

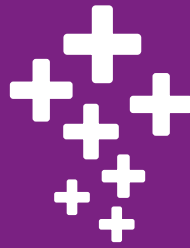
Climate



People



Places



Value

Defining and developing the design champion role

ICE Working Paper

Summary p2

Introduction p3

Current thinking p4

Good design in projects p6

Further research and next steps p7

Summary

The Institution of Civil Engineers (ICE) and the National Infrastructure Commission Design Group (NICDG) are proposing to work with industry stakeholders to develop and publish guidance on the requirements and competencies of the recently mandated 'design champion' role.

The goal is to define the role so project leaders can fulfil the requirement from the UK Government's National Infrastructure Strategy that all projects have a board-level design champion in place. In doing so, they can be assured that projects are progressing in line with recommended design principles.

The work will also inform ICE members about the concept and how design champions might interact with others in a team, as well as encouraging civil engineers to consider taking up such a role.

The guidance will take the form of a succinct report expanding on the practicalities and a proforma 'job description' for the role, supported by explanatory notes and case study personas of some 'typical' design champions.

Contributors

Anthony Dewar Network Rail and member of National Infrastructure Commission Design Group

Clare Donnelly Fereday Pollard and member of NICDG

Kay Hughes HS2

Kosh Kar Greater London Authority

Mark Malcolm Anglian Water

Prof Sadie Morgan OBE dRMM, member of the National Infrastructure Commission (NIC) and chair of NICDG

Sowmya Parthasarathy Arup

Dan Shotter Programme manager, NIC

Judith Sykes Expedition Engineering and member of NICDG

Mike Wilson National Highways

Nathan Wyatt Assistant director, NIC

ICE head of insight production: Michelle Harbi

ICE insights manager: Sarah Hall

Design: James McCarthy

Sub-editing: Matthew Keegan

ABOUT THIS WORKING PAPER

This paper is based on initial desk research and discussions with industry stakeholders. It details the background, context and key objectives of the proposed final report and explores further research needs and how the project is expected to develop.

We invite contributions from ICE members to the next stages of the work and the resulting report and guidance – please visit www.bit.ly/DCWPfeedback

All infrastructure projects [are] to have a board-level design champion in place at project, programme or organisational level, supported where appropriate by design panels

National Infrastructure Strategy, November 2020

Introduction

In November 2020, the Government published the UK's first ever 30-year [National Infrastructure Strategy](#). It included the bold requirement that all projects have a board-level 'design champion' in place by the end of 2021. The strategy was a response to the [NIC's 2018 National Infrastructure Assessment](#), which recommended the creation of the design champion role although did not specify what kind of person would fulfil it.

The design champions are to facilitate delivery of the [NIC's design principles](#), which seek to ensure that projects are designed with respect for people and places while addressing climate and delivering value – both core ICE Plan themes.

The need for this role has been enshrined in government policy, including in its [Transforming Infrastructure Performance \(TIP\) Routemap to 2030](#). However, the skillset that would constitute a 'design champion' has not yet been specified and greater definition is needed for the industry to take the concept forward.

This project builds on the [What Makes Good Design?](#) work that ICE undertook with the NICDG in 2020-21 to understand ICE members' awareness and understanding of the NIC's design principles. One of the key recommendations was for ICE to convene a forum with institutions and industry representatives "to define what a design champion is and commit to creating programmes to support development of board-level champions in all major infrastructure projects".

This project thus seeks to define the design champion role so that:

- Project leaders can fulfil the Government's mandate and be assured that their projects are progressing in line with the 'good design' principles

- ICE members can support design champions in projects and complement other built environment professionals in undertaking this role

- ICE can position its members, alongside other design professionals, to be design champions

Defining terms

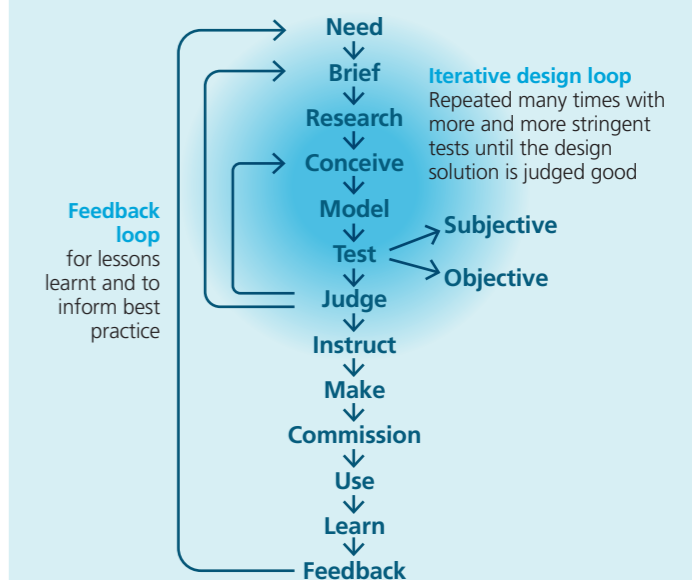
Projects – This potentially encompasses all infrastructure projects but, for the purposes of this work, the focus is on Nationally Significant Infrastructure Projects (NSIPs), as originally recommended in the NIC's 2018 assessment. NSIPs are defined by the Government as large-scale infrastructure developments that require a 'development consent'.

