

# Alternatives to Travel: Next Steps

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# Contents

Foreword .....	4
1. Introduction .....	6
What are 'alternatives to travel' and why are they important? .....	6
Call for Evidence.....	7
About this document .....	7
2. Next Steps.....	9
Call for Evidence key points.....	9
Guidance and case studies.....	9
The Olympics and Paralympic Games.....	14
Government action - leading by example .....	15
Financial incentives .....	18
Links with wider Government policies .....	19
3. Anywhere Working .....	23
Background.....	23
Aims.....	23
Measuring success .....	24
Partners .....	24
Next steps – and where to find out more .....	26
A. Case Studies.....	27
GlaxoSmithKline .....	27
Microsoft .....	30
Eversheds.....	31
Merseyside Fire and Rescue Service .....	33
B. Sustainable Travel Hierarchy .....	36

# Foreword

When people look back on the early years of the 21st century they will no doubt puzzle over a curious anomaly.

Ours is an age that has given rise to communications technologies of dazzling sophistication.

An era that did more than merely reduce the distance between A and B but, thanks to innovations like tele conferencing and instant messaging, removed it altogether.

Yet, to date, our approach to alternatives to travel - whether working from home, staggering office hours, or using web conferencing - has not kept pace with the benefits available. Most of us still take the same crowded bus or train to work with barely a nod to the freedom of flexible working or the versatility of the video conference.

But the purpose of this report is not to press the case for any one method of travel. It is not to argue that you should stay at home or invest in the latest gizmo. Instead, it seeks to challenge inflexibility. The insistence on doing things because that's the way they've always been done.

In an era where businesses must keep running, whatever the weather, where we are looking to radically reduce our carbon emissions, adaptability and flexibility must become our watchwords.

As our report shows, forward looking companies are already embracing this way of working for hard-nosed economic reasons. With spin-offs ranging from higher productivity to a lower cost base, from reduced absenteeism to increased staff retention.

In fact, as we look forward to the Olympics and move towards a low carbon economy, it is precisely these versatile companies who stand to gain most.

The Government is committed to practising what it preaches. Our report illustrates the various steps we are taking across Whitehall to be more flexible as an employer, and to cut carbon.

But if we are to realise the prize that alternatives to travel offers, of fewer needless journeys, of better work-life balance, of congestion and carbon down and company profits up, then we have to do more.

Public and private sector must work in tandem to create travel policies fit for the modern era.

So that when people look back at our century they will see this as the moment when we awoke to the potential that travel alternatives can offer. And our society, our economy, our environment, and our own working and personal lives reaped the reward that followed.

**Norman Baker MP**

**Parliamentary Under Secretary of State for Transport**

# 1. Introduction

## What are 'alternatives to travel' and why are they important?

- 1.1** Alternatives to travel are measures which can reduce or remove the need to travel, particularly for work, including commuting and business trips and travelling during peak times. The travel alternatives that are within the scope of our current work include:
- Home working and remote working
  - Flexible working and staggered hours (in order to reduce travel during peak periods)
  - Tele conferencing, video conferencing and web conferencing
  - Any other alternatives to travel which can help reduce work-related travel.
- 1.2** In encouraging these approaches the Government is not seeking to stop people from travelling. Rather we are encouraging individuals and business to think flexibly and to consider the range of technology and travel options available to enable them to carry out their work in the most efficient and effective manner. It is in recognition of the economic and potential environmental benefits that, for the first time, alternatives to travel is an element within the Ministerial portfolio.
- 1.3** Using alternatives to travel can make **good business sense**. They can help to reduce congestion and increase productivity, contributing to **economic growth**, and can help reduce business travel, saving businesses money. They can help to reduce stress and absenteeism and have the potential to provide a boost to local economies and rural areas. There are potential benefits for the UK knowledge economy that has developed to support the different alternatives to travel approaches.
- 1.4** Increased uptake of alternatives to travel can also help **reduce carbon** by reducing the need for business-related travel (for example, by conducting meetings via technology solutions or reducing unnecessary trips), or by increasing the number of staff working remotely, thereby reducing commuting trips. Greater flexibility for employees to work in a

range of locations can also enable employers to make more efficient use of their buildings, potentially reducing their property requirements with consequent savings in both costs and emissions.

- 1.5 Increased **business resilience** to events such as severe winter weather or transport disruption is a further benefit of increased use of alternatives to travel. Building in the ability to work more flexibly, both in terms of hours and locations, provides a valuable ability for businesses to continue to operate in unforeseen circumstances where travel may be difficult or impossible. For many office-based organisations, access to mobile technology and communications can enable business to continue as usual with minimal travel.

## Call for Evidence

- 1.6 The Government does not claim to be the leading expert on the use of alternatives to travel. Many businesses and organisations are already successfully using these approaches, tailored to the particular needs of their work. However, this is by no means universal.
- 1.7 Therefore, in April 2011 we launched a Call for Evidence to seek contributions from a wide range of businesses, sectors, organisations and individuals. By doing this, we aimed to document experiences and impacts of, and the future potential for, alternatives to travel. In addition, we wanted to hear from those not currently making use of such alternatives about the reasons behind this.
- 1.8 The Call for Evidence closed at the end of May and we have now analysed the responses we received. A summary of those responses is published alongside this document. We have used the information we gathered from stakeholders to develop a longer term strategy on alternatives to travel. This in turn will ensure that alongside local sustainable travel choices, alternatives to travel can play a key role in creating economic growth and cutting carbon.

## About this document

- 1.9 This document sets out the work currently underway and the next steps Government will be taking to develop and deliver a coherent, co-ordinated policy relating to alternatives to travel. These next steps have been developed taking into account responses to the Call for Evidence and following discussions with stakeholders and other parts of Government. Some of the proposed actions are short term while others will take many years to deliver, and many of these actions will require

Government, business and individuals to work together to deliver a genuine, sustainable behaviour change.

- 1.10** The document also sets out a business initiative - Anywhere Working - that will help address some of the key issues raised by respondents to the Call for Evidence. This initiative has been developed by business, for business, and will support organisations as they seek to implement modern working practices which remove the need to always travel to a traditional office. Further detail on the initiative can be found in Section 3.

## 2. Next Steps

### Call for Evidence key points

- 2.1** The key findings from the Department's recent Call for Evidence are summarised in an accompanying document. The actions set out over the following pages respond in particular to the comments received about the role of Government in encouraging a more widespread uptake of alternatives to travel.
- 2.2** The points raised included:
- Promoting case studies and positive messages, for example including best practice, feasibility studies, monitoring tools and guidance on getting started
  - Improving broadband and other issues relating to internet access
  - Government leading by example
  - Changing the tax system to both promote change and remove (real or perceived) barriers
  - Linking up with other parts of Government so that alternatives to travel are taken into account in other policy areas
- 2.3** The following sections set out the steps Government is currently taking on alternatives to travel, and further action that Government will be pursuing in the short, medium and long term to address each of the issues highlighted above.

### Guidance and case studies

#### Developments to date

- 2.4** The Department for Transport currently engages with business on sustainable transport and alternatives to travel through a range of initiatives including funding the National Business Travel Network (NBTN) and working directly with public and private sector organisations.

- 2.5** The NBTN, hosted by Business in the Community, has developed a *ways2work* toolkit to offer advice on workplace travel planning, including alternatives to travel, with case studies and advice on using information and communication technology (ICT) to reduce business travel. The toolkit can be found at: [www.nbtn.org.uk/ways2work/](http://www.nbtn.org.uk/ways2work/).
- 2.6** There are many examples of businesses and public sector organisations who have already been successful at implementing a range of alternatives to travel measures, and who have seen a wide range of benefits as a result. The following case studies (summarised below and in more detail in annex A) are taken from NBTN's *ways2work* resources. More can be found via the *ways2work* website.

