Evidence-based Development of a Dormouse Bridge to Prevent Habitat Fragmentation

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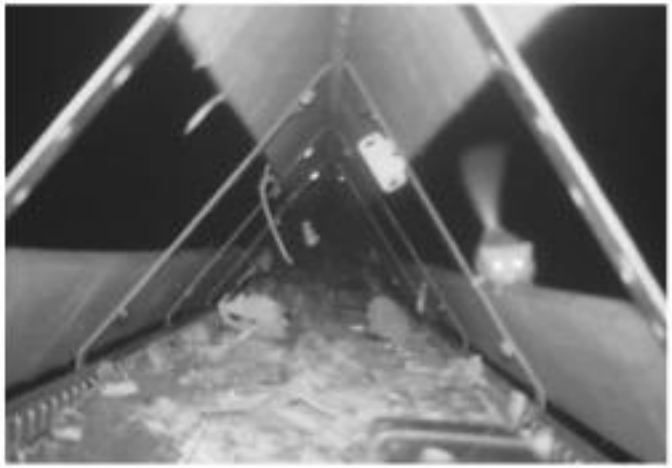

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Introduction

- Animex/PTES partnership
- Review of historic dormouse bridges
- UK trial of Japanese design
- Design evolution
- Best practice

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Why Dormouse Bridges?

- Preference for arboreal movement
- Habitat fragmentation: limits access to food, reduces strength of metapopulations
- Habitat fragmentation: highways
- So… maintaining arboreal connectivity is key!

Dormouse Bridges – A Review

- Lack of behaviour-led design
- Lack of monitoring
- Cost
- Longevity
- Lack of consideration on a landscape scale
- Bad press

➢ A need for evidence-based, affordable and reliable alternatives to prevent habitat fragmentation

The Telegraph

Repairs to £190k motorway bridge for EU-protected dormice could cost £63k

Daily Mail

What a waste! Taxpayers foot £190,000 bill as bridge opens over busy bypass... for DORMICE

By DAILY MAIL REPORTER
UPDATED: 07:40, 25 August 2010

Green Bridges

- Habitat connectivity for a range of species
- A21 in Lamberhurst, Kent (2006)
- Ecologically valuable but expensive:
  - Design, installation and on-going maintenance
  - Not viable on smaller projects
  - Limits possible number of bridges installed per project


Pat & Mary Morris


Niels Verheul

Suspended Ropes & Wires

- Wire or rope 'tightrope' attached to two poles within road-side habitat
- Mimics branches
  - Lack of research & post-installation monitoring
  - Predation
  - Longevity

Natural Aerial Connectivity

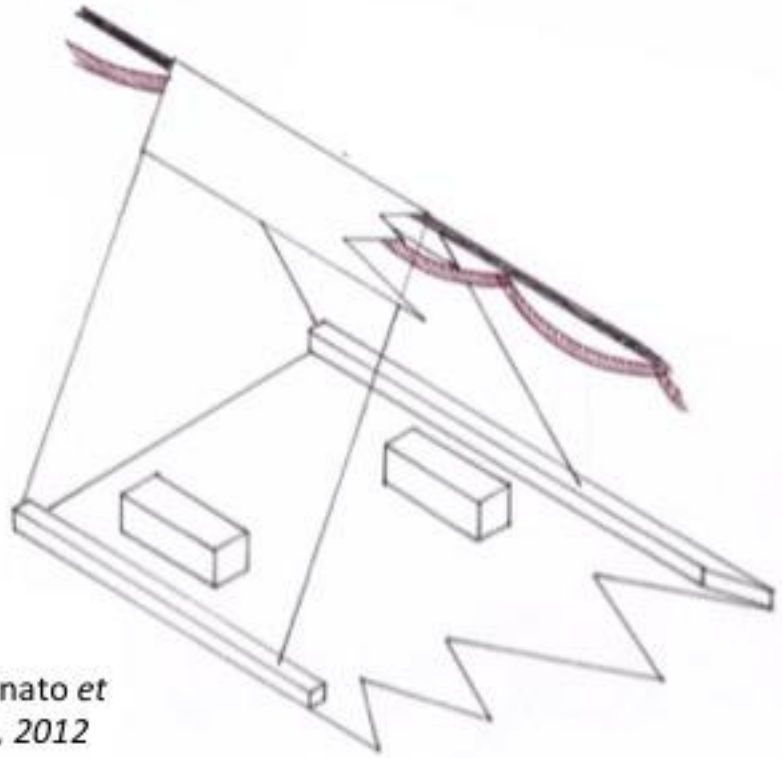
- Can work well on smaller gaps, but…
- Potentially temporary solution:
  - Planting large trees - risks: mature establishment vs time
  - Risk of damage – construction & operation
  - Disease
  - Management regime – communication - perpetuity not guaranteed

Dormouse Bridges

- Wire mesh tubes (sometimes filled/covered) suspended on cable
- Based upon captive-bred Dormouse study
  - Lack of proven design & monitoring
  - Access points
  - Breaks between uprights
  - Poor location
  - Ongoing maintenance
  - Lack of longevity
  - Cost

Japanese Dormouse Bridge

- Suspended on cable, aluminum roof, mesh floor, rope runway, shelters
- Used 800 times in three months by four mammal species
- Preference for arboreal crossing: road only 10m wide!
- Award-winning!



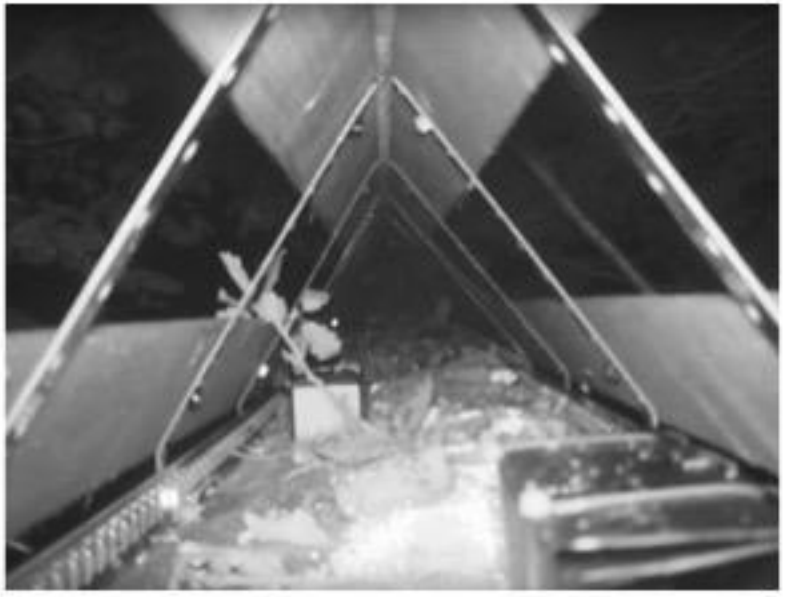
Minato *et al., 2012*

Ian White

UK Trial - Animex/PTES

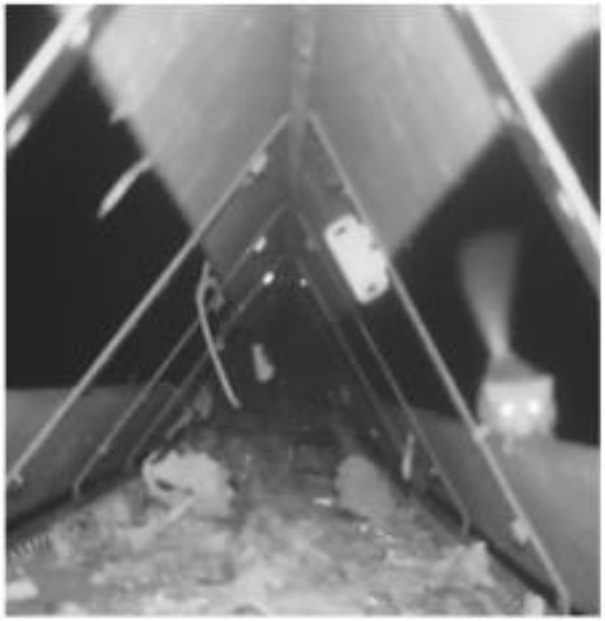
- Adapted Japanese design
- Isle of Wight: known Dormouse populations
- Aims:
  - ➢ Use by Hazel Dormouse?
  - ➢ Preference for crossing habitat gap on bridge or ground?

- 30 metre habitat gap (approx. UK dual carriageway width)
- Reptile fencing
- Cameras on bridge and ground
- Installed 2015, monitored active season 2016



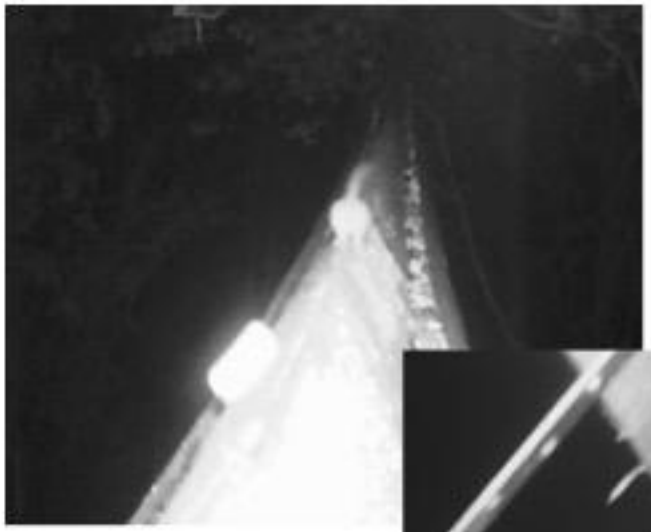
UK Trial - Results

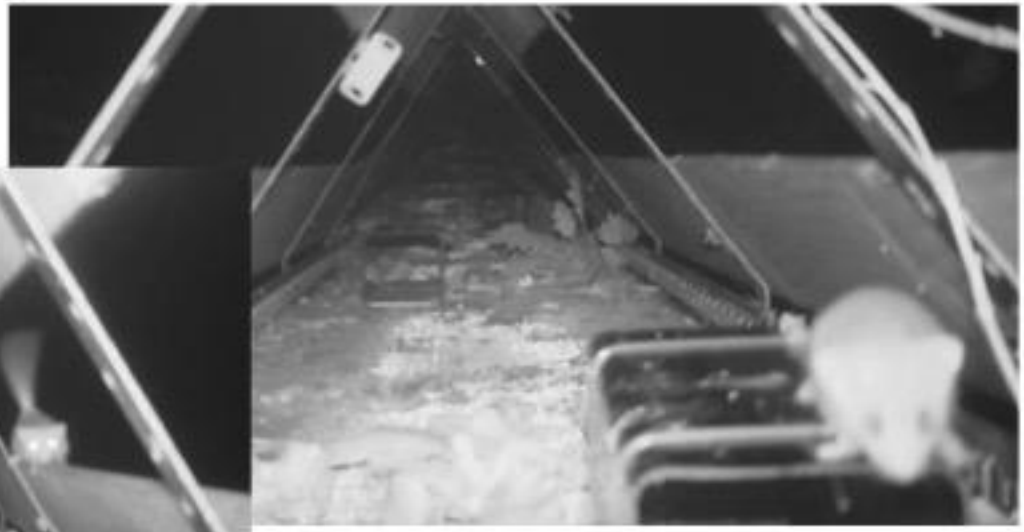
- Dormouse use of bridge: nine hours post-installation!
- 30 individual Dormouse events on bridge vs. three on ground
- 94 individual Red Squirrel *Sciurus vulgaris* events on bridge vs. 44 on the ground (night only)
- Clear preference for use of bridge

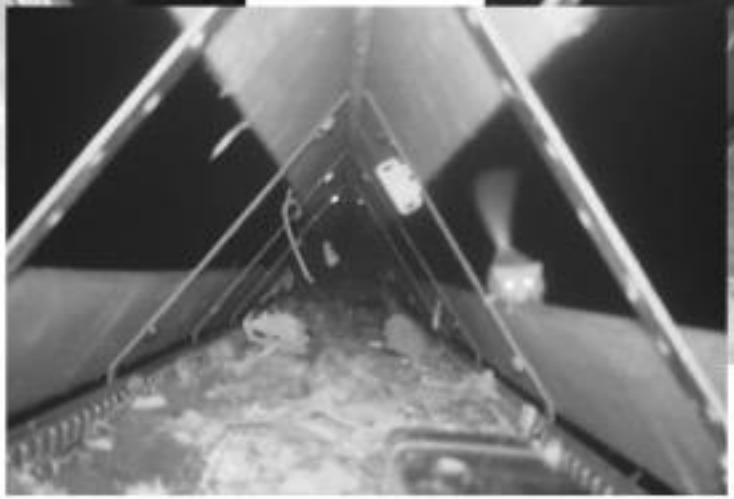


Why Did It Work?

- Positioning is key
- Multiple access points
- Design – extension of natural habitat



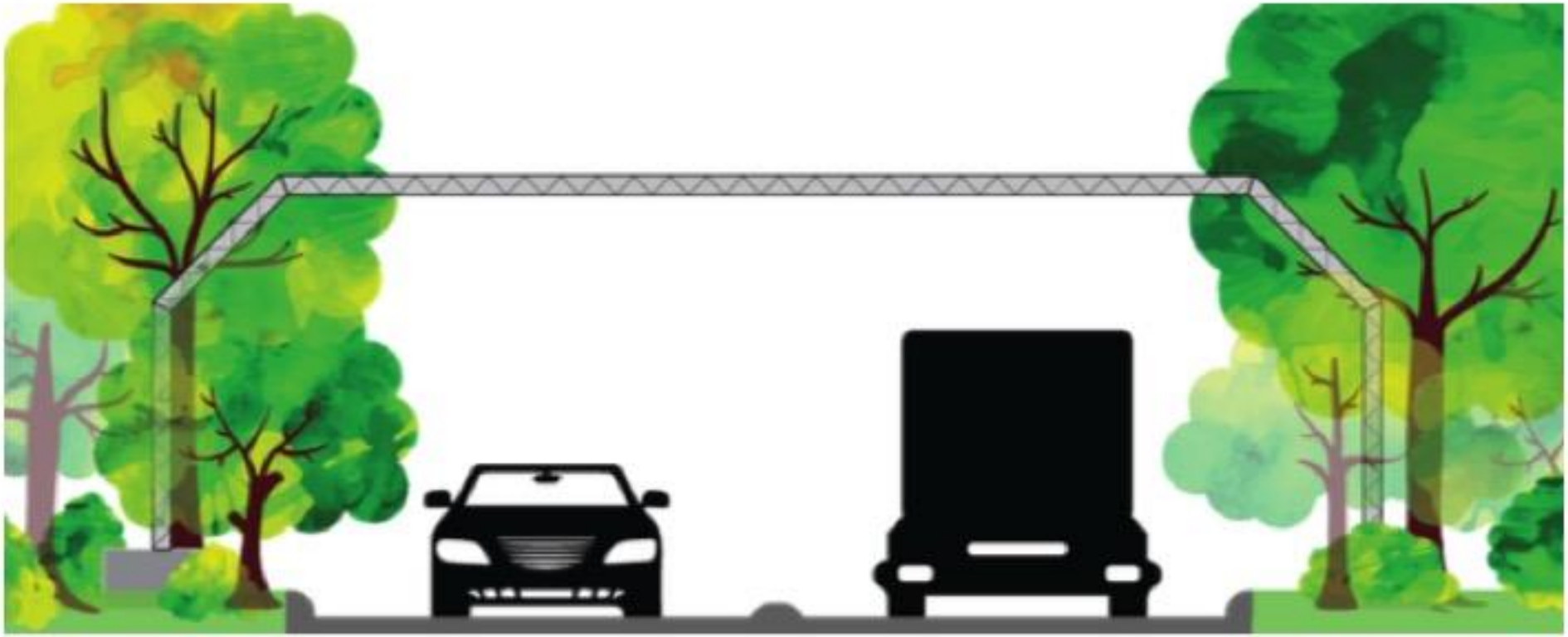




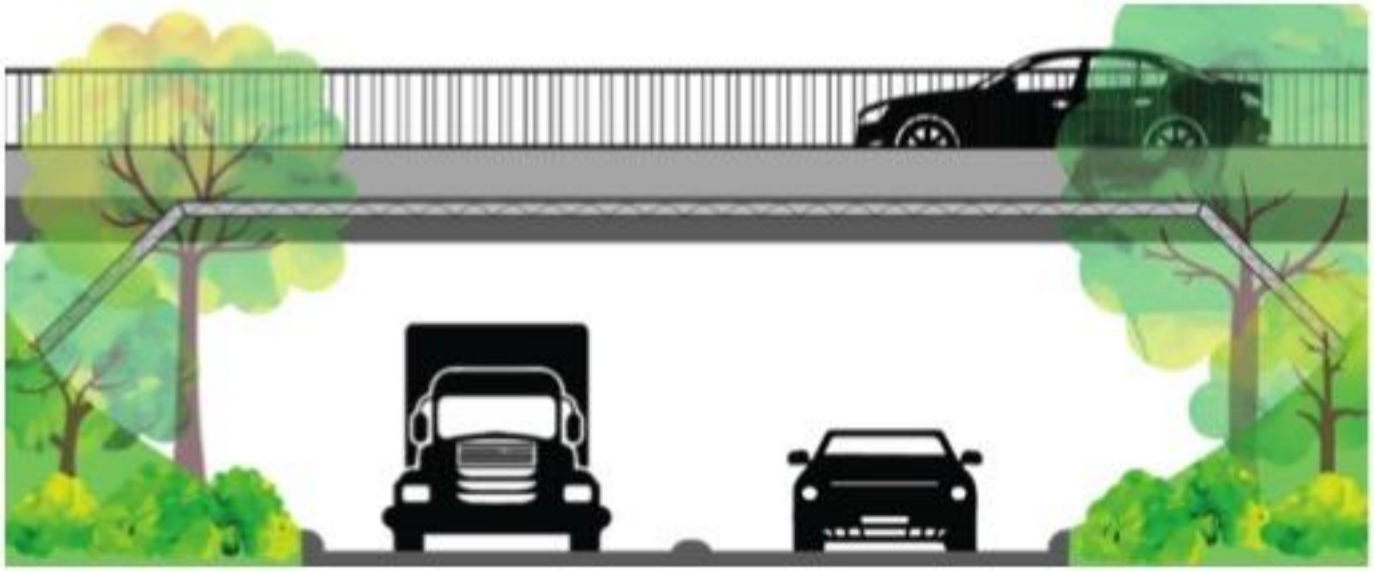
Progression of the Design…

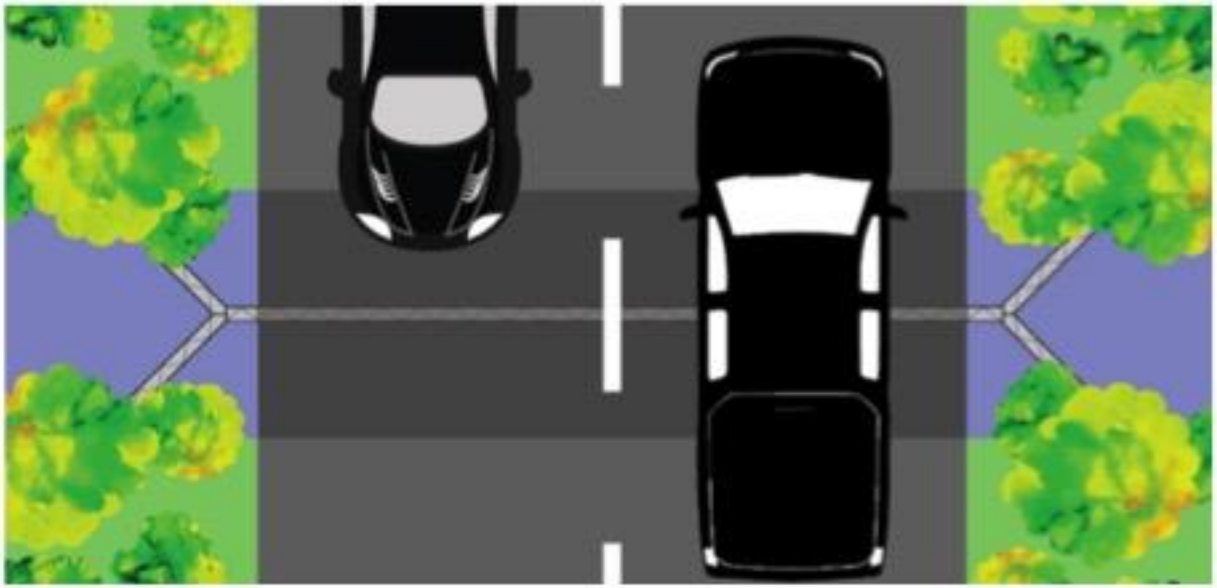
- Tried and tested, affordable, Highways Agency compliant
- Project compliance with planning policy and wildlife legislation
- Longevity: mitigation in perpetuity
- Standalone fixed structure or retrospectively-fitted (bridges or culverts)
- Now progressing on a range of projects:
  - Small scale housing schemes with hedgerow severance
  - Roads dissecting woodland
  - Smart Motorway Schemes

Standalone Bridge



Retro-fitted Bridge





Best Practice Considerations

- **POSITIONING IS KEY!**
  - Population hotspots
  - Within a habitat network (or a newly created/enhanced network)
- Part of a wider landscape scheme: connectivity
- Post-completion monitoring to inform any updates to habitat management schemes
- Guidelines available

Animex *Wildlife Bridge®*
BEST PRACTICE GUIDELINES

Post-installation Monitoring and Management

The **Animex** *Wildlife Bridge®* provides a tried and tested method of connecting fragmented dormouse habitat. Long-term population monitoring and a reactive landscape management scheme are, however, key to maintaining the optimal value of the bridge in the future. Please note that every site is different and therefore this guidance should be considered generic; please contact us should you require site-specific advice.

Population Monitoring

Implement a programme of post-installation population monitoring once the bridge has been installed. This will determine whether the dormouse population remains present within the habitat network adjacent to the bridge.

