

# Public Accounts Committee

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Meeting Venue:  
**Committee Room 3 – Senedd**

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Meeting date:  
**Tuesday, 17 March 2015**

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Meeting time:  
**08.30**

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Cynulliad  
Cenedlaethol  
Cymru

National  
Assembly for  
Wales



For further information please contact:

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## Agenda

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At its meeting on 10 March 2015 the Committee resolved under Standing Order 17.42 to exclude the public for items 1 and 2 of the meeting on 17 March 2015

- 1 Managing Early Departures (08:30–08:40)** (Pages 1 – 13)
- 2 Forward Work Programme (08:40–09:00)** (Pages 14 – 24)
- 3 Introductions, apologies and substitutions**
- 4 Papers to note – Public Accounts Committee** (Pages 25 – 27)

**Managing Early Departures: Letter from the Auditor General for Wales on Invest to Save (10 March 2015)** (Pages 28 – 32)

**5 Inquiry into value for money of Motorway and Trunk Road Investment: Evidence Session 2 (09:00–09:45)** (Pages 33 – 78)

Prof Nigel Smith, School of Civil Engineering, University of Leeds

Kris Moodley, University of Leeds

Prof Bob Lark, College of Physical Sciences and Engineering, Cardiff University

**6 Inquiry into value for money of Motorway and Trunk Road Investment:  
Evidence Session 3 (09:45–10:45) (Pages 79 – 84)**

Rhodri-Gwynn Jones, Director, Civil Engineering Contractors Association Wales

David Meller, Principal Engineer, Chartered Institution of Highways and  
Transportation (North Wales Branch)

Russell Bennett, Chairman, Chartered Institution of Highways and Transportation  
(South Wales Branch)

**7 Motion under Standing Order 17.42 to resolve to exclude the public  
from the meeting for the following business: (10:45)**

Item 8

**8 Inquiry into value for money of Motorway and Trunk Road Investment:  
Discussion of evidence (10:45–11:00)**

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# Agenda Item 2

By virtue of paragraph(s) vi of Standing Order 17.42

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By virtue of paragraph(s) vi of Standing Order 17.42

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## Public Accounts Committee

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Meeting Venue: **Committee Room 3 – Senedd**

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Meeting date: **Tuesday, 10 March 2015**

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Meeting time: **09.06 – 10.54**

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Wales



This meeting can be viewed on [Senedd TV](http://senedd.tv) at:

<http://senedd.tv/en/2608>

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### Concise Minutes:

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#### Assembly Members:

**Darren Millar AM (Chair)**  
**Jocelyn Davies AM**  
**William Graham AM**  
**Mike Hedges AM**  
**Sandy Mewies AM**  
**Julie Morgan AM**  
**Jenny Rathbone AM**  
**Aled Roberts AM**

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#### Witnesses:

**Huw Vaughan Thomas, Auditor General for Wales, Wales Audit Office**  
**Matthew Mortlock, Wales Audit Office**  
**Steve Ashcroft, Wales Audit Office**  
**Mark Jeffs, Wales Audit Office**  
**Dave Thomas, Wales Audit Office**  
**Sir Derek Jones, Permanent Secretary, Welsh Government**  
**David Richards, Welsh Government**  
**Gawain Evans, Welsh Government**  
**Peter Ryland, Welsh Government**

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#### Committee Staff:

**Michael Kay (Clerk)**  
**Leanne Hatcher (Second Clerk)**

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## TRANSCRIPT

View the [meeting transcript](#).

### 1 Introductions, apologies and substitutions

1.1 The Chair welcomed Members to the meeting.

1.2 There were no apologies.

### 2 Papers to note

2.1 The papers were noted.

2.2 The Committee agreed to write to the Minister for Education and Skills to request a clear timetable of actions against its recommendations on Covering Teachers' Absence.

### 3 Welsh Government Annual Report on Grants Management 2014: Evidence session 1

3.1 The Committee scrutinised the Welsh Government on its Annual Report on Grants Management.

3.2 The Welsh Government agreed to provide a note on:

- the potential losses that are outstanding as a result of organisations that are in liquidation;
- the number of complaints from the third sector about the way grants have been administered and the occasions where three months' notice in advance of the termination of a contract was not given;
- the number of cases included in the sample audit and the levels of non-compliance within that sample;
- the 35 grants ended in 2013/14;
- whether all of the Local Authorities are attending and contributing to Local Authority training provided by CIPFA (via WLGA) and Welsh Government/Welsh Audit Office; and
- the £22 million-worth of hypothecated grant funding to the NHS.

### 4 Motion under Standing Order 17.42 to resolve to exclude the public from the meeting for the following business:

4.1 The motion was agreed.



## **5 National Framework for Continuing NHS Healthcare: Consideration of Draft Report**

5.1 The Committee considered the draft report on Continuing NHS Healthcare and agreed a small number of changes.

## **6 NHS Waiting Times: Consideration of Welsh Government Response**

6.1 The Committee considered the Welsh Government's response to the Auditor General for Wales' report on NHS Waiting Times and agreed to invite the Chair of a Community Health Council and a Health Board to provide oral evidence at a future meeting.

6.2 The Chair agreed to write to Dr Andrew Goodall to inquire about the timetable for implementing the agreed recommendations as set out in his letter.

