

M54 to M6 Link Road

TR010054

**8.20 Review of Woodland Mapping,
Impact Assessment and Compensation
– Revised Design**

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**M54 to M6 Link Road
Development Consent Order 202[]**

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Compensation – Revised Design**

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1 Introduction

1.1 Terms of Reference

- 1.1.1 This Technical Note ('TN') has been prepared in respect of an application ('the Application') for a Development Consent Order ('DCO') under section 37 of the Planning Act 2008 ('PA 2008') for the proposed M54 to M6 Link Road ('the Scheme') made by Highways England Company Limited ('Highways England') to the Secretary of State for Transport.
- 1.1.2 The Application for the Scheme was submitted on 30 January 2020 and accepted for Examination on 28 February 2020. Relevant Representations were received from interested parties in Spring 2020 and published on the Planning Inspectorate website on 11 June 2020.
- 1.1.3 This TN provides further information in response to RR-031 from Allow Ltd ('Allow'), and their statement that the extent of woodland habitat within the Scheme boundary has been inaccurately mapped and, therefore, the quantum of compensatory woodland planting proposed on Allow's land is unjustified. Whilst the statement on the accuracy of data was made by Allow in its relevant representation, the detailed information to explain the rationale behind this statement was provided by Allow on 29 September 2020, via a report by Aspect Ecology Ltd entitled '*Review of Proposed Habitat Creation on Land Owned by Allow Ltd*'.
- 1.1.4 The Aspect Ecology report stated that only 14.03 ha of woodland would be lost as a result of the Scheme, compared to the 20.67 ha woodland loss reported by Highways England in Table 8.18 of the Environmental Statement ("ES") (Version 3) [AS-083/6.1].
- 1.1.5 A TN was produced by Highways England to look at woodland loss in greater detail to investigate the discrepancy between the Aspect Ecology report and Chapter 8 of the ES[APP-047/6.1 and subsequent revisions]. Both the Aspect Ecology report and the revised woodland mapping and impact assessment TN submitted to the ExA at Deadline 3 [REP3-038/8.16], were based upon the Woodland Loss plan issued to Allow in July 2020, to allow direct comparison of the two. Those assessments were therefore based on the Scheme design submitted to the Planning Inspectorate in January 2020, as reported in Version 1 of the ES.
- 1.1.6 This version of the TN presents further assessment of woodland loss based on the design changes accepted by the Examining Authority on 29 October 2020, to ensure that the quantum of woodland loss reported in relation to design changes is accurate. In that respect it updates the TN submitted to the ExA at Deadline 3 [REP3-038/8.16] by presenting the information for the Scheme in its current form.

1.2 Scope

- 1.2.1 This TN does not replace or supersede any of Highways England's issued responses to RR-031 [see REP1-043/8.9] or more detailed responses to points

raised, as set out in the draft Statement of Common Ground with Allow [REP1-066/8.8LIU(A)]. Instead, this TN seeks to provide information on the following:

- The original baseline mapping methodology used to map the extent of woodland within the Scheme boundary, as presented in the ES for the Scheme [APP-040 to 056/6.1, APP-057 to 153/6.2, APP-154 to 210/6.3] as amended by the ES Addendum [AS-118/6.1] and revised ES chapters.
- Methodology for the revised mapping approach to woodland extent.
- The extent of woodland loss based on the changes to the Scheme design accepted by the ExA on 29 October 2020.
- Commentary on the proposed woodland compensation.

1.2.2 Impacts on ancient woodland and the compensation provided to offset those impacts are outside of the scope of the TN because ancient woodland is considered an irreplaceable habitat and by definition its impact cannot be mitigated. Areas of ancient woodland are therefore excluded from any of the areas of existing woodland or new woodland planting detailed in this TN. See Highways England's response to the Examining Authority's Written Question 1.3.18 [REP1-036/8.10] for information on ancient woodland loss and compensatory planting. No ancient woodland compensation is proposed on land owned by Allow.

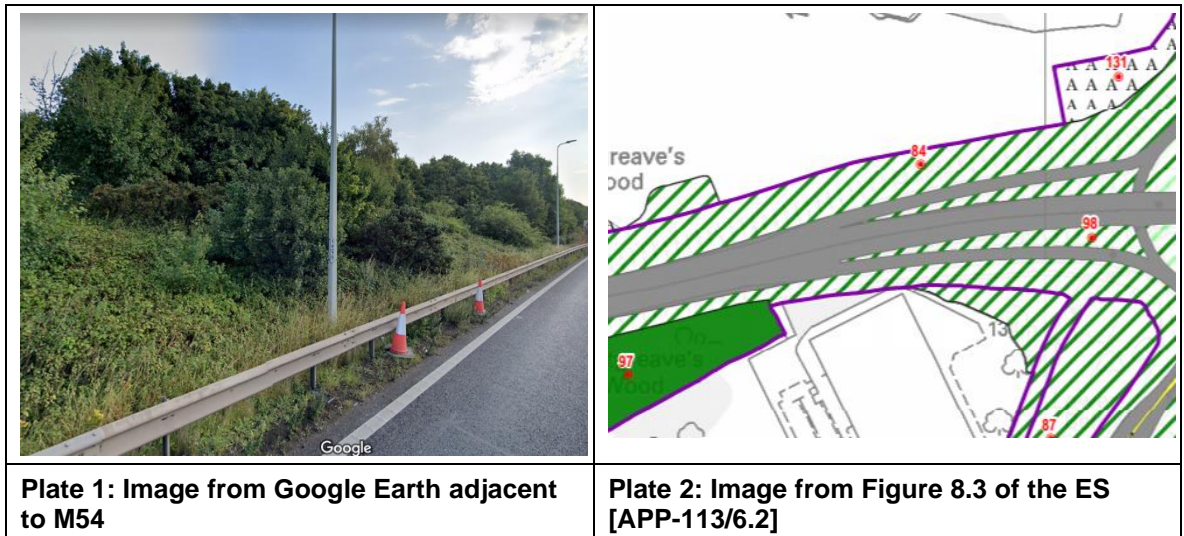
1.2.3 Both Allow's data on woodland extent and loss, and the revised woodland mapping and impact assessment presented in the previous version of the TN (submitted to the ExA at Deadline 3 [REP3-038/8.16]), were based upon the Woodland Loss plan issued to Allow in July 2020 which reflected the January DCO submission design as reported in Version 1 of the ES. This plan has been superseded as a result of the Scheme changes accepted on 29 October 2020. This version of the TN uses the same method for calculation of Woodland Loss as the previous version but is based on the Scheme design as it stands from 29 October 2020, hence areas of woodland loss reported here supersede those reported at Deadline 3. The method of baseline mapping and measurement of woodland loss are described in sections 2 and 3 below. All of the areas and calculations are illustrated in Appendix A of this TN, which is a new addition for this updated version of the TN. The summary of woodland losses and explanation of the proportionate woodland compensation are given in sections 3 and 4 respectively.

2 Baseline Mapping Methodology

2.1 Initial Baseline Mapping

- 2.1.1 Woodland extent within the Scheme boundary (and beyond where considered appropriate to do so) was mapped in accordance with Phase 1 methodology (Joint Nature Conservation Committee ("JNCC"), 2010). A Phase 1 habitat survey is a system of mapping habitats as a baseline for further survey work and assessment and is the current industry standard used by ecologists throughout England in support of development proposals of all scales.
- 2.1.2 JNCC methodology refers to Phase 1 habitat surveys being typically based upon 1:10,000 or 1:25,000 scale Ordnance Survey maps, with the minimum mapping units 0.1 ha or 0.5 ha respectively. To provide a greater level of accuracy for the assessment of the Scheme, habitats were mapped at a scale of 1:5,000 (as presented in Figure 8.3 of the ES [APP-113/6.2]), allowing smaller features such as ponds and individual trees to be mapped. It is not considered necessary to map at a smaller scale than this for an assessment of the effects of the Scheme in line with JNCC methodology for habitat mapping. An environmental statement is required to provide in particular a description of the likely significant effects of the project on the environment; and a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment. Whilst it is necessary to record the woodland and its extent in order to determine if it is of sufficient importance that any effect on it would be significant, the assessment of the impacts to the woodland and the requirements for mitigation including compensatory planting areas required to address the loss of woodland are not based on loss of woodland down to the nearest m².
- 2.1.3 The methodology uses lines and polygons to represent features like grassland, woodland or hedgerows. It does not aim to accurately map habitats to a small scale, and, as such, small areas of one habitat type may be included in a polygon representing a different habitat type. This is because the transition from one habitat type to another may be a gradation, rather than a sharply delineated boundary, and often the areas of habitat are too small to distinguish one from another. An example of this approach is highlighted below (for key refer to Figure 8.3 of the ES [APP-

113/6.2]), where the green and white cross-shading on Plate 2 indicates plantation woodland habitat.



- 2.1.4 The dominant habitat type along the verge of the eastbound M54 in the south of the Scheme footprint is plantation woodland. However, within this woodland are areas of scrub and grassland that are too small to map as individual areas and are therefore included within the polygon denoting plantation woodland.

2.2 Revised Baseline Mapping

- 2.2.1 HE has undertaken an updated desk-based mapping exercise, to compare the extent of woodland within the Scheme boundary as mapped during the Phase 1 habitat surveys with the extent of woodland shown in the same location on Google Earth aerial satellite imagery.
- 2.2.2 The results of this revised mapping have been used to update the assessment of woodland loss arising from the Scheme as accepted by the ExA on 29 October 2020. Revised woodland mapping is provided in Appendix A of this TN.

3 Assessment of Woodland Loss

3.1.1 The extent of woodland loss presented in this TN includes the following:

- Woodland that will be felled during site clearance required for the Scheme.
- Woodland that will not be directly felled but is adjacent to woodland that will be felled. This woodland is likely to be damaged during site clearance through the compaction of soils. It is also likely to be subject to increased wind, rain, sunlight and temperature extremes, due to the change in the location of the woodland edge and the protection, or lack of, that the woodland edge provides to the woodland interior. Tree roots can spread a considerable distance beyond the canopy extent, typically extending a distance at least equivalent to the height of the tree and in some cases up to 3 times the height of the tree. To account for this potential damage or loss of woodland, rather than calculating the root spread for each individual tree, wherever construction works encroach within 5m of woodland, that particular area of woodland within 5 m of the construction works is assumed to be damaged or lost and therefore requires compensation. In the absence of individual root protection areas, there is no industry standard for calculating these potential impacts, other than for ancient woodland where a 15 m buffer is recommended to protect the woodland. A distance of 5 m is considered to be appropriate for the woodland within the Scheme boundary, given that it is not ancient but a mix of mature woodland and younger plantation woodland where many trees are not fully mature.
- Individual trees on the boundary of a site clearance area. As it is not possible to retain part of a mature tree, where such trees are situated on the boundary of a site clearance area, the tree is assumed to be lost.

3.1.2 The above approach differs from the approach that Allow took in mapping and reporting the extent of woodland loss as a result of the Scheme. Allow did not incorporate any impact buffer (as described above in the second bullet point) within their calculations to account for damage or loss of retained woodland adjacent to construction areas. With higher scales of mapping this is not seen as appropriate given the size of such buffer zones in comparison to the minimum mapping units (and was not part of the methodology of the original assessment of woodland loss reported in the ES). However, at more detailed scales of mapping, it is necessary to calculate the full extent of woodland loss by incorporating a buffer to capture potential damage or loss. As such Allow underestimated the amount of woodland that would be lost as a result of the Scheme. Losses were rounded to the nearest 0.01 ha in the ES, but measurements to 0.001 ha are shown for each area in Appendix A and in the text below.

3.2 Assessment of Woodland Loss at Lower Pool

- 3.2.1 Lower Pool Local Wildlife Site (“LWS”) and Site of Biological Importance (“SBI”) is situated within the Scheme boundary and would be partially lost during construction of the Scheme.
- 3.2.2 The LWS/SBI consists of broadleaved woodland and a pond, as shown in Plate 3 below. The boundary of the woodland is clearly defined where it meets the historic parkland and grassland habitats adjacent to it and there is no transition area where it is difficult to assign a particular habitat type.
- 3.2.3 Based upon the revised woodland mapping, the woodland loss within Lower Pool would be 2.126 ha of direct loss, plus 0.450 ha of loss or damage where construction works would be within 5 m of retained woodland, making a loss of 2.576 ha in total, in the area shown on Plate 4 (ID 19 in Appendix A). This is in comparison to the 2.04 ha of loss reported in the ES Version 3 (October 2020). No impact zone was included then, due to scale of the mapping (as described in 3.1.1 above) and in addition there have been corrections in area calculations for wider utility corridors.
- 3.2.4 The Scheme would also result in the loss of 0.46 ha of standing water (pond) within the LWS/SBI.



Plate 3: Image of Lower Pool from Google Earth



Plate 4: Image of Lower Pool showing the SBI boundary (turquoise line), woodland loss (green hatch) and zone of impact (yellow outline/orange hatch).

3.3 Assessment of Woodland Loss within the rest of the Scheme

- 3.3.1 The revised mapping exercise at higher resolution than the original mapping has highlighted locations that were mapped as woodland during the phase 1 habitat survey, but where it is now considered possible to define the boundary between different habitats. These locations are typically along the carriageways of the A460,

M54 and the M6 where a mosaic of plantation woodland, scrub and grassland is present.

3.3.2 Taking account of the revised mapping, woodland loss across the rest of the Scheme would be:

- 12.77 ha of direct loss of woodland; and
- 5.954 ha of loss of woodland within the 5m buffer.

3.3.3 The areas above exclude the loss of woodland within Lower Pool (2.126 ha of direct loss and 0.450 ha of woodland within the 5 m buffer) and also exclude loss of ancient woodland (which is outside of the scope of this TN).

3.4 Assessment of Total Woodland Loss as a result of the Scheme

3.4.1 The Scheme would result in the total loss of 21.300 ha of non-ancient woodland, as follows:

- 2.126 ha of direct loss of woodland within Lower Pool LWS/SBI.
- 0.450 ha of loss of woodland within the impact zone, 5m buffer within Lower Pool LWS/SBI.
- 12.77 ha of direct loss of woodland across the rest of the Scheme.
- 5.954 ha of loss within impact zone within the 5m buffer across the rest of the Scheme.

