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Strategic Design Panel
Progress report

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Strategic Design Panel Progress report 3 – November 2019

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Foreword



In *The road to good design*, I shared the aspiration that, as well as being safe, efficient and affordable, our roads are also beautiful. Our design vision set out the challenge to deliver safer, better, beautiful roads to connect people and connect our country.


However, our design principles do not hold all the answers nor describe the easiest way to create beautiful roads. They are signposts to guide us in the right direction and we therefore rely on the talent of our engineers and designers, with the support of the Strategic Design Panel, to create beautiful roads.

As we now look towards the next roads period, elevating the design of our roads from functional to beautiful will require further thought. We will need to consider the coordination and rationalisation of elements and pay attention to detail and the view from the road. A deeper understanding and response to context is also required. This will give further cultural meaning to our roads, so that they reinforce a sense of place or indeed become places in and of themselves.

Over the past year, the Strategic Design Panel has continued to challenge and advise Highways England to become a better design-led company. I would like to thank past members for their valuable contribution, and welcome new members who are all committed to

helping us achieve our goal of roads that serve people and places better. I would also like to thank our design review panel, whose advice on schemes over the past year has helped improve design outcomes and inform many of the recommendations made in this report.

In this last year of the first roads period, it is important that we continue to embed our design vision and principles in everything we do, and demonstrate progress. I look forward to another year of working together with the Strategic Design Panel to support this on-going shift in design culture on our road to good design.

A handwritten signature in black ink that reads "Mike Wilson".

Mike Wilson

Chief Highways Engineer and Chair of the Highways England Strategic Design Panel



Second Severn Crossing

Highways England design vision

We aim to put people at the heart of our work by designing an inclusive, resilient and sustainable road network; appreciated for its usefulness but also its elegance, reflecting in its design the beauty of the natural, built and historic environment through which it passes, and enhancing it where possible.

Principles of good road design

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



A628 Derbyshire

Executive summary

This is the third 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 have a strong and passionate interest in the design of the SRN. This report sets out the Panel's progress over the past year (June 18 to May 19), makes key recommendations and looks ahead to the coming year.

Design review and advice

Over the past year, the design review panel (DRP) has continued to provide scheme specific design advice to project managers and design teams, as well as reporting strategic issues from the reviews to the Panel.

From these reports on strategic issues, the Panel has made a series of recommendations to Highways England to improve the review process, the work of design teams and design processes.

Key recommendations

Over the past year, the Panel has made the following key recommendations:

- Highways England should accelerate and prioritise work to fully embed its design vision and principles into its processes and culture.
- Highways England should act on the Panel's recommendations for green infrastructure and learning from 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 and a potential future review of the Manual of Contract Documents for Highway Works.

Looking ahead

Over the next year, the Panel will focus on education, research and design review. The Panel will support Highways England to embed the principles of good design in practice, and help develop good design case studies to advance education. The Panel will understand the design of corridors and begin to explore the issue of visual clutter on the SRN. The Panel will consider this work alongside issues emerging from the review of schemes by the DRP, and monitor progress on previous recommendations.

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 make sure that design excellence in landscape, engineering and built environment is considered in all of Highways England projects.

Highways England will achieve design excellence through the SRN being safe, functional and effective, as well as 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.

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 wider Road Investment Strategy. Over the past year (June 18 to May 19), the Panel has applied its advisory powers:

- providing advice on embedding Highways England's design vision and principles
- reviewing and giving advice on Highways England standards and processes including the Design Manual for Roads and Bridges (DMRB) and the Manual of Contract Documents for Highways Works (MCHW)
- considering and making recommendations on the importance of green infrastructure and quality in construction
- 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

"The Institution of Structural Engineers recognises how vital it is to have safe and effective transportation systems that serve our economic needs. Good highway design requires us to respect the environment and ecology as well as the needs of people and industry. We are pleased that Highways England recognises this and through the Strategic Design Panel we hope to help steer towards increasingly holistic design outcomes for our highway infrastructure as it shapes up for a low carbon future."

Dr Mike Cook,
Panel member
representative for
the Institution of
Structural Engineers



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 acts on its recommendations.

Current membership of the Panel includes:

Chair: Mike Wilson Chief Highway Engineer, Highways England
Andrew Allen (interim) 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
Clare Green Connected Places Catapult
John Lyall Chair of the Highways England Design Review Panel
Selina Mason Royal Institute of British Architects
Tom Perry Design Council
Matt Thomson (interim) Campaign to Protect Rural England
Rohan Torkildsen Historic England
Clare Warburton Natural England

Over the course of this year, the representative for some organisations changed. The Chair would like to thank past members Philip Morris, Bridget Fox and Ralph Smyth for their valued contribution to the Panel.

“Transport Focus is pleased to have played an active role in the Strategic Design Panel alongside a range of experts in aspects of good design. It’s good to have established that ensuring roads function safely and smoothly for the wide range of users must lie at the heart of good design.”

Phil Carey,
Panel member
representative
for Transport Focus



M6/A14 Leicestershire

2. Making progress

In the first progress report, the Panel identified its aspirations, made recommendations and set out several aims. Many of these aspirations continue to be valid but can only be achieved in the longer-term.

Highways England has made progress in establishing the context for change, through addressing the previous Panel recommendations and aims.

Actions

The Panel made three key recommendations in the first progress report and these were updated in the second 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 a future 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 drafting of other relevant sections. The DRP has undertaken design reviews of relevant draft standards and will continue to do so.

A further 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 the evaluation of a completed scheme and the design principles through reviews over the past year. The development of good design case studies is planned for next year.

"The design of the SRN has important consequences for the effectiveness of the network, the environmental impact that it has on its surroundings and the experience of users. Design must always be respectful of place and, over the past year, Highways England has made important contributions on this subject through the publication of its ten principles of good road design (*The road to good design*). We propose that the Highways England Strategic Design Panel should continue to provide both general advice and independent design reviews of individual Highways England projects."

Department for Transport,
Draft Road Investment
Strategy 2: Government
objectives (2018)

Aspirations

The Panel considered several key aspirations to help Highways England raise the standard of design. These were also set out in the first progress report and updated in the second. The Panel has reviewed and updated them again, and recommend that they are carried forward so further progress can be made next year, 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.
- 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.

Activities

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

- A second annual review of the Panel in May 2019 was undertaken and an outlook for the year ahead agreed. This process of review and outlook should continue annually.
- Following the publication of the design vision and principles in the DMRB, work to embed good design into Highways England guidance and processes is on-going. This includes the development of supplementary guidance, internal and supply chain training and the review of selected schemes. However this work should be accelerated to ensure the design principles are embedded further for the next roads period.
- Learning from best practice is on-going and the Panel are following the work of the HS2 Review Panel and National Infrastructure Commission to identify common issues. However case studies need to be developed by Highways England to provide a comprehensive knowledge base and to establish 'what good looks like'.



A303 Hampshire



3. Design review

The Panel previously identified that the independent review of scheme design would be beneficial to broaden thinking and provide constructive challenge. This would help ensure that the design vision and principles are applied to individual schemes or specific programmes, at appropriate stages of Highways England's Project Control Framework (PCF).

The design review panel (DRP) was established in the autumn of 2017 and has now undertaken 12 scheme and standard reviews. The reviews are organised by the Design Council, an independent charity and the government's advisor on design, on behalf of Highways England.

The DRP comprises 35 members drawn from the Design Council's network of 400 built environment experts. It is chaired by architect John Lyall who is supported by planner/transport planner Lynda Addison and engineer Martin Stockley as vice-chairs. DRP members are experts in transport and traffic planning, structural and civil engineering, architecture, urban design, landscape architecture, environmental sustainability and other built environment fields. Individual scheme review panels comprise a group of recognised experts in the fields appropriate to the scheme under review. The review of a scheme generally takes place over a day and includes a site visit.

As well as providing scheme specific design advice to project managers and design teams, the DRP reports to the Panel on strategic issues emerging from reviews. The Panel's recommendations to Highways England to improve design quality and processes are outlined in section 4.

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

"I am very encouraged that we are now receiving at design review sessions some promisingly good design narrative presentations which tell a convincing story about the proposed route, and how it will appear to both users and local communities the road passes through. Such holistic, co-ordinated, design by landscape architects, bridge designers, architects, artists and road engineers will define a new exciting era in road design. Old ideas and standards are naturally being challenged; hopefully with attractive and creative results."

John Lyall,
Chair of the Highways
England Design Review
Panel and Panel member

4. Design advice

Under the direction of the Panel, the DRP reviewed the A5036 Port of Liverpool Access, and held two follow-up reviews of the proposed Lower Thames Crossing since the second progress report. The DRP also undertook a design evaluation of a completed scheme - A556 Knutsford to Bowdon, held two design workshops with the Trans Pennine Tunnel Study team, reviewed design guidance for proposed air quality barriers and reviewed an Appearance of Structures standard as part of the DMRB update this year.

Following the first full year of design reviews to December 2018, the Panel made the following recommendations by category:

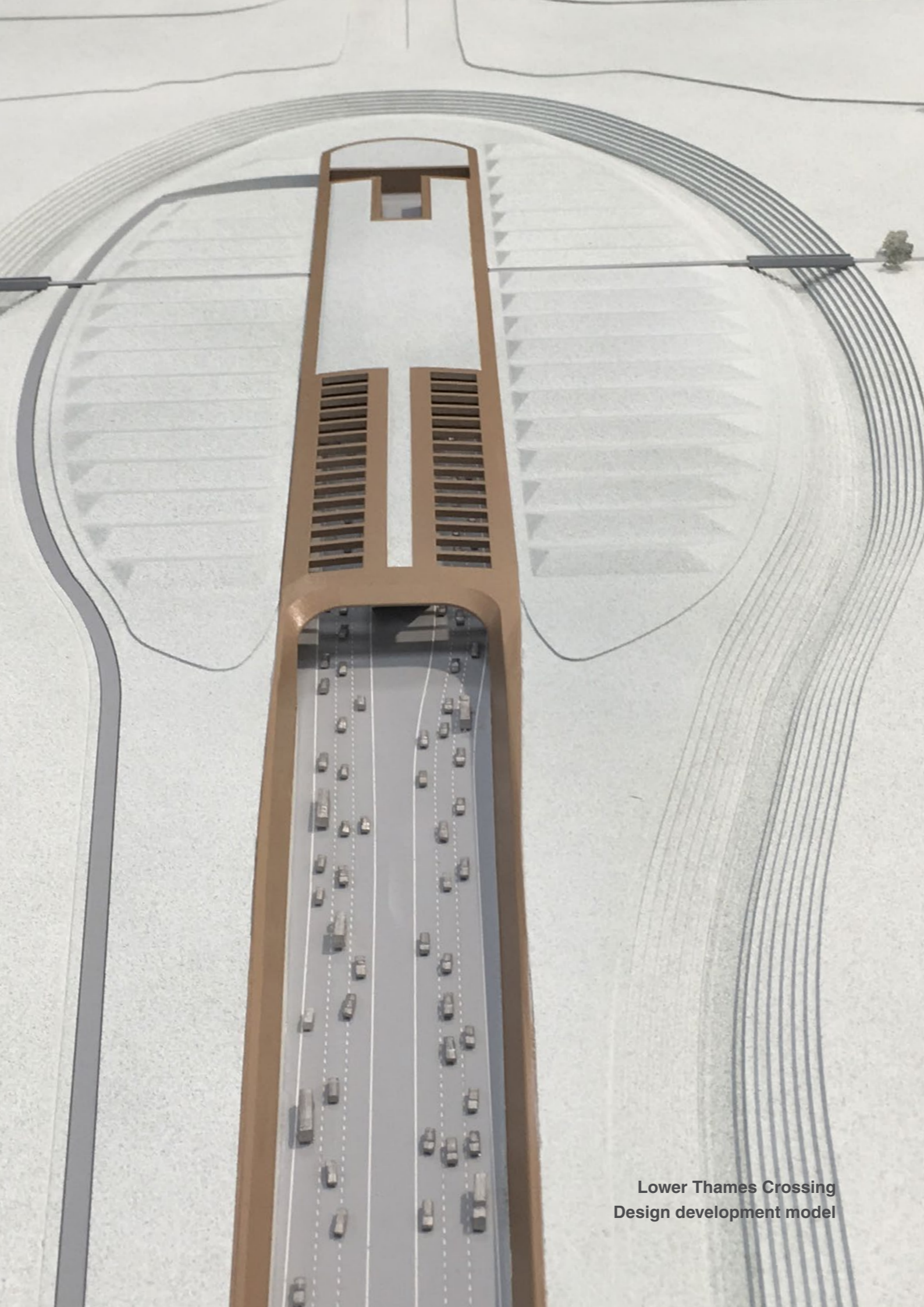
- actions to improve the **design review process**
- ways that **project design teams** can improve their approach
- learning for **Highways England** to improve the design process for roads projects

Design review process

- Structure reviews to address more clearly the ten principles of good road design.
- Ensure that the selection process for identifying projects for review remains rigorous, with the criteria for including the project for review clearly set out.
- Design opportunities and issues arising from different potential routes (on landscape, wider movement, setting, views) should be demonstrated. Reviews prior to preferred route announcement would enable this.
- Continue to use the independent DRP for scheme reviews, and investigate developing other models such as that used for completed schemes and use of design workshops.
- Undertake further design evaluations of completed schemes.
- Carry out detailed design reviews for specific infrastructure hardware, for example gantries or maintenance access areas.
- Consider more sequential reviews of major schemes through the various PCF stages.
- Ensure briefing of the design team delivers benefits from the process, for example, appropriate display materials. Presenting teams should be encouraged to show rough early concept ideas and options to the DRP, demonstrating the working process.
- Obtain better feedback from design teams on the review process.

Project design teams

- Encourage project teams to incorporate the thinking set out in *The road to good design*. Use a place-centred approach which ensures landscape, heritage and ecology assessment feeds into a design narrative, and ensure the design team incorporates landscape and architectural input from the early stages.
- Clearly articulate a vision for each project, with a strong, confident design narrative. Schemes should be presented as a wider design opportunity, not just a solution to a traffic problem. Express and investigate opportunities, not just mitigation.
- Establish route corridor characteristics and narrative. For example, the sequential change of landscape character along the route.
- Focus on the visual sequence experience for the motorist and passengers in the design early on.
- Establish key views early on to understand long-distance changes to the landscape, and how the scheme is experienced up close.
- Ensure wider walking, cycling and horse-riding networks are considered and improved as part of the design process.
- Explore and use precedents of multi-disciplinary good design in infrastructure, with evidence of why they were successful.
- Explore the dynamic between the scheme objectives, the speed limits set by the client requirements and how the design for a scheme could evolve.



Lower Thames Crossing
Design development model

Highways England (medium term)

- Introduce a requirement for a design narrative into the PCF - ideally as part of stage 1.
- Improve design objective setting and introduce design principles at PCF stage 0/1. There is great scope for scheme objectives to think much more broadly about value. For instance, the value of landscape protection and enhancement, social and environmental sustainability, and improving health and wellbeing.
- Establish the landscape characteristics and narrative for each route corridor (potentially as an addendum to the Route Strategy documents).
- Each project should have a designated role of 'design champion' who ensures the design quality of the scheme.
- Develop a mechanism for design exploration of the road user experience - a graphic communication tool that can be utilised at early design stages.
- Use the new DMRB standard GG103 to instigate change away from mitigation led design to an opportunity place centred approach.
- Create a case study resource, illustrating successful aspects of completed schemes as recommended in the first Panel progress report.

Highways England (long term)

- Review the current process for community involvement in the design process. Look at collaborative working and other approaches for facilitating meaningful interaction.
- Consider including an enhanced design requirement within Client Scheme Requirements.
- Consider reviewing the procurement system that requires a change in design team between PCF stages and see if design continuity can be prioritised.
- Review the composition of design teams. Investigate options for including an artist in the team for appropriate projects. Consider that the procurement of design teams includes landscape and architectural input from the earliest stages.

Highways England should action these recommendations and specific scheme advice given by the DRP and grasp the opportunity to improve processes and outcomes. Over the next year the Panel will monitor progress made.



5. A14 Cambridge to Huntingdon

In November 2018, the Panel had the opportunity to visit the A14 Cambridge to Huntingdon Improvement Scheme to view progress on Highways England's largest construction project to date.

The Panel had a presentation on the scheme in 2016, and it was also subject of an independent review by the Design Council the same year. There was therefore much interest in learning how the design had developed since, and to appreciate the scale and progress of construction on site.

The Panel's key observations and recommendations from the site visit included:

- The pride shown in the construction work and the strong safety culture was commended. Achieving similar levels of pride in design and a strong design culture should be an aspiration for Highways England in the future.
- The collaboration demonstrated within the integrated delivery team was commended. This model should be considered on other complex schemes.
- The scale of the intervention in the landscape of such large schemes should be recognised and opportunities presented taken. The A14 appeared to be as much a green infrastructure scheme as it is a highway scheme.
- Highways England should consider communicating and lobbying for change when issues are identified through the development of schemes. For example, there are powers to obtain land for mitigation, but these are limited for enhancement.
- Ensure learning from innovation and efficiency demonstrated on the A14 is communicated effectively throughout Highways England and its supply chain.
- The benefits of prefabrication were clearly demonstrated on the A14, and such modern methods of construction should be considered on other schemes to improve both quality and efficiency.



A30 Cornwall

6. Green infrastructure

This year the Panel received several presentations relating to green infrastructure, the soft estate and environment. A well designed and managed soft estate should provide resilience and operational efficiency (for example, flood regulation), enhance the user experience, help mitigate negative impacts of road building, deliver wider benefits for society (for example, pollination, recreation, carbon storage) and potentially provide a source of revenue and energy. The soft estate is an important asset for Highways England. Green infrastructure therefore represents a significant opportunity for design quality and place making. It could 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;
- ambition for good health with a stronger focus on prevention, by supporting active travel; and
- Highways England's own targets for biodiversity net gain by 2040.

These are the Panel's recommendations for green infrastructure for consideration by Highways England:

- **Multi-functional** – the soft-estate should reflect the multifunctional aspects of natural systems and be recognised and designed as such.
- **Time for design** – allow sufficient time to design with natural systems and reduce the need for mitigation. Consider natural systems and green infrastructure from scheme inception (stage 0).
- **Beyond the boundary** – natural systems operate beyond highway boundaries and design should extend beyond, while addressing the potential difficulties of delivery and management that may arise.
- **Green corridors** – consider how a green corridor approach could be applied to the development of new road schemes.
- **Recognise value** – reflect the value of natural systems in the appraisal of schemes. Consider value-for-money options that incorporate the benefits of a multi-functional soft estate rather than transport benefit cost ratio alone. The soft estate should be considered an 'asset and opportunity' rather than a 'liability and constraint'.
- **Biodiversity net-gain** – consider bringing forward Highways England requirements for biodiversity net gain and make this a design objective for new schemes and management of the existing soft estate.

“Green infrastructure on the road network can deliver multiple benefits if well-designed and managed. Road verges are green corridors that support an array of wildlife and can help us to tune into nature on our daily walk, cycle or drive.

Nature on the roadside also does other essential jobs too, like helping to remove some air pollutants, storing carbon, pollinating crops and providing sustainable drainage that helps to reduce flood risk.

We need to better understand these functions so that we can design and manage roadside green infrastructure in a way that maximises these benefits and enhances the surrounding landscape.”

Clare Warburton,
Panel member
representative for
Natural England



7. Key recommendations and forward planning

During the reporting period, the Panel has made the following key recommendations:

- **Highways England should accelerate and prioritise work to fully embed its design vision and principles into its processes and culture.** Although the design vision and principles are now published in the DMRB, a more comprehensive programme of communication and training, both internally and with the supply chain, is required.
- **Highways England should act on the Panel's recommendations for green infrastructure and learning from design reviews.** The potential for a truly multi-functional soft estate should be developed further, and the monitoring of the impact of design reviews undertaken. Critically, a design narrative should be developed for individual schemes and a design champion identified to ensure commitments to design quality are met.
- **Highways England should ensure that the design vision and principles are central to further development of the DMRB and a potential future review of the MCHW.** All standards and requirements should give design quality and place making equal consideration alongside safety and function so that responding to context becomes 'business as usual'.

Other more detailed observations and recommendations related to specific topics this year are presented in sections 4 to 6 and in Appendix A.

Over the next year, the Panel will focus on education, research and design review. The Panel will support Highways England to embed the principles of good design in practice, and help develop good design case studies to advance education. The Panel will understand the design of corridors and begin to explore the issue of visual clutter on the SRN. The Panel will consider this work alongside issues emerging from the review of schemes by the DRP, and monitor progress on previous recommendations.

Appendix A - Understanding best practice

The Panel recognises that best practice in design, engineering and 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 translated into the work of Highways England.

Over the past year the Panel received presentations and made recommendations on the following:

Design review (Design Council) August 2018

The presentation provided an overview of the new design review process, emerging lessons and thoughts on the relationship between the new DRP and the Panel. It considered the use of the design principles by teams, the need for design champions and the selection of schemes for review and their timing.

The Panel welcomed this early reflection on the design review process, and recognise the potential benefit of undertaking reviews at an earlier stage. Further understanding of the impact of scheme objectives and client requirements on design quality and cost is needed by the Panel. The lack of a specific Highways England key performance indicator for design quality was also noted.

Design Manual for Roads and Bridges (DMRB) & Manual of Contract Documents for Highway Works (MCHW) (Highways England) August 2018

The presentation provided an update on the revision of the DMRB, which ensures proper governance and technical assurance on the SRN. Work was on-going to incorporate the design principles into a general requirements document. A scoping exercise to identify opportunities for improvement ahead of a possible future revision of the MCHW, which outlines requirements and specifications for construction, was also discussed.

The Panel expressed concern over the DMRB being used by local authorities on local streets when it was clear it was only applicable to the SRN and higher speed roads. Progress made in revising the DMRB is positive, but the Panel suggested opportunities to apply the design principles further. The Panel expressed concern that documents such as the MCHW can prove restrictive to good design, and recommended that a future review should explore ideas to allow for greater flexibility with detailed design and construction.

A14 Cambridge to Huntingdon Improvement Scheme (A14 Integrated Delivery Team) November 2018

The presentation provided an overview of the scheme, including programme and key achievements to date. Information was also provided on potential expressway designation, community engagement, archaeology and landscape, with a focus on design proposals for borrow pits and Huntingdon rail station.

The Panel appreciated the complexity and scale of the scheme and commitment to quality demonstrated. Although the presentation confirmed the benefits of design review (undertaken 2016), the Panel recommended this takes place at an earlier stage for similar large and complex schemes in future.

Developing projects in environmentally sensitive areas (Highways England) November 2018

The presentation focussed on the role of the Strategy and Planning directorate and research they are initiating on developing projects in environmentally sensitive areas. The earliest consideration of the environment could allow for more robust costs to be established and opportunities for wider benefits, particularly for landscape, to be realised.

The Panel were fully supportive of Highways England's research in this area and agreed the environment needs to be considered more from the very start, and not seen as something to mitigate for later. The Panel also discussed how significant infrastructure has the potential to enhance natural beauty through design, or present opportunities to connect people and landscape.

Designated Funds (Highways England) November 2018

The presentation gave an overview of the purpose and use of the five Highways England Designated Funds, with a focus on the Environment Designated Fund. This fund covers noise, carbon, landscape, flooding & water quality, cultural heritage, biodiversity and legacy. Examples were provided for current and future projects.

The Panel welcomed an update on the purpose and outcomes of the designated funds, particularly as they encouraged collaboration with others and allowed for a more holistic approach to design. Although the Panel could see that there is guidance available, it appears limited and could benefit from feedback on what has worked in the past to help improve wider design quality.

Benefits of a multi-functional soft estate (Natural England/ Balfour Beatty/ Atkins/ Butterfly Conservation) November 2018

The presentation focussed on how the design and management of soft estate can deliver benefits for water management, user experience, recreation and sense of place, while mitigating air quality, noise, visual and carbon impacts. The concept of monetising natural capital benefits such as air quality, biodiversity, erosion protection and social value was discussed, and the A14 scheme cited as an example. The Weymouth Relief Road was presented as a good example of an ecosystems approach to soft estate design.

The Panel supported the idea of a multi-functional soft estate, and if fully adopted by Highways England it could go a long way to help achieve the 2040 target of biodiversity net gain for example. The Panel requested more information on how non-transport benefits are calculated by Highways England.

Innovation and Designated Funds (Panel member Ralph Smyth) November 2018

The presentation proposed using designated funds to innovate for better design. This includes supporting culture change, applying design more holistically throughout Highways England to become a design led organisation, and using technology to better collaborate, as well as co-create, with communities.

The Panel recognised the need to embed good design and encourage culture change in Highways England and its supply chain. The Panel recommended further understanding of Highways England's expertise in Lean and Innovation.

Appraisal of scheme benefits (Highways England) March 2019

The presentation focussed on how Highways England makes decisions on assessing the benefits of schemes and value-for-money (VfM). It was emphasised that VfM was not the same as benefit to cost ratio (BCR). VfM was able to consider environmental and social impacts which may be less visible, but important to consider as part of a holistic view of scheme benefits.

The Panel were supportive of Highways England's work in this area to broaden the consideration of benefits. The Panel noted though that good design was more than aesthetics and is integral to many of the impact areas presented, including health for example. The Panel agreed further consideration should be given to how good design could raise benefit realisation in these areas, and not focus on a narrow definition of design.

Delivering green infrastructure along linear assets (Natural England/ ARUP) May 2019

This presentation highlighted on-going work for CIRIA (Construction Industry Research and Information Association) to improve infrastructure performance through integrated green infrastructure (GI). This work seeks to demonstrate the benefits of GI performance of linear assets, and provide a clear business case for future delivery.

The Panel discussed challenges around funding constraints, delivery, ownership beyond the 'red line' and a lack of clear objectives for GI generally. The Panel welcomed the work and asked to be informed of the final recommendations.

Highway clutter (Chartered Institute of Highways and Transportation/ Highways England) May 2019

This presentation focussed on the visual appearance of the SRN, and set out examples of clutter and ideas for categorisation. Sign clutter was cited as not only visually intrusive, but potentially distracting to drivers and wasteful of resources.

The Panel recognised visual clutter as an issue, and requested further work be undertaken by Highways England to understand the scope and scale of visual clutter on the SRN so that potential solutions could be developed.

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