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Mr Darren Millar AM  
Chair of the Public Accounts Committee  
National Assembly for Wales  
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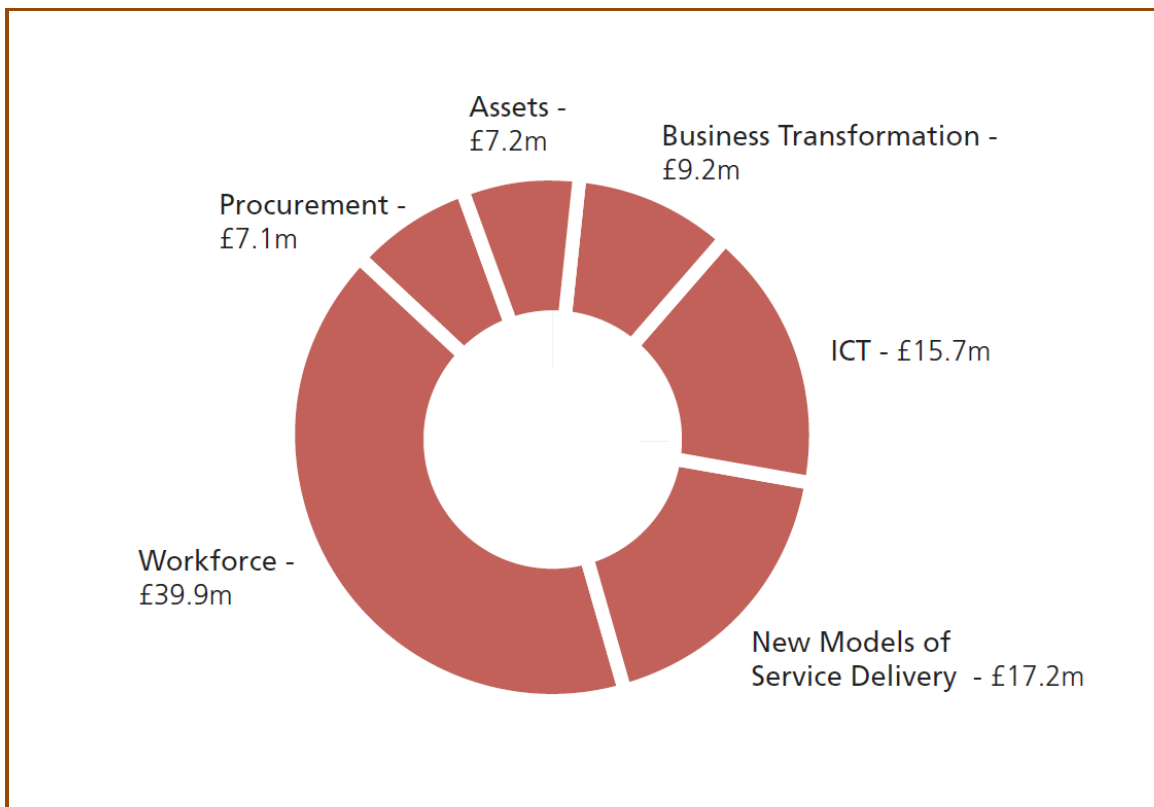
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Dear Darren

## INVEST TO SAVE FUND

On 10 February 2015, the Committee considered my report on [Managing early departures across Welsh public bodies](#). During the course of that discussion, the Committee noted the references in my report to the Welsh Government's Invest to Save (I2S) fund. I offered to provide a note to the Committee about the fund and possible options should the Committee wish to take forward any further scrutiny.

I2S is intended to support the introduction of new or proven ways of working so that public services become more efficient and effective. Investments made from the fund are fully repayable, interest-free, with flexibility on the payback period. The Welsh Government's Invest to Save Annual Report 2014 shows that between 2009-10 and 2014-15 the Welsh Government allocated £96.3 million across 70 different projects. Around two-thirds of the funding (£60 million) has been invested in the NHS. Just three projects account for more than half of the £96.3 million allocated: Voluntary Exit Schemes in the NHS (£30 million); Public Sector Broadband Aggregation (£14 million); and the Gwent Frailty project (£7 million). The thematic analysis below shows that the largest single area of spending is under the 'workforce category'.



Source: [Invest to Save Annual Report 2014](#)

I2S has been subject to review and scrutiny in recent years. In May 2014, an [independent evaluation report](#) by SQW Ltd for the Welsh Government found that I2S provided value for money. SQW identified gross cash-releasing savings of £3 for every £1 spent. Of 23 projects reviewed, SQW found that at least 15 had delivered cash-releasing savings. I2S was also the subject of a [Finance Committee report](#) in March 2013. The Finance Committee’s report sets out that “*we have learned that invest-to-save works. We have heard and seen how services have been transformed, and how savings generated have allowed the initial loans to be repaid and recycled*”. The Public Policy Institute for Wales (PPIW) has also examined the extent to which good practice from I2S was being shared. The [PPIW report](#), published in November 2014, concluded that there is “*potential for cross-sector learning from some of the I2S projects which seems to be currently unexploited*”.

While their overall conclusions on I2S were positive, SQW, the Finance Committee and PPIW identified areas for improvement. Based on the findings from these reviews, I would categorise the key risks to value for money as follows:

1. The risk that the individual projects funded through I2S are not actually achieving the financial and service benefits as intended or as reported; and
2. The risk that I2S is not maximising its potential to encourage and shape transformation and innovation across public services.

I have not undertaken any audit work to assess the extent to which the Welsh Government is now mitigating these risks.

***The risk that the individual projects funded through I2S are not actually achieving the financial and service benefits as intended***

The I2S fund requires that projects pay back the investment at an agreed rate, regardless of whether, and at what level, savings are achieved. The SQW report found that “*evidencing savings remains challenging, and quality of the information varied*”. Previous audit work in Wales, and the work of other UK public audit bodies, shows that public bodies often struggle to evidence that they have actually achieved the savings they report.

Measuring the non-financial impact of projects is important. Firstly, it helps to ensure that intended benefits are being achieved, secondly it helps ensure that actions to achieve cash-releasing savings do not impact the level or quality of services. The SQW evaluation found weaknesses in processes for measuring non-financial benefits. It found that there was evidence of benefits in individual projects, but these were not being consistently measured. The review concluded that “*addressing the absence of processes and systems to track non-cash releasing benefits is an important issue going forward*”.

***The risk that I2S is not maximising its potential to encourage and shape transformation and improvement across public services***

The SQW evaluation also suggests that the projects were generally – though not exclusively – lower risk and less innovative than might have been expected if I2S had sought to test new forms of service delivery. It has generally delivered incremental rather than radical change in terms of service delivery and outcomes. SQW found that many of the project ideas were pre-existing and had been bent to match the requirements of I2S rather than being driven by I2S’s objectives. SQW note that I2S does not have a high failure rate. There may be questions for the Committee to explore about whether the low rate of failure reflects a low risk appetite and risk aversion in the choice of projects.

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The apparent lack of innovation is highlighted by the fact that the largest single area of spend is voluntary exit schemes, primarily in the NHS. Voluntary exit schemes can be an important enabler of transformation as part of wider efforts to change the way services are provided so that they can sustain levels and quality of service with fewer staff. However, the Welsh Government acknowledges in its 2014 Annual Report on I2S that it has not monitored whether the significant funding for voluntary exit schemes has enabled transformation of services. Earlier this month, the Finance Committee noted in its [report on the Welsh Government's Second Supplementary Budget for 2014-15](#) that it is seeking further detail on the value for money of voluntary exit schemes funded from I2S.

