Reducing Carbon from Transport Inquiry

Memorandum from the Low Carbon Vehicle Partnership to the Environmental Audit Committee

1 Summary

1.1 This Memorandum has been prepared by the Low Carbon Vehicle Partnership, the organisation established in 2003 as an outcome of the Powering Future Vehicles (PFV) Strategy to accelerate the shift to low carbon vehicles and fuels in the UK.

1.2 Limited progress has been made by DfT towards carbon reduction targets. Road transport CO2 emissions have increased by 8% since 1990, but are projected to stabilise in the period to 2010 as a result of the introduction of biofuels. The specific contribution DfT is making towards CO2 reduction targets has not been clarified. Progress towards targets for low carbon buses and cars in the PFV Strategy are likely to be missed by a considerable margin. CO2 emissions from new cars are decreasing at 1.2% pa and, at this rate UK average CO2 emissions from new cars will be 164g/km by 2008 compared to the EU average target of 140g/km.

1.3 Whilst there is generally good coordination between the organisations responsible for delivering the PFV Strategy, the resources and policy mechanisms available for delivering the Strategy are not sufficient. The suspension of the TransportEnergy grant programmes in November 2004 has further restricted the support available.

1.4 To achieve significant GHG savings from road transport before 2010 would require measures to reduce vehicle use or fuel consumption. There is very little scope for bringing forward new vehicle technologies due to the long development cycles. The introduction of the Renewable Transport Fuels Obligation (RTFO) is welcomed and estimated to reduce transport emissions by 1.6MtC by 2010. However, overall GHG emissions improvements will not be as great as this due to the GHG emissions arising from agricultural cultivation and production of the fuels.

1.5 There is greater scope for technology improvements by 2020, though this timescale is still too short to achieve a major technology shift. LowCVP supports an integrated approach to reduce road transport CO2 emissions with technology-neutral market mechanisms used to promote the shift to low carbon vehicles and fuels.

1.6 LowCVP research has shown a range of activities is needed to stimulate the market for low carbon vehicles and fuels and that current incentives are insufficient to achieve accelerated progress. The capacity of the UK, in isolation, to bring forward low carbon technologies in a global vehicle market is, however, limited.

2 The Low Carbon Vehicle Partnership

2.1 The LowCVP was established in 2003 to accelerate the shift to low carbon vehicles and fuels in the UK. It aims to help deliver carbon reduction targets and give commercial advantage to UK business. The Partnership is a multi-stakeholder forum with over 190 members including many leading car manufacturers and fuel suppliers, major fleet operators, environmental and consumer groups, academics

and government departments. This response has been prepared by a committee comprising all key stakeholder groups.

2.2 The Partnership undertakes activities to both encourage the supply and raise demand for low carbon vehicles and fuels. This includes providing guidance on the priorities to stimulate market development. Some of our recent key achievements and principal current activities include:

- Brokering a voluntary agreement with the UK motor industry to introduce colour-coded fuel economy labels in all new car showrooms. On-going studies are evaluating the effectiveness of the label through research into dealer and consumer attitudes and implementation rates
- Input to the feasibility study for a Renewable Transport Fuels Obligation – focussed on the development of sustainability assurance and carbon certification. Current activities involve the development of a sustainability standard to complement RTFO reporting requirements
- Oversight of the establishment of Cenex, a public-private Centre of Excellence for Low Carbon and Fuel Cell Technologies. The LowCVP is represented on the Board of the company
- The LowCVP road transport Challenge: a process initiated by the Partnership to bring forward innovative proposals for delivering carbon reductions from the road transport sector. The best entries will be presented at a conference in June 2006.

2.3 LowCVP's response is structured in response to the specific questions posed by the committee.

3 What progress has the DfT made against key carbon reduction targets?

3.1 The principal carbon reduction target to which DfT contributes is the Joint Public Service Agreement (PSA) with DEFRA and DTI to:

- Reduce greenhouse gas (GHG) emissions to 12.5 per cent below 1990 levels in line with our Kyoto commitment; and
- Move towards a 20% reduction in carbon dioxide emissions below 1990 levels by 2010.

3.2 The specific contribution DfT makes towards the PSA target has not been clarified. Emissions trends[1] show that the Kyoto target will be met (subject to achieved emissions reductions being maintained). Recently published DTI projections[2] estimate GHG emissions reductions will average 19.6% between 1990 and 2008 – 2012. Net emissions of CO2 fell by 5.6 per cent between 1990 and 2004 and are projected to be 10.6% below the base year by 2010. This equates to a 15 -16 MtC gap in reductions between the forecast and target.

