



THE PWI

THE INSTITUTION FOR RAIL
INFRASTRUCTURE ENGINEERING

WELCOME

PWI CLIMATE CHANGE ADAPTATION &
DECARBONISATION COMMITTEE.



Background Information

- Since PWI achieved accreditation with Eng Council, we have become more involved with the Royal Academy of Engineering.
- RAE host the National Engineering Policy Centre – one of their subject areas is Climate Change & Decarbonisation
- Aware of the work the ICE are doing in this space.
- Nov 20 PWI Board agreed a strategic focus on this area.



NATIONAL
ENGINEERING
POLICY CENTRE

The NEPC

- We are a unified voice for 43 engineering organisations, representing 450,000 engineers
- We give policymakers a single route to advice from across the engineering profession
- We inform and respond to policy issues for the benefit of society

Partners of the National Engineering Policy Centre



HOME ► EVENT ARCHIVE

Event Organiser: ICE

ICE Presidential Address 2020



Webinar

Online

03 November 2020

12:00 - 13:30

National Engineering Policy Centre experience share: Professional Bodies & Climate Action

XX

PWI CLIMATE CHANGE ADAPTATION & DECARBONISATION COMMITTEE





DECARBONISATION COMMITTEE

WHAT'S OUR PURPOSE?

Decarbonisation Committee – Terms of Reference

- What can PWI do as an organisation?
- What can individual members do?
- What can PWI do to help Corporate and individual members?
- What can PWI do with professional groups & industry partners to foster political and public support?
- Keep learning & exploring subject matter

VISION

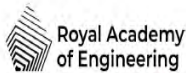
A RAIL INFRASTRUCTURE
COMMUNITY THAT INSTINCTIVELY
DELIVERS A ZERO-CARBON
SUSTAINABLE RAILWAY

MISSION

RECOGNISING CLIMATE CHANGE
AND DECARBONISATION
CHALLENGES IN RAILWAY
INFRASTRUCTURE, SHARING
SOLUTIONS AND BEST PRACTICE,
AND FOSTERING THEIR ADOPTION
THROUGH COLLABORATION TO
ENABLE POSITIVE CHANGE.



Royal Academy of Engineering



The Institute of Materials,
Minerals and Mining



NEPC and Net Zero

January 2020- ongoing

- Thought leadership and problem definition
- Applying systems thinking and methods
- Convening diverse stakeholders – not just engineering
- Working directly with government on policy challenges
- Raising cross-cutting issues: governance, infrastructure, digitisation, resilience & adaptation

NATIONAL
ENGINEERING
POLICY CENTRE





NEPC NET ZERO WORKING GROUP



Key outputs

Reports:

- Read our report on [the role of hydrogen in a net zero energy system](#)
- Read our report on [rapid low regret decision making for net zero policy](#)
- Read our report on [decarbonising the construction industry](#)
- Read our report on [laying the foundations for a net zero recovery following the COVID-19 pandemic](#)
- Read our [project's launch paper](#)

Consultation responses:

- Read our response to [Ofgem's Open Letter on the next network price control review process](#)
- Read our response to [Chris Skidmore's independent review of net zero delivery](#)
- Read our response to a consultation on [net zero governance](#)
- Read our response to a consultation on [the role of hydrogen in achieving net zero](#)

Media:

- Watch our [Getting to Net Zero video series](#)



NEPC NET ZERO WORKING GROUP

Ongoing Proactive Projects

- **Enabling a net zero compatible grid:** A series of roundtables on the key enablers of and barriers to the transformation required to enable a net zero compatible grid. We have been assembling a working group, meeting with them 1-1 to get input and refine scope and engaging partner PEIs.
- **Materials and net zero:** A multimedia briefing series on the theme of materials and net zero, likely topics include supply chain resilience, embodied carbon, critical rare materials and end-of-life impacts.





Decarbonising Transport



Decarbonising Transport

Setting the Challenge

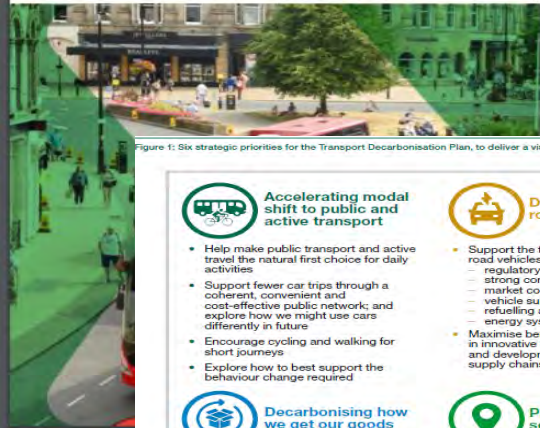


Figure 1: Six strategic priorities for the Transport Decarbonisation Plan, to deliver a vision of a net zero transport system



