

Integrating EIA with Popular Design Methodologies

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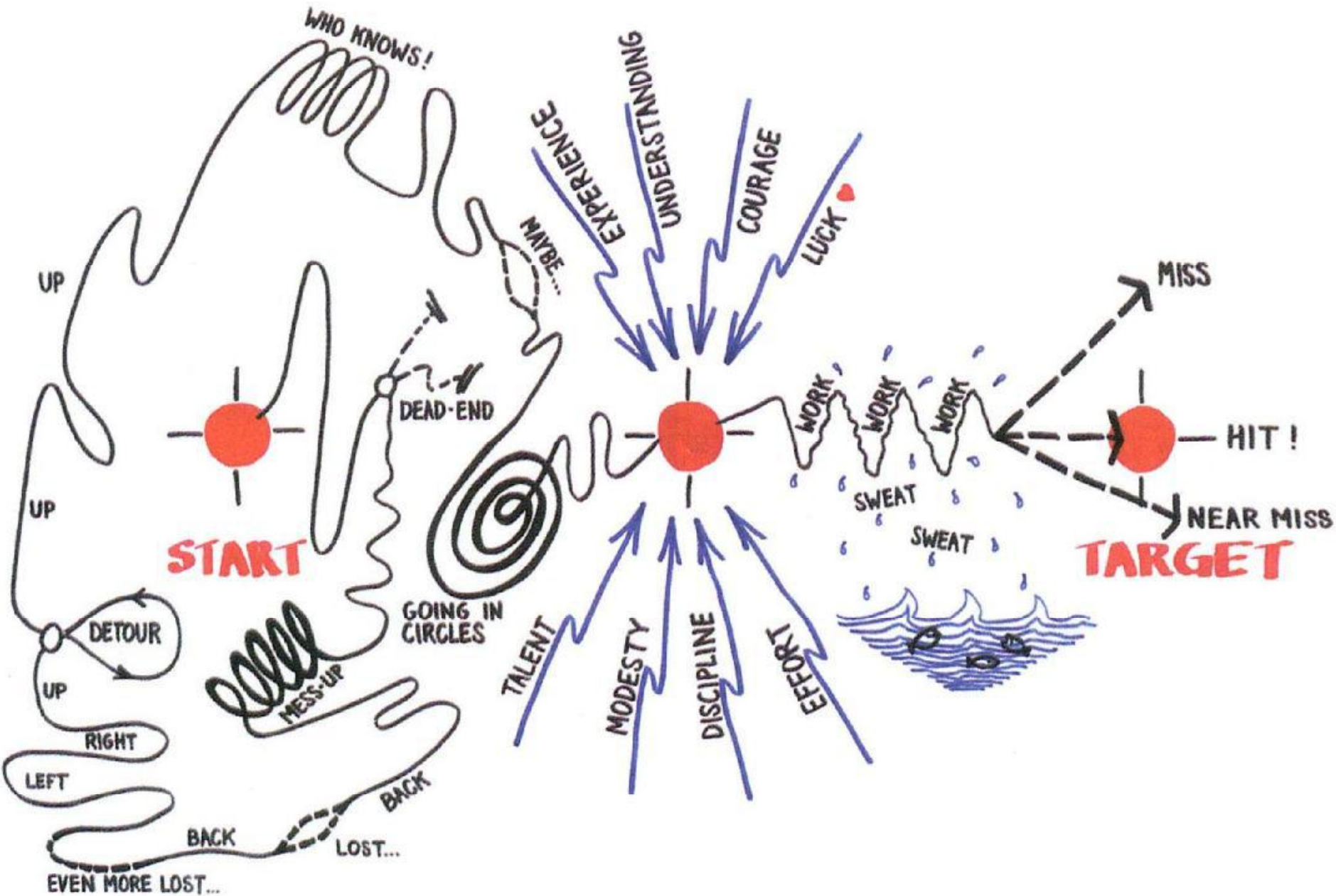
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Impact Assessment as a Design Tool. Thursday 23rd April 2015, 9am

