M54 to M6 Link Road

TR010054

Volume 8.23

Ancient Woodland Map Regression Oxden Leasow/ Whitgreaves Wood North

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

January 2021

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M54 to M6 Link Road

Development Consent Order 202[ ]

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List of Appendices

1 Introduction

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 (RR) were received from interested parties in Spring 2020 and published on the Planning Inspectorate website on 11 June 2020[1].

1.1.3 This TN provides further information in response to RR-042 from Staffordshire Wildlife Trust, "*We are concerned that areas of potential ancient woodland may have been missed. There is a remnant of Oxden Leasow/ Whitgreaves Wood on the north side of the M54 which has not been investigated. Areas of 'The Belt' woodland adjacent to the A460 could possibly be ancient, as they appear on old maps and support some indicator species such as bluebell, dog's mercury and wood melick. No veteran trees will be directly affected by the Scheme*."

1.1.4 'The Belt' was investigated as part of the initial assessment of potential ancient woodland sites which was discussed and agreed with Natural England in July 2019. This site was determined not to be ancient woodland. However, the area to the north of the M54, a possible remnant of Whitgreaves Wood, a known area of ancient woodland recorded on the Ancient Woodland Inventory, was not considered in this original analysis, partly due to the fact that it is located outside the Scheme boundary and would not be directly impacted by the Scheme.

1.1.5 Following updates to the nitrogen deposition methodology as set out in the Design Manual for Roads and Bridges (DMRB) LA105: Air Quality there is now a requirement to assess the impact of nitrogen deposition on areas of ancient woodland within 200 m of the affected road network (ARN). There is the potential that if this site is found to be ancient woodland the Scheme could result in an adverse impact on this site. Therefore, further map regression has been undertaken to determine whether this site is likely to be ancient woodland and if so, the impact of the Scheme on this site.

[1] https://infrastructure.planninginspectorate.gov.uk/projects/west-midlands/m54-to-m6-link-road/?ipcsection=relreps

2 Methodology

2.1 Determination of Ancient Woodland

2.1.1 Refer to Figure 8.2 [APP-112/6.2] Statutory, Non-Statutory and Ancient Woodland Sites and Figure 8.3 [APP-113/6.2] Phase 1 Baseline Habitat Survey Results Target Note 97, for the location of the current Oxden Leasow/ Whitgreaves Wood ancient woodland. Screenshots are presented in Plates 1 to 3 below.

Plate 1: Oxden Leasow (Whitgreaves Wood) Ancient Woodland [APP-112/6.2]

Plate 2: Oxden Leasow (Whitgreaves Wood) Ancient Woodland [APP-113/6.2]

Plate 3: Oxden Leasow (Whitgreaves Wood) Ancient Woodland, Google Earth image 21.12.20

2.1.2 The remnant fragment of woodland in question is the block of broadleaved plantation woodland shown on Figure 8.3 [APP-113] Phase 1 Baseline Habitat Survey results with screenshots presented in Plate 4 and 5 below.

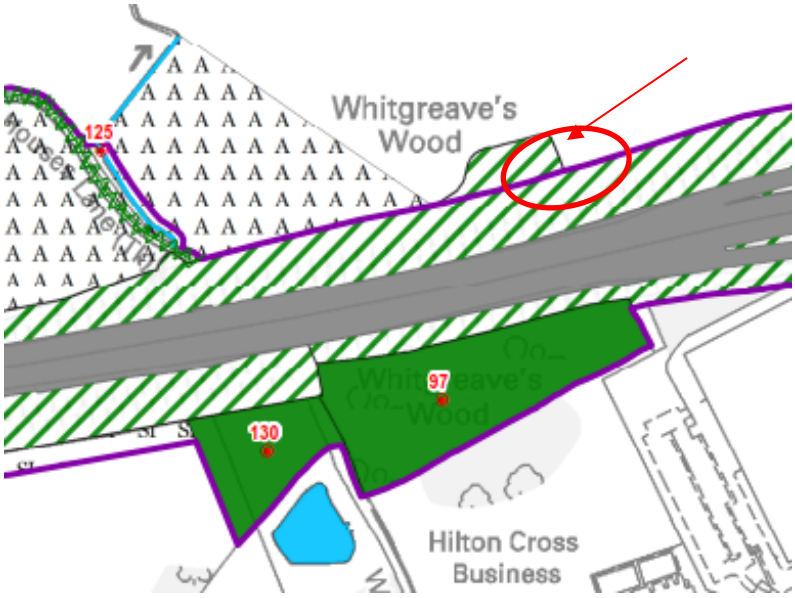


Plate 4: Potential remnant block of Oxden Leasow / Whitgreaves Wood ancient woodland [APP-113/6.2]