### **Case Study: Microsoft**

90% of Microsoft's UK staff work flexibly, so it is imperative that staff are provided with the tools and technology to facilitate working anywhere. All staff have access to Microsoft Unified Communications (UC) technology, including laptops, headsets and webcams. Online training, step-by-step guides and IT workshops are held to ensure staff know how to best use the technology.

A number of business benefits have been identified since this technology was first deployed, including:

- An improved productivity gain of 28 minutes per employee per day, saving Microsoft \$86 million in employee cost.
- Microsoft employees avoided taking more than 45,000 trips per year, which saved an additional 420,000 hours in travel time. Assuming half of this is recaptured for work-related activities, this time is valued at \$17 million.
- The average cost of each of these saved trips is \$2,050, saving the company \$93 million in travel costs.
- Employees avoided flying more than 100,000,000 miles in the first fiscal year, saving 17,000 metric tons of CO<sub>2</sub>.
- By reducing audio conferencing costs, Microsoft IT expects the cost savings to be 50% of current charges, totalling more than \$9 million over three years.

## **Case Study: GlaxoSmithKline**

GSK's mission statement is to 'do more, feel better, live longer' and the company has a holistic travel impacts reduction programme to support this. It is also important to GSK to attract and retain the best staff and the most productive talent by enabling colleagues to work with ease and efficiency, offering the best and healthiest working conditions, and providing the facilities and technology to enable employees to work and collaborate flexibly and remotely when it best suits the business's and their needs.

GSK have developed innovative, pragmatic solutions that are sustainable, promote the use of eco-friendly transport modes and support the efficiency of space utilisation in their London HQ. Facilities and policies enabling employees to seek alternatives to travel to reduce commuting and business travel impacts have also been provided.

To further support employee work / life balance, GSK offers flexible working policies and arrangements to enable staff to work flexibly and / or remotely by agreement with their manager and dependent on their role in the business. Likewise, GSK's offices are configured to enable different workstyles suiting business and employee needs whilst making effective use of office space.

As a result of this approach, GSK have seen a number of business benefits. Business travel has been greatly reduced by a significant investment in conferencing systems around the world including tele conferencing and web conferencing facilities, desktop and personal video conference units, 500 dedicated video conferencing rooms in 68 countries and 16 telepresence suites. This provision of good quality equipment, supported by behavioural change programmes, has resulted in a 40% increase in video conferencing from 2009-10.

Between 2008 and 2009 GSK cut 37,804 one-way flights, saving 38,622,606km of air travel, decreasing CO<sub>2</sub> emissions by 7,151 tonnes, and significantly reducing business travel costs while improving employee productivity and work / life balance. As an example, one meeting involving 70 senior managers from around the world resulted in cost savings of £60,000, reduced 140,000 miles worth of air travel and 24 tonnes of CO<sub>2</sub>.

There are also reputational benefits. GSK is recognised as one of the most innovative employers in reducing travel impacts, and in 2010 was, along with BSkyB, voted Cycling Weekly's top commuting employer.

### **Case Study: Eversheds**

Eversheds, a legal firm, has a holistic approach to flexible working. Their Lifestyle scheme enables all staff to meet their personal needs whilst fulfilling their business and career objectives. Increased use of technology such as laptops, mobiles and BlackBerries make it easier for employees to work more flexibly. Citrix is available to all staff and in 2010 Eversheds was the first major UK law firm to roll out iPads. This enables greater flexibility and productivity throughout the business. Webinars, tele conferences and video conferences are widely used throughout the firm enabling meetings to be set up and information shared at no notice, on a global basis.

The main drivers for Eversheds' work in this area were staff retention, improved productivity, and business efficiency. They have seen a number of business benefits, including:

- Between 2008/09 and 2009/10 Eversheds set a 10% travel related carbon reduction target – however this was exceeded with comparable travel costs falling by 24% saving £1.3 million.
- By encouraging colleagues to travel more sustainably and less, car mileage reduced from over 1,154,000 miles in 2008 to 720,000 miles in 2010 (an overall 38% reduction). This equates to a reduction of 141.7 tonnes CO<sub>2</sub> (Defra 2009 conversion factor) and a saving of £175,000.
- An 85% reduction in carbon emissions associated with flights was achieved by daily liaison between the travel team, travellers and bookers.
- Absence figures, whilst already low, have further reduced from 2.3% in January 2010 to 1.9% in January 2011.
- In 2010, almost 500,000 minutes were used on webinars. Take up increased from 16,000 minutes/month in January 2010 to over 45,000 minutes/month January 2011.
- An increasing proportion of staff agreed with statements relating to the firm being supportive of their work / life balance, being able to work flexibly if they needed to, and being able to choose working arrangements that enable a better work / life balance.

### **Case study: Merseyside Fire and Rescue Service**

MFRS aims to reduce single occupancy car travel - both business and commuting - through encouraging active / sustainable travel and reduced

travel through the use of video and audio conferencing.

MFRS' main business drivers are to reduce emissions and costs. MFRS is committed to a 30% reduction in CO2 emissions (2008-13). 30% of MFRS emissions are from business travel and commuter emission estimates at MFRS are equivalent to 15-25% of the organisation's direct emissions, so 'alternatives to travel' are likely to make an increasing and significant contribution to reducing these emissions.

In order to reduce emissions, MFRS has developed a travel hierarchy policy in conjunction with a highly successful staff culture change campaign. In addition, a vehicle efficiency project has been implemented to reduce emissions from business travel, including by increasing use of media conferencing facilities. A number of technologies and policies to support remote working have also been put in place.

The use of conferencing facilities is making a sound contribution to reducing transport emissions, both from essential Station Management Incident Command mileage and also from Support Staff business mileage. Video and audio conferencing are frequently used for knowledge sharing during incident management – using interactive whiteboards at Stations and Incident Rooms and using the Incident Command Vehicle, in addition to audio and VC software. It is also used for liaison between other UK Fire and Rescue Services.

As a result, MFRS have seen emissions from mileage reduced from 118.52 tonnes in 2007/8 to 82.23 tonnes in 2010/11 – a reduction of over 30% and saving over £70,000 in this three year period. There have also been significant reputational benefits for MFRS which can be quantified by the numbers of awards and commendations received.

- 2.7** In the 2011/12 financial year, the Department has also made available a one-off grant to promote alternatives to business travel and commuting in the public sector. The specific role of this grant is to encourage the public sector to look holistically at transport across an organisation, including commuting and business travel, and consider the potential for reducing or removing the need for travel. The project is due to report in March 2012, and one of the expected outputs is a tool to support organisations in developing business cases for introducing alternatives to travel measures. The tool will be made available on the Department's website.

## **New and future developments**

- 2.8** The business-led Anywhere Working initiative, described in detail in Section 3, will also provide an extensive source of tools, resources, advice and best practice to support organisations in getting started on anywhere working. Although this initiative will initially run during the 2011/12 financial year, it is hoped that it will continue in future years and - along with *ways2work* - provide an ongoing source of information and support.
- 2.9** Over the longer term, the Department will continue to engage with the business sector, with employee representatives, and with other stakeholders with an interest in alternatives to travel. This is with the aim of both developing a robust evidence base quantifying the benefits of different types of alternatives to travel in a range of different circumstances, and making use of this evidence base to continue to promote alternatives to travel and smarter ways of working.