One area of concern is the sharing of good practice from I2S projects to enable other parts of the public services to learn from success and failure. At present, the sharing of learning comes primarily through case studies included in the I2S annual report. The Finance Committee recommended that the Welsh Government do more to share good practice. The SQW report found that mechanisms for sharing learning from projects were of mixed quality and that there was a risk that "*practices will not be retained and embedded to the degree that might have been expected*". Although not specifically focused on I2S, the sharing of learning and good practice is an area where I and the Public Accounts Committee have previously raised broader concerns in our respective Picture of Public Services reports. The PPIW review shows that there is still considerable progress to be made in sharing learning from I2S.

### **Options for further scrutiny of Invest to Save**

If members wanted to examine the entire I2S programme or specific aspects of it there are a number of possible approaches. For example, Wales Audit Office staff could look to prepare a factual memorandum drawing on publically available information about I2S alongside some supplementary information, such as on the repayment schedules and reported savings from projects. The Committee could use this factual memorandum as a basis for taking further evidence.

I could alternatively consider adding I2S to my programme of value of money studies. Any detailed audit work would probably be best focused on the two key areas of risk that I identified earlier in this letter. For example, it could look at the quality of the evidence behind the reported savings and non-financial benefits, with a view to some in-depth testing of a sample of projects. I could also explore whether the Welsh Government's programme management is adopting an appropriate balance between securing financial payback and encouraging innovation and managed risk-taking. I would however need to give further thought to the scope of any such audit work and the extent to which it would be likely to add much to the findings of previous reviews. There would also be the opportunity for the Committee to consider the broader issue of the contribution of I2S to

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public service innovation and transformation when considering my third Picture of Public Services report, which I intend to publish in the autumn.

There are, of course, opportunities for the Committee to explore the use of I2S funding for voluntary exit schemes as part any future evidence sessions following on from my recent *Early Departures* report. The Committee could also return to this issue with any relevant organisations in the autumn, on the assumption that the Committee will again be scrutinising the accounts of a selection of public bodies where voluntary exits supported by I2S funding might feature. In addition, my current review of the development of Natural Resources Wales should give me scope to consider in further detail how voluntary exit arrangements are supporting the development of that organisation.

In any of the scenarios mentioned above, there would be the merit in the Committee confirming with the Finance Committee its own intentions with regard to any on-going monitoring of the use of I2S funding.

Yours sincerely



**HUW VAUGHAN THOMAS**  
**AUDITOR GENERAL FOR WALES**

## Welsh Assembly: Public Accounts Committee

### Evidence for the Inquiry into value for money in motorway and trunk road investment : 13.02.15

**Mr K Moodley**

**Professor N J Smith**

Institute for Resilient Infrastructure  
School of Civil Engineering  
University of Leeds  
LEEDS, LS2 9JT.

**Nigel J. Smith BSc, MSc, PhD, CEng, FICE, FCIHT, MAPM** is Professor of Project & Transport Infrastructure Management, Institute for Resilient Infrastructure, School of Civil Engineering, University of Leeds. After working with contractors and the Department of Transport, he returned to academia he has researched and published widely in the field of transport infrastructure. He is author or co-author of key reports on transport infrastructure for the Organisation for European Co-operation and Development, for the European Parliament and for the UK National Audit Office.

This written evidence is given in the context of our recent work in England for the National Audit Office on infrastructure management. In-depth research in Wales has not been conducted. This evidence relates specifically to the second and third bullet points in the Terms of Reference, namely:

- The extent to which the current approach to routine maintenance and improvement of the network via Trunk Road Agents has delivered value for money
- How maintenance and improvement functions delivered by the Trunk Road Agents can be improved, in the context of the on-going Welsh Government review of these agents.

## **Background in England**

In England the Highways Agency, HA; soon to be corporatised as Highways England, is performing well by world standards, (1). The Strategic Road Network, SRN is managed on Whole Life Asset Management, WLAM, principles. The corporatisation of the HA will provide access to additional sources of funding from both public and private sectors, provide a known level of continuous investment for contractors, minimise the effect of working in single financial years and support a pipeline of priority maintenance interventions.

The HA utilise Local Authorities as agents. However for non-SRN roads the road maintenance funding is fragmented and non-hypothecated which results in a wide spectrum of good to poor maintenance in terms of cost effectiveness and a lack of data and of staff with the correct skills and competencies to use HMEP/WLAM approaches. Consequently many minor roads are in poor condition.

The HA system or policy regarding funding is not clear on the balance between capital and operational maintenance funding. However it is too early to tell if the recent budget cuts are sustainable without adverse consequences. Expensive, emergency "pothole" repairs are not cost effective and a sustainable and resilient maintenance strategy including energy audit/ decarbonisation/ green behaviour as integral parts needs to be adopted.

## **Welsh Trunk Road Network**

The trunk road network in Wales comprises 1,576km of trunk road and 133km of motorway with an asset value of around £13.5bn. The total road network which includes all Class A, B and C roads is 34,489km. Highway maintenance is influenced by the traffic, the weather and the maintenance regime. Recent figures show that traffic increased from 10.08bn vehicle kilometres in 2008 to 10.14bn vehicle kilometres in 2013 (2). Road condition is reported through SCANNER surveys of the road surface and Deflectograph assessment of the carriageway condition. The frequency of the Deflectograph surveys has changed from a 3 year cycle to a 5 year cycle. In 2013 only 69 percent of the motorway network and 68 percent of the trunk road network were surveyed, (2). The winters over the last few years have been relatively mild. The maintenance requirement is that "no more than 8 percent of the trunk road and motorway network to require maintenance at any one time" (3).

Since April 2012 routine maintenance has been undertaken by two public sector agents: North and Mid Wales Trunk Road Agent (NMWTRA) and South Wales Trunk Road Agent (SWTRA). In turn these agents operate on a partnership basis with local authorities, to a varying extent, to deliver the service. The management and maintenance are mainly funded through the



motorway and trunk road Spending Programme Area (SPA), of the Welsh Government budget. Budget figures for 2014/15 indicate £71m in capital expenditure and in £61m revenue expenditure. Typically capital activities include planned renewals/refurbishment and structural renewals, improvements and replacements. Revenue activities concerns routine maintenance and reactive maintenance and severe weather work. Set in global terms most of the large industrialised economies typically spend about 0.4 percent of GDP on road maintenance (4). Under the continued pressures for improved infrastructure service levels and from the need to make public sector budget savings the maintenance of the highways has to make its contribution. The Minister for Economy, Science and Transport published a statement in June 2014 focusing on improvements and savings.

