Gloucestershire Wildlife Trust

Gloucestershire Wildlife Trust
A417 Missing Link: TR010056
Written representation

December 2021

Reference: GWT TR010056 – Written representation

Interested party number: 20028970

Contents

1. Executive Summary

GWT acknowledges the need for the scheme, but during an ecological emergency this cannot come at the cost of nature's recovery. Whilst GWT believes the scheme can achieve the right balance this is not currently the case. There are three principle matters outstanding.

1.1. <u>The scale of adverse impacts on biodiversity and Biodiversity Net Loss</u>

GWT objects to the net loss of biodiversity and the scale of adverse impacts on biodiversity receptors. The Trust believes that the scheme's overall impact on biodiversity is likely to be moderate, adverse with large significance. This questions whether it falls short of the shared landscape-led vision and design principle of "delivering substantially more benefits than negative impacts". Demonstrative examples include

- 21% of biodiversity and 54% of habitat receptors are significant adversely affected by construction, with 19% and 75% by operation.
- Many impacts are **permanent** and several affect **irreplaceable** habitats.
- According to Biodiversity Metric 2.0, the scheme will result in **20-25% net loss of biodiversity**.

GWT has consistently requested that the scheme commits to Biodiversity Net Gain (BNG). GWT accepts that due to timing this is not mandatory for the A417 scheme, but questions whether the current biodiversity outcomes are acceptable given this context and existing Government and National Highways policies. Specifically:

- NPSNN paragraphs 5.24, 5.24 and 5.33, which require decisions to "consider Government aims to halt biodiversity declines and establish coherent ecological networks", "avoid significant harm to biodiversity interests" and to maximize opportunities for building in beneficial biodiversity features.
- Enhanced NERC Act duties to actively conserve and enhance biodiversity.
- National Highway's Biodiversity Plan aims 'to achieve no net loss of biodiversity across the strategic road network by 2025" and the commitment to "mitigate and compensate biodiversity impacts to achieve no net loss of biodiversity, as far as projects are reasonably able".

GWT requests that the following priorities are secured through DCO, further recommendations are made in the full response.

- BNG calculations are repeated using Defra Metric version 3.0 and results provided as biodiversity units.
- A statement to justify the overall adverse biodiversity impacts in context of the scheme vision/principles and Government policy, including an explanation of intent to align with the principles of the Environment Act.
- Further measures to avoid excess airborne pollutants degrading irreplaceable ancient woodland at the Ullenwood Local Wildlife Site.

- To review and reconsider all adverse biodiversity impacts arising from non-essential components.

- Include the **reversion of Barrow Wake car park to species-rich grassland** in the scheme as an important opportunity to provide biodiversity benefits.

- All blighted land is prioritised for delivering further compensatory habitat to reduce the level of biodiversity losses

- A network analysis to investigate impacts on the resilience and viability of the NRN

1.2. Impact on the Crickley Hill and Barrow Wake SSSI

Access to nature is important but enhancing access at designated sites being degraded by recreation pressure must be avoided. The scheme acknowledges that enhanced access will **increase visitor pressure on the Crickley Hill and Barrow Wake SSSI** (Site of Special Scientific Interest). GWT objects to the conclusion that the residual impact will be minor and considers the impact to be adverse, moderate to major and nationally significant. Current mitigation proposals are inadequate and GWT disagrees that the evidence presented demonstrates no adverse cumulative effects on the SSSI.

GWT requests that the following priorities are secured through DCO, further recommendations are made in the full response.

- Evidence is provided to justify the conclusion of a minor adverse impact on the Crickley Hill and Barrow Wake SSSI and lack of cumulative impacts on this receptor during operation.

- Adequate mitigation is provided for increased recreational pressure at the SSSI, including the provision of new off-site alternative greenspace on undesignated land. This could be delivered on blighted land.

- Compensation should be provided for any impact on GWT's income at Crickley Hill as a result of construction because this income is vital to managing the site's biodiversity.

1.3. Delivery & management of a high-risk mitigation strategy

The commitment to creating substantial new priority habitat is welcomed, but compensation is a high-risk strategy and a last resort in the mitigation hierarchy. The residual biodiversity **impacts presented in the DCO documents represent a best-case scenario** that assumes 100% successful delivery of habitat goals, which **evidence from previous schemes indicates is highly unlikely**. The factors affecting habitat creation success haven't been assessed. There is no risk analysis of LEMP delivery due to construction delays and insufficient governance detail for the LEMP. Therefore, **the DCO does not present the most likely scenario** and as a result the residual **adverse biodiversity impacts may be underestimated**.

GWT objects with the estimated time lag between habitat destruction/degradation and compensatory habitat being established to sufficient quality, as well as the conclusion that this poses no significant risk to biodiversity. Time lags have an important impact on species extinction risk, which is not currently assessed.

GWT requests that the following priorities are secured through DCO, further recommendations are made in the full response.

- The applicant provides likely success rates and timespans for establishing compensatory habitat of sufficient quality, informed by the suitability of receptor land and creation methods. Residual impacts on biodiversity receptors should be revised to account for this.

- A risk analysis of the mitigation plan against construction delays. Using a predictive restoration assessment [1] alongside a framework to set and evaluate time-lag sensitive biodiversity goals [2].

- This LMEP should be developed collaboratively with the Environmental Stakeholders and manage compensatory habitat in perpetuity. Effective governance should detail accountability, funding, monitoring, management, triggers for remediation and remediation works.

2. Gloucestershire Wildlife Trust full written representation

2.1. GWT context

2.1.1 Gloucestershire Wildlife Trust (GWT) is the largest environmental charity solely focused on Gloucestershire. GWT has a vision where each year there is more wildlife, more wild places, and more people with a connection to the natural world. This is made possible by 40,000 active local supporters, including more than 28,000 members, representing five percent of households in the county. GWT currently manages 57 nature reserves and is a leading advocate for work to deliver nature's recovery in the county. GWT is also a leading provider of ecological evidence for Gloucestershire, including the production and maintenance of Gloucestershire's ecological network maps - the Nature Recovery Network (NRN).

2.1.2 Two GWT owned nature reserves are wholly or partly within the boundary of the A417 Missing Link scheme. Crickley Hill is jointly managed and owned with the National Trust (NT), whilst Barrow Wake is solely owned by GWT and managed in partnership with the NT. These sites form a single SSSI, designated for its nationally important species-rich grassland, scrub, and semi-natural woodland, with notable ancient trees.

2.1.3 The Crickley Hill and Barrow Wake SSSI forms a core area of Gloucestershire's Nature Recovery Network and represents one of the largest remaining fragments of rare species-rich limestone grassland, which used to cover 40% of the AONB and now covers less than 1.5%. These habitats support incredibly diverse assemblages of plants, invertebrates, fungi, including nationally rare and threatened species. Crickley Hill is also a well-loved and important green space for local communities, providing access to nature for 135,000 visitors per year.

2.1.4 GWT acknowledges the need for the road scheme and that important design improvements have been made. GWT has proactively engaged with the A417 Missing Link Scheme since 2016, including participation in the Strategic Stakeholder Panel and the Technical Working Groups. A solutions focused approach has been adopted, balanced alongside the Trust's responsibility to stand up for the county's biodiversity and seek opportunities for nature's recovery.

2.2. Combined adverse impacts on biodiversity receptors

2.2.1 GWT supports improvements made to the scheme to reduce biodiversity impacts. In particular, the design changes made in December 2020 which added a substantial green bridge at the Gloucestershire Way crossing. This will help to mitigate increased fragmentation to the Crickley Hill and Barrow Wake SSSI and aligns with the Government's requirement for National Highways to deliver "landscape scale biodiversity projects that reduce habitat fragmentation" [3].

2.2.2 GWT objects to the combined levels of adverse impacts on biodiversity receptors. DCO documents present a scheme with multiple significant adverse impacts on biodiversity. This includes permanent, adverse impacts on priority habitats and core parts of Gloucestershire's Nature Recovery Network (NRN – see glossary and appendix 1), some of which are irreplaceable

2.2.3 The Environmental Statement indicates that 54% of biodiversity receptors will be adversely affected by construction, with 21% significantly affected and 33% of these impacts being permanent or irreversible.

2.2.4 The operation stage appears to have an adverse impact on 26% of biodiversity receptors, with 18.5% significantly affected and 26% of these impacts being permanent or irreversible.

2.2.5 Achieving the residual levels of adverse biodiversity impacts relies on a high-risk mitigation strategy, which assumes 100% success in achieving creating large extents of priority habitat. Studies indicate that this is unlikely and some road schemes achieve just 33% of their habitat goals [4].

2.2.6 The projected adverse impacts on biodiversity receptors represent the minimum levels in a best-case scenario. Any shortcomings in mitigation delivery will result in greater impacts and GWT is concerned that the most likely and worst-case scenarios are not known.

2.2.7 GWT believes that the scale of residual adverse impacts on biodiversity receptors is too substantial to be justified or offset by other environmental benefits. This questions whether the scheme is achieving its vision '*to bring about wildlife benefits'* or the design principle of *'delivering substantially more benefits than negative impacts for the Cotswolds AONB.'*. Failure to do so would fall short of the shared landscape-led vision for the scheme developed by National Highways and its stakeholders.

2.2.8 The Environmental Statement acknowledges that during operation some veteran trees and part of the ancient woodland at the Ullenwood Local Wildlife Site will be affected by airborne Nitrogen deposition in excess of critical loads (8.10.262 & 268). Due to the known impacts of excess Nitrogen on ancient woodlands [5], it is likely that the affected areas will lose botanical and soil biodiversity. In biodiversity terms, GWT considers this to be a gradual destruction of ancient woodland rather than degradation. The process will just occur over a longer timescale than has been considered by the Environmental Statement.

2.3. GWT recommendations regarding combined adverse impacts on biodiversity receptors

2.3.1 GWT asks the applicant to demonstrate that appropriate weight has been given to adverse impacts on biodiversity receptors considering the scheme vision and established policy requirements for NSIPs.

2.3.2 GWT asks the applicant to demonstrate how the impacts on ancient woodland are compliant with policy 5.32 of the NPSNN, which recognises the biodiversity value of this habitat and steers against schemes that have significant adverse impacts.

2.3.3 GWT asks the applicant to demonstrate how the scheme aligns with policy commitments in the Government's 25 Year Environment Plan, specifically "to develop Nature Recovery Networks to protect and restore wildlife" as well as the amended NERC Act 2006 duties introduced by the Environment Act 2021, which require public bodies to proactively conserve and enhance biodiversity.

2.3.4 The applicant demonstrates how design decisions aligned with the mitigation hierarchy, to ensure that all reasonable avenues to avoid the loss and degradation of priority and irreplaceable habitat have been pursued. This is a particular issue for the Ullenwood Local Wildlife Site and Tufa.

2.3.5 GWT recommends a review and reconsideration of all adverse impacts on biodiversity receptors arising from non-essential components of the scheme.