## The Olympics and Paralympic Games

- 2.10** In those areas of the country affected, the **London 2012 Games** have been a key factor in raising awareness and take-up of travel alternatives, both in Government and within the wider public and private sectors. Transport for London (TfL) is working closely with organisations across London to help them put plans in place now for how they will operate during the Olympics period, when transport networks in London and other venue towns and cities will be much busier than usual. In addition to site-specific advice for those businesses most affected, TfL has developed a set of resources at [www.tfl.gov.uk/2012](http://www.tfl.gov.uk/2012) to help businesses plan their travel by reducing non-essential journeys and re-timing, re-routing or changing the mode of essential journeys next summer. TfL has also launched a revised guide to Smarter Working designed to help businesses become more efficient and productive and to make more effective use of both their workforce and London's transport infrastructure.
- 2.11** As large central London employers, Government departments also need to start planning now to contribute to demand reductions and ensure that essential business can continue. The Department for Transport is steering a project to ensure that Government leads by example in reducing travel demand through changing our working and travel practices over the Games period next summer.
- 2.12** The first stage of this project was to produce a toolkit for departments setting out the options for reducing travel and offering guidance on the process for developing an action plan. This set out options for reducing commuting and business travel - for example, by increasing home working, video and audio conferencing - and gave a number of tips to

help implement these working practices. The toolkit also made clear the legacy benefits of trialling such working practices during the Olympics and Paralympics.

**2.13** Staff at the Department for Transport tested travel reduction plans in a trial week in August 2011, and positively changed 69% of commuting and business trips. The Department's ambition for next summer is to positively change at least 50% of our commuting, business travel and delivery / collection trips over the seven-week period from the date that the Olympic Torch comes to London (21st July) to the Paralympics Closing Ceremony (9th September). In the next year the Department will be using the lessons learned from the trial to make sure this is achieved, and will be engaging with other Government bodies to make sure they are considering the impacts on their business and reducing their own travel where possible. The Department is also planning to hold a further trial week next year to coincide with the Anywhere Working initiative described in Section 3. Although the focus of the Olympics is relatively short term, the Department is clear that this provides a valuable opportunity for Government and business to trial new ways of working, and that it is essential to learn lessons and ensure a positive legacy.

**2.14** The Department, along with DCMS, the Olympic Delivery Authority and Transport for London, will be actively working to ensure that there is an ongoing legacy from the Olympics in terms of travel behaviour and approaches to working flexibly. We aim to ensure that lessons are learned from the Olympic and Paralympic Games, and that behaviour changes are locked in wherever possible. In the run up to the Games, we will work with organisations to help them see the Olympics as an opportunity to trial different ways of working and to help them realise and quantify the benefits of more flexible approaches to working. Following the Games, we will ensure that these benefits, and examples of particularly successful approaches, are shared to ensure lessons are learned as widely as possible.

## Government action - leading by example

**2.15** In addition to preparations for the 2012 Games period, the Government has already taken a number of steps to both facilitate, and lead by example in, increasing the use of alternatives to travel technologies and flexible working patterns.

### **Broadband delivery**

**2.16** Many respondents to the Call for Evidence referred to the widespread availability of reliable broadband access as a key factor in enabling them

to consider increasing their take up of alternatives to travel, particularly internet-based working. The Government has committed to delivering superfast broadband (at least 25 mega-bits per second) to 90% of households in the UK by 2015, and has made £530m available during the lifetime of the current Parliament to facilitate this.

- 2.17** Stimulating investment in the UK's broadband infrastructure is a top priority. The Broadband Delivery Programme covers the delivery of the Government's investment and policy approach to bring forward network infrastructure upgrades and to improve the accessibility of services in locations where there is a weak commercial investment case. On policy issues, the Broadband Delivery Programme Board reports to a cross-Whitehall Ministerial Group on Broadband, which includes representation from the Department for Transport.
- 2.18** Broadband Delivery UK (BDUK) has been created within the Department for Culture, Media and Sport (DCMS) to be the delivery vehicle for the government's policies relating to stimulating private sector investment using the available funding. BDUK funding will be used to stimulate investment in broadband infrastructure to deliver a greater access speed (data throughput) and quality of connectivity resources available at a wholesale level in the 'final third' of the UK. The market will be able to use these to help deliver the services demanded by end-users. For more information on BDUK's Programme Delivery Model, please go to: <http://www.culture.gov.uk/publications/8124.aspx>.
- 2.19** In addition to ensuring that investment is made in the relevant infrastructure to deliver superfast broadband, it is also important that businesses and households are aware of the benefits of taking up superfast broadband. These will include the development of virtual networks through, for example, cloud computing and improved access to home and remote working, with the benefits this can bring. Local Authorities should take undertake action to stimulate demand as part of their role in creating the environment for successful superfast broadband implementation and to reduce the potential risk of projects not being viable. Suppliers' revenues will ultimately depend on the level of demand so it will also be in their interests to ensure high take-up. A reliable broadband infrastructure will continue to play a vital role in the take-up of alternatives to travel in the future.
- 2.20** As well as supporting home and remote working, superfast broadband also has an important role to play in increasing connectivity to rural areas. The Government has announced funding to support the roll-out of superfast broadband to a number of remote rural areas to prevent a new digital divide between urban and rural areas. All seven areas selected by BDUK – which include some of the most remote and geographically

challenging parts of the UK – will be provided with broadband connection speeds usually only found in densely populated urban areas.

## **Business Travel Policy Principles**

- 2.21** In recent months, Government has worked with existing suppliers to develop a series of business travel policy principles, which have been disseminated to Central Government Departments to incorporate into their own travel policies. These seek to standardise central Government Departmental travel management to drive efficiencies. Although these are not mandated, they should be seen as target values which departments should work towards. Using 2010/11 as the baseline, monitoring over the coming years will show the resulting impact.
- 2.22** As a first step, these principles make clear that travel should be kept to a minimum, and departments should ensure that personnel have the relevant access to (and consider using first) telephone conference and video conference facilities. The Department for Transport has implemented these principles at all levels, with Ministers frequently pre-recording video speeches, rather than travelling to the actual event.

## **Greening operations and procurement**

- 2.23** In February the Government launched a set of commitments for greening its operations and procurement. The Greening Government Commitments apply to the office and non-office estate of central government departments and their Executive Agencies (EAs), Non-Ministerial Departments (NMDs) and executive Non-Departmental Public Bodies (NDPBs). Key outcomes for the commitments include reducing greenhouse gas emissions by 25% from a 2009/10 baseline from the whole estate and business-related transport, with a specific commitment to cutting domestic business travel flights by 20% by 2015 from a 2009/10 baseline. This target, along with the travel principles described above, should lead to an increase in alternatives to travel measures as departments make greater use of technologies for meetings. As with the business travel policy principles, this is a relatively new area of work and ongoing monitoring will show how travel behaviour has changed.

## **Rationalisation of the Government estate**

- 2.24** The role of the workplace in Government needs to change. Developments in technology, combined with an increasingly distributed workforce, are challenging the traditional concepts of the workplace - including how and where civil servants work. People, technology, and the workspace need to complement each other so that optimum flexibility in working practices can be achieved.

**2.25** The Government Property Unit (GPU) is looking to accelerate workplace transformation through engaging leading thinking from the private sector on how the integration of property, ICT, and working practices can lead to a fully flexible infrastructure. This will ultimately deliver fewer, better workplaces, more intelligently distributed and far more intensively used.

**2.26** The GPU is engaging a partner to undertake a study and prepare a report on how such changes might be implemented, indicating the risks and benefits, costs / budget requirements and likely timescales. The report is expected in due course to inform a full procurement for provision of the agreed recommendations. Potential Government buildings have been identified that may be available to serve as the basis for this study, and it is intended that these should serve as showcases for the approach informed by the study and ultimately act as a template for this new model of working across the Government estate. The successful adoption of modern workplace practices has the potential to drive forward a significant change in the culture of the civil service, which is a key strand of the civil service reform agenda.

