

SOUTH EAST ENGLAND



INFRASTRUCTURE 2014

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The limitations of our regional infrastructure are, perhaps, most visible to the public on our road and rail networks – and when floods cause severe damage to homes and businesses.

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.

However, we also face challenges for our future water and energy supplies. While not so immediately visible to the public, they are just as vital to our way of life, and need proper attention.

TRANSPORT

Congestion on roads, railways, airports and ports is a key challenge for the South East. While there has been significant progress on a number of fronts since our previous State of the Nation Infrastructure report in 2010, areas of serious concern still remain.

INTERNATIONAL GATEWAYS: OUR PORTS AND AIRPORTS

We are still some way off the vital decision on airport expansion – the burning transport issue for both London and the South East – and therefore ICE wants to see Government act decisively to deliver new aviation capacity in the South East following the Davies Commission's report in 2015. While the airport debate dominates headlines, the UK's ports are a quiet success story - handling the highest tonnage in Europe and without public subsidy. Government forecasts that container traffic will treble in the next 15 years¹, so we expect a significant increase in lorry and rail freight to and from our largest regional container ports of Southampton and Dover.

We also need to recognise that an airport is more than its runways and a port is more than its berths. The transport networks that bring passengers, freight and support services have to be world-class if our airports, ports and Eurostar are to play their role in keeping the UK as a primary hub in the global economy. It is vital that we get that supporting infrastructure right.

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TRANSPORT

RECOMMENDATIONS

- Government should act decisively to deliver new aviation capacity in the South East following the Davies Commission's report in 2015
- Government agencies, local authorities and private operators need to work together to improve connectivity for our ports, airports and commuter hubs

RAIL

Congestion on our region's railways is most apparent from the daily commute to London. On a typical weekday in autumn 2012, 536,000 passengers arrived into central London by rail during the morning peak and 981,000 across the whole day. Over 100,000 passengers had to stand at trains' busiest points in the morning rush hour.²

Rail investment is therefore essential. Current highlights include: upgrades to a number of smaller stations to improve accessibility, for example at Gravesend and Camberley; the Reading Station upgrade, to increase capacity at one of the UK's busiest rail hubs; electrification of the Great Western Main Line; East-West Rail from Oxford to Bedford; a new Oxford to London Marylebone link; Crossrail; and the proposed Heathrow Western Rail Access.

Rail strategy and planning are well developed and industry is delivering improvements, while keeping disruption on our busy network to a minimum. However, capacity will remain an issue given the projected population growth in London and the South East.

1. National Policy Statement for Ports, Department for Transport, October 2011. 2. <https://www.gov.uk/government/publications/rail-passenger-numbers-and-crowding-on-weekdays-in-major-cities-in-england-and-wales-2012>



Southampton Airport: short-listed for the ICE South Engineering Excellence Awards in 2013



Project Horizon, Surrey County Council: short-listed for the ICE Thames Valley Engineering Excellence Awards in 2013



Margate flood and coastal protection works, 2013 ICE Kent & East Sussex Engineering Excellence 'Community' Award winner

CONNECTIVITY

There is a need for an integrated approach to transport, to enable connectivity with airports, ports and railway stations – vital connections for a region that is both an international gateway and the home of tens of thousands of people who commute into London each day.

The importance of freight is often overlooked yet we rely on it to keep us fed, clothed and functioning in almost every sense. While improved rail freight capacity is welcome, for example on the Southampton to Nuneaton line, road haulage will remain dominant - just a 10% modal shift would overwhelm the rail network. To support freight movements, government should ensure that economic appraisals of land-side access improvements recognise the wider economic benefits, such as seen with the M27 improvements in Southampton.

ICE called for the devolution of powers to powerful, fully-integrated transport bodies in its 2013 State of the Nation Transport Report. While our region's cities and towns do not lend themselves to 'Manchester' or 'London' style solutions, the need for integrated planning and delivery remains. We need to see Local Authorities, Local Enterprise Partnerships and Local Transport Boards face up to this challenge and lead on transport arrangements in the round (walking, cycling, buses, trains, real time information systems, parking, cars, etc.) to create an environment that manages congestion and supports the economic and social well-being for their areas.

