

# Manifesto 2017

## Engineering growth



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## Foreword

The UK is once again going to the polls just two years after the last general election. Our industry believes that creating jobs, housing and economic growth is the shared goal across the political divide and in order to achieve this infrastructure is central.

Since 2010, we have seen a much welcomed greater appreciation for the social and economic importance of infrastructure to the UK economy with a corresponding increase in government spending. As we face the upcoming general election, the UK, however, stands at the crossroads; either it can decide to invest in social and economic infrastructure networks that can compete with emerging economies, or it can continue to underinvest and see its international competitiveness fall.

The Association for Consultancy and Engineering (ACE), as the voice of the consultancy and engineering industry working in the built environment, has been central to the improvement in the government's attitude to social and economic infrastructure development. At the heart of this has been ACE's work as part of the Infrastructure Alliance, championing the significant improvements to the National Infrastructure Delivery Plan (NIDP) in partnership with the Infrastructure and Projects Authority (IPA) which have made positive improvements to the Government's planning, financing, and execution of its programme.

Although we have achieved a lot there is still more to do. As a country we need to develop greater cross party consensus on the development and implementation of large scale infrastructure projects. More needs to be done to link societal needs with government delivery within national and regional frameworks. We also need to unlock the huge potential of our cities to grow their economies, meet their residents' needs, and create social value.

This manifesto highlights the issues that face the UK economy and proposes solutions that can help a future government achieve the economic growth that the UK so desperately needs. Building on the research that ACE has done over the last few years, and the extensive experience of our members, it outlines a programme that can be adopted from day one of a new government.

We want all political parties to accept the need for a long-term plan for infrastructure investment and to work together to provide industry with the certainty it needs to invest in our future. ACE looks forward to working with the political parties to ensure that this happens.

Our recommendations are practical, pragmatic and achievable. We call on the next UK government, the devolved administrations, and local authorities of all political persuasions to work together with us to help lay the foundations on which UK economic prosperity in the twenty-first century will be built.

A handwritten signature in black ink, appearing to read 'Nelson Ogunshakin', with a horizontal line underneath.

**Dr Nelson Ogunshakin OBE,**  
**Chief Executive of The Association for Consultancy and Engineering**

# Introduction

The UK's infrastructure network is crucial to our quality of life and the effective functioning of our society yet its true importance only becomes clear when the system starts to fail. Despite the networks importance to the essential wellbeing of the UK, successive governments over the last thirty years have failed to invest in it. We now face a situation where we can no longer put off the investment decisions needed at a time when government finances remain tight.

ACE, as the voice of the consultancy and engineering industry working in the built and natural environment, is only too aware of the problems we face. To highlight these challenges and to promote the solutions to these problems, ACE has produced this manifesto as an important contribution to the infrastructure debate at the next general election.

The UK's economic position in the world and its ability to compete in the global race is coming under increasing pressure with the emergence of new economies that are making significant investment in their own infrastructure networks to sustain their economic growth. This is even more the case since the UK voted to leave the EU. To make a success of Brexit we must win the global economic race by investing in the UK's infrastructure.

The continuing success and growth of the UK economy is vital if we are to sustain and improve our quality of life. The provision of predictable and affordable energy generation and distribution, water supply, waste management, construction of housing and the transportation of people and goods by rail, road, sea, and air are the means by which the UK will achieve this.

A quick review, however, of the existing infrastructure network will show that the UK is experiencing an increasing disconnect between the needs of society and the ability of the network to deliver. The UK's population is growing at a significant rate and we are seeing a corresponding growth in jobs due to the expansion of the UK economy as a whole. This has led to the development of a number of network gaps in the supply of housing, airport capacity, energy provision, and transportation that will only get worse as each year goes by.

ACE's investigations into the state of our infrastructure networks have shown that the UK is currently operating at 99% of hub airport capacity at a time when it has never been more important to be connected to emerging markets in the world. This has the potential to lose the UK £14bn a year in global trade.

Satisfaction amongst road users has never been, lower, with 70% ranking the network as poor. This collapse in satisfaction has been caused by the stop and go funding models used by government over the last couple of decades. The resulting inefficiencies from this lack of road investment will total £100bn by 2020.

The UK is currently facing an emerging energy gap of around 10-12% of capacity due to the closure of older power stations. The increasing pressure this will put on the national grid runs the risk of increasing black outs as spare capacity falls to 2%. Bill payers will see their costs rise and business will see its supply become more disrupted and uncertain. The government estimates it will take £117bn to ensure that energy production keeps pace with demand.







