



Green Transport Corridors

Managing for ecosystem services, resilience and operational efficiency

Clare Warburton, Senior Specialist, Sustainable Development

Project Aims

A high-speed train, white with a yellow nose and purple accents, traveling on tracks through a green landscape. The train has "EAST COAST" written on its side.

Ecological connectivity and ecosystem services

A wide, multi-lane asphalt road stretching into the distance under a cloudy sky, with green fields on either side.

Transport infrastructure resilience

Win win opportunities

Verges in England

- Up to 400,000 ha road and rail verges
- Rural road verges alone home to 700 species (nearly 45% of native flora)
- 87 threatened with extinction (Plantlife 2015)



Network Rail + Highways England Challenges



A Partnership Project Involving

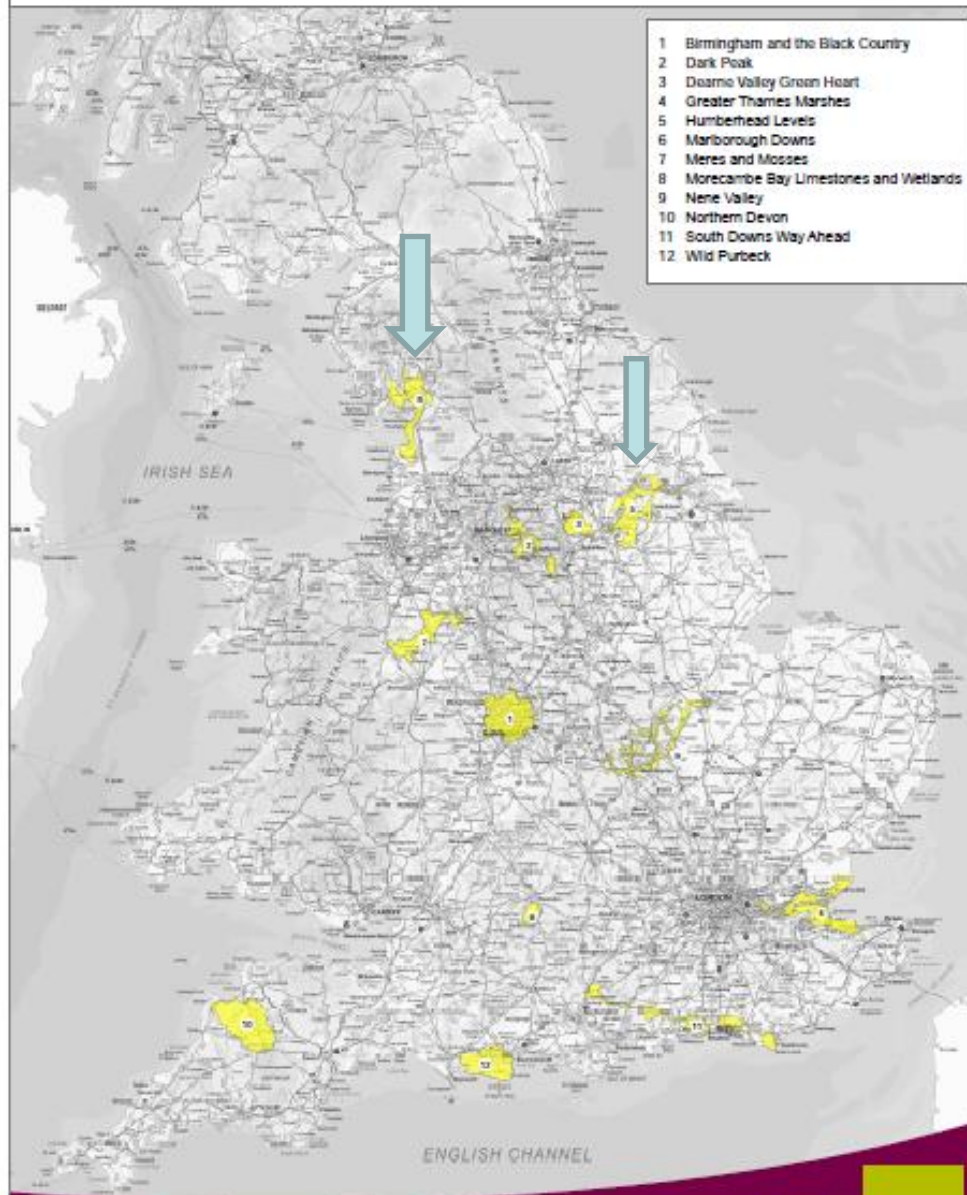


**Humberhead Levels
NIA Partnership**

**Morecambe Bay
Limestones & Wetlands
NIA Partnership**



Nature Improvement Areas



Project Phases

- **Phase 1:**

- Literature Review: how transport's soft estate has enhanced green infrastructure, ecosystem services and resilience

<http://publications.naturalengland.org.uk/publication/5752930789490688>

- Options appraisal and opportunity mapping

<http://publications.naturalengland.org.uk/publication/5485064148221952>

- Green Bridges literature review

<http://publications.naturalengland.org.uk/publication/6312886965108736>

- **Phase 2: Jan 2015-2017**

- Trial management
- Impact on network resilience, biodiversity and ecosystem services

Management Options



Woodland/Scrub



Woodland/Scrub



Biodiversity benefits	Ecosystem Service Benefits	Infrastructure resilience benefits	But consider...
Woodland/scrub species	Air and water quality regulation	Bank stability in some locations	Tree and leaf fall
Buffering surrounding woodland	Carbon sequestration	Cooling/shading – service stations, railway stations	
Mosaic approach with varied vegetation height	Cultural services – noise and visual screening	Reduce trespass	
	Biomass	Windbreak if at safe distance	

Grassland



Grassland



Biodiversity benefits	Ecosystem Service Benefits	Infrastructure resilience benefits	But consider...