3.3 Since 1990, CO2 emissions from road transport, have increased by 8% from about 30 to 33MtC in 2004 – due largely to a 22% increase in vehicle kilometres. Emissions from freight transport, particularly light duty vehicles, have grown more quickly than those from passenger cars. DTI projections anticipate emissions will continue to rise from 30.1MtC (1990) to 34.6MtC in 2010. These projections do not

[1] DEFRA 2006, 2004 UK climate change sustainable development indicator and greenhouse gas emissions final figures
[2] DTI 2006, Government's projections for energy and carbon emissions for the UK

include the impact of biofuels (that are estimated to deliver a potential saving of 1.6MtC) and will stabilise road transport emissions in the period to 2010. It should be noted that well-to-wheel GHG savings arising from increased use of biofuels will be significantly less than this – as discussed in paragraph 6.2. Beyond 2010 transport emissions are projected to continue to grow to 36.2MtC in 2020 – although these projections ignore any future measures to continue to improve vehicle efficiency or future policy initiatives.

3.4 Although not an official Government target, the Transport 10 Year Plan assumed the EU Voluntary Agreement target (to reduce average CO2 emissions from new cars to 140g/km) would be met in the UK. The assumption was calculated to deliver a 4MtC saving - enabling road transport CO2 emissions to remain broadly stable despite the large growth in overall vehicle km within the Plan. The 2004 Transport White Paper diverged from the ambitious assumption in the 10 Year Plan and included a projection of future average CO2 emissions from new cars of 152 g/km by 2008. New car CO2 emissions have improved by an average of 1.2%pa since 1995. This rate of progress will achieve a UK average CO2 emission from new cars of around 164g/km by 2008 and enable the UK to achieve the original 140g/km target by 2022.

3.5 DfT has also established targets for low carbon cars in the PFV Strategy. Progress towards, and the appropriateness of these targets, is discussed in Section 8.

4 Are the DfT's carbon reduction targets underpinned by a coherent strategy across its full range of activities?

4.1 The specific contribution DfT is making towards the PSA CO2 reduction targets has not been clarified and no sector specific targets for transport therefore exist. Many LowCVP stakeholders believe there would be a clearer policy focus on transport CO2 management if DfT had a defined CO2 target against which its performance could be measured. An overall target for transport emissions, owned by the DfT, would require the Department to ensure its aviation and road transport policies did not conflict with its overall CO2 target.

4.2 A subsidiary CO2 target for road transport would provide a framework against which to balance measures designed to: improve vehicle efficiency, reduce the carbon intensity of fuels, promote low carbon modes of private transport and manage freight transport. It would enable the Department to define policy priorities on the basis of cost-benefit, lowering the overall cost of managing road transport emissions within the available cap. It should be noted that taxation and other fiscal policies have a significant influence on road transport emissions. Treasury should therefore also contribute towards the delivery of GHG emissions reductions.

5 Does the current balance of expenditure between the DfT's objectives adequately reflect the environmental challenges it faces?

5.1 In general, the LowCVP believes that additional resources and stronger policy signals are needed to facilitate market transformation in favour of low carbon vehicles and fuels to achieve the scale of emissions reductions needed in the long-term. While DfT funding to deliver environmental objectives has grown in recent years, it remains small in relation to funding for complementary economic and social / accessibility objectives.

5.2 The budget allocated specifically to road transport is a small proportion of total spend on the environmental PSA target. Furthermore, in 2004/5 and 2005/6 the funds that were allocated to the Transport Energy programmes to support the introduction of low carbon vehicles and fuels have not been fully allocated. This arose from the suspension of the Transport Energy programmes in November 2004 after concerns that they may not comply with EU State Aid rules. Of the six programmes submitted to the EC for approval in early 2005 only two have, to date, proceeded, an:

1. Infrastructure Programme – £600k, to provide grant funding of 30-50% of eligible costs for alternative refuelling infrastructure
2. Low Carbon R&D Programme - to provide funding to vehicle developers towards the costs of developing prototype low emission vehicles.

