MEETING RAIL’S CARBON AMBITION

Carbon and cost reduction in the Industry Strategic Business Plan
EXECUTIVE SUMMARY.

- Key interventions could lead to overall traction reductions of 38% per passenger km and 10% per freight km
- This translates into an absolute reduction in traction CO₂ emissions of 12% or 400,000 tonnes per year by the end of CP5
- Interventions could lead to savings of a million tonnes of CO₂ and £110 million by the end of CP5, and 2.8 million tonnes of CO₂ and £360 million by the end of CP6

In the Initial Industry Plan for CP5 the rail industry outlined its ambition to reduce carbon emissions per passenger km by 25% in England and Wales and 28% in Scotland. To help enable these reductions the industry committed to a Carbon Management Framework to tackle key strategic issues around carbon reduction.

Since then, the industry has made significant progress in implementing its Carbon Management Framework:

- Energy efficiency and pay-for-what-you-use billing is included in franchise ITTs
- 20% of traction energy is now billed on a metered basis
- Government policies are seeking reductions in operational and embedded carbon
- Industry is developing a whole life carbon measurement tool
- New protocols have been agreed to ensure robust measurement of emissions.

At the same time the industry has commissioned research to identify the most cost-effective interventions to help it meet its carbon ambition. This work has identified four key interventions at a network level that together could help save over 1 million tonnes of CO₂ and over £100 million in CP5 (rising to 2.8 million tonnes of CO₂ and over £350 million by the end of CP6 in 2024). These interventions are:

- Practising energy efficient driving across the network, and in particular installing driver advisory systems (DAS)
- Installing the automatic shutdown of hotel loads
- Ensuring weight reduction is specified in new trains
- Enabling regenerative braking on the Class 92 fleet

There are also widespread opportunities around LED lighting at stations and depots as well as many other opportunities that may work in specific cases though not at the network level.

The four key interventions, when considered alongside the decarbonisation of electricity generation and the electrification of the network outlined in the High Level Output Specification (HLOS), could lead to overall traction carbon reductions of 38% per passenger km and 10% per net freight km. This translates into an absolute reduction in traction CO₂ emissions of 12% or 400,000 tonnes per year by the end of CP5 (against a 2009/10 baseline).

In delivering these carbon and cost savings all organisations in the industry have a part to play. From governments and specifiers ensuring the continued inclusion of energy efficiency in franchise contracts, to TOCs and FOCs implementing the key interventions outlined.
INTRODUCTION.

This supporting document to the industry’s Strategic Business Plan (ISBP) for CP5 lays out key steps that have been taken towards meeting the industry’s carbon ambitions.

Rail is already a low carbon mode of transport and just increasing its modal share in a static transport market would reduce carbon emissions. However transport as a whole is a growing market and its carbon emissions are among the fastest growing of all sectors.

The Sustainable Rail Programme supports the industry planning process for CP5, and issued a supporting document for the Initial Industry Plan (IIP). This covered both carbon and environmental noise as two issues identified as needing industry-wide planning. For the Strategic Business Plan, environmental noise is being covered in Network Rail’s Track Asset Management Plan so this document only covers the carbon issue.

In the year since the IIP was published there has been significant progress in implementing the Carbon Management Framework, with industry and government working together to set a solid foundation for a lower carbon railway.

It was significant then to see this overarching goal of a lower carbon railway supported in the HLOS for England and Wales, as well as that for Scotland.

However carbon, though a critical issue, does not stand alone and the rail industry remains focused on developing a lower cost, higher capacity railway. So to ensure that rail meets its carbon aims in the most cost-effective way possible, the industry commissioned research to better understand the business case for the most promising carbon reduction interventions. The results, which show how the industry can meet and even surpass its ambitions, are detailed below.

Taken together, the elements in this paper, developed by the cross-industry Sustainable Rail Programme demonstrate the commitment of the rail industry, already one of the lowest carbon modes of transport, to go even further in developing a low carbon railway.
The IIP introduced the Carbon Management Framework, developed by the industry to unlock the potential to deliver greater carbon efficiencies. The framework, which was based on a detailed analysis of the key barriers faced by the industry, outlined how industry, government and regulator could work together to build the foundations which could enable industry to develop a lower carbon railway.

