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Strategic Design Panel
Progress report
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Foreword

There has been good progress over the past year by both the Strategic Design Panel and Highways England to guide the design and delivery of safer, better, more beautiful roads which connect people and connect our country. I do not underestimate the challenge and the cultural change required for such a step change and welcome the on-going support of Panel members in helping Highways England become a better design led company. The Panel believes good design is a powerful tool for achieving a higher quality of life, as well as greater economic vitality and a more efficient use of resources. I share this view and have no doubt about the potential for good design to transform our roads and the places they pass through for the better.

This year Highways England published its vision and principles for good road design which follow the themes of people, places and processes.

The Panel have continued to examine and challenge our processes to make recommendations to respond better to the needs of users and local communities. It is important for the company to continue to be challenged to improve design outcomes, but also become more efficient in what it does. The new design review panel overseen by the Panel will also help us do that.

I would like to thank past Panel members for their valuable contribution and welcome new members drawn from a wide range of organisations who are all committed to helping us achieve our goal of roads that serve people and places better. I look forward to another year of working together towards this goal.

Mike Wilson
Chief Highway Engineer and Chair of the Highways England Strategic Design Panel
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
Executive summary

This is the second report of the Highways England Strategic Design Panel (the Panel), which is tasked with challenging and supporting Highways England to make a step change in the design quality of England’s strategic road network.

With members from across a range of disciplines and representing stakeholders who have a strong and passionate interest in the design of Highways England’s road network, the report sets out progress over the past year (April 17 to June 18), key recommendations made and looks ahead to the coming year.

The road to good design
First announced in last year’s Progress Report, Highways England formally published its design vision and principles in January 2018, a key milestone for the Panel. The purpose of The road to good design is to challenge thinking about the design and quality of the strategic road network. To support Highways England’s design vision for the network, a set of principles which follow the themes of people, places and processes, were established to encourage better design.

Design review
A second key milestone for the Panel was the establishment of a design review panel in the autumn of 2017. Scheme design reviews are now managed and organised by the Design Council on behalf of Highways England with oversight from the Panel.

As well as providing scheme specific design advice to project managers and design teams, the design review panel reports strategic issues emerging from the reviews undertaken to the Panel for consideration.

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

- Highways England should continue work to fully embed its design vision and principles.
- Highways England should consider the Panel’s recommendations for evaluation and learning.
- Highways England should ensure that the design vision and principles are at the heart of the on-going review of the Design Manual for Roads and Bridges (DMRB).

Looking ahead
Over the next year, the Panel will consider the benefits of green infrastructure and its relationship with road building, ways to improve the user experience and gain an understanding of why the road environment looks the way it does through the process of design, construction and maintenance. These will be considered alongside other issues emerging from the review of schemes by its design review panel, the on-going update of the DMRB and evaluation.
1. The Panel

The Highways England Strategic Design Panel (the Panel) is tasked with challenging and supporting Highways England in driving a step change in the quality of England’s strategic road network. This means ensuring that design excellence in landscape, engineering and built environment is at the heart of all aspects of Highways England projects.

Design excellence will be achieved through the strategic road network being safe, functional and effective, responding positively and sensitively to landscape character, natural systems, cultural heritage and communities, while also conforming to the principles of sustainable development.

While the Panel’s role is advisory, Highways England seeks and acts on advice from the Panel to embed a design led approach in its processes, including the design of road improvements, network management and operations, and in the development of relevant design standards and guidance.

Our work

The work of the Panel takes place in the context of the government’s wider Road Investment Strategy. Over the past year the Panel has applied its advisory powers to:

- Provide advice on the adoption of a design vision and principles.
- Review and provide advice on Highways England standards and processes including the Design Manual for Roads and Bridges (DMRB).
- Recommend and support Highways England staff in the development of new standards and guidance, for example on Expressways.
- Review and comment on strategic and recurrent themes and issues associated with the design and procurement of road schemes.
- Oversee the new design review panel’s review of complex and sensitive schemes.
Membership
Panel members are drawn from a wide range of organisations which have expertise in the delivery of well-designed infrastructure. Membership brings together organisations and individuals who have a broad perspective on road design. The Chair is responsible for ensuring effective and efficient operation of the Panel and ensuring that its recommendations are implemented by Highways England.