The EU's transport policy has been reviewed several times since its establishment in 2001 and it identified a number of roads that form part of Trans-European Networks- Transport (TEN-T). In 2012 this has been superseded by the revised comprehensive network. In Wales the roads in this network include the M4/A48/A40/A477 corridor to the ports of Pembroke Dock and Fishguard in South Wales and the A55 to Holyhead in North Wales, (5). In 2015 there is one EU Priority Corridor in the UK (partially in Wales); the Felixstowe to Holyhead link. (6)

### **The Cycle of Routine Maintenance**

Routine maintenance is intended to keep highway infrastructure safe, serviceable and reliable. The key to providing value for money is performing timely and appropriate maintenance interventions will:

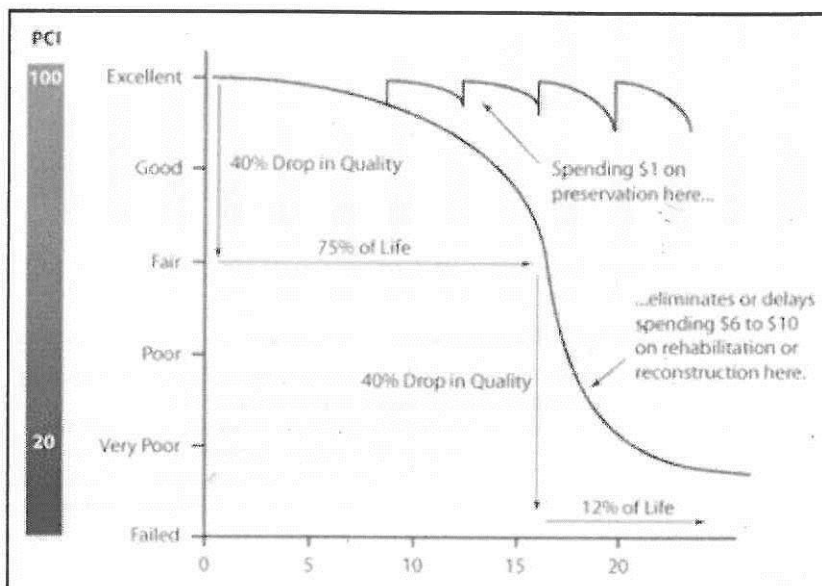
- limit the adverse effects on road users;
- prevent further deterioration; and
- minimise whole-life costs.

Intervening with planned routine maintenance at a suitable point during an asset's life can often restore it to its specified condition and hence extend the period of use between routine maintenance interventions. The importance of intervening at the right time for road repairs is paramount, in particular carrying out preventative maintenance to stop water penetrating the surface saves significant costs in later years." The Audit Commission reported that carrying out preventative maintenance during an asset's life costs less than a third of the price to reconstruct a road if it were allowed to fail", National Audit Office, (7).

Once constructed highways normally remain in service and require routine maintenance. If the regular cycle of routine maintenance is not adhered to and the period between interventions increases then the operational effectiveness of the asset decreases and the cost of maintenance intervention increases putting additional pressures on future budgets.

Recently constructed road pavements are appropriately designed and constructed with high quality materials and begin life in excellent condition. Typical UK winter weather will not cause problems for a pavement in excellent condition and prevention is the best cure for serious deterioration. Nevertheless over time the condition of the pavement starts to deteriorate and its condition will fall from excellent to good. Timely routine maintenance interventions are very cost effective and return the pavement to its excellent condition. This is shown in Figure 1 below (reproduced from the US Federal Highway Administrations Office of Asset Management, Pavements and Construction, (8)).

Figure 1: Deterioration Curves for highway pavements, Reproduced from FHAO, US (8)



If intervention is delayed the deterioration curve becomes increasingly steep and the cost and scale of maintenance required is increased in a non-linear manner. Under investment causing the delay of interventions leads to rapid and non-linear deterioration. Routine maintenance is replaced with carriageway reinstatement or even in extreme cases reconstruction of most or all of the layers which make up the carriageway. Extended delays in intervention will lead to a maintenance deficit being established with more roads offering lower operating standards and incurring higher maintenance costs in future. The asset value of the highway will also fall significantly.

Road pavements in poor condition can develop “potholes”. This is usually dealt with quickly and effectively should it occur on the motorway and trunk road network but on minor roads is a significant and sensitive issue for all road users. Patching these pot holes offers a short term fix but it does not improve the overall pavement condition, the repairs often deteriorate very quickly and the cost is estimated to be around 20 times the cost of routine maintenance, (9). This type of “worst first” strategy is very inefficient (10).

### **Highway Maintenance compared with Pavement Maintenance**

Highways also contain bridges, tunnels, culverts, retaining walls and other structures as well as drainage, earthworks and signage that all requires routine maintenance – typically with very different design lives and very different operational periods. All elements of the highway require routine maintenance and most of the basic principles are common to but this evidence concentrates on the road pavement maintenance.

To be effective routine maintenance has to take place in a particular time frame, as shown by the deterioration curves discussed above. This requires an asset management plan.

### **The need for the Highways Maintenance Efficiency Programme Approach**

The Highways Maintenance Efficiency Programme, HMEP, is a £6 million initiative, funded by the Department of Transport, to improve the efficiency of highways maintenance in England, using asset management principles, (11). The programme is concerned with facilitating the change to highways services, so that greater savings and efficiencies can be achieved and the demand for improved highway services can be met. HMEP seeks to connect the networks across the highways sector and provides tools and resources to help managers transform delivery of highways through greater efficiencies. The programme has ambitious goals to deliver 15% savings by 2015 and 30% by 2020 based on transforming the sector. The Asphalt Industries Alliance ALARM survey, (12), indicated that 80% of all local Authorities that responded to their recent survey were participating in HMEP.