The **Animex** *Wildlife Bridge®* is tried and tested – our trial illustrated that if dormice can find the bridge they are happy to use it. By adhering to our best practice guidelines associated with the positioning of your **Animex** *Wildlife Bridge®*, the bridge will be installed in optimal and connected habitat, but the habitat quality needs to remain high to ensure continued use in the long-term. Populations are best monitored by checking the wooden dormouse boxes introduced to the site during the bridge installation.

Animex *Wildlife Bridge®*
BEST PRACTICE GUIDELINES

The **Animex** *Wildlife Bridge®* provides a tried and tested metho
fragmented dormouse habitat. The bridge can be installed eith
to an existing structure such as a road bridge/gantry or throu
positioning is key to its success on any project – if it is not
limited, if any, value.

The following best practice guidelines will ensure opti
dormouse bridge to an existing structure.

Please note, however, that every site is different and thr
please contact us should you require site-specific ad
extensive details of habitat creation and manageme
should also be consulted (please refer to the Dormou

Positioning is Key!

- Assess your Phase II Survey data – does
hotspots?
- If retrofitting the wildlife bridge to ar
location is under the parapet, as this v
- Consider the scheme within a wid
connectivity both within the site an
- Aim to position both ends of the
of the bridge be further enhance
- Aim to 'funnel' dormice to the
network (including but not li
strategy?
- The wildlife bridge must extend into the surrounding ve
it is retrofitted to. Positioning this 'connection' element at leas
at an angle, will allow dormice suitable access points at different heights ac
- Ensure the connecting ends of the wildlife bridge do not exceed the height of vegetation – i
vegetation is too low and the wildlife bridge height cannot be reduced, include planting of taller
vegetation adjacent to the bridge, then gradually grade this down to the height of the surrounding
vegetation.

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Thank You!

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