



# 4

## Strategic Design Panel progress report

## Good road design:

makes roads safe and useful  
is inclusive  
makes roads understandable  
fits in context  
is restrained  
is environmentally sustainable  
is thorough  
is innovative  
is collaborative  
is long-lasting

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The A3 Hindhead Tunnel in Surrey allowed the heathland above to be reconnected and restored for wildlife and people.

## Foreword



In the time since publication of the last progress report, we have embarked upon a second investment period for the strategic road network and our lives have been disrupted by a pandemic.

It has been a challenging time, yet the vision we set out in *The road to good design* – designing an inclusive, resilient and sustainable road network – is even more relevant today. Our aim to put people at the heart of our work has not changed and still resonates.

I am proud of our accomplishments in the first road period. The founding of the first design panel for roads and publication of specific design principles, has challenged us to improve our design processes and outcomes for people and places. Introducing design review for roads was another first, and has helped us raise aspirations to meet our aims and informed many of the recommendations made in this and previous reports.

The three essential qualities of good road design are safe, functional and elegant. And it is the latter, with careful attention to detail, that will elevate the quality of the network and deliver our vision of good design for people and places. In the second road period we will embed our principles of good road design further, so that their use becomes business as usual and second nature. I do not doubt there will be new design challenges ahead, but we have great multi-disciplinary design teams and with the support of the Strategic Design Panel, we will rise to these.

I would like to thank current and past members of the Strategic Design Panel for their valuable contribution, and welcome new members who are all committed to helping us deliver safer, better, beautiful roads to connect people and connect our country. I look forward to another year working together with the wide range of organisations represented here.

A handwritten signature in black ink that reads "Mike Wilson". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Mike Wilson,  
Chief Highways Engineer and  
Chair of the Highways England Strategic Design Panel



Murdoch's Connection is a new local landmark linking the city to its waterfront over the A63, Hull.

## Executive summary

This is the fourth report of the Highways England Strategic Design Panel (the Panel), which is tasked with challenging and supporting Highways England to improve the quality of England's strategic road network (SRN).

The Panel includes members from across a range of disciplines, representing stakeholders who are committed to improving the design and quality of the SRN. This report sets out the Panel's progress over the past year and a half (June 2019 to end of 2020), makes key recommendations and looks ahead to the coming year and the remainder of the second road period.

### Design review and advice

The design review panel (DRP) has continued to provide scheme specific design advice, as well as reporting strategic issues from reviews to the Panel.

The Panel recommends a separate report on design review to date is published to disseminate learning from, and the benefits of, the review process more widely. The Panel also recommends reviews continue to be undertaken by a separate design review panel under its direction in the second road period.

### Key recommendations

Over the past year and a half, the Panel made the following key recommendations. Highways England should:

- **accelerate** communication and training to promote and embed its design vision and principles into its processes and culture
- **act** on the Panel's recommendations for adapting to climate change, reducing carbon, supporting biodiversity and the design of corridors
- **publish** a design strategy to clearly articulate its ambitions for the second road period and beyond

See section 6 for details of these key recommendations.



Design for the future - ground investigation for the proposed Lower Thames Crossing.



Bridleway over the A26 on the South Downs Way National Trail, East Sussex

## Looking ahead

Over the next year, the Panel will continue to focus on education, research and design review. The Panel will support Highways England to promote and embed the principles of good design in practice, and help develop further good design case studies to advance education. The Panel will understand and make recommendations on visual clutter, and support good design competitions that challenge current approaches and inspire innovation for other areas of interest. The Panel will consider this work alongside issues emerging from the review of schemes by the DRP, monitor progress on previous recommendations and support the publication of a separate report on design reviews to date.

The Panel will continue to support Highways England throughout the second road period to ensure the principles of good design are fully embedded in practice and culture. It will also monitor the quality of design and outcomes, with more attention given to the quality of the existing road network. The Panel will also support Highways England in responding to the challenges of climate change and biodiversity through good design.

“Designing high-performing and beautiful infrastructure ... the government is committed to embedding good design in all infrastructure projects...”

HM Treasury (2020) National Infrastructure Strategy



The simple elegant lines of the A14 Orwell Bridge in Suffolk create a bold landmark in the landscape.

## 1. The Strategic Design Panel

The Highways England Strategic Design Panel (the Panel) is tasked with challenging and supporting Highways England to improve the quality of England's strategic road network (SRN). The Panel's role is to ensure that design excellence in landscape, engineering and built environment is considered in all Highways England projects.