Infrastructure – For the purposes of this work, the NIC definition of economic infrastructure will be used and therefore includes projects in the fields of energy, transport, water and wastewater, waste, flood risk management and digital communications.

Design – Infrastructure design is not purely about aesthetics; it's about how something works as well as how it looks. Great infrastructure uses design to solve problems and to maximise the benefits provided over a project's whole life. When visible, it should look good, too, as projects can shape the landscape for generations.

Infrastructure design is as much about process as it is product. It is a creative approach to problem-solving that brings together technical and creative expertise and looks at a number of constraints to find a solution that provides good value and works well for climate and places, as well as the people it is being designed for. It is different from the linear, structured work-breakdown process that many projects have.

DESIGN PROCESS



Credit: Chris Wise and Ed McCann



Design Principles for National Infrastructure
NICDG, February 2020

Current thinking

Why do we need design champions?

The benefits of good design are far-reaching but if the right design and strategic decisions are not prioritised in the early stages of the process then work has to be redone, costing time and money. These decisions require both internal- and external-facing elements.

Executive directors are usually in place with specific responsibilities for 'internal-facing' elements such as cost, programme, safety, technical compliance and sustainability, but incentives for these elements alone do not add up to the complete picture. While it is assumed that the project will deliver for the people it is intended for, there is not always an executive-level director in place with responsibility for keeping the people benefits front and centre.

All infrastructure projects have people as their beneficiaries. As such, a top-level external-facing role is needed right from the start to consider the benefits to the people who use the infrastructure and to the wider population. In this way, the wider remit and related opportunities are brought to the fore, including the wellbeing benefits for users and the benefits to climate, environment and biodiversity.

By giving focus to the design at the right times, projects can also be delivered more quickly, more cheaply, using less carbon, and with better functionality.

Parallels can be drawn with assumptions that may have been made in the 1970s in the UK with regard to safety automatically being accounted for on projects and the difference that has been made now that specific roles are in place associated with safety and the higher place it now has on everyone's agenda.

What is meant by 'board level'?

Initial discussions have tested the idea of 'board level' in terms of this being where the design champion needs to sit. There is general agreement that the champion should sit on the board responsible for delivering the project. For projects that organisations have been set up to deliver, such as HS2 or Crossrail, they should sit on the organisation's board. For projects that are delivered within government departments, or by non-departmental/arm's length bodies such as National Highways, they should sit on the project or programme board responsible for delivery.

In having the design champion at this level in the organisation that is responsible for delivery, there is the opportunity to ensure that design is considered from the initial stages of a project and that the design principles are taken into account at the highest level of projects. It means the strategic direction is set upfront and discussions about design are included alongside those about cost and programme in the direct communications at board level.

A board-level design champion can hold the long-term vision and has the accountability and responsibility necessary to test and check at a high level. They also have the mechanisms and structures in place for briefing and dialogue with other levels of the organisation to know what's happening and to influence decision-making. By having design leadership at the top of projects, we can embed an organisation-wide culture of good design and ensure it is recognised as a process that adds significant value.

What is the role of a design champion?

The role, and the resources needed to support it, will change to accommodate different phases of a project. Overall, they will be accountable for delivering coherent good design that drives value across the project, including possible cost and programme benefits. They will have the people benefits of the project at the core of their remit and be responsible for constantly querying the design to ensure that the design principles are delivered in practice and that the outcomes meet the needs of users.

At the early stages, the design champion will ensure that the NIC design principles are used as a jumping-off point for the development of project-specific design principles that are included in the vision and the brief and used as a tool for testing feasibility. They will be responsible for creating an environment that allows good design to flourish. They will be involved in setting up appropriate governance structures so that good design is incentivised. They will break down silos, bring people together and join up and streamline diverse processes. They will guide and champion an iterative design process to test the best way of achieving the design principles.