2.3.6 GWT recommends a review of all missed biodiversity opportunities arising from the delivery of other environmental benefits, such as the Air Balloon Way. If there are any a cost-benefit analysis for these decisions should be presented.

2.3.7 GWT asks the applicant to justify any decisions that increase adverse recreational pressure on priority habitats, designated sites and the core NRN.

2.4. Biodiversity Net Loss and the Environment Act

2.4.1 Since engaging with the road scheme, GWT has repeatedly iterated the importance of this landscape to biodiversity. Since 2017 GWT has consistently stated its view that the scheme needs to deliver Biodiversity Net Gain (BNG) in order to achieve the shared vision, principles and objectives.

2.4.2 The Environment Act 2021 introduced a mandatory requirement for NSIPs to deliver a minimum 10% BNG. GWT recognises that the A417 scheme's DCO submission was made before BNG became mandatory. However, BNG is likely to be mandatory by the time construction begins on the A417 in 2023.

2.4.3 GWT objects to the scheme not delivering BNG and understands that current projections are estimating a 20-25% Net Loss of Biodiversity. This is an unacceptable outcome for a road scheme within a designated National Landscape, which adversely impacts designated biodiversity sites and core parts of the Nature Recovery Network. GWT believes there is sufficient intent in legislation and both Government and National Highways policy for this scheme to be expected to deliver a minimum of no net loss of biodiversity, but ideally a net gain.

2.4.4 GWT questions whether delivering a large net biodiversity loss on the A417 scheme is compliant with NPSNN policy 5.24, which requires decisions to consider Government aims to halt biodiversity declines and establish coherent ecological networks.

2.4.5 GWT questions whether delivering a large net biodiversity loss on the A417 scheme is compliant with the NPSNN policy 5.25, which requires schemes to "avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives".

2.4.6 GWT questions whether delivering a large net biodiversity loss on the A417 scheme aligns with National Highway's Biodiversity Plan outcome "to achieve no net loss of biodiversity across the strategic road network by 2020 and a net gain by 2040".

2.4.7 GWT questions whether delivering a large net biodiversity loss on the A417 scheme reflects the latest progress report (2018-19) for National Highway's Biodiversity Plan action 3.2, which states that standard practice for major schemes is to "mitigate and compensate their biodiversity impacts to achieve no net loss of biodiversity, as far as the projects are reasonably able".

2.4.8 GWT objects to the DCO documents presenting habitat losses and gains solely as quantities of habitat (Environmental Statement, Table 8-18) rather than changes in biodiversity units. Presenting quantity changes does not transparently demonstrate the full impacts because it omits quality considerations. Industry good practice and the user guide for the metric state that changes should only be described using biodiversity units, which cover both quality and quantity [6]. Quality includes habitat condition, distinctiveness, and strategic significance, which are vital factors affecting the scale of biodiversity loss.

2.4.9 GWT supports the ambition to create new priority habitats, particularly species-rich calcareous grassland. This cannot overshadow the projected significant net loss of biodiversity units. Removing large areas of priority habitat is detrimental even if this is to be offset with new priority habitat. This is because the new habitat may take decades or centuries to establish, and success is not guaranteed. meaning there is still a medium to long-term adverse impact on biodiversity.

2.5. GWT recommendation regarding Biodiversity Net Loss and the Environment Act

2.5.1 GWT asks the applicant to outline their intentions for aligning the scheme with the new statutory requirements introduced by the Environment Act. With consideration that the Act embeds Government Policy from the 25 Year Environment Plan, which was established prior to DCO submission.

2.5.2 GWT Recognises that the red-line boundary is a constraint on delivering further habitat compensation. GWT asks the applicant to outline how they would achieve mandatory BNG had this been a legal requirement, as it will be for new NISPs. GWT recommends that the A417 is used as an opportunity to test how NSIPs in constrained landscapes can achieve the new mandatory requirements introduced by the Environment Act.

2.5.3 GWT requests that the BNG calculations are repeated using Defra Metric version 3.0 and the results provided in full as changes in biodiversity units.

2.4.4 GWT requests evidence that no further avoidance or mitigation of priority habitat losses is possible through changes to the scheme design.

2.5.5 As per 3.2 of National Highway's Biodiversity Action Plan, GWT requests that the applicant provides a statement to explain why insufficient opportunities to achieve net biodiversity gain have been identified. Including what reasonable alternatives have been considered, in accordance with NPSNN policy 5.25.

2.5.6 GWT asks that all blighted land is prioritised for delivering further compensatory habitat to reduce the level of biodiversity losses.

2.5.7 GWT asks if NPSNN policy 5.25 permits the scheme to seek and fund biodiversity offsetting opportunities on land outside of the red-line boundary to counteract the deficit in biodiversity units.

2.5.8 GWT agrees that the scheme should deliver its own mitigation independently of Designated Funds. However, if BNG is not deemed to be a requirement of the scheme then opportunities should be sought through Designated Funds. Working in partnership with the environmental stakeholders to deliver the necessary biodiversity units to achieve 10% BNG. Priority should be given to projects that provide compensatory habitat in close vicinity of the A417 scheme and are guided by the NRN.

2.5.9 As access to land is a key barrier to delivering further compensatory habitat, it is disappointing that Designated Funds will not support land acquisition. GWT asks National Highways to review this decision.

2.6. Barrow Wake Car Park

2.6.1 GWT owns the land surrounding Barrow Wake car park, most of which is designated SSSI. The Trust also deals with a lot of the consequences of the anti-social behaviour that persists in the car park.