Accelerating modal shift to public and active transport

- Help make public transport and active travel the natural first choice for daily activities
- Support fewer car trips through a coherent, convenient and cost-effective public network; and explore how we might use cars differently in future
- Encourage cycling and walking for short journeys
- Explore how to best support the behaviour change required



Decarbonising how we get our goods

- Consider future demand and changing consumer behaviour for goods
- Transform 'last-mile' deliveries – developing an integrated, clean and sustainable delivery system
- Optimise logistics efficiency and explore innovative digitally-enabled solutions, data sharing and collaborative platforms



UK as a hub for green transport technology and innovation

- Utilise the UK's world-leading scientists, business leaders and innovators to position the UK as an internationally recognised leader of environmentally sustainable technology and innovation in transport
- Build on expertise in the UK for technology developments and capitalise on near market quick wins



Decarbonisation of road vehicles

- Support the transition to zero emission road vehicles through:
 - regulatory framework
 - strong consumer base
 - market conditions
 - vehicle supply
 - refuelling and recharging infrastructure
 - energy system readiness
- Maximise benefits through investment in innovative technology development, and development of sustainable supply chains



Place-based solutions

- Consider where, how and why emissions occur in specific locations
- Acknowledge a single solution will not be appropriate for every location
- Address emissions at a local level through local management of transport solutions
- Target support for local areas, considering regional diversity and different solutions



Reducing carbon in a global economy

- Lead international efforts in transport emissions reduction
- Recognise aviation and maritime are international by nature and require international solutions
- Harness the UK as a global centre of expertise, driving low carbon innovation and global leadership, boosting the UK economy

PWI TECHNICAL SEMINAR

ELECTRIFICATION

Delivering the business case

13 JULY 2021



The Scottish Government have recognised that benefits of a rolling programme of electrification and Network Rail Scotland is developing faster than anticipated. Electrifying an existing railway requires the electrification system to be integrated with the broader railway system: the configuration of the traction system and its constituent parts; how operators run the operation; train usage, and performance of the railway.

The challenge facing engineers of all disciplines is to simplify the systems integration task so that it supports a rolling programme of new railway infrastructure investments.

This seminar will help engineers across the railway decarbonise, understand the implications of converting a route to electric traction, and explore ways in which system specification, design, and implementation can support a rolling plan.

ELECTRIFICATION DELIVERING THE BUSINESS CASE

GLASGOW REINA CENTER HALL

13 JULY 2021 09:00 - 12:00

FOR REGISTRATION
CONTACT: info@pwi.co.uk
OR: 01202 311111

BOOKING NOW OPENS:
www.pwi.co.uk/electrification

SPONSORSHIP AND CO-SPONSOR
PWC AVAILABILITY CONTACT: 01202 311111 / info@pwi.co.uk

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MACDONALD

pwb rail

bam
railbuild

SPL
SPECIALIST PROJECTS LIMITED

Furrer + Frey
Engineering Consultants



COMMUNICATING WITH THE MEMBERSHIP

WHAT ARE WE DOING?





GREAT BRITISH RAILWAYS

ANSWERING THE CALL FOR EVIDENCE

2022 started with a flurry of activity as the PWI prepared its response to the Great British Railways Transition Team's (GBRTT) call for evidence to inform an intended Whole Industry Strategic Plan, also known as the WISP or Strategic Plan. With a submission deadline of 4 February, the timescale for assembling responses to GBRTT's questions was undoubtedly tight. Fortunately, a 'shoot out' to Institution Fellows brought a wealth of experience and knowledge to bear on the task. After what for the PWI wasn't a near continuous run of online discussions and meetings from late December to late January, and a decision to focus on those questions with direct application to infrastructure and engineering, GBRTT's six questions were made on the PWI's behalf to three of GBRTT's six questions.

I can't thank enough the 30+ Fellows who volunteered and participated in the exercise, and particularly the three Fellows who each took on the role of principal author for one of the questions: Michelle Nolan-McGeevrey, Richard H Brown, and Joel Henry. The Fellows' highly active participation enabled the PWI to draw on engineering, organisational, logistical, commercial, and business management experience stretching from the 1960s to the present day, and from a wide range of perspectives. I confess that at the time I was a little worried that this range of experience might make consensus difficult to achieve and that individual Fellows' conclusions might differ, perhaps even violently in the event my fears were groundless and, whilst a variety of opinions were offered and some serious discussions ensued, differences turned out to be more apparent than real, and largely related to tone rather than substantive content.

THE QUESTIONS WE ANSWERED

GBRTT framed its questions with reference to the UK government's five 30-year strategic objectives for the rail industry. These industry objectives are:

1. meeting customers' needs;
2. delivering financial sustainability;
3. contributing to long-term economic growth;
4. linking up and connectivity; and
5. delivering environmental sustainability.

The 3 questions assessed by the PWI were set against:

- application and delivery of the five strategic objectives in the context of five societal, economic, and environmental trends, or in a way that both better integrates rail transport into the UK's overall transport system, and is resilient to key uncertainties (question 1);
- delivery of financial sustainability (question 3); and
- delivery of environmental sustainability (question 5).