The design champion will ensure that design reviews are taking place and that the outcomes of reviews are implemented, that the design principles are not lost during the procurement process and that the right designers are procured at the right time. As projects progress through construction, they will be responsible for ensuring that the design principles are not undermined. Lesson sharing of what went well and what didn't, during and at the end of the project, will be an important part of the role.

Qualities of a design champion

EXCELLENCE
COMMUNICATION
SIGNIFICANT
EXPERIENCE
GRAVITAS
DIVERSITY
OF THOUGHT
ADVOCACY SKILLS
ABILITY
COMMITMENT
AUTHENTICITY
PERSPECTIVE

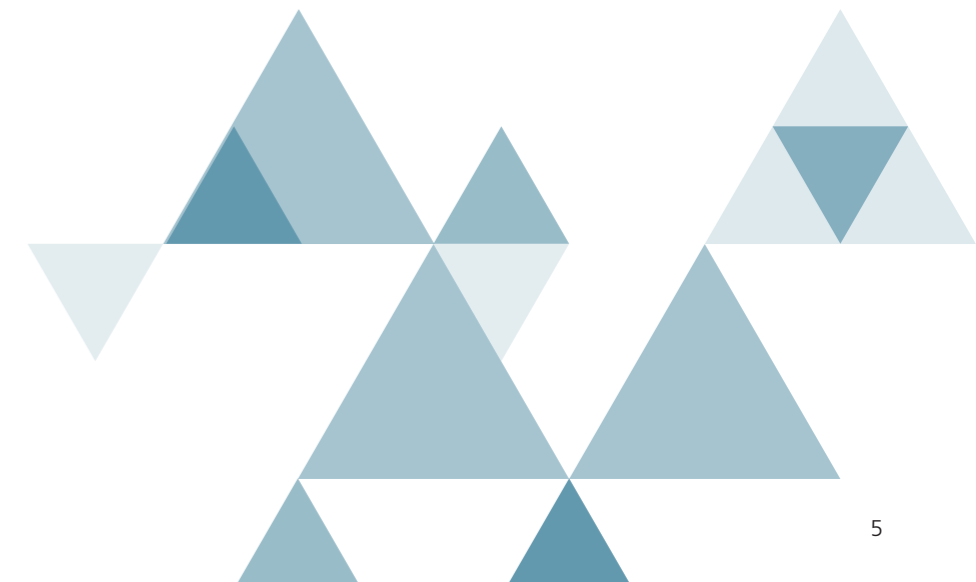
What attributes and experience are needed?

A design champion is someone with sufficient gravitas and ability to hold the project team to account in terms of a macro vision of design. They will be able to see the bigger picture as well as having the skills in design to understand the wider remit and the opportunities and benefits that the project can bring. They will complement the skills of other board members.

The champion will have significant design experience (refer to the definition of design on page 3), a commitment to design excellence and be embedded enough in the design process to promote technical excellence and drive changes where needed. They will have experience of setting and upholding design priorities for large, complex projects, in the context of cost and programme pressures, and will have excellent advocacy skills to communicate the value of design to the rest of the board.

They will need an understanding of how design can contribute to sustainability and low carbon, of community and stakeholder engagement and the contribution this can make to design decision-making, and of how public sector procurement processes can be structured to deliver design quality.

Key skills will be similar to those needed to promote a Development Consent Order (DCO) for NSIPs and will include authenticity, communication, understanding, listening, diversity of thought, perspective and an ability to foster and promote a culture that supports constructive challenge.



Good design in projects

The following projects have been proposed as examples of good design that could be explored further to better understand the roles in a team that are involved in putting good design into practice.



Orientkaj and Nordhaven, Copenhagen

These two metro stations, one above ground and one below, connect Copenhagen's northern docklands, one of Europe's largest urban regeneration projects.

They have been designed as an innovative prototype to inform the style of future stations along the extended line. The principle of contextual place-making was exemplified in the distinct visual style of the design, which retains and is inspired by the past industrial identity of the area.

Passenger impacts are at the forefront of the design – wayfinding is supported by bold coloured panelling that guides passengers to the relevant interchange/exits so that they can quickly orientate themselves and transfer between services.



London 2012 Olympics

A core ambition of the 2012 Olympic and Paralympic Games bid was to create a sustainable legacy of social, economic and physical regeneration. Key to this was the creation of a park with a coherent and relevant sense of place.

The Olympic Delivery Authority prioritised design and artistic excellence in its design team selection criteria with an overarching commitment to meet the needs of all people using the park both during and after the games.

The focus was on delivering exceptional sustainable and inclusive design standards, with eight core objectives to assess design quality: value for money; on time; for purpose; legacy; environment; health and wellbeing; safe and secure; and inclusion.

