

EAST OF ENGLAND



**THE
STATE
OF THE
NATION**

**INFRASTRUCTURE
2014**

INFRASTRUCTURE 2014

Every region faces its own particular challenges and the East of England is no different. Ranked the fourth largest in the UK it includes Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk.

UK OVERVIEW

Infrastructure is vital to society – our quality of life depends on it functioning effectively and our reliance becomes painfully evident when infrastructure systems fail.

The UK's ability to compete in the global race and to generate and sustain economic growth with appropriate quality of life depends on infrastructure networks that provide predictable energy generation and distribution, water supply, waste management and the transportation of people and essential goods into and around the UK by rail, road, sea and air.

State of the Nation is ICE's flagship report on the current state of the UK's infrastructure. The 2014 State of the Nation Infrastructure report assesses the performance, capacity and condition of the UK's economic infrastructure networks, and determines the actions required in order to improve and enhance performance, and importantly, to ensure that our infrastructure is resilient when faced with the many challenges ahead – from climate change to population growth.

Each county and district has competing infrastructure demands dependent on limited budgets. This requires carefully planned improvements that will not always meet all the challenges that the region faces.

ENERGY

In common with the rest of the country the East of England's energy demands are set to increase and it is pleasing to see that EDF Energy is pressing ahead with Sizewell C Power Station having reached agreement with the Government. However, the company is blunt in its assessment when it says: 'By 2020, existing power stations producing about a quarter of Britain's electricity will close. Many of these are old oil, coal and gas-fired plants whose carbon emissions no longer meet EU environmental regulations. The remainder are nuclear reactors reaching the end of their lives.'¹

In recent years large coastal wind farms have been developed such as the 140 turbine Greater Gabbard Wind Farm off the Suffolk coast. In May 2013 permission was granted for a further 140 turbines with completion in 2017 creating 504MW. East Anglia Offshore Wind Limited (EAOW), a joint venture between Scottish Power Renewables and Vattenfall has plans for six offshore wind farms. The first three, which have a total capacity of 3,600MW, are due to be connected to National Grid's network at Bramford substation, near Ipswich, in phases between 2018 and 2022.

Yet there are issues surrounding connection to the grid. National Grid says: 'Consultations with stakeholders and the public will take place over the coming years before decisions are taken about how and where the different wind farms might be connected.'² We hope this will not delay project delivery.

CASE STUDY

ELLOUGH, SUFFOLK

A solar farm which could produce enough energy to power 7,000 homes is being proposed by Lark Energy at Ellough airfield in Suffolk. It will occupy 150 acres, producing around 25MW. Enough for every home in Beccles and Worlingham for an entire year. Lark Energy held a public exhibition in Beccles in August 2012 which attracted 130 attendees. A planning application was submitted and recommended for approval by officers but was rejected by the planning committee on the casting vote of the Chairman. A smaller 14MW project was subsequently submitted and gained planning approval in April 2013. The original application was called in by the Secretary of State Eric Pickles for determination and disallowed because 'the limited harm caused by the appeal scheme is greater than the very limited harm that would be caused by the permitted scheme', and 'the increase in the amount of renewable energy generated by the appeal scheme does not outweigh the additional harm caused to the character and appearance of the area.'

The decision runs at odds with the planning inspector's recommendation that: 'The harm to the character of this part of the district would be no greater than that which has already been accepted by the council when it approved a 14.1MW solar farm on this part of the site in April 2013.' Lark Energy has sought a judicial review which, to date, is awaiting decision. The outcome may have implications for all future solar farm planning applications through the UK.

GRADE

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ENERGY

Potentially declining as demand for electricity grows.

1. <http://sizewell.edfenergyconsultation.info/>
2. <http://www2.nationalgrid.com/UK/In-your-area/Projects/East-Anglia-Offshore-Windfarm-connection/>



Inland wind farms are still a contentious issue with many communities opposed to them and forming protest groups. It is difficult to see how this can be resolved. Solar farms appear less contentious perhaps because they are not so visible, however it is difficult to see them as a long term option should tariffs and viability change. Lark Energy who have four schemes under development across the region say solar farms are 'easily removed when the scheme is decommissioned in the future.' Whilst this may be seen as beneficial it could also mean that should solar farms prove unviable they could disappear as quickly as they appeared.