Highways England will achieve design excellence through the SRN being safe, functional and elegant, by responding positively and sensitively to landscape character, natural systems, cultural heritage and communities. The SRN should also meet Highways England's goals for sustainable development, including being resilient to climate change, reducing carbon and supporting biodiversity.

While the Panel's role is advisory, Highways England should seek and act on advice from the Panel to embed a design-led approach in its processes. This includes the design of road improvements, network management and operations, and in the development of relevant design standards and guidance.

### Work

The Panel's work takes place in the context of the government's road investment strategies. Over the past year and a half (June 2019 to end of 2020), the Panel has applied its advisory powers by:

- providing advice on embedding Highways England's design vision and principles via guidance and training
- reviewing and giving advice on Highways England standards and processes
- considering and making recommendations on the importance of corridor design, climate resilience, low carbon design and biodiversity
- reviewing and commenting on strategic and recurrent themes and issues associated with the design and procurement of road schemes
- overseeing the design review panel's (DRP) review of complex and sensitive schemes

## Membership

The Panel is made up of a wide range of stakeholders and relevant experts who have expertise in the delivery of well-designed infrastructure and a broad perspective on road design. The Chair has continued to ensure the effective and efficient operation of the Panel, and that Highways England considers and acts on its recommendations.

Current membership of the Panel includes:

**Chair: Mike Wilson** Chief Highways Engineer, Highways England

**Silviya Barrett** Campaign for Better Transport

**Phil Carey** Transport Focus

**Dr Mike Cook** Institution of Structural Engineers

**Colin Davis** Chartered Institute of Highways and Transportation

**Roland Diffey** Institution of Civil Engineers

**Stephanie Evans** National Trust

**Noel Farrer** Landscape Institute

**Wayne Hutton (interim)** Connected Places Catapult

**John Lyall** Chair of the Highways England Design Review Panel

**Selina Mason** Royal Institute of British Architects

**Paul Miner** Campaign to Protect Rural England

**Sue Morgan** Design Council

**Rohan Torkildsen** Historic England

**Clare Warburton** Natural England

Over the course of the reporting period, the representative for some organisations changed. The Chair would like to thank past members Clare Green, Andrew Allen, Tom Perry and Matt Thompson for their valued contribution to the Panel.

“Highways England’s ten principles of good road design provide a useful framework which should guide design work in specific locations, responding appropriately to the local context. Highways England’s Strategic Design Panel will continue to provide both general advice and independent design reviews of individual Highways England projects.”

Department for Transport (2020)  
Road Investment Strategy 2 (RIS2): 2020 to 2025



Retained exposed stone on the A590 in Cumbria reinforces local landscape character.



Weathering steel is long-lasting and will reduce maintenance on the M27 Hampshire.

## 2. Making progress

In the first progress report, the Panel identified its aspirations, made recommendations and set out several aims. Many of these long-term aspirations continue to be highly relevant in the second road period.

Highways England has made further progress in establishing the context for change over the past year and a half, through continuing to address previous Panel recommendations and aims. But a more concerted effort is needed in the remaining second road period to achieve a significant shift in design culture, particularly around climate change, carbon and biodiversity.

### Actions

The Panel made three key recommendations in the first progress report and these were updated in the second report and addressed in the third progress report:

**1. Publish the design vision and principles and develop a good design guide.**

Highways England published its design vision and principles in *The road to good design* in 2018, and these were subsequently incorporated into the DMRB in 2019. Highways England has also drafted supplementary guidance supporting the design vision and principles to assist in the development of a future good design guide(s).

**2. Implement the design vision and principles effectively to become a practical tool.**

Highways England's major schemes continue to be reviewed against the design vision and principles as part of the Project Control Framework. Highways England has also drafted supplementary guidance as an online resource for internal and supply chain use.

**3. Ensure a design led approach is at the heart of the Design Manual for Roads and Bridges (DMRB).**

The design vision and principles have been incorporated into the DMRB and this will continue to inform future revision of relevant standards. The DRP has undertaken design reviews of relevant standards and will continue to do so.

An additional key recommendation from the second progress report was for **Highways England to consider the Panel's recommendations for evaluation and learning**. This work is on-going, with additional design evaluations of completed schemes undertaken alongside reviews of schemes and associated project design reports. Case studies have also been developed over the past year to understand and disseminate 'what good looks like'.