HMEP is relevant in the context of Wales because there is recognition of the importance of well-maintained roads for economic prosperity. Roads that are fit for the future are the concern of government, business and communities. The HMEP programme is operating with a view to deliver improved roads in an environment of tighter budgets, rising costs and greater demands from consumers. HMEP seeks to enable and embed change at both a strategic and operational level. At the strategic level HMEP is seeking to engage with the leaders of local authorities including elected members, senior officers and practitioners to recognise the opportunities arising from change across the sector.

HMEP's strategic approach encourages new ways of organising and approaching delivery of services and include shared service models, scale economies and building capacity from within the sector network by sharing practice.

Asset management takes a long term, whole life approach to the management of new and existing highways assets. It allows for planned decision making rather than short term reactive decisions that inevitably cost more. HMEP has developed a number of guidance documents to support the development of asset management practices including a Lifecycle planning toolkit, (13). Where HMEP asset management has been adopted savings of 5 percent have been reported and in cases with more developed asset systems savings of 15 percent were reported. Asset management led decision making embeds a value and benefits achievement approach.

Collaboration is central to the change envisaged within HMEP. The approach is about creating the correct culture for opportunities for efficiency and improvement to flourish. HMEP encourages client/client as well as client/provider collaborations. It recognises that collaboration already exist and deliver improved performance but seeks to embed this culture. In support of collaboration it has developed a number of support guides and standards. These include; Maximising Client Provider collaboration toolkit for highways,(14), Local Authorities Collaborative Alliance Toolkit, (15), Shared Services Toolkit, (16), and Lean Toolkit, (17). One of the most significant outcomes is the reduction of disruption when highways and utilities collaborate on renewal and maintenance projects.

HMEP has developed guidance on procurement and contracts for highways. They seek to rationalise and consolidate documents that support delivery. These documents include the Form of Contract for Highways Maintenance Services, (18), procurement route choices toolkit for highways maintenance services, (19) and a supply chain collaborations toolkit, (20). Standardisation promotes greater certainty and consistency for clients and providers.

The ability to deliver improved efficiency is also dependent on the capability, competency and capacity of the participants. The new "Improving infrastructure delivery: project initiation routemap", supported by Infrastructure UK, (21), places a great deal of emphasis on the project management capability and competence of officials to deliver projects. It would therefore be relevant to consider a capability and competence audit within Transport Wales. Part of the work associated with HMEP also addressed competence and capability within organisations. It identified a lack of understanding of key decision making roles, an absence of whole life

management skills as well as project and collaborative management skills. To deliver efficient projects competent people are needed.

### **Maintenance trends in Wales**

As in the rest of the UK the motorway network in Wales appears to be maintained to a high standard. There is no published evidence of increasing deterioration in the state of the motorway and trunk road network. However there is evidence that in recent years there have been fluctuations in the pavement condition with an improvement in the state of the asset from 2002 to 2010 but a significant downward trend in 2011 and 2012 back to 2002 levels. This is partially due to adverse weather conditions but other factors are likely to have been involved, including the recovery in vehicle kilometres, mentioned above, (11).

Spending on pot hole repairs continues. If all minor roads are included then last year some 156,00 potholes were filled, costing £7.4m but over £1.8m was paid out in compensation for damage and injuries caused by potholes (12).

### **How can delivery & performance be improved?**

There is no evidence to indicate that there is a problem with the maintenance and management of the motorway and trunk road network in Wales. However like most aspects of the public sector budget there are pressures to delivery savings whilst not adversely affecting the levels of service. The “Do nothing” option, delaying intervention until a later time, can appear as a “free or cheap” option and without problems but this is not the true position. Further the strategy of “worst first”, usually applied to potholes is not cost or operationally effective.

Budget cuts must be considered in future and consideration given to how this can be achieved without detrimental effect of the network. From work with the HA and NAO in England, the following criteria have been identified to facilitate the improvement of the cost effective delivery of road network maintenance:

- Strategy must be based on HMEP asset management principles to make appropriate and timely maintenance interventions, (22)
- Staff must be trained appropriately
- Prioritisation criteria in line with the National Infrastructure Plan, (23)
- Up to date and accurate data on the condition of the network must be available
- Secure sustainable long term funding must be in place
- Development of a set of key performance indicators

It is likely that some initial investment is needed to ensure all these conditions exist before the savings in road pavement maintenance can be delivered. This will take time and it is likely that “savings” made by reducing funding before these conditions are satisfied will be detrimental and non-sustainable.

To provide a single strategic highways vision for Wales consideration should be given to the creation of a single entity that takes responsibility for the trunk and motorway network. This would facilitate a closer strategic delivery link between national infrastructure plan and a “new strategic roads agency”. The mechanisms for service delivery that follow can then be flexible.

In the longer term there are a number of maintenance options that deserve further consideration. One approach adopted in several countries around the world is the Toll-Operate Toll, TOT, system of road maintenance. Realistically this option is only viable where the motorway and trunk road network is wholly or partially tolled. Although unpopular, the option for variable, full-time, 24 hours for 7 days a week, tolling of the highway asset is likely to be introduced at some point in the future. TOT consists of transferring a length of road to the private sector, allowing tolls to be charged and using the dedicated income to upgrade, improve and maintain the road to a high standard for the duration of the PPP concession at which time it is either transferred back to the public sector as a toll road or re-contracted to a private operator.

## References

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2. Welsh Government, Statistical bulletin on road lengths and conditions, December 2014
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4. Unpublished World Bank Internal Report
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8. US Federal Highway Administrations Office of Asset Management, Pavements and Construction, [www.planning.dot.gov/documents/ASI\\_report/asi-01.htm](http://www.planning.dot.gov/documents/ASI_report/asi-01.htm).
9. All Party Parliamentary Group on Highway Maintenance, Managing a valuable asset: improving local road condition, 14 October 2013
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14. HMEP Maximising Client/Provider Collaboration in Highways Maintenance Services. HMSO (2013)
15. HMEP Local Highway Authorities Collaborative Alliance Toolkit. HMSO (2012)
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20. HMEP Local Highway Authority Supply Chain Collaboration Toolkit . HMSO (2014)
21. HM Treasury Improving Infrastructure Delivery: Project Initiation Routemap Handbook . HMSO (2014)
22. National Audit Office, Maintaining strategic infrastructure: roads, 6 June 2014
23. ICE State of the Nation Infrastructure 2014



Welsh Assembly Public Accounts Committee

Professor R J Lark BSc(Eng), ACGI, PhD, CEng, FICE

Dean of Education and Students  
College of Physical Sciences and Engineering  
Deputy Director  
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Robert (Bob) Lark is a Professor of Civil Engineering at the Cardiff School of Engineering, Cardiff University and has been involved in research, design and construction allied to the UK's transport infrastructure over a period of nearly 40 years. Of particular relevance to this inquiry is the time he spent with the then Gwent County Council, where he was involved with the assessment, repair and maintenance of the County's highway structures; his involvement with ICE Wales, Cymru, of which he was Chair in 2008/09 and to whose "State of the Nation" reports he has contributed; and his research interest in the application of BIM (Building Information Modelling) to the design, construction, maintenance and management of our highway infrastructure, which he is currently undertaking in collaboration with the Welsh Assembly Government, the UK Transport Catapult and both private and public service providers who work with the Welsh Government to deliver the design, construction and maintenance of Wales' highway network.