The most acute gap occurs in the housing market with the UK facing a housing shortfall of around 900,000 homes by 2021. The UK will have to build several new cities to house our expanding population at a cost of £185bn. In the short term, the housing market will continue to see rapid increases in house prices that will exclude more and more people from the housing market with a significant impact on peoples' quality of life.

ACE is confident that the UK possesses the skills and ability to meet these challenges and ensure the UK remains a dynamic and prosperous economy in the twenty first century. Our members are continually developing innovative solutions to solve complex infrastructure problems both here in the UK and abroad. This manifesto not only highlights the problems that we face but lists a number of solutions that the government can implement today that will ensure that these problems do not become a reality.

Our members, however, cannot solve these problems alone as they will need the committed support of the UK government to meet the challenges the country faces. The infrastructure industry needs to have a long-term commitment by the UK government to the investment in, and improvement of, national infrastructure networks in a sustainable way. Without this commitment the UK will struggle to maintain its current economic position in the world with a corresponding impact on living standards.

The UK government has begun to recognise this with the creation and development of the National Infrastructure Delivery Plan, the National Infrastructure Commission (NIC), and the Infrastructure and Projects Authority (IPA), which all aim to highlight, prioritise, and secure investment in long-term infrastructure needs. This, however, is only the beginning and not the end as the NIDP, NIC, and IPA will need to be developed further to meet the aspiration of the government. ACE also envisages that in the next parliament the way in which the government drives forward and delivers its priorities will change and become more sophisticated. This could mean that we have now reached the stage where there will need to be specific position with responsibility at cabinet-level of the delivery of infrastructure as a whole.

Alongside this, ACE welcomes and encourages the Devolved Nations and London's involvement in this debate. With the creation of their own infrastructure development plans the devolved governments are making a significant contribution to the assessment of the UK's needs but more can be done. Currently, the Devolved Nations lack the economic freedom and certainty to assume full responsibility within this area and this should be reassessed. Likewise, ACE believes that there are significant advantages to city regional devolution within the nations but powers must be matched with economic resources if the potential benefits are to be reached.

The UK faces significant challenges to its infrastructure networks caused by decades of under investment but the country and its government are extremely well placed to not only meet these challenges but to create networks that will ensure the UK remains a competitive and dynamic global leading economy. ACE and its members look forward to working with the UK government and the political parties to ensure that we rise to these challenges.

# TRANSPORT

## Moving to a better Britain

The effects of years of under investment are evident across the UK's transport network. Heathrow Airport is running at 99% of capacity, while Gatwick is similarly constrained for parts of the year. This means Britain could already be losing out to the tune £14bn per year in global trade because of insufficient capacity at our south-east airports.<sup>1</sup>

ACE has also estimated that inefficiencies across England's road network currently total as much as £12.2bn per year, cumulatively reaching almost £100bn by 2020.<sup>2</sup> In addition, estimates suggest that the West Coast Main Line is approaching the limits of its capacity, while Transport for London's previous Commissioner Sir Peter Hendy says the extra 10% capacity Crossrail will add to the London Underground 'will be immediately full'. Such inefficiency demonstrates the need for structured asset management plans, spanning multiple parliamentary periods and alternative governing parties.

The UK's transport network is facing ever-increasing challenges as the population grows and the need to move goods and people around increases. Both this and the previous government realised this, and positive measures are being put in place, but more can and must be done.<sup>3</sup>

## THE CHALLENGE

Over

**£88.4bn**

transport investment identified in the National Infrastructure Delivery Plan 2016-21.

**£3,274**

investment per household.

## To deliver transport for a growing economy government should:

**Continue its roads reforms** – Now Highways England has been established as a ‘GoCo’, the next government must continue the reform process by committing to providing a fixed revenue stream in the form of Vehicle Excise Duties. This will provide the kind of security of funding Network Rail enjoys through the track access charge regime.

**Commit to Crossrail 2** – With Transport for London already developing plans for it, the political parties should commit to support Crossrail 2 in the same manner as they did Crossrail 1. Cross-party consensus was a key factor that enabled a diverse funding package to be assembled with private and public sector investment.

**Begin preparatory work on HS2 Phase 2b & HS3** – Where possible, the next government should provide resource to ensure as much preparatory work around the proposed routes and stations can be carried out as possible ahead of the commencement of the bill passage of Phase 2b.