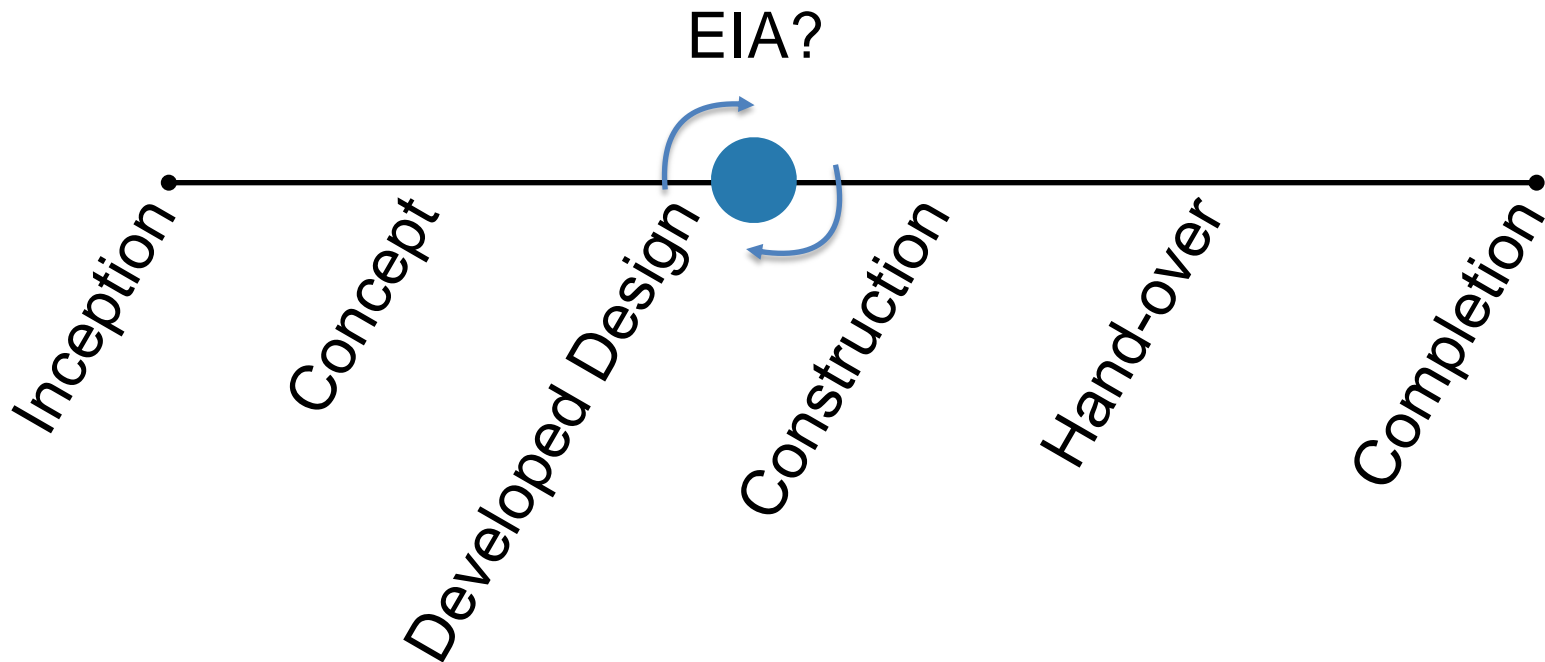


Structuring the Design Process





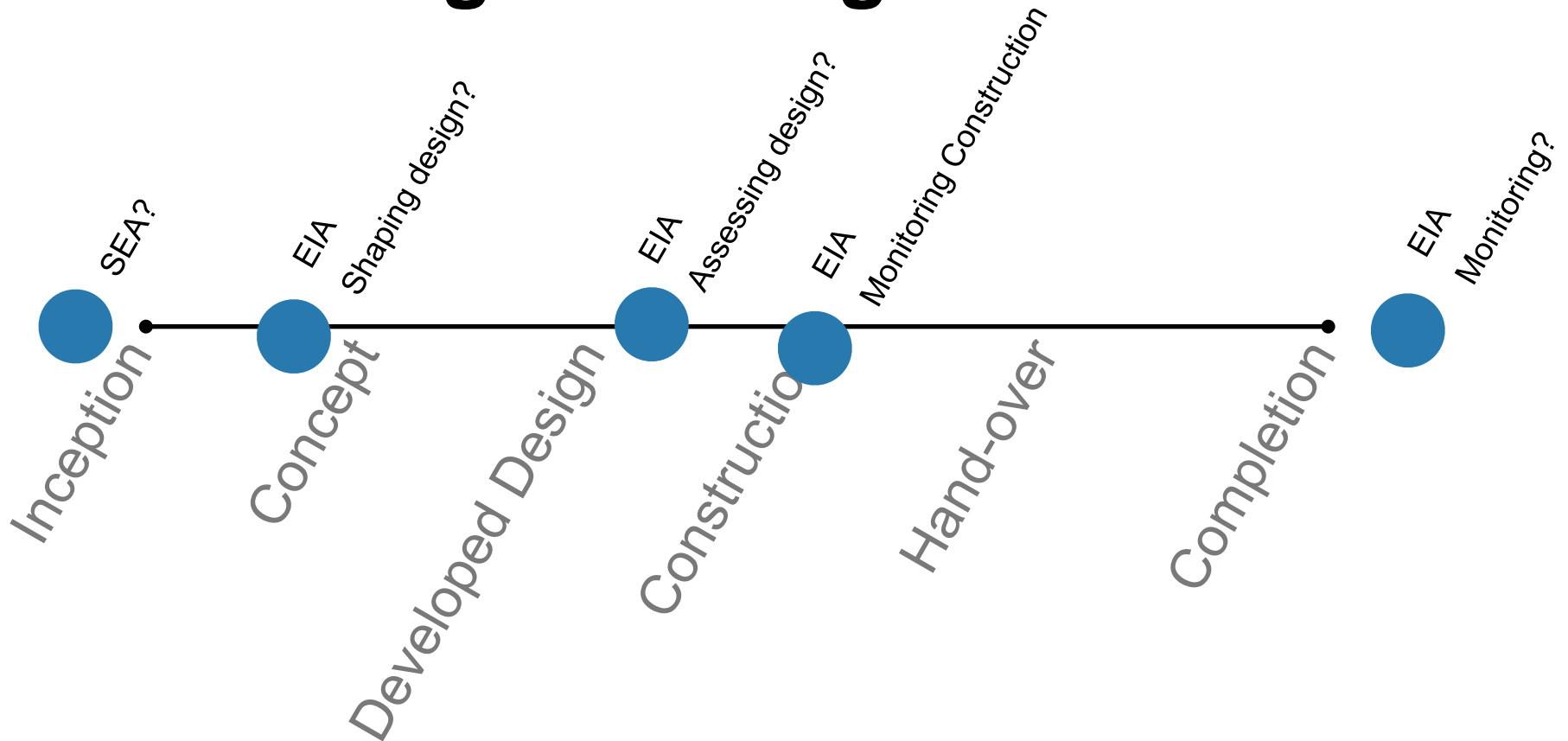
Structuring the Design Process



Rafiq Y, Beck M. (2008) *A decision support tool for multi-disciplinary conceptual design*. Structural Engineer, 8 January 2008, Vol86(1), pp37-42

Lawrence D, P. . (2013) *Impact assessment: practical solutions to recurrent problems and contemporary challenges*. 2nd ed. Hoboken, N.J.: Wiley.

Structuring the Design Process

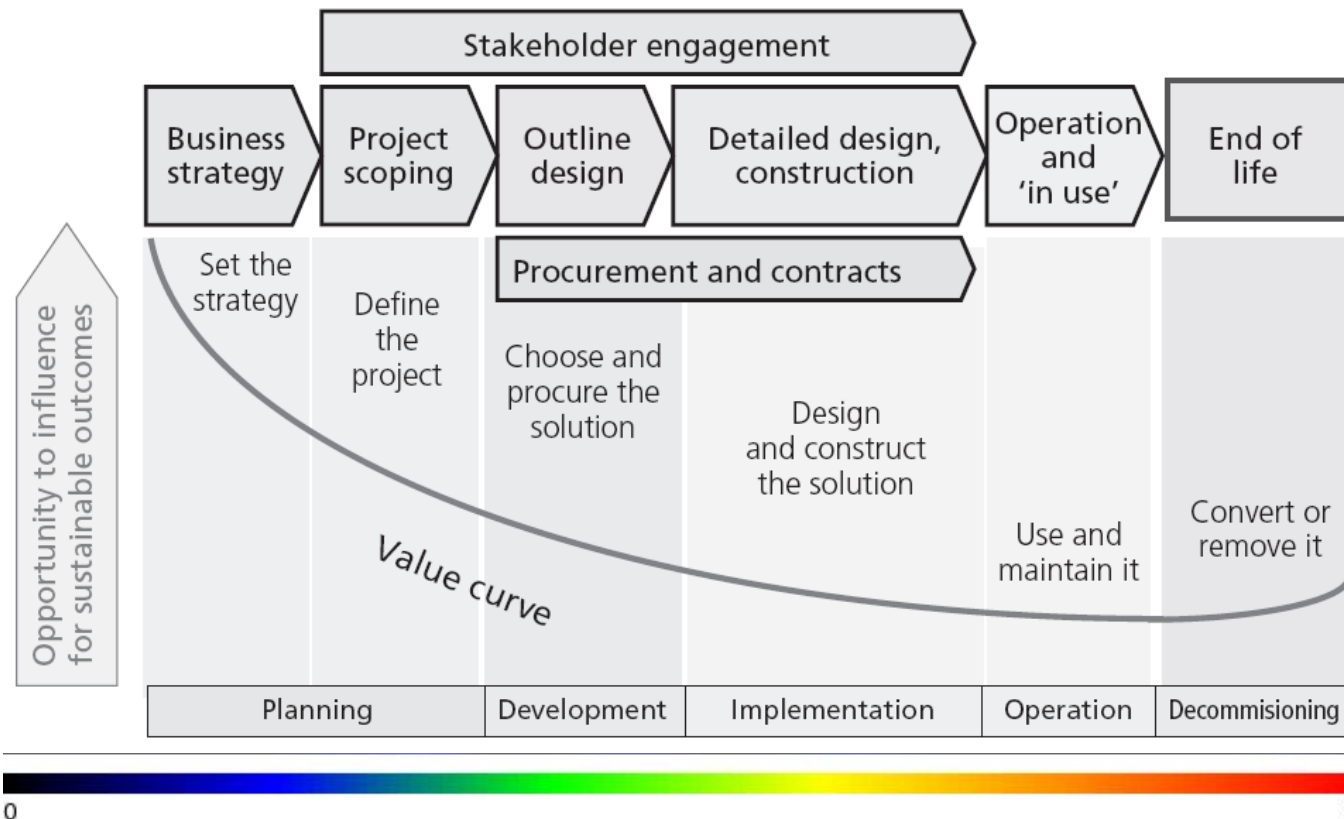


EIA and the Design Process

- If EIA is to become a design tool, we must first understand where it works at the moment, and where practitioners feel that it could work in the future.
- IAIA Members were surveyed between 1st and 21st of April 2015 (n=34)
- Respondents were asked about their experiences of IA in design.
 - 84% of respondents believed IA was used to inform the design, rather than the planning process.

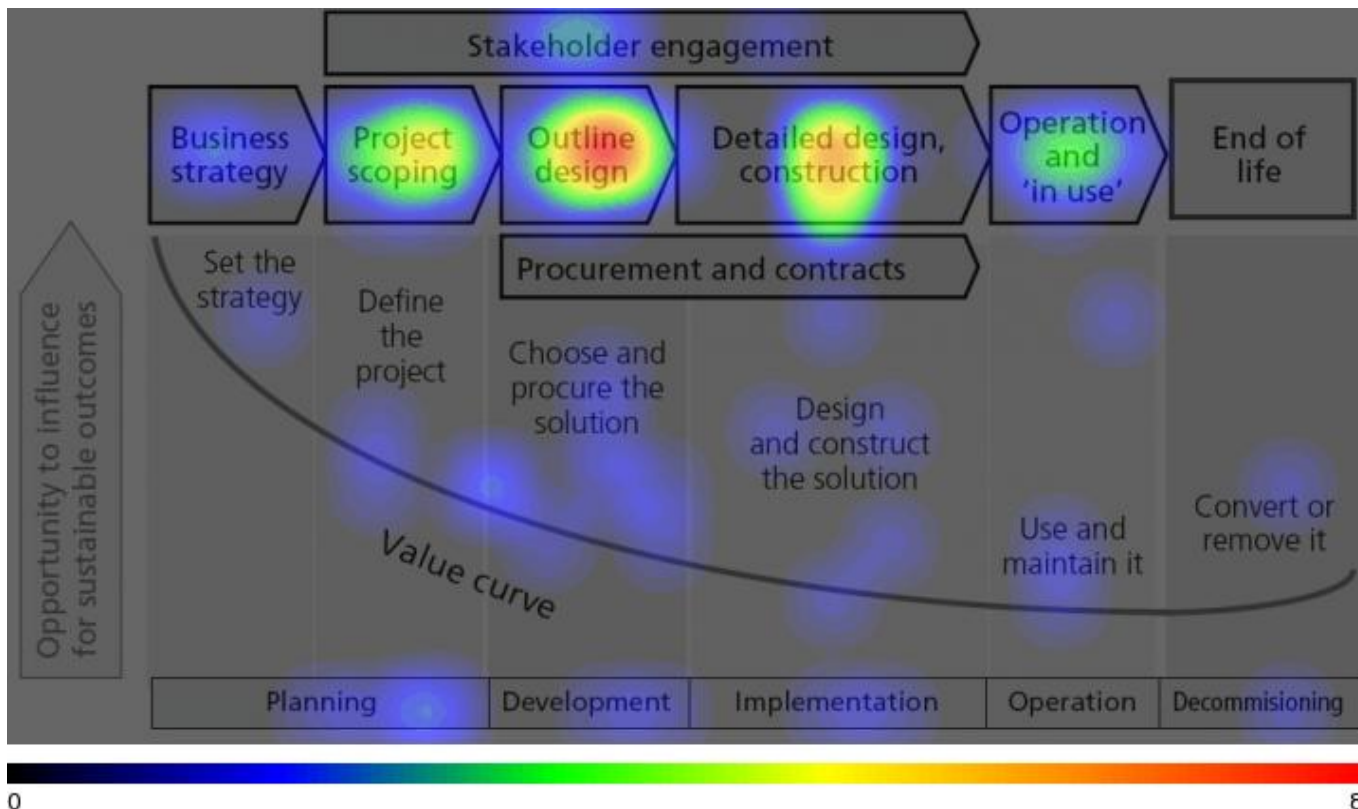
IAIA Survey Responses

- Where does IA integrate with the larger construction process?



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IAIA Survey Responses

- Where do practitioners work across the design process:
 - 85% in choosing/developing the conceptual design
 - 67% in scoping or defining the principles for a given project
 - 67% in detailed design
 - 15% in the strategic definition stage.
- Despite being seen as an ‘assessment’ tool, these responses indicate that practitioners are involved throughout the design process as it develops.
- This led to broader questions around how IA formally enters the design process in other projects

2. Simple IA: Learning for British Highway Projects

IMPACT ASSESSMENT AND UK HIGHWAY DESIGN

#IAIA15



IA in Highway Design

- Highway developments in the UK are designed according to the Design Manual for Roads and Bridges (DMRB).
- First introduced in 1992, now used across the UK.
- DMRB incorporates EIA throughout the design in a more structured way, but does it lead the design?



IA in Highway Design

- DMRB details the design process for highways across 16 volumes.
- Two of those are dedicated to the environment.
- **Volume 10 - Environmental Design**
 - Tells designers how to design environmentally sensitive structures
e.g. wildlife mitigation
- **Volume 11 - Environmental Assessment**
 - Details how EIA should be carried out on major highway projects.
 - Ensures the design meets legislative and best practices, while being consistent along the route.

Volume 0

Introduction and General Requirements

Volume 1

Highway Structures: Approval Procedures and General Design

Volume 2

Highway Structures: Design (Substructures & Special Substructures),
Materials

Volume 3

Highway Structures: Inspection & Maintenance

Volume 4

Geotechnics & Drainage

Volume 5

Assessment & Preparation of Road Schemes

Volume 6

Road Geometry

Volume 7

Pavement Design & Maintenance

Volume 8

Traffic Signs & Lighting

Volume 9

Traffic Control & Communications

Volume 10

Environmental Design

Volume 11

Environmental Assessment

Volume 12

Traffic Appraisal of Road Schemes

Volume 13

Economic Assessment of Road Schemes

Volume 14

Economic Assessment of Road Maintenance

Volume 15

Economic Assessment of Road Schemes in Scotland

IA in Highway Design

- Work is split in to three stages, with elements of the EIA developed alongside the design.
 1. Broadly defined route corridors
 2. Identify options along the preferred route
 3. Detailed design of the chosen route