ROADS

Our major road network is heavily used and congestion on our motorways is the norm at rush hour. This is despite a small (2%) decrease in traffic volumes in the region over the past 10 years.³

The Highways Agency has a substantial investment and maintenance programme for motorways and A-roads across the South East. For example, extra capacity will be created through new 'managed motorway' schemes on the M25, M3 and M4. Progress notwithstanding, ICE is calling for reform to the Highways Agency to improve planning and long-term funding. On a more local scale, we have been pleased to see Local Enterprise Partnerships securing funds to alleviate major bottlenecks across the region through so called 'Pinch Point' funding.

The picture for our local road network is not so positive though with 15% of roads in the care of local authorities in need of attention or expected soon to be.⁴ In 2013, Government announced £6 billion over the next Parliament for local road maintenance in England; however, the estimate for a one-time maintenance 'catch-up' cost is now £12 billion.⁵ On a more positive note, Surrey County Council's 'Project Horizon' is taking a more systematic approach to clearing the backlog, while the Isle of Wight's Highways PFI is another long-term investment programme.

However, with nearly a million extra people expected in the South East over the decade, the pressure on our local and strategic roads will continue. ICE believes more sophisticated demand management will become essential. ICE's 2013 State of the Nation Transport report called for a Transport Futures Board for England, to help government develop solutions to such 'too difficult' challenges.

We need to do so for health as well as economic reasons. Nitrous oxide (NOx) and particulate matter (PM) emissions are responsible for tens of thousands of early deaths across the UK.⁶ While we do not suffer from the levels of pollution experienced in London, the M4 corridor to Heathrow is an area of concern while the World Health Organisation's air pollution database shows Southampton currently exceeding its guidelines for PM10 levels.⁷

FLOOD RISK MANAGEMENT

The winter of 2013/14 has seen extreme storms and rainfall, causing extensive and prolonged flooding along the Thames in Oxfordshire, Berkshire and Surrey. Although this has been a season of particular intensity, such events have occurred in different locations for a number of years and will occur more frequently in the future.

Those extreme events occurred despite improvements in flood defences and a more joined-up approach to flood risk management over the last 15 years: better flood forecasting and warnings, national flood modelling and mapping, and emergency management have all contributed to an improved understanding and responses.

We will not be able to protect every location but we can take steps to improve flood defences, build flood risk measures into new developments and protect critical infrastructure.

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FLOOD RISK MANAGEMENT

RECOMMENDATIONS

While capital budgets remain static in real terms, the decline in flood maintenance budgets poses a significant risk to our defence standards.

DEFENDING OUR TOWNS

Protecting towns and cities from floods can be complex in terms of the number of agencies involved, the different sources of flood water (sea, rivers, rain, sewage overflows, ground water) and the varied geographical scales (from precautions taken by householders and neighbourhoods, to upstream river catchment measures).

Recent schemes in the region include: Banbury's new £28M flood defences which has already protected the town from river flooding three times since completion in 2012; Newbury's recently completed £2.4M scheme has provided protection from river flooding to 380 homes and 70 businesses – although this example highlights the need for holistic flood protection solutions, given that parts of the town subsequently experienced surface water flooding following the exceptional rainfall in February 2014; in Oxford, multiple agencies have come together to solve problems with sewage overflows in Kennington Road area, and Portsmouth Water is investing £20M to solve drainage problems in the city.

As new developments are built, sustainable urban drainage should be adopted to reduce and slow down the flow of surface water runoff.⁸

DEFENDING OUR COASTLINE

The Armed Forces and the Environment Agency inspected over 150,000 flood schemes across the country after the successive tidal surges and winter storms in 2013/14, making repairs and replacing thousands of tonnes of shingle lost from coastal defences across the south coast.⁹

While that short-term urgent intervention was essential, it is our Shoreline Management Plans¹⁰ that provide the long-term framework for understanding and planning coastal defences.