**Give the regions more say over infrastructure investment** – The UK’s core city-regions must be empowered through increased control of locally raised taxation to invest in the transport infrastructure they feel they need to thrive. This will ensure gains from nationally significant projects like HS2 are maximised and communities are linked into the economic opportunities they provide.

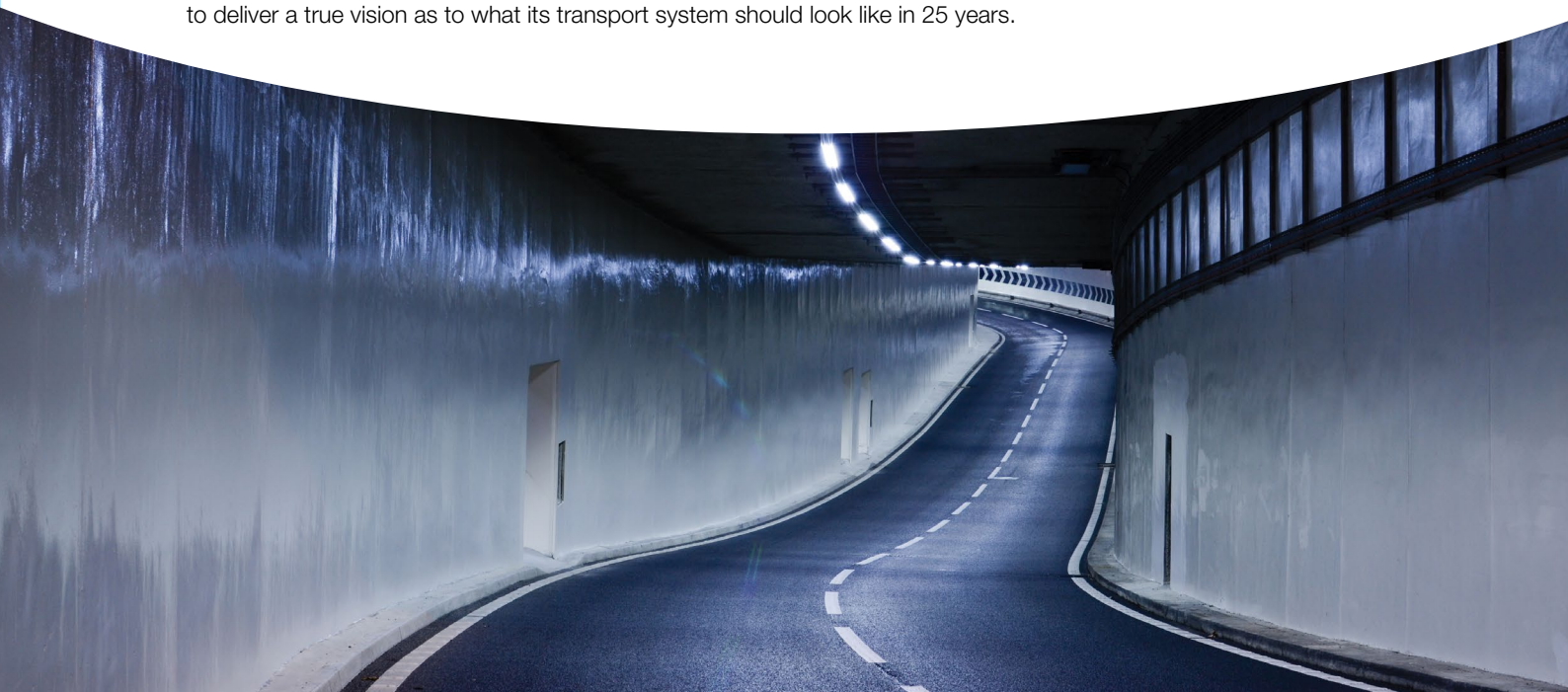
**Deliver quickly on the aviation National Policy Statement** – With government now firmly behind the need for further runway capacity in the South East, work must be done to ensure the quick adoption of the National Policy Statement on aviation. This will provide the certainty needed by the sector and delivery can begin as soon as possible.

## Aiming towards a better Britain in 2025

This general election represents a fundamental opportunity to ensure the UK has the transport connectivity it needs to compete in the emerging global economy. Businesses need to know they can move people and goods around quickly, efficiently, and affordably, while strong commitments from government will ensure confidence and certainty for the construction sector.