The Panel also made three key recommendations in the third progress report and progress has been made, but further work is required:

- **Highways England should accelerate and prioritise work to fully embed its design vision and principles into its processes and culture.** A communication plan and a training plan have been developed and the Panel is updated regularly. Highways England has also committed in the second road period to “promote and embed the principles set out in *The road to good design*” (Highways England Delivery Plan 2020-2025).
- **Highways England should act on the Panel's recommendations for green infrastructure and learning from design reviews.** Guidance for landscape design is in development to support a new landscape design standard. Biodiversity is a key performance indicator for the second road period and low-fertility verges have recently been mandated for all new Highways England schemes to support biodiversity. A design review publication is also in development to promote learning from the first three years of design reviews.
- **Highways England should ensure that the design vision and principles are central to further development of the Design Manual for Roads and Bridges (DMRB) and a potential future review of the Manual of Contract Documents for Highway Works (MCHW).** Processes are now in place to ensure revisions to relevant DMRB standards, such as the Requirements for new and upgraded all-purpose trunk roads, consider the principles of good design. MCHW will be updated in the second road period, principles of good design considered, and the Panel engaged in this process.

## Aspirations

The Panel has considered key aspirations in previous reports to help Highways England raise the standard of design. The Panel has reviewed and updated them again here, and recommend that they be carried forward so further progress can be made on:

- clear and consistent consideration of place and design quality at the earliest stage of scheme development
- building in greater flexibility to later stages of scheme design, within the constraints of the consenting process
- emerging schemes learning from completed schemes, and other parts of the built environment sector
- post-opening evaluation considering design principles



The M6 in Cumbria follows the twists and turns of the rugged landscape to connect the country.



An arched bridge over the M56 in Cheshire is a memorable crossing for both road and rail users.

- recognising the importance of inter-disciplinary design
- designing for more than mitigation
- landscape-scale vision and early engagement of landscape professionals
- better quality design of essential common elements and features
- incorporating more green infrastructure and sustainable drainage
- more inclusive engagement with users and local communities
- better planning for walkers, cyclists and horse-riders
- inspiring innovation through design competitions and achievement through awards
- incorporating resilience to climate change and carbon reduction

## Activities

The Panel developed a forward programme of activities to meet its aims set out in the first progress report. Progress continues to be satisfactory, but again some activities are on-going and will continue into next year:

- A third annual review of the Panel in May 2020 was undertaken and an outlook for the year ahead agreed. This process of review and outlook should continue annually.
- Work to embed good design into Highways England guidance and processes has continued. This includes the development of supplementary guidance and case studies and the review of selected schemes. However, this work should be accelerated to ensure the design principles are promoted and embedded fully during the second road period to become ‘business as usual’.
- Learning from best practice is on-going and the Panel are following the work of the HS2 Design Panel and National Infrastructure Commission to identify common issues. For example, the Panel endorsed the National Infrastructure Commission’s Design Principles for National Infrastructure published in 2020. Further good design case studies and promotion of these should be undertaken by Highways England. These will help expand the knowledge base and firmly set out ‘what good looks like’ as a client.

“Through promoting and embedding the principles set out in *The road to good design*, we will challenge ourselves to deliver roads which are more than just safe, efficient and affordable.”

Highways England (2020) Delivery Plan 2020-2025



Proposed southern tunnel approach for the Lower Thames Crossing (artist's impression).

### 3. Design review

After the Panel recommended independent review would be beneficial to broaden thinking and provide constructive challenge, the design review panel (DRP) was established in the autumn of 2017. Although design review is more familiar within other sectors, the process is endorsed by the Department for Transport and the National Infrastructure Commission and is encouraged in national planning policy.

In three years, the DRP has undertaken 23 scheme, guidance and standard reviews. The reviews are facilitated by Design Council, an independent charity and the government's advisor on design, on behalf of Highways England.

The DRP comprises 35 members drawn from Design Council's network of 400 built environment experts. DRP members are experts in transport planning, structural and civil engineering, architecture, urban design, landscape architecture, sustainability and other built environment fields. Individual scheme review panels comprise a group of recognised experts appropriate to the scheme under review. The review of a scheme generally includes a site visit, although this has had to be adapted in response to the pandemic.

Under the direction of the Panel, the DRP reviewed A66 Northern Trans-Pennine, A57 Mottram Bypass and Smart Motorway Programme and held follow-up reviews of Lower Thames Crossing, A27 Arundel Bypass and A417 Missing Link since the last report. The DRP also undertook design evaluations of two completed schemes, A21 Tonbridge to Pembury and A45/A46 Tollbar End, and reviewed DMRB standards for Landscape Design and Sustainable Development.

As well as providing scheme specific design advice, the DRP reports to the Panel on strategic issues emerging from reviews. The third progress report outlined the Panel's recommendations to Highways England to improve design quality and processes from the first year of reviews. Recommendations were made by category:

- actions to improve the **design review process**
- ways that **project design teams** can improve their approach
- learning for **Highways England** to improve the design process for roads projects



Proposed Thames Chase bridge over the M25 for the Lower Thames Crossing (artist's impression).



Attenuation ponds supporting biodiversity, A5-M1 link Bedfordshire

The Panel recommends that independent design reviews continue and further schemes, particularly those less complex or sensitive, should be reviewed. This will help to improve design outcomes more broadly, and further embed the principles of good design.

In addition, the Panel recommends a report on design reviews to date is published. This should capture learning and advice from reviews, and encourage the wider use of design review in Highways England and the broader highways sector.

Highways England should action the recommendations of the Panel from design review and specific scheme advice given by the DRP, and grasp the opportunity to improve processes and outcomes. Following publication of a design review report, the Panel will monitor progress made through the second road period.

“The advice received was invaluable in the shaping of our scheme proposals, particularly in the early stages of development, helping to define those factors that should influence the design and how the design should respond to its context.”

Steve Roberts  
Lower Thames Crossing, Engineering Design Lead



The A590 fitting into the Cumbrian landscape

## 4. Corridor design

There currently appears to be varied or minimal visual coordination of design features, and an inconsistent driver experience, along many road corridors. Improvement and maintenance work undertaken in the absence of an overall design approach, can also weaken landscape character and a sense of place, and negatively impact on users. This may be worsened where road corridors, particularly all-purpose trunk roads, are developed over a long-time and in a piecemeal fashion. Such road corridors will be visually and functionally poorer without some high-level design coordination and delivery, and maintenance less efficient.

Design coordination of road corridors would raise design quality and enhance a sense of place, while providing a consistent driver experience. Efficiencies gained would potentially reduce costs, while also helping to identify broader environmental, economic and social benefits. Corridor design frameworks, or narratives, could complement work already undertaken on routes that generally focusses on traffic and safety only. Such an approach could also help identify key assets and constraints, as well as opportunities such as linking natural systems, both present and future. It should set out a vision supported by design objectives, principles and guidelines to coordinate the design of improvement works and equally help inform future management and maintenance work.

These are the Panel's recommendations for corridor design:

- The development of a high-level corridor design approach should be considered to support **route planning**, and to provide wider context for future improvement and maintenance work.
- A corridor approach should be considered to identify natural, built and historic assets, and opportunities to enhance both place making and user experience at a **regional scale**.
- A **design narrative** that reflects the wider context should be required as part of the project design report, within Highways England's project control framework.
- The **view of and from the road** are both considered in the design of schemes to protect the character of places and enhance the experience of users and communities.
- **Guidance** for the design and improvement of corridors should be developed to support both the approach to and the design of improvements and maintenance works.
- Consider the overall **quality and experience** of a corridor in the design of individual schemes, particularly schemes to improve all-purpose trunk roads, and challenge designers through competitions for facilities such as service areas.



Achieving net zero carbon is now a significant design challenge for the network.

## 5. Climate change and biodiversity

Roads are long in their planning and long-lasting in operation. Designers must anticipate changes in long-term technological, social and environmental conditions under which they will function well into the future. Planning and design must be resilient to such changes and anticipate different scenarios under which a road might need to operate to continue to be relevant and maintain its high value.

Technological changes will include the rapid move to zero emission, connected and autonomous vehicles and increased online working and shopping. Social changes could include public anxiety about carbon intensive activities and the desire to preserve and enhance our natural heritage, seeking life-styles that support the environment and promote health and well-being. Environmental conditions will change radically through the impact of global warming. Rising temperatures, increased rainfall and flooding, are likely to become greater threats. There has also been a general decline in biodiversity in parallel with changes to our climate.

