A NATURAL CAPITAL BASED APPROACH TO INFRASTRUCTURE SITE SELECTION AS APPLIED TO TRANSPORT ROUTES

Eman Abdalhaq, Louis Gaillot, Inés García Sáez, Nic Kirkham

17th May 2018

www.cranfield.ac.uk

List of Contents

East West Rail - Central Section
Conditional Outputs Statement
East West Rail Consortium

Final Report

8 August 2014

ATKINS

JACOBS

East West Rail – Central Section

Engineering Summary Report

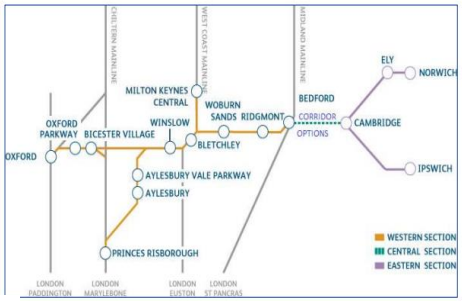
B22380FA – 0001

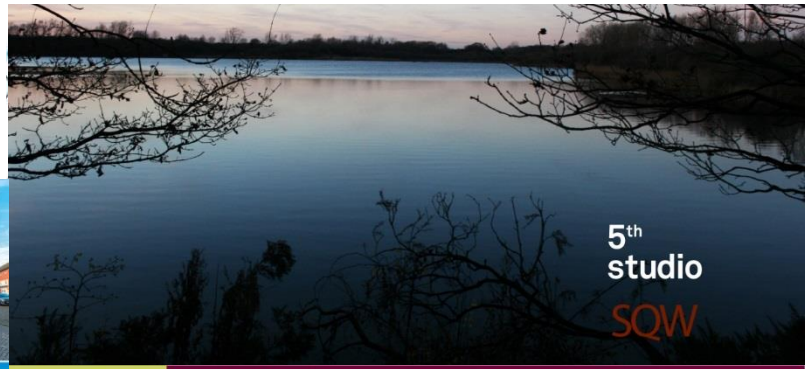
15 February 2016

Bedford Borough Local Plan 2035
Draft Plan for Submission

January 2018

Local Plan 2035
Planning for the future





HM Government

A Green Future: Our 25 Year Plan to Improve the Environment

PARTNERING FOR PROSPERITY:
A new deal for the Cambridge-Milton Keynes-Oxford Arc

National Character Area profile:

88. Bedfordshire and Cambridgeshire Claylands

Supporting documents

Introduction & Summary | Description | Opportunities | Key facts and data | Landscape change | Analysis

