Balfour Beatty VINCI Working in partnership with HS2

La biodiversité sur HS2

Conférence dédiée au triptyque éviter/réduire/compenser – 21/06/2022

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HS2 overview

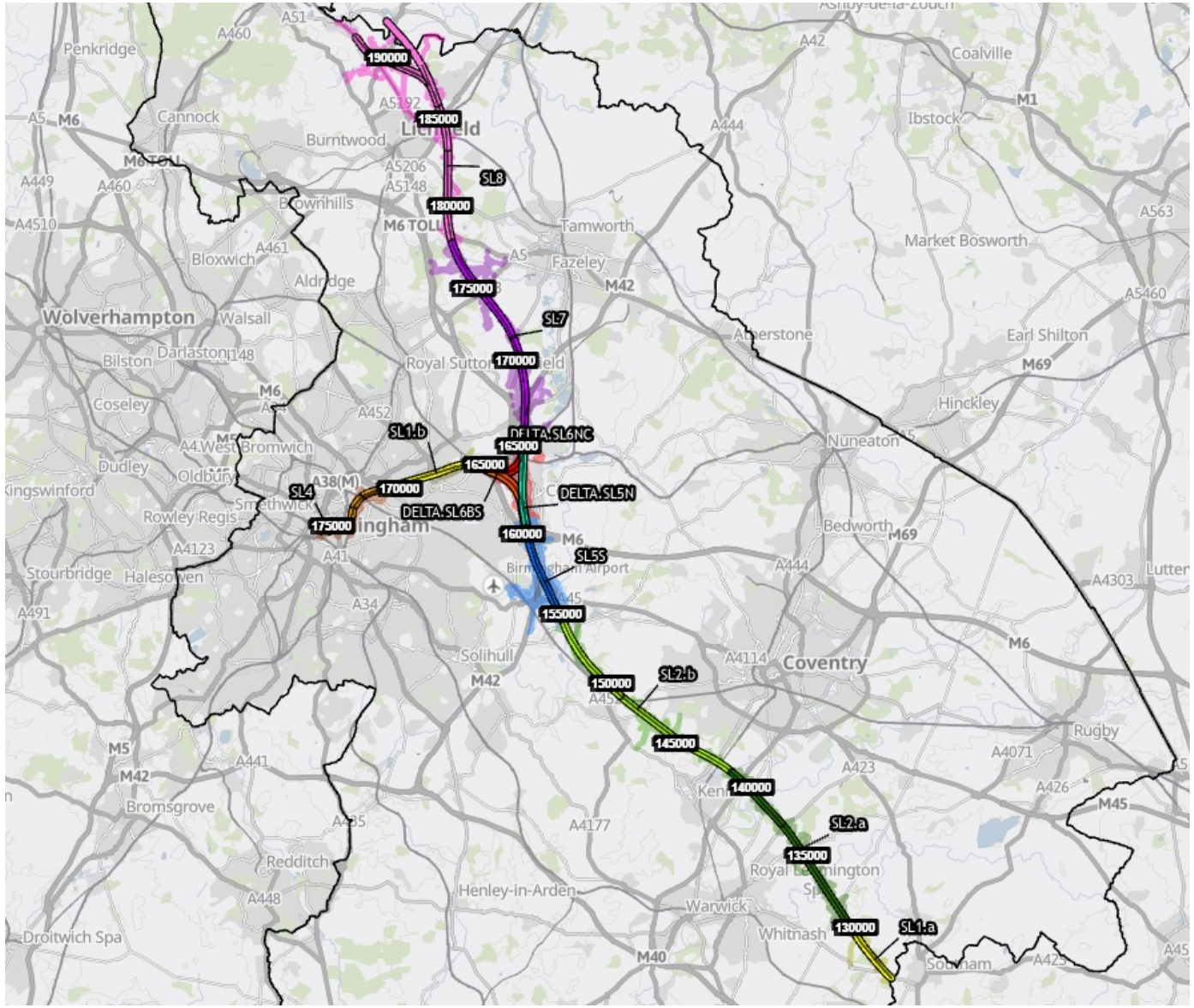
From London to Birmingham and beyond

- Destinations served by HS2
- HS2 line (Phase One – Completed 2026)
- HS2 line (Phase 2a – Completed 2027)
- HS2 line (Phase 2b – Completed 2033)
- HS2 services on existing network

Based on current indicative train service specification.
Final HS2 timetable subject to consultation.

Sublots

- SL0: Routewide activities
- SL 1.a and 1.b
  - Tunnels
- SL 2 and 5S
  - South of Birmingham
- SL 4
  - Inside Birmingham
- SL 5N and 6
  - Delta junction
- SL 7 and 8
  - Link to West coast mainline



Some figures on Area North

Contrat Génie Civil : N1&N2 : £ 6 Mds
Montant Travaux Environnementaux - N1&N2 : £ 350 M

Budget Design Environnement - N1&N2 : £ 20 M
Equipe Environnement Design – Construction : + 200 ETP

