Innovation in the Department for Transport

Introduction

This document is the Department for Transport (DfT) response to the White Paper 'Innovation Nation', which recommended that all Government Departments should establish and develop Innovation Procurement Plans.

The Department for Transport's aim is transport that works for everyone. This means a transport system that balances the needs of the economy, the environment and society. In support of this aim the Department has five strategic objectives which focus on the core area of our business:

1 To support national economic competitiveness and growth, by delivering reliable and efficient transport networks.
2 To reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of avoiding dangerous climate change.
3 To contribute to better safety, security and health and longer life-expectancy through reducing the risk of death, injury or illness arising from transport and promoting travel modes that are beneficial to health.
4 To promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society.
5 To improve quality of life for transport users and non-transport users, and to promote a healthy natural environment.

One of the biggest challenges facing DfT is tackling climate change whilst supporting economic growth. This will require innovative approaches as past models are unlikely to be able to support the challenges of today, reducing the impact of transport on the environment at the same time as supporting economic growth.

Background

The Government has committed to a reduction of at least 80 per cent in greenhouse gas emissions by 2050 compared to 1990 levels and is also committed to demanding overall targets for 2020. In this context, the pressing need to reduce transport's greenhouse gas emissions (primarily Carbon Dioxide) is clear. We are developing a specific strategy for transport to address this goal whilst also supporting economic growth. We will work closely with other Government Departments to identify and exploit synergies, for example with measures to promote low carbon business opportunities.

For domestic transport, we shall be looking to maximise the contribution from improving the carbon efficiency of all modes of transport, encouraging behavioural change, and supporting the provision of lower emission transport. This will support freedom of choice about when and how to travel. Moreover, we can expect further progress towards our 2050 destination through promoting the development and take-up of electric vehicles, rail electrification and from the decarbonisation of electricity generation. In this timescale, non-transport factors – particularly land use planning - can also have a significant impact on the "what, where and how" of transport demand.

There is no reason why we cannot tackle emissions and achieve continued economic growth. The basic connectivity of the UK transport network is good but there are acute congestion and crowding problems in key urban areas, on inter-urban corridors and at international gateways, for which we pay an economic price. Improving reliability and reducing congestion will be a priority. The worst option of all – stop-start traffic and gridlock on our roads – is bad for the economy, climate change and our quality of life. We will also want to

consider improvements which enable people and freight to shift to lower carbon modes of transport such as the electrified railway. The need to increase capacity in some areas will require us to consider a range of solutions, for example whether any new rail lines, including high speed rail, or improved road capacity, may be needed along certain strategic transport corridors.

Objectives and Responsibilities

The objectives of this innovation paper fall into two main categories.

- Innovation in the procurement process: changing the way procure through improved supplier engagement and collaboration.
- Innovative outcomes: delivering innovative solutions to specific requirements.

Within DfT the Director Procurement has the lead for developing and introducing innovative procurement processes and facilitating the procurement of innovative products and solutions. However, we also expect our suppliers to challenge us on both processes and innovative outcomes. Responsibility within the Department for specifying and identifying innovative products and solutions rests with the appropriate business unit or Agency.

Innovation in the Procurement Process

Developing Supplier Engagement

The Department for Transport holds an annual Commercial Stakeholders Event, to which the top suppliers to the Department and transport industry are invited. At this event the Department outlines its key delivery objectives for the forthcoming year(s) with a view to encouraging early supplier engagement in Departmental thinking and stimulating innovative thinking.

The strategy behind this approach is to develop two-way communications which allow the supply side to suggest improvements and innovation in the way we approach and deliver policy, programmes and procurement.

This is supplemented by a series of more detailed engagements between Directors General, the Chief Scientific Adviser Unit and the Chief Executive of Highways Agency, as the designated category leaders, and the key commercial stakeholders in specific market categories. These engagements can take the form of events for stakeholders in a market category, or one-to-one meetings with stakeholders.

The aim is to improve senior-level engagement with commercial stakeholders. This will improve the commercial focus and knowledge of category leaders, and provide opportunities for the Department to have an open and honest dialogue about strategic options, whether or not these are enabled by direct procurements.

The final piece in the Supplier Engagement jigsaw which complements the Commercial Stakeholder Event and the Commercial Stakeholder engagement by Directors General is the development and implementation of a cross departmental supplier engagement strategy targeted at the key suppliers to the Department. This will look at approximately 50 suppliers with the aim of combining the central department and Agency usage of those suppliers to develop stronger and mutually beneficial relationships.