Plate 5: Potential remnant block of Oxden Leasow / Whitgreaves Wood ancient woodland, Google Earth image 21.12.20

2.1.3 The following sources of historic map information have been reviewed to determine how the landscape at this location may have been arranged in the past and how it has changed over time:

- Bushbury Tithe of 1845. Ref: B/A/15/68 from Staffordshire Records Centre
- Old-maps.co.uk where historic maps have been georeferenced using Geographical Information System (GIS) onto modern Ordnance Survey Maps:
    - OS County Series: Staffordshire 1884 1:2, 500
    - OS County Series: Staffordshire 1887-1889 1:10,560
    - OS County Series: Staffordshire 1902 1:2, 500
    - OS County Series: Staffordshire 1921-1924 1:10, 560
    - OS County Series: Staffordshire 1923 1:2, 500
    - OS County Series: Staffordshire 1938 1:10, 560
    - OS Plan 1954-1955 1:10, 560
    - OS Plan 1957 1:2, 500
    - OS Plan 1966 – 1968 1:10, 560
    - OS Plan 1968 1:2, 500
    - OS Plan 1989-1995 1: 10,000

2.1.4 This method provides the opportunity to overlap each historic map with the current baseline to note how the wooded landscape has altered overtime.

2.1.5 Additional information obtained from the maps was place and/or wood names (where applicable). Place and/or wood names at that location can indicate how a woodland was managed or used in the past.

2.1.6 No digital historical maps have been produced to support this TN due to copyright / database rights.

2.2 Assessment of impacts

2.2.1 The methodology for assessing the impact of the Scheme on ancient woodland is as set out in Chapter 8: Biodiversity of the ES (Version 3) [AS-083/6.1], Section 8.3 'Assessment methodology' in line with the DMRB LA105 and LA108.

3 Map regression

3.1.1 A review of the historic map information indicates that a small remnant fragment of Oxden Leasow Wood / Whitgreaves Wood ancient woodland (measuring approximately 0.16 ha) does appear to be present to the north of the M54. This area however is too small to be included historically in the ancient woodland inventory as a standalone piece of woodland as it measures less than 0.2 ha. Refer to Plate 6, 1845 map.

3.1.2 The woodland was collectively referred to as Whitgreave's Wood across the Historic maps, until the late-1960's when the woodland was fragmented as a result of development of the M54.