5.3 Proposed grants for low carbon cars and buses and programmes to reduce vehicle air pollution emissions have been suspended. The overall 2005/6 budget for the TE programmes was £24m. This included work in delivering advice to organisations to develop travel plans and improving the environmental performance of their fleet operations. £250k was also allocated from this budget for the LowCVP. The expenditure achieved for 2005/6 is not known but estimated to be less than half of that originally allocated. The LowCVP approached DfT to enquire whether any unspent funds could be carried forward to future years but was informed that this was not possible.

6 What, realistically, could DfT achieve in reducing transport-related carbon emissions by 2010 and 2020?

6.1 To achieve significant GHG savings from road transport before 2010 would require measures to reduce vehicle use or fuel consumption. A recent IEA study[3] provided examples of how fuel consumption can be reduced in the short-term. Similarly, a submission to the LowCVP Challenge[4] indicates that a properly enforced 70mph speed limit would cut carbon emissions by almost 1MtC pa. However, many LowCVP stakeholders have reservations as to the acceptability or viability of such an approach.

6.2 The DfT has claimed that the introduction of the Renewable Transport Fuels Obligation (RTFO) will reduce UK road transport GHG emissions by around 3%, the equivalent of taking 1M cars off the UK's roads (& equating to about 1MtC saved). Many LowCVP stakeholders have doubts that this level of GHG saving will be achieved as it requires biofuels to achieve an average GHG well to tank saving of over 60% compared with petrol/diesel. The Partnership has produced research[5] showing the cost and GHG benefits from biofuels vary greatly depending on how the fuel is produced. Incentives can encourage biofuels to achieve higher levels of GHG saving. The Government has indicated in its RTFO feasibility study that it does not propose to introduce such incentives at the start of the scheme – although it may do so as part of a further development of the RTFO post-2010. This decision will affect the level of GHG savings achieved.

6.3 By 2010, there is very little scope for bringing forward new vehicle technologies due to the long development cycles. The main emphasis in the short-term should

[3] IEA, 2005, Saving oil in a hurry
[4] Anable et al, 2006, Getting the genie back in the bottle: Limiting speed to reduce carbon emissions and accelerate the shift to low carbon vehicles, LowCVP (unpublished)
[5] LowCVP 2005, WTW evaluation of the production of ethanol from wheat

therefore be to increase the rate of penetration of the best existing technologies to reduce emissions from new vehicles. By 2010, (assuming a 1.2%pa improvement in vehicle efficiency - the average achieved from 1995 to 2005), new car CO2 emissions will average about 160.5g/km compared to 170.5 in 2004. Even so, by 2010, any improvement in vehicle efficiency will only be effective in less than a third of the vehicle fleet and therefore have limited impact upon overall CO2 emissions.

6.4 There is greater scope for technology improvements by 2020, though this timescale is still too short to achieve a major technology shift (such as that which would lead to significant numbers of vehicles powered by renewable hydrogen and/or fuel cells). If a 1.2%pa improvement in new vehicle efficiency was maintained to 2020 this would reduce UK average new car CO2 emissions to 142.5g/km by 2020 (higher than the EU Voluntary Agreement target for 2008/9). However, if it was possible to double the rate of penetration of new technology to 2.4%pa this would enable UK fleet average new car tailpipe CO2 to be below 120g/km by 2020.

6.5 There is no consensus amongst different stakeholder groups as to the rate of possible improvements in vehicle efficiency and how these should be balanced by measures to introduce low carbon fuels, achieve modal shift and efficient freight management. It is also important to note that there is a limit to the technical developments that the UK, on its own, can stimulate as the vehicles and fuels markets are European or global in scope. International agreements for measures designed to encourage technology change will be more effectual than those set at national level. National policies will however remain an important driver to support market penetration of new technology.

7 What specific steps should the DfT take to reduce road transport carbon emissions and congestion over the next decade?

7.1 Although LowCVP activities focus upon measures to accelerate a market transformation to low carbon vehicles and fuels, all stakeholders recognise the importance of other measures to deliver CO2 reductions including:

- Improved driver behaviour – in terms of both the type of journeys undertaken and the way in which the vehicle is driven
- Better freight distribution
- Modal shift – in favour of lower and zero carbon modes
- Land-use planning – reducing distances travelled over the longer term
- Teleworking – to reduce the need for commuting.

7.2 For measures designed to promote the shift to low carbon vehicles and fuels, LowCVP stakeholders favour policies that are technology-neutral market mechanisms. Wherever possible, these polices should also be designed to assist UK-based technology providers.