3. <https://www.gov.uk/government/statistical-data-sets/tra01-traffic-by-road-class-and-region-miles#table-tra0103> 4. <https://www.gov.uk/government/statistical-data-sets/rdc01-roads-where-maintenance-should-be-considered> 5. http://www.asphaltindustryalliance.com/images/library/files/ALARM_Survey_2014.pdf 6. Policy Exchange (2012) 'Something in the Air' 7. <http://www.bbc.co.uk/news/uk-england-27323198> 8. <http://www.ice.org.uk/Information-resources/Document-Library/The-SUDS-Manual> 9. <https://www.gov.uk/government/news/flood-defences-given-a-health-check-after-the-wettest-winter-on-record> 10. <https://www.gov.uk/government/publications/shoreline-management-plans-smps>

Peacehaven waste water treatment works, East Sussex: Overall winner of the ICE Kent & East Sussex 2013 Engineering Excellence Awards

Materials Recovery Facility in Longparish, near Andover in Hampshire: short-listed for the ICE South Engineering Excellence Awards in 2011

GRADE
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WATER

RECOMMENDATIONS

We endorse metering schemes to reduce demand in the region and collaborative working to manage our water-stressed region, but have concerns for new storage for the 2020's and beyond.

At their best, coastal defences enhance the places they are protecting. The works completed at Margate in 2012 are a good example, raising the standard of defence from 1:20 to 1:200 for the next 50 years with a concrete stepped revetment creating a new amenity from which to enjoy views of the beach, sea and Grade II Stone Pier.

'Holding the line' is not always the most appropriate solution.¹¹ For example, Medmerry in West Sussex is an outstanding example of managed retreat. The £28 million project, completed in late 2013, protects 350 properties, two holiday parks and a water treatment works and also provides 180 hectares of coastal habitat for wading birds and protected species. The new wet land created by breaching the old sea wall acts as a buffer, providing a more secure coastal defence.

DEFENDING CRITICAL INFRASTRUCTURE

When protecting properties and businesses, we need to think about the critical infrastructure that serves them. Recent concerns include the closure of the main line to Paddington in February 2014 because of ground water flooding at a signal box near Maidenhead, the impact of power outages at Gatwick Airport because of flooding from the River Mole in December 2013, and more recent media concerns about the resilience of our electricity sub-stations.¹²

WATER

We have graded South East England's water sector as 'adequate for now'. The region has coped with pressures such as the 2011/12 drought and planning for the medium and long-term is well developed, as can be seen in water companies' Water Resource Management Plans and the work of the Water Resources in the South East Group (WRSE).¹³

Water companies operating across the region have made significant investments in water pipelines, storage facilities, waste-water treatment works, pumping stations, leak reduction and metering. The Peacehaven water treatment works in East Sussex, a £300m scheme to meet the latest European environmental standards on waste water treatment, is one prominent example.

However, climate change and population growth, while meeting sustainability standards set out in legislation, present major long-term challenges to water security. The WRSE analysis indicates that, by 2040, demand in the region could exceed supply by 856 Ml/day in dry year critical periods (compared to a baseline of 6309 Ml/day).¹⁴ That gap can most effectively be closed through a range of new schemes involving leakage reduction, metering, water reuse, desalination, reservoirs and transfers (between companies and within companies).

Demand management measures will help close the gap over the next five years¹⁵ and therefore we believe the current programme of household metering should be vigorously pursued, ideally with 'smart metering' to improve leak detection across the network.

Additional capacity needed from 2020 to 2025 will be found most economically from supply-side (57%) and water transfer schemes (40%).¹⁶ It is worth noting that the last major reservoir in the South East, Bewl, was constructed in 1975 and to then compare that with the opposition to Thames Water's proposal for a new reservoir in Abingdon over recent years. We may need a major new reservoir in the future and, if so, the planning and investment processes in the region must deliver on time.

ENERGY

The UK has reliable energy and gas networks capable of meeting our current energy needs: However, significant generation capacity will be retired in the coming years, with major implications for security of supply. At the same time, demand in the region is expected to evolve in terms of energy use, climate change and population growth.

GRADE
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ENERGY

RECOMMENDATIONS

Government should reform the energy market before next election to ensure security of supply.