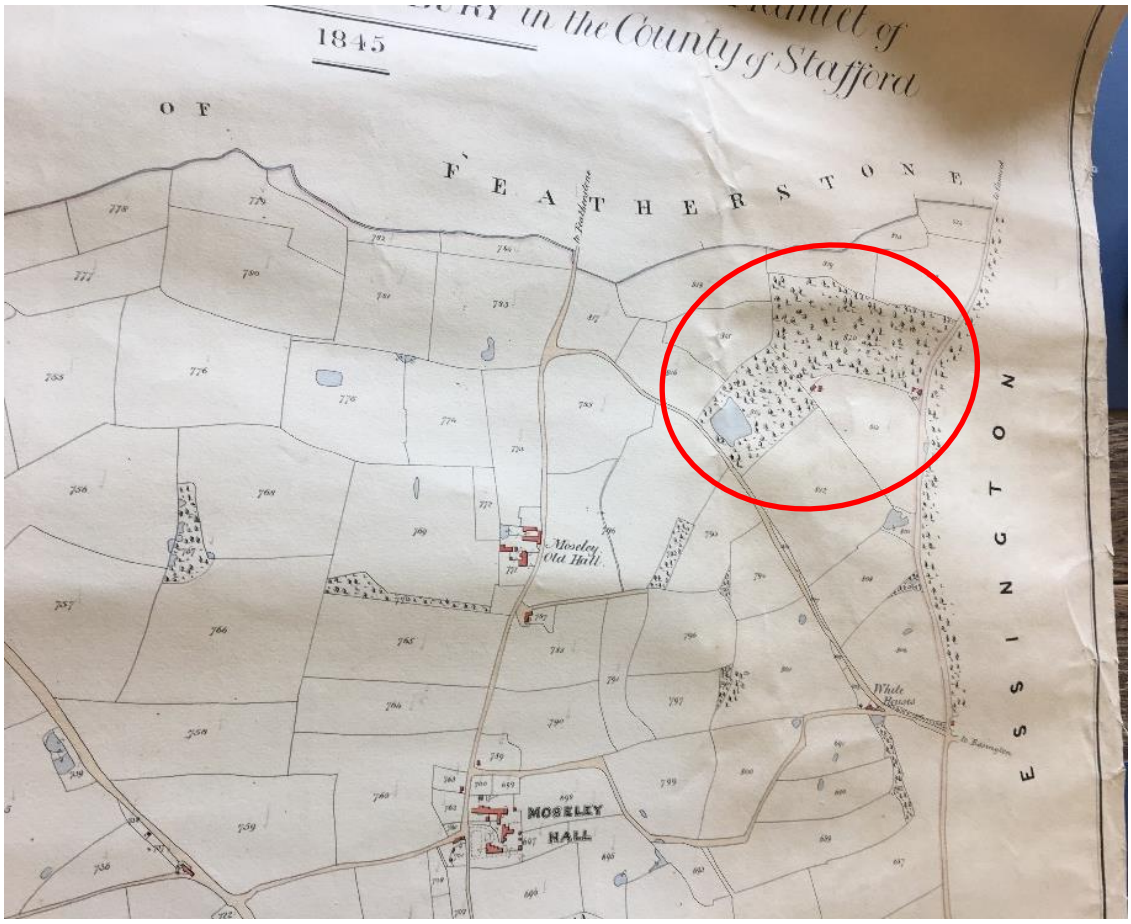


Plate 6: Whitegreaves Wood, 1845 - Staffordshire Record Office

4 Assessment of likely significant effects

4.1.1 Oxden Leasow Wood / Whitgreaves Wood ancient woodland was assessed as part of the environmental impact assessment for the Scheme as presented in the Environmental Statement (ES) Chapter 8: Biodiversity [AS-083/6.1]. The fragment of Oxden Leasow Wood / Whitgreaves Wood ancient woodland located to the north of the M54 (hereafter referred to as 'the woodland fragment'), has been assessed separately for likely significant effects during the construction and operation of the Scheme and is presented below.

4.2 Construction

4.2.1 The woodland fragment is located in a false cutting and will not be directly or indirectly impacted by the Scheme construction activities. Works will occur >15m from the woodland fragment, avoiding root damage. This is in line with best practice guidelines for protecting ancient woodlands from development (Forestry Commission and Natural England, 2018).

4.2.2 The General Scheme Layout Sheet 4 of 10 [AS-067/2.5] shows that the woodland fragment is located adjacent to the Scheme boundary and the proposed area of works is >15m away from the woodland fragment. The woodland fragment is also separated by retained woodland vegetation as shown on the Environmental Masterplan Sheet 5 of 5 [AS-092/6.2]. Refer to Plates 7 and 8, respectively. Additionally, Appendix 7.1: Arboriculture Impact Assessment Report [AS-101/6.3] Tree Survey Schedule, and relevant Figure Tree Protection Plan Sheet 40 of 47, does not show any trees adjacent to or within 15m of the woodland fragment to be removed. Refer to Plate 9.