7.3 With respect to fuels, LowCVP stakeholders have actively supported and encouraged the introduction of biofuels to reduce the carbon intensity of conventional fuels. The LowCVP provided considerable input to the Government RTFO Feasibility Study[6] focussing on carbon certification and sustainability assurance systems. The Partnership welcomed the decision to include a reporting mechanism for GHG saving proposed by the Government as a useful first step. Many stakeholders however believe that, at a future date - assuming as soon as a practical system can be implemented - RTFO certificates should be awarded in

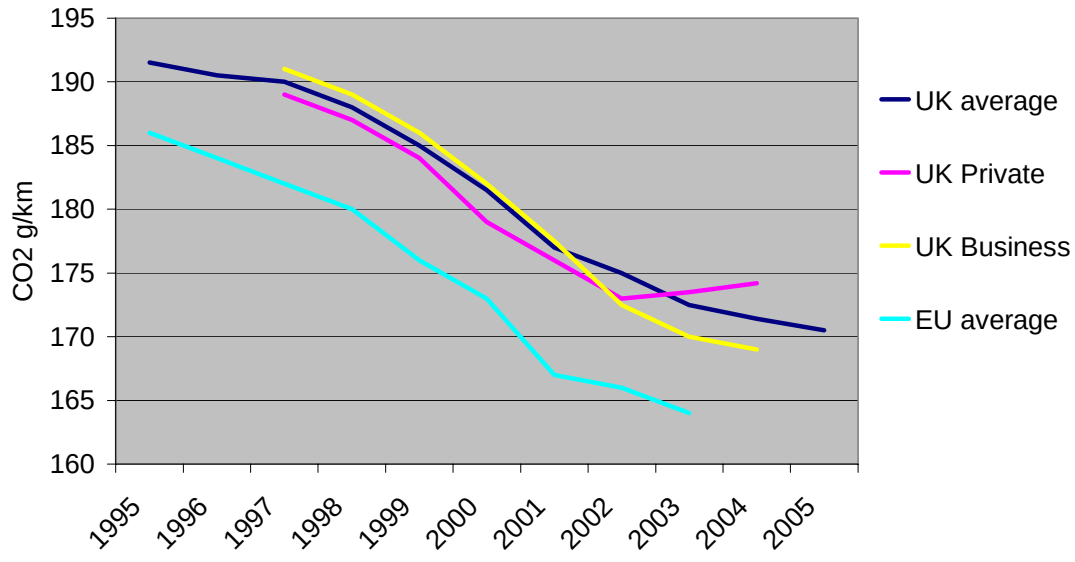
[6] DfT 2005, Feasibility study for certification within the RTFO

proportion to the well to tank GHG reduction of the biofuel. This would serve to incentivise GHG savings and avoid 'lock-in' to first generation technologies. Partnership members also support, and are working to develop, a sustainability standard to help to mitigate wider environmental and social concerns arising from biofuel production. The Partnership has also proposed that a strategic environmental assessment (SEA) be undertaken to identify the potential environmental effects of increasing biofuel feedstock cultivation and other environmental effects.

7.4 The Partnership also actively encourages increased supply and demand for more efficient vehicles and believes further Government action is needed to stimulate the market. The graph (below) illustrates the improved efficiency of new cars sold in the UK. This has been principally achieved through increased dieselisation, the EU voluntary agreement with vehicle manufacturers to reduce CO2 emissions and company car tax policy. Demand for environmentally friendly vehicles however remains weak. The graph also illustrates that:

i. UK new car fleet average CO2 emissions are significantly above the EU average. This is due to the lower rates of diesel penetration and the historic preference of UK new car buyers to purchase larger vehicles than the EU average. Similarly high new car CO2 figures are observed in other more affluent EU states which, like the UK, do not impose vehicle purchase taxes such as Germany and Sweden.
ii. UK fleet and businesses are progressively purchasing smaller and more efficient vehicles – in large part stimulated by the company car tax regime. In contrast, since 2002, private buyers have tended towards purchasing larger vehicles.