This connectivity cannot be limited to just the national strategic level, however. Local communities, combined authorities and city-regions, must all be empowered to take their destinies in their own hands. This will be a key aspect in the drive to rebalance the UK’s economy and ensure an equitable division of the country’s prosperity without jeopardising the continued success of London.

The last decade has seen transport firmly recognised as a key economic driver. We must make sure we build on this foundation and ensure the UK’s transport networks continue to be fit for a twenty-first century purpose. The UK has to deliver a true vision as to what its transport system should look like in 25 years.



# UTILITIES

## The backbone of a better Britain

Investing in these assets is no longer a choice as ageing infrastructure continues to make an impact on businesses and consumers. For example, in the next decade approximately 10%-12% of current power generating capacity will be lost, unless £112bn of investment is made while the water industry will be investing £43bn during the next five years.<sup>4</sup>

The UK is facing an unprecedented challenge when it comes to upgrading its utility infrastructure. Not only does it need to invest in capacity to keep up with future demand but a significant number of assets are reaching the end of their lifespan and need replacing.

Utilities, however, extend beyond water and energy, with telecoms and broadband increasingly vital for businesses and consumers. In its *2016 report, Connected Futures*, the NIC criticized the government and claimed the UK is behind Peru, Albania, and Panama in terms of network access.<sup>5</sup>

## THE CHALLENGE

Over

**£143bn**

utility investment required.

**£5,300**

investment per household.





## To deliver utilities for a growing economy government should:

**Improve transparency and competition** – Competitive markets only work well if individuals and companies have sufficient information to generate efficient prices. Government should explore models such as ACE's Priority Auction Mechanism (PAM) which aims to improve pricing and transparency.<sup>6</sup>

**Secure energy supplies as this is now critical** – Base load power at affordable prices is critical if the UK is to deliver an affordable energy market. The government should create a number of Generation Investment Vehicles (GIVs) to complement the Electricity Market Reforms, bringing forward much needed investment in capacity.<sup>7</sup>

**Recognise that connecting the UK is about more than utilities** – Broadband capacity is important to companies. The UK should aim to have 50% of all connections at 100mbs by 2020, rising to 90% by 2025. Further to this the UK should accelerate the development of 5G technology to keep up with mobile data and usage demands.

**Smooth and co-ordinate investment** – With an increased emphasis being put on Regulated Asset Base (RAB) models of investment, it is vital government continue its efforts to smooth the investment cycle. There is also a need for a trans-border or national programme of investment to ensure an integrated system that balances supply and demand to avoid future droughts and mitigate flood risks.

**Empower consumers to manage demand** – Demand management is important not only to lower bills but also to reduce wasted resource. Government should speed up the rollout of smart meters and ensure interoperability between gas, electricity, and water providers. Without meaningful information, useful data, and comparisons consumers will not change behaviour.

## Aiming towards a better Britain in 2025

The UK has one opportunity to transform its utility sector for the future. The decisions we make today will determine the sustainability, connectivity and operability of future generations. Government needs a balance of new technologies and reliable, well-understood infrastructure to ensure it delivers a cost effective solution for the future.

It should never be forgotten that there is a significant cost to taking no action. If energy, water, or communication services were to trip over, businesses would fail, economic activity would slow and future growth potential would be limited.

For this reason it is important that government secure the core economic infrastructure of the UK, delivering networks that are suitable for the demand and requirements of 2025 in 2025.

# HOUSING

## Addressing the 'housing gap'

A 2013 report by ACE found that the UK was facing a 'housing gap' of around £185bn or almost 900,000 homes by 2021, based on the number of houses being built and the number of households forming. This represents a city twice the size of Birmingham.

In addition, the report estimated that anyone wishing to secure a mortgage with a 25% deposit would need to save for over 35 years, while a couple would need to be in a 22 year relationship. These factors mean that for most, the prospect of owning their own home is becoming increasingly unrealistic.<sup>8</sup>

Recent measures like 'Help to Buy' aimed at improving the situation are only proving partially successful and recent estimates suggest the 'housing gap' could be widening. Only a plan to radically increase the number of houses being built will ensure enough supply for future generations.

## THE CHALLENGE

The UK must build

# 886,000

houses if current demand projections are to be met.