Collaboration

The DfT actively encourages collaboration: within the Department, with other Government Departments, and with suppliers. When new requirements arise consideration will be given as to whether these can be met through existing contractual relationships – but only if this provides value for money, and is allowed for in the way the contract was let. When letting new contracts, we will seek to “join up” requirements across the Department and its

Agencies. By linking demand and presenting greater contractual opportunities to the supply market, the Department expects to make significant economies and efficiencies. (See Surveillance Aircraft below)
We will be exploring the use of 'Innovative Alliancing' on future major projects. This is a contracting technique developed by Partnership Sourcing Limited, an organisation funded by the CBI and supported by BIS. The main features include: "Best for Project" staffing approach which involves joint placement schemes between the contracting parties and sees the contractors embedded in the client organisation, "No Blame Culture", a "No Litigation" clause and a variety of novel approaches to risk and gain share.

Rail

The delivery of a rail system that provides for the needs of a diverse society presents the department with a number of key challenges. They include: - .

- Technology maturation
  - Developing technology to the point where it can be used
- Technology insertion
  - Taking developed technology and using it in a rail system
- Cross company delivery
  - Working with other companies to deliver a rail capability

Technology Maturation

- Need to mature new technology whilst delivering low risk programmes;
  - Technology maturation is a funnel
  - Early stages of maturation require experimentation
  - Later stages need trying out in representative and live environments
  - Each stage requires least promising ideas to be filtered out
- Need to embed the right amount of new technology in our programmes, not too much, or too little;
  - Too much technology makes development programme too risky
  - Too little technology leads to greater obsolescence, degradation of technology management skills and the need for higher risk technology insertion in the future
- Need to reduce the time to market of innovative technology
  - Average time to market for safety critical defence or aerospace technology is 3-5 years – in rail it is 6-8 years
  - Long time to market increases a range of risks – obsolescence, stakeholder churn, drifting goals, knowledge fade

Technology Insertion

- Need to ensure technology can be easily inserted into current systems
- Need to increase adoption of mature technology that is new to UK rail
- Need to manage the potential conflict between safety and technology insertion

Cross Company Delivery

- The easy stuff has been done and – we have optimised within the silos – now we need to optimise across them
- The next phase of rail programmes are all multi-contractor
  - Thameslink
  - European Rail Traffic Management System (ERTMS)
- Need to implement innovative solutions where benefits and costs lie in different parts of the industry
  - Cross monitoring 'track on train' and 'train on track'

Managed Motorways Programme

The Highways Agency (HA), an Executive Agency of DfT, has introduced the Managed Motorways programme which draws on best practice developed by BAA T5 and London Olympics. In particular HA are looking to utilise collaborative working and the forming of a team to deliver a large complex project. Other methods for improved collaboration and teamwork are the use of project bank accounts which HA are now piloting on a major project and the use of project based insurance which HA are currently considering.
HA are looking to shortlist around 9 suppliers and reduce that to 3 or 4 contractors on a framework of partners to deliver major projects. Suppliers will be required to collaborate to achieve specific goals. A 'gainshare' mechanism has been included which requires delivery of the programme as well as success on individual projects – thereby rewarding programme success. This is a step change from past ECC/ECI [1] approaches where success for a contractor on individual projects has still potentially left HA at risk on the overall budgeted programme.

Procurement of Traffic Technology

Over the next 3 – 5 years the Highways Agency (HA) is looking to move away from the multi-contract, multi-technology based current position. Under the new arrangements HA will move from being the "purchaser" of, often bespoke, technology, to a streamlined contracting approach where the HA is "client" to a technology service provider who adopts the interface, commercial and delivery risks currently held by the HA. This will require a greater understanding of the supply chain, a step change in the way requirements are specified and collaboration with our suppliers. Some of the benefits of this approach include resolving the current limited number of suppliers and removing the perceived barriers that prevent new suppliers coming into the traffic technology market.

Managing Agent Contractor (MAC & TechMAC) contracts[2]

Instead of asking tenderers for a traditional Quality Statement the Highways Agency are asking that the quality bid is based around the process driven (ISO) quality management system. Tenderers will provide the first draft of their Quality Plan (QP) and their submission will be process flow diagrams with activity notes etc. This process will cut out the hard work and uncertainty of translating sometimes unclear quality promises from the winning tenderer into their QPs which they will use to run their 5-7 year contracts.

Innovative Outcomes

Meeting Evidence & Research Needs

The Department has developed Evidence and Research Strategies at both Departmental and unit level that review the evidence base for its policies and operations of its agencies, identify gaps and form the basis for the programme of research commissioned to meet its needs. The

[1] ECI/ECC is based on a collaborative approach between client and his suppliers. Generally it deals early with issues before they become disputes providing it is well managed by project managers. ECC upon which ECI is also based is recommended by OGC. ECI allows a contractor to be hired early as implied, which overall saves time on delivery particularly due to the standstill period post public inquiry as we await a ministerial decision. Also with a contractor in the team the design is tweaked to match the contractors preferred construction methods. This leads to cheaper construction costs due to more efficient use of his on-site skills. The downside for HA has been insufficient control of project budgets particularly during stage 1, the scheme development stage, and lack of commercial tension in the earlier contract. This is now dealt with in their latest ECI model.