Energy generation in South East England is moving from traditional sources to renewables. Coal fired power stations are closing down, for example Didcot A in Oxfordshire, while Dungeness in Kent is no longer part of the long-term plan for UK nuclear power. Gas is a crucial part of the migration to lower carbon energy sources, and gas storage facilities at Hambly Grove in Hampshire and the Liquid Natural Gas terminals at the Isle of Grain in Kent are vital components in the network. Shale gas has potential to contribute to the UK's energy mix; however, as witnessed at Cuadrilla's exploratory drilling site at Balcombe in West Sussex last summer, it remains a controversial issue which requires further evidence-based debate. Most importantly the interdependencies between shale gas exploration and its impacts on water resources and high demand on transport requires detailed research and understanding.

Looking beyond gas, renewable energy has a bigger part to play in our future supply. The Kentish Flats, Thanet and London Array offshore wind farms currently provide 1GW of capacity, and a new 700 MW facility off the coast of Sussex is under consideration. However, we must not be complacent. SSE recently withdrew from two offshore wind farm proposals, citing uncertainties about subsidies and costs.¹⁷ A 2030 decarbonisation target will help to improve investor confidence in this area.

In terms of demand, housing accounts for over a quarter of UK energy use and transport nearly a third. Steps towards the electrification of rail and cars are welcome, but we are concerned that energy savings through better insulated buildings and the uptake of smart technologies are not happening quickly enough – schemes such as the Green Deal need to make more impact.

11. ICE / Building Futures report on 'Facing Rising Sea-levels', 2010. 12. <http://www.independent.co.uk/environment/nature/vulnerable-substations-serving-millions-still-at-risk-from-flooding-9257678.html> 13. An alliance of the Environment Agency, Ofwat, Consumer Council for Water, Defra, Thames Water, South East Water, Southern Water, Portsmouth Water, Sutton and East Surrey Water, and Affinity Water (see <http://wrse.org.uk>). 14. Water Resources in the South East group's 'Progress towards a shared water resources strategy in the South East of England - Phase 2B report', February 2013.



Newhaven Energy Recovery Facility, East Sussex: short-listed for the ICE Kent & East Sussex Engineering Excellence Awards in 2012



Materials Recovery Facility (MRF) in Longparish, near Andover in Hampshire: short-listed for the ICE South Engineering Excellence Awards in 2011

GRADE

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WASTE

RECOMMENDATIONS

We call for an Office for Resource Management for England, to provide leadership on waste and resource policy across government.

WASTE

Unlike other infrastructure sectors, the significant investment in municipal solid waste has been council-led in England, with the EU Landfill Directive being the key driver. As a result, landfill has declined dramatically in the South East: local authority collected waste sent to landfill decreased from 81% in 2000/01 to 22% in 2012/13, while household recycling rates increased from 16% to 43% over that period.¹⁵ This trend looks set to continue as the emerging recycling and recovery industries flourish. In contrast, government lacks clear policies or direction for commercial and industrial waste.

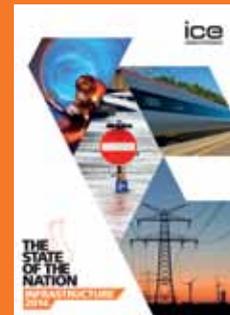
Because waste is overseen by various government departments (DEFRA, DECC, BIS, DCLG, DfT and HM Treasury), ICE urges the government to set up an Office of Resource Management to provide clear leadership, research, and develop policies that recognise waste as a resource, not an end product. We believe this new body should report to the Department of Business, Information and Skills.

This would allow for the simplification of funding streams directed at the waste management sector, which currently includes the Green Investment Bank, Renewable Obligation Certificates, Renewable Heat Incentive, Renewable Transport Fuel Obligation, and the Feed-In Tariff. Doing so should help the waste economy to progress from a linear to a circular model.

KEY TO SOUTH EAST 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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15. Ibid. Demand management schemes contribute about 27% of the new capacity from 2015 to 2020, supply schemes 36% and inter-company transfers 37%. 16. Ibid 17. <http://www.renewableuk.com/en/news/press-releases.cfm/2014-03-26-renewableuk-statement-on-sse-announcement> 18. <https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables>