

**NATIONAL
INFRASTRUCTURE
COMMISSION**

Resilience study

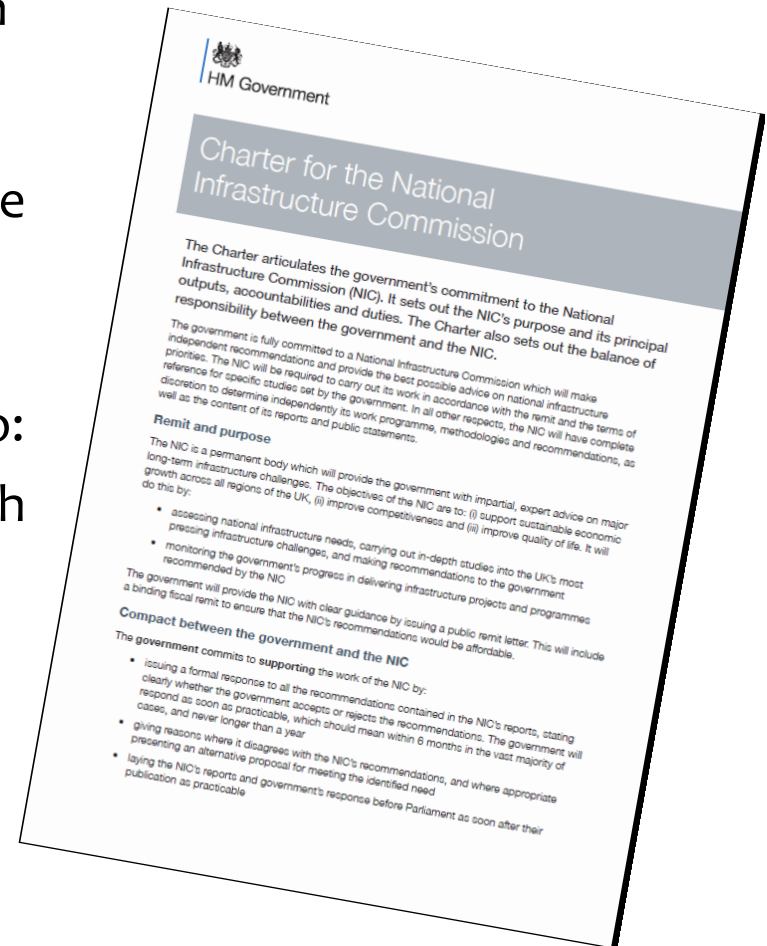
Matt Crossman

The National Infrastructure Commission

The National Infrastructure Commission is a permanent body providing the government with impartial, expert advice on major long-term infrastructure challenges.

The objectives of the Commission are to:

- support sustainable economic growth across all regions of the UK
- improve competitiveness
- improve quality of life