Stage 1

Broad route outline
+ *environmental constraints*

Stage 2

Design options of preferred route
+ *advantages & disadvantages of route*

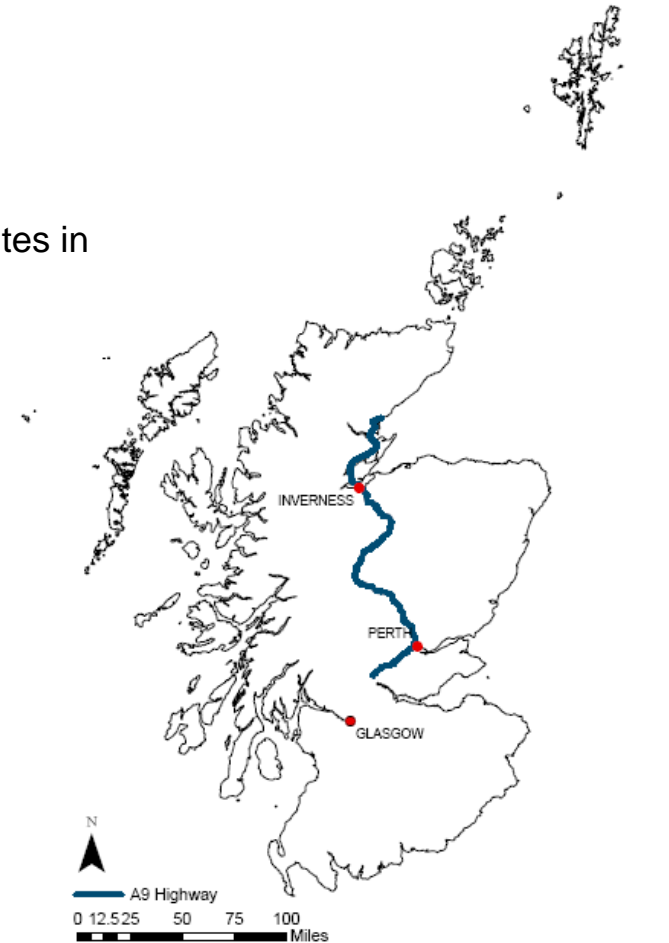
Stage 3

Defined preferred route
+ *published environmental statement*

'Modified' DMRB

A9 Highway Widening, Scotland

- A £3bn route, 400km road improvement project, crossing environmentally sensitive and now internationally protected sites in Northern Scotland.
- Upgrade is intended to reduce accidents on the route.



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The Courier (2012) *A dual carriageway section of the A9 in Highland Perthshire.*

<http://www.thecourier.co.uk/news/uk/latest-tragedy-adds-new-urgency-to-a9-dualling-campaign-1.52198>

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‘Modified’ DMRB

A9 Highway Widening, Scotland

- The A9 brings elements of the full EIA – normally completed in stage 3 – to stage 2.
- This is seen as ‘**extended scoping**’, *informing* the design stage while delivering early preparatory work for the EIA.
- While good practice, there are questions around whether this can be justified in projects where the funding is not secured.



3. Future Research

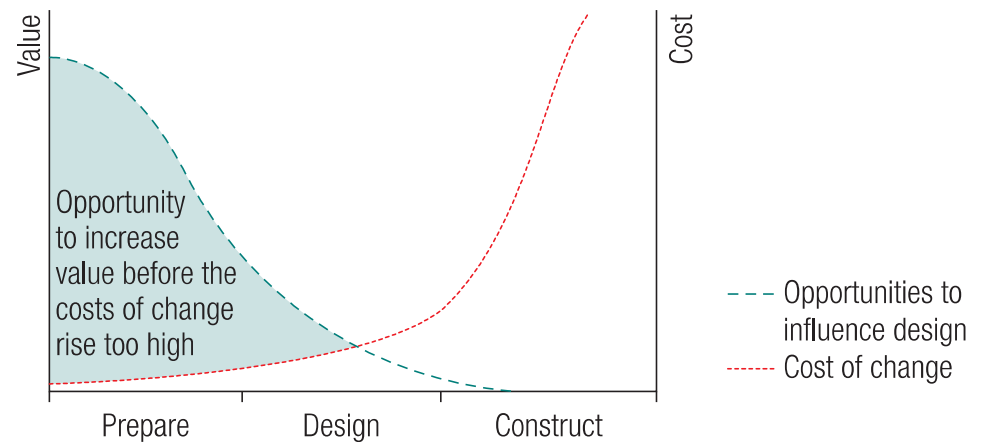
NEXT STEPS

#IAIA15



Opportunities for IA-based Design

- If EIA is to shape the design, it must act early to take advantage of the fluidity of the process.
- This may involve encroaching on existing working practices.
- IA Practitioners should take advantage of shifts to new data management techniques such as BIM to integrate themselves in the design process.



Barriers to IA-based design

- Building consensus among members of the design team will remain challenging: what is their definition of sustainability?
- EIA is still part of a legal process. Any attempts to change how it works must continue to comply with national legislation.

Thank you

Questions?

#IAIA15





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