www.naturalengland.org.uk

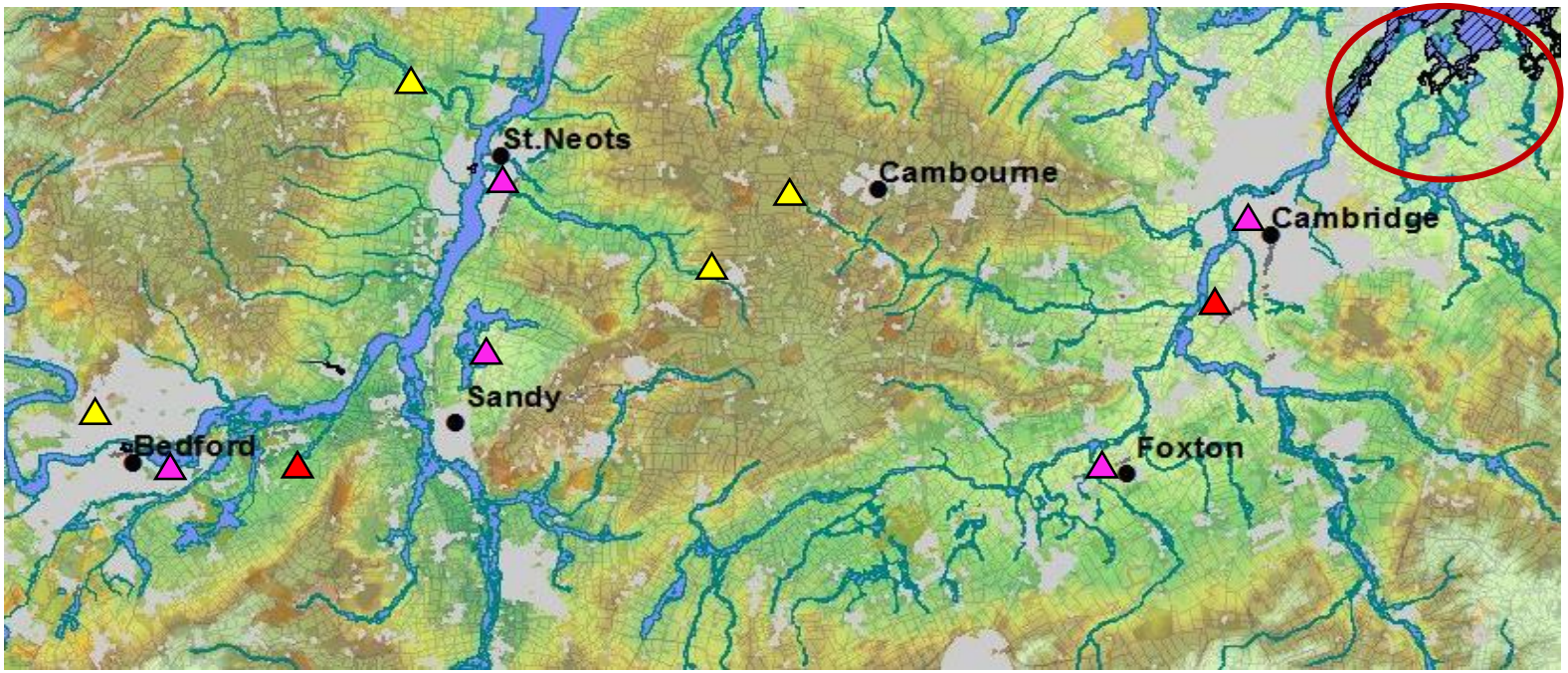
NATURAL ENGLAND

What is a Natural Capital?