### **ICT in service-delivery**

**2.27** A number of Government departments have taken steps to improve their service delivery by making greater use of ICT. One welcome benefit of this is a reduction in travel. The move towards delivering services electronically and by making use of information and communication technologies will continue into the future. Examples include:

- The Department of Health has been evaluating the potential of telehealth and telecare for improving the health of people living with long term conditions.
- A commitment across the criminal justice system to maximise the use of videolinks for court hearings and trials and for managing contact with victims, witnesses and offenders.
- The provision of online facilities by the DVLA for taxing a vehicle, declaring a vehicle off-road, or carrying out a range of licensing transactions.

## **Financial incentives**

**2.28** A number of respondents to the Call for Evidence made reference to the tax system, however there was no single overriding issue of concern or clear suggestion of what respondents hoped to see changed. Many would like incentives built into the tax system to encourage change to flexible working practices or to reward investment in alternatives to travel measures. However, it could be argued that a financial incentive already

exists through the reduced travel and office costs incurred by businesses who embrace smarter ways of working.

- 2.29** There are many examples of companies that have implemented reward schemes to incentivise their staff to change their travel behaviour. These companies have introduced such schemes within the existing tax and employee benefits framework, and this option is open to any company who wishes to consider this.
- 2.30** However, the Department is open to exploring how Government can best work with business to ensure that business travel practices both support economic growth while cutting carbon. We will also share this work with HM Treasury to feed into their consideration of existing tax and benefits policies relating to employee travel.

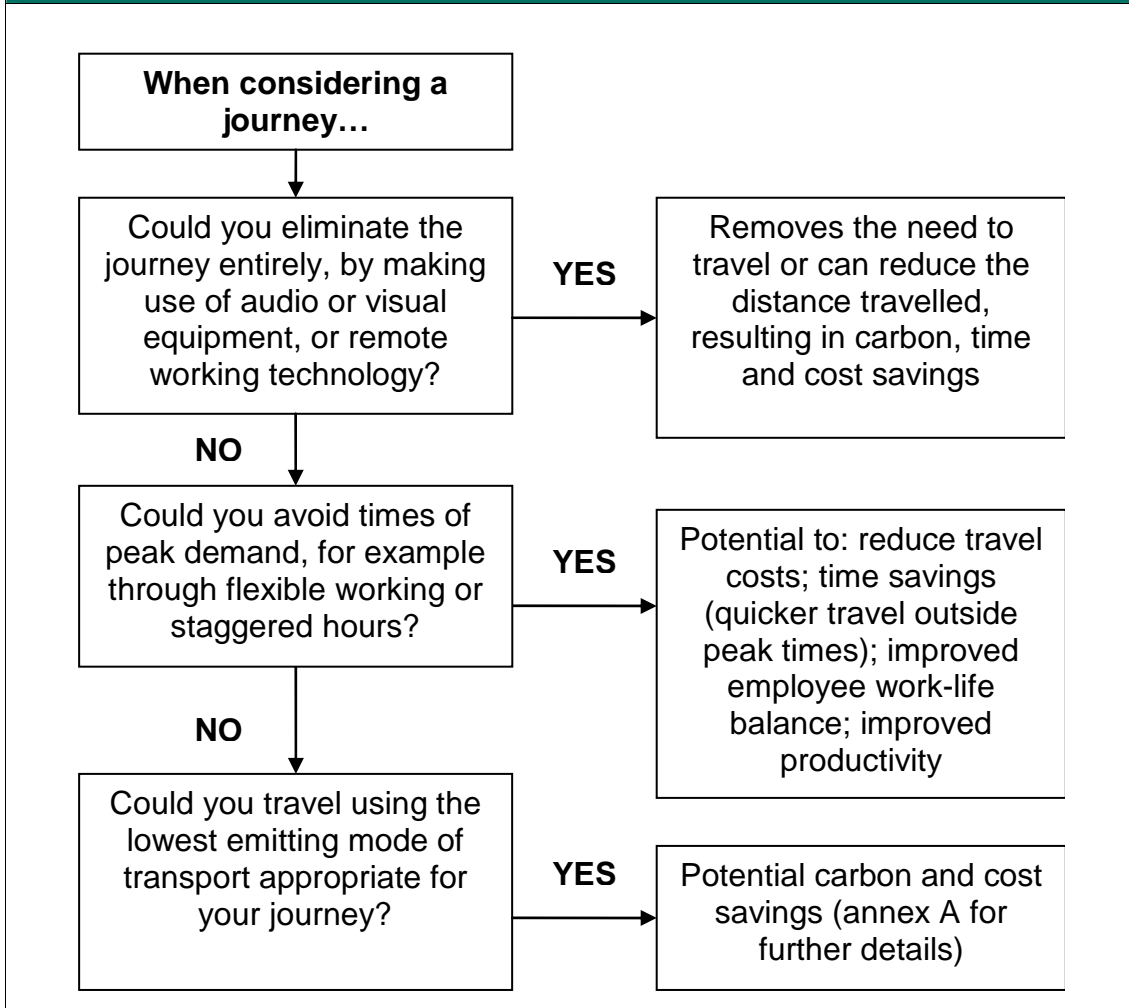
## Links with wider Government policies

- 2.31** The results of the Call for Evidence showed a desire for alternatives to travel to be more closely aligned with other Government policies, and the Department has put plans in place to ensure this happens more effectively and transparently in future.

### Travel hierarchy

- 2.32** As a first step, the Department will be more closely aligning alternatives to travel policy with our wider approach to sustainability and accessibility. So, for example, when planning a journey travellers first consider whether it is completely necessary, and if it is, how the journey can be carried out with optimal environmental and economic impacts. Figure 1 below illustrates the hierarchy of questions to consider prior to planning a journey, and highlights some of the benefits that can be realised by not travelling.
- 2.33** Annex B includes further charts that illustrate the relative average carbon impacts from different modes of travel. These charts do not necessarily inform which mode is better than another, since other factors such as distance travelled, mode utilisation and time of travel can all have an impact on CO<sub>2</sub> emissions. There are a number of caveats associated with the charts, which are set out in annex B, and further work is needed to refine the charts in order to provide accurate comparisons.

**Figure 2 : Questions to consider when planning a journey**



**2.34** We will work to ensure that alternatives to travel are seen as one tool within the sustainable travel toolkit, as well as having a range of economic, environmental and social benefits.

### **Smart and integrated ticketing**

**2.35** We are aligning our work on alternatives to travel with work developing smart and integrated ticketing. A smart ticket is one where a ticket or 'permission to travel' is stored electronically on a card or suitably enabled device – like a mobile telephone. Integrated tickets are valid on more than one operator and or mode of transport. One of the Department's aims is to use smart and integrated ticketing to facilitate the more efficient use of the transport network, by encouraging passengers to consider travelling at different times and offering opportunities to reconsider personal travel patterns - for instance the working of

staggered hours. The Department is also considering how the fares structure could be changed to offer greater flexibility for passengers who do not need to travel to work, or to the same place of work, every day.

- 2.36** For example, the Southern train operating company's franchise agreement includes a commitment to trial a range of options, which could include three-day season tickets or cashback season tickets. The Government intends to specify smart ticketing requirements in other franchises due for retendering over the next few years.