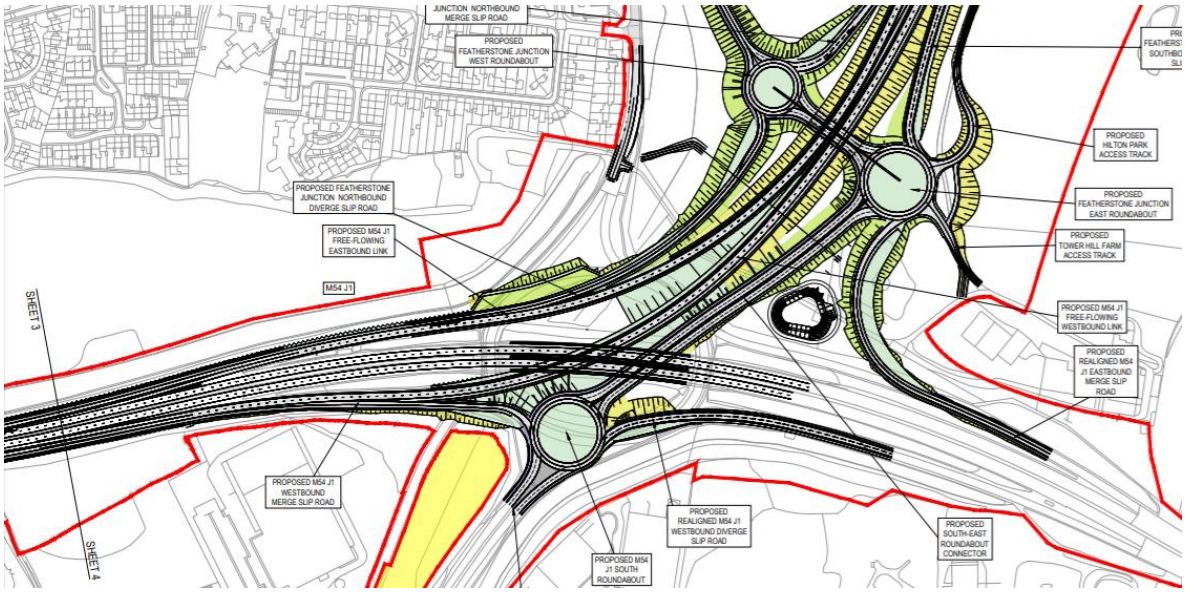


Plate 7: General Arrangement Regulation 5(2)(O) Sheet 4 of 10

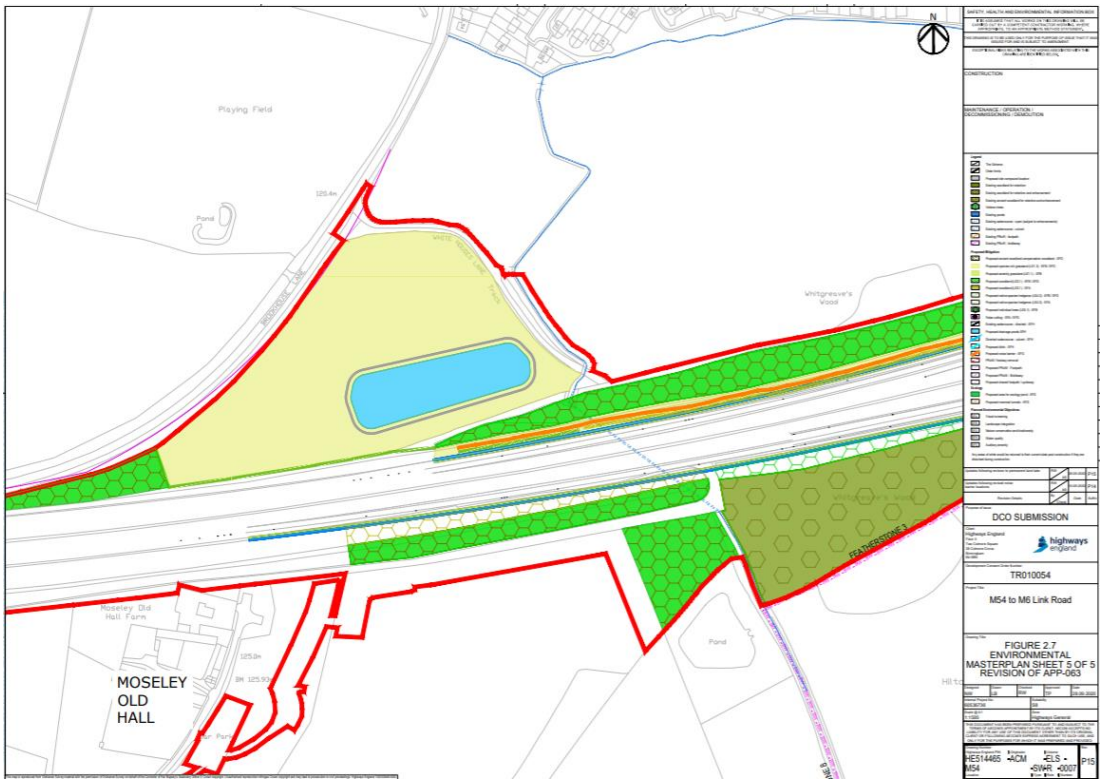


Plate 8: Environmental Masterplan Sheet 5 of 5 [AS-092/6.2]

Plate 9: Appendix 7.1: Arboriculture Impact Assessment Report, Tree Protection Plan Sheet 40 of 47 [AS-101/6.3]

4.3 Operation

4.3.1 Nitrogen deposition, as a result of changes in air quality from operational traffic, can change species composition, reduce species richness and increase plant production, with the greatest impact being on nutrient root ecosystems and species (such as lichens and bryophytes).