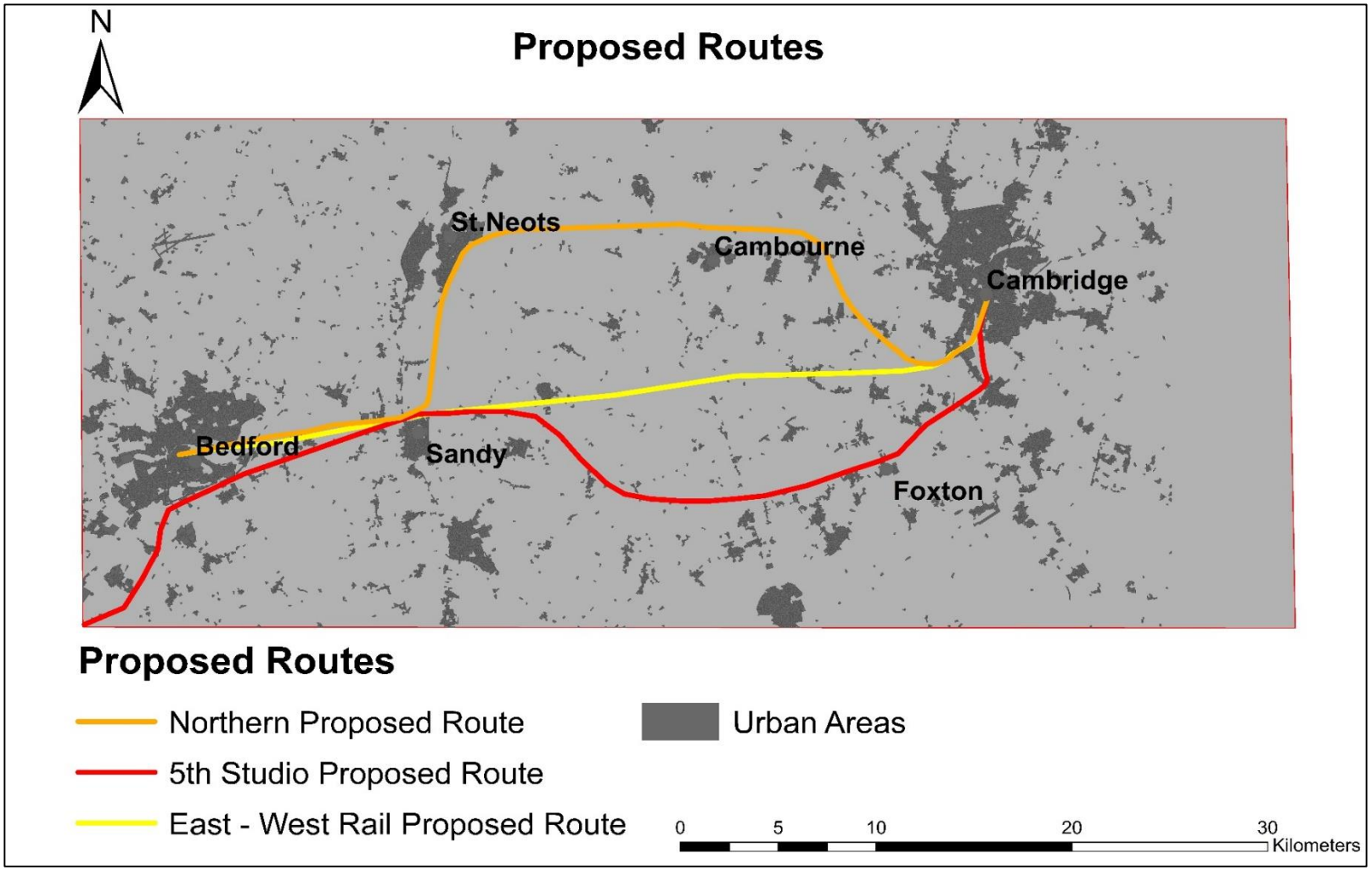
Decision Making Process

CONSTRAINTS

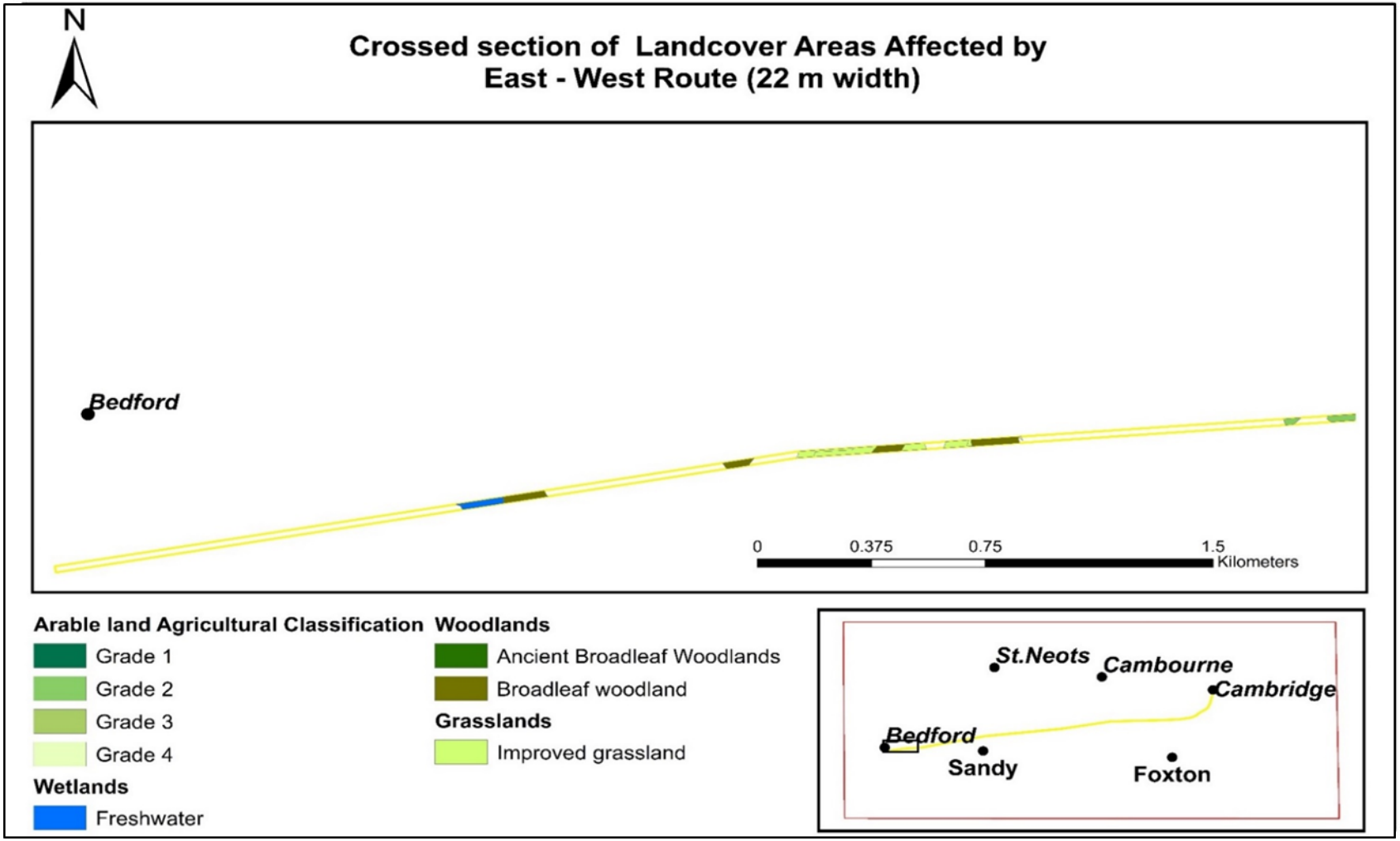
- **Environmental Assets:** SSSI, LNR, Land Covers
- **Flood Zones:** West of Cambridge
- **Topography:** Valley, Elevation…
- **Settlements:** Retail Park, Dwellings…
- **Existing Infrastructure:** Road, Rail…
- **Historic Monuments:** The Dovecote at Willington



