Tower Lane / White Lane.

  Bloxholm Lane (only for the construction of the pumping station and associated pipework, and not for servicing the construction of the whole pipeline).
- Earthworks - we will strip topsoil back, creating a working area (or easement). The soil will be bunded up on one side of the working area, to help protect the working area from surface water run-off and any pre-construction land drainage underneath. We will seek to preserve the structure of the soil. When topsoil is stripped from the land we will store it separately from other excavated materials. We will not compact the topsoil with machinery as this would damage the quality of the soil.

Installation

During installation of the pipes, we will maintain access to public rights of way, protect livestock, and work with landowners to reduce or mitigate any impacts on how they use the land, where possible.

Working hours will be from 7:30 to 18:30 Monday-Friday with occasional weekend working, with potential extended working hours in the summer months. We plan to minimise any noise levels by using low-noise equipment. After some initial planning, we estimate there will be around 20 visits a day for deliveries and staff going to sites and compounds along the route during construction.

We will carefully manage our vehicle movements and transportation of materials to reduce the impact on local road users and manage any required road diversions or lane closures to reduce disruption and delays.

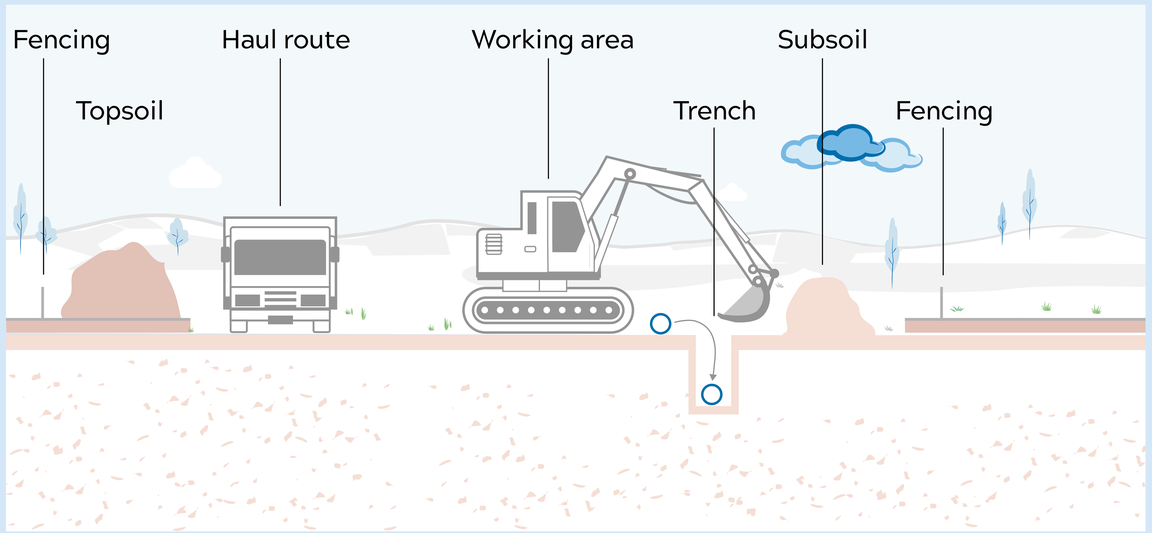
We will control dust and mud levels by damping down and road sweeping where required.

The installation of the pipeline will follow good industry practice using tried and tested techniques. The most common method to lay a pipe is the use of open cut trenches. Where we need to minimise disruption to the ground, such as at some roads and railways, we will use trenchless techniques.

