

November 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 8 Additional Submissions (Examination)

8.68 Applicant's response to Written Questions - Biodiversity

Infrastructure Planning (Examination Procedure) Rules 2010

Application Document Ref: TR020001/APP/8.68

The Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

**London Luton Airport Expansion Development Consent
Order 202x**

**8.68 APPLICANT'S RESPONSE TO WRITTEN QUESTIONS -
BIODIVERSITY**

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1 RESPONSE TO EXAMINING AUTHORITY WRITTEN QUESTIONS (BIODIVERSITY)

Table 1.1: Responses to the Examining Authority's Written Questions (Biodiversity)

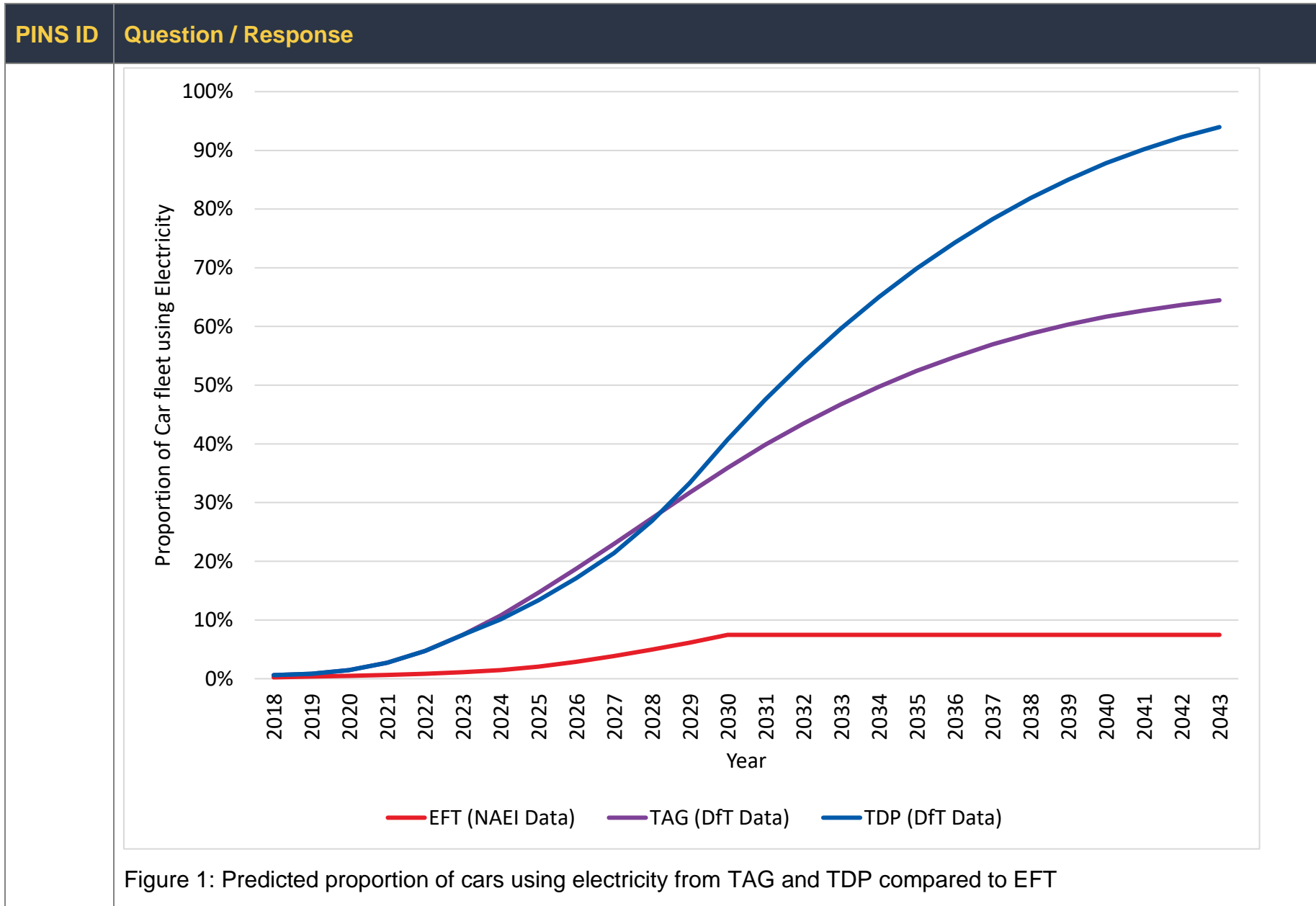
PINS ID	Question / Response
BIO.1.1	<p>Question:</p> <p>Orchids</p> <p>The mitigation strategy for orchids [AS-035] relies in part on an existing orchid population beyond Wigmore Valley Park County Wildlife Site. It is not clear from the information provided [AS-033 and AS034] where existing stands of orchids across the site are located. Please provide this information in a level of detail sufficient to inform a site inspection.</p> <p>At ISH6 and in the Applicant's response at D3 [REP3-053] it is stated that <i>"there have been many examples of natural colonisation [of orchids] occurring very quickly in close proximity to the proposed site"</i>. Provide the evidence to support this statement.</p> <p>Response:</p> <p>Please see an additional Figure created in response to this question, which is included as Appendix A, that shows the location of all orchids identified during baseline surveys for the Proposed Development. It should be noted that in some locations, such as grassland 5 north of Winch Hill Wood, orchids were very frequent (around 200 common spotted orchids noted) and growing widely in the open sward. Thus, precise location of individual plants is not provided, rather associated habitat parcels are indicated. Further details of these results are provided on pages 9 and 10 of the Appendix 8.10 Ecological Mitigation Strategy Orchid and Invertebrates [AS-035] and within Appendix 8.1 Ecology Baseline Report of the ES [AS-033].</p> <p>Regarding the comments made around local orchid colonisation, at ISH6 these were made primarily in reference to the species noted during baseline surveys for the Proposed Development, including the common spotted orchid colony in grassland 5. Section 2.6.177 of the Ecology Baseline Report [AS-033] reports Grassland 5 has also been taken out of agricultural use and has been colonised by a range of agricultural associated species with patches of bare ground, including the orchids.</p>