Current membership of the Panel includes:

Chair Mike Wilson, Chief Highway Engineer, Highways England
Phil Carey Transport Focus
Mike Cook Institution of Structural Engineers
Colin Davis Chartered Institute of Highways and Transportation
Roland Diffey Institution of Civil Engineers
Noel Farrer Landscape Institute
Bridget Fox Campaign for Better Transport
Clare Green Transport Systems Catapult
John Lyall Chair of the Highways England Design Review Panel
Selina Mason Royal Institute of British Architects
Philip Morris (interim) National Trust
Tom Perry Design Council
Ralph Smyth Campaign to Protect Rural England
Rohan Torkildsen Historic England
Clare Warburton Natural England

The representative for a number of organisations has changed over the course of the year and the Chair would like to thank the following past members for their valued contribution to the Panel: Richard Bourne, Victor Callister, Katharine Fletcher, Ian Wilson and Wolf Manglesdorf. The Chair would also like to thank Michael Harris and the Prince’s Foundation for their contribution to the Panel.
2. Making progress

The Panel identified its aspirations, made recommendations and set out a number of aims in the first *Highways England Strategic Design Panel Progress Report*. Although many of these aspirations can only be achieved in the longer-term and continue to be valid, good progress has been made by Highways England in establishing the context for change through addressing last year’s recommendations and aims of the Panel.

**Actions**

Three key recommendations were made in the first Progress Report:

1. **Publish the design vision and principles and develop a good design guide.**
   Highways England published its design vision and principles (see section 3). Supplementary guidance supporting the design vision and principles has been drafted to assist in the development of any future good design guide.

2. **Implement the design vision and principles effectively to become a practical tool.**
   Major schemes are reviewed against the design vision and principles (see section 4) as part of the Project Control Framework. Supplementary guidance is being drafted which will become an online resource for projects and operations.

3. **Ensure a design led approach is at the heart of the Design Manual for Roads and Bridges (DMRB).**
   The design vision and principles will be published in the DMRB shortly. This will inform the drafting of subsequent relevant sections of the DMRB.
Aspirations
A number of key aspirations that the Panel considered would help Highways England raise the standard of design were set out in the first Progress Report. These have been reviewed and updated and are recommended to be carried forward so further progress can be made against them next year:

- Clear and consistent consideration of design 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 further blue-green infrastructure.
- More inclusive engagement with local communities and users.
- Better planning for walkers, cyclists and horse-riders.
- Inspiring innovation through design competitions.
Activities

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

- A review of the Panel was undertaken in May 2018 and its terms of reference updated. This should happen annually.
- Work to embed good design into Highways England guidance and processes continues, and includes the development of supplementary guidance, inclusion of the design vision and principles into a finalised Sustainable Development and Design DMRB requirement and review of selected schemes (see section 4).
- A review of the design outcomes and opportunities associated with Highway England’s soft estate and identifying an objective means of measuring improvement will be carried over into next year.
- Learning from best practice is on-going and the Panel has made a number of related evaluation recommendations (see section 5). The Panel are following the work of the HS2 Review Panel and National Infrastructure Commission to identify commonalities. However, case studies need to be developed and the experience of other linear assets explored further to develop a comprehensive knowledge base.

The independent design review process has proved to be beneficial in improving the quality of schemes large and small. The Panel’s emphasis on good, integrated design by architects, landscape designers and engineers is beginning to have beneficial results in the focus of teams and the use of ‘design narrative’. This message for quality design has been strongly put across by the Panel in the reviews held so far.

John Lyall
Chair of the design review panel and Panel member
3. Design vision and principles

First outlined in last year’s Progress Report, Highways England formally published its design vision and principles in January 2018. The Panel welcomes the publication of *The road to good design* which establishes Highways England’s commitment to improving quality. By focussing on good design, Highways England can make a positive difference to the experience of road users and to the communities through which the strategic road network passes.

The Panel also welcomes on-going work to incorporate the design vision and principles into the DMRB. The Panel looks forward to the publication of the introduction and general requirements for sustainable development and design document containing the design vision and principles in the DMRB. The Panel recommends that other relevant sections of the DMRB currently being reviewed have due regard to the design vision and principles.