1403 assets

2 bored tunnels

5 green bridges

35 cuttings

62 overbridges

28 underbridges

43 viaducts

62 embankments

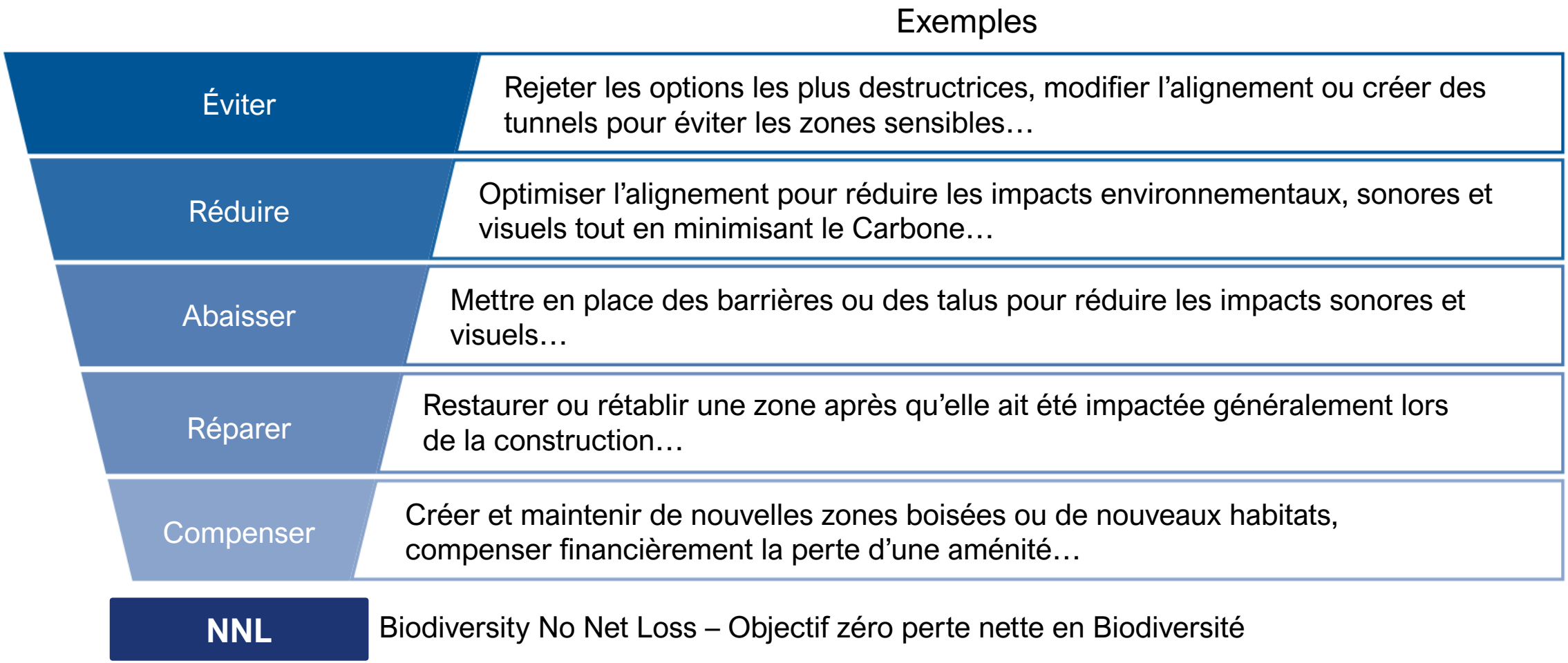
Obligations en Protection de la Biodiversité

"The Proposed Scheme will seek to achieve a no net loss in biodiversity at a route-wide level as far as reasonably practicable."
ES Volume 1

In order to demonstrate progress towards this objective, habitat losses and gains will be measured using a modified version of the Department for Environment, Food and Rural Affairs' (Defra) biodiversity offsetting metric.

No Net Loss is achieved when bio diversity gains
match biodiversity losses
such that there is no overall reduc tion in the type, amount or condition
of biodiversity over area and time

Protéger la biodiversité : les principes



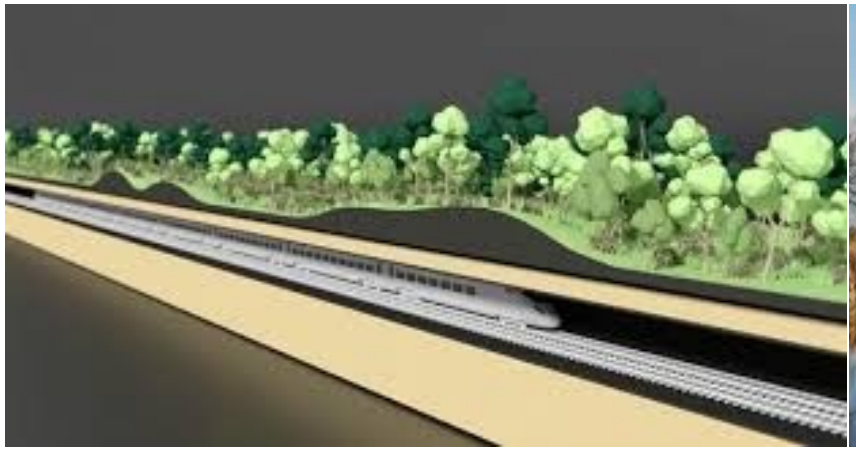
Protection de la biodiversité durant le Design

- Discipline and Project Designers share design concepts prior to development of Federated Models allowing early engagement.
- Ecological requirements for species and habitats integrated into design and updated on an emerging basis. Working closely with the landscape architects.
- Ongoing review and involvement in design meetings to allow iterative process
- Opportunity to influence and integrate NNL benefits.
- Design decisions recorded within decision log along with any risks, opportunities and/or assumptions.
- Engagement with EWC proposals to ensure these are considered during the MWCC design.

Towards Biodiversity Net Gain

No Net loss provides a value which encompasses the entire biodiversity of the site, which must be maintained.

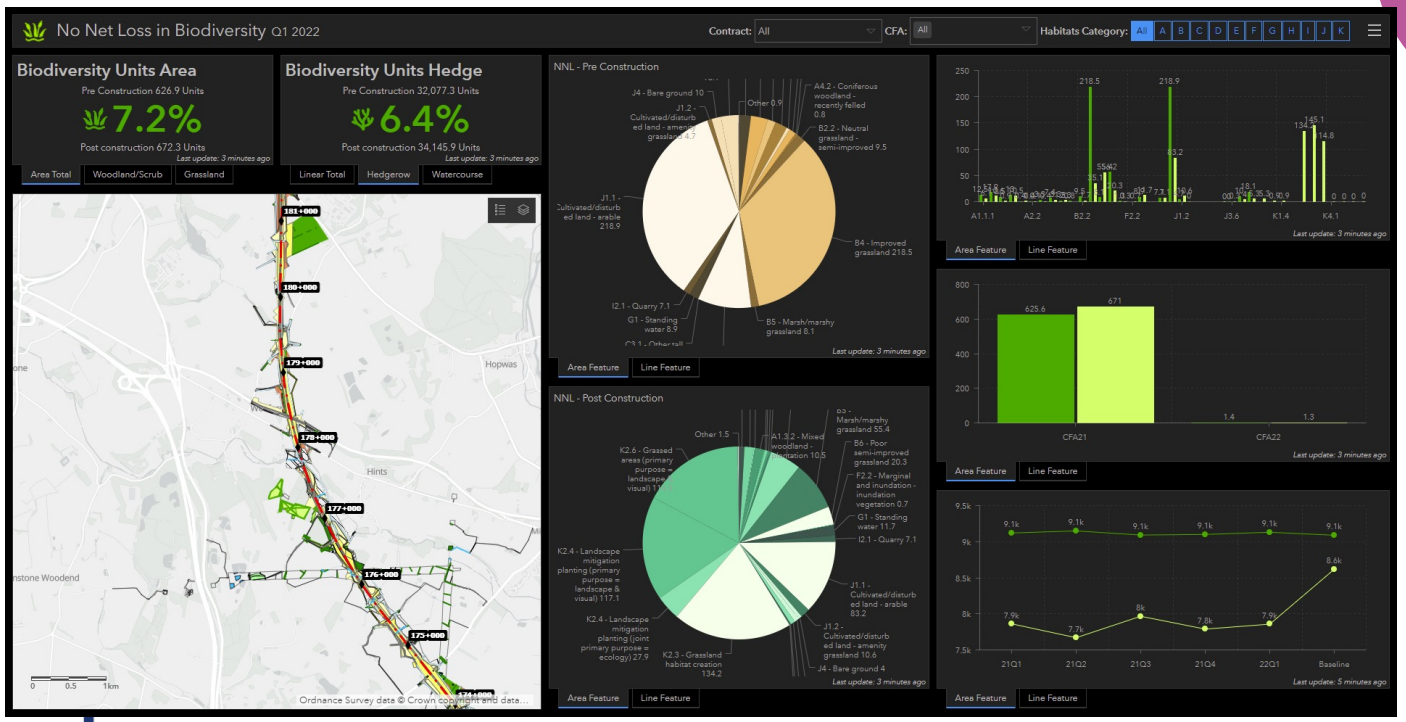
Biodiversity Net Gain/NNL goes above and beyond ‘traditional’ requirements of developments which may have only limited the loss of particular protected species and not habitats as a whole.