The housing gap is

# £185bn

# To enable future generations to own their own homes the government should:

**Implement the ACE's LOVE model** – The 'Land Optimisation Value Extraction' model will ensure all parties involved in developing land for housing are able to share in the uplift, thus incentivising development. It will also enable more forward planning of vital infrastructure as local authorities can release more capital to fund economic and social infrastructure schemes.

**Provide guarantees in the event of a fall in land values** – A key aspect of the 'LOVE' model is that central government should step in and provide certainty in the form of a guarantee in the event of land value price falls. As this only occurs during 13% of the time (compared with 16% for the FTSE 100), this will not exert significant pressure on government finances.

**Empower Local Authorities** – Local Authorities should be required to produce strategic plans for the provision of the housing that will be required in their areas in the medium and long-term. This will ensure certainty for developers and investors, and proper consideration of the needs of local communities, while also allowing the Local Authority to plan the necessary infrastructure with confidence.

**Make it easier for small developers** – As part of the plans, Local Authorities should be encouraged to use the expertise of large developers to clear and prepare small scale sites. These can then be utilised by smaller housebuilders who will have confidence that site preparation risks have been accounted for.

**Create stability in social housing policy** – It is important that reasonable levels of social housing are met, with Local Authorities able to enhance this offering if areas are under particular strain. ACE's revolutionising housing models suggests a flat 15% provision of social housing within a development with an option to purchase up to 15% extra.

## Aiming towards a better Britain in 2025

Successive UK governments have been notoriously bad at delivering on the house-building targets they have set during their times in office. Rather than making announcements that they will build a certain number of homes, government should focus on providing an environment conducive to new development coming forward.

Ensuring a greater degree of local engagement and accountability in the form of local strategic plans will make local communities feel consulted on plans for their neighbourhoods, while guaranteeing a share of the uplift will encourage landowners come forward early in the process.

This will also allow Local Authorities to plan and deliver vital infrastructure ahead of completion of development, a major factor in much of the opposition this kind of development encounters. Overcoming these challenges is the key to unlocking the housing growth we need and helping the upcoming generations reach their potential.



# FINANCE

## A better Britain needs better investment decisions

Whilst finance conditions have improved recently, the UK should not, however, take such conditions for granted. The latest WEF Global Competitiveness Report still illustrates some concerning statistics with the UK rated 49<sup>th</sup> out of 138 for access to loans and 62<sup>nd</sup> for the soundness of its banks.<sup>9</sup>

The financial crisis highlighted the important role private finance plays in UK infrastructure. This role does not only relate to big economic infrastructure projects such as power stations but also for social infrastructure such as schools, houses and hospitals.

Government must recognise that if it wishes to access significant sums of private finance the stability of the regulatory and funding conditions which it creates becomes more important than ever. In addition, it will continue to be important that government helps to build the investment capacity of alternative sources of finance such as pension funds.

### THE CHALLENGE

**\$24.6trn**

value of funded pensions market.

**£297bn**

NIDP pipeline investment requirement.





## To unlock private finance the government should:

**Create funding certainty** – For projects to gain private finance, investors need to be able to forecast future revenues and assess if the rate of return justifies the investment. Where these revenues are reliant on government policies further certainty should be provided. As such, the government should expand the six year funding profiles for government departments to 10 years.

**Improve policy certainty** – The changes made to the solar feed-in tariff regime in the last parliament highlight the damage swift policy changes can make to levels of private investment. Government should, where possible create policies that operate over longer periods, with clearly defined review periods and automatic stabilisers to ensure budgetary control.

**Improve regulatory consistency** – Currently the aims and approaches of regulators across sectors vary significantly. This mix of priorities adds to uncertainty for private investors, especially when the approach to items such as affordability varies, and can create significant reputational risks.

**Recognise that alternative finance is a long game** – Pension funds may help to invest in infrastructure in the future but the need for structural and cultural change is significant. It is therefore unlikely that pension funds will increase investment significantly in the short term but in the medium to long term as a source of finance they could prove to be valuable.<sup>10</sup>

**Devolving investment opportunities** – Devolution in the UK provides government with the opportunity to allow communities to leverage private finance. Models such as Tax Increment Financing (TIFs) and PF2 allow such solutions and could be effective tools to leverage the investment the UK requires.

## Aiming towards a better Britain in 2025

The UK over the next ten years needs to continue to emphasise the importance of investment as a driver for economic growth. To optimise this growth, however, the UK needs to ensure that private companies and investors are able to make decisions efficiently.