The design principles provide designers with a simple list of considerations to help improve the quality of their designs in respect of their context and setting.

*Roland Diffey*

Panel member representing the Institution of Civil Engineers

The Panel also supports the use of *The road to good design* as the foundation for Project Design Reports which are completed by schemes at stages 1 and 3 of the Project Control Framework. The Panel believes this to be essential to embedding the design principles into Highways England processes and recommends these reports are reviewed in due course to assess the uptake of the design principles and understanding.

The Panel also recommends that a programme of training and workshops, both within Highways England and externally with its consultants and contractors, is prepared and undertaken to further assist in the embedment of *The road to good design*. Again, this will ensure a good level of understanding and adoption of the design principles.
4. Design review

The Panel previously identified that the independent review of scheme design would be beneficial to broaden thinking and provide constructive challenge. Last year it therefore recommended the trialling of a dedicated design review panel for this purpose, procured by Highways England with the oversight of the Panel. The purpose of this complementary review panel would be to 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.

The design review panel was established in the autumn of 2017 by Highways England and has now undertaken a number of scheme reviews. The reviews are organised by the Design Council, an independent charity and the Government’s advisor on design, on behalf of Highways England and managed by framework consultants Jacobs/Atkins.

The review panel 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. Review panel 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 review panel reports to the Panel on strategic issues emerging from reviews undertaken. An annual report will be produced for the Panel that identifies common themes so that future recommendations can be made to Highways England to improve design quality and processes.

The review panel operates in accordance with Design Review: Principles and Practice and its work will be reviewed annually by the Panel following the submission of an annual report.

We found the Panel’s reflections both helpful in shaping our thinking and in driving us to look at certain aspects afresh.

A27 Arundel design team
5. Design advice

The Panel had the opportunity to discuss M25 junction 10 and the A417 Missing Link last year. It was not possible for the Panel to comment in detail on these schemes and it was recommended both be referred to the new review panel once further design work was undertaken.

After referral by the Panel, the review panel reviewed the proposed Lower Thames Crossing, A303 Amesbury to Berwick Down, M25 junction 10, A417 Missing Link and A27 Arundel. Following a site visit and presentation, the Design Council issued advice to each team. Emerging common and strategic issues were also identified and reported to the Panel.

As a result of these ongoing activities, the Panel has identified the following common issues with the design process and presentation of schemes this year:

- Many consultations do not demonstrate clear inclusive processes which facilitate collaborative input, rather than broadcast information. Involving local people earlier on in the design process will help build a better understanding of and response to place.

- The potential for the wider benefits of infrastructure beyond the project team’s direct concern are often not overtly identified and acted on. These potential wider benefits, particularly those for local communities, could assist in schemes being accepted more readily.

- Project teams should do more to design and communicate the opportunities emerging from a scheme, rather than just mitigate against negative impacts. Identifying and acting on such opportunities early on can reduce the need for mitigation at a later stage.

- Many project teams are not clearly evidencing that they are fully considering the user experience both for the road user and those near to the road. This should be illustrated visually, with eye level sequential views along a route for example.

- Many scheme designs are not demonstrating a clear response to a deep understanding of the historic and cultural context and identity of a site. This is an essential for successful place making.

Highways England should consider the above emerging issues and scheme advice given and grasp the opportunity to improve outcomes. Over the next year, the Panel will monitor progress on these issues and consider the annual report from the review panel. This annual report will expand upon these issues once further schemes are reviewed and the Panel will make recommendations to Highways England in due course.

Road users will welcome this scrutiny from the review panels. The panels’ work so far highlights a range of missed opportunities in scheme development. Transport Focus will work with the Strategic Design Panel and Highways England to secure much greater focus on the user experience, and more inclusive consultations, as projects are taken forward.

Phil Carey
Panel member representative for Transport Focus
6. Design evaluation

Following a presentation of the Campaign to Protect Rural England report *The Impact of Roads in England* to the Panel in April 2017 (see appendix A), a working group of the Panel was established to consider the design evaluation of built schemes and learning.

The working group made the following nine recommendations to the Panel:

1. **Undertake a ‘deep dive’ study**
   A 15 year after study of several schemes with a focus on design would be useful to identify long-term successes and problems.