Since the IIP was published, there has been significant progress in implementing the Carbon Management Framework, detailed below. However much remains to be done to embed the framework. The industry, through the Sustainable Rail Programme, will continue to work across the sector as well as with governments and the regulator to ensure that the focus is maintained, especially in areas such as franchising.

### Energy efficiency

**What's happened:**

- Both the Essex Thameside and Great Western franchise ITTs, the two most recent, included a requirement to set targets for reducing carbon emissions
- Both ITTs also required compliance with the Carbon Management Framework
- Reviews of franchising are underway so there is some uncertainty in this area

### Energy billing

**What's happened:**

- The Essex Thameside ITT included a requirement for the fitment of energy meters.
- The initial Great Western ITT included a requirement to supply Network Rail with sufficiently accurate information on traction energy consumption for billing purposes.
- The new Intercity Express and Thameslink rolling stock specifications include on-board energy meters.
- 20% of traction energy is now billed on a metered basis.
- The ORR plan to increase the incentive for train operators to meter their trains through changes to the electricity charges framework.
**System loss**

What’s happened:

- The ORR plan to incentivise Network Rail to manage losses more effectively.

**Whole life energy and cost savings**

What’s happened:

- Recent franchise ITTs have required that all initiatives are considered on a whole-life, whole-system cost basis.
- The England and Wales HLOS requires that the industry should measure and reduce the carbon embedded in new infrastructure.
- The Scottish HLOS seeks a continuous and sustained carbon reduction per train km and freight tonne km in the operation, maintenance, renewal and enhancement of the network.
- The industry commissioned a carbon accounting tool to enable robust measurement of embedded carbon in projects.

**Measuring and monitoring**

What’s happened:

- Recent franchise ITTs have required compliance with the Carbon Management Framework, in particular reporting energy consumption.
- The Essex Thameside ITT requires a plan to measure, monitor and manage traction and non-traction energy consumption reflecting industry best practice.
- Industry has agreed updated protocols for reporting traction and non-traction emissions, these will be the basis for reporting emissions to the ORR.
- Industry has agreed a methodology for measuring scope 3 emissions².
MEETING RAIL’S AMBITION.

- Four recommended interventions: energy efficient driving, weight reduction for new trains, automatic shutdown of hotel loads and enabling re-generative braking on class 92

- Potential 38% reduction in CO₂ per passenger km, and 10% per net freight tonne km

- Savings of 1m tonnes CO₂ and £110m by end of CP5; 2.8m tonnes CO₂ and £360m by end of CP6

Traction

In the IIP, the industry stated its ambition to reduce carbon emissions, per passenger km, by 25% in England and Wales and 28% in Scotland. This was based on a trajectory which included passenger growth, decarbonisation of the electricity grid, agreed electrification schemes, changes to liquid fuel including the addition of a proportion of biodiesel, and an initial view of the potential efficiency improvements that could be achieved by the industry.

This work has been further analysed and refined for the ISBP, including new electrification schemes, removing the assumptions around biodiesel on the advice of DfT, and a significant piece of research to understand how the industry can meet its efficiency aims in the most cost-effective way.

This research, which has been steered by a cross-industry working group of experts, has given a picture of what’s possible over the course of CP5 and CP6. The research identified four key traction interventions that, if implemented, will pay back by end of CP5

<table>
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<th>Cost (capex)</th>
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<th>Carbon saving</th>
<th>NPV</th>
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<tr>
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<td>£3m</td>
<td>18kT</td>
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<td>1,092kT</td>
<td>£361.5m</td>
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Cost and carbon savings from recommended interventions – CP5 and CP6
potentially saving over £100m, and over £350m by the end of CP6. In carbon terms saving over 1m tonnes of carbon in CP5 and nearly 3m tonnes over both control periods.4

The work also identified interventions where there was no business case at the system level but where a local business case could be positive.5

As a result, it is recommended from both a carbon and cost saving perspective that the industry should:

• Extend energy efficient driving principles across the network, and follow this up with installation of driver advisory systems.

• Install automatic shutdown of hotel loads whenever a train goes for an interior refresh or full refurbishment.

• Ensure that all specifications for new trains include a strong focus on weight reduction and energy efficiency.

• Enable regenerative braking on the Class 92 fleet.

Most of this investment will fall to the TOCs and FOCs and their partners (ROSCOs), however with widespread energy metering they should also see most of the benefit.