3.4.2 The woodland loss reported in Table 8.18 of Version 3 of Chapter 8: Biodiversity of the ES [AS-083/6.1] was 20.67 ha. This consisted of 2.04 ha loss within Lower Pool and 18.63 ha across the rest of the Scheme. The revised woodland loss (direct loss and impact zone loss) for the Scheme as revised at 29 October 2020 is 0.63 ha more than reported in Version 3 of the ES.

3.4.3 The difference in woodland loss arises from:

- the increased detail in baseline mapping;
- the inclusion of the 5 m buffer to assess damage or loss of woodland immediately adjacent to construction areas; and
- revision of Scheme design (accepted 29 October 2020) including additional clearance of woodland for utilities at Lower Pool.

4 Woodland Compensation

- 4.1.1 Compensation woodland planting has been proposed to offset the residual loss of, or permanent damage to, existing woodland after mitigation measures have been taken into account.
- 4.1.2 Design Manual for Roads and Bridges (DMRB) Sustainability & Environment Design LD 118 Biodiversity design states that:
- Biodiversity compensation measures shall provide replacement ecological resources or functions that are of a similar type and an equivalent or higher value than those being impacted.
 - There is inherent uncertainty in the success of biodiversity compensation measures, particularly in cases which require ecological restoration, habitat creation, or translocation of species or habitats, therefore designing for higher replacement ratios can improve confidence in outcomes.
- 4.1.3 The Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2018) gives the following guidance on compensation:
- Compensation should be focused on the same type of ecological features as those affected and equivalent levels of ecological 'functionality' sought.
 - Any replacement area should be similar in terms of ecological features and ecological functions that have been lost or damaged, or with appropriate management have the ability to reproduce the functions and conditions of those ecological features.
 - Compensation should be provided as close as possible to the location where effects have occurred and benefit the same habitats and species as those affected.
 - Replacement ratios of compensatory habitat greater than one-to-one are frequently appropriate because of the uncertainty inherent in compensation, particularly in cases which require ecological restoration, habitat creation or translocation of species or habitats.
 - The scientific basis for deriving appropriate ratios is not exact and will vary depending on the habitat or species concerned. Increased replacement ratios can also help take account of the time lag in delivering compensation
- 4.1.4 With regards to ratios of compensatory planting, not all areas of individual woodland blocks that will be lost have been compensated for with an equivalent area of new planting. Some woodlands, such as Lower Pool LWS/SBI, are of greater biodiversity importance than small areas of woodland planting in the Highways England soft estate. Compensatory planting for LWS/SBI has been provided at a ratio of approximately 2:1 to account for their importance. Woodlands such as Lower Pool are of greater importance as they have been designated as LWS, provide habitat for

protected species such as bats, and are less disturbed and fragmented than plantation woodlands alongside the existing road network.

4.1.5 Overall, HE considers that the areas of compensation to be provided are essential to compensate for the loss of woodland across the Scheme and are not excessive.

4.1.6 Allow RR-031v states that:

“The Applicant has failed to justify the rationale behind why the Applicant has placed all of the ecological mitigation it considers necessary to alleviate the impact of its scheme on Allow's land and not any other parties land”.

4.1.7 The Environmental Masterplan Figures 2.1 to 2.7 [AS-086 to AS-092/6.2] for the Scheme clearly sets out HE's approach to delivering essential mitigation across the extent of the Scheme, with features such as woodland, grassland, hedgerows and ponds proposed on several other parties' land, not just land owned by Allow.

4.1.8 The ecological mitigation to be delivered on Allow's land, in particular on Plot 5/2, is to compensate for the impacts to Lower Pool LWS/SBI. This is considered in more detail below.

4.2 Woodland Compensation at Lower Pool

4.2.1 The Scheme would result in the loss of 2.126 ha of woodland and 0.46 ha of standing water (pond) within Lower Pool LWS/SBI. Construction would take place within 5 m of an additional 0.45 ha of woodland within Lower Pool which could be damaged or lost (impact zone). To compensate for this, a total of 4.84 ha of woodland, 0.57 ha of standing water and 0.78 ha of grassland is proposed to be created on Plot 5/2 (as shown in Plate 5), which is in the ownership of Allow.

4.2.2 Although no grassland would be lost within Lower Pool LWS/SBI, the new grassland is an essential part of the habitat creation. It would:

- form a buffer between the pond and the woodland, reducing the risk of significant build-up of organic material via leaf fall in the pond which can result in nutrient overload and loss of the pond ecosystem;
- reduce the negative effect of shading of the pond by the woodland;
- allow future safe access to the pond for management, and
- allow room for the root zone of trees as they mature.

Table 1: Summary of habitat loss and creation at Lower Pool

Loss of habitats at Lower Pool LWS/SBI	Area of loss (ha)	Area of habitat creation
Woodland (direct loss)	2.126	4.84
Woodland (impact zone)	0.45	
Standing water	0.46	0.57
Grassland	0	0.78



Plate 5: Image of Lower Pool from Environmental Masterplan [AS-086/6.2]

4.2.3 Plot 5/2 is an appropriate location for the compensatory planting for the following reasons:

- The plot is large enough to accommodate the required amount of woodland planting. Smaller plots would result in more fragmented pockets of woodland, which are of less value to biodiversity as they support smaller numbers of species and are more susceptible to disturbance.
- The plot is adjacent to the retained areas of Lower Pool. This means that the compensation is close to the location where effects have occurred and would benefit the same habitats and species as those affected.

4.2.4 Whilst the new link road represents a partial barrier between woodland on the east and west sides, the compensatory woodland planting on Allow's land will be across the link road from the retained areas of Lower Pool. The new link road between Hilton Lane and the pool within Lower Pool will be in a cutting, which will facilitate crossing by birds and bats and minimise the risk of collision for those vulnerable to road traffic deaths such as barn owl. The habitat creation next to the highway will also physically connect the compensatory and the retained woodland via the vegetated Hilton Lane immediately adjacent to retained woodland. In addition, the compensatory woodland will connect to existing woodland to the southwest. A mammal tunnel will allow safe crossing there.

4.2.5 The potential to provide new woodland planting and replacement standing water to the east of the mainline of the Scheme was explored during the development of the landscape design at the request of Allow. However, due to the presence of the designed landscape of Hilton Park and the Shrubbery, which is a feature of the historic parkland, on the eastern side of the Scheme any additional woodland planting would result in adverse effects on these receptors. The parkland also forms the setting of the Grade I Hilton Hall and associated buildings. The potential to locate planting to the east was discussed with Historic England at a meeting on the 13 August 2019. It was agreed that the form of features within the retained historic park

such as the historic boundary of Lower Pool/ The Shrubby should be retained and that the woodland should not be extended into the remaining open parkland.

- 4.2.6 Plot 5/2 will compensate for the impacts to Lower Pool by providing new planting. As stated above, there is no rigid scientific basis for determining ratios for compensation. In this instance, the area of new planting is approximately twice as much as is being lost. Highways England considers that this provision is appropriate, given that the woodland being lost is within a LWS and supports protected species such as bats. There are always risks associated with creating new habitats, such as the suitability of the compensation site and the details of the developing habitat and the time required for new woodland to reach its target condition. These risks have been factored into the compensation proposals.
- 4.2.7 The revised mapping and the changes in the Scheme due to utilities works slightly increased the area of woodland lost within Lower Pool (by 0.536 ha), but Highways England does not propose to increase the extent of proposed new planting on plot 5/2. Changes to the amount of woodland lost in areas distant to Lower Pool, such as along the carriageways of the M54, do not impact on or affect the area of compensatory planting necessary at Lower Pool.

4.3 Rest of the Scheme

- 4.3.1 The compensatory planting across the rest of the Scheme, shown in the Environmental Masterplan Figures 2.1 to 2.7 [AS-086 to AS-092/6.2], either addresses the impacts to another LWS, Brookfield Farm, or has a multitude of functions including landscape integration, visual screening and biodiversity. Any changes in the areas of woodland to be lost have therefore not resulted in any changes in the Environmental Masterplan. Integrating the new road layout into the wider landscape is not based on the existing areas of woodland to be lost. The scale of the impact on Brookfield Farm LWS/SBI, which influences the amount of woodland planting in the north of the Scheme distant to plot 5/2, has not changed.

5 Conclusion

- 5.1.1 Highways England has undertaken a revised woodland mapping and impact assessment for the Scheme to respond to concerns raised by Allow in RR-031 and the Aspect Ecology report, as part of the DCO process. The revised mapping is not currently being used for any other purpose.
- 5.1.2 This exercise has shown that there were some discrepancies between the habitats mapped in the original Phase 1 habitat mapping exercise and the habitats on the ground, most notably when mapping habitat mosaics of woodland, grassland and scrub along the carriageways of the A460, M54 and M6 and these have been corrected. However, even when the loss of woodland is assessed using the revised methodology and takes into account the accepted amended Scheme (29 October 2020), the difference between the woodland loss reported in Table 8.18 of Version 3 of the ES [AS-083/6.1] and this updated TN is 3% (0.16 ha) across the Scheme, much less than the difference in the calculation of loss by Allow. The original woodland mapping and calculations of woodland loss were carried out at a higher scale than the analysis undertaken by Allow. This original methodology is consistent with Joint Nature Conservation methodology and it is not considered necessary to map at a smaller scale than this (as the transition to one habitat to another is not obvious nor can it be defined by an accurately mapped boundary). With the greater level of detail of woodland mapping, the calculations of woodland loss have been undertaken to a more detailed level. As a result a buffer has been included to account for loss and damage during construction and extent of tree roots. The areas calculated using the original and more detailed methodology result in similar areas of woodland loss
- 5.1.3 Table 2 summarises the calculations of woodland loss across the Scheme.

Table 2: Summary of Woodland Loss Calculations

Woodland loss reported in the ES (version 1)	Woodland loss reported in the ES (version 3)	Woodland loss reported by Allow (based on the ES version 1 submission)	Woodland loss reported in this TN
20.45 ha	20.67 ha	14.03 ha	21.30 ha

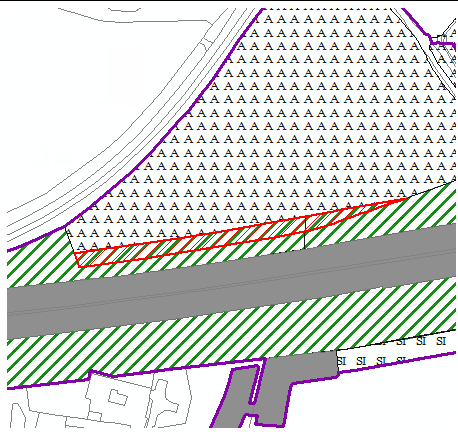


- 5.1.4 Allow did not incorporate any buffer within their calculations to account for damage or loss of retained woodland adjacent to construction areas. The risk of impacting trees through damage or compaction of root systems when working in close proximity to the tree is detailed in "*British Standard 5837: Trees in relation to design, demolition and construction – recommendations*". It is important to account for this risk in any calculation of woodland loss, therefore it is the opinion of Highways England that Allow underestimated the amount of woodland likely to be lost as a result of the Scheme.
- 5.1.5 As such, Highways England concludes that the proposals for woodland planting within plot 5/2 (owned by Allow Ltd) to compensate for impacts to Lower Pool LWS/SBI, and the proposals for woodland planting in the Masterplan as a whole to compensate for impacts of woodland loss across the Scheme are both proportionate

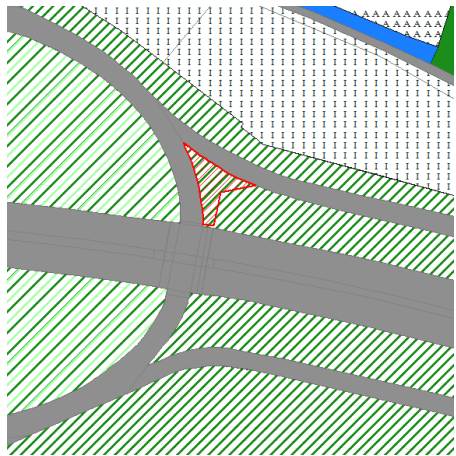





and justified, and not excessive. The planting proposed is considered essential to mitigate the impact of the Scheme on Lower Pool.

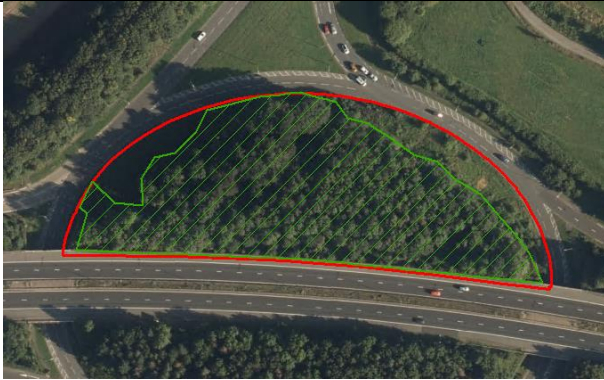


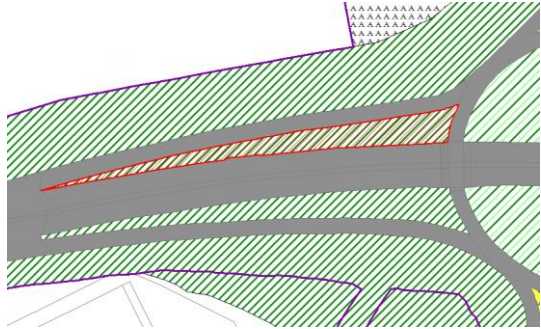


- 5.1.6 Although the loss of woodland reported in this TN is 0.63 ha greater than the loss reported in Table 8.18 of Version 3 of the ES [AS-083/6.1], no changes to the Environmental Masterplan or the compensatory habitat are proposed. Specific ratios have not been used to determine the quantum of ecological compensation required. Instead, the ecological importance of the feature requiring compensation, in combination with other factors such as its difficulty to recreate have informed the compensation proposals for the Scheme in its entirety. New woodland planting across the Scheme would have several functions including biodiversity, landscape integration and visual screening and is required regardless of the total loss of woodland. The exceptions to this are blocks of woodland planting to compensate for impacts to Lower Pool LWS and Brookfield Farm LWS. Impacts to these two sites have not significantly altered, therefore the proposals for woodland planting to compensate for the impacts to these two sites have not changed following the review detailed in this TN.