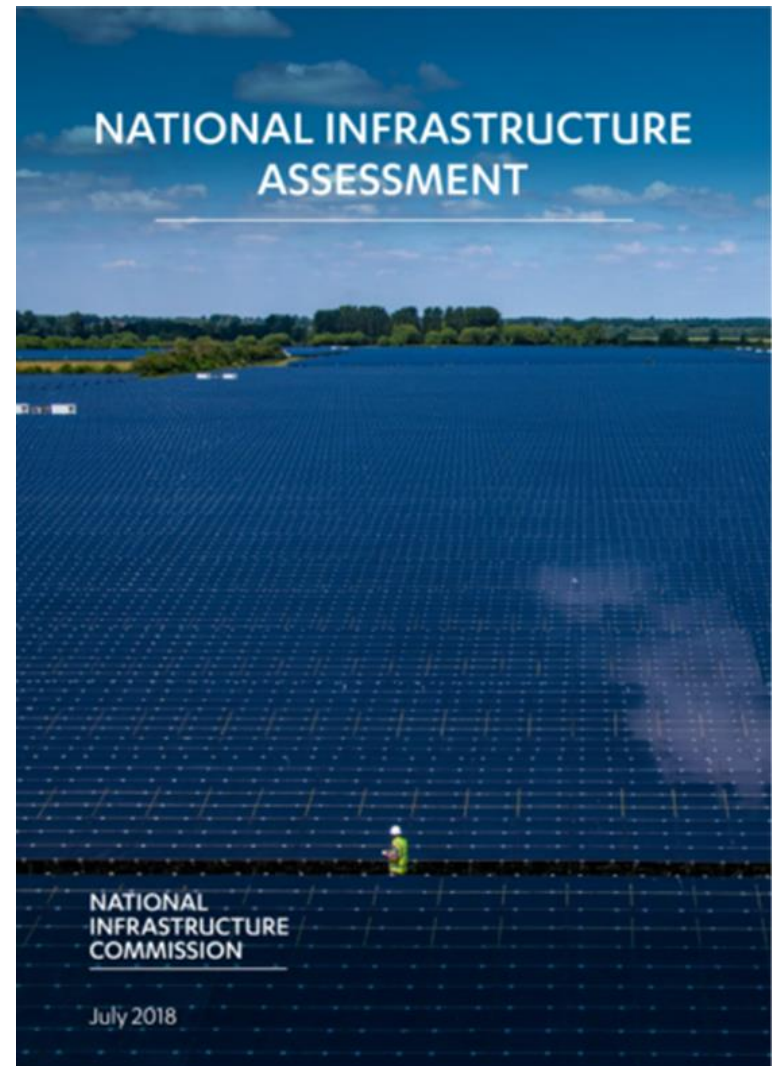
The National Infrastructure Assessment

The Commission's plan of action for the UK's infrastructure over the next 10-30 years.

Government responding through Infrastructure Strategy in 2019 - agreed recommendations will become government policy.

Resilience:

- Smart capability and resilience should form an important part of the infrastructure design process.
- An important priority will be to undertake more in-depth analysis of infrastructure resilience, as previously indicated in the Commission's Process and Methodology consultation.



Terms of reference

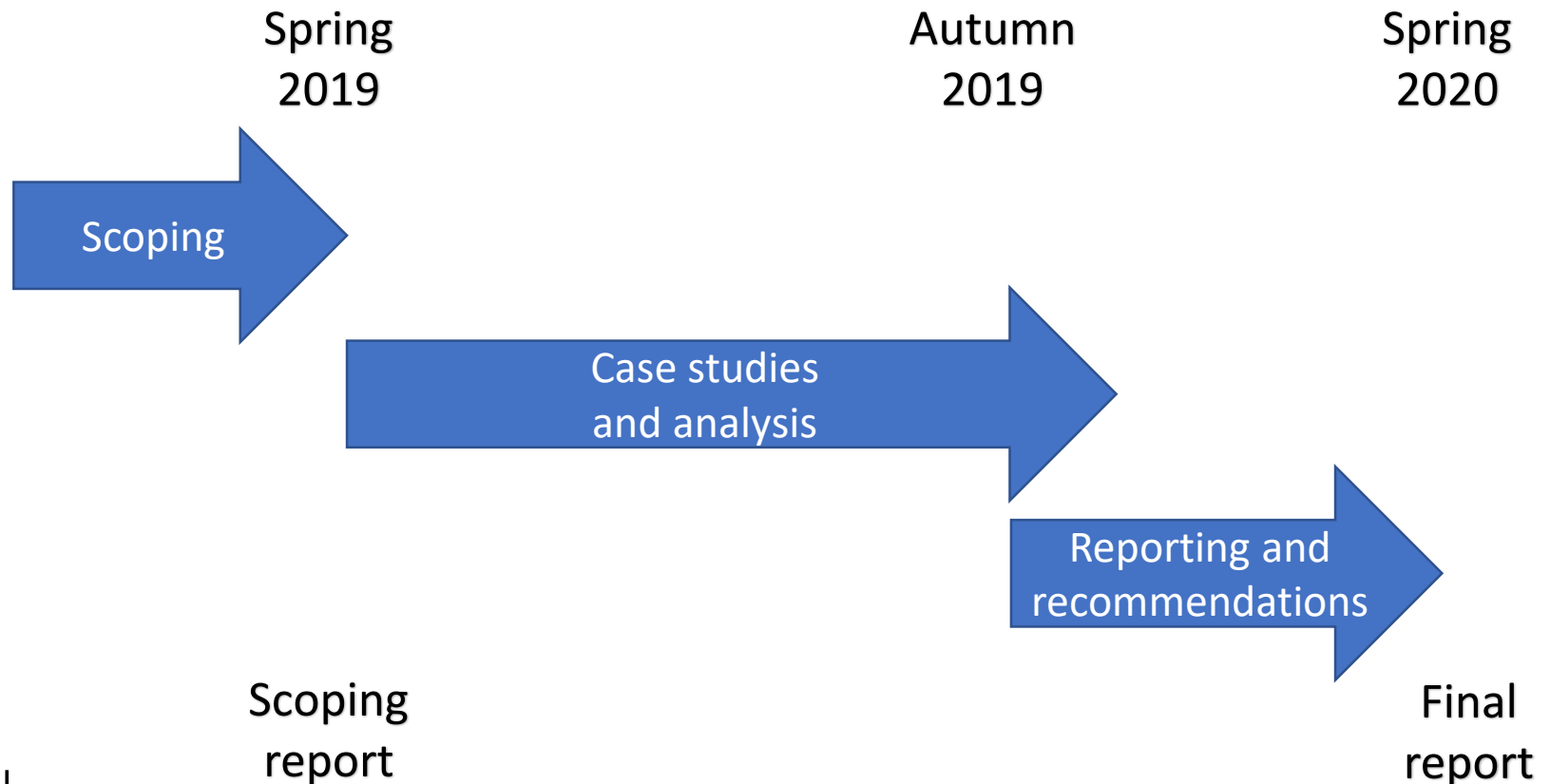
The Government asks the Commission to:

- a) Review UK and international knowledge and approaches relating to the resilience of current and future economic infrastructure systems
- b) Develop an understanding of public expectations and response to the potential loss of infrastructure services
- c) Develop an analytical approach that can be used to better understand the resilience of economic infrastructure systems, and the costs and benefits of measures to improve this
- d) Undertake pilot analysis of infrastructure systems to identify actions to improve resilience
- e) Make recommendations to government



Timing

The Commission should undertake a two-stage approach to the study with a scoping report identifying the proposed methods and analysis, followed by a final report, provisionally by spring 2020.



Scoping phase (so far)

UKCP18 National Climate Projections

Jason A. Lowe, Don Berrio, Philip Bell, Lucy Britheno, Simon Brown, Dilley Cokort, Robin Clark, Karen Eagle, Fanni Edwards, George Fossler, Fal Fang, Laila Gohar, Peter Good, Jonathan Gregory, Gian Harris, Tom Howard, Neil Kaye, Elizabeth Kendall, Justin Kingpin, Paul Mansley, Ruth McDonald, Rachel McInnes, Carol McSweeney, John F.B. Mitchell, James Murphy, Matthew Palmer, Chris Roberts, Jon Rostron, David Sexton, Hazel Thornton, Jon Tinker, Simon Tucker, Kuniko Yamazaki, and Stephen Belcher

Department for Environment, Food & Rural Affairs | Department for Business, Energy & Industrial Strategy | Met Office Hadley Centre | Environment Agency | Working together on UK Climate Projections | © Crown Copyright 2018, Met Office