The analysis has identified that energy efficient driving, including the gradual implementation of driver advisory systems across the fleet offers the largest single potential carbon saving, while effecting the automatic shutdown of hotel loads across a range of fleets also offers a significant carbon saving. As can be seen above, all of these interventions pay back over the course of CP5.

However, in value for money terms reducing the weight on new trains (as has been done with Thameslink) offers the best carbon savings per £, followed by enabling regenerative braking on Class 92s. Hotel load shutdown and energy efficient driving also show good value for money saving £170 and £100 per tonne of carbon respectively. All this can be seen in the marginal abatement cost curve (MACC) (figure 1 below). The MACC also shows that other efficiency improvements for pre-privatisation rolling stock, such as re-engining or low-energy saloon lighting, do not have a business case at the system level. However they may make sense at the more local level, for example when a particular class of rolling stock is being life-extended, as not all variables could be accounted for in the research.

Further, there are some interventions that do not pay off over CP5 and CP6 periods, but do pay off over their lifetime. These include the installation of solar PV and re-transmissioning of certain types of diesel rolling stock. These are covered on page 11.

Figure 1: Marginal abatement cost curve: GB rail carbon interventions – CP6
Non-traction

The industry’s non-traction carbon emissions are a smaller proportion than those from traction, however they still account for around 12% of emissions, of which lighting is the largest part. The research considered the implementation of LED/PIR (passive infra-red) lighting technology that could be applied to stations and depots across England, Wales and Scotland.6

Overall, energy savings are considered to be in the order of 40% of current energy used in lighting stations and depots across the network. This could mean carbon savings of 320,000 tonnes of CO2 over the course of CP5&6.

It has not been possible to develop a robust network-level CBA due to the lack of data. However companies in the industry that have implemented LED lighting suggest a typical payback period of 2-3 years, meaning that this would be a very worthwhile intervention.

The intervention would be implemented and paid by TOCs, FOCs and Network Rail, who would also receive the benefit.

Embedded emissions

The industry is also responsible for significant carbon emissions through building, renewing and maintaining infrastructure and rolling stock. The industry does not currently have a clear understanding of the precise scale of these emissions, though it is working on measures to improve this situation including the development of a carbon accounting tool. This could also help project teams explore options for reducing embedded carbon, for example by considering alternative designs requiring fewer raw materials and/or by incorporating a greater proportion of recycled material in concrete or steel.

The industry is also reviewing how carbon (and other environmental considerations) can be incorporated into decision making processes so that they are considered throughout the life of projects and programmes.

Longer term ambitions

The rail industry has also recognised through its 2012 Rail Technical Strategy that the development of new technologies such as intelligent traffic management systems, onboard energy storage systems and lower cost electrification systems could offer significant energy and carbon benefits in the longer term. The industry’s innovation fund for CP5 provides an opportunity to develop and demonstrate some of these technologies.

Some interventions do not pay off at system level, but do make sense at a local level.
Carbon Smart & Energy Wise

Impact.

Traction

The results of the research show that rail can more than meet its IIP ambitions.

When combined with the decarbonisation of electricity generation and the increased electrification of the network as announced in HLOS, implementing the interventions would lead to an overall reduction of traction carbon emissions of 38% per passenger km and 10% per net freight tonne km by the end of CP5 (against a 2009/10 baseline). This would take per passenger km emissions from 51g CO₂ to 32g CO₂, and net freight tonne km emissions from 27g CO₂ to 24g CO₂.

Further, this means an absolute reduction in traction carbon emissions of 12%, or nearly 400,000 tonnes CO₂ per year by the end of CP5.

When compared to a growth-only benchmark (ie no grid decarbonisation and no further electrification) half the reduction is due to the decarbonisation grid generation and therefore outside industry’s control. 19% is due to further electrification and 31% due to the efficiency interventions identified in the research. The high proportion (69%) due to ‘electric’ issues explains the lower normalised reduction in freight carbon. However, the significant proportion (31%) that is a result of efficiency interventions helps to highlight the importance of the industry taking action.

Non-traction

Understanding of non-traction emissions at the system level is less sophisticated than for traction, however over the last year progress has been made to baseline non-traction emissions and make a high-level forecast for how these might change over the course of CP5.