Across the region there are other power plants burning straw or waste animal products. Each adds to the energy mix but inevitably – despite the welcome investment in renewable energy sources within the Region - we will still be dependent on large gas and/or nuclear power plants.

GRADE

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FLOOD MANAGEMENT

In danger over 20 year horizon of declining to a D.

FLOOD MANAGEMENT

Large parts of the East of England (Essex, Norfolk and Suffolk) are at potential risk of coastal flooding. This was brought home in December 2013 with the 'the biggest UK storm surge for 60 years' (Environment Agency).

It is not possible to ensure 100% flood prevention and the investment for flood prevention as a whole is sizeable and on-going. Following the episodes of flooding in winter 2013/4 the Government is providing £270 million to repair or maintain flood defences.

We welcome the provisions of the Flood and Water Management Act 2010 which has provided a lead to Local Authorities. Many have plans in place to implement the Act. For instance Cambridge City Council has produced the 'Cambridge Sustainable Drainage Design (SuDS) and Adoption Guide', which sets out the Council's requirements. However the introduction of the new SuDS duty was originally anticipated to be in 2012, but

this has been subject to repeated delays leaving many local authorities in limbo. David Harrison, Norfolk County Council's Cabinet Member for Environment, Transport, Development & Waste, said: 'this delay and uncertainty is enormously frustrating. We were on target to have a SuDS approval, inspection and adoption system ready for April, but this has now been put on hold, including staff recruitment.'

The Environment Agency and Local Authorities are working in partnership with private investors to help ensure the region is resilient to flood risk.³ However, there is concern that despite this there is insufficient investment in the maintenance of our flood defences. An additional concern is that many of the experienced flood prevention engineers are older and moving towards retirement. Without new entrants to the profession, this is resulting in a skills shortage.

However it is not all bad news. Ipswich has seen significant investment in flood defence and the new pumping station at St German's in Norfolk will help to ensure 700km² of fenland and in excess of 25,000 properties will not flood.

For now the region is holding its own but this is unlikely to be the case in 20 years. During this time as sea levels rise it is possible that parts of the Norfolk Broads could become salinated. Natural England issued a report in 2009 that said around 16,000 acres (25 square miles) including six villages, hundreds of homes and thousands of acres of farmland are at risk.⁴

Some coastal communities are at severe risk from coastal erosion, indeed many already have had frightening experience of this. Decisions are needed to relocate people at greatest risk and increase erosion resilience for others. Key infrastructures at Sizewell and Bacton must be included to avoid damage and isolation.

When assessing flood risk much emphasis is placed on people and property but little on agricultural land. The East of England has vast tracts of agricultural land providing significant value to the UK economy. It is a concern that agricultural land value and food security are not currently given sufficient weighting alongside protection of property.

CASE STUDY

ST GERMAN'S PUMPING STATION

The Station took three years to construct and was officially opened on 20 April 2011. It cost £38m and protects property worth £3.6M including 22,500 homes. It has six pumps that can move up to 100 tonnes of water a second, protecting land as far away as Peterborough and Cambridge from flooding.



It can operate for 10 days at full capacity with 250,000 litres of stored diesel. Because the pumps are speed variable they can be run as efficiency demands. Performance can be checked remotely to keep water levels under control.



Its predecessor was over 75 years old and has been demolished. In April 1998 it worked at full capacity for 50 hours and it was the fear of mechanical failure that led to plans for a replacement.

3. Flood and Coastal Resilience Partnership Funding – an introductory guide 4. Responding to the impacts of climate change on the natural environment: The Broads (NE114)

Park and Ride - Cambridge



Abberton Reservoir



GRADE

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TRANSPORT

In danger of declining to D.

TRANSPORT

Travelling south or north is relatively easy by road and rail, travelling east or west less so. The region is experiencing growth and is struggling to match it with efficient transport links.

There have been some encouraging developments. We welcome the progress made in making improvements to the A14 the main artery from the midlands to the east coast ports and therefore vital to the country's economy. The last remaining section of the A11 to be dualled from Barton Mills to Thetford was brought forward and is moving apace with completion due in December 2014. The first section by-passing Elveden opened on 28 April 2014. The improvements will give direct access to Norfolk from London via the M11 and A14.