This written evidence is given in the context of the above experience and represents a personal opinion. In-depth research has not been carried out into any of the issues identified, either in Wales or the rest of the UK, but it does address all three of the bullet points in the Terms of Reference, albeit only superficially in the case of the first of these.

**Does the Welsh Government's approach to delivery of major trunk road projects provide value for money?**

The procedures that are currently being adopted by the Welsh Government are consistent with what is generally considered to be good practice in the industry. Early Contractor Involvement (ECI) is considered to be key to efficient planning, the provision of reliable cost and completion date estimates and the timely delivery of project outputs. The Welsh Government has been closely involved with the development of ECI and, while there are still undoubtedly procedural and contractual issues that would benefit from refinement, it doesn't seem unreasonable to assume that this still represents an attractive and viable way of ensuring value for money in the delivery of trunk road projects. What may be further investigated is whether even closer alliances / public private partnerships / private finance initiatives might be established with such providers to benefit from their commercial management and ability to invest in research and development, although this may detract from the benefits of competitive tendering that can be obtained at different points in the current procurement protocols.

## **Highway maintenance and improvement.**

Highway maintenance requires consideration of many diverse assets including the highway pavement, bridge structures, culverts, tunnels, retaining walls, earthworks, drainage, lighting and street furniture such as signage, all of which are currently dealt with in many different ways. In some cases, such as for the highway pavement, condition monitoring techniques are relatively sophisticated and the management of maintenance and repair regimes can follow well established protocols. However, in the case of highway structures and secondary features such as drainage, maintenance is often much more reactive, albeit often being triggered as a result of a routine inspection. Asset management procedures are less well-developed and, as a consequence, the timing and cost certainty of the work that is required is much less well defined leading to inefficiencies and reduced value for money.

Equally challenging is that currently there is very little linkage between the management systems that are used for the different asset categories and therefore when it comes to cross asset prioritisation comparable measures of value, reliability and risk are not readily available. Bridge and Structure management systems have been developed and, in some cases, very successfully deployed, but their output cannot readily be compared to or combined with that of the widely available pavement management systems or the more ad-hoc and often locally developed databases used for managing drainage systems, lighting networks, road markings and signage etc. Research is required to identify common characteristics, measures of condition, reliability and risk and techniques whereby these measures can be compared across assets so that informed and defensible decisions can be made as to how to ensure best value is achieved in highway maintenance and improvement.

The Highways Maintenance Efficiency Programme, HMEP, funded by the Department of Transport, seeks to deliver improved highways management in an environment of tighter budgets, rising costs and greater demand from consumers by providing tools and resources to address the above challenges. It is appropriately based on asset management principles and provides a framework for a whole-life approach to the management of highway assets, which has the potential to yield significant savings if it can be applied across the board. For this to happen collaboration is essential and while HMEP provides 'toolkits' to facilitate this, what is still lacking is a universally applicable methodology that can truly support and drive forward this approach.

To achieve this, a step change in highway infrastructure asset management is required in the form of a high powered (Cloud Computing based), intelligent and BIM compliant decision making framework for the "real time operation, maintenance and improvement of a highway network". This should provide a flexible system that would enable the Welsh Government and their Maintaining Agents to meet their statutory duties for safety, while minimising the whole life costs of the assets for which they are responsible and achieving their wider policy objectives. It would be founded on BIM based standards/processes that could combine traditional inventory and condition data with the output of condition monitoring and evaluation surveys to provide a basis for the real time performance management, decision making and intervention required to optimise scheme development and prioritise budget limited asset group investment strategies. The innovation required to facilitate this would lie in the development of BIM (level 2) standards for highways to facilitate real time and risk based multi-criteria decision making through the processing of large scale "big data" supplied by multiple, life cycle stakeholders.

The big picture would be to enhance the decision making processes associated with the management of highway networks to ensure that service levels are sufficient to meet the needs of Wales' economy, health and education agendas. Such a development could

provide vital tools to enhance the optimisation and decision making processes that are fundamental to maintaining the serviceability and safety of a highway network within the constraints of a limited budget. As such it could underpin a smarter and more cost effective approach to asset management and offer the step change needed for a more sustainable approach. Such a development could also demonstrate how science and lateral thinking might contribute to improving highway management practice and facilitating behavioural change.

To conclude, to achieve a more efficient approach to the management of Wales' highway network and to obtain better value for the money invested for this purpose there is a need for greater collaboration between the Welsh Government, their agents and the contractors responsible for the delivery of both new works and the maintenance of existing infrastructure. To achieve this there is a need for research and development into the deployment of BIM compliant highway management systems that can build on the recently developed Integrated Road Information System (IRIS) and, given the special characteristics of the Welsh highway network, a Welsh based public / private partnership might be an appropriate way of delivering this.

R. J. Lark  
04/03/15

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**National Assembly for Wales Public Accounts Committee  
Inquiry into the value for money of motorway and trunk road investment**

**Comments from Chartered Institution of Highways and Transportation**

**1 Background**

- 1.1 The Chartered Institution of Highways and Transportation (CIHT) was established in 1930 as the Institute of Highway Engineers; it was granted its Royal Charter in 2009. Today it has around 13,000 members worldwide, with over 700 members in Wales, across both the public and private sectors and a range of transportation disciplines.
- 1.2 CIHT will be represented by Eurling David Meller, BSc(Hons), CEng, CEnv, MICE, FCIHT, MAPM, a committee member of the North Wales Branch with 30 years' experience in the highway industry, working on both trunk and county road improvements and maintenance projects. He has delivered a number of trunk road major projects in North Wales over the last 20 years, working direct to Welsh Government as client, and also worked extensively for North and Mid Wales Trunk Road Agent (NMWTRA). The comments made may not, however, address issues that have arisen in South Wales, nor are they based on a detailed knowledge of the routine maintenance activities.