The results show that at the beginning of CP5 non-traction emissions are projected to be 510,000 tonnes of CO₂. Of this 441,000 tonnes are related to the railway in England and Wales, and 69,000 tonnes to the railway in Scotland.

Taking into account planned infrastructure changes over the course of CP5, as well as forecast changes to the carbon intensity of grid electricity, the total emissions are forecast to reduce to 403,000 tonnes, a reduction of about 20%. Within this emissions in England and Wales go down by 91,000 to 350,000 tonnes and emissions in Scotland go down by 16,000 to 53,000.

As highlighted above, these emissions could be further reduced, potentially significantly so, through fitting LED/PIR lighting technology across a large part of the network.

Figure 2: GB rail traction carbon trajectory CP5
INTERVENTION PACKAGES.

Below is a summary of the analysis of those intervention packages recommended for implementation in CP5.

It is important to note that all of the analysis has, inevitably, been done at the system level, though split by funder. As mentioned on page 6, some system-level interventions (as well as other interventions) that do not have a system-level business case, will still pay off at a local level.

Energy efficient driving

This intervention groups together eco-driver training and standalone driver advisory system (DAS). The former applies to all TOCs not currently practising eco-driving, the latter to all rolling stock across England and Wales and Scotland which does not currently have DAS installed. This intervention can be implemented by both freight and passenger train operating companies.

Eco-driver training teaches good driving practice by using route-specific indicators (eg to know where to coast). By driving in a more economical manner with more coasting and lower speeds, less energy is used.

DAS is the installation of a cab-mounted computer that analyses local route and current location against timetable and line-speeds to advise the driver of a recommended speed to achieve the timetable using minimum energy. The energy reduction potential of DAS is a function of:

- Ratio of potentially available train performance (kWh/km)/required train performance to meet the timetable which includes relative efficiency of diesel and electric traction across the speed range.
- Current driving style and existing approaches to eco-driving.

Figure 3: Relative %age of benefits from eco-driving and DAS over implementation period

![Figure 3: Relative %age of benefits from eco-driving and DAS over implementation period](image-url)
• Type of service, eg Intercity, freight, metro.
• Other traffic and potential operational conflicts, such as at junctions.
• Approach to timetabling and the amount of recovery time.

Typical energy reduction due to DAS is about 8% though this will vary, some Intercity trains can achieve much higher savings while inner suburban commuter operations will usually achieve lower savings.

Eco-driving and DAS are in essence mutually exclusive, both have a positive business case on their own and fitting DAS also has a positive business case for the additional saving above eco-driving. Eco-driving is quicker to implement, however DAS has the greater potential therefore it has been assumed that there will be an initial take up of eco-driving followed by a gradual transfer to DAS.

Eco-driving would take 8 months to roll out with energy benefits evident as soon as drivers are trained. DAS would be implemented over a period of 4 years, going live in increments at the end of each year as different fleets are completed and ‘switched on’. When DAS is fully implemented the benefits of eco-driving would reduce to zero (see figure 3 above).

**Barriers**

While this level of implementation is perfectly achievable, it may require additional resources to facilitate this (eg staffing and supply chain).

**Automatic shutdown of hotel loads**

This intervention considers installing the automatic shutdown of hotel loads at interior refresh or refurbishment of rolling stock. It covers all post privatisation DMUs and EMUs that will go through interior refresh during CP5 and CP6 in England and Wales and all pre privatisation electric and diesel trains that will go through major refurbishment during CP5 and CP6 in England and Wales. This intervention has not been applied in Scotland where the shutdown of hotel loads is already implemented.

Parked trains often continue running hotel loads, which in total make up about 5% of traction energy. Automatic shutdown systems can reduce the wasted energy without any impact on operations, saving about 50% of overall hotel loads according to ATOC data.

Costs may be borne by passenger TOCs or ROSCO, with the financial benefits accruing to the TOCs. Where ROSCOs bear the capex costs, it is expected that these will be recouped through increased lease charges, subsequently offset by reduced operating costs.

**Weight reduction for new trains**

This intervention considers weight reduction applied to all new passenger rolling stock identified in the medium scenario of the rail industry passenger rolling stock strategy, but not currently in procurement, across GB.

Weight reduction increases train efficiency as less power is required to accelerate and brake. The intervention is based on a potential weight reduction of 20%, which equates to an average energy saving of 7%. As well as the carbon saving and financial benefit through increased energy efficiency, there will also be a financial benefit from reduced track damage.