Connectivity between grasslands	Pollination	Enhanced safety – reduced tree and leaf fall	Specific species eg bats, barn owls
Mosaic approach	Biomass	Cost effective – reduced line closure costs	Priority/ancient woodland
Grassland species	Cultural service – opens up views - reduced driver stress	Potential to reduce accidents due to wildlife	No net loss of woodland

Wetland



Wetland



Biodiversity benefits	Ecosystem Service Benefits	Infrastructure resilience benefits	But consider ...
Wetland species	Water quality/water management regulation	Reduced flood risk	Soft estate or adjacent land
Buffering/connectivity with other wetland habitats	Biomass		Maintenance
Habitat creation	Carbon sequestration		

Win Wins



Combine Belgium Visit



- Overcoming barriers
 - classification of waste;
 - access to road and rail-side locations
 - the availability of anaerobic digesters near to harvesting sites.

Phase 2: 2015-2017



**Humberhead
Levels
NIA Partnership**



**Morecambe Bay
Limestones &
Wetlands NIA
Partnership**



**Yorkshire
Wildlife Trust**

Phase 2: 2015-2017



- Establish trial management in opportunity areas in each NIA to ground-truth
- Shape & refine decision-making and management tools for transport soft estate staff
- Inform roll-out of the approach across the wider transport soft estate network



Trial Management – example Poterric Carr



- Managing tree and scrub and improving botanical diversity of the grassland
- Reducing shading of the drain by removing trees and scrub from drain sides.
- Linking to other site based woodland management with biomass initiatives
- Creating small gaps in the tree/scrub layer to connect grassland on the soft estate with grassland on the reserve



Biomass Potential of Strategic Road Network in England



- Woodland component of the SRN 11,900 hectares
- Available timber 35m cubic metres
- 800,000 tonnes of woodchip material
- Energy value 2.8 million megawatt hours
- Could generate a substantial income but against these figures need to offset harvesting and management costs





Next Steps

- Report in 2017 on the outcomes from the phase 2 trial sites
- Potentially look to explore funding to extend trials



Questions
clare.warburton@naturalengland.org.uk