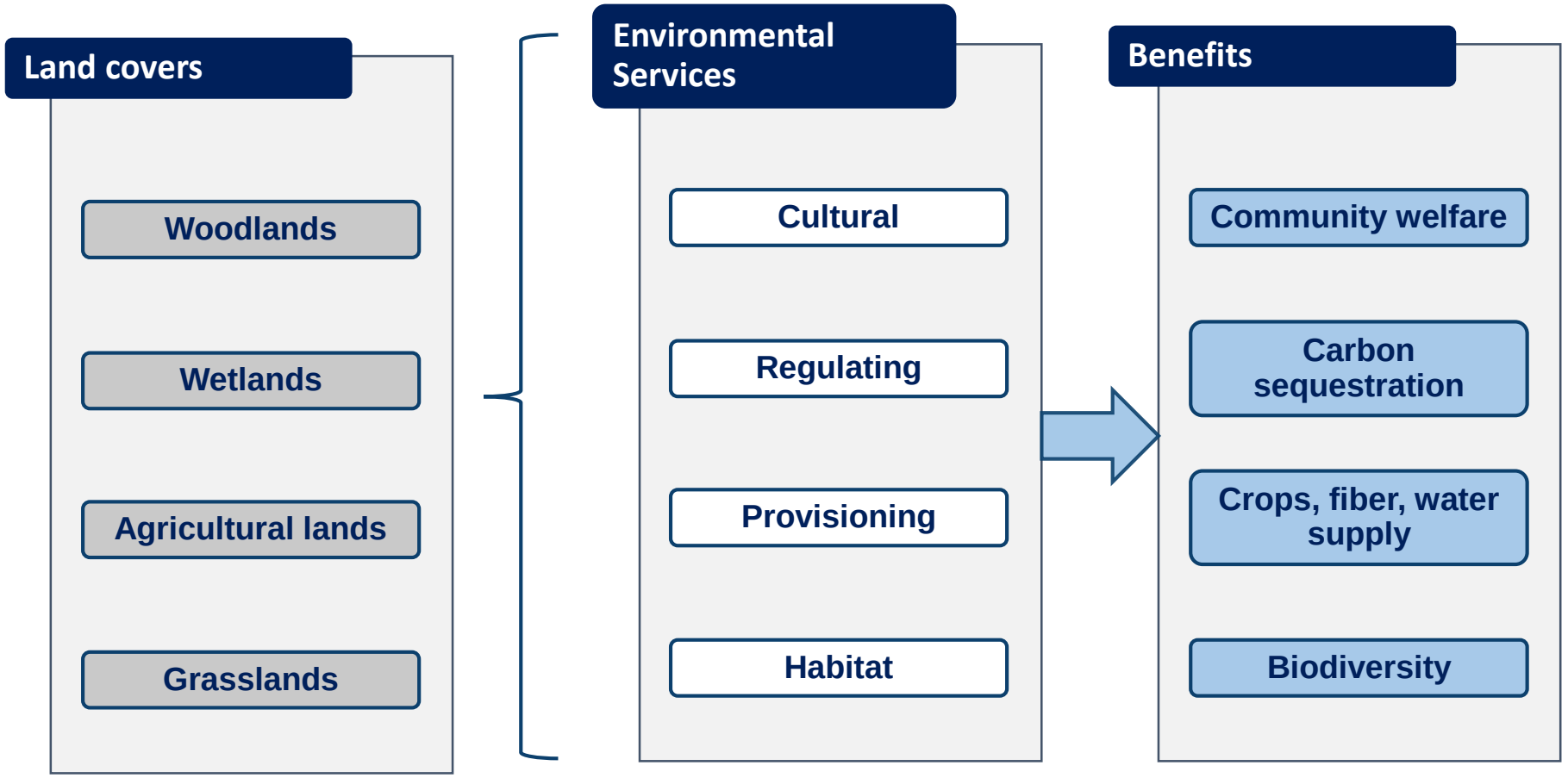
Map Construction



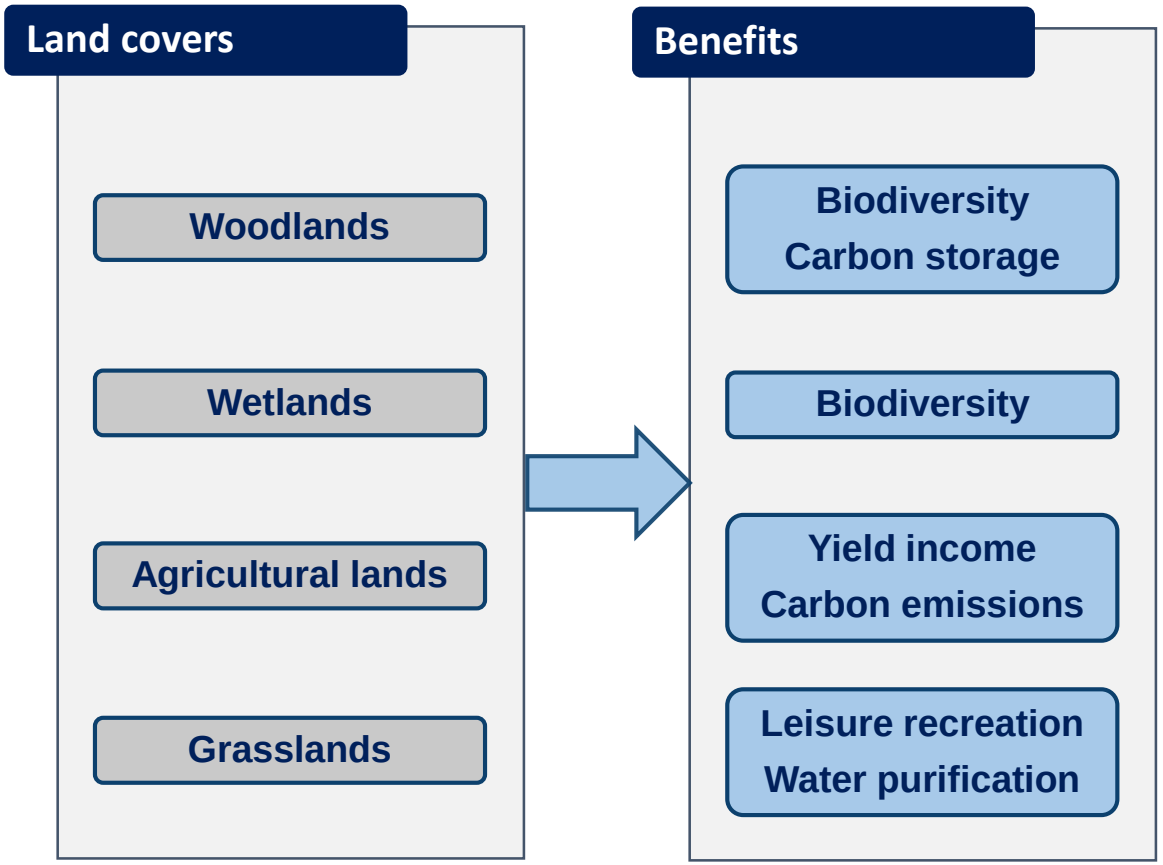
Map Construction



Environmental Evaluation



Environmental Evaluation



Engineering route assessment

	Journey Time (min)	Construction costs (bn£)	Number of buildings to demolish (within 30m)	Number of tunnels to build	Noteworthy facts
EWR	17	1.29	174	1	Shortest distance to run
NAR	21	1.14	113	0	Longest distance to build Crossing of crowded areas
5th Studio	21	1.33	36	2	Shortest distance to build Longest distance to run

Environmental route assessment

	Financial impact on woodland services (£m)	Financial impact on wetland services (£m)	Financial impact on grassland services (£m)	Financial impact on agricultural services (£m)	Noteworthy impacts on the natural capital
EWR	1.6	0.01	0.7	1.0	Impact on ancient woods Impact on rich arable lands Low operation emissions
NAR	1.1	0.03	0.3	2.0	Biggest natural impact Construction emissions Air particles for population
5th Studio	0.8	0.08	0.6	1.4	Lowest natural impact Low construction emission Operation emissions

Limitations of this financial assessment

- Annual financial values capitalized only towards 2030.
- Railway impact assessed for a particular 22m-wide line and no further.
- Due to the fragmentation of lands, the impact may be greater (notably for biodiversity and welfare services).
- The number of site dissections and the variety of their importance prevented a relevant method to be drawn.