7.5 **UK new car fleet average tailpipe CO2 emissions**



7.6 Research undertaken by the LowCVP into car buying behaviour[7] indicates that a range of activities is needed to stimulate the market as illustrated in the following figure. Awareness-raising activities such as Defra's Climate Change Communications initiative are helpful in preparing consumers to embrace new, 'greener' technologies, but are not sufficient in themselves to significantly alter

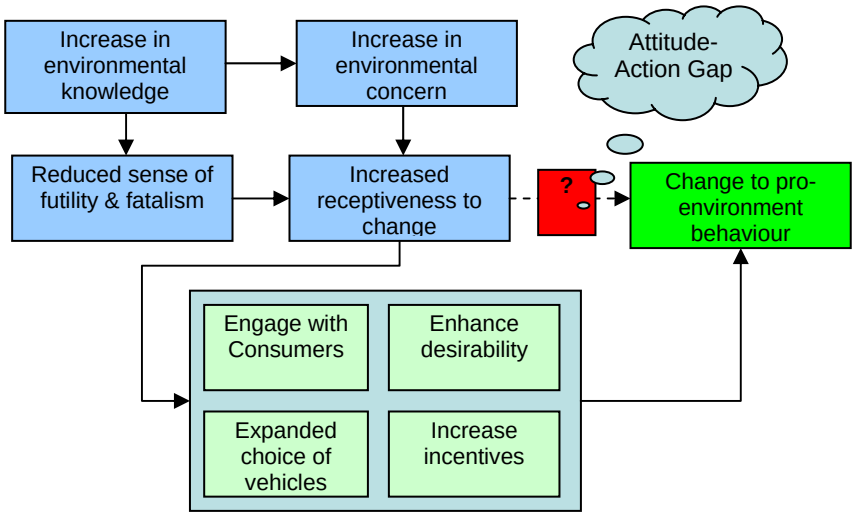
[7] LowCVP 2005, Car buyer research report

buying behaviour. Closing the 'attitude-action gap' requires a combination of initiatives by both industry and Government including:

- Activities to engage with consumers and address myths, preconceptions and misconceptions about new technologies and fuels
- Marketing to enhance the desirability of low carbon vehicle models
- An increased choice of low carbon vehicle options in all market segments
- Effective incentives – both financial and in terms of vehicle amenity value.

7.7 The new car fuel economy label, voluntarily introduced by the UK motor industry as a result of a LowCVP initiative, is designed to make consumers more aware of car running costs and CO2 emissions. Proposals for a "league table" of the most efficient models in each sector would complement the label and would be likely to be picked up by major car buying magazines. Many LowCVP stakeholders support an approach developed by the Energy Saving Trust and were disappointed that the DfT has declined to support this initiative.

7.8 **Increased demand for environmentally friendly vehicles requires actions to bridge the attitude-action gap**



7.9 Many LowCVP stakeholders believe current incentives for low carbon vehicles are insufficient to stimulate significant demand. Many stakeholders would welcome the reintroduction of Government-funded grants for low carbon vehicles to encourage early adopters to purchase new technology. Achieving widespread market penetration will, however, require market-based instruments to achieve market transformation. For example; some, but not all, stakeholders advocate a "Feebate" scheme in which tax reductions for low carbon vehicles are funded through a purchase tax on "gas guzzlers". Others have proposed greater differentials between VED bands. Financial incentives can be complemented by providing additional amenity value to drivers of low carbon vehicles - such as preferential parking places and discounts for road user charging or city congestion schemes. The Government feasibility study into road user charging showed that the CO2 implications of the policy are highly variable depending upon the design of the scheme. Many LowCVP stakeholders support designing road user charging to achieve both environmental and congestion benefits and would like to see greater consideration of this option.

7.10 LowCVP stakeholders would also wish to see further attention given to encouraging 'green' public procurement for vehicles. This needs to be guided by clear criteria based upon the environmental performance of vehicles. The LowCVP would encourage the use of the Forward Commitment approach being taken forward by Cenex to reduce the market risk to technological innovators in the automotive supply chain.

8 How appropriate are the Powering Future Vehicles Strategy targets?

8.1 The 2002 Powering Future Vehicle (PFV) strategy included targets to:

- Achieve 10% of new vehicle sales below 100g/km tail-pipe CO2 emissions by 2010
- Achieve sales of 600 low carbon buses by 2010.

8.2 Progress towards both the PFV Strategy targets indicates that these are likely to be missed by a considerable margin. In 2004 (the most recent year for which data is available) 481 cars were sold meeting the low carbon car target which represented 0.02%[8] of new vehicle sales. There has been no significant increase in sales in recent years and a very limited number of models achieving the target are presently available - or are likely to be - by 2010.