Planning and design must accept the challenge to create a network resilient to such changes. Although it is acknowledged that road use rather than road operation or construction, is currently by far the largest generator of carbon emissions on the network, good planning and design can have a positive impact with all three. In addition, Highways England's soft estate should be considered an opportunity to enhance biodiversity and not a liability. The design of the soft estate is also an opportunity to lessen the impacts of climate change and improve the well-being of users and communities.

The Panel has received several presentations relating to climate change and biodiversity and recognises that good design represents a significant opportunity to contribute to the government's:

- legally binding carbon target;
- National Pollinator Strategy;
- ambition to make cycling and walking a natural choice for shorter journeys, or as part of longer journeys;
- National Infrastructure Strategy; and
- Highways England's own targets for biodiversity net gain by 2040.

These are the Panel's recommendations for climate change and biodiversity for consideration by Highways England:

- **The road to net zero** – develop a plan to reduce carbon generated by operation, construction and use of the road network, to meet UK legal requirements
- **Task Force on Climate-related Financial Disclosures** – consider reporting on risks and opportunities for design in this manner for consistency and comparison
- **Carbon management in Infrastructure** – consider use of the PAS2080 standard to reduce carbon and cost through more intelligent design, construction and use
- **Low carbon by design** – integrate measures to support low carbon construction into design at an early stage and challenge designers through competitions
- **Climate resilience by design** - integrate measures to ensure the road network, including the soft estate, is designed to be resilient to future changes in the climate
- **Recognise value** – reflect the value of climate resilience, low carbon design and biodiversity in the appraisal of schemes. Consider options that incorporate broader benefits rather than transport benefit cost ratio alone
- **Zero carbon users** - support the rapid move to zero tailpipe emission vehicles through good design
- **Biodiversity net-gain** – although no net loss is the target for the second road period, biodiversity net gain should be set as a design objective for new schemes where there is more opportunity to achieve overall no net loss quicker
- **Biodiversity by design** – integrate measures to support biodiversity into design at an early stage and challenge designers through competitions



Supporting biodiversity on the network with species rich verges on the A38, Devon



Designing with natural features, M6 Cumbria

## 6. Key recommendations and forward planning

The Panel has made the following key recommendations in this report:

- **Highways England should accelerate communication and training to embed its design vision and principles into its processes and culture.** Further good design guidance and case studies should be developed, and training given, both internally and with the supply chain, so that responding to the design context becomes 'business as usual'. A design review report on learning from reviews should also be published to support embedding good design.
- **Highways England should act on the Panel's recommendations for adapting to climate change, reducing carbon, supporting biodiversity and the design of corridors.** Highways England should develop a plan for meeting the government's challenging carbon reduction targets for design. Both resilience to climate change and supporting biodiversity should be considered early in the design process. An approach to the design of corridors should be developed to support and coordinate good design.
- **Highways England should publish a design strategy to clearly articulate its ambitions for the second road period and beyond.** To ensure the principles of good design and goals of sustainable development are fully embedded, a strategy and action plan should be developed to support this.

Other more detailed observations and recommendations related to specific topics are presented in sections 4 and 5 and in Appendix A.

Over the next year, the Panel will continue to focus on education, research and design review. The Panel will support Highways England to promote and embed the principles of good design in practice, and help develop further good design case studies to advance education. The Panel will understand and make recommendations on visual clutter and support good design competitions that challenge current approaches and inspire innovation for other areas of interest. The Panel will consider this work alongside issues emerging from the review of schemes by the DRP, monitor progress on previous recommendations and support the publication of a separate report on design reviews to date.

The Panel will continue to support Highways England throughout the second road period to ensure the principles of good design are fully embedded in practice and culture. It will also monitor the quality of design and outcomes, with more attention given to the quality of the existing road network. The Panel will also support Highways England in responding to the challenges of climate change and biodiversity through good design.

**“In the second road period, we will promote and embed the principles set out in *The road to good design*.”**

Highways England (2020) Delivery Plan 2020-2025

## Appendix A – Understanding best practice

The Panel recognises best practice in design, engineering and the environment is ever developing and evolving. The Panel has an important role in understanding current practices, and drawing in this best practice to advise how it can be applied to the work of Highways England.

Over the past year and a half, the Panel received presentations and made observations and recommendations on the following:

### Design for people (Highways England) September 2019

The presentation provided an overview of Highways England's approach to walking, cycling and horse riding, looking specifically at improving design detail to benefit users. Highways England's suicide prevention strategy was also presented, looking at how design can have a positive impact in this difficult area.