2.6.2 The biodiversity outcomes of the scheme could be improved by closing Barrow Wake car park and reverting it to species-rich calcareous grassland. This would provide some additional compensatory biodiversity units, as well as buffering the SSSI and enhancing a core area of the NRN.

2.6.3 Removal of the car park would benefit the condition of the SSSI, which is threatened by erosion caused by visitor trampling, off-road vehicles, and mountain bikes. GWT's site monitoring has demonstrated that the botanical diversity is lower in areas of grassland closer to the car park (appendix 2) and the DCO documents acknowledge that the scheme may increase this pressure (Environmental Statement 8.10.228).

2.6.4 GWT considers that reversion of the Barrow Wake car park to calcareous grassland is a missed opportunity for the scheme to fulfill its objective to "maximise opportunities for natural environment enhancement".

2.6.5 GWT acknowledges that there is a conflict between the biodiversity benefits of removing Barrow Wake car park and the access benefits it currently provides. GWT argues that the access value is of local importance whilst the biodiversity value is of national importance, and therefore, should be prioritised.

2.6.6 The Barrow Wake car park is less than 1km from the Cotswold Beechwoods Special Area of Conservation (SAC). The latest mitigation plan cites the car park as a key one used by visitors to the SAC and recommends reducing parking in locations where there is evidence that this will reduce recreational pressure on the SAC [7].

2.6.7 GWT welcomes the consultation initiated by Gloucestershire County Council. The Trust agrees that some alternative parking provision is needed and has suggested several locations where this would have a lesser impact on the SSSI and provide greater natural surveillance to deter anti-social behaviour.

2.6.8 National Highways has stated that reversion of the car park is not possible because the land lies outside of the scheme's scope. GWT objects to this position because the car park is within the red-line boundary and the DCO application proposes works to resurface, remark, and improve drainage at the car park (Environmental Statement, 2.836, 2.8.37 & 8.10.19). This demonstrates that work to the car park can be within the scope of the scheme and suggests an inconsistency between biodiversity and other outcomes.

2.6.9 National Highways has also stated that removal of the car park is not possible because it is a designated highway, so ownership of the road surface and duties for closing it lie with Gloucestershire County Council. GWT acknowledges the duties of the County Council, and that consultation is required. However, National Highways could have initiated discussions with the County Council when GWT first proposed reversion of the car park when responding to the 2019 Statutory Consultation. At this point there was ample time to consult the County Council and stakeholders and integrate it into the scheme. However, discussions only began in November 2020 after being initiated by the environment stakeholders and the County Council.

2.6.10 GWT wishes to highlight that reversion of the car park to calcareous grassland may generate budget savings for the scheme, as this action is likely to be cheaper than the planned enhancements to the car park.

2.7. GWT recommendation regarding Barrow Wake Car Park

2.7.1 GWT recommends that the scheme delivers reversion of the Barrow Wake car park to species-rich calcareous grassland, should this outcome be supported by the consultation process being led by Gloucestershire County Council.

2.7.2 GWT calls for the scheme provide suitable alternative parking to offset some of that lost at Barrow Wake. Highlighting that this action could generate multiple benefits for biodiversity, access, and the local community.

2.8. Habitat creation success rates and time lags

2.8.1 Creating compensatory habitat is central to the scheme's strategy for mitigating adverse biodiversity impacts. GWT supports the commitment to creating new priority habitat and the focus on a mosaic of calcareous grassland and woodland.

2.8.2 GWT is concerned about the level of reliance on habitat creation to mitigate adverse impacts on biodiversity, which represents a high-risk strategy. Habitat creation cannot be assured as it is complicated by soil fertility, hydrology, existing vegetation, weather, pH, and seed bank quality [8–11]. There has been insufficient assessment of the receptor sites or detail on habitat creation mechanisms to estimate the likely success rates.

2.8.3 Both the residual impacts on biodiversity receptors and the estimated levels of biodiversity net loss appear to assume 100% success in habitat creation within the lifespan of the scheme. Previous roads schemes indicate that this is unlikely to be the case [4], so the mitigation presented reflects a best case scenario rather than the most likely outcome.

2.8.4 Created grasslands and woodlands may take decades or more than a century to develop the species assemblages and ecosystem processes present in priority habitats [12–15]. This means there could be a significant time-period between existing priority habitats being lost or degraded and created habitats achieving sufficient condition to fully compensate for these adverse impacts.

2.8.5 This time lag has an important impact on the extinction risk of notable species, particularly as restoring lost grassland invertebrate assemblages can take more than 30 years [16]. Species isolated to single sites can easily be lost over a few years, particularly as the climate becomes more unpredictable. GWT supports commitments to front-load habitat creation but disagrees that the time lags will have no significant adverse impacts.

2.8.6 During a meeting with National Highways on October 28th 2020, GWT requested details on the anticipated time-lag between loss of priority habitat and new habitat being established to adequate quality. During Statement of Common Ground discussions, the applicant has indicated that time-lags will be addressed during detailed design. GWT argues that this information is needed at examination, in order to accurately depict the extent of biodiversity impacts.

2.8.7 The likelihood of failing to establish habitat and how this will be mitigated, monitored, and remediated is not dealt with at present.

2.9. GWT recommendations regarding Habitat creation success rates and time lags

2.9.1 The applicant is asked to provide the likely success rates for establishing compensatory habitat of sufficient quality within the lifespan of the scheme, informed by suitability of receptor land and the creation methods. Residual impacts on biodiversity receptors should be revised to account for the likely success rate.