No Net Loss Dashboard

Dashboard usage

As the design of the Proposed Scheme is modified or becomes more detailed, it is intended that the no net loss calculation will be run at appropriate intervals to demonstrate progress towards the objective of seeking no net loss in biodiversity



Follow NNL design

Follow by area

NNL Dashboard Why?

Follow evolution between quarters

Follow by habitat

Compare to baseline data

HS2 Green Corridor : Trame verte

Trame verte : une ambition HS2

Our vision: **the green corridor**

Multi-functional green spaces that **bring people, places** and **nature together**

A **network** of **wildlife habitats**, supporting important ecosystems

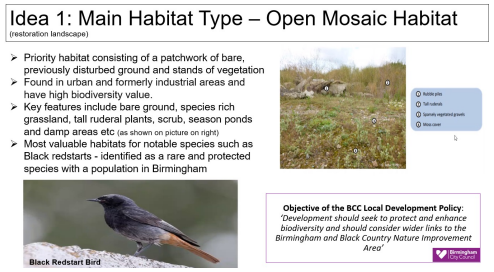
Extensive planting and **new woodlands** – tailored to each location

Local communities involved in design and delivery

Supporting **locally-led environmental projects** outside the immediate corridor

Ancrer le projet dans le territoire (financements de projets urbains et ruraux)
Fonds de £7 millions
Eviter la perte d'habitats
Intégration du projet dans le paysage
Continuité écologique
Création d'habitats et plantations haies, boisement. A ce jour, 9 km² de forêts; 7 millions d'arbres plantés.

Environmental Opportunities



Creation of a green corridor through Birmingham City will enable:

1. Connectivity between 'patches' of landscaping already being designed and the River Rea
2. Increasing the contribution toward achieving Biodiversity No Net Loss
3. Ecological aspects to be key drivers informing habitat selection choices in the Birmingham area, in particular open mosaic habitats, invertebrates and key bird species such as the black redstart and bats
4. Interpretation of green corridor – will be an educational resource for schools/local community

The Green Corridor will **"help people and communities along the railway to connect with the natural world"**

Community Benefit

- Positive impact on mental health and wellbeing, reducing stress and encouraging outdoor activities – brings people involved in the project together and will make them feel like they are a part of a legacy and have something to be proud to be a part of
- Educates communities about the benefits of trees and nature and reduces likelihood of fly tipping (this is a key issue in the community)

Engagement feedback

"Any features where the public can have access such as, **creating a space for promoting wildlife observation and creating recreational areas.** This will be better than sterile land, with no use."

"The perforate

Choix de Design en Ecologie / Protection de la Biodiversité

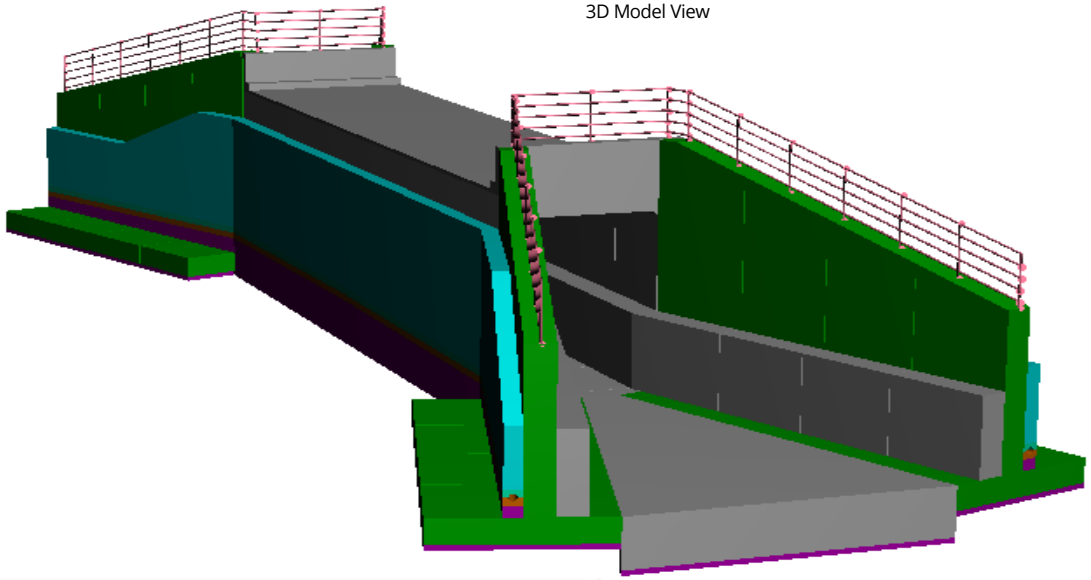
Design – Transparence écologique

Badger

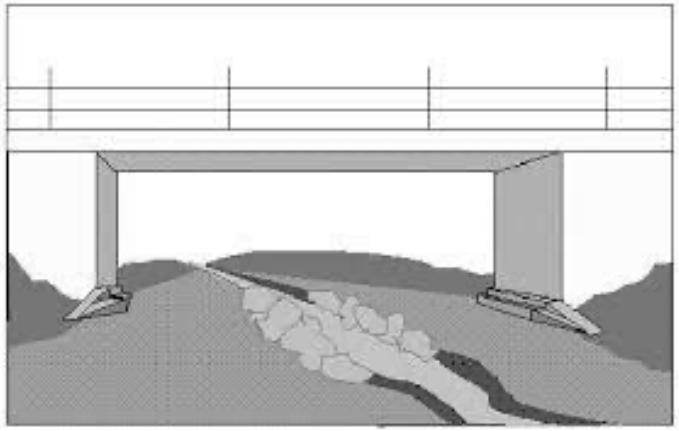
- Culvert structures have been designed with dry passage or mammal ledges in line with HS2 ETS (150mm above Q5 level) to provide safe crossing point and reduce severance
- Ledges to have ramped access to ground level