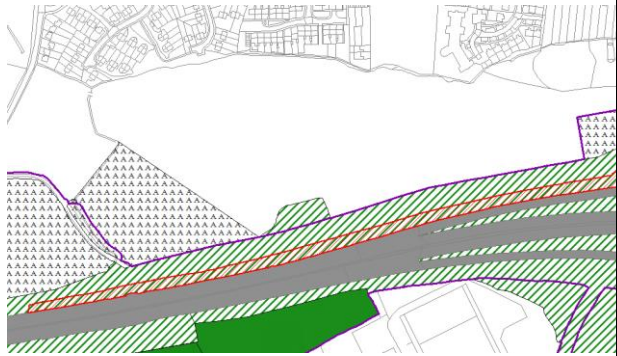


Appendix A: Revised Mapping Exercise



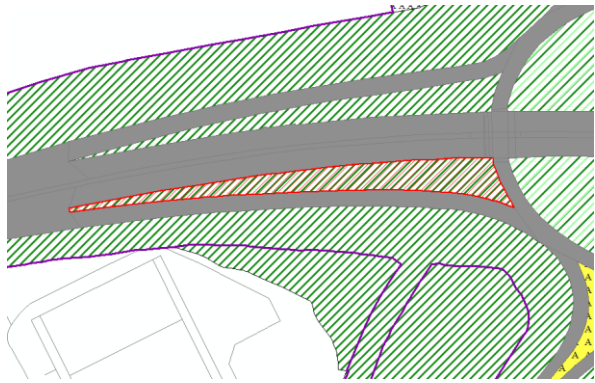

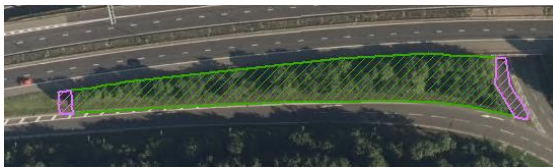
The detail of the assessments discussed is presented in the table below, with a row for each polygon. Each row outlines the woodland loss quanta identified as being lost in the ES, by Aspect for Allow Ltd and in this woodland review, with narrative and woodland loss quanta provided. The ‘Outcome’ column shows the areas of woodland direct loss and impact zone used for the calculations of woodland loss in this TN. (Abbreviations in narrative: HS – hard standing, RPA – Root Protection Area (arboricultural), N/A – not applicable).


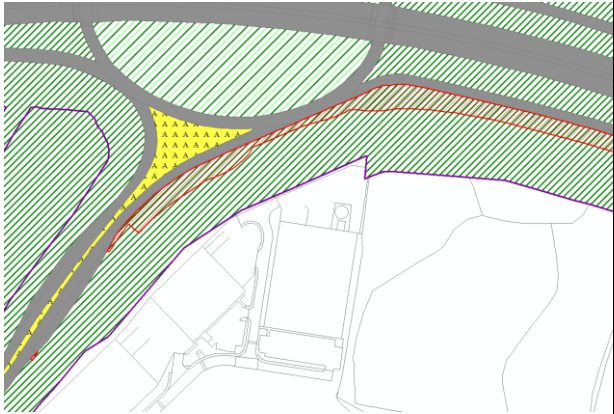





ID	Woodland reference	1. Loss reported in the Oct ES (ha)	2. Aspect woodland loss (ha)	Do points 1 and 2 Agree?	Narrative Red line – Site clearance area Green Hatch - Woodland	4. Direct loss of woodland within site clearance area (ha)	5. Woodland within 5 m of woodland lost (ha)	6. Other habitats within 5m of woodland lost (ha)	Outcome Green hatch – Woodland loss Orange hatch – Impact zone – Woodland within 5 m buffer Purple hatch – Impact zone - Other habitats (non-woodland) within 5 m buffer
1		0.189	0 No woodland present	No	<p>Bulk of the area does not appear to be woodland, according to aerial imagery - appears to be a combination of arable field and a grass verge with scattered scrub.</p>  	0	N/A (not applicable)	N/A	Largely farmland, with some overlap with grass verge.


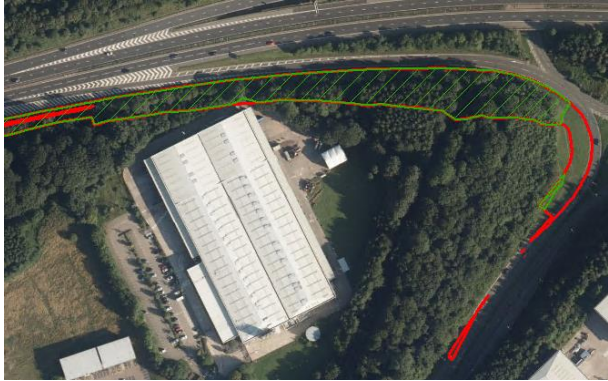





ID	Woodland reference	1. Loss reported in the Oct ES (ha)	2. Aspect woodland loss (ha)	Do points 1 and 2 Agree?	Narrative Red line – Site clearance area Green Hatch - Woodland	4. Direct loss of woodland within site clearance area (ha)	5. Woodland within 5 m of woodland lost (ha)	6. Other habitats within 5m of woodland lost (ha)	Outcome Green hatch – Woodland loss Orange hatch – Impact zone – Woodland within 5 m buffer Purple hatch – Impact zone - Other habitats (non-woodland) within 5 m buffer
2		0.032	0 Grass verge	No	<p>Small overlap with woodland to the east. Woodland edge at fence-line, with a grass verge, and hardstanding (HS) beyond.</p>  	0.008	0.009	0.007	
3		1.292	1.261	No	<p>Some land around perimeter of roundabout, where vegetation is of more of a scrub or grassland character.</p>	1.013	0.00	0.093	


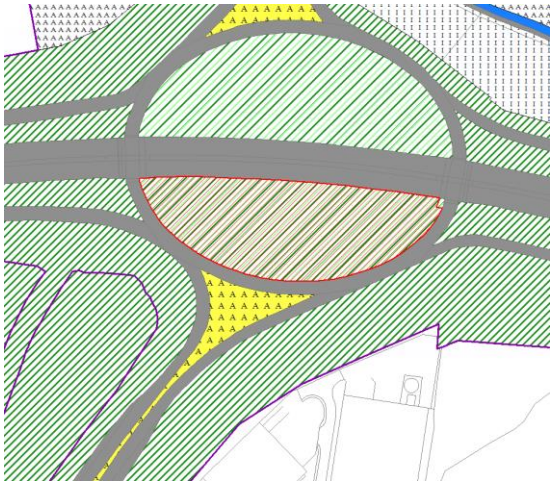



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4		0.271	0.1624	No	<p>Some grass verges at western end as it tapers to a point, and in the west in the sightlines of the roundabout. Some hardstanding around the overhead gantry in the west.</p> 	0.178	0.00	0.006	

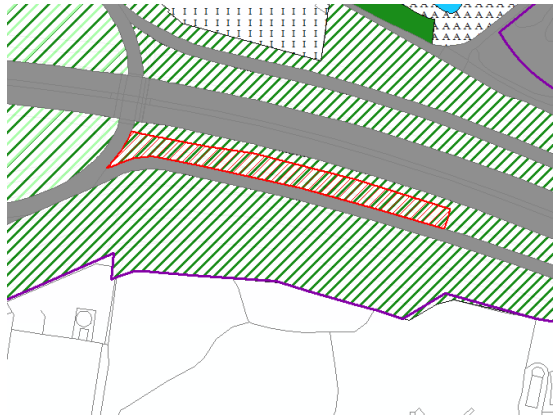




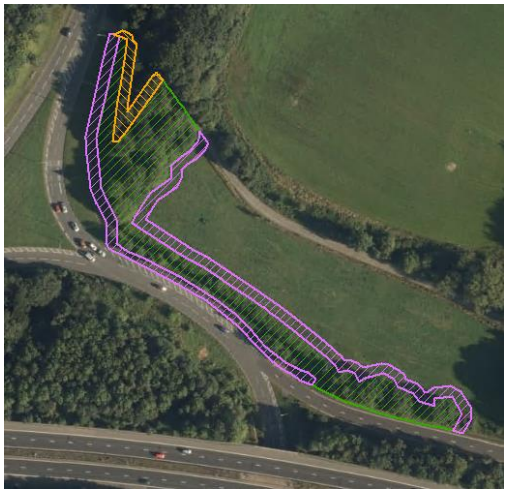
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5		1.132	0 Verge + pavement and no woodland	No	Woodland largely continues to verge, but some areas of grassland and scrub. In north-east, HS footpath and grass. Impact zone covers areas of impact, for example to roots. 	0.815	0.45	0.218	

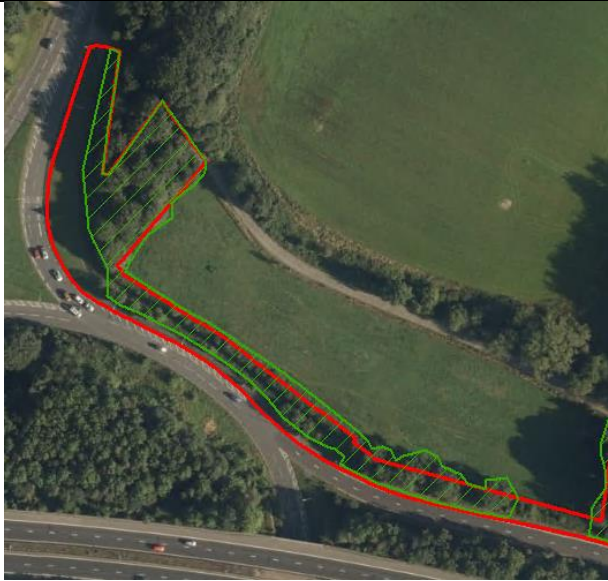




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6		0.333	0.2264	No	<p>Grass verges in west and in sightlines for roundabout in east, either side of area of woodland.</p> 	0.252	0.00	0.012	

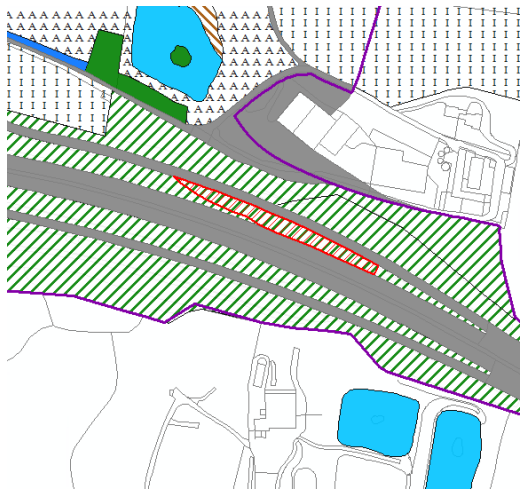


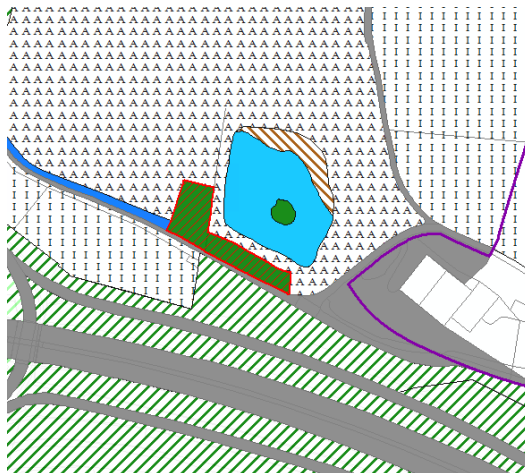
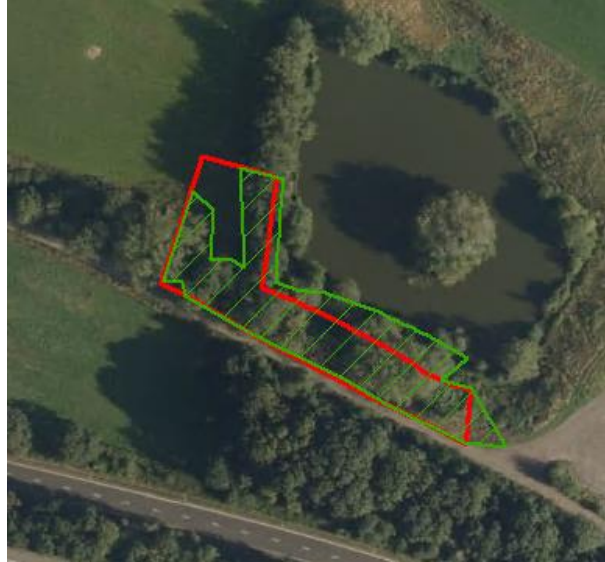
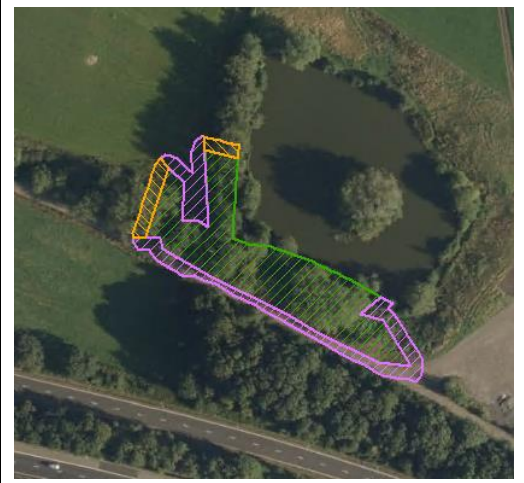
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7		0.495	0 Verge + pavement and no woodland	No	<p>Largely edge of woodland lost. Some scrub, grass and HS also present in this area.</p>   	0.418	0.23	0.076	 