2.9.2 The applicant is asked to detail the time-lags between priority habitats being lost or degraded and compensatory habitat of sufficient quality being established. This should be accompanied by an assessment of the likely biodiversity impacts of the time lags, particular on specialist species that require priority habitats.

2.9.3 The Land and Ecological Management Plan (LEMP) should detail how the habitat creation and the impact of time lags will be mitigated, monitored, and if necessary remediated. It is suggested that a predictive restoration assessment is used [1] alongside a framework to set and evaluate time-lag sensitive conservation goals [2].

2.10. Adverse impact of recreational pressure on the Crickley Hill and Barrow Wake SSSI

2.10.1 The cited features of the Crickley Hill and Barrow Wake SSSI are already adversely affected by recreational pressure, as displayed by the level of soil compaction and erosion on the SSSI grassland (appendices 2 and 3). GWT is highly concerned that the scheme will increase visitor pressure, leading to significant and permanent adverse impacts on SSSI condition.

2.10.2 The visitor survey jointly commissioned by the National Trust and GWT in 2018 indicated that 75% of visitors to Barrow Wake would use the new Cotswold Way crossing to access Crickley Hill [17]. This does not account for additional users of the new Air Balloon Way.

2.10.3 GWT has particular concerns about increased use by horseriders and mountain bikers due to the documented adverse impacts these activities can have on wildlife through erosion and disturbance. Although there is a bridleway at Crickley Hill it is poorly connected to wider routes and has low levels of use by mountain bikers and horseriders. This would change under proposals presented in the DCO and visitor surveys show a desire for mountain bikers to use Crickley Hill (Table 4.1), which is further supported by the National Trust and GWT's Insight survey [17].

2.10.4 In GWT's experience, it is incredibly difficult to prevent mountain bikers and horseriders from leaving designated bridleways and treating sites as open access. The Trust owns several nature reserves where managing impacts of this nature are a significant challenge, and this is a well-documented issue in the Cotswold Beechwoods SAC.

2.10.5 The DCO documents acknowledge that visitor numbers to the Crickley Hill and Barrow Wake SSSI are likely to increase as a result of the scheme (Environmental Statement 8.10.212; 8.10. 228) and that the impact of increased recreational pressure would be permanent (Environmental Statement 8.10.231). However, it concludes this to have a minor adverse impact. GWT objects to this conclusion.

2.10.6 It has been suggested that the new Air Balloon Way will mitigate potential adverse impacts of improved access on recreational pressure on the SSSI. GWT feels that this is highly unlikely because visitor surveys demonstrate that the view is a key attractant, and this would not be provided by the Air Balloon Way, which could in-fact channel more visitors to Crickley Hill and Barrow Wake.

2.10.7 An onsite management strategy is useful, but in the experience of GWT, onsite interventions such as signage are only an effective intervention for some people and cannot fully mitigate increased recreational pressure. A detailed migration strategy is required, ideally including the provision of alternative green spaces that fulfill the needs identified by up-to-date visitor surveys.

2.11. GWT recommendations regarding adverse impact of recreational pressure on the Crickley Hill and Barrow Wake SSSI

2.11.1 Based on the evidence available, the residual impact on the Crickley Hill and Barrow Wake SSSI should be a permanent moderate/major adverse impact according to Table 4-4 (see Chapter 4: Environmental Assessment Methodology).

2.11.2 A funded mitigation strategy is produced to mitigate the increased recreational pressure at the Crickley Hill and Barrow Wake SSSI, including off-site provision.

2.12. Assessment of cumulative impacts

2.12.1 GWT accepts that the assessment of cumulative impacts has been undertaken in-line with LA 104 guidance. GWT disagrees that there is sufficient evidence to support the conclusion of no adverse cumulative impact on designated sites during operation as a result of increased recreational pressure. The Cotswold Beechwoods SAC and Crickley Hill and Barrow Wake SSSI are already suffering demonstrable adverse impacts from recreational pressure (see section 2.10). Therefore, it is difficult to understand how the improved access and reduced journey times proposed by the scheme., combined with an increasing population within visiting distance, will have no negative cumulative impact.

2.13. GWT recommendations regarding assessment of cumulative impacts

2.13.1 GWT asks that evidence is provided to justify the conclusion that there will be no adverse cumulative impacts on the Cotswold Beechwoods SAC and Crickley Hill and Barrow Wake SSSI during operation as a result of increased recreational pressure.

2.13.2 If an adverse impact is likely then additional mitigation should be provided.

2.14. Integration with Nature Recovery Network

2.14.1 The NRN is not referenced as a key evidence document despite being a key part of the strategy for nature's recovery in Gloucestershire. The LNP has adopted it as the habitat map that will underline the new Statutory Local Nature Recovery Strategy.

2.14.2 The impacts of habitat loss on the viability of the NRN networks has not been investigated. To provide one example, the removal of 12.42 ha of Semi-natural broadleaved woodland (Table 8-18) and 85% of important hedgerows (8.10.81), could have a significant adverse impact the viability and resilience of the wooded ecological network in this landscape.

2.14.3 Adverse impacts on the viability and resilience of the NRN are concerning because they will not be rectified until new compensatory priority habitat of sufficient quality is

established. The impact on the survival of viable populations of specialist rare and threatened species during this interim period is unknown.

2.15. GWT recommendations regarding the Nature Recovery Network

2.15.1 GWT asks that the NRN is referred to as a key evidence document in the DCO and that mitigation and compensatory habitat is aligned with it.