Bats

- Culvert structures designed to provide bat passage (2.5m above QMED) to reduce severance
- Directional planting adjacent to the structures, to guide to these safe crossing points
- Planting adjacent to existing watercourses to include hedges and trees to reinforce existing hedge features



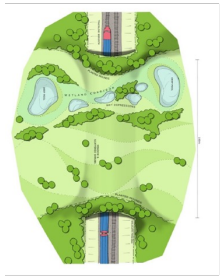
3D Model View



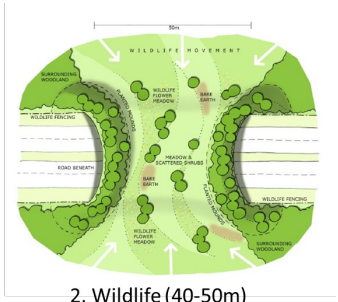
Ramp examples

Design – Transparence ecologique

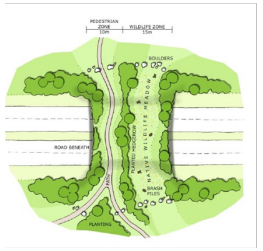
- **Type 1 –** Bechstein's bats (12m double hedgerow and grassland core vegetated zone, with 9m vegetated surface on either side).
- **Type 2 –** scarce and high assemblages of bat species (core vegetated zone of at least 12m).
- **Type 3 –** landscape and habitat connectivity and/or the dispersal and passage of wildlife - (A) single veg zone, (B) double veg zone (dependent on target species requirements).
- **Type 4 –** other types of green bridge with site specific functionality



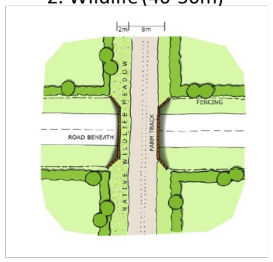
1. Natural (70-100m)



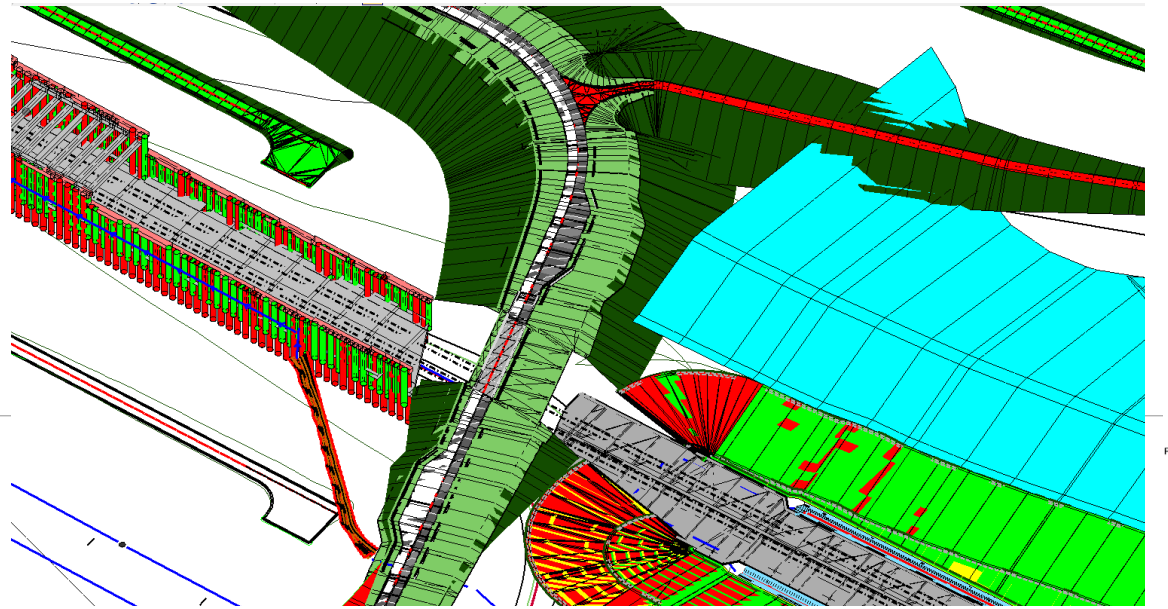
2. Wildlife (40-50m)



3. Mixed use (15-20m)

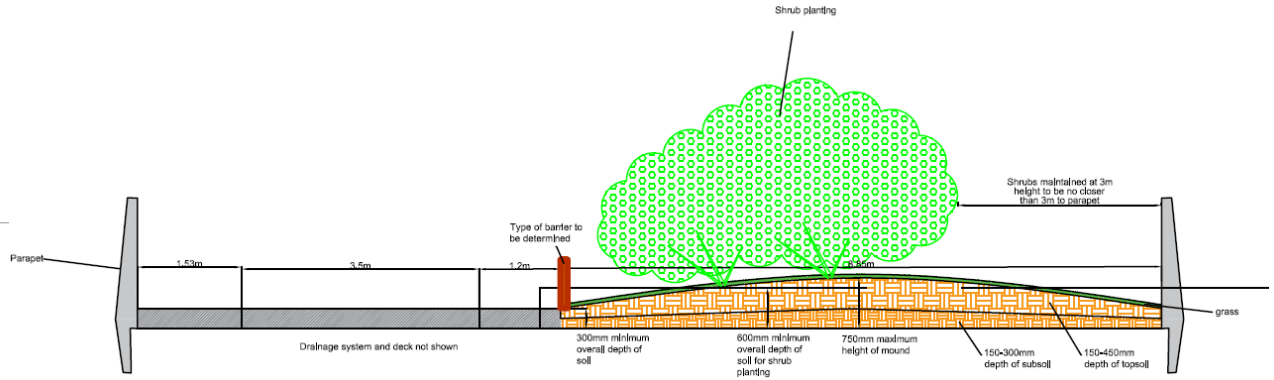


4. Modified grey bridge



Green Overbridge

- The structure is a Type 3a green bridge (designed for landscape and habitat connectivity and/or the dispersal and passage of wildlife)
- The highway cross section across the bridge was reduced to minimum requirements to maximise space on the bridge for the green corridor.
- The overbridge is a single span structure, with 3.5m carriageway. The overall width of the bridge is 15m, of which 8.5m will be for planting.