2. **Use evaluation to establish best practice**
   Best practice from Post Opening Project Evaluation (POPE) could provide case studies for each design principle to provide resources to assist design teams.

3. **Evaluate the effectiveness of the design principles**
   Once the design principles begin to influence schemes, their effectiveness should be evaluated. This would provide the basis for a future review of the principles.

4. **Integrate the design principles into POPE**
   POPE currently compares against the scheme objectives and the predicted impacts from the appraisal. Schemes could also be reviewed against the design principles.

5. **Report learning to Strategic Design Panel and others**
   Where POPE identifies an on-going design issue, the Panel and its design review panel should be made aware so they can pay particular attention to those aspects of proposals.

6. **Reconsider landscape evaluation**
   The evaluation of landscape for built projects should be considered beyond a comparison of impacts to expected impacts to provide lessons in landscape best practice.

7. **Learn from innovation**
   Innovation is encouraged and learning from should be disseminated widely and quickly to ensure new ideas can be incorporated into schemes without delay.

8. **Link DMRB review with best practice**
   The review of the DMRB is an opportunity to ensure learning and best practice identified through evaluation is embedded into future standards.

9. **Evaluation should be the starting point for future schemes**
   Successes and failures identified through POPE and other means should be the basis for future scheme requirements and objectives. Design teams should also be encouraged to identify precedents and utilise best practice for better outcomes.

The Panel endorsed the above recommendations and recommends Highways England consider these to improve the evaluation of and learning from schemes. Learning from best practice is an important part of the design process and is encouraged to improve outcomes.
7. Key recommendations and forward planning

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

- **Highways England should continue to work to fully embed its design vision and principles.** This will include publication in the DMRB and undertaking a programme of communication, training and workshops, both internally and externally.

- **Highways England should consider the Panel’s recommendations for evaluation and learning.** For example, a number of ‘deep dive’ studies should be undertaken to help inform the review of the DMRB, in addition to work to incorporate the design principles into POPE and improve landscape evaluation.

- **Highways England should ensure that the design vision and principles are at the heart of the on-going review of the DMRB.** Future standards should give design quality and place making due consideration alongside safety and function.

Other more detailed observations and recommendations of the Panel related to specific topics are presented in Appendix A.

Over the next year, the Panel will consider the benefits of green infrastructure and its relationship with road building, ways to improve the user experience and gain an understanding of why the road environment looks the way it does through the process of design, construction and maintenance. These will be considered alongside other issues emerging from the review of schemes by its design review panel, the on-going update of the DMRB and evaluation.
Appendix A: Maintaining an understanding of wider Highways England work and external best practice

The Panel recognises that best practice in design, engineering and environmental practices are under constant development. There is an important role for the Panel in drawing in this best practice and advising how it can be translated into the work of Highways England.

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

The Impact of Road Projects in England (Campaign to Protect Rural England) April 2017

The presentation gave an overview of the Campaign to Protect Rural England report and focused on the impact of roads on the landscape and schemes that had failed to meet desired environmental outcomes.

The report examines the current state of the POPE process for schemes and makes a series of recommendations for improvement, including data collection, timing, professional input and learning.

The Panel welcomed publication of the report and recommended a working group be formed to consider evaluation in more detail in light of the presentation.

DMRB Review (Highways England) August 2017

The presentation gave an overview of the DMRB and its purpose. The DMRB review gives an opportunity to embed good design into the process. It is planned to incorporate the design vision and principles into the general requirements of the DMRB a document all users will read to understand how to use the manual.

The Panel welcomed the placing of the principles at the front of the manual but were concerned that if the principles were not referenced consistently throughout the document, the impact and meaning may be lost. The Panel requested they be kept updated with progress on the DMRB review and that they are given the opportunity to engage with documents of interest.

Procurement Strategies (Highways England) August 2017

The presentation gave an overview of the procurement strategies that Highways England are developing to create a commercial environment that will allow the business to flourish. These focus on the supply chain, routes to market, categories and supplier selection. The industry wide skills gap was also discussed.

The Panel recommended that procurement should encourage smaller firms to tender to encourage diversity, but their intellectual property needed to be protected.