### **Flexible working**

- 2.37** The Government has made a commitment in the Coalition Agreement to extend the right to request flexible working to all employees. Earlier this year the Government conducted a consultation on modern workplaces, looking at how changes to employment law might encourage a more fair and flexible approach at work. The results of this will be published around the end of the year. Remote or home working and staggered hours are all approaches which can help employers and employees to maximise productivity through a flexible approach.
- 2.38** Government is also undertaking a number of non-legislative work strands. Firstly, the Department for Work and Pensions has convened a group of organisations representing employers and other experts in employment issues, which aims to produce practical tools to stimulate wider awareness of the business benefits of flexible working and to overcome 'blockages' in its implementation. The group is developing proposals about ways to encourage the supply of flexible working at the point of advertisement, and to better communicate the availability of flexible work at the recruitment stage.
- 2.39** Secondly, the Government recognises that it needs to lead by example on flexible working, and in recognition of this, we are working towards achieving the Government's aspirations for the Civil Service to be an exemplar in flexible working practices. This includes enhanced good practice and awareness for managers across the Civil Service.
- 2.40** Lastly, Jobcentre Plus (JCP) has a key role to play in promoting cultural change through its engagement both with employers and with people seeking work. JCP is improving familiarity with flexible working amongst employer and claimant-facing advisers, and integrating flexible working principles into their employer services, such as the Small Business Recruitment Helpline.

### **Carbon Budgets**

**2.41** Following the Climate Change Act 2008, the Government set legally binding emissions reduction targets to encourage the transition to a low carbon economy. This means a reduction of at least 34% in greenhouse gas emissions by 2020 and at least 80% by 2050. To ensure these targets are met, a number of carbon budgets have been agreed, with each budget covering a five-year period. The first three carbon budgets were set in law in Spring 2009, and run from 2008-12, 2013-17, 2018-22. The fourth, running from 2023-27, was set in law at the end of June 2011. During the earlier carbon budget periods, the focus in the transport sector is on carbon reduction in road transport, for example through continuing improvements to the efficiency of conventional cars and increasing numbers of ultra-low emission vehicles. While there remain significant carbon emissions from the car fleet, a shift to accessing businesses and services remotely or via technology could have an important role to play in meeting the Government's targets. Therefore the Department will continue to ensure that both sustainable travel and alternatives to travel are considered in work to both set carbon budgets and deliver against these.

# 3. Anywhere Working

## Background

- 3.1** The business-led 'Anywhere Working' initiative was launched in November 2011 by Norman Baker MP, Parliamentary under Secretary of State for Transport.
- 3.2** Supported by the Department for Transport as part of our work on alternatives to travel, a number of organisations (the Anywhere Working Consortium, see details below) have come together to encourage employers and employees to adopt more modern working practices which negate the need to always travel to a traditional office to do business or conduct meetings.
- 3.3** The initiative evolved as a direct response to business feeling the pressure to maximise their productivity and performance in a difficult economic climate, but also feeling uninformed about how to make new work practices work for them and their employees whilst balancing both financial and environmental concerns. There is a significant opportunity in this tough economic climate to help businesses and employees be more productive, save costs and reduce their impact on the environment. This initiative aims to bring technology, experience and working practices together in a way that can be easily leveraged and used by employees and employers.

## Aims

- 3.4** The primary aims of the campaign are to educate, promote and encourage participation in flexible working practices, to illustrate the efficiency and productivity benefits of a more flexible approach, and to help reduce the burden on transport infrastructure and the impact travelling has on the environment. Through the campaign, business to business advice will be available alongside access to tools, online training, know-how and technology. Organisations and individuals will be able to access a range of offers from consortia members (such as technology trials, wellbeing services, office space and online training).

- 3.5** The campaign will raise the profile of the range of alternatives to travel facilitated by technology, be that impromptu work hubs, taking advantage of wireless hot spots in places such as public buildings or coffee shops or simply embracing more flexible working styles. It will also highlight the clear and tangible benefits, whether they are reduced travel costs, increased productivity and organisational resilience, or significant improvements to wellbeing and employee morale. By providing access to a range of alternatives, the initiative will encourage organisations to find the solution that best fits their business and an Anywhere Working trial week in February 2012 will provide the opportunity to try out a different approach.
- 3.6** Although technology has a key role to play in enabling a shift in behaviour, cultural factors are also key. Therefore - as well as educating businesses on the available technologies to support alternatives to travel - the campaign will share best practice, tell stories of businesses already embracing working anywhere and provide links to further information and solutions which help support modern working styles.

## Measuring success

- 3.7** To measure the impact of the initiative and to further illustrate the benefits of Anywhere Working for individual businesses and employees, participants will be able to record the money, time and miles saved through working differently (illustrating the economic and carbon benefits) as well as improvements in employee satisfaction and wellbeing. These tools will be made available online in January 2012.

## Partners

- 3.8** The campaign is being led by a consortium of partners from across the public and private sectors. This includes:
- Microsoft
  - Business in the Community
  - Nuffield Health
  - Regus
  - Department for Transport (advisory role)
  - Transport for London (advisory role).

*Successful organisations today embrace different working styles such as flexible and remote working. These organisations are highly collaborative no matter how geographically dispersed their employees are. Technology has an important role to play in facilitating seamless communication and collaboration across work boundaries and can significantly drive down the cost of doing business. From increased productivity on the move, to chance collaboration opportunities, the ability to work anywhere is driving this transformation and delivering great results.*

**Gordon Frazer, UK Managing Director, Microsoft**

*Business in the Community fully embraces and supports Anywhere Working and the use of technology to help people and organisations to work more effectively. Through our National Business Travel Network ways2work campaign we are influencing behavioural change which is enabling organisations to achieve maximum productivity and resource efficiency by transforming the way they work and travel.*

**Stephen Howard, Chief Executive, Business in the Community**

*Modernising working practices is vital to enhancing the wellbeing of employees and as London 2012 approaches the pressure on business to introduce those necessary changes will increase. However, the long term focus should be that, by creating a flexible and harmonious working environment, business will reap the benefits from rising productivity.*

**Marcus Powell, Nuffield Health's MD for Corporate Wellbeing**

*With the ever increasing cost of energy, it's financially impractical to expect vast numbers of people to commute often long distances to fixed locations day-in, day-out, even more so given the globalised, technology enabled nature of today's business world. The fixed location, traditional office is an anachronism, and should be as alien to today's business as the slide rule is to accountants.*

*Every day almost a million people around the world use Regus to help them work flexibly, saving time and money, reducing their carbon footprint whilst increasing productivity and achieving a better work-life balance.*

*I welcome the Anywhere Work initiative – it's a 21st century approach to 21st century challenges.*

**Mark Dixon, CEO, Regus plc**

- 3.9** In addition, the campaign is supported by a range of organisations, including those representing business and employees.

## Next steps – and where to find out more

- 3.10** Organisations and individuals can register their interest via the National Business Travel Network's *ways2work* website ([www.nbtn.org.uk/ways2work/](http://www.nbtn.org.uk/ways2work/)). The organisers will email all those who have expressed an interest when the initiative goes live in January 2012. At this time there will be a wide range of online resources such as case study examples, guidance, advice and product offers and trials from consortia at this time, building up to a week-long call to 'take action' from 6th February 2012. The long-term goal of the initiative is to encourage a more permanent shift in the approach to work with an increase in the number of businesses and employees utilising (and benefiting from) working anywhere methods.

# A. Case Studies

## GlaxoSmithKline

### Business overview

- Sector: Pharmaceuticals
- Turnover: £28.4bn pa
- Employees: 99,000 globally
- Head Office: Middlesex, UK

**A.1** GlaxoSmithKline is one of the world's leading research-based pharmaceutical and healthcare companies and is committed to improving the quality of human life by enabling people to do more, feel better and live longer.