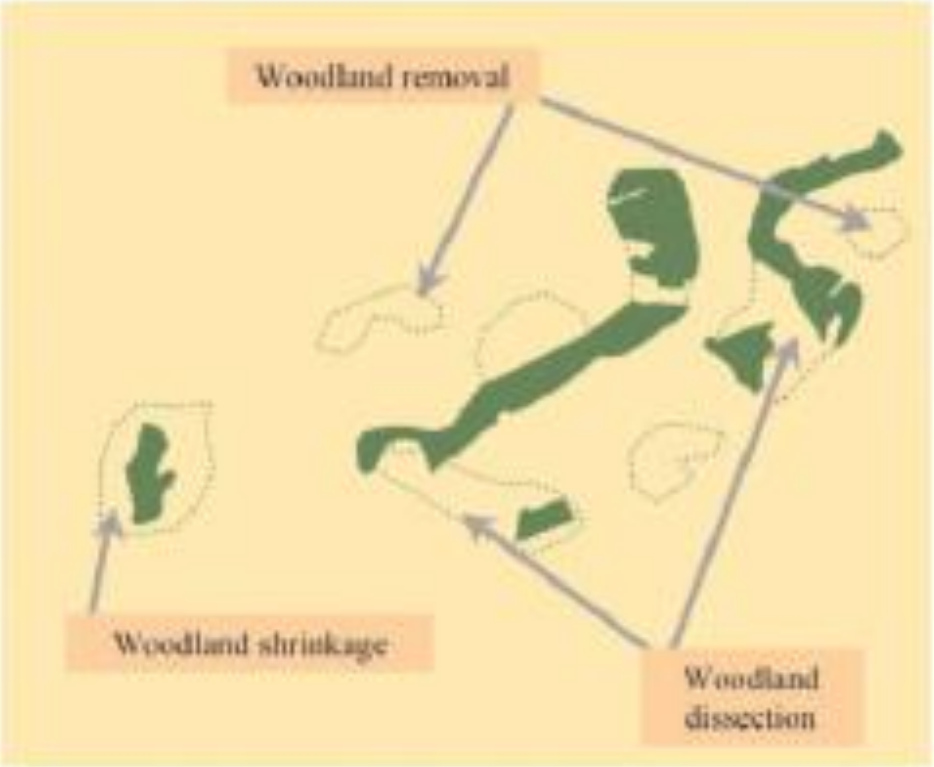
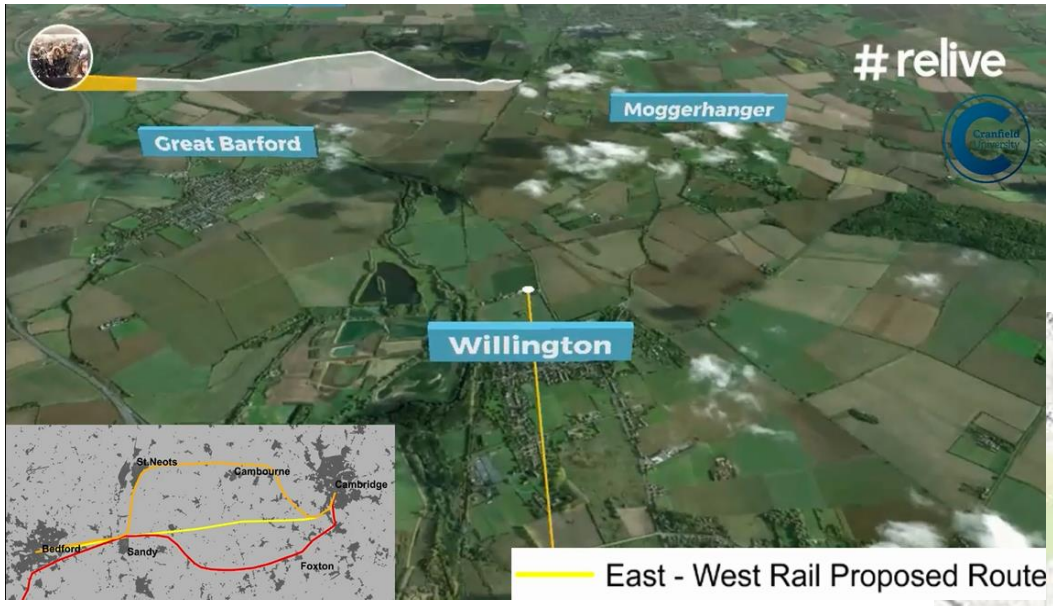