*The Panel welcomed the recognition of the importance of good design, particularly for those experiencing the SRN up close. The Panel recommended that the needs of all users is considered earlier in the design process, in parallel with an understanding of the wider context, including local connectivity. The Panel also discussed the positive impact of green infrastructure on mental health and how the physical environment can impact on how one feels about a place and themselves.*

### Standards for maintenance (Highways England) September 2019

The presentation provided an overview of Highways England's maintenance standards and different types of maintenance contracts in use. The benefits of asset delivery contracts for users was highlighted, along with work to reduce litter on the SRN to improve its appearance.

*The Panel welcomed the focus on user experience and suggested that the purpose of existing signs be considered with inspections, not only their visibility and condition, with a view to reducing clutter on the SRN. The Panel recommended that opportunities and benefits for biodiversity in maintenance standards and contracts also be considered more fully.*

### Design training (Panel members Colin Davis, Selina Mason and John Lyall) November 2019

The presentation focussed on the need for good design training for both Highways England and its supply chain to improve outcomes. A three-part programme was suggested consisting of – leadership workshops on key elements; preparation of guidance on the design of key elements; and, training based on the guidance for those responsible the design and maintenance of high speed roads.

*The Panel concurred that design quality and training were interlinked, and that training was fundamental to successful improvement. The Panel recommended training be well structured, include defined outcomes and ensure Highways England and its supply chain were working towards the same goal. A training plan should be developed, and the Panel regularly updated on progress.*



Roads supporting the rural economy, A66 Cumbria

### Corridor design study (Jacobs/Atkins) November 2019

This study to coordinate design features along a road corridor to improve design quality and enhance user experience was presented. As part of the research, a case study of the A66 was used to test ideas and processes on the premise that the landscape can be viewed as both 'mobile' and 'static'.

*The Panel welcomed the research and recommended the study recognise that many users may only travel on a small section and to consider rest and stopping places, particularly on scenic routes. Also, how future design decisions may impact on local communities, often when there is a lack of control over adjacent land uses, and how maintenance and small projects, not just large new schemes, would use a corridor design approach.*

### Landscape led design (Arup/Knight Architects) November 2019

A landscape led approach was presented. Three key challenges identified through its development were: mitigation/enhancement, highway standards/landscape character and sufficient time for good design. The presenters asserted that placing landscape at the heart of the process could help reclaim a positive perception of roads.

*The Panel endorsed the approach, particularly for roads that pass through sensitive landscapes and sought to enhance the character of the place and user experience. The Panel commended the response to both the design principles and goals of sustainable development. The Panel agreed there was much value to be gained from a landscape led approach and giving sufficient time for good design.*



The green bridge over the A556 in Cheshire allows wildlife to cross

### Climate change and biodiversity (Panel members Dr Mike Cook, Selina Mason and Noel Farrer) November 2019

The presentation focussed on professional institutions' recent declarations of climate and biodiversity emergencies and their positions. The requirements of the Task Force on Climate-related Financial Disclosures for listed companies was noted and a proposed 'road to zero carbon' piece presented for discussion.

*The Panel welcomed this challenge from the professional institutions and requested clarification of Highways England's current policies for climate change and loss of biodiversity. The Panel recommended good design and the views of individual organisations represented on the Panel be considered in the development of future policy. The Panel requested regular updates on Highways England design policy for carbon and biodiversity.*

### Climate change (Highways England) February 2020

The presentation outlined the challenges from increased frequency and intensity of extreme weather and the importance of resilience. Road users generate most carbon on the SRN and emissions are increasing alongside traffic. Highways England is focussing on minimising carbon from operations, carbon efficient construction, supporting the transition to zero emission vehicles and engaging in strategic planning with others.

*Although Highways England's own carbon contribution is minimal compared with road users, the Panel discussed supply chain carbon and incentives for more carbon efficient construction, including embedding innovation benefits in business plans. Suggestions to reduce road user carbon included better connectivity for walking and cycling, mobility hubs to encourage different modes, reducing short journeys on the SRN and local authority planning to reduce demand. The Panel recommended Highways England develop a carbon plan to help meet the UK's net zero commitments.*

### Design principles for national infrastructure (National Infrastructure Commission) February 2020

This presentation focussed on the work of the National Infrastructure Commission (NIC) Design Group and its design principles. The new NIC design principles for national infrastructure focus on climate, people, places and value.