### Business drivers

**A.2** GlaxoSmithKline is concerned about the impacts of work-related travel and has a holistic travel impacts reduction programme directly supporting its mission statement above to “Do more, feel better, live longer”.

**A.3** As part of the Transport Strategy which was developed when GlaxoSmithKline's new headquarters were built, comprehensive facilities were incorporated to deliver an integrated transport strategy and to meet S106 conditions.

**A.4** It is important to GlaxoSmithKline to attract and retain the best and most productive talent by enabling colleagues to get to work with ease and efficiency, by offering the best and healthiest working conditions on site, whilst also providing the facilities and technology to enable employees to work and collaborate flexibly and remotely when it best suits the business's and their needs.

### Business interventions

**A.5** GlaxoSmithKline's approach is to integrate fully issues surrounding how employees work and travel in relation to their work into its core business strategy. Innovative, pragmatic solutions that are sustainable, promote

the use of eco-friendly transport modes and support the efficiency of space utilisation in West London have been implemented. Likewise, facilities and policies enabling employees to seek alternatives to travel to reduce commuting and business travel impacts have been provided.

- A.6** In addition, reducing work-related travel and work impacts is viewed as a change management programme with colleagues actively involved, supported, influenced and encouraged to change working and travel behaviours and practices. As well as looking at the bigger picture, great attention is paid to the detail and it is often the detail that makes the differences.
- A.7** Commuting - GlaxoSmithKline provides significant support and encouragement to colleagues to influence them to car share, use public transport, walk and cycle. A personal travel planner is available for one-on-one consultations. Bio-fuelled shuttle buses travel on schedule to a local tube station. The use of Smart cars by employees to reduce traffic congestion and emissions is encouraged through the offering of discounts and the provision of 50 dedicated parking spaces. Car parking is provided to employees for four weeks out of every five – however Smart car owners are exempt from this. Other car drivers have to find different ways of working or getting to work on their fifth week with many choosing to car share, cycle or work flexibly.
- A.8** Excellent cycling facilities are also provided including parking, purchasing, training and repair facilities plus high quality changing rooms with showers, towels, irons, driers and storage.
- A.9** To further support employee work / life balance, GlaxoSmithKline offers flexible working policies and arrangements to enable staff to work flexibly and / or remotely by agreement with their manager and dependent on their role in the business. Likewise, GlaxoSmithKline's offices are configured to enable different workstyles suiting business and employee needs whilst making effective use of office space.
- A.10** The on-site Fitness Centre at GSK House further encourages physical activity amongst staff. It has a membership of 1,300 which represents 32.5% of staff on site. Around 180 staff use the gym on a daily basis. The company also offers dry cleaning facilities, shoe repair, post office services, Oyster top-up, ATMs and a variety of catering outlets to further reduce travel during the working day.
- A.11** Business Travel - Business travel has been greatly reduced by a significant investment in conferencing systems around the world including tele conferencing and web conferencing facilities, desktop and personal video conference units, 500 dedicated video conferencing rooms in 68 countries and 16 telepresence suites. This provision of

good quality equipment, supported by behavioural change programmes, has resulted in a 40% increase in video conferencing from 2009-10.

- A.12** GSK House has 13 dedicated suites and several smaller rooms with video and tele conferencing capabilities. International travel at GSK has been drastically curbed since 2009 and between 2009 and 2010 the use of these facilities increased by 70%, offering significant environmental and time savings.

### **Business benefits**

- A.13** GlaxoSmithKline's change management programmes and interventions to reduce the impacts of how their employees work and travel in relation to their work has resulted – even after substantial investment – in significant reductions in costs and emissions. Equally, there have been productivity improvements, positive effects on employees' wellbeing and gains in terms of effective use of office and car parking facilities.
- A.14** Reduction in single-occupancy car use at GSK House in Brentford from 81% in 2004 to 56% in 2009 has reduced congestion, emissions and car parking – and 500 leased car parking spaces were released in 2006 as a result of interventions to reduce car use, saving £1 million per annum.
- A.15** The total costs of providing car parking equate to around £10,000 per space, whereas cycle parking spaces cost about £100, therefore, each cyclist saves the business £9,900. The 1,224 car parking spaces (for staff and visitors) cost more than £12m, with parking for 180 bicycles costing £18,000. In addition, each cyclist saves 88 tonnes of CO<sub>2</sub> each year by cycling.
- A.16** In a survey of the cycling group, 92% of respondents agreed that their health was improved as a direct result of the support they receive from GSK to cycle to work, 74% said they were more productive and 73% believed they were more motivated.
- A.17** Between 2008 and 2009 GlaxoSmithKline cut 37,804 one-way flights saving 38,622,606 km of air travel, decreasing CO<sub>2</sub> emissions by 7,151 tonnes and significantly reducing business travel costs whilst improving employee productivity and work / life balance. As an example, one meeting involving 70 senior managers across the world resulted in cost savings of £60,000, reduced 140,000 miles of air travel and 24 tonnes of CO<sub>2</sub>.
- A.18** There are reputational benefits – GlaxoSmithKline is recognised as one of the most innovative employers in reducing travel impacts and in 2010 was, along with BSkyB, voted Cycling Weekly's top commuting

employer. GlaxoSmithKline also received a BITC Big Tick in 2011 for the ways2work national award – one of only 11 employers to do so.

## Microsoft

### Business overview

**A.19** Microsoft participated in a study with Cranfield School of Management to measure the productivity and cultural impact of flexible working options. Results showed the following:

- A positive effect on individual performance in both quantity and quality of work.
- Both individuals and managers believed it has a neutral or positive effect on team performance.
- There was a very close relationship with flexi working and an individual's work / life balance.
- A positive effect on stress at work.

### Business drivers

**A.20** Since 90% of Microsoft staff in the UK work flexibly it is imperative for the company to provide staff with the tools and technology to facilitate working anywhere. In line with the company's goal of reducing carbon related travel, using the technology also provides a great alternative to non-essential business travel.

### Business interventions

**A.21** All staff in the UK have access to Microsoft Unified Communications (UC) technology. All mobile staff are issued with a laptop, headset and a webcam to enable them to get best use out of the technology. Online training, step-by-step guides and workshops by the IT Team are held to ensure staff know how to best use the technology.

**A.22** A global study was carried out when this technology was first deployed using Forrester methodology to measure the impact of the deployment of the tools on employee satisfaction, costs, the environment and productivity.

### Business benefits

- UC technology enables employees to work independently of their location, so they do not need to be in the office or tied to a desk to be effective.
- By using UC technology, the improved productivity gain is 28 minutes per employee per day, which saves Microsoft \$86 million in employee cost.
- Microsoft Travel calculates that Microsoft employees avoided taking more than 45,000 trips per year. With an average travel time of nine hours for a roundtrip, employees saved an additional 420,000 hours in travel time. Assuming half of this time was recaptured for work-related activities, this time is valued at \$17 million.
- The total miles per employee decreased by 6%, and the number of air trips per employee fell by 10%. By avoiding more than 45,000 trips, with an average cost of \$2,050, the company saved a total of \$93 million in travel costs.
- Microsoft Travel estimates that employees avoided flying more than 100,000,000 miles in the first fiscal year, saving 17,000 metric tons of CO<sub>2</sub>.
- To estimate the sales cycle benefits, Microsoft IT looked to the Enterprise Sales group, which has 1,800 account managers. The sales department estimates that these additional proposals generate an additional profit of almost \$11 million annually.
- By reducing audio conferencing costs, Microsoft IT expects the cost savings to be 50 percent of current charges, totalling more than \$9 million over the next three years.
- By reducing administrative and IT infrastructure costs, the internal charge to move an employee has decreased from \$30 to \$8.