ECOLOGY DRIVERS – CANLEY BROOK

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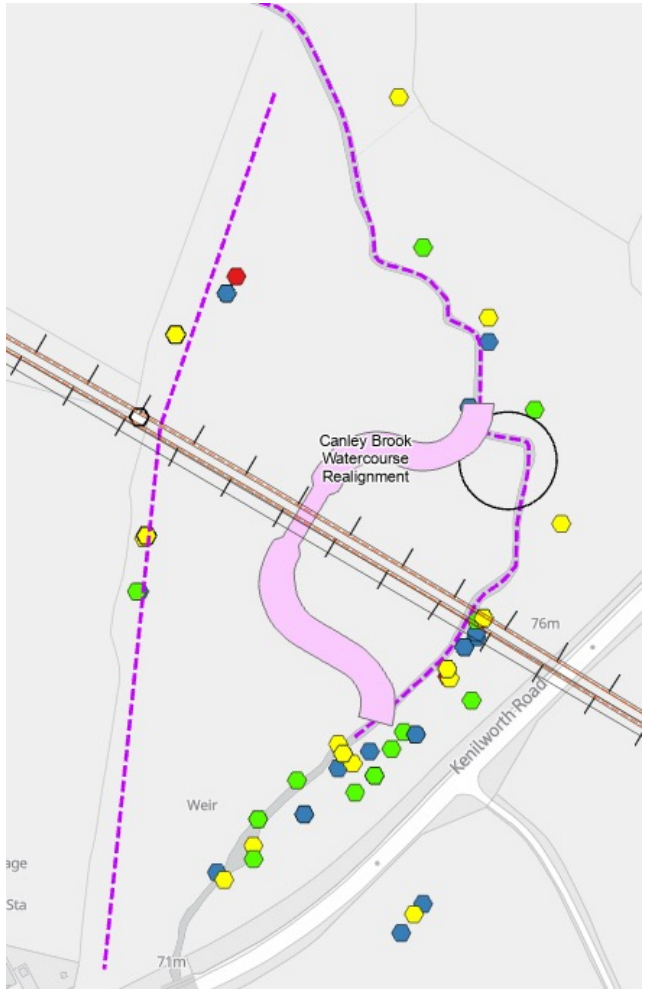
Canley Brook Viaduct – Design for Bats

- A shorter brook diversion beneficial for bats who are now more easily diverted to the revised Canley Brook Viaduct location.
- Free board height beneath the viaduct is 2.3m - sufficient height for bats to pass underneath.
- **To help guide bats under the viaduct, acoustic barriers have been specified over a length that extends more than 50m before and after the viaduct.**

Also

- Reduced earthworks is opportunities for additional habitat creation.
- Potential for wetland habitat creation (floodplain grazing marsh) surrounding the proposed watercourse diversion.



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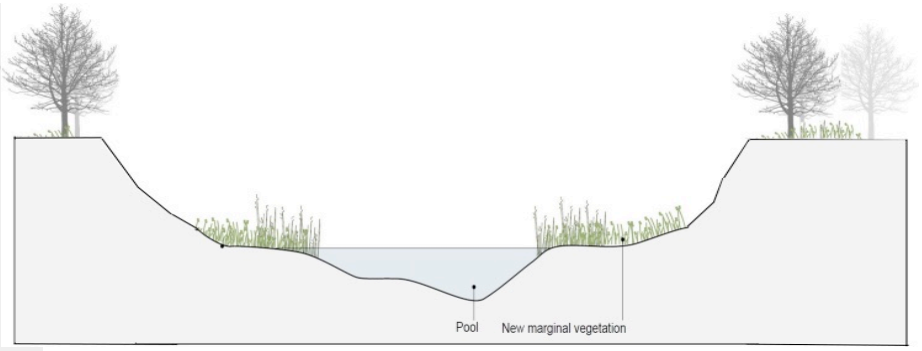
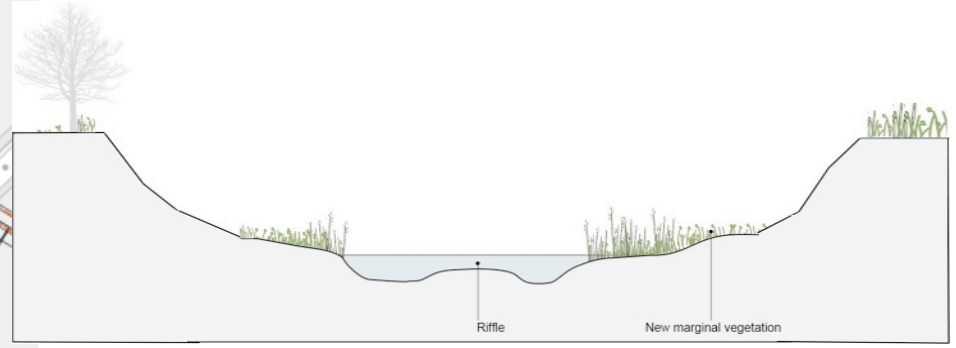
Canley Brook Viaduct – Design for other species

- Enhancement for watervoles via retained backwater
- **Otter** – safe passage for otter has been maintained along the brook beneath the viaduct.
- **Fish** and **Aquatic macro-invertebrates** – in-channel design includes riffles, pools and gravel patches which will benefit these species groups.