4.3.2 Oxden Leasow/ Whitgreaves Wood ancient woodland was assessed for likely significant effects as a result of nitrogen deposition. Refer to paragraph 8.9.143 of the ES Chapter 8: Biodiversity [AS-083/6.1] for details.

4.3.3 Nitrogen oxide (NOx) concentrations were modelled along two transects (AW001 and AW002) south of the M54. Refer to Plate 10. The closest edge of these transects is 0 m from the edge of the road. In comparison, the woodland fragment is located approximately 39 m from the edge of the road.

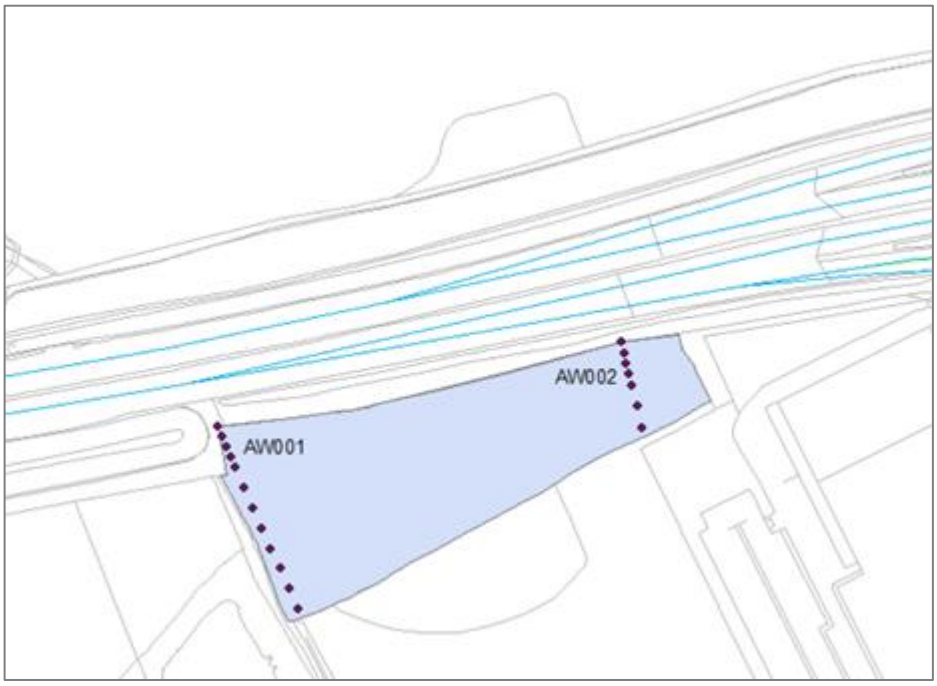


Plate 10 Transects at Oxden Leasow/ Whitgreaves Wood ancient woodland south of the road (AW001 and AW002)