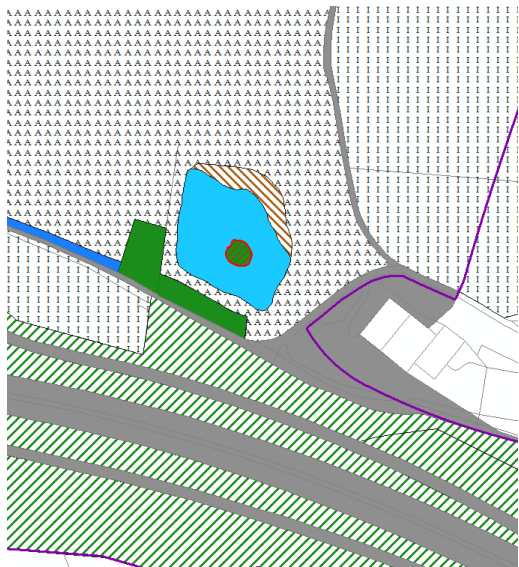




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8		1.551	0.6297	No	<p>Largely edge of a wider area of woodland. Area of grass around sight lines for roundabout (eastern edge of removal polygon), along with some small areas of grass and hardstanding throughout area.</p>    	1.475	0.666	0.03	<p>Buffer not extending into hardstanding – roads and near the building). Woodland impact zone increased to 15m into AW.</p>  


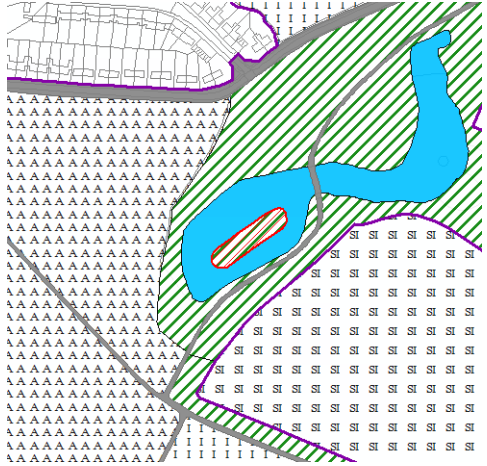


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					<p>The buffer will encroach into Whitgreave's wood – ancient woodland (see below), as such the same 15m approach was taken as for other areas of ancient woodland.</p> 				
9		1.098	0.5364	No	<p>Woodland cover in centre of roundabout. Areas of grass and scrub around edge.</p>  	0.692	0.00	0.102	


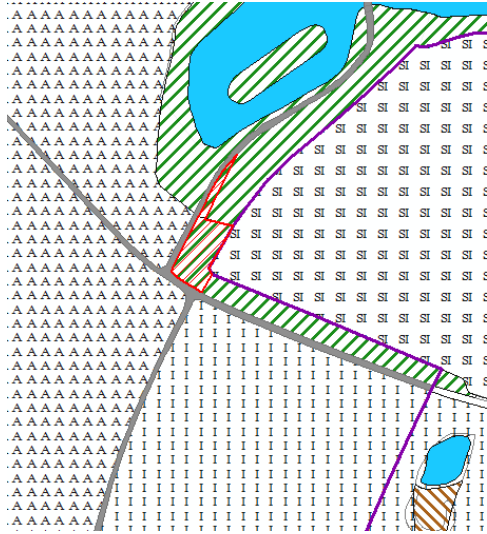

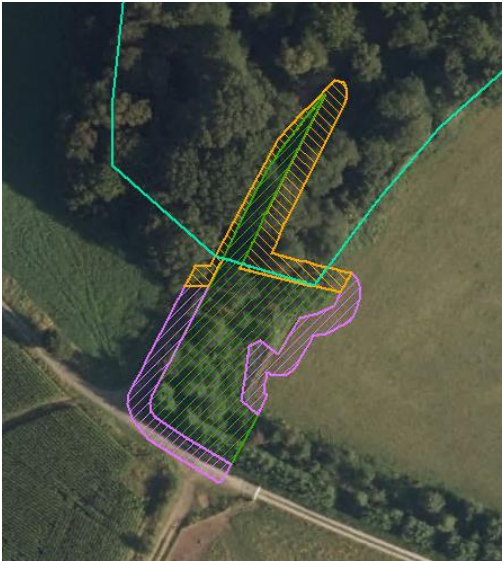
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10		0.308	0.3701	No	<p>Largely an area of woodland. Some grass and HS footpath at western edge around sightlines of roundabout.</p>  <p>Streetview of the southern side of the area.</p> 	0.349	0.008	0.024	
11		1.259	1.0418	No	<p>Largely area of woodland. Some grassed areas on the sight lines of the roundabout (westernmost edge of polygon) and on verge.</p>	1.083	0.16	0.244	

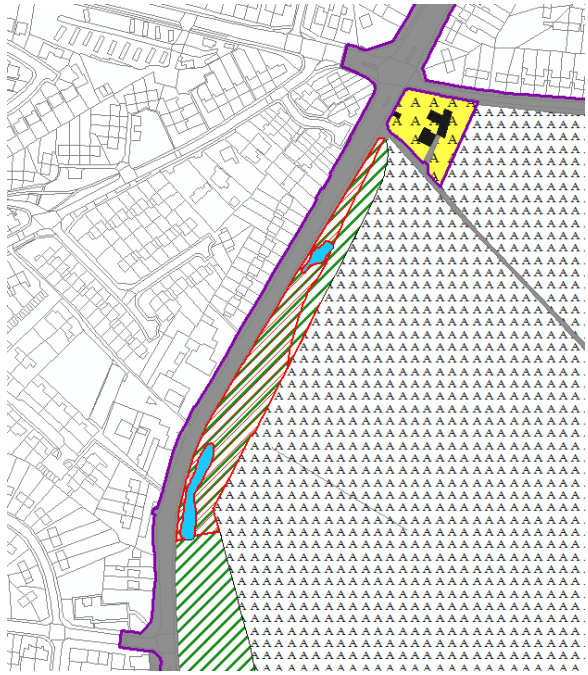



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					  <p>View from roundabout, looking north-east.</p>  				

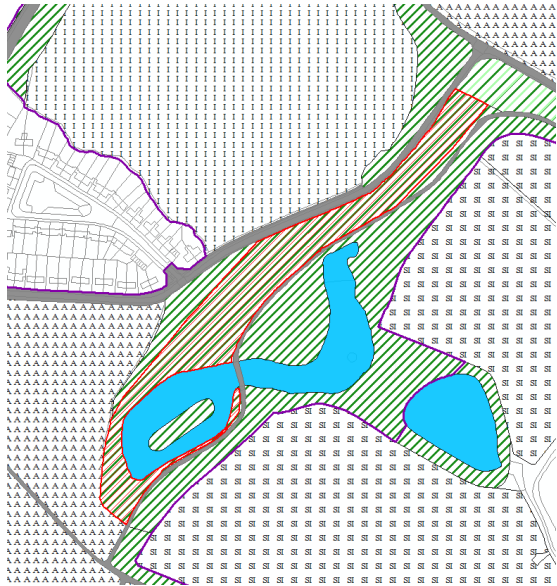



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12		0.218	0 No woodland present	No	This is scrub and grassland, as identified from Google Street View. No woodland present.  	0	N/A	N/A	No woodland, just scrub and grassland.
13		0.215	0.215	Yes	Mostly all woodland, with small area of grass in west. 	0.24	0.022	0.088	

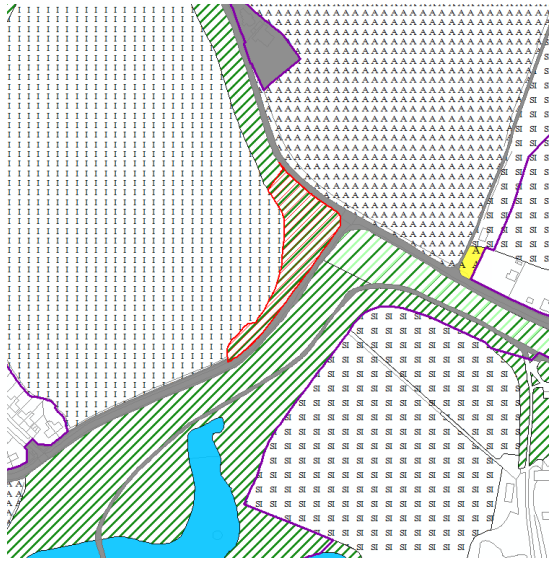



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14		0.025	0.025	Yes	Island on pond/lake. All woodland. Assumed extent of island correct in loss polygon. 	0.025	N/A	N/A	Assume area of loss polygon correct to edge of island.
15		0.155	0.0967	No	Woodland area. Small amount of grass and HS footpath to the west, into which Root Protection Areas (RPAs) of trees are likely to extend underneath. Woodland loss area extended to the edge of the canopy in the west and extended in the east as existing boundaries would leave half a tree.  Streetview of the western edge of the woodland.	0.235	0.086	0.053	

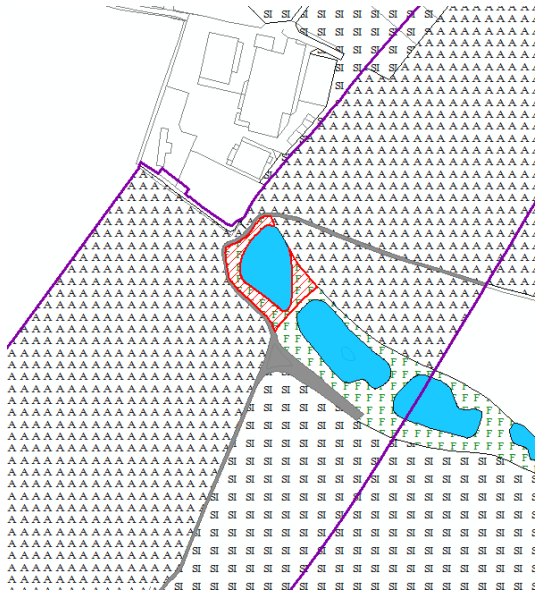


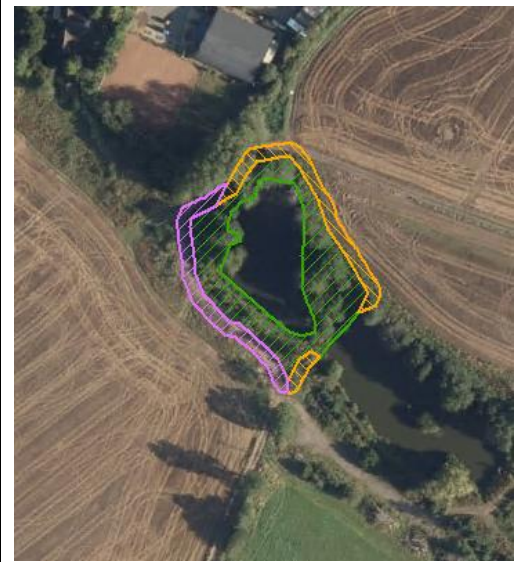
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16		0.12	0 No trees on island	No	<p>Google Earth shows the island was tree covered in September 2018, the trees have subsequently been removed (between Sept-2018 and May-2019), (the woodland is not on the arboricultural data) however, the baseline pre-felling should be used. The island area is taken to be the woodland area, rather than the canopy area pre-felling.</p> <p>Woodland prior to felling (pre-May 2019)</p>  <p>Woodland post woodland felling (note regeneration of woody vegetation in image)</p>	0.08	N/A	N/A	<p>Area within Lower Pool SBI.</p> <p>Island was tree covered at time of survey. Used extent of island for measurement reducing area of loss polygon to just the island area.</p> 

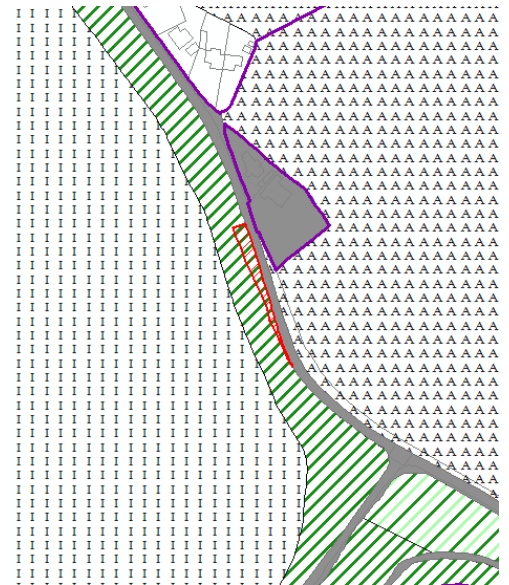


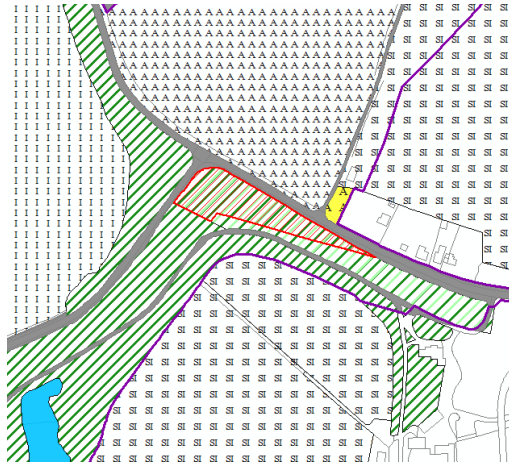


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17		0.109	0.0944	No	<p>Appears to be young, recently planted trees, not all visible on aerials. Very thin strip marked to be lost in the north. 5m buffer should account for impacts to surrounding woodland. Unsurfaced tracks assumed to contain roots in RPA.</p> <p>Lower Pool SBI shown in turquoise outline.</p> 	Within SBI 0.015 Outside SBI 0.093	Within SBI 0.037 Outside SBI 0.008	Within SBI 0 Outside SBI 0.052	<p>Area partly within Lower Pool SBI.</p> 