Sadly the same cannot be said for the A47 which runs west/east from the East Midlands to Norfolk. Local authorities along the route have joined forces with business, MPs and the Local Enterprise Partnerships to call for improvements. The A47 Alliance Steering Group, predicts that improvements will deliver over 15,000 new jobs in 20 years and boost economic output by over £600m a year. The Group says: 'housing and jobs growth is being held back for want of relatively modest, targeted improvements at key locations and, over and above this, the route does not perform as well as it could. The single carriageway standard of the majority of the route leads to slow unreliable journeys and a poor safety record.' It proposes targeted investment of £127m in 2014 to 2017, a further £247m by 2021, and £425m in the longer term (after 2021).

The region is fortunate in having excellent port facilities at Felixstowe, Harwich and London Gateway. Each is vital to the UK economy transporting goods from and to the rest of the world. Port operators are making significant investments in the transport networks serving these ports. For example DP World – operators of London Gateway - have made improvements to the A13. In March 2014 a new £59m rail link to Felixstowe opened providing a direct link for

freight to the Midlands. Previously freight trains went via Ipswich adding an hour to the journey. At 0.75 miles (1.2km) long the Ipswich Chord connects the East Suffolk Line with the Great Eastern Main Line to Nuneaton. The number of containers transported by railway has doubled in the last decade.⁵ Felixstowe owners Hutchison Ports said 28% of its UK freight - about 830,000 containers - went by rail in 2013 compared to 400,000 containers in 2004.

The Government's Airports Commission led by Sir Howard Davies is not due to deliver until the summer of 2015 when a new Government will be in place. Decisions regarding airport capacity should be resolved immediately after the Davies Commission to avoid further uncertainty for our major airports – including Stansted.

The region is of course served by other airports in Luton, Norwich, Southend and Cambridge but these are largely geared to the leisure and holiday trade. In December 2013 a planning application by London Luton Airport to increase to increase capacity from 12 million to 18 million passengers a year was approved.

Public transport varies across the region. Rail links to London are good and improving. In April 2014 Abellio Greater Anglia announced a £20 million programme of improvements to rolling stock, facilities and services.

Travelling across the region is more disjointed and lengthy with few easy options. The project to re-open the East West Rail Link between Cambridge and Oxford is progressing and is largely dependent on inter-local authority vision, co-operation and funding. Because much of the original route land is unavailable there are considerable problems to overcome. 'The Central section of East West Rail between Bedford and Cambridge includes the link between Bedford and Sandy. Within the overall scheme, this is the most difficult and costly part of the route to reinstate.'⁶

Bus services within cities are generally good, less so in urban areas and often a rarity in rural areas. Without public sector subsidy bus operators cannot run frequent services when passenger numbers are not viable.

The way bus services are managed can be improved to make them more attractive as an alternative to the car. Park and Ride services have proved successful but changes to policy may have detrimental consequences.⁷

Cambridgeshire County Council is seeking to impose a daily parking charge at park and ride sites to raise revenue and deter those who park then cycle. This additional cost may push users back to their cars, in fact the authority is expecting a 5% drop in use. The main bus operator Stagecoach believes it will be considerably higher.

Perhaps the most encouraging news is the region now has two guided busways in Cambridgeshire and Luton. The Cambridgeshire Guided Busway opened in August 2011 and was quickly oversubscribed. In the first year of operation it provided 2.5 million journeys - 750,000 more than forecast. The Luton and Dunstable Busway opened in September 2013 and is steadily building passenger growth.

Also in Cambridge the new Cambridge Science Park rail station is progressing although completion is likely to be a year later than planned due to work required by Network Rail.

GRADE

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WATER

In danger of declining to D due to climate change and population growth.

WATER

The East of England is one of the driest regions in the country yet probably more dependent on water than most. Aside from the growing domestic needs, agriculture and industry are set to increase demand. While Essex and Suffolk Water have done excellent work in expanding the capacity of Abberton Reservoir to meet growing demand it has taken over 20 years to deliver.