**2 The effectiveness of Welsh Government planning and costing of schemes**

- 2.1 The Welsh Government's (WG's) approach to delivery of major trunk road projects is generally satisfactory. Our main observation regarding planning and costing would be to avoid 'stop-start' delivery, as this leads to waste. For example, one trunk road scheme in the recent National Transport Plan had previously advanced to publication of the statutory orders some years ago before being 'shelved' and the orders withdrawn. Quite apart from the fact that a number of incidents have occurred on that part of the network in the meantime, which would probably not have occurred had the scheme proceeded, the need to carry out renewed environmental surveys, and address revised design standards and procedures that have been introduced since the previous scheme was prepared, means that a considerable amount of work has been abortive. A similar situation may well apply to schemes such as the M4 at Newport. There is a common feature here between the major projects programme and the management and maintenance function, in that increasing certainty of expenditure and workload brings increased efficiency in delivery over the current short-term planning and funding regimes – on major projects it seems to be widely accepted that the Early Contractor Involvement (ECI) model is improving cost and time performance.
- 2.2 There have been problems in recent years with cost escalation during the construction phase of some schemes. While this is due to a number of factors, a common factor appears to have been delay in the procurement process leading to a delay in starting construction, and hence a compensation event from day one of the contract – WG needs to address this issue. There was also, during the recession, pressure on contractors to win work in order to maintain cash flows, which we believe

led in a few cases to unrealistically low tenders being submitted, leading to attempts to cover losses by exaggerating the cost of change. In the improving market such tactics are unlikely to be employed, but it is important that particular emphasis (perhaps greater than at present) is placed on quality over price in assessment of tenders, as too great a focus on tender prices leads to both higher out-turn capital costs and higher whole-life costs.

### **3 The approach to project delivery and evaluation of projects**

- 3.1 WG follow the project evaluation processes set out in the Design Manual for Roads and Bridges (<http://www.standardsforhighways.co.uk/dmrb/>) when assessing the forecast benefits of schemes, thus giving a high level of confidence that benefits will accrue to the community as a whole, and that any adverse effects will be appropriately mitigated. There does seem, however, to be a lack of transparency over the prioritisation of projects - looking back over the published programmes of the last fifteen years or so, projects have appeared and disappeared, or disappeared and re-emerged for reasons which are not entirely clear. As indicated above, such stop/start progression can lead to waste even in the scheme preparation stage.
- 3.2 Another area where improvement could be made is in post-completion evaluation of projects, to examine the extent to which the intended benefits have been delivered and to potentially learn lessons for the future. While 'cost reconciliation reports' are frequently produced, they consider only the construction phase, while we are not sure how widespread the production of 'design effectiveness reports' is, and there is little evidence of experiences being fed back into WG processes or the lessons from schemes being disseminated across the wider design and construction profession. We understand WG are intending to produce guidance on the content of a 'post opening project evaluation report', but are not aware of the timescale for this.

### **4 How the Welsh Government could improve its approach to planning and delivery of schemes**

- 4.1 Besides the comments made above, we would emphasise the importance of a clear pipeline of work, which allows the industry (both contractors and consultants) to maximise efficiency in delivery of schemes. We would also like to see a focus on 'medium sized' projects, which would allow Welsh SMEs to take a lead role, and develop experience both for the business and individual employees. At present, with the focus on rather larger projects, these businesses can only find a role in road projects as second or third tier in the supply chain, which stifles their ability to develop.
- 4.2 There is provision for 'medium' schemes to be delivered through the trunk road agents, but the threshold for such schemes has remained at, we believe, £2M for at least the last 20 years, and inflation has eroded the size of project that can be delivered. If the threshold were raised to, say, £5M, with delivery through the current framework consultants and contractors, there would be significant benefits for the 'Welsh pound' – while many of the large consultants and contractors have offices or depots in Wales, the work on the major ECI projects is often carried out by offices outside Wales. More modest sized schemes can deliver higher return on investment than the 'mega schemes' and, with usually shorter lead times (eg no public inquiry), the overall delivery timescale can be considerably shorter.



- 4.3 There is a medium scheme budget within the trunk road agent funding regime, but it has been severely curtailed in recent years. From being sufficient to fund construction of schemes in the £1M to £2M range some four to five years ago, we understand the budget for NMVTRA last year permitted only some preparatory design work on a single project.
- 4.4 Efficiency of delivery by the trunk road agents is severely constrained by the annual funding cycle. While the agents have done what they in terms of framework contracts that provide for rapid mobilisation of both consultants and contractors, the situation remains unsatisfactory. Budgets tend not to be confirmed until one or two months into the financial year, so preparation/design time is lost. The design is then carried out under time pressure which often means that value engineering opportunities cannot be exploited, and the actual construction work is concentrated in the last few months of the financial year, when daylight hours are short, and adverse weather has an effect on programme (and hence cost). The situation is particularly acute with regard to surfacing work, which is susceptible to disruption due to low temperatures, and surfacing contractors often have insufficient resources to deliver all the work on offer - we do not have evidence to confirm the perception that tender prices rise at this time of year, but it seems highly likely. It has also become the norm for additional funding to become available around November of each year, and the requirement for this to be spent by the end of March leads to considerable inefficiency – we make comments later about longer funding periods.