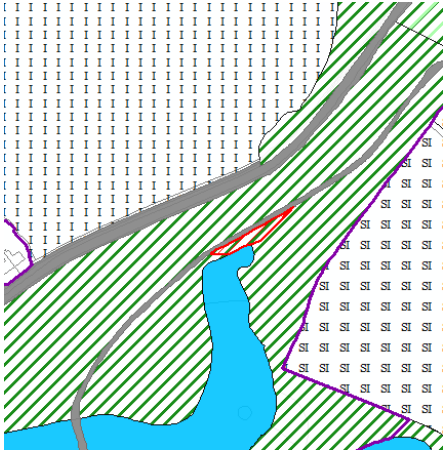


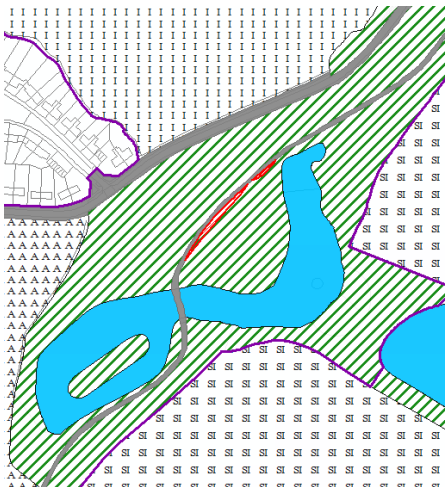
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18		0.555	0.608	Yes	<p>Appears to be solid block of woodland. Loss extended slightly in north, where half a tree would be left under existing loss extents. 5m buffer to east included where no natural woodland edge and into non-woodland habitats adjacent to woodland. Ponds present in woodland, which have been kept separate.</p>  <p>Western edge of woodland. Canopy overhangs footpath and road.</p> 	0.559	0.166	0.00	<p>Cut outs are ponds. Northern corner and west have wall and HS road, so considered to be boundary.</p> 



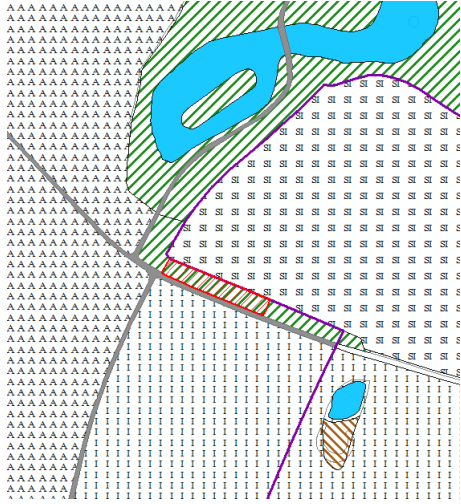


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19		1.722	1.272	No	<p>Entire loss polygon appears to be woodland. Unclear why Aspect have reduced AECOM figure by 0.4ha. Include 5m buffers into surrounding woodland and adjacent habitats (except where ponds and roads are adjacent to woodland loss). Lower Pool SBI shown in turquoise outline.</p>  	Within SBI 1.629 Outside SBI 0.097	Within SBI 0.243 Outside SBI 0.061	0.00	

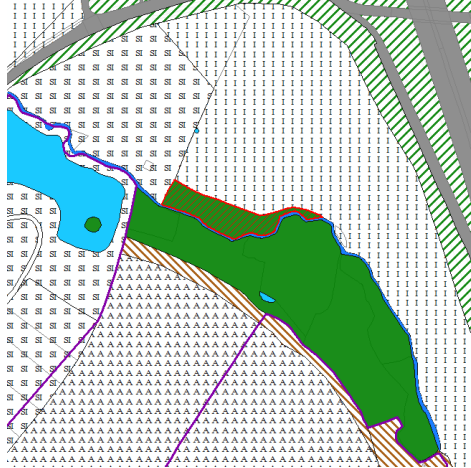


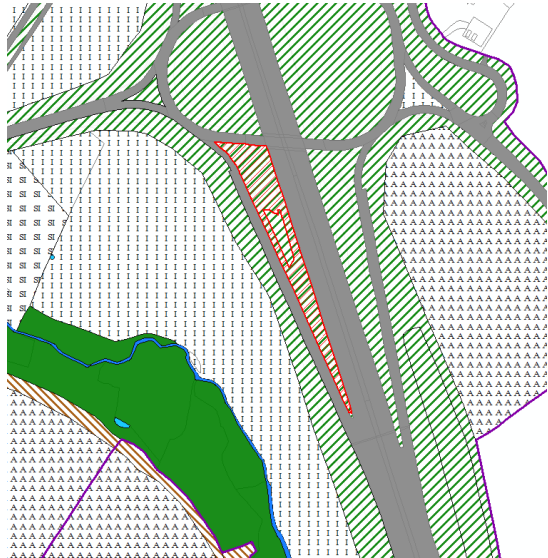
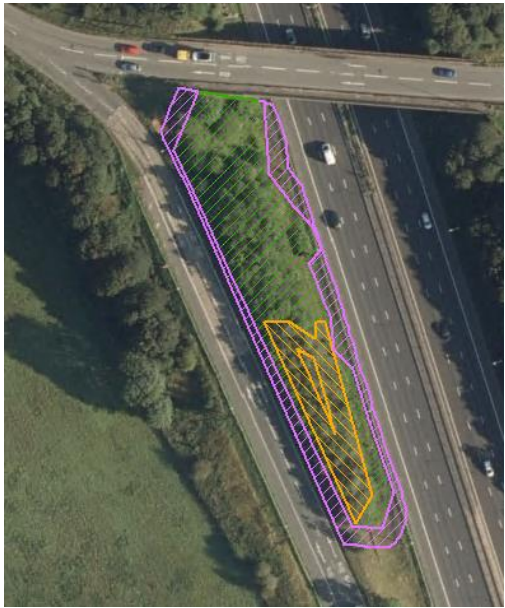
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20		0.489	0.3325	No	<p>Woodland block present. Loss area extended to prevent the retention of half a tree. Buffers do not extend under road.</p>  	0.6	0.02	0.094	<p>Extended in the west as can't lose half a tree. No buffer to south west as tarmacked road present.</p> 

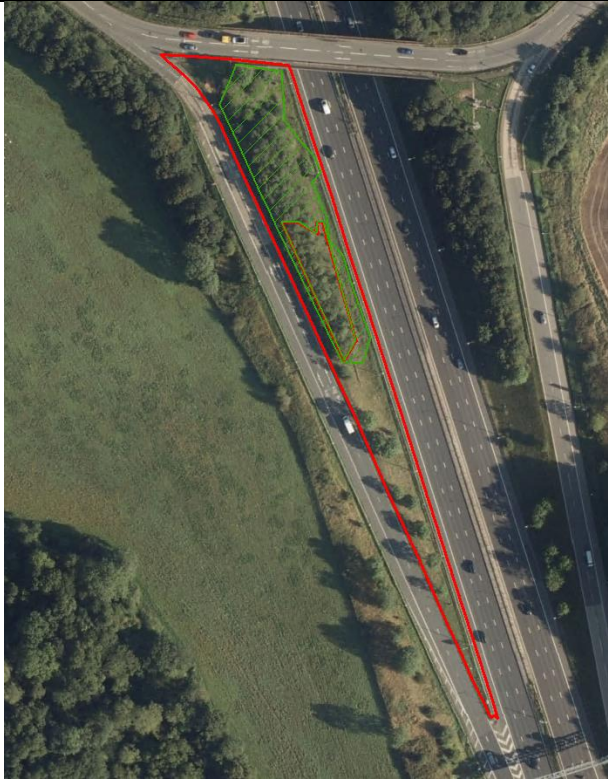

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21		0.13	0.14	No	<p>Narrow strip of trees around pond until at least March 2017. Area largely cleared in April 2018 and is not on the arboricultural data, however, the baseline pre-removal should be used. Buffers for RPA do not extend over water.</p> <p>Woodland prior to felling</p>  <p>Woodland post felling</p> 	0.201	0.059	0.049	

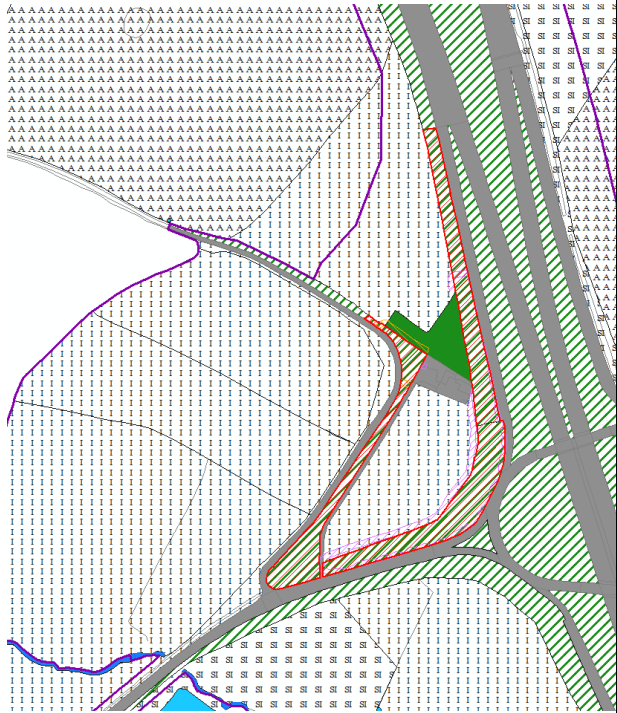
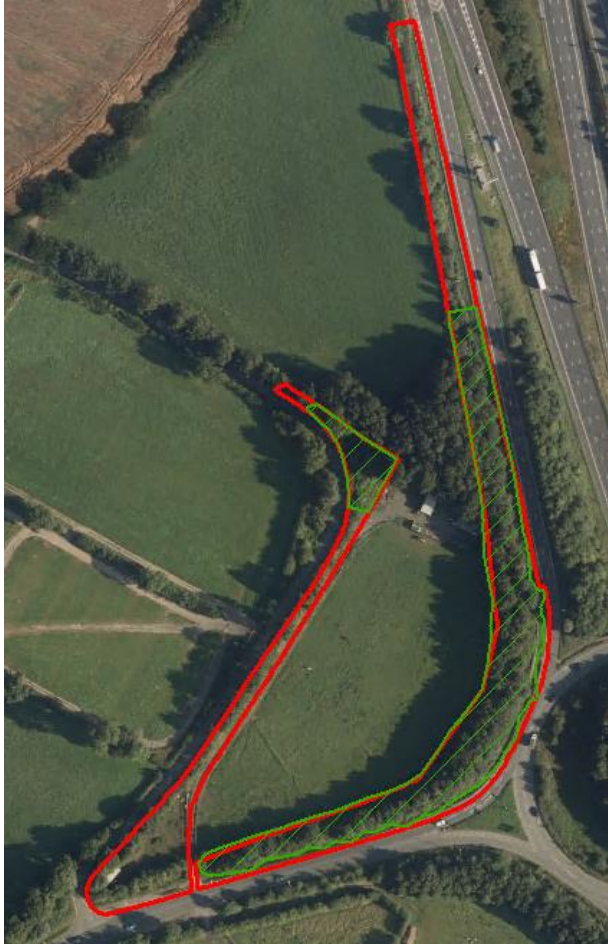
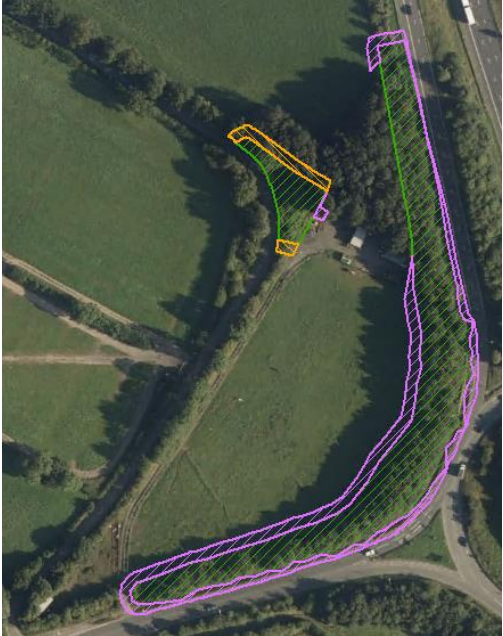

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22		0.041	0.114	Yes	<p>Very narrow grass verge in places, but this is under canopy, so considered to be continuous woodland block.</p> 	0.046	0.056	0.00	<p>Surfaced road to the east considered to be barrier.</p> 
23		0.348	0.6498	No	<p>Section of larger woodland block. Very narrow grass verge in places, but this is under canopy, so considered to be continuous woodland block.</p> <p>Unclear why such disparity between AECOM and Aspect – loss polygon only approx. 0.232ha in size.</p> <p>Lower Pool SBI shown in turquoise outline.</p> 	<p>Within SBI 0.293</p> <p>Outside SBI 0.056</p>	<p>Within SBI 0</p> <p>Outside SBI 0.072</p>	0.00	<p>Surfaced road to north and west considered to be barrier.</p> 



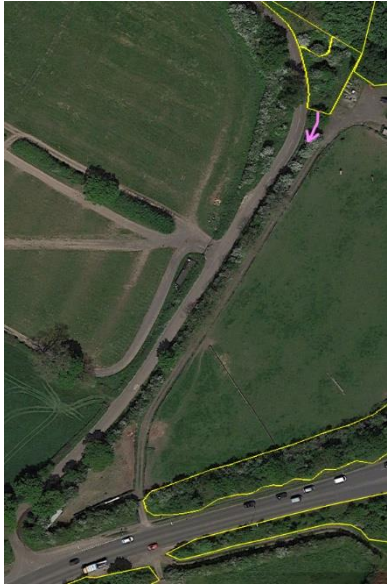
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24		0.03	0.007	Yes	<p>Looks to be woodland within block of woodland. Expanded to west to meet adjacent polygon as approx. 4m gap retained, which is unrealistic. 5m buffer to the east where no natural woodland edge. Lower Pool SBI shown in turquoise outline.</p> 	0.05	0.039	0.00	<p>Within Lower Pool SBI</p> 
25		0.022	0.025	Yes	<p>Looks to be woodland within block of woodland. Expanded to west to meet adjacent polygon as approx. 4m gap retained, which is unrealistic. 5m buffer to the east where no natural woodland edge. Lower Pool SBI shown in turquoise outline.</p>	0.059	0.059	0.00	<p>Within Lower Pool SBI</p>