8.3 The LowCVP is presently undertaking a review of the PFV Strategy, the outcomes from which will be completed by summer 2006. Our initial discussions indicate that the current cars target is not appropriate. Some stakeholders have proposed amending the target to achieve a proportion of vehicles sales to the less exacting VED band B threshold (less than 120g/km). A much larger number of models is available that achieve this performance. The market share of cars with CO2 emissions below 120g/km grew from 2002 to 2004 to about 3% but the pace of improvement has slowed since then.

8.4 Some Partnership stakeholders have reservations about the appropriateness of any target which is focussed on increasing sales of only the most efficient vehicles. While increasing the proportion of low carbon vehicle sales is clearly desirable, greater overall CO2 benefits can be achieved by reducing fleet average CO2 emissions for new cars. One option would be to establish a UK target based upon average CO2 emissions from new cars. Irrespective of the form of the target, greater emphasis should be placed upon established policy instruments that provide a mechanism for the target to be achieved.

8.5 The PFV bus target is also unlikely to be achieved without transformation of the bus market. In 2004, 5 low carbon buses were sold; in 2005, this rose to 19 low carbon buses (compared to the 2010 target of 600 buses).[9] A recent announcement by the London Mayor expressed a wish to purchase 10 hydrogen buses by 2010 in addition to a number of cars. Though this development is welcomed - and will provide essential experience in the operation of fuel cell buses - significant market penetration of fuel cell buses is unlikely for at least the next 15 years due to their prohibitive cost. Other low carbon bus technologies are more likely to make a greater impact in the short or medium term.

[8] SMMT 2005, UK new car registrations by CO2 performance
[9] LowCVP 2006, unpublished data

8.6 Alternative mechanisms will need to be developed to support the introduction of low carbon buses, such as proposed in the Low Carbon Bus Programme. The programme is, however, delayed due to the failure to obtain state-aid approval from the EU.

9 Is there adequate coordination between organisations responsible for delivering the Powering Future Vehicles Strategy; and sufficient resources allocated for their delivery?

9.1 Generally there is good coordination between the organisations with responsibility for delivering the PFV Strategy. These are: the Low Carbon Vehicle Partnership, The Energy Saving Trust (EST, which manages the TransportEnergy Programmes) and DfT. EST and DfT are represented on the Board of the LowCVP and actively participate in the work-programmes of the Partnership. Through its working groups EST staff routinely report on the progress of the programmes being operated for DfT. Monthly coordination meetings are held between LowCVP, DfT, DTI and DEFRA officials to share information and coordinate activities.

9.2 The LowCVP is also represented on the Board of Cenex and made an effective contribution to developing the terms of reference and overseeing the establishment of the new Centre. A Memorandum of Understanding is being prepared between LowCVP and Cenex that will clarify responsibilities and identify areas of collaborative activity.

9.3 At present, there are a number of relatively small research activities focusing on the development of low carbon vehicle technologies. These are supported or operated by EST (for DfT), Cenex, the Society of Motor Manufacturers and Traders Foresight Vehicle and DTI. LowCVP also runs an Innovation Working Group which, as part of its remit, seeks to monitor research activities carried out under the auspices of the above organisations. The need for improved coordination between low carbon vehicle research programmes has been suggested by some stakeholders. Better coordination between all Government departments in the procurement of low carbon vehicles is also needed.

9.4 Clear responsibility for improving public understanding and awareness of low carbon vehicles is a current gap in activities. The Climate Change Communications Programme operated by DEFRA is raising awareness about climate change but does not focus on mechanisms to reduce emissions. DfT has commissioned a number of research studies examining consumer attitudes to climate change and transport, but has declined to support EST proposals for developing public understanding. Greater investment in this area is seen as a priority by many LowCVP stakeholders.

9.5 The funding available for delivering the PFV Strategy is limited – as discussed in Section 5. The absence of adequate funding or mechanisms to deliver the targets is the major contributor to the lack of progress that has been made towards the Strategy targets. The LowCVP, established as a result of the Strategy, is funded by an annual grant (budgeted at £530k for 2006/7) provided jointly by DTI and DfT. Funding is only committed on an annual basis making long-term planning difficult. The grant funds the small secretariat plus office costs. There is no budget available to fund specific work programme activities. Whilst DfT, DEFRA and members have generously provided sponsorship of individual activities the absence of any budget to support the work programme constrains the activities of the Partnership.