4.3.4 At 40 m, AW002 is predicted to experience an increase of nitrogen deposition rate by 0.3 kg N ha^{-1} $year^{-1}$, which equates to 3.1% of the critical load. It would be expected that the impact at 39 m (the edge of the woodland fragment) to the north of the road is higher than the impact at the same distance to the south of the road. This is due to prevailing meteorological conditions leading to higher concentrations in the northerly direction. On that basis, it was expected that the impact would be more than 1% of the critical load (the threshold of imperceptibility cited in LA105). Therefore, air quality modelling (comprising two transects WW Extra 1 and WW Extra 2, refer to Plate 11) was carried out on the woodland fragment to the north of the M54, to facilitate the impact assessment and determine any potentially significant effects.

4.3.5 The results of the air quality modelling show that there would be an increase in nitrogen deposition of between 0.4 and 0.5 kg N ha^{-1} $year^{-1}$ across the woodland fragment. At the edge of the woodland fragment, the increase would be 0.5 - 0.6 kg N ha^{-1} $year^{-1}$. On the eastern side, up to approximately 21m from the woodland fragment edge and beyond the increase in nitrogen deposition is ≤0.4 kg N ha^{-1} $year^{-1}$. On the western side, up to approximately 11m and beyond the increase would be ≤0.4 kg N ha^{-1} $year^{-1}$. This is relevant because Figure 2.98 of LA105 identifies that a conclusion of no significant effect can be drawn if the forecast nitrogen dose does not exceed the minimum dose required to reduce species richness by one species as set out in Table 21 in Natural England commissioned report NECR210. The list of habitats in NECR210 is narrow, so if the habitat isn't mentioned LA105 identifies that the lowest dose in the table (aside from nutrient impoverished sand dunes) should be selected, which is 0.4 kg N ha^{-1} $year^{-1}$. Woodland is not covered specifically in NECR210 so according to LA105 the threshold for no significant effect is a nitrogen dose of 0.4 kg N ha^{-1} $year^{-1}$. Therefore, the area of the woodland fragment at 21 m and beyond on the eastern side and 11 m and beyond on the western side, would not experience a significant adverse effect resulting from the Scheme, according to the process in LA105. Up to approximately 21 m from the edge of the woodland fragment, particularly on the eastern side, the increase will exceed 0.4 kg N ha^{-1} $year^{-1}$.

4.3.6 The total area of ancient woodland affected by nitrogen deposition within the woodland fragment is therefore approximately 0.1 ha (63% of the ancient woodland fragment to the north). This effect is assessed to be a minor adverse effect, which is not significant. The forecast nitrogen dose only slightly exceeds the 0.4 kg N ha^{-1} $year^{-1}$ threshold such that any resulting effect on species richness is likely to be subtle, particularly considering that nitrogen is already well in excess in the system being c. 40 kg N ha^{-1} $year^{-1}$. The area of woodland involved also constitutes a very small amount of the overall ancient woodland resource in the area ((amounting to 0.1 ha out of a total 1.48 ha (comprising 1.32 ha to the south of the M54 and 0.16 ha to the north of the M54); which is approximately 7%)). Moreover, the modelling does not take into consideration the location of the woodland behind the false cutting and the existing trees along the road embankment to be retained, which may intercept some of the nitrogen that would otherwise be deposited in the woodland beyond (refer to Cross Section shown in Appendix A). The woodland fragment would not experience a significant adverse effect as a result of the Scheme.