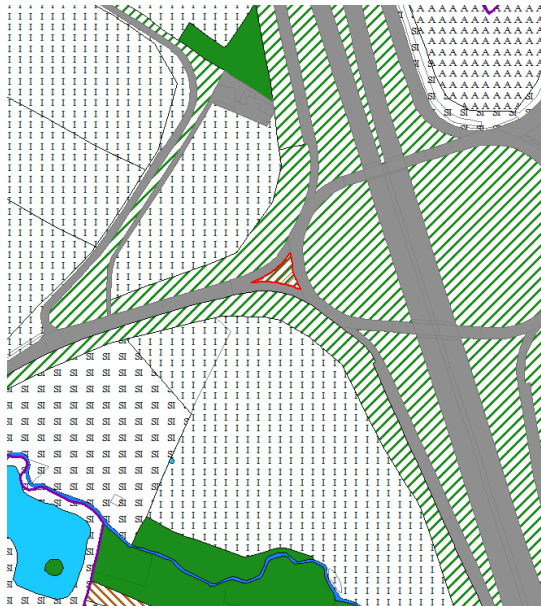

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26		0.131	0.016	Yes	Appears to be line of trees and young, recently planted trees. 	0.131	0.007	0.094	


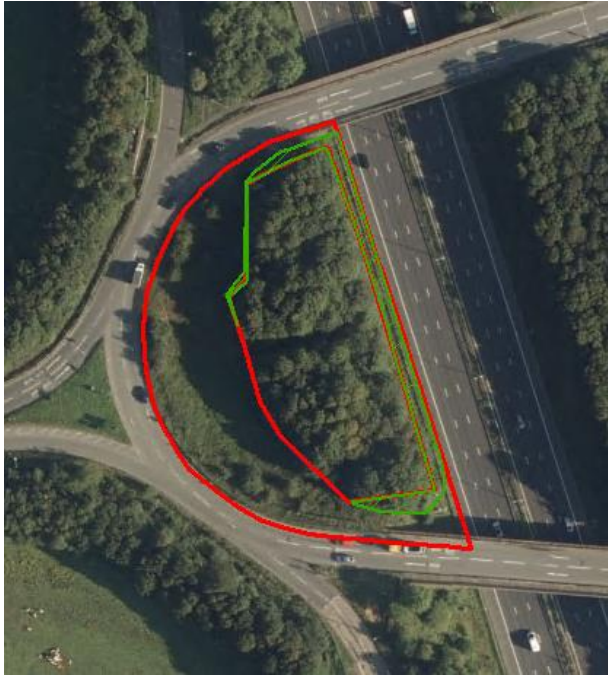

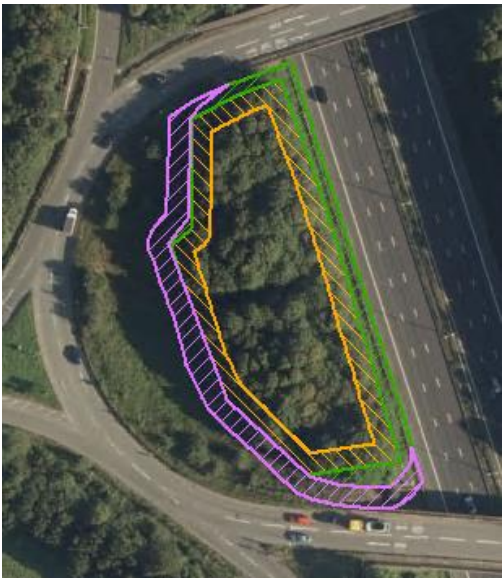
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27		0.268	0.268	Yes	<p>Appears to be solid block of woodland. Appears to be stream running through woodland. It is assumed this is the reason for the gap between the polygons.</p> <p>A 15m buffer into adjacent areas of ancient woodland (east). A 5m buffer was considered to be appropriate into other adjacent habitats.</p> <p>Brookfield Farm SBI shown in turquoise outline.</p> 	<p>Within SBI 0.267</p> <p>Outside SBI 0.002</p>	<p>Within SBI 0.143</p> <p>Outside SBI 0.037</p>	<p>Within SBI 0.015</p> <p>Outside SBI 0.025</p>	
28		0.446	0.2986	No	<p>An area of woodland is present in the north of this triangular section. Elsewhere within the loss polygon, the habitats consist of a grass verge with a few scattered trees, but not woodland.</p>	0.167	0.051	0.075	<p>Road considered to be barrier</p> 

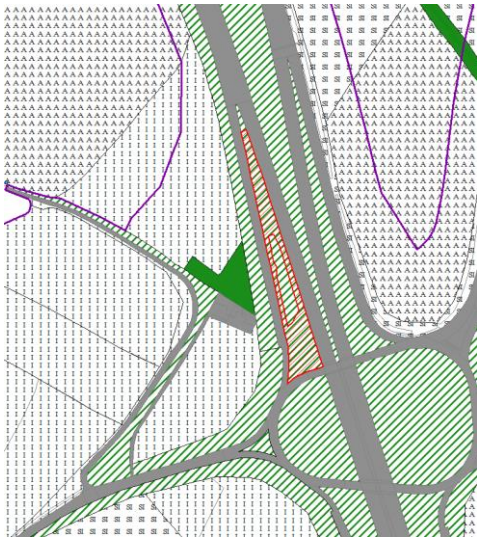

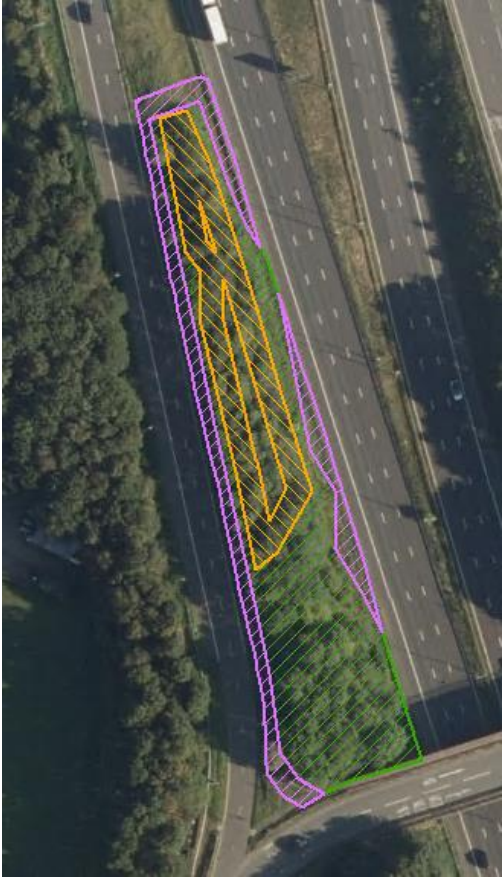
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					<div></div> <div>Eastern side of the area</div> <div></div> <div>Western side of the area</div> <div></div>				

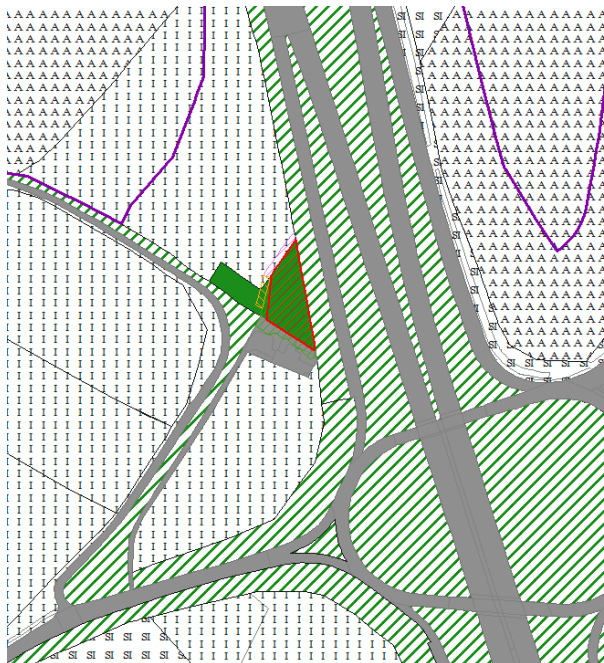


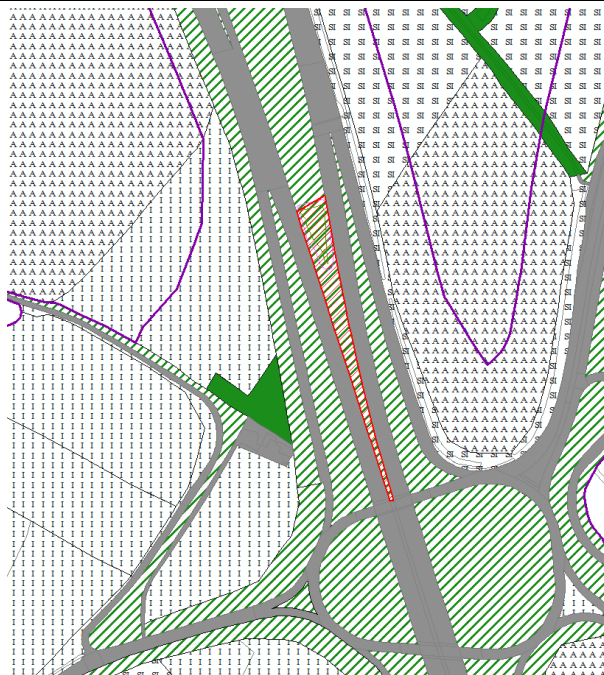
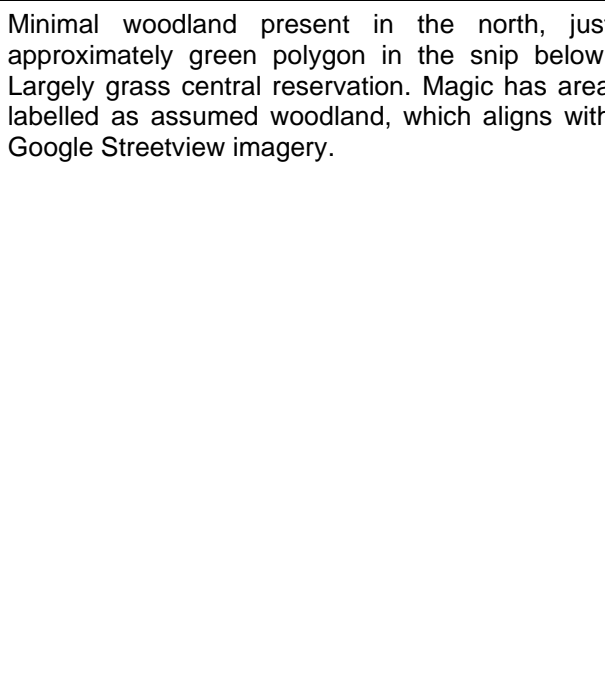

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29		1.189	0.7431	No	<p>For most of this area, woodland, with grass and path between woodland and road. Only a few metres beyond woodland, so likely roots underneath. In the north, appears to be grass verge with scattered trees.</p>  <p>Area to the north-west of the yellow polygon (below) considered to be a hedgerow (indicated by pink arrow). Remainder considered to be part of functional woodland to the north-east. RPA of woodland to the north-east likely to extend into this area, which does contain mature woody scrub. Semi-natural broadleaved woodland is marked as priority deciduous woodland on Magic, so edge habitats are important. Consider area to be woodland, except for hedge.</p>	0.697	0.032	0.22	<p>No buffer where surfaced road present.</p>  


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					<div></div> <div></div> <p>Largely a hedge (indicated by pink arrow). In southern tip it is a hedge surrounding an area of likely grass pasture. North-east corner, so is considered to be part of functional woodland. The area was expanded to remove gaps between polygons. Consider yellow area (below) to be woodland. The remaining areas are considered to be hedge and not woodland.</p> <div></div>				


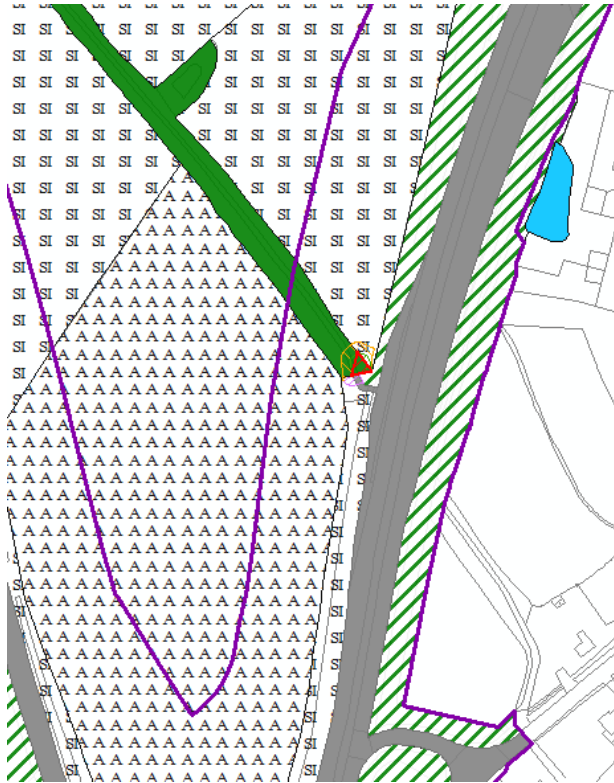


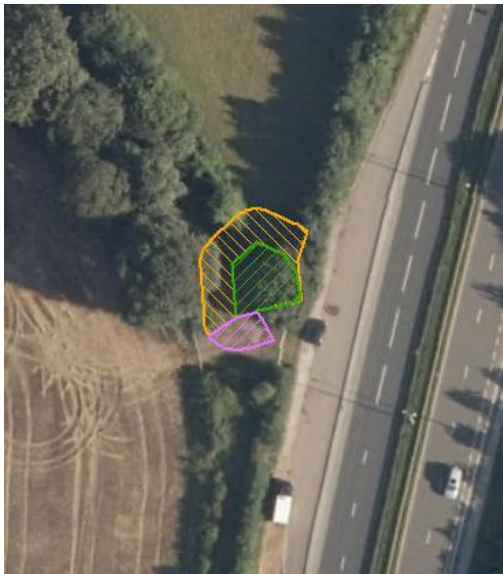
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30		0.04	0 No woodland present	No	<p>No evidence of woodland ever being present. Short mown grassland in roundabout sightline. No woodland present.</p> 	0	N/A	N/A	No woodland was ever present.