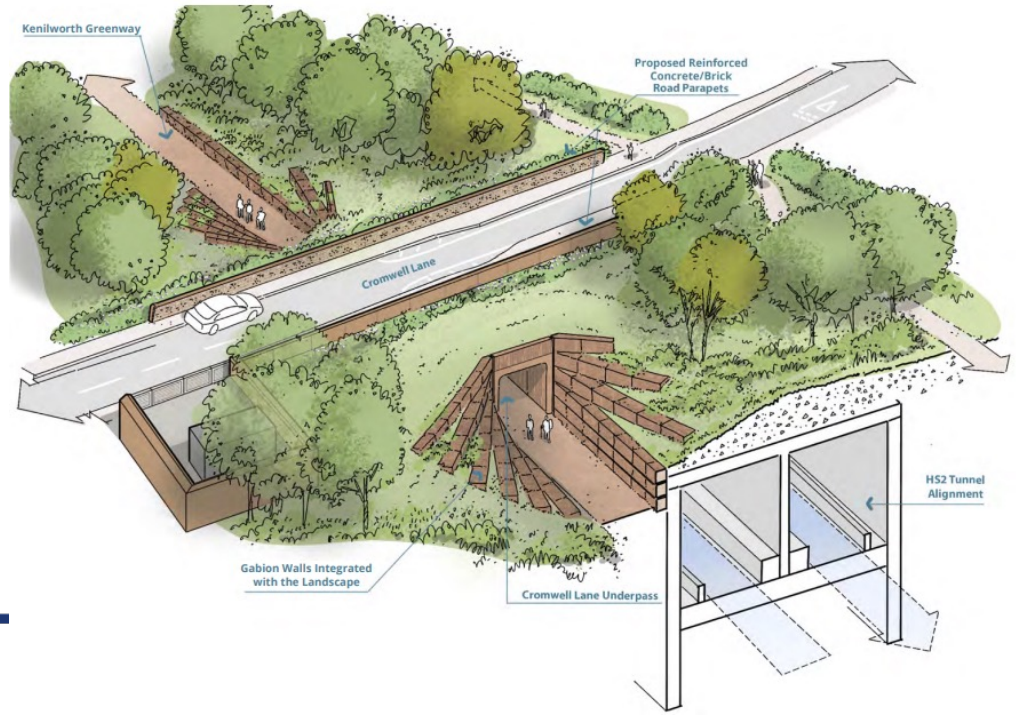
ECOLOGY DRIVERS – BURTON GREEN TUNNEL

Burton Green Tunnel and the Greenway Realignment

Burton Green tunnel is a 400 metres green tunnel going through Warwickshire, providing opportunities to create and enhance the landscape around and over the tunnel.

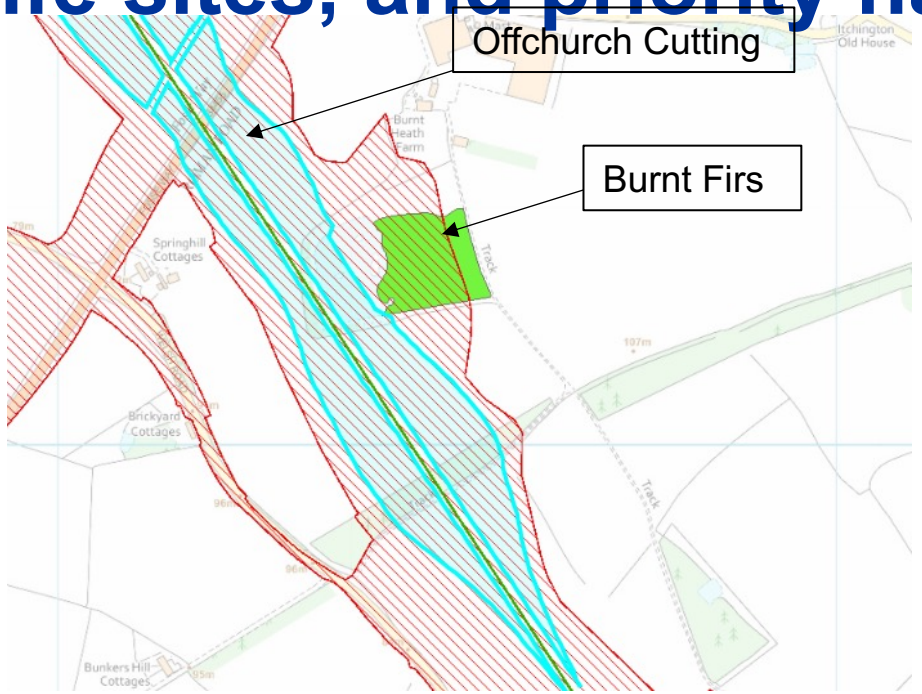
The current design provides new environmental features, with extensive tree planting, new footpaths and improved connectivity with local woods

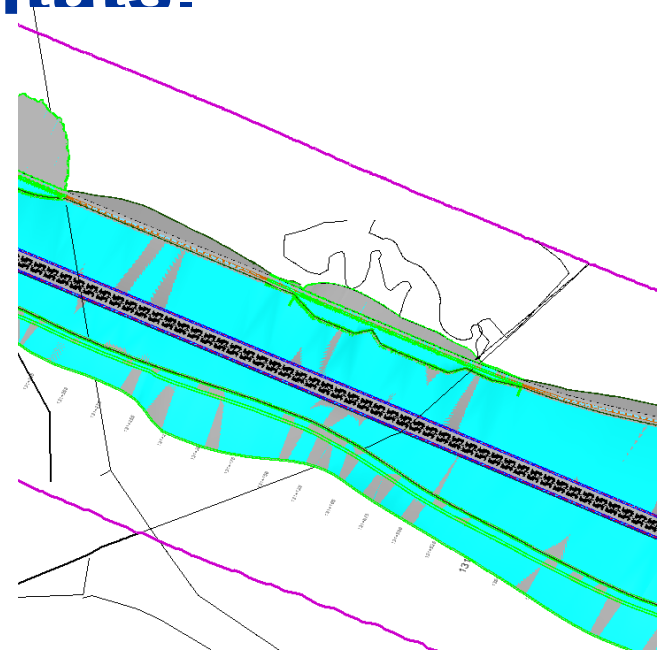
The tunnel will also be linked to the Kenilworth Greenway through cycling, horse riding and walking paths. Native trees and shrubs will improve the biodiversity in the area and provide suitable habitats for wildlife.



DESIGN DRIVERS – BOISEMENT ANCIENS "ANCIENT WOODLANDS"

Minimising impact on ancient woodland, local wildlife sites, and priority habitats.

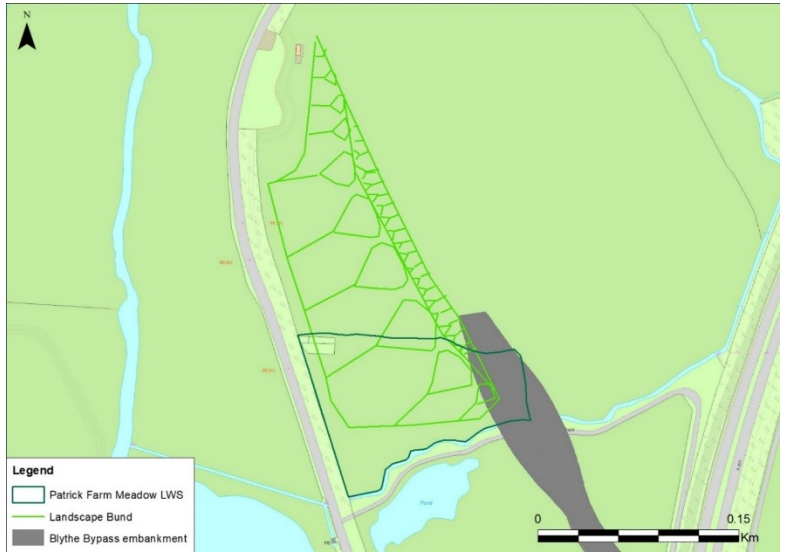




- ES - Loss of the whole of Burnt Firs Ancient Woodland (1.1ha) was required due to reprofiling of the land to remove a low point.
- Design changes during consolidation comprise inclusion of a drainage ditch at the crest of the cutting and partial infill of the reservoir.
- **Resulted in entire woodland area being retained.**