For this reason, regulatory and policy developments need to build in greater certainty, consistency, and stability. Whilst the government may not hold the cheque book in many private projects, its actions can make or break an investment case.

Beyond this in 2025, projects should engage with future asset owners earlier within project development and embed the concept of whole life costing into projects. It is after all these costs that asset owners and alternative finance providers consider key to maximising their long term revenue generation.

# PROCUREMENT

## Moving beyond “transactional” buying, securing strategic investment through procurement reform

Total UK annual public procurement spend amounts to £230bn and is managed through thousands of public bodies (Contracting Authorities) which include Government Departments, Agencies, NDPBs, Public Corporations, Local Authorities, the NHS, Universities, etc. If just 5% of this is spent inefficiently it equates to £11.5bn of poor investment.

UK annual constructions spend totals approximately £100bn with 40% of output being procured by the public sector. Consequently government construction policy is rightly focused on the reform of public sector client procurement practices in order to secure improved value for money.

However, as we approach a period of increased infrastructure investment in the UK together with the devolution of power and responsibility for delivery at regional level the role of the construction client will need to evolve in order to manage the delivery of a wider range of outputs and outcomes through the construction investment process. This will require a shift in focus from in out specifications towards outcomes and outputs within the procurement process.

It is generally acknowledged that customary construction procurement policies and practices are not adequately calibrated to support the delivery of high level comprehensive strategic benefits through construction investment. Construction clients must therefore focus on developing new commercial, risk, business and investment management skills within a wider corporate policy framework, whilst retaining an expert understanding of the construction industry and its complex supply chains.

## THE CHALLENGE

**£230bn**

spent annually on procurement.

UK construction is worth

**£100bn**

# To ensure strategic investment through procurement the government should:

**View procurement as an investment mechanism** – Encouraging all public sector construction client organisations to view procurement as an important element of investment in supporting regeneration, growth at national, regional, and local level.

**Endorse the critical role of the construction/infrastructure client** – These clients form a key corporate function in public organisations responsible for delivering large construction investment programmes, whilst ensuring value for money outcomes.

**Encourage wider public sector to adopt initiatives** – Current government construction/infrastructure policy initiatives which are focused on enhancing client capacity and capability to secure whole life value for money and supply chain efficiency and innovation need to be applied more widely.

**Utilise progress to date in the future** – To promote and build upon the current construction and procurement policies initiatives developed by the Cabinet Office, BEIS, the Local Government Association, the National Audit Office, and the Institute for Government.

**Encourage a collaborative debate** – The development of a more formal, structured and collaborative debate on procurement reform between the public sector and industry as modelled by the ACE in the London Region.

## Aiming towards a better Britain in 2025

If the UK is to achieve better outcomes in the future the challenge is recognising that construction/infrastructure procurement is not simply a buying process, but a vital component of investment management at national, regional, and local level.

There will therefore need to be efforts to raise the capacity and capability of infrastructure and construction clients across the wider public sector to a consistent level of excellence in order to secure whole life value for money.

The core of this in the future will be having the construction client function located at a strategic level in corporate management structures to reinforce the strategic importance of procurement as an investment management function. This will allow the UK to undertake projects and programmes with significant levels of complexity and diversity.



# SUSTAINABILITY

## Managing the environmental impacts of infrastructure-driven growth

As the UK economy continues to recover, economic growth will lead to renewed pressure on our natural resources and ecosystems. Waste is an under-utilised resource, and should be put to better use in order to maximise economic growth and production potential.

Climate: The legally binding 5 year carbon budgets set under the Climate Change Act will be more challenging to meet, with infrastructure related emissions totalling 515MtCO<sub>2</sub>e a year, 53% of total UK emissions.

Land: An additional 7m ha of usable land could be needed by 2030 to cope with food demands and urban sprawl

Air quality: Rising traffic volumes, for example London traffic rose by 15% in 2013 the first rise since the recession and emissions from construction machinery risk exacerbating already poor urban air quality

## THE CHALLENGE

The UK must reduce its emissions by:

**80%**

The UK emitted

**569m**

tonnes of carbon dioxide in 2013





## To ensure future growth is sustainable as well as economically beneficial the government should:

**Implement fully the recommendations from the Infrastructure Carbon Review** – As recommended the government should encourage the leadership, monitoring, and promotion of cost effective low carbon technologies. A low carbon approach to infrastructure does not have to increase the cost of project delivery and can actually help reduce total costs.