Construction techniques

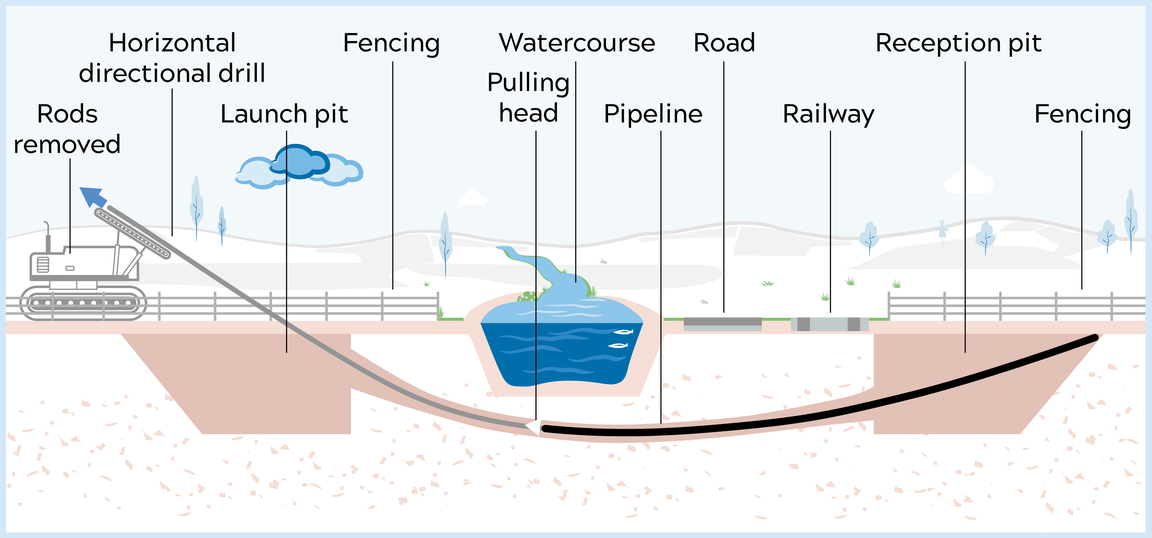
Open cut trenching

Open cut trenching will be used for most of the pipeline route which goes through open ground. Open cut is when a trench is dug out by a digger, the pipe is laid and then covered over (see picture below).



Trenchless techniques

This technique will be used to lay pipes underneath main rivers, railway lines and main roads (some A roads, with some B roads). We will use methods such as directional drilling or auger boring, when a machine will drill or 'bore' a hole through the ground from one side of an obstruction, to the other. The pipe is then pushed through the hole produced (see picture below).



What happens after construction?

The pipeline needs to be tested during what is known as 'commissioning' before it can be used to supply drinking water. This involves cleaning the pipe, before filling it with water at high pressure to test for leaks. It is disinfected and the water discharged to lagoons. The water is tested to ensure it meets the required water quality standards.

Once the pipeline has been tested and is fit for purpose, the habitats affected by construction will be reinstated. Hedgerows would be replanted in the first season after all construction is finished and grassland will be reseeded with approved seed mix. Where trees are removed, two will be planted for each one removed. They will be planted once construction has finished and agreed areas have been identified, for example, where there is a gap in tree lines and there is suitable space to do so. Hedges will be planted to screen the pumping station at Waddington.

We are currently exploring ideas to increase biodiversity for this project, which could include planting extra hedgerows for example.

Our environmental assessments and biodiversity

As part of our pre-construction works, we have already started our environmental assessments and surveys. These are ongoing and will help us to better understand the current environment in terms of habitats and ground conditions where the pipe will be located. This information will help us to finalise our Construction Management Plans and identify any mitigation measures that may be necessary.

Managing environmental impacts

During any construction activity there will be some impacts on the environment. Our aim is to reduce these impacts by avoiding or protecting sensitive areas and by repairing and replacing habitats carefully and improving where appropriate and possible. Once installed we do not expect the pipeline to leave any lasting impacts on the surrounding areas.