2.15.2 A network analysis is completed to investigate the short, medium and long-term impacts on the resilience and viability of the NRN and populations of rare and threatened specialist species.

2.16. Ecological delivery management system

2.16.1 Many of the ecological mitigation and avoidance measures are very time sensitive. It is likely that there will be unforeseen delays affecting the construction schedule and it is unclear how these will be managed to ensure that the LEMP can be delivered as planned.

2.16.2 There is no risk analysis of delays to delivery of the LEMP and how this would impact both the success rate of habitat creation and the time-lags detailed in section 2.8.

2.16.3 Delivery of the LEMP will require a strong governance process to ensure effective accountability, monitoring, management, review, remediation, and funding are in place. There is insufficient information on this at present.

2.17. GWT recommendations regarding Ecological delivery management system

2.17.1 A risk analysis should be undertaken to understand how delays to the construction schedule will impact delivery of the LEMP. In particular, the success of compensatory habitat creation and adverse impacts caused by time-lags between habitat loss/degradation and compensation. The LEMP should plan for the impact of construction delays.

2.17.2 The DCO should secure effective governance of the LEMP. Including detail on accountability, monitoring, management, triggers for remediation and remediation works. Including good practice control procedures that have been developed to improve the success rate of compensation measures [4].

2.17.3 This LMEP should be a long-term plan, developed collaboratively with the Environmental Stakeholders.

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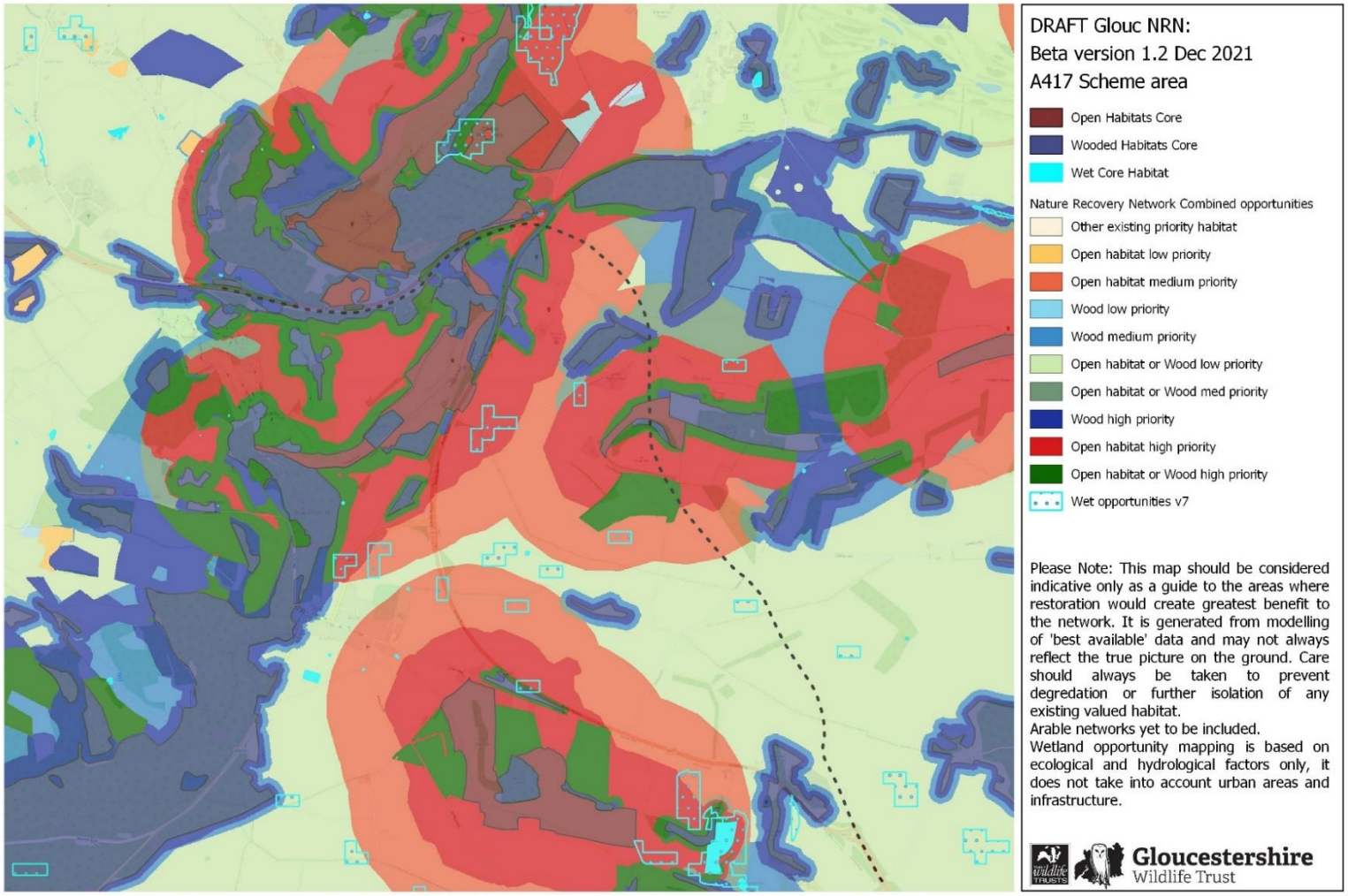
4. Glossary

Nature Recovery Network: A countywide map that combines three ecological networks: open habitats, woodland habitats and wetland habitats. The most comprehensive representation of Gloucestershire's ecological networks. It identifies land that forms core areas of importance, connectivity between these core areas, their resilience to fragmentation and prioritised zones for nature's recovery.