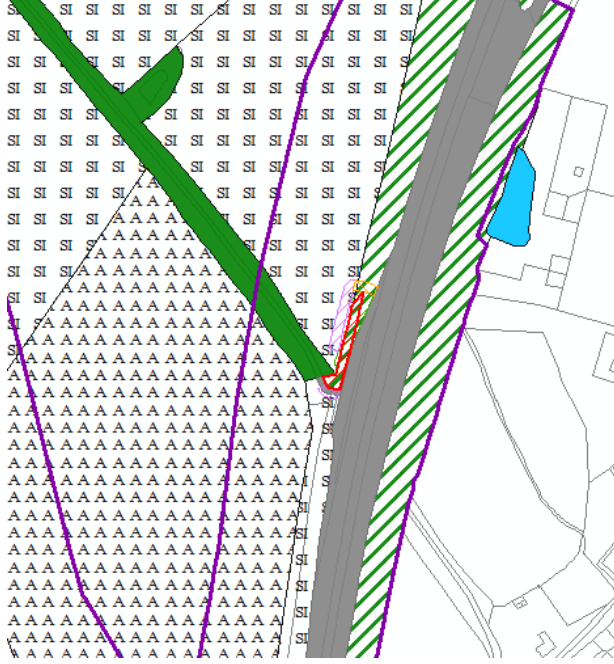


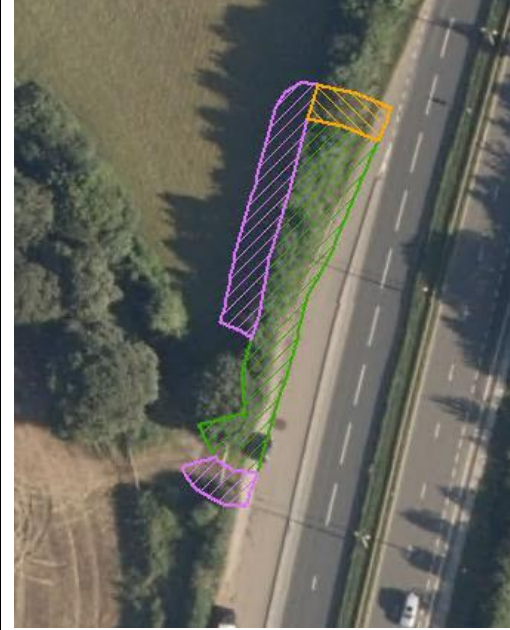
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31		0.345	0.2571	No	<p>Woodland in east of roundabout island, grassland, scrub and scattered trees appear to be present in the west. Woodland largely retained.</p>  	0.053	0.11	0.071	


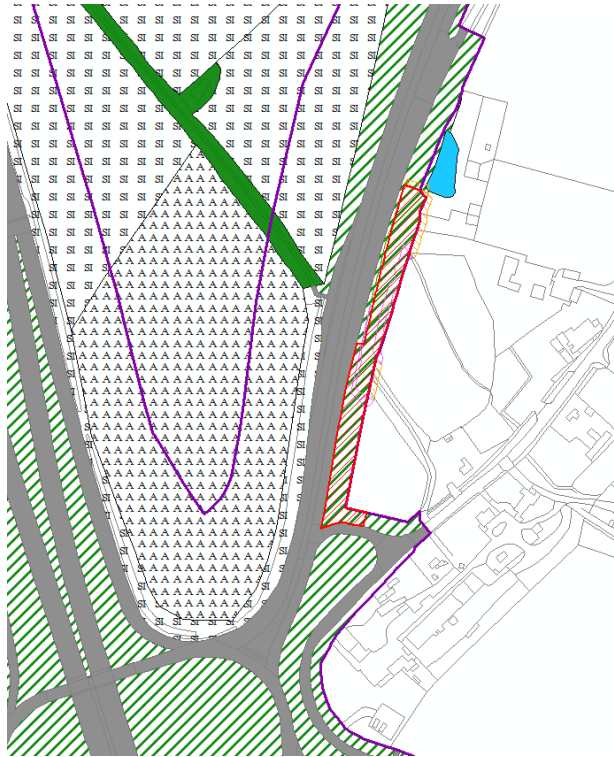
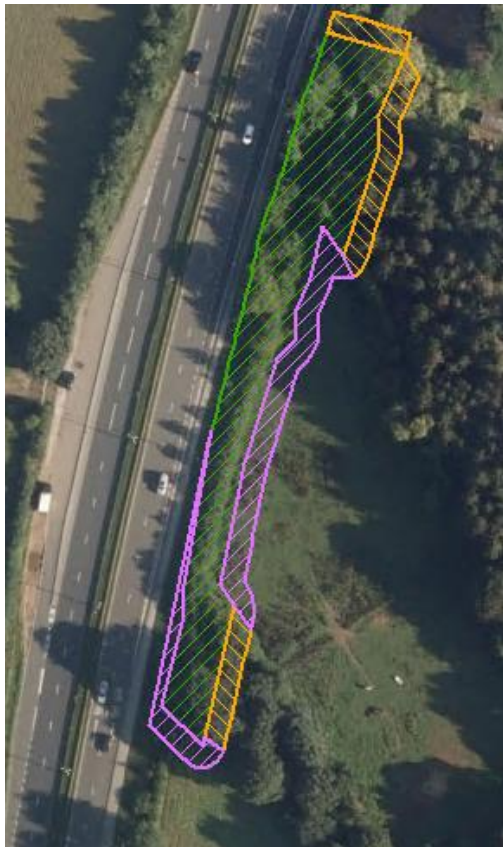
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32		0.439	0.3262	No	<p>Woodland only extends about halfway up polygon, with a grass verge in the northern half and adjacent to woodland. Small areas around roundabout where grass and HS beyond RPA.</p> 	0.193	0.095	0.075	<p>Road used as a barrier.</p> 



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33		0.152	0.152	Yes	<p>Entire area looks to be woodland block. Expanded slightly to not leave unrealistic woodland area (i.e. half a tree) and taken to canopy extent. The apparent car park is considered to be a barrier.</p> 	0.187	0.011	0.018	<p>Car park considered to be a barrier.</p> 
34		0.353	0 No woodland present	No	<p>Minimal woodland present in the north, just approximately green polygon in the snip below. Largely grass central reservation. Magic has area labelled as assumed woodland, which aligns with Google Streetview imagery.</p> 	0.059	0.009	0.054	

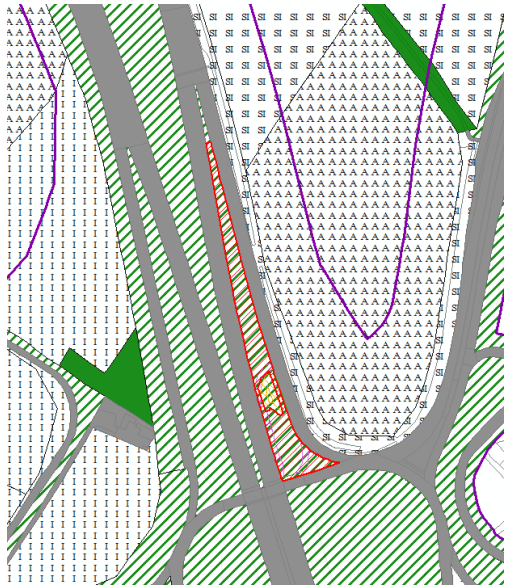
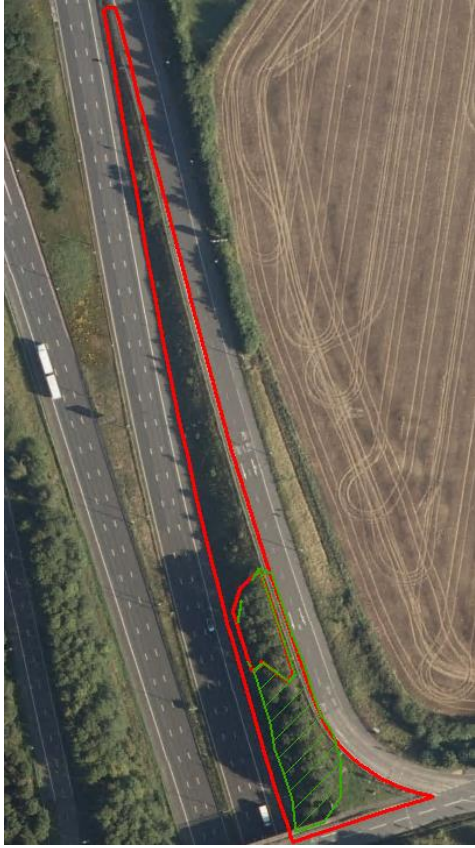
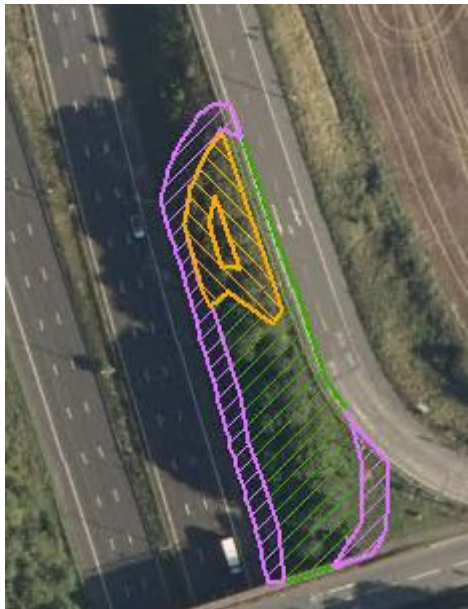
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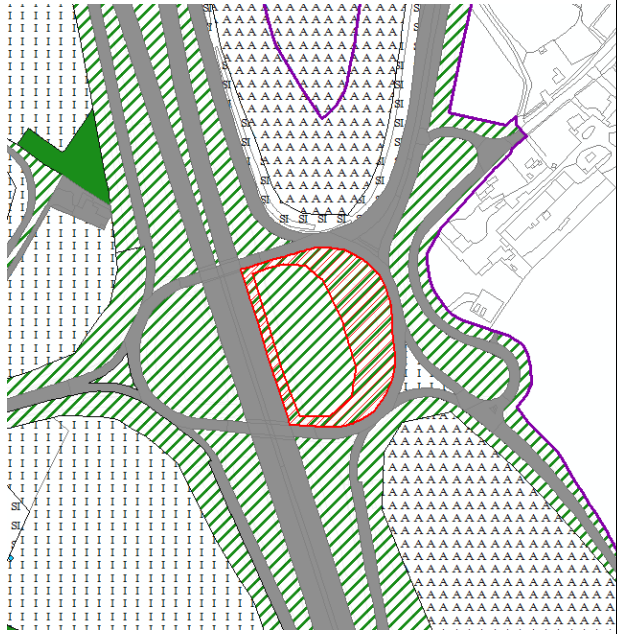
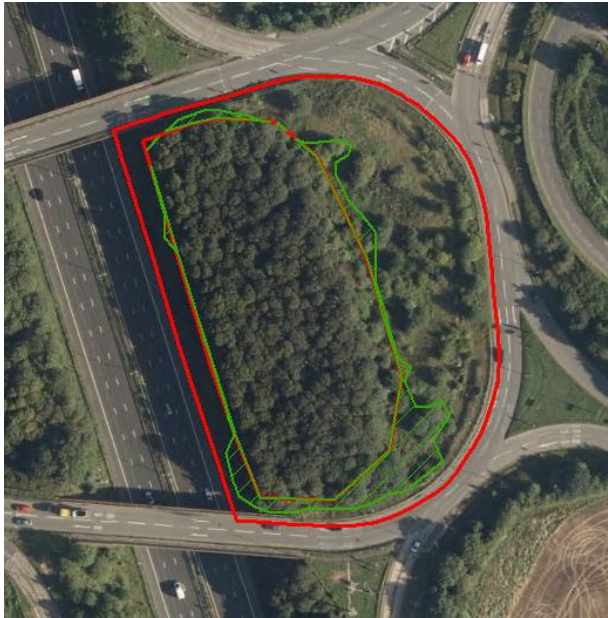

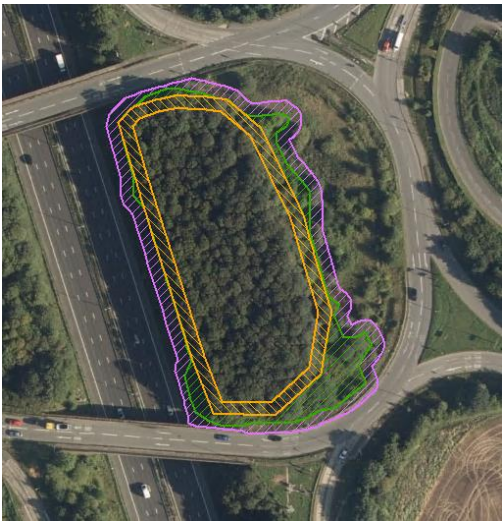
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35		0.006	0.006	Yes	<p>Appears to be corner of woodland block. Loss polygon expanded to fully cover the tree it is located around.</p>  	0.009	0.014	0.004	