The capital expenditure for this intervention is estimated to be £5m (about £5,000 per vehicle), this is the marginal cost of an additional design cycle focused on weight reduction.

To implement this intervention requires the inclusion of weight reduction (eg in the form of a target weight as in Thameslink) in the specification for new rolling stock. This could also be addressed by including weight reduction in the key technical requirements for new rolling stock published by ATOC via the Vehicle/Vehicle System Interface Committee (V/V SIC).
The cost would be borne by ROSCOs or train manufacturers and recouped through increased vehicle purchase costs or lease charges to the train operating companies. These costs will be offset by reduced operating costs.

It should be noted that this work did not include in its scope a more radical weight reduction of about 50% as being considered by the Technical Strategy Leadership Group through tram technology. However there are further potential significant savings in this area.

The research did consider configuration flexibility (ie ensuring the ability to add new carriages at key stages in a train’s life) and there is evidence to suggest that there may be significant longer-term carbon and financial savings, however the benefits were deemed to fall outside the two control periods. This is an area that would merit further research.

**Barriers**

There are no significant barriers to implementing this intervention

**Enable regenerative braking on Class 92**

FOCs can enable the regenerative braking on Class 92 locomotives. This allows the recovery of energy whilst the train is braking that can be supplied back to the 25kV AC OHLE for use by other trains. It is assumed that this will be enabled over a four year period.

Class 92 locos were provided with this functionality when built but it was not enabled. The use of this technology would give a CO2 emissions abatement through a decrease in net energy use. This would be implemented by FOCs, who would also benefit through lower energy charges.

**Barriers**

There are no significant barriers to implementation.

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### Interventions that payoff within the life of the asset

Some interventions do not pay off within CP6 but do pay by the end of the life of the assets. Below are two examples:

**Solar PV** – This intervention applies to stations and depots improvement by installing solar photovoltaic (PV) cells onto the roofs and canopies which have the correct orientation to be worthwhile. Renewable energy generated locally would replace energy from external sources to reduce emissions. This initiative would be implemented by TOCs, FOCs and Network Rail and would be applied to selected stations and depots across England and Wales and Scotland.

This intervention was considered with a feed in tariff; there are several other funding plans available which could potentially reduce the capex costs and make this intervention more financially attractive, examples include ‘rent a roof’ type schemes.

**Re-transmissioning**: New mechanical transmissions are more efficient than existing hydraulic systems. This would give a carbon abatement benefit through increased efficiencies. This option would apply to the pre-privatisation ‘Sprinter’ and diesel ‘Networker’ trains. The CBA analysis highlighted that though this sub-intervention does not pay off by end of CP6 it does pay in England and Wales by 2027 which is within the life of the asset, though not in Scotland.

### Option CP5 – NPV CP5 – kTCO2e abatement CP6 – NPV CP6 – kTCO2e abatement Year of positive NPV

<table>
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<th>Option</th>
<th>CP5 – NPV</th>
<th>CP5 – kTCO2e abatement</th>
<th>CP6 – NPV</th>
<th>CP6 – kTCO2e abatement</th>
<th>Year of positive NPV</th>
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<tr>
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<td>£-3m</td>
<td>70</td>
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<tr>
<td>Re-transmissioning</td>
<td>£-40m</td>
<td>99</td>
<td>£-14m</td>
<td>265</td>
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RECOMMENDATIONS.

While the railway is already a low-carbon transport mode, there are clear opportunities for further carbon reduction and in many cases an allied financial case. Given this, it is incumbent on the industry to increase its focus on energy efficiency as a clear win-win.

Every organisation in the industry has a part to play, whether we succeed will depend upon the extent to which:

- Specifiers (DfT and Transport Scotland) ensure the continued inclusion of carbon reduction targets and on-train metering in future franchise competitions and the monitoring of these targets.
- ORR implement their current plan to increase the incentive for TOCs to implement in-train metering and Network Rail to reduce electrification system losses.
- The industry, and DfT, use the carbon accounting methodology being developed by the industry in major infrastructure contracts and set targets for reducing embedded carbon.
- ORR enforce the industry agreed carbon reporting protocols and ensure that all TOCs are reporting their energy and carbon emissions.
- TOCs not currently doing so implement energy efficient driving techniques, including eco-driving and standalone driver advisory systems.
- TOCs/ROSCO install automatic shutdown of hotel loads whenever a train goes in for refurbishment or interior refresh.
- All new train specifications, whether from government, ROSCO or TOC, focus on weight reduction and energy efficiency.
- Industry include weight reduction in the key technical requirements for new rolling stock.
- FOCs enable regenerative braking on Class 92s.
- Station and depot owners install energy efficient lighting (eg LED/PIR) in their estate.
- Network rail, and TOCs with long-life infrastructure assets, fit solar PV in key locations.
- Further research is commissioned into issues not fully understood currently.