Figure : Key elements of woodland fragmentation (British Forest Landscapes, 2006)

Investment Opportunities: DECIDER

- Distribution
- Education
- Creation
- Interlinkage
- Development
- Expansion
- Regeneration

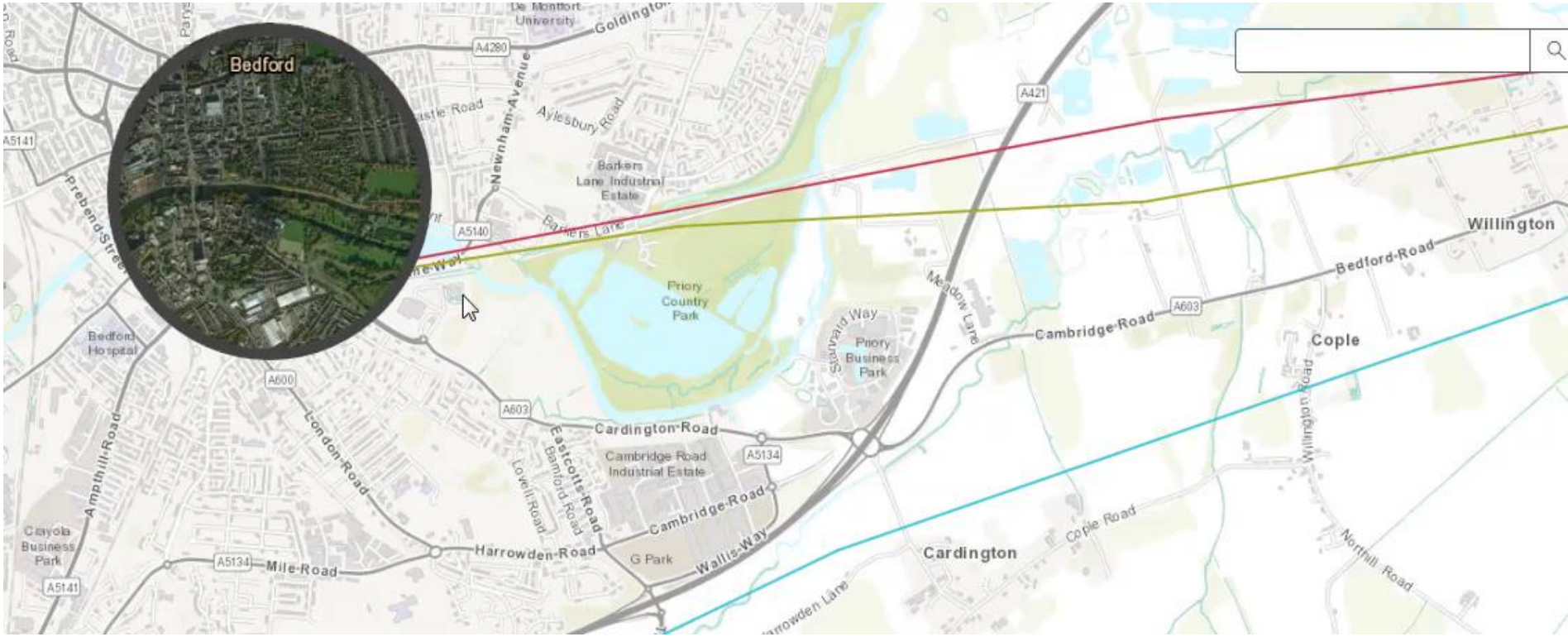
Technological Opportunities: Spy Glass and Flyover



Flyover (#relive)

Spy Glass (Esri)

Technological Opportunities: Spy Glass



Technological Opportunities: Flyover

Cranfield University

www.cranfield.ac.uk

T: +44 (0)1234 750111

@cranfielduni

@cranfielduni

/cranfielduni