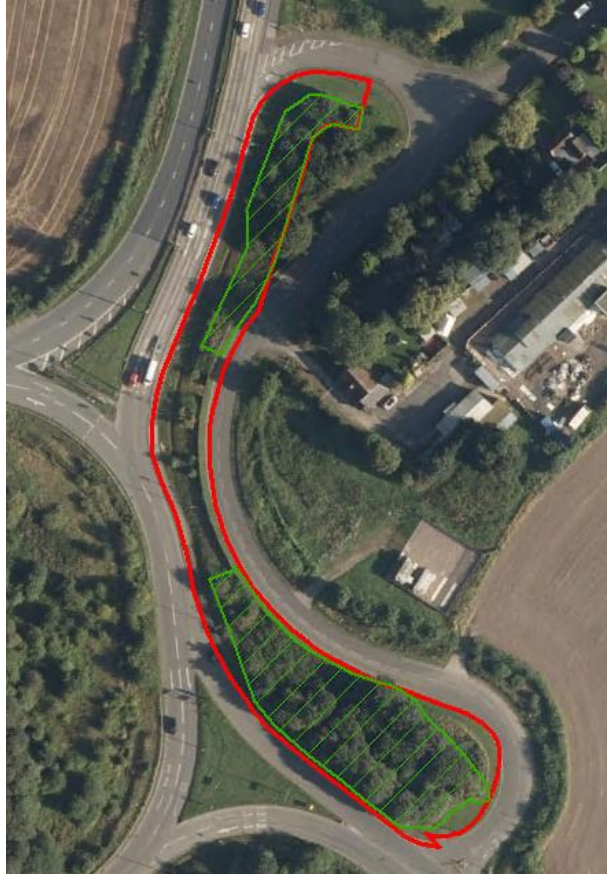

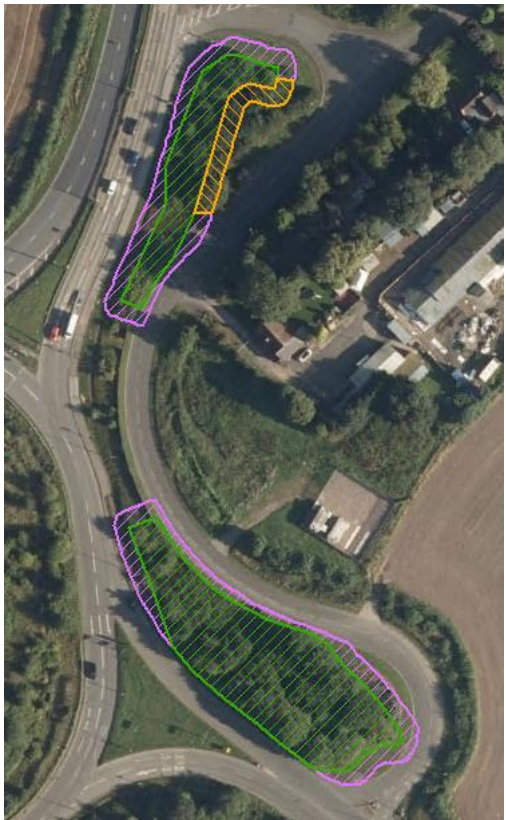
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36		0.022	0.0225	Yes	<p>Appears to be southern tip of area of woodland. Expanded woodland loss to prevent unrealistic areas of woodland remaining. Canopy taken as woodland extent.</p>  	0.038	0.005	0.022	




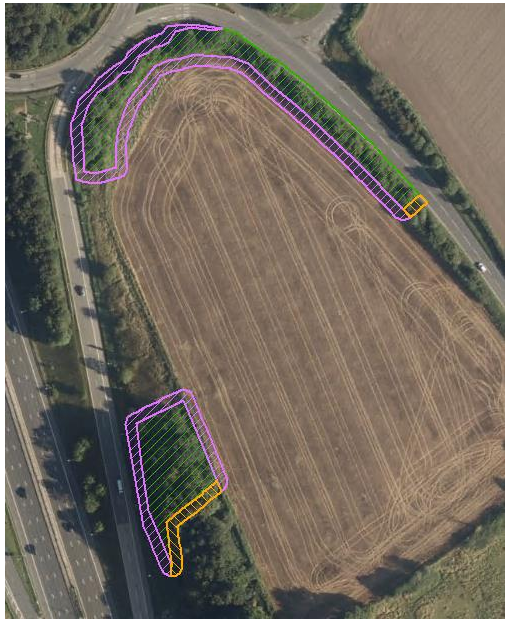
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37		0.433	0.2621	No	<p>In south below the green polygon (in image below), appears to be a short cut hedge between a grassland field and grass verge. Footpath and grass verge between hedge and road. This area is not woodland (hedge, grass and HS). The woodland area is adjusted to the canopy in the east (as would retain half a tree) and the west (where extends into grass field).</p> <p>Aerial view of loss polygon</p>	0.199	0.047	0.064	



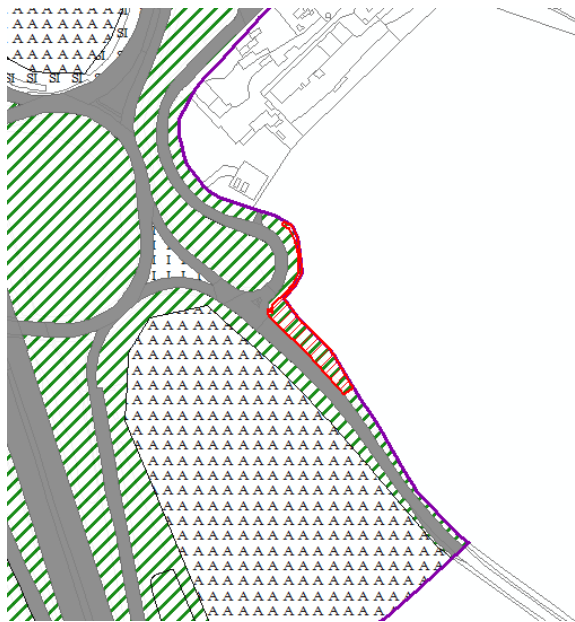
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					<div><p>The dividing point between hedge and woodland is shown below.</p></div>				




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38		0.393	0.2445	No	<p>Mostly grass with a few scattered scrub species present. Area of woodland in the south.</p> 	0.103	0.032	0.051	

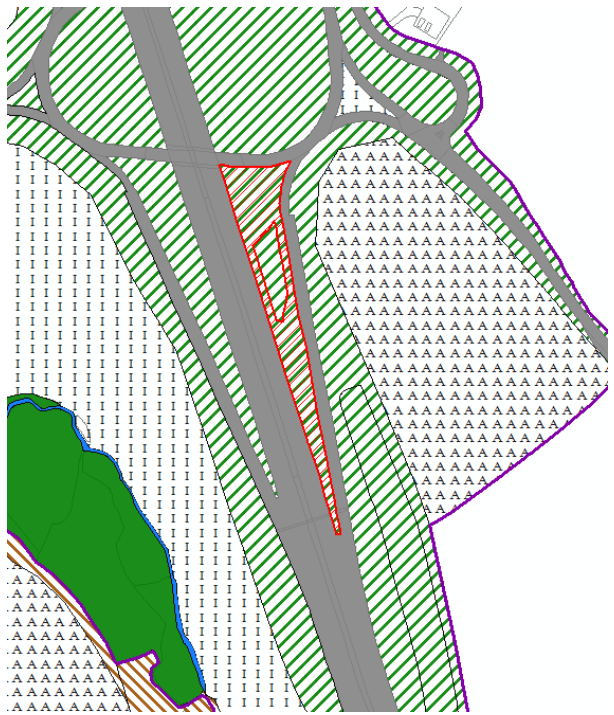
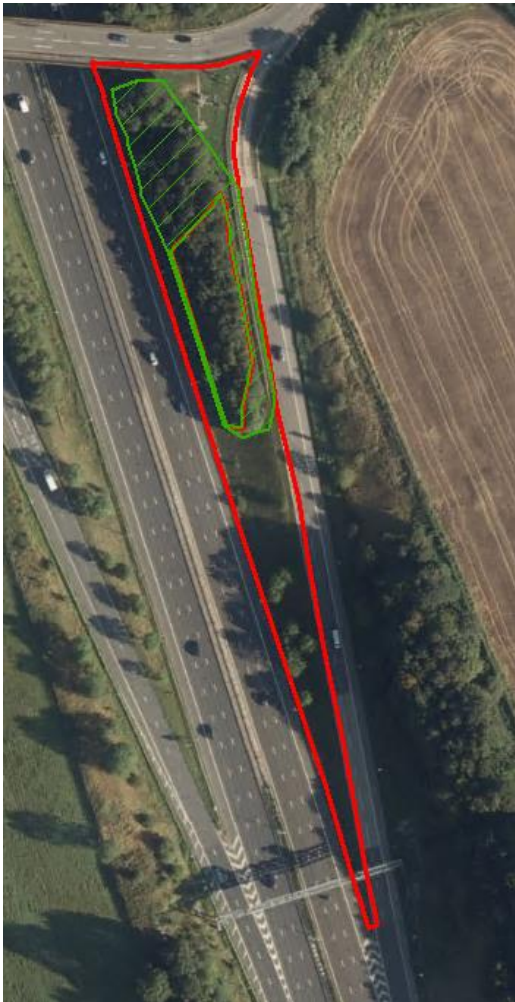


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39		0.731	0.731	Yes	<p>Woodland block in centre of roundabout island, with scrub and grassland extending beyond this.</p>  	0.123	0.16	0.186	



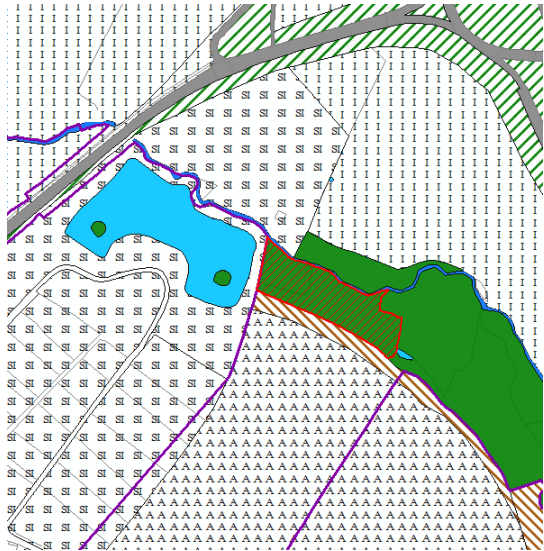


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40		0.533	0.3521	No	<p>At the northern and southern areas woodland is present. In the middle, grassland with some scattered scrub is present. 5m buffer beyond woodland, except where barrier is present.</p>  <p>Southern extent of northern woodland</p>  <p>Northern extent of southern woodland</p>	0.292	0.026	0.125	

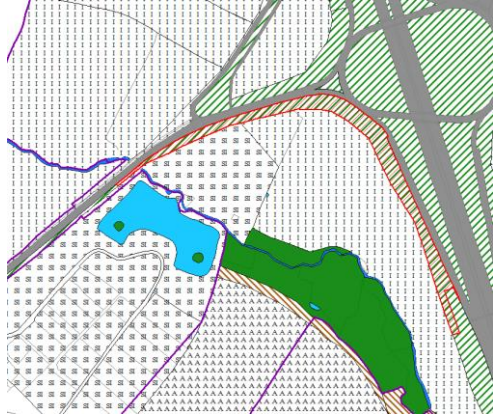



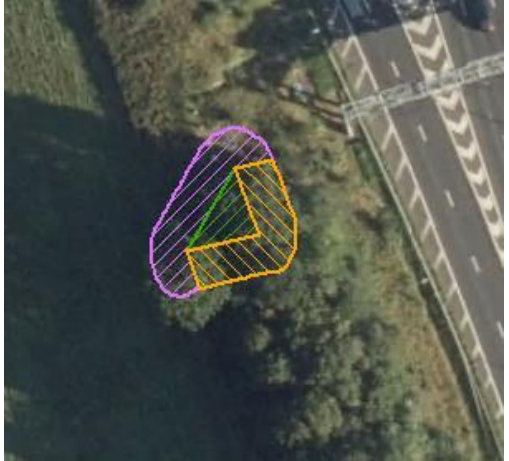


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41		0.792	0.8456	No	<p>Some woodland present in south-west, south-east and northern portion of the loss polygon. Areas of grass and scattered scrub in between. Woodland loss extent extended in areas so as not to leave half a tree retained.</p>  <p>In south east, some verge has woodland edge character, but in the south, there is more clearly defined edge, as below.</p>	0.388	0.031	0.226	

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					 <p>Area of grass verge between the woodland blocks is shown below</p> 				
42		0.117	0.0605	No	<p>Line of trees and scrub adjacent to hedge (as shown below). Consider as part of hedge, so no woodland present.</p> <p>No woodland present.</p>	0	N/A	N/A	Assess as hedge and grass verge.

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					<div><p>Image of vegetation associated with hedge.</p></div>				

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43		0.493	0.3379	No	<p>Woodland in the north. Grassed areas in the south and around the area of woodland. Some woody scrub is present in the south, but this is not considered to constitute woodland.</p>  <p>View of east side</p> 	0.165	0.069	0.079	

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					<p>View of west side</p>  <p>View of north-east corner</p> 				
44		0.513	0.5135	Yes	<p>Part of a block of woodland. Loss areas extended in the south to prevent leaving half trees. It is assumed that the gap between the polygons represents the stream running through this area. A 15m buffer has been applied into adjacent areas of ancient woodland (east). A 5m buffer was considered to be appropriate into other adjacent habitats.</p> <p>Brookfield Farm SBI shown in turquoise outline.</p> 	<p>Within SBI 0.503</p> <p>Outside SBI 0.099</p>	<p>Within SBI 0.144</p> <p>Outside SBI 0.013</p>	<p>Within SBI 0.017</p> <p>Outside SBI 0.08</p>	<p>Within Brookfield Farm SBI.</p> 

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45		1.032	0.9506	No	<p>Woodland present at the north-eastern section of the arc (loss polygon in arc shape). In the west some hedges are present, which is considered to be separate to woodland. In east grass verges are present.</p> <p>The yellow areas marked in the below images are considered to be woodland. The blue area is a hedge (in bottom image). In the south-east is an area of verge with grass and scrub, not woodland. The woodland loss areas are extended in some places to prevent loss of half a tree.</p>  <p>Hedge and woodland in west of area (marked in blue).</p>  	0.66	0.034	0.229	  
Total		20.57	14.03			14.90	3.52	2.88	