Collation of knowledge and approaches

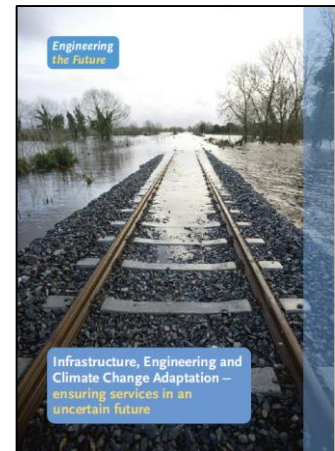
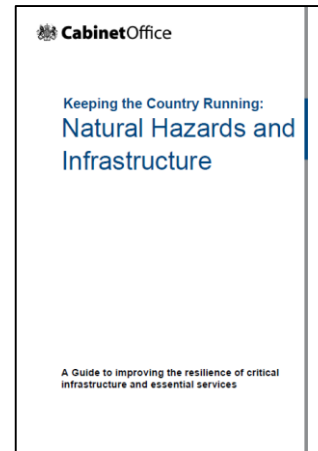
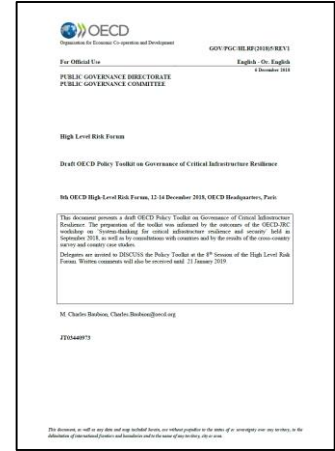
Identification of ongoing work and initiatives

Short reviews

- UK Levels of Service
- International Levels of Service
- Frameworks to Assess the Resilience of Infrastructure Systems

Initial social research

- Infrastructure Resilience: Public Expectations



Where should we focus ?

- Framework for application in 2nd National Infrastructure Assessment ?
- Cross-sectoral perspective (including impacts beyond economic infrastructure) ?
- NIC well placed to bring together different UK interests – but where are the most important gaps and which should we look to fill ?
- Do principles provide a useful starting point ?



Seven steps for critical infrastructure resilience policies

To strengthen critical infrastructure resilience, a comprehensive policy framework should address the following seven interrelated governance challenges:

1. Setting up a multi-sector governance structure for critical infrastructure resilience
2. Understanding complex interdependencies and vulnerabilities across infrastructure systems to prioritise resilience efforts
3. Establishing trust between government and operators by securing risk-related information-sharing
4. Building partnerships to agree on a common vision and achievable resilience objectives
5. Defining the policy mix to prioritise cost-effective resilience measures across the life-cycle
6. Ensuring accountability and monitoring implementation of critical infrastructure resilience policies
7. Addressing the transboundary dimension of infrastructure systems

Case studies

Objectives

- Test analytical approaches that can be used to better understand the resilience of economic infrastructure systems
- Help identify actions to improve the resilience of national infrastructure systems and inform investment decisions

Things to consider

- Timing - from late Spring to Autumn 2019
- Resources – NIC internal resources and finite budget!
- Existing work – not re-inventing the wheel...
- NIC remit – national infrastructure systems