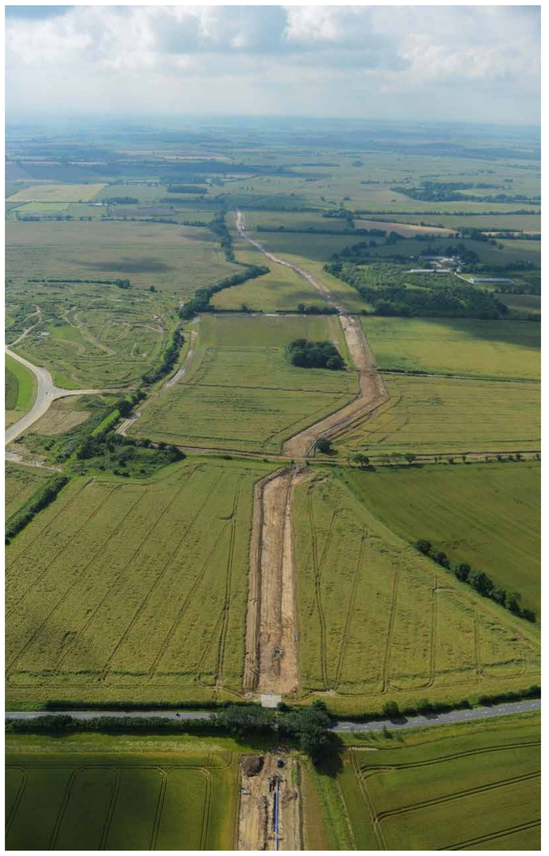
We care about the environment and have given some examples of the way we will be working to protect and restore land.

The current environment

There are different types of habitat along our preferred pipeline route. Some are fields growing crops, which, while important to produce food for us as well as feeding livestock, does not provide food and shelter for many species. In other areas, sites have been surveyed and found to have special or protected species. Along the route and wider area there are protected sites such as Sites of Special Scientific Interest (SSSI) or locally designated sites such as Local Wildlife Sites.

It is important that we avoid these areas where possible and identify other sites which may be home to protected species. Species that we have already found along the route include Great Crested Newts, bats, badgers, and various bird and plant species.

We've started our detailed field surveys to identify the location of these species and sensitive habitats. This information will be used to inform our environmental assessments and our way of working to minimise any impact.



Protecting biodiversity

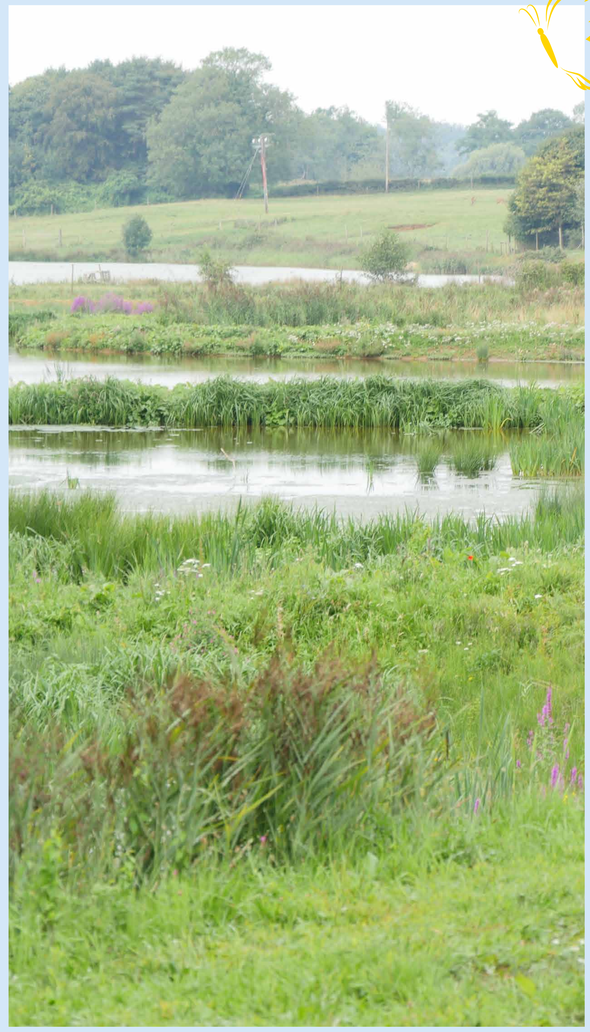
Maintaining a mixed and diverse range of species is important as it provides food and shelter for different species. The more diverse the species, the healthier the environment.

We have collected detailed information about the location of sensitive sites along the preferred route. Some temporary, reversible disruption may happen in some areas during construction. Before we can lay the pipe, we will need to remove some hedges and other vegetation.