Biodiversity Net Gain – A net increase in biodiversity units as calculated using the latest version of the Defra Biodiversity Metric (currently 3.0). The minimum mandatory gain set by the Environment Act for new NSIPS is 10%.

Appendix 1: Nature Recovery Network within the A417 road scheme area



Map includes data derived from LCM2015 © NERC (CEH) 2017.
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Appendix 2: GWT condition monitoring report of Barrow Wake.

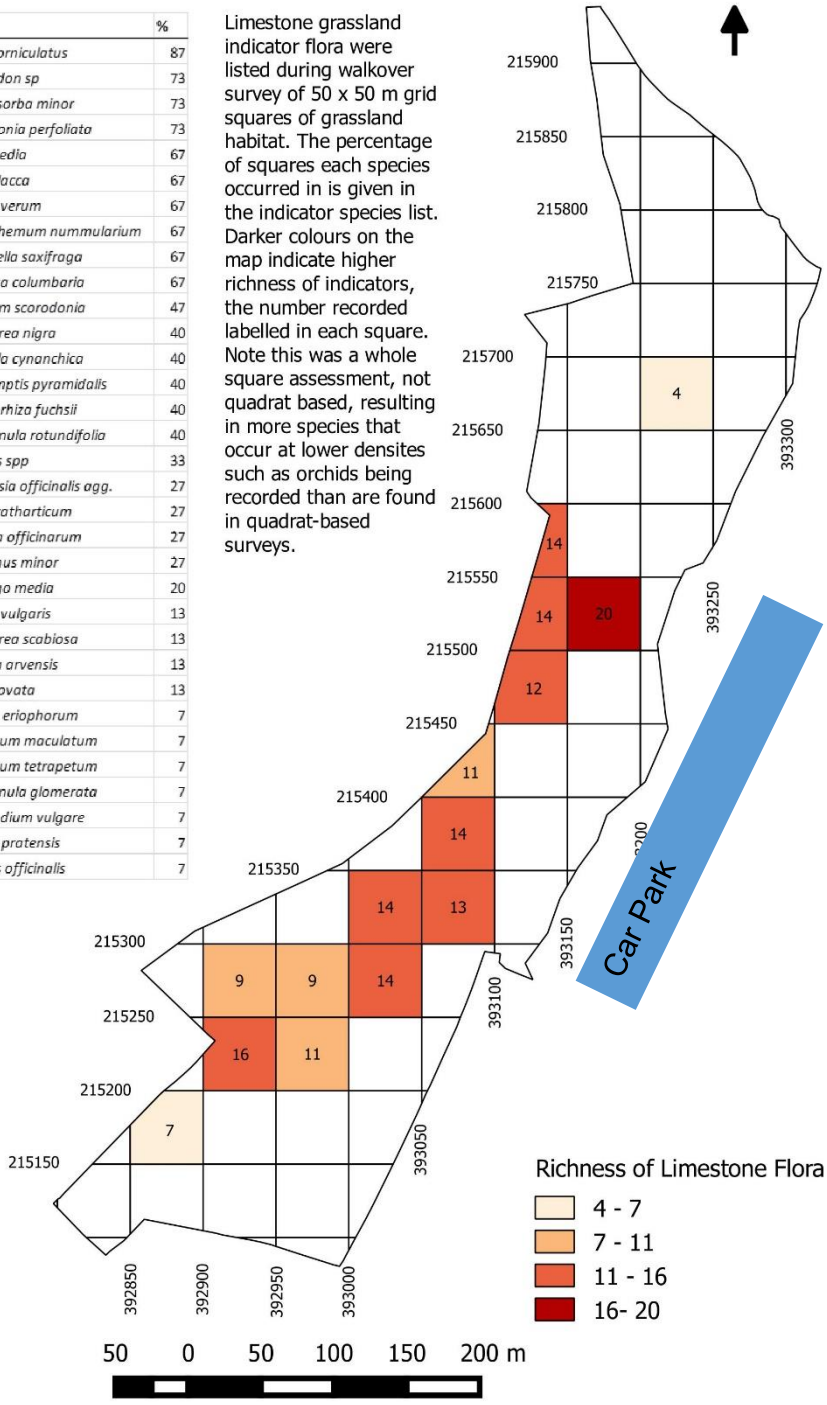
Showing the number of calcareous grassland indicator species across the grassland. Note that white areas at the north of the site and in the southern tip are mostly wooded.

Limestone Grassland Flora Grid Square Assessment
Barrow Wake, Gloucestershire
26/07/2017. Kathy Meakin

Limestone Grassland Indicator Species Recorded.