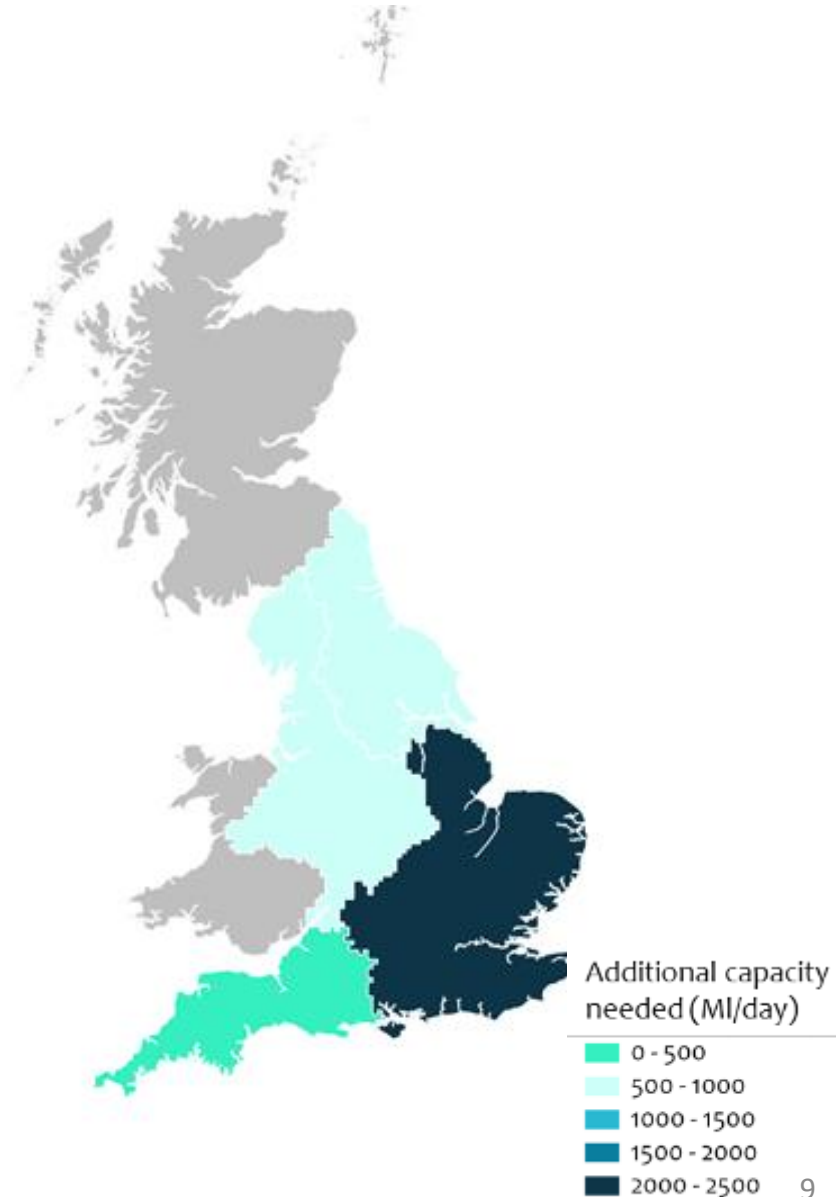
Scale?

National case studies

- Pros
 - Give a country-wide picture (DAs...?)
 - Help identify and test nation-wide solutions
- Cons
 - Only simplified analysis possible

Sub-national case studies

- Pros
 - Complex analysis possible
 - Allow exploring and engaging on specific issues
- Cons
 - Findings might be area-specific
 - Might not capture issues coming from outside of the area



Where?

Cities

- Pros
 - Complex systems
 - Ongoing work
- Cons
 - Generalisable?
 - What about rural?

A 'problematic location' or a 'good example'

- Pros
 - Known baseline and range of issues
- Cons
 - Might be difficult to identify
 - Generalisable?
 - Willingness to engage?