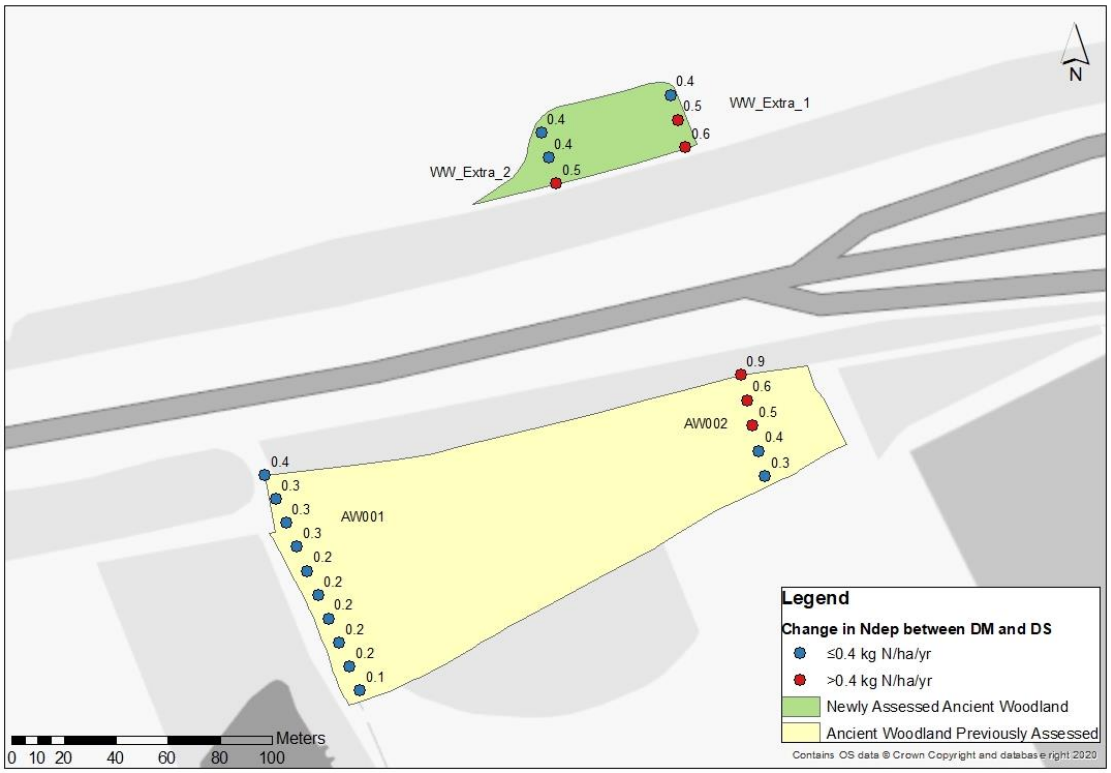


Plate 11 Transects and Change in Nitrogen deposition at Oxden Leasow/ Whitgreaves Wood ancient woodland to the north (WW_Extra_1 and WW_Extra_2) and south of the road (AW001 and AW002)

4.4 Compensation measures

4.4.1 There would be no direct loss of Oxden Leasow / Whitgreaves Wood ancient woodland as a result of the Scheme.

4.4.2 As per ES Chapter 8: Biodiversity [AS-083/6.1] the compensation measures proposed in association with Oxden Leasow / Whitgreaves ancient woodland comprises; 2.24 ha of woodland planting (to compensate for the loss of woodland as a result of work being required within the 15 m buffer zone to the south of the M54); 0.33 ha of woodland planting (to compensate for the woodland affected by nitrogen deposition located to the south of the M54); and improvement measures to the southern area of ancient woodland.

4.4.3 Given there are no likely significant effects on the woodland fragment as a result of construction and / or operation of the Scheme (as explained in Section 4.2 and 4.3 respectively), the compensation measures already proposed are considered sufficient and appropriate to mitigate for any predicted adverse effects on the ancient woodland as a whole. No additional compensation measures are proposed.