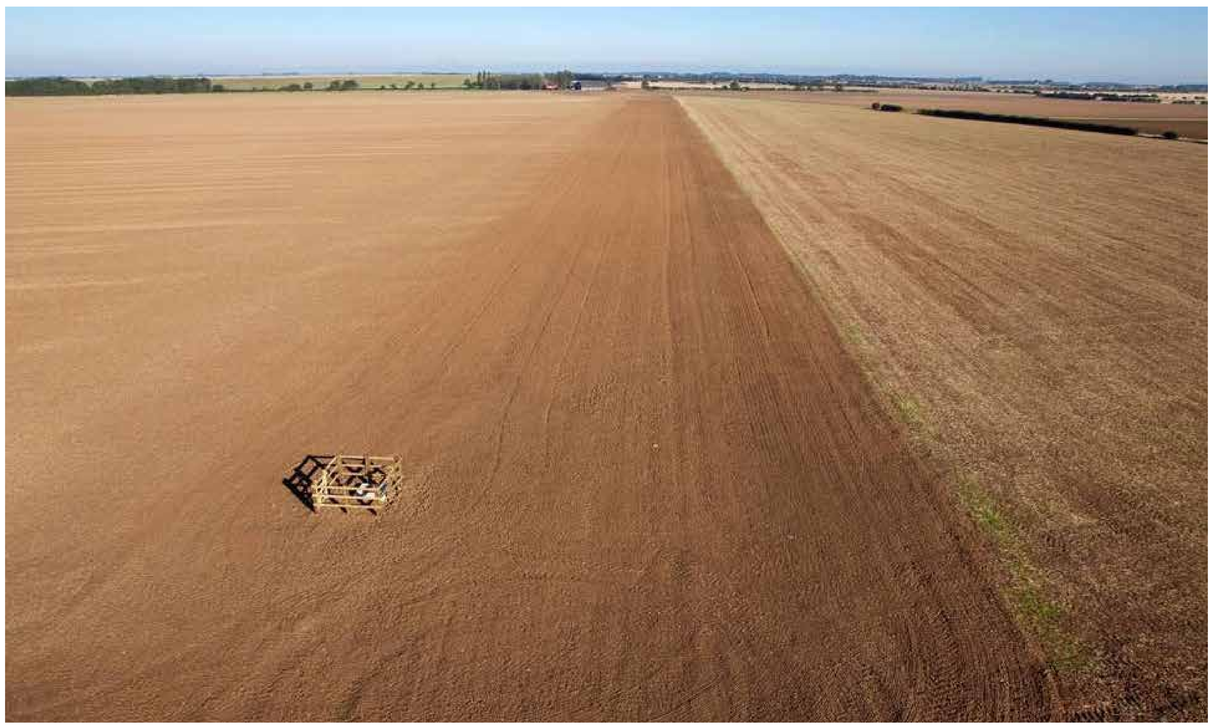
This will be timed to have minimum impact - such as during winter when crops have been harvested, the berries have been eaten and birds are not nesting.

Other sites, which may be corridors for animals to travel along, may also be disrupted. We will include mitigation measures to keep disturbance to a minimum and provide alternatives where feasible.

During construction, the noise, light and vibration from plant and machinery may have an impact on some species. We will continue to monitor our impacts during all phases of work and will introduce additional protection where needed.



Our environmental assessments and biodiversity



Some of the steps we have taken to protect the environment

- Our preferred route avoids ancient woodland to reduce the loss of these important sites.
- We have tried to avoid protected sites and other woodland.
- We have narrowed the width of the working corridor through field boundaries (hedgerows, trees and watercourses) to reduce the loss of habitats.
- We may use trenchless techniques to cross some watercourses to minimise disruption.
- Wherever possible we will plan works to take place outside breeding and nesting seasons.
- We will adopt best practice mitigation measures to reduce the risk of impact to protected species.
- We will reinstate habitats after work has been completed and will aim to enhance some of their features.

Working with landowners and the local community

We want to be good neighbours and value our long-term relationships with the local community and people who have our existing or planned pipelines on their land.

We will work with landowners to agree the necessary rights to maintain, operate and inspect the pipeline.

We are committed to keeping the local community informed and we will update our website frequently. If you'd like to receive updates about this scheme, please provide your email address when you submit your survey.