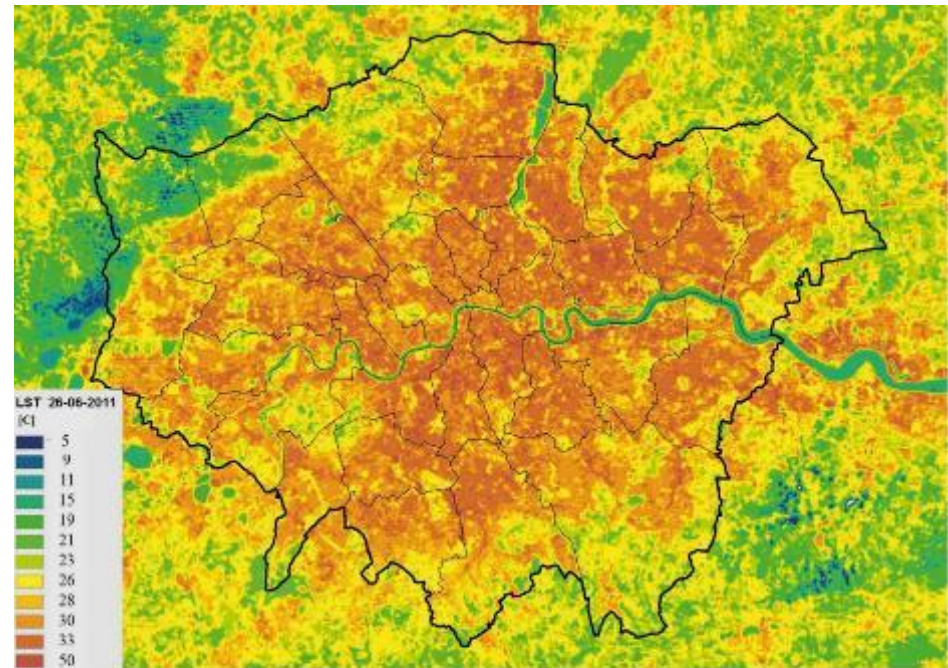


Figure 3. Greater London measured Land Surface Temperatures (°C) – day time 26th June 2011 (ARUP 2014)

ARUP, "Reducing Urban Heat Risk: A study on urban heat risk mapping and visualisation," ARUP, GLA, LCCP, Climate UK, Environment Agency, UCL, London Borough of Islington, Jul. 2014.

http://www.zerocarbonhub.org/sites/default/files/resources/reports/ZCH-OverheatingLeaflet-2-RiskMapping-S_o.pdf

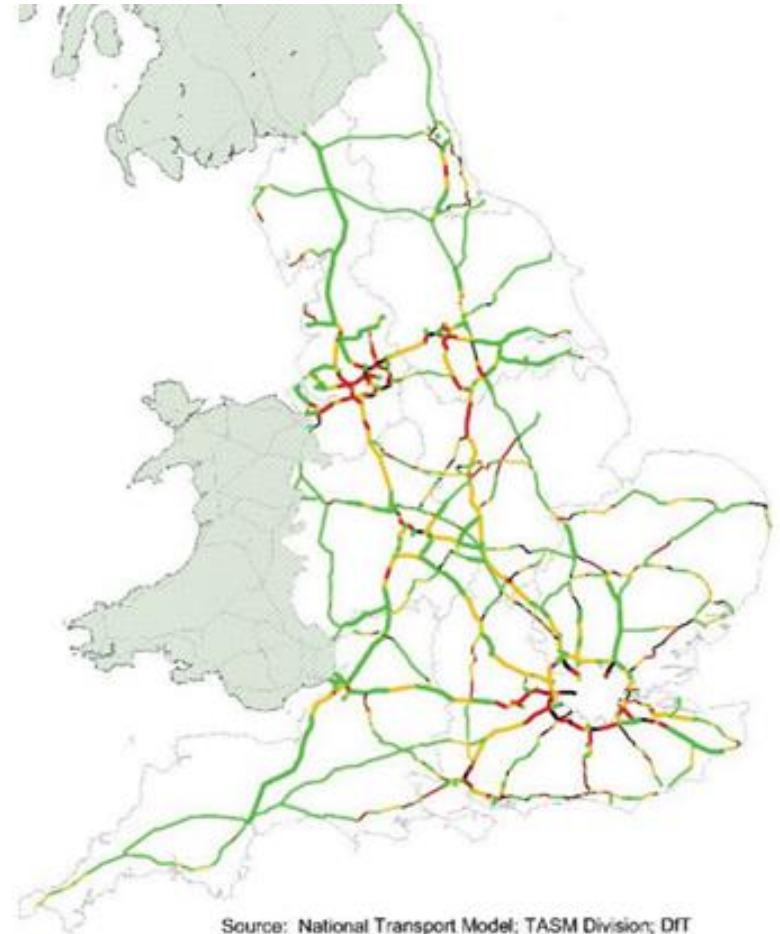
Which sector?

Sector-specific

- Pros
 - Build on existing models
 - Expertise and actors might be easier to identify
 - Allow looking at a specific issue
- Cons
 - Interdependencies...?

Multi-sector

- Pros
 - Interdependencies!
- Cons
 - Need to restrict scale or focus on a simplified analysis
 - Data availability



Source: National Transport Model; TASM Division; DfT

Scenario:
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Department for Transport



https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/624990/transport-investment-strategy-web.pdf

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