Air Quality Barriers (Highways England) November 2017

This presentation outlined the work Highways England is doing to tackle poor air quality on the strategic road network, highlighting that volume of traffic is the main cause of air quality issues. Air quality barriers are just one component being considered as part of Highways England’s Air Quality Strategy.

Examples of noise barriers from elsewhere that may be applicable as air quality barriers were presented. It was emphasised that air quality barriers are being considered as a last resort solution for specific sites only and testing and modelling of their effectiveness was ongoing.

It was noted the DMRB does not yet specify the use of air quality barriers and it is a potentially innovative solution to a difficult problem.

The Panel recognised the seriousness of poor air quality, but raised concerns about the potential visual impact and severance effect of air quality barriers if adopted widely on the strategic road network. Sensitive design that responds to place will be needed.
Green Bridges  
(Highways England)  
November 2017

This presentation gave an overview of Highways England’s green bridges, but also other wildlife connections such as underpasses, highlighting successful projects, areas for improvement and future opportunities and challenges. Although the problem of severance caused by roads has been recognised for some time in the UK, the defragmentation of habitats in countries such as Germany is already well established in highway design.

Green bridges or adapted accommodation bridges can offer a low cost solution to reduce severance if designed properly; ensuring new infrastructure enhances the natural environment in which it resides. Wildlife underpasses or culverts can be even more cost effective and practical, but do not have the same public profile as green bridges. The biggest challenge for many defragmentation proposals if not deemed essential mitigation, is keeping them on the agenda throughout development and procurement.

The Panel were fully supportive of Highways England’s work in this area and agreed green infrastructure associated with the network has the potential to have much wider influence on safety, quality and sustainability than at present.

References

Expressways / Smart Roads Vision  
(Highways England/Atkins/Jacobs)  
February 2018

The presentation provided a background and update to the expressways concept and the progress made since the last presentation to the Panel. The key benefits in terms of safety, economy and environment were outlined and it was noted the concept continues to evolve.

A vision for smart roads was also being developed and this would include smart motorways and expressways. Key issues raised by smart roads were discussed with the Panel in a workshop format.

Although the Panel recognised the proposal to designate expressways as (M) motorways in the future would potentially reduce clutter and make their use more intuitive, many of the comments made in last year’s Panel Progress Report remained relevant. The Panel recommended that the design principles should be part of the development of the smart roads concept.

Expressways / Smart Roads Vision (Highways England/Atkins/Jacobs) February 2018

Roads and the Environment  
(Campaign for Better Transport)  
May 2018

This presentation gave an overview of the Roads and the Environment: Putting an innovative approach at the heart of RIS2 report from the Campaign for Better Transport for the Rees Jeffreys Road Fund. The report outlines the priorities and challenges that should be considered in the second Road Investment Strategy to ensure there is a green thread running through future projects and asks for the Panel to have greater resources. It also suggests all road projects should aim to deliver environmental enhancements and learn from best practice as illustrated in the report and presentation.

The Panel received the report positively and agreed the Panel would have more impact with more resources to develop guidance such as a green retrofit manual for example. The Panel recommended Highways England develop further case studies such as those featured in the report to share lessons learned more widely. It was also recommended that the opportunities outlined in the report be considered further by Highways England.

Roads and the Environment (Campaign for Better Transport) May 2018

HS2 Design Panel and National Infrastructure Commission  
(Tony Burton, Vice-Chair HS2 Design Panel) May 2018

The history, role and structure of the HS2 Design Panel was outlined. HS2 panel members are individual experts and do not represent stakeholders and are keen to learn from other large infrastructure projects and disseminate best practice.

The Panel were also updated on the work of the National Infrastructure Commission who advocate embedding design quality into national infrastructure planning at the earliest stage. Work is ongoing to understand why many infrastructure projects prioritise time and budget over design, and to identify the barriers to good design.

The Panel welcomed the insight into the work of the HS2 Design Panel and lessons learned. The Panel agreed with the National Infrastructure Commission that it was important to create capability and recognise, support and structure design within organisations such as Highways England. The Panel welcomed support across shared challenges in what was seen as a joint opportunity to improve the design quality of national infrastructure.

HS2 Design Panel and National Infrastructure Commission (Tony Burton, Vice-Chair HS2 Design Panel) May 2018

The road to good design
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