**Ensure that any new runway capacity aligns with long term emission obligations** – The government's decision on additional runway capacity in the South East must be compatible with achieving UK obligations under the Climate Change Act, as the Davies Commission itself acknowledged.

**New energy generation must enable ongoing decarbonisation** – The renewal of our energy generation infrastructure must be accompanied by an emphasis on energy efficiency and on decarbonising energy supply. A 2030 energy decarbonisation target should be set in line with advice from the Climate Change Committee

**Reduce construction side emissions** – Emissions from Non-Road Mobile Machinery (NRMM) on construction sites which make up 19% of emissions in central London must be tackled. There needs to be an expansion (to outer London and to other cities) of the GLA scheme which requires such machinery to meet tight emission standards.

**Brownfield land remains an underutilised resource** – New housing and non-domestic development should be on brownfield sites where possible. ACE's Revolutionising Housing paper proposes that the cost of preparing such land for development could be met by capturing the land value uplift that occurs as development takes place.

## Aiming towards a better Britain in 2025

The next government will have an opportunity to demonstrate that jobs, growth, and efficiency can go hand in hand with decarbonisation and high environmental standards. A green growth policy will also support the UK's environmental sector, which already turns over more than £100bn a year and has strong export potential.

By leading the way in developing sustainable growth the UK not only improves its international competitiveness in the short term, but also increases its production and productivity over the long term. Such improvements not only ensure that the UK remains a major player economically, but also stays a political leader within a wider set of international activities.

# SKILLS

## Ensuring we have a capable workforce

The first issue that is currently hampering the UK in its efforts to deliver the infrastructure required in the twenty-first century is around a shortage of engineering skills at all levels. This is acting as a brake on growth and constraining the UK's ability to compete in the global marketplace.

Secondly, many professional consulting and engineering employers have been forced to import workers with the experience and expertise needed to sustain their businesses. This will continue to be an important source of engineering skills for some time to come and must be protected in any Brexit negotiations.

Demand for professional consultancy and engineering skills is only set to increase in the coming years, and is already tempering the optimism of engineering consultancies that are concerned at the difficulties and expense they are experiencing in recruiting and retaining highly skilled staff.

This is in the context of nearly one million unemployed 16-24 year olds, who need to be equipped with the skills, including engineering skills, which British industry and the British economy need now and will need in the future, and which can offer them rewarding and satisfying long-term careers.

## THE CHALLENGE

**1 million**

16-24 year olds unemployed.

The UK faces a shortfall of

**36,800**

qualified engineers by 2050.

## To ensure the UK has the engineering skills it needs the government has to:

**Improve careers advice** – Measures should be put in place to ensure that the careers advice given to young people is appropriate, well-informed, and widely available, setting out the various career paths open to them including apprenticeships and the opportunities to work in an exciting and important sector of the economy.

**Increase incentives for STEM teachers** – The UK already has incentive schemes in place to improve teacher recruitment in physics and maths, however there are still big shortfalls. The government should therefore look to improve these incentives in order that young people receive the best tuition available in STEM subjects.

**Reach out to a wider audience** – Engineering needs to overcome its image as an industry dominated by white men and so working with the sector, government should develop plans to boost the diversity of engineering undergraduates and apprentices. Government can and must do more to promote greater diversity through the procurement process.

**Provide more support for apprentices** – Working with employers, the government must ensure funding support for engineering apprenticeships recognises the significant cost of delivering high quality programmes that meet the requirements. The Apprenticeship Levy is a tool to help achieve this but government must work more closely with employers to ensure it achieves the desired results.

**Ensure viability of HE programmes** – The government should commit to a review of funding arrangements for engineering degree courses to ensure that it is financially viable for HE institutions to deliver high quality engineering programmes.

## Aiming towards a better Britain in 2025

Resolving the issues around skills in the professional consultancy and engineering sector is a vital part of ensuring the UK will have the infrastructure to enable it to grow and thrive. Providing young people with a good grounding in vital STEM subjects, inspiring them to take up careers in engineering, and giving them an understanding of the variety of routes to a career as a professional engineer will provide the pipeline of talent we need.

In addition, the diversity of the engineering community will have improved so making better use of the whole talent pool.

Ensuring education and training programmes are well-funded, rigorous, valued, and up to date will provide the confidence employers need that they are delivering the knowledge and skills required. Companies will then have the staff they need to deliver projects to quality, time and budget requirements.