The governance structure promoted these principles throughout. Crucial to success was a board-level role that championed design in the early stages, leading to a culture of design that was supported by everybody at board level.



Cambridge wastewater treatment plant relocation

This is the first water-sector NSIP to adopt the DCO planning route. In preparation for the DCO submission, the team has focused on demonstrating 'good design' using the NIC's design principles framework of climate, people, places and value.

Having a controlling mind on the design has enabled the vision to be held and generated an industry-leading design incorporating technologies that will deliver net-zero carbon benefits, a landscape-inspired physical design and cleaner/greener sustainable outcomes to benefit the environment and local communities.

In line with the NIC's design principles, ambitions have been concentrated on connecting people, places and processes to ensure positive opportunities come from the scheme. Use of this narrative in the tender process has helped to carry the principles through to construction.



Lower Thames Crossing

This will create a new tunnel under the River Thames to connect Kent, Thurrock and Essex. It will double capacity across the river east of London and is the largest single road investment since the M25.

As a result, the design process has been subject to one of the UK's most comprehensive consultations ever undertaken. The design team has focused on three objectives – legacy, enhancement and placemaking – and used a design narrative to aid ongoing consultation. This has helped them to formulate its vision and how it can be achieved and has supported the incorporation of a series of enhanced design features into the DCO application.

In line with the NIC's design principles, ambitions have been concentrated on connecting people, places and processes to ensure positive opportunities come from the scheme. Use of this narrative in the tender process has helped to carry the principles through to construction.

Further research and next steps

The next stage of the project is to evolve a brief for design champions that can work across different infrastructure sectors. We will do this by working in collaboration with other institutions and key projects to test the following questions in more detail:

- Is there also a need for a design champion to sit at board level within a parent-company governance structure as well as on the board of the organisation responsible for project delivery?
- What does a proforma job description look like for the role in terms of the skills, qualifications and experience needed?
- Will the role, responsibilities, qualities or skills of a champion vary depending on the project set-up or type of board?
- How has good design been put into practice on projects where somebody has essentially already taken this role on?
- How are different infrastructure project boards configured and where would the design champion fit among other roles?

Discussions will also be broadened to include, where possible, the following organisations:

- Arts Council
- Association of Consultancy and Engineering
- Design Council
- Engineering Council
- Infrastructure and Projects Authority
- Landscape Institute
- Major Projects Association
- Mayor's Design Advocates
- National Infrastructure Planning Association
- Royal Institute of British Architects
- UK Green Building Council

– and projects selected from the following:

- A14 Cambridge to Huntingdon improvement scheme
- A303 Stonehenge
- Cambridge wastewater treatment plant relocation
- Crossrail
- CCUS programme
- HS2 – Euston and Western leg
- London 2012 Olympics
- Lower Thames Crossing
- Milau Viaduct, France
- Orientkaj and Nordhaven, Copenhagen
- Oxford flood alleviation
- Rotterdam Centraal, Netherlands
- Sizewell C
- Thames Tideway Tunnel
- Transpennine route upgrade

Historical (e.g. original London Underground design) and futuristic (e.g. Hyperloop) case studies could also be explored.

Outputs of the next stage of research will include a report to government on the requirements/competencies recommended. This will be articulated by creating a 'job description' for the role, supported by explanatory guidance notes aimed at project leaders to support their recruitment and development of design champions.

Personas of some 'typical' design champions will be created. These will be produced as case-study visual materials in the final printed pack. They will also be animated and narrated in a series of short films in which the persona will role-play how to address some hypothetical but typical issues.

We are keen to hear from any teams from the projects mentioned above or from other NSIPs that would like to be part of discussions, and welcome any questions or comments about this Working Paper – visit www.bit.ly/DCWPfeedback

What does a job description look like for the role in terms of the skills, qualifications and experience needed?

Established in 1818 and with more than 95,000 members worldwide, the Institution of Civil Engineers exists to deliver insights on infrastructure for societal benefit, using the professional engineering knowledge of our global membership.



Follow us on Twitter:

@ICE_engineers

and LinkedIn:

bit.ly/FollowICELinkedIn

UN Sustainable Development Goals (SDGs)

Linking our work back to the [UN Sustainable Development Goals](#) is a core part of ICE's plan and mission. This paper ties in with the following SDGs:



Institution of Civil Engineers is a Registered Charity in England & Wales (no 210252) and Scotland (SC038629).

ICE
One Great George Street
Westminster
London SW1P 3AA
UK

Get in touch
For more information, please contact:
ICE Knowledge
E: knowledge@ice.org.uk
W: ice.org.uk