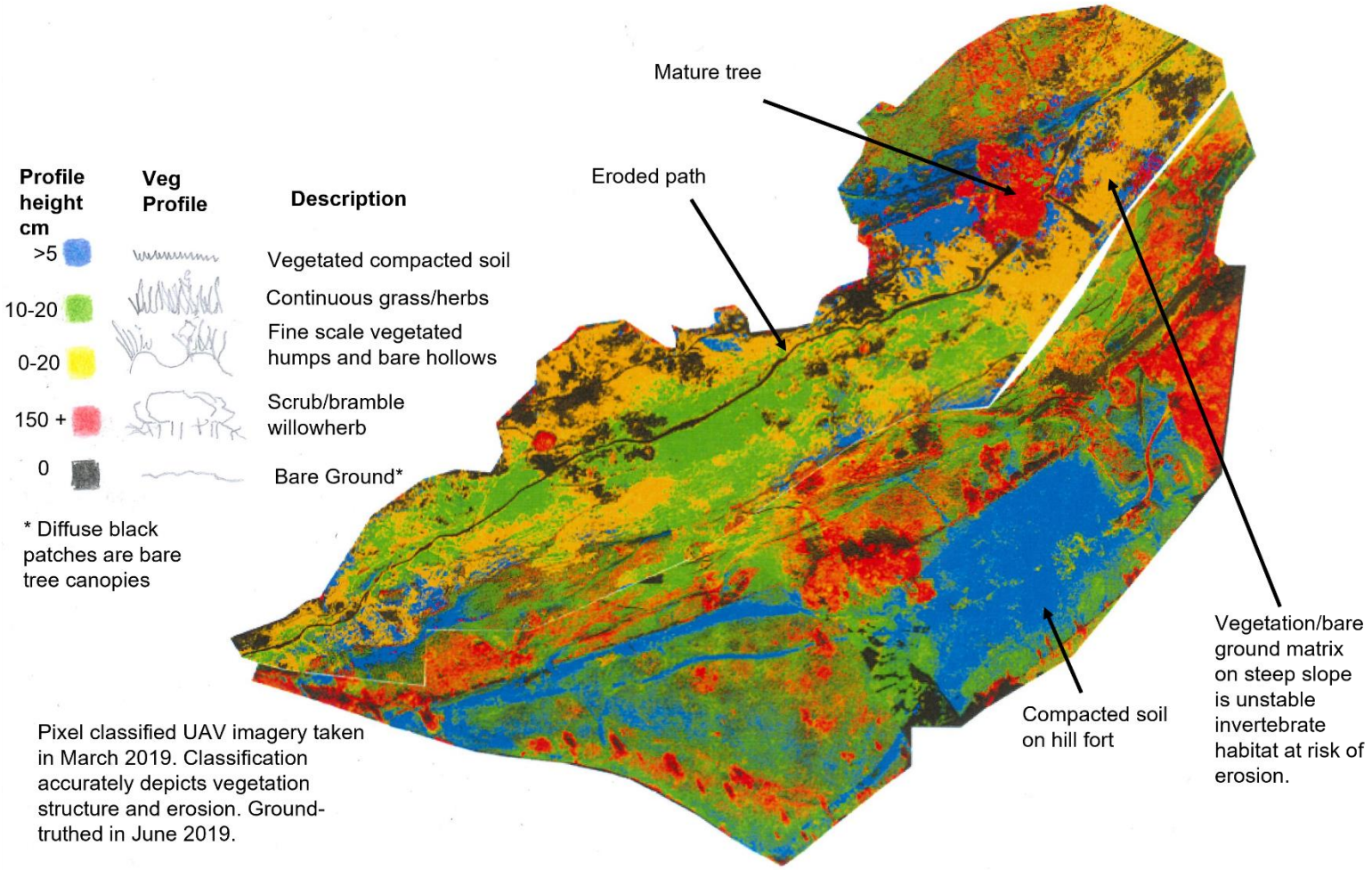
Common Name	Latin	%
Bird's-foot trefoil	*Lotus corniculatus*	87
Hawkbit sp	*Leontodon sp*	73
Salad Burnet	*Sanguisorba minor*	73
Yellow-wort	*Blackstonia perfoliata*	73
Quaking Grass	*Briza media*	67
Glaucous Sedge	*Carex flacca*	67
Lady's Bedstraw	*Galium verum*	67
Rock Rose	*Helianthemum nummularium*	67
Burnet-saxifrage	*Pimpinella saxifraga*	67
Small Scabious	*Scabiosa columbaria*	67
Wood Sage	*Teucrium scorodonia*	47
Black Knapweed	*Centaurea nigra*	40
Squinancywort	*Asperula cynanchica*	40
Pyramidal Orchid	*Anacamptis pyramidalis*	40
Common Spotted Orchid	*Dactylorhiza fuchsii*	40
Harebell	*Campanula rotundifolia*	40
Thyme	*Thymus spp*	33
Eyebright sp	*Euphrasia officinalis agg.*	27
Fairy Flax	*Linum catharticum*	27
Mouse-ear Hawkweed	*Pilosella officinarum*	27
Yellow Rattle	*Rhianthus minor*	27
Hoary Plantain	*Plantago media*	20
Carline Thistle	*Carlina vulgaris*	13
Greater Knapweed	*Centaurea scabiosa*	13
Field Scabious	*Knautia arvensis*	13
Common Twayblade	*Listera ovata*	13
Woolly Thistle	*Cirsium eriophorum*	7
Imperforate St John's-wort	*Hypericum maculatum*	7
Square-stalked St John's-wort	*Hypericum tetrapetum*	7
Clustered Bellflower	*Campanula glomerata*	7
Basil	*Clinopodium vulgare*	7
Devil's-bit Scabious	*Succisa pratensis*	7
Betony	*Stachys officinalis*	7

Limestone grassland indicator flora were listed during walkover survey of 50 x 50 m grid squares of grassland habitat. The percentage of squares each species occurred in is given in the indicator species list. Darker colours on the map indicate higher richness of indicators, the number recorded labelled in each square. Note this was a whole square assessment, not quadrat based, resulting in more species that occur at lower densites such as orchids being recorded than are found in quadrat-based surveys.



Appendix 3: GWT Impact of recreational pressure and vegetation compaction and erosion on Crickley Hill SSSI grassland 2019

Crickely Hill Gloucestershire. Erosion and vegetation profiles 2019



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