Taken together these steps could help move rail towards a genuinely low-carbon, low-cost railway and demonstrate the continued sustainability of the railway in Great Britain.
CARBON SMART & ENERGY WISE.

APPENDIX
– summary of key interventions and savings

- Four recommended interventions: energy efficient driving, weight reduction for new trains, automatic shutdown of hotel loads and enabling re-gen braking on class 92.
- Potential 38% reduction in CO2 per passenger km, and 10% per net freight tonne km
- Savings of 1m tonnes CO2 and £110m by end of CP5; 2.8m tonnes CO2 and £360m by end of CP6.

England and Wales
- 37% reduction in CO2 per passenger km and 11% per net freight tonne km
- Savings of 1m tonne CO2 and £110m by end of CP5; 2.7m tonne CO2 and £350m by end of CP6.

Scotland
- 43% reduction in CO2 per passenger km and 6% per net freight tonne km
- Savings of 26,000 tonnes CO2 and £200k by end of CP5; 77,000 tonnes CO2 and £8m by end of CP6.

ENDNOTES

1 NB this element of the Framework was updated by the sustainable Development Steering Group from the previous “An increase in metering of traction energy by CP5 should be incentivised, through ECT4T, to ensure that operators pay for what they use and reap the benefits of efficiency savings”

2 The GHG Protocol categorizes direct and indirect emissions into three broad scopes:
Scope 1: All direct GHG emissions.
Scope 2: Indirect GHG emissions from consumption of purchased electricity, heat or steam.
Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (eg T&D losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

3 Applies to pre-privatisation electric and diesel rolling stock at refurbishment and post-privatisation EMUs and DMUs at interior refresh

4 Electricity prices on which these figures are based were provided by Network Rail based on actual prices paid with an uplift according to DECC projections; diesel prices are based on DECC projections. If DECC central projection for electricity prices is used savings would rise to c£165m for CP5 and £492m by the end of CP6

5 These are not included in the carbon or cost saving figures in this document

6 The research also considered the installation of solar photovoltaics, these can pay back over the asset life, but did not have a business case in the CP5&6 period.

7 Originally this intervention included Connected DAS (C-DAS) as a successor to DAS. C-DAS has the same benefits as DAS with the added benefit of enabling communication between trains as part of an infrastructure wide network enabling the in-cab computer report the speed the driver should do to give the greatest benefit to the entire system. This would benefit from more on-time services and increased efficiencies hence carbon abated. C-DAS has not been analysed in this intervention due to lack of industry knowledge and understanding and no specifications currently exist. Consequently, it is impossible to assess the infrastructure and software costs as well as the impact from the interface with timetabling.

8 Class 92 locomotives are metered for use on the AC network

9 Classes 150, 153, 155, 156, 158, 159, 165 and 166.
The Sustainable Rail Programme (SRP) supports the industry in reaching its full potential in sustainable development.

The railway has a key role to play in contributing to an integrated national transport system, providing a sustainable transport solution that minimises environmental impacts and contributes to social inclusion and economic prosperity. The SRP focuses on areas where collaboration across the industry or with government is required to address issues or take initiatives forward.

The SRP supports industry to:

- Build shared understanding
- Understand global SD policy framework
- Facilitate cross-industry discussion
- Develop industry strategy
- Measure performance Support implementation
- Influence policy and legislation

The SRP is run as a cross-industry programme by RSSB on behalf of the rail industry. It is steered by the Sustainable Development Steering Group, which comprises Network Rail, train and freight operating companies, rolling stock leasing companies, suppliers, as well as Department for Transport, the Office of Rail Regulation, Transport for London, and RSSB itself.

For more information, go to www.rssb.co.uk