## Eversheds

### Business overview

- Sector: Legal
- Turnover: £355.2m pa
- Employees: 4,500 globally (2,700 UK)
- Head Office: London, UK

### Business drivers

- A.23** Staff retention – Eversheds' organisational vision is to be a great place to work and they know that talented people are more likely to stay if satisfied with their work / life balance.
- A.24** Improved productivity - the ability to work flexibly has been shown to have a positive impact on an individual's performance. Technology, 'now' meetings and the sharing of live documents has resulted in faster decision making.
- A.25** Business efficiency:
- Reduced travel and accommodation costs.
  - Reduced carbon footprint.
  - Increased efficiency by completing work at off-peak periods and ability to react to peaks and troughs in workload.
  - Eversheds is a global business and their people and clients alike benefit from flexibility.

### **Business interventions**

- A.26** Eversheds has a holistic approach to flexible working and encourages both formal and informal arrangements through the Lifestyle scheme which was launched in 2002. The scheme enables everyone to meet their own personal needs whilst fulfilling their career and business objectives.
- A.27** Increased use of technology such as laptops, mobiles and BlackBerries make it easier for employees to work more flexibly. Citrix is available to all staff and in 2010 Eversheds was the first major UK law firm to roll out iPads. This enables greater flexibility and productivity throughout the business. Webinars, tele conferences and video conferences are widely used throughout the firm enabling meetings to be set up and information shared at no notice, on a global basis.
- A.28** Eversheds has a sustainable travel policy and a travel hierarchy – with 'no travel' being at the top.

### **Business benefits**

- A.29** Between 2008/09 and 2009/10 Eversheds set a 10% travel related carbon reduction target – however this was exceeded with comparable travel costs falling by 24% saving £1.3 million.
- A.30** By encouraging colleagues to travel more sustainably and less, car mileage reduced from over 1,154,000 miles in 2008, to 933,552 miles in 2009 and to 720,000 miles in 2010 (an overall 38% reduction). This

equates to a reduction of 141.7 tonnes CO<sub>2</sub> (based on Defra's 2009 conversion factor) and a saving of £175,000.

- A.31** An 85% reduction in carbon emissions associated with flights was achieved by daily liaison between the travel team, travellers and bookers. Travellers were given the opportunity of changing their plans before escalating 'out of policy' bookings to senior management.
- A.32** Absence figures, whilst already low, have further reduced from 2.3% in January 2010 to 1.9% in January 2011.
- A.33** In 2010, almost 500,000 minutes were used on webinars. Take up increased from 16,000 minutes/month in January 2010 to over 45,000 minutes/month January 2011.
- A.34** The number of employees agreeing with the following statements has increased:
- 'The firm is supportive of the need to balance work and home life' from 47% (October 2006) to 74% (August 2010).
  - 'I have been able to work flexibly in the last 3 months if I have needed to': 2009/10 - 77% positive, 2010/11 - 83% positive.
  - 'I am able to choose hours / working arrangements to enable better work / life balance': 2009/10 - 71% positive, 2010/11 - 77% positive.

## Merseyside Fire and Rescue Service

### Business Overview

- Sector: Fire and Rescue Authority
- Turnover: Public Sector Budget
- Employees: 1433
- Head Office: Merseyside

### Business drivers

- A.35** MFRS' main business drivers are to reduce emissions and costs. MFRS is committed to a 30% reduction in CO<sub>2</sub> emissions (2008-13). 30% of MFRS emissions are from business travel and commuter emission estimates at MFRS are equivalent to 15-25% of the organisation's direct emissions, so 'alternatives to travel' are likely to make an increasing and significant contribution to reducing these emissions.
- A.36** MFRS aims to reduce single occupancy car travel - both business and commuting - through encouraging active / sustainable travel and reduced travel through the use of video and audio conferencing.

## **Business interventions**

**A.37** Transport emissions (27%) are being addressed with the adoption of a Travel Hierarchy, workshops vehicle efficiency projects and purchasing strategies.

**A.38** The Travel Hierarchy policy was published in 2010 in conjunction with a highly successful staff culture change campaign. The Travel Hierarchy asks:

- Is the journey necessary? Can it be replaced by an audio or video conference?
- Can local journeys be undertaken safely on foot or bicycle? If so use pool bikes / cycle to work scheme.
- Is Public Transport viable and effective? Executive Director approval required for air travel.

**A.39** If Options 1-3 are simply not viable, then the following hierarchy must be followed (with a preference for modern, efficient and well serviced vehicles):

- Pool Cars: Low emission small cars, well maintained
- Hire Cars: Lower emission models should be chosen
- Fleet Cars and vans: Well maintained

**A.40** The Vehicle Efficiency Project was set up with 14 specific objectives around all aspects of sustainable travel, measuring and monitoring of mileage and emissions, outsourcing of travel bookings and encouragement to use multimedia conferencing facilities. The objectives include the following:

- To reduce the size of the ancillary fleet – 7 vehicles gone
- To develop a 'Hierarchy of Travel' – delivered
- Encouraging multi-media conferencing – BT MeetMe / Microsoft Lync
- To encourage and facilitate car sharing partnerships
- To provide Flexible Duty Officer emergency response cars - complete
- To reduce impacts from HFSCs
- To deliver driver efficiency training
- To set up robust monitoring & reporting

**A.41** Technology and policies to support remote working:

- Webmail access has been made available to all staff

- ICT Policy is in place to support Homeworking
- Homeworking may be authorised on a case by case basis, and is managed within the Flexible Working Policy
- Homeworking was authorised for a number of staff during 'the big freeze' in Winter 2010/11
- VPN access and associated security measures are being trialled in 2011, home-based Legislative Fire Safety staff are likely to benefit when implemented fully
- Wide Area Network (WAN) is being upgraded from 2MB to 10MB to provide extra capacity for home workers

## **Business benefits**

**A.42** The use of conferencing facilities is making a sound contribution to reducing transport emissions both from essential Station Management Incident Command mileage and also from Support Staff business mileage. Video and audio conferencing are frequently used for knowledge sharing during incident management – using interactive whiteboards at Stations and Incident Rooms and using the Incident Command Vehicle, in addition to audio and VC software (Microsoft Lync). It is also used for liaison between other UK Fire and Rescue Services.

**A.43** There is not yet a system for recording mileage replaced and CO<sub>2</sub> saved, however emissions from mileage have reduced from 118.52 tonnes in 2007/8 to 82.23 tonnes in 2010/11 – a reduction of over 30% and saving over £70,000 in this three year period.

**A.44** There are significant reputational benefits for MFRS which can be quantified by the numbers of awards and commendations received; in addition, the following occurrences demonstrate the reputational benefits now enjoyed by MFRS:

- Requested to join Chief Fire Officers Association Environment Protection Group as Sustainability Lead.
- Invited to deliver a 'Greener Transport' case study to Liverpool Climate week 2011-11-03.
- Partnership work with TravelWise, Green2Go Biofuels, Bionic (international biofuels) Project, Energy Saving Trust (Smarter Driving and Green Fleet Review), Envirolink, Carbon Trust etc.
- Leading UK Fire Services on alternative emergency responses (Firebikes and Paclider wildfire projects).
- A significant number of awards (>10) in the past six years.