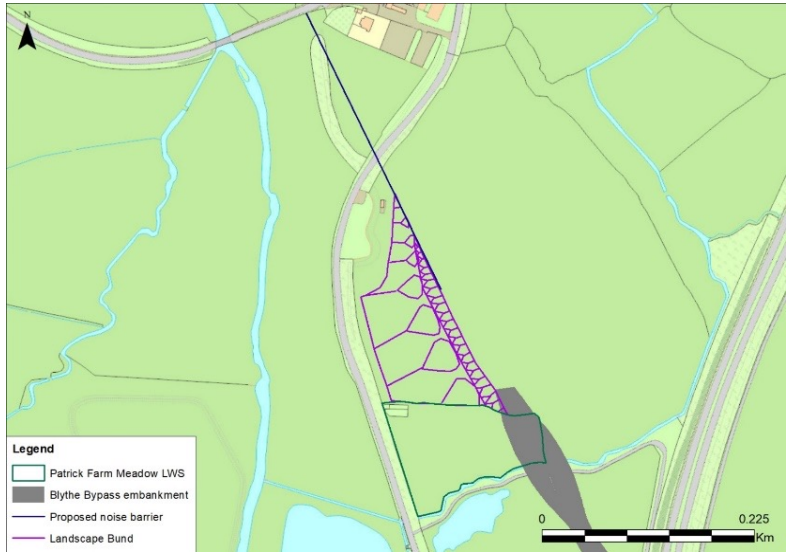
Designated Sites: Patrick Farm Meadow LWS

FPD



- Footprint of Blythe Bypass Embankment and landscape bund resulting in land take from LWS (marshy grassland).
- 0.78ha land take from LWS (60% of area).
- Affected grassland = 14.04 Biodiversity Units.
- ES reports 3.8ha marshy grassland to be created within CFA area = 21.69 Biodiversity Units.

Design changes (pre-consolidation)



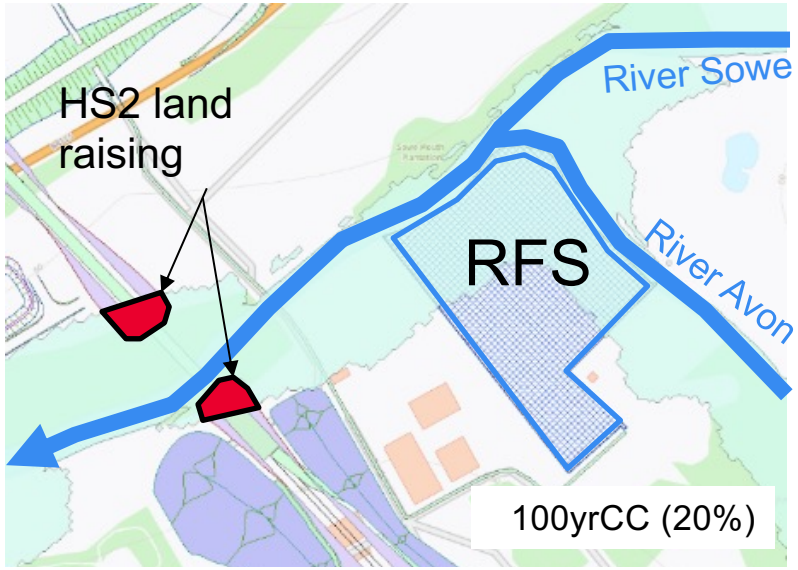
- Landscape bund removed from within LWS.
- Additional planting for improved screening/ landscape integration.
- Slope optimisation of Blythe Bypass Embankment.
- 0.29 ha land take from LWS (22% of area).
- Affected grassland = 5.22 Biodiversity Units.
- Extent of marshy grassland creation to be determined during consolidation.

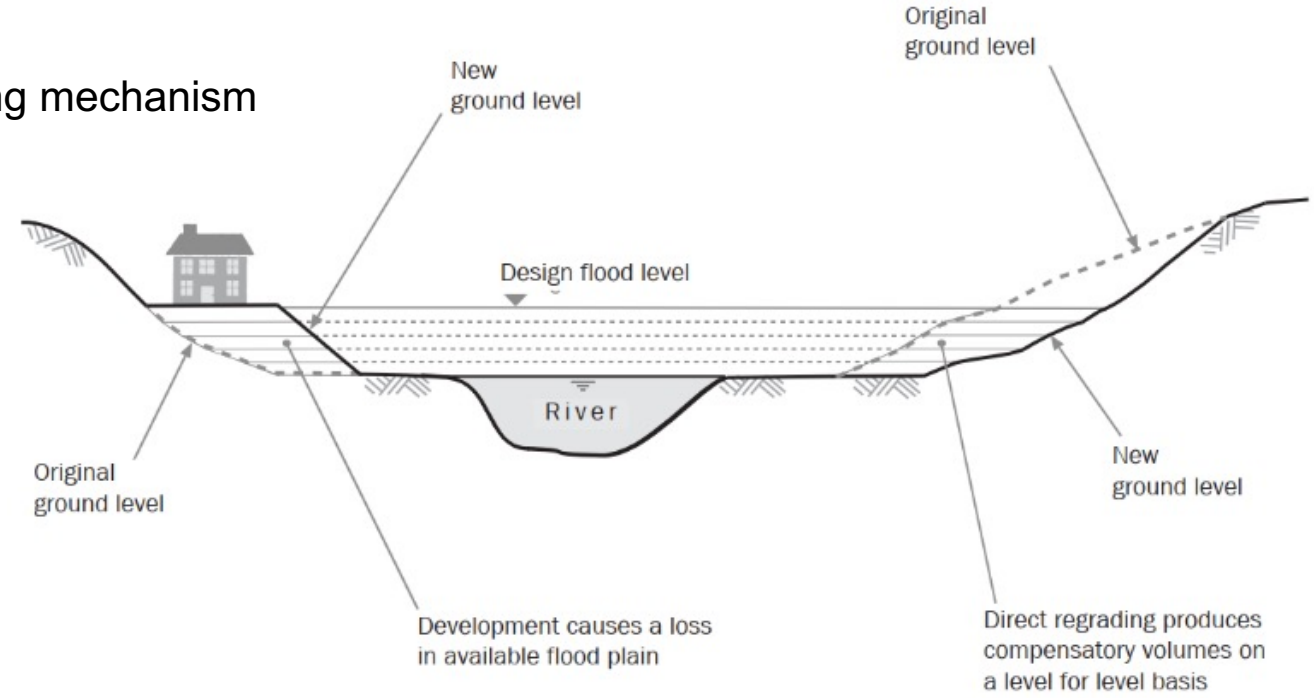
BIODIVERSITÉ ET ZONE DE COMPENSATION HYDRAULIQUE

Enhancement opportunities – exploring the use of replacement floodplain storage (RFS) areas for biodiversity and landscape enhancement : Nature based solutions