Already water is being transferred many hundreds of miles to serve communities with lower levels. For instance Essex is the driest county in England and in some years up to a third of its water is pumped from Denver in Norfolk via the Rivers Stour and Blackwater. This arrangement started in the 1970s and is known as the Ely Ouse to Essex Transfer Scheme (EOETS). Demand in Essex is predicted to increase 25% by 2023. Increasing the capacity of Abberton Reservoir and enhancing transfers from the River Stour should result in less water being transferred from Norfolk.

5. www.portoffelixstowe.co.uk 6. www.eastwestrail.org.uk/route-and-train-services 7. www.cambridge-news.co.uk/Cambridge/Bus-firm-Stagecoach-at-war-with-council-over-proposed-Cambridge-park-and-ride-parking-charges-20130909161551.htm



It is clear that more water resources, storage and inter-company transfers will be required to deal with future supply and demand. This does not mean a national water grid which is often called for. To do so would be expensive – water is heavy and requires pumping which needs energy which is not carbon efficient.

Every new home and business requires water yet people do not value water unless it is not available. Water companies continue with programmes to educate the public. Metering is becoming more available as are energy and water efficient devices such as low flush toilets. These alone will not be enough; everyone must do more to conserve this precious resource. Anglian Water reports that in areas where meters have already been installed, they have been shown, on average, to save £100 from a household's annual water bill, as well as helping to reduce other energy bills.

Water security is another area of concern. Water companies have assets such as pumping stations often in areas at risk of flooding. The loss of such a facility can wreak havoc on communities with lack of supply and sewage overflows.

We have seen during recent flooding events across the country that drainage systems are soon overwhelmed. As mentioned in the section on flooding the introduction of guidance on Sustainable Urban Drainage Systems (SUDs) is behind schedule. When drainage systems are compromised the damage can be extensive not just to homes and businesses but leisure amenities like rivers and streams resulting in contamination killing fish and damaging habitats. For instance in 2012 Anglian Water was fined £36,000 plus nearly £6,000 in costs when a sewer overflowed into the River Chelmer killing over 400 fish. The sewer had not been included on a maintenance list and become blocked by third party debris.

GRADE

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WASTE

Requires attention.

WASTE

In common with the rest of the country the East of England is trying to find ways of dealing with its waste. There are various plants for burning straw and animal waste to create energy.

Cambridge has a state-of-the-art recycling plant at Waterbeach. The £42 million mechanical biological plant (MBT) is owned and run by AmeyCespa in a Private Finance Initiative (PFI) contract with Cambridgeshire County Council. It has the capacity to treat 200,000 tonnes of waste a year.

In Suffolk a similar partnership with SITA UK, an energy-from-waste facility is under construction at Great Blakenham and should be live by December 2014. It will produce enough electricity to power 30,000 homes and create 43 jobs

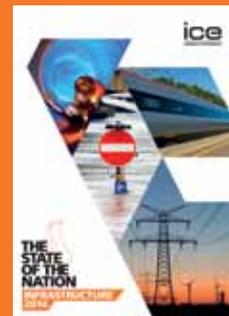
Unfortunately plans for a similar plant at King's Lynn, Norfolk were scrapped in April following pressure from campaign groups and the withdrawal of Government funding. The Cory Wheelabrator energy from waste plant would have processed around 260,000 tonnes of waste a year saving council taxpayers £8 million and creating 40 jobs. It would have generated enough electricity for 36,000 homes plus steam that could be used by local businesses or to provide a district heating service.⁸ And it would have saved 70,000 tonnes of CO₂ being released. The cost of terminating the contract is estimated to be £30.26m.

In Bedfordshire, US owned Covanta Energy proposed a Resource Recovery Facility (RRF) near Stewartby. It would convert 585,000 tonnes of residual waste per year into 65MWe of electricity, of which 55MWe would be exported to the national grid. It would also include a facility to recover valuable metals and secondary aggregates. In total it could recover value from approximately 96% of the waste it treats. Again there have been local objections which ended in a High Court judgement⁹ in February 2014 giving Covanta Energy the go ahead. Previously in December Central Bedfordshire Council announced it would no longer support the scheme and is looking for alternatives.

KEY TO EAST OF ENGLAND GRADES

- A** FIT FOR THE FUTURE
- B** ADEQUATE FOR NOW
- C** REQUIRES ATTENTION
- D** AT RISK
- E** UNFIT FOR PURPOSE

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