5 Summary

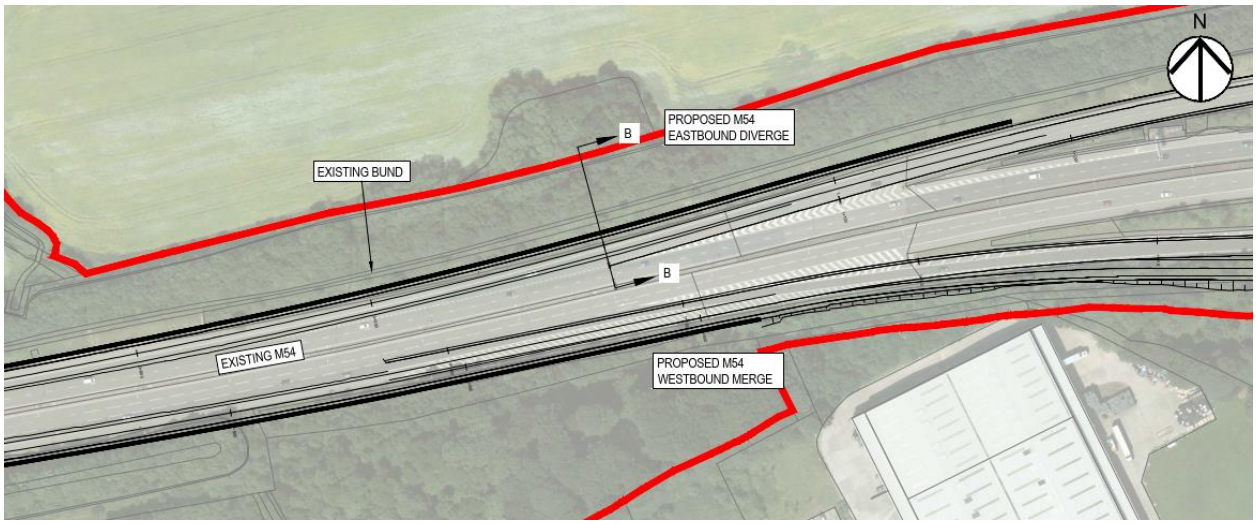
5.1.1 Oxden Leasow Wood / Whitgreaves Wood ancient woodland was assessed as part of the environmental impact assessment for the Scheme as presented in the ES Chapter 8: Biodiversity [AS-083/6.1]. The fragment of woodland located to the north of the M54 (the woodland fragment) has been confirmed as a remnant of Oxden Leasow / Whitgreaves Wood ancient woodland through a historic map regression exercise.

5.1.2 The woodland fragment is located in a false cutting and will not be directly or indirectly impacted by the Scheme construction activities. Works will occur >15m from the woodland fragment, avoiding root damage.

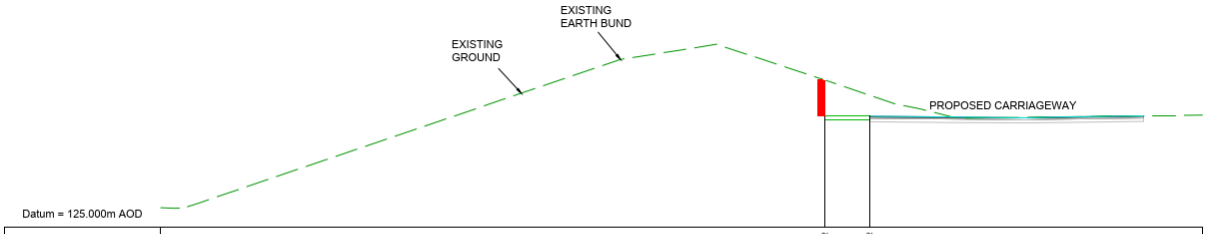
5.1.3 Approximately 0.1 ha of the woodland fragment would be affected by nitrogen deposition from operation of the Scheme. This effect is assessed to be a minor adverse effect which is not significant. The area of woodland involved constitutes a very small amount of the overall ancient woodland resource in the area (amounting to 0.1 ha out of a total 1.48 ha (comprising 1.32 ha to the south of the M54 and 0.16 ha to the north of the M54); which is approximately 7%).. Additionally, the modelling does not take into consideration the location of the woodland within the false cutting and the existing trees along the road embankment to be retained, which may intercept some of the nitrogen that would otherwise be deposited beyond.

5.1.4 The compensation measures already proposed for impacts to Oxden Leasow / Whitgreaves Wood ancient woodland during construction and operation of the Scheme (approximately 2.57 ha of woodland planting and enhancement measures in areas of retained ancient woodland) are considered sufficient and appropriate to mitigate for any predicted adverse effects on the ancient woodland as a whole. No additional compensation measures are proposed.

Appendix A – Cross section of the Scheme adjacent to woodland fragment



Cross Section B:



Proposed Elevation		129.932	129.932
Existing Elevation		131.538	130.867
Offset		-5.303	-3.303