[2] MACs and TechMACs are the Highways Agency main contractual vehicles for maintaining, operating and improving the road network. Contracts are typically five years in length with options to extend by up to two years dependent upon performance; annual spend on each contract runs to tens of millions of pounds. They are based around robust and consistent contractual quality process models. Performance measurement and management, linked to incentivised continual improvement, are key contract principles. Suppliers are expected to ensure transparency through all tiers of their supply chain, and to operate as an integrated team with HA to support best delivery.

Department currently spends about £60 million each year on research, some of which is looking at innovative ways of tackling transport issues. Following an open competition, the Department has in place a Research and Technical Consultancy framework contract which provides an innovative route to the transport research supply market. As well as being faster than conventional research procurement, the framework is intended to encourage suppliers to consider innovative solutions in framing tenders.

Low Carbon Strategy

The Low Carbon Transport Innovation Strategy, launched in 2007 sets out an overall framework through which the Government will encourage innovation and technology development in lower carbon transport technologies. It also contains specific chapters on the road, aviation, rail and maritime sectors - setting out in detail the technologies that can contribute to lower carbon transport and the steps the Government is taking to encourage them.

In July 2009 DfT launched "Low Carbon Transport: A Greener Future" which outlines the Departmental objective of reducing Carbon emissions from Transport.

Transport Research Centre

The Department in partnership with the Economic and Social Research Council (ESRC) and the Scottish Government has established a new academically-based independent UK Transport Research Centre (UKTRC). This centre is jointly co-ordinated by Imperial College London and the University of Leeds. The new centre is designed to act as a multi-disciplinary centre of excellence for independent, high quality, innovative, strategic research. It focuses on enhancing the evidence base needed to inform the key transport policy issues facing the UK over the next decade and beyond. A major focus is the socio-economic dimension. To bring fresh perspectives UKTRC aims to involve social researchers with expertise in areas other that transport. Alongside long term academic studies, UKTRC will also undertake to complete short-term policy research projects on a rolling basis as specified by the Department. These projects are specified by the Department through a Programme Customer Group supported by the Transport Analysis and Economics Directorate.

Technology Strategy Board

The Department collaborates with the Technology Strategy Board (TSB) whose main aim is to stimulate technology-enabled innovation in the areas which offer the greatest scope for boosting UK growth and productivity. They promote, support and invest in technology research, development and commercialisation, and spread existing knowledge about technology. As well as investing in projects and programmes, much of their work is in bringing people together to spread knowledge, spot opportunities, solve problems or make new technical advances. One approach that the TSB uses is that of Innovation Platforms, the basic concept of which is to bring together representatives of policy, business, government procurement and research and resource perspectives to generate innovative solutions. The department is currently the major contributor to two of those platforms - Low Carbon Vehicles and Intelligent Transport Systems (ITS) & Services.
There are currently 3 projects jointly-funded by the Department, the Engineering & Physical Sciences Research Council and the TSB;

- Freeflow: to use transport data to generate transport intelligence
- Footlight: to deliver innovative driver/vehicle interface systems & service to encourage sustained changes to driving styles and behaviours to encourage safer & greener behaviour

- Understanding User Innovation: using existing IT & IS technologies in innovative ways and in different contexts; unanticipated applications of existing ITS; addresses the process of innovation

The Department for Transport is participating in the current Small Business Research Initiative, which is led by the TSB on behalf of BIS. The initiative is aiming to capitalize where possible in Government procurement on the innovative ideas of smaller firms.

Active Traffic Management (ATM)

The Highways Agency (HA) has introduced ATM with the aim of tackling congestion on the motorway network by introducing new innovative technology to make best use of the existing road space. The M42 pilot was submitted as an example for the Government's first Annual Innovation Report (2008).

The HA is now trialing a similar traffic management technique on a trunk road. The A14 Traffic Management Scheme is financed by the Transport Innovation Fund. It embodies a step change in fibre technology and also applies techniques learnt from the railway industry when building foundations.

Managed Motorways

Managed Motorways is a HA programme of projects with the objective of increasing network capacity by using dynamic hard shoulder running on some of the countries most congested roads. Through the development of standardised designs for technology, gantries and ancillary kit, combined with a selection process that will focus on identifying organisations with experience of implementing lean processes and working in collaborative environments.

Surveillance Aircraft

The Maritime & Coastguard Agency, an Executive Agency of DfT, has entered into a collaborative procurement with the Marine and Fisheries Agency, an Executive Agency of DEFRA, for the procurement of surveillance aircraft. A joint requirement has been identified and advertised through the OJEU process. The anticipated benefits of this exercise are a reduction in overall flying hours and potentially fewer aircraft being used.

Governance, Publication and Further Information

This paper will be reviewed annually by the Procurement Policy and Information Division of the DfT Procurement Directorate.

This paper will be published on the DfT website and supporting guidance will be developed as and when new procedures and techniques are formalised.

Further information on the DfT's approach to procurement can be found on the DfT web site, as well as information about the way the Department is organised.