## B. Carbon Emissions Hierarchy

- B.1** The following diagrams present a hierarchy showing the relative average carbon emissions from different modes of transport for different journeys.
- B.2** Figure B1 shows a typical ordering of modes, based on per passenger greenhouse gas emissions, for a typical short journey of under 10 miles. However, there may be some circumstances when this ordering is not appropriate. For example, the position of cars in the hierarchy will be dependent on the size and efficiency of the engine, with smaller cars being significantly lower emitters than large cars. There may also be some variation depending on the exact journey being undertaken. The figures on which the diagrams below are based will themselves make use of a series of assumptions that may vary from one mode to another.
- B.3** These figures do not include air quality related emissions, such as nitrous oxides and particulate matter. If these emissions were to be included, it is possible that the ordering of modes shown in the diagrams below would change. The diagram also does not take into account the relevant impact on other variables, such as congestion levels. For example, while car sharing may appear 'better' in the diagram below, it could be argued that buses will have a greater impact on reducing congestion on local roads than large volumes of car shares.
- B.4** Figure B2 relates to journeys of over 10 miles, either national or international. This is a simplified illustration based on average CO<sub>2</sub> emissions<sup>1</sup> from different modes of transport. In some cases people may need to use multiple modes of transport to complete a journey or some travel choices are not available to that person. A more detailed break down of CO<sub>2</sub> emissions on door to door journeys is available on the Transport Direct journey planner (<http://www.transportdirect.info/>).
- B.5** The diagram shows a rough ranking based on average emission factors. It does not necessarily inform which mode is better than another, since other factors such as distance travelled, mode utilisation and time of travel can all have an impact on CO<sub>2</sub> emissions.

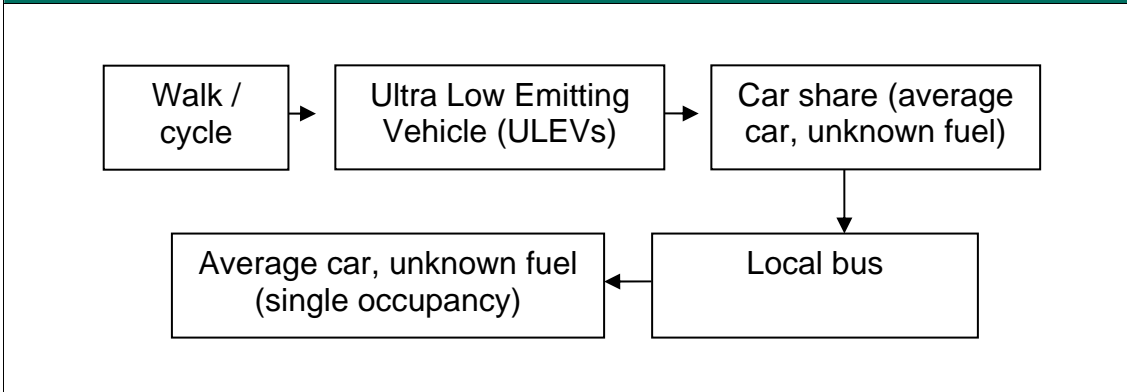
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<sup>1</sup> Source: emissions factors are based on figures from Defra / DECC's Greenhouse Gas Conversion Factors for Company Reporting, August 2011, <http://www.defra.gov.uk/environment/economy/business-efficiency/reporting/>

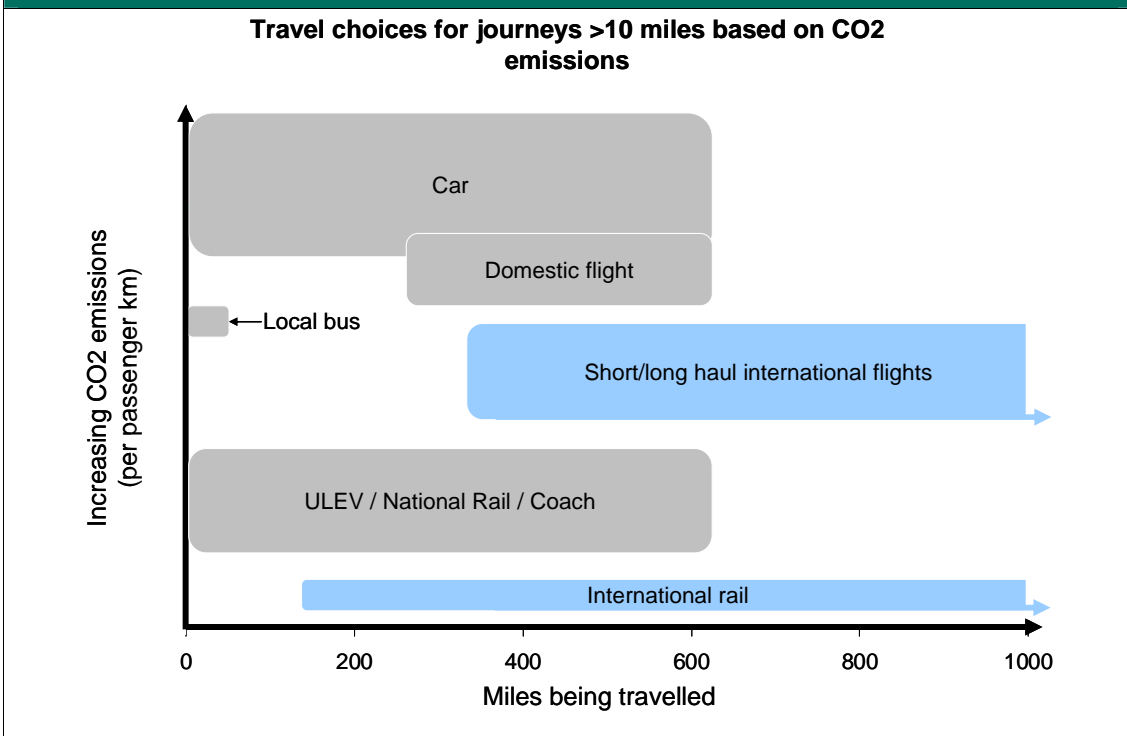
**B.6** A number of assumptions have been made in developing this diagram:

- Emissions factors underlying the chart are based on 'all scopes'. These include direct emissions of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O from the combustion of fuel from owned / controlled transport, and indirect emissions associated with extraction and transport of primary fuels as well as the refining, distribution, storage and retail of finished fuels.
- The height (boundaries) of the 'car' box in the diagram reflects different sizes of car, not variations in distance, level of utilisation (e.g. car sharing) or time of travel.
- Other boundaries are purely illustrative to reflect that there is some uncertainty.
- Local bus CO<sub>2</sub> emissions appear high because they are based on an average figure, which includes assumptions about a stop / start cycle of driving, which may not be accurate on longer journey, as depicted here.
- Using an average figure also disguises the fact that an average bus passenger increases CO<sub>2</sub> emissions by a lot less than an additional car driver trip.
- Journey lengths have been estimated using analyst judgment, using results from the National Transport Survey 2010 and searches on transport provider websites.
- The ultra low emitting vehicles (ULEV) emissions factor is based on <75g CO<sub>2</sub>/km (as defined), with no uplift factor included.
- Car, ULEV and coach distances ranges assume that it is possible to fill up with fuel or recharge batteries during the journey.
- Car data used here are based on 'unknown' fuel type.

**Figure B1 : Short journeys (< 10 miles) – typical average hierarchy showing suitable modes of transport from lowest to highest per passenger emitters<sup>23</sup>**



**Figure B2 : Illustration of average CO<sub>2</sub> emissions from different modes of transport for journeys of over 10 miles**



<sup>2</sup> ULEVs are defined as any car with emissions less than 75g CO<sub>2</sub>/km at the tailpipe. For example, technologies such as plug in hybrids, full battery electric vehicles, range-extended electric vehicles and fuel cell vehicles.

<sup>3</sup> Car shares are based on two or more occupants.