The form and nature of the PWI's responses meant that, while each answer looked at the requested 5, 10, and 30 year time horizons, specific answers were not made against each horizon.

WHAT WE SAID

You can read the extensive PWI responses to the GBRTT call on our website at: www.railpwi.org/ibrtt/. However, a number of common themes related to railway transport and GBRTT itself permeated all three answers and I thought it would be helpful to summarise here some of the themes that I thought particularly important.



Great British
Railways
TRANSITION TEAM



AWARD

OPEN TO ANYONE INVOLVED IN RAIL INFRASTRUCTURE ENGINEERING

THE PWI'S CLIMATE CHANGE ADAPTATION & DECARBONISATION AWARD

DESCRIPTION The climate emergency and the absolute certainty that we need to both adapt and decarbonise global society is the largest and most important issue facing humanity. Engineering and engineers have a critical role to play in defining the policies and actions necessary to avert physical and societal collapse. Sponsored by WSP, this award will recognise an individual or team who, through their work, have made a positive contribution to climate change adaptation and / or decarbonisation within the boundaries of rail infrastructure engineering.

ENTRY Deadline 2 September 2022 to: secretary@railpwi.org. Please submit an original paper of 2000 - 2500 words on a relevant project or initiative, completed between 2019 - 2021. Papers will be judged against the following criteria: relevance to climate change adaptation and / or decarbonisation; benefits delivered and/or cost effectiveness; quality of paper and demonstration of technical excellence. The award is open to anyone involved in rail infrastructure engineering.

AWARD EVENT November 2022, London



Competence E3 - Sustainability

- Eng Council: Understand the principles of sustainable development and apply them in their work

Eng Tech	IEng	CEng
Understand principles of sustainability	Demonstrate appropriate consideration of principles of sustainability	Understanding sustainability implications of their work seeking to improve aspects where feasible.

- PWI: Understand the principles of sustainable development and apply them in their work

Eng Tech	IEng	CEng
Understanding sustainability implications of their work seeking to improve aspects where feasible.	Understanding sustainability implications of their work seeking to improve aspects where feasible.	Understanding sustainability implications of their work seeking to improve aspects where feasible.



ONGOING WORK

Professional Registration – Competence E3

- Suitable scoring system....what's the minimum
- Safety v sustainability....are they equal
- Exemplars for both candidates and reviewers.
- Evidence linked to UNSDGs?



Encourage understanding of your own carbon footprint

- <https://footprint.wwf.org.uk>
- <https://www.carbonfootprint.com/calculator>
- <https://www.gov.uk/guidance/carbon-calculator>
- <https://zero.giki.earth/>



ONGOING WORK – SUSTAINABILITY & ETHICS



Defining “sustainability”

Transport inequality

Prejudice and discrimination

Behavioural change

Global warming

Being reactive: **climate resilience**

Being proactive: **decarbonisation**

So what?



ONGOING WORK – DECARBONISING TRACK



10 point Track Decarbonisation Action Plan

- Improved sustainability awareness needed in track materials industry and life cycle wide.
- New material and track designs to follow eco design principles
- Provide guidance on low carbon alternatives for track construction material selection and track design specifications.
- Improve specifications and tenders to improve sustainability
- Identify track renewal carbon targets for CP7/2025 onwards
- Develop better repurposing and sustainability initiatives for sites and materials involving the installation contractor and material supplier
- Validate carbon tools to ensure accuracy of data – eg Ballast data with RSSB
- Strategize track in line with NR Zero Carbon 2050
- Nudge suppliers to start thinking greener – share the learnings
- Gather data sources for track maintenance activities eg grinding, rerailing to validate carbon life cycle models





LOOKING TO THE FUTURE

PWI STRATEGY:
**2024 – 2028
& BEYOND**

THE PWI
THE INSTITUTION FOR RAIL
INFRASTRUCTURE ENGINEERING

Consultation Document v.1.1

02/01/2023



BEYOND THE WORLD OF RAIL ENGINEERING BIG QUESTIONS TROUBLE HUMAN SOCIETY

- The sustainability of our environment and the threats posed by climate change
- The engineering profession - is it attracting enough talented people to meet society's current future needs?

PWI RESPONSE

Established two committees to guide the Institution on:

1. Decarbonisation, climate change adaptation, and wider questions of sustainability
2. Diversity and inclusion within its current and future membership

QUESTIONS TO CONSIDER

1. Are there other areas of wider societal concern other than climate change / decarbonisation, and diversity and inclusion that the Institution should be responding to?
2. How might the work of the two established committees be broadened out to engage more widely with PWI members and Sections?
3. How should the Institution reflect ethics and values?
4. How might PWI Sections reflect strongly and visibly the Institution's commitment to decarbonisation and diversity and inclusion?

THANK YOU &
QUESTIONS