## **5 The extent to which the current approach to routine maintenance and improvement of the network via Trunk Road Agents has delivered value for money**

- 5.1 The trunk road agents, through the collaboration with local authorities, have generally delivered value for money in the routine maintenance and improvement of the network. Historically there may have been concerns about inefficiencies, but we believe the auditing regime established by WG and the pro-active management by the agents has driven out waste – though there is always room for further improvement. We would note that the audit reports do not appear to have been made publicly available and, while we appreciate that much of the content may be commercially confidential if it compares local authority prices with framework prices, we would suggest that at least the principal findings should be placed in the public domain.
- 5.2 In the rural areas of Wales, in particular, the sharing of resources between the county and trunk road networks means that operatives and equipment are available locally to respond swiftly to incidents, and works such as winter maintenance can be carried out with maximum efficiency.
- 5.3 With regard to the white-collar services, however, there is a risk that the significant financial pressures now being placed on local authorities will starve them of the resources to develop. We are seeing evidence of training budgets being drastically reduced, so that staff development is minimal. This comes at a time when many greatly experienced people are being lost through voluntary redundancies and yet the requirement for training is even greater, with the need to develop capability across a range of areas, for example in the application of BIM (Building Information Modelling). The same financial pressures are stifling investment in technology (both hardware and software) so that delivery processes are failing to keep pace with developments in current best practice. Across North and Mid Wales we are seeing the complete

closure of in-house consultancy organisations in some authorities, with a consequent loss of capacity and capability.

- 5.4 While the agents have frameworks in place that allow for delivery of such services and, in theory, they should be able to pick up the slack, it seems that the private sector consultants are now experiencing growing workload and being far more selective in accepting work. The NMWTRA Multi-Disciplinary Consultancy Services Contract was awarded in October 2014 and, for work under £50K in estimated value, provided for a 'preferred consultant' who would be offered all work within the scope of the framework. We understand that already, the lead consultant is declining work and, although there are two reserve firms, the fact that such a situation has arisen so soon, gives cause for concern as to what the situation might be further into the three-year term of the framework with regard to value for money.

**6 How the maintenance and improvement functions delivered by the Trunk Road Agents can be improved, in the context of the on-going Welsh Government review of these agents.**

- 6.1 Given the combination of problems outlined above, of local authority consultancies losing experienced staff due to wider-ranging financial constraints, and private sector consultancies declining work due to insufficient capacity, a possible solution might be some sort of Public-Private Partnership which allows for retention of senior staff with their invested (often local) knowledge, allowing time for knowledge transfer to more junior staff, continued feedback of funding into the local economies, and the innovation and development of new technologies from the private sector partners. There is, of course, a multitude of questions that arise surrounding such a proposition, and we do not claim by any means to have all the answers, but suggest this is a potential solution worthy of further investigation.
- 6.2 In considering options for improvement, it is appropriate to look at how others do things. In England the Highways Agency (soon to become government-owned company Highways England) was formed in 1994 to manage the trunk road network, and initially maintenance work was performed by local authorities. From 1997 private sector firms were appointed – a Managing Agent (usually a consultant) to design and manage maintenance work, and a Term Maintenance Contractor. From 2002 these functions were combined into Managing Agent Contractors (MACs), usually involving a joint venture between contractor and consultant.
- 6.3 The MACs originally tended to be based on input specifications, which stated what the contractor/consultant was required to do, and related to the Trunk Road Maintenance Manual (TRMM, an updated version of which is still used in Wales). This approach later gave way to an outcome specification, which stated what performance level was required from the contractor, as now set out in the Network Management Manual and the Routine & Winter Service Code (RWSC). While the TRMM might require that gullies, catchpits and interceptors are emptied once a year, the RWSC requires that drainage systems are maintained such that there is no standing water on the paved area of the highway.
- 6.4 With public finances coming under greater pressure, the MACs started to be replaced by Asset Support Contracts (ASCs), which were intended to encourage providers to innovate and drive down cost. The first ASC was tendered in 2011, but their introduction apparently featured anomalies in the assessment of bids as well as

delays to the tender process. Late last year the tender processes were halted for two areas, following financial evaluation, and revised tender documents are to be issued. In February it was reported that the Area 7 MAC (for which the current contract expires in summer 2016) will not be replaced by an ASC as originally intended, but there will instead be separate contracts for design, routine maintenance and construction.

- 6.5 This latest change in procurement policy is aimed at giving Highway England closer control of the network. It recognises that, with the establishment of the MACS, the Highways Agency lost its in-house expertise, and the ASCs have tended to put more control and knowledge in the hands of the suppliers. Highways England aims to be an intelligent client, but cannot achieve that ambition without understanding of the detail of the network. The change also acknowledges the fact that many of the ASCs were procured in a time when the industry was in recession, but the current recovery raises concerns that the rates in the contracts are probably now insufficient to cover costs, and quality may become compromised.
- 6.6 The creation of Highways England, with 5-year funding periods, is aimed at improving efficiency through increased certainty, bringing the highways sector into line with what is already happening in the rail and water industries. An area for concern with such models, however, is that the transition between funding periods can lead to troughs in workload, with associated loss of staff and experience, and a lag in delivery capacity as the supply chain mobilises for the new funding period. The water industry seems to be addressing this issue by establishing new delivery arrangements in advance of the new funding period; an alternative may be a rolling 3-year regime.
- 6.7 In Scotland the trunk road network is divided into four areas, in each of which a MAC-style arrangement is in place. In Northern Ireland the Roads Service is responsible for all highways, and is currently still a government department. Comparison with other parts of the UK therefore suggests that there are a number of options which should be carefully appraised before making changes to the way in which trunk road maintenance is procured. Again, it may be that a Public-Private Partnership model of some sort should be one of those options, and it may be that the alliancing model now being employed in the water industry is an option to consider.

## **7 Conclusions**

- 7.1 We conclude that WG generally obtains value for money in the maintenance and improvement of the Welsh trunk road network. The delivery of major trunk road projects is generally satisfactory, with scope for improvement in terms of evaluating outcomes of projects and some other areas of planning and prioritisation.
- 7.2 There is scope for re-introduction of a medium scheme programme, filling the gap between the modest safety improvements currently dealt with through the trunk road agents, and the major projects delivered through ECI contracts. Such medium schemes would provide a good rate of return on investment in a relatively short timescale, and bring substantial benefits in sustaining and developing Welsh SMEs.
- 7.3 The trunk road agents have provided a good service over the years and the partnership with local authorities has a number of advantages, particularly the ability to share resources and expertise in the rural regions. However, the wider financial challenges facing local authorities suggest that the current model may not be

sustainable, particularly with regard to the white-collar services, and a change may be necessary. We urge caution, however, in making radical changes without full consideration of options.

- 7.4 Probably the greatest opportunity for increasing value for money in maintenance of the trunk road network lies in greater certainty of funding, which would lead to better planning of work, so that it can be carried out at the best time of year and make best use of resources as well as minimising disruption to road users.