Replacement Floodplain Storage (RFS) / Compensatory Flood Storage Required by National Planning Policy Framework (NPPF) & CIRIA C624

- Any land raising within a design flood level must be compensated by RFS
- Aims to prevent increases in flood risk downstream
- Level for level, volume for volume basis design
- Only effective for displacement of floodwater flooding mechanism



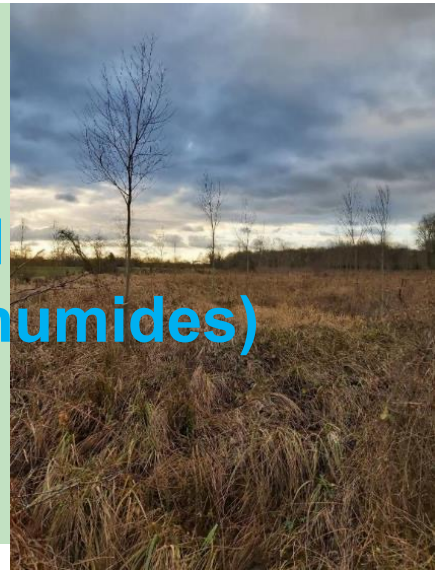


Source: Appendix A3.3.10 of CIRIA C624

Biodiversity opportunities in RFS?

- Where there is scope and as agreed with landowner – return with a more diverse habitat.
- Create wetland habitats, floodplain meadows, wet woodland. Support the creation of Priority habitats/LBAP?
- Floodplain grazing marsh, lowland meadows.
- Support NNL.
- Better habitat connectivity.
- Target habitat creation for species?
- Ecosystem services/work with natural processes – hydrological, wellbeing, visual, amenity, carbon sequestration.

A seasonally flooded field previously used as a horse paddock, planted with wet woodland tree species
© F Southgate



Biodiversity opportunities?

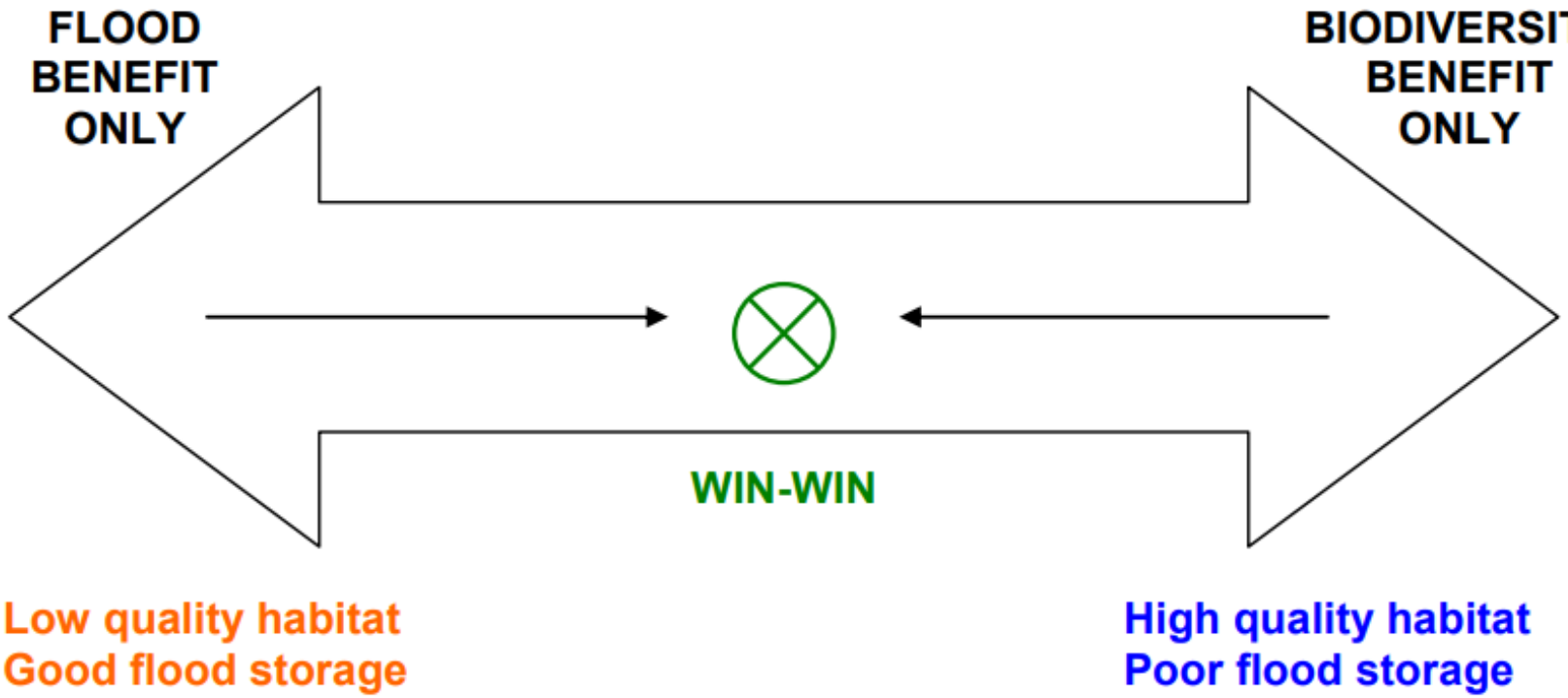


Figure 6.1: Flood Benefit versus Biodiversity

Microsoft Word - FSAs_Biodiversity_Final_Report100325.doc (therrc.co.uk)

CONCLUSION

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Conclusion

“ The largest ecology project in Europe; we just happen to be building a train line at the same time”

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HS2

Merci de votre attention
N’hésitez pas à poser vos questions

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