*The Panel welcomed the publication of the NIC's design principles for national infrastructure and noted that although 'climate' is not a specific Highways England design principle, it is referenced in other principles and is a key sustainable development goal. The NIC's support for both design champions and design review was discussed. The Panel recommended Highways England continue the review of sensitive and complex schemes and identify a design champion(s) at board level and for individual schemes.*

### Scheme Objectives (Highways England) June 2020

The Network Strategy & Development team focussed on scheme objectives, client requirements and development at the feasibility stage. Outline design work at the feasibility stage is only undertaken to provide a cost estimate for budgeting purposes and is developed further at the next stage if the scheme progresses. A design solution is not proposed at the feasibility stage.

*The Panel recognised the importance of feasibility work in shaping the development of schemes and recommended further consideration of design issues for sensitive or complex projects to ensure robustness of cost estimates. Consideration of future commitments, carbon, good design and users were discussed by the Panel. The Panel recommended that design reviews are considered at this feasibility stage, perhaps in a workshop format, for more sensitive or complex schemes, as trialled previously.*

## Road period 2 (Highways England) September 2020

The Road Investment Strategy 2 Delivery Plan and Strategic Business Plan was presented. Work between 2020 and 2025 is split between operations, maintenance and renewals (£10.8bn) and enhancements (£14.2bn). Designated Funds (£936m) and preparing for the third road period are also key areas. Performance will be measured through 12 Key Performance Indicators (KPIs). One of these is to achieve £2.2bn of efficiencies.

*The Panel recognised the importance of Designated Funds to good design and raising quality. The Panel noted there is no specific good design performance indicator, although good design should support achievement of many of the key performance indicators. The Panel recommended that design quality should be a key consideration in the development of the third road investment strategy and the opportunity taken to further incorporate good design and requirements into future plans.*

## Biodiversity in road period 2 (Highways England) September 2020

The target to deliver no net loss of biodiversity across all Highways England activities in road period 2, measured using an industry standard biodiversity metric, was presented. Meeting the Biodiversity KPI will focus on maximising biodiversity delivery while supporting best (overall) environmental outcomes.

*The Panel welcomed the higher target, and use of the biodiversity metric, but recommended net gain be sought on individual schemes where possible to support achievement of the overall KPI. The Panel noted that an analytical approach does not capture appearance of measures and design quality is still important. The Panel recommended that biodiversity is considered early in the design process and that teams are made fully aware of the commitment to no net loss. It was acknowledged by the Panel that no net loss would be a significant design challenge, particularly where there was no additional land and that reinstated habitats generally have a lower biodiversity score.*

## Improving journeys on A roads (Highways England) November 2020

The characteristics and challenges of A roads and the design features of DMRB standard GD 300 - Requirements for new and upgraded all-purpose trunk roads – was presented. The standard sets out 4 levels of upgrades suitable for different roads and traffic volumes to achieve better, safer travel for all road users and a better, safer working environment.

*The Panel welcomed the development of the standard, but further consideration should be given to how essential design elements fit together in future revisions. The Panel also recommended that links to relevant DMRB standards for place making, walking/cycling, carbon and biodiversity should be strengthened. The Panel agreed the soft estate should be integral to the design of new and upgraded A roads, not considered a separate design element.*

## Designated Funds (Highways England) November 2020

Designated Funds address a range of issues over and above the traditional focus of road investment. The presentation highlighted the successes of, and learning from, Designated Funds in road period 1, including the importance of partnering with others. There are 4 funds in road period 2: Environment and Wellbeing, Innovation and Modernisation, Users and Communities, and Safety and Congestion.

*The Panel welcomed the continuation of Designated Funds in road period 2 and agreed the importance to transfer learning from road period 1 to 'business as usual'. The Panel recommended that opportunities for good design using Designated Funds continue in road period 2.*

## Green Infrastructure (Highways England) November 2020

Examples of recent green infrastructure work that goes beyond essential mitigation, along with policy initiatives, were presented. These include the publication of a new landscape design standard in DMRB supported by the development of guidance, and the recent introduction of a requirement for low-nutrient grasslands.

*The Panel welcomed progress made in response to its previous recommendations for green infrastructure demonstrated by these examples and initiatives. Green infrastructure can deliver multiple benefits for the network if well-designed and managed, and the Panel recommended that work is further developed to support this.*

## References

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