# Endnotes

1. Frontier Economics Bulletin, Missing Trade Opportunities, November 2012
2. ACE, Funding Roads, October 2013
3. The Guardian, Transport for London commissioner warns of 'calamitous' impacts if government funding stalls, 15 March 2013
4. IPA, National Infrastructure Delivery Plan
5. NIC, Connected Futures
6. ACE, Electricity Market Reform: Generating Results
7. ACE, Electricity Market Reform: Generating Results
8. ACE, The Housing Gap, July 2013
9. World Economic Forum, Global Competitiveness Report
10. ACE, Pensions and Infrastructure



# ACE economic and policy papers

This paper forms part of a growing portfolio of research by ACE into the effects of infrastructure on the wider economy.

## **Cities and Infrastructure**

A joint paper with WSP that explores the infrastructure needs of our cities, how investment can improve growth and the importance in of political and fiscal devolution.

## **Review on EU Environmental Regulations**

An in depth review of all EU environmental regulations affecting the UK and how they will be affected by Brexit.

## **Triggering Article 50**

This paper explores the complexities and realities facing the UK and the industry from Brexit.

## **Brexit and Employment Law**

This paper looks at EU employment law and how our industry will be affected by Brexit.

## **Electricity Market Reform: Generating Results**

This paper explores the role of the current energy companies in the retail and generation sectors, and suggests reforms to EMR.

## **Funding Roads**

This paper explores inefficiency within the road network and possible funding and financing solutions for the future.

## **Revolutionising Housing**

This paper is the second in ACE's housing paper series and explores in detail a new model to rebalance the incentives for development.

## **The Housing Gap**

This paper is the first in ACE's housing paper series and explores in detail the conditions within the UK housing market.

## **State Investment Bank**

This paper is the final paper in ACE's infrastructure investment series and explores in more detail the rationale and practicalities of establishing a State Investment Bank.

## **Green Investment Bank**

This paper is the fifth in ACE's infrastructure investment series and explores in more detail the rationale behind the Green Investment Bank and the challenges it faces going forward given market conditions in 2012.

## **Pensions and Infrastructure**

This paper is the fourth in ACE's infrastructure investment series and explores in more detail the current conditions within the market, and the implications they have on pension funds' investment potential into infrastructure.

## **Performance of PFI**

This paper is the third in ACE's infrastructure series and examines how to improve procurement in Public Private Finance Models (PPFM).

## **Public Private Finance Models**

This is the second in ACE's infrastructure series and explores in more detail the rationale, performance and conditions that surround Public Private Finance Models (PPFM).

## **Performance of PFI**

This paper is the first in ACE's latest infrastructure series and reviews the performance of historical PFI data to learn lessons for the development of new financing models.

# About ACE

As the leading business association in the sector, ACE represents the interests of professional consultancy and engineering companies, large and small, in the UK. Many of our member companies have gained international recognition and acclaim and employ over 250,000 staff worldwide.

ACE members are at the heart of delivering, maintaining, and upgrading our buildings, structures, and infrastructure. They provide specialist services to a diverse range of sectors including water, transportation, housing, and energy.

The ACE membership acts as the bridge between consultants, engineers, and the wider construction sector that together make an estimated contribution of £15bn to the nation's economy, with the wider construction market contributing a further £90bn.

ACE's powerful representation and lobbying to government, major clients, the media, and other key stakeholders, enables it to promote the critical contribution that engineers and consultants make to the nation's developing infrastructure.

Through our publications, market intelligence, events and networking, business guidance and personal contact, we provide a cohesive approach and direction for our members and the wider industry. In recognising the dynamics of our industry, we support and encourage our members in all aspects of their business, helping them to optimise performance and embrace opportunity.

**Our fundamental purposes are to promote the worth of our industry and to give voice to our members. We do so with passion and vision, support and commitment, integrity and professionalism.**

## Further information

For further details about this publication please contact the authors:

ACE  
0207 227 1882  
pea@acenet.co.uk  
www.acenet.co.uk

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**Association for Consultancy and Engineering**

Alliance House  
12 Caxton Street  
London  
SW1H 0QL  
T: 020 7222 6557  
F: 020 7990 9202  
[pea@acenet.co.uk](mailto:pea@acenet.co.uk)  
[www.acenet.co.uk](http://www.acenet.co.uk)