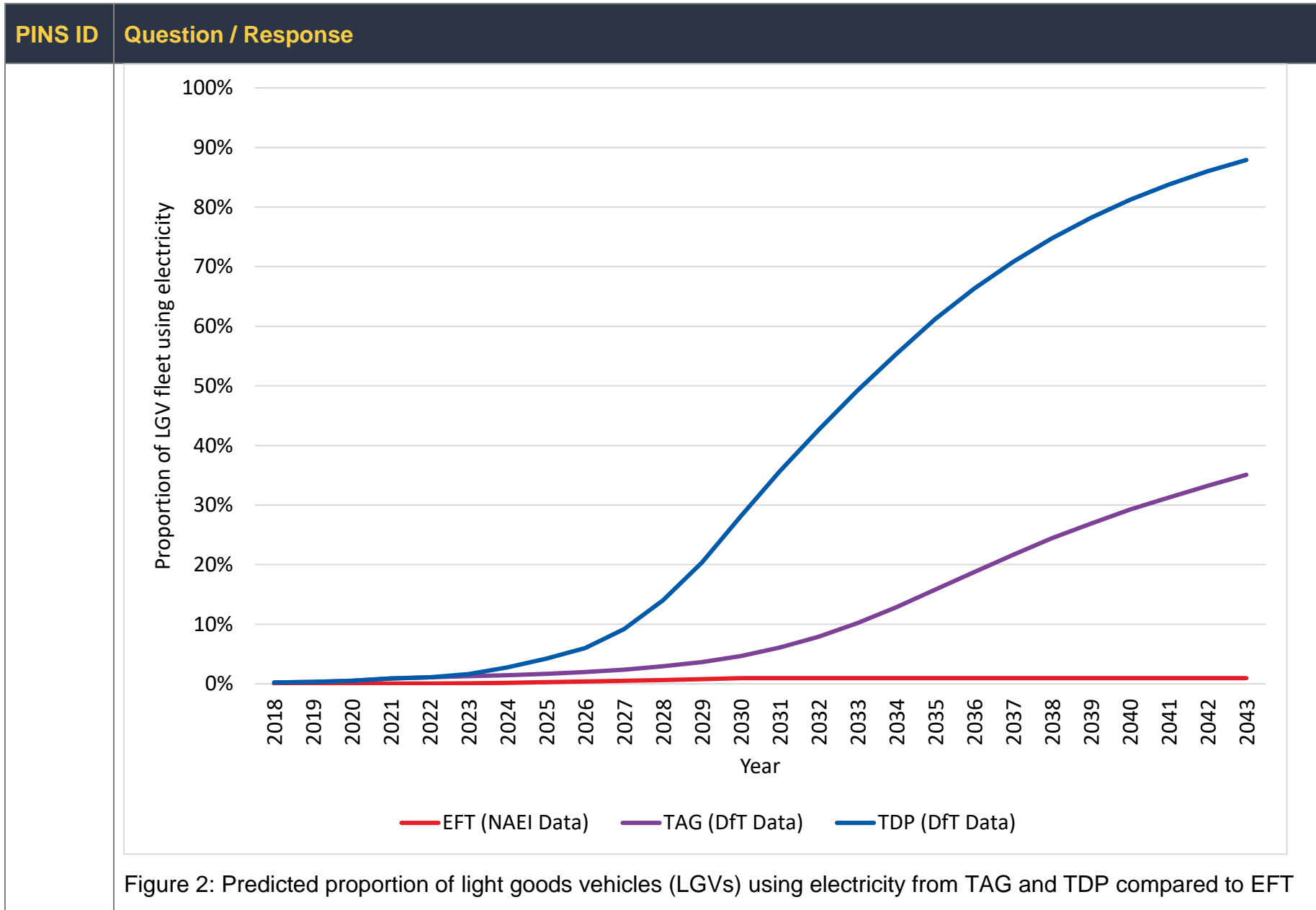
PINS ID	Question / Response
	<p>Additionally, the lead biodiversity witness for the Applicant (Dr Paul Clack) formerly worked for the Herts and Middlesex Wildlife Trust. This included management experience at local nature reserves. The Trust manages Hexton Chalk Pit, around 5km north of Luton Airport. This is a site where various orchid species including those found within the Wigmore Park County Wildlife Site (CWS) have colonised a former active chalk quarry, with young plants frequently found on the thin exposed soils. Additionally, common spotted orchid colonised exposed chalky gravels at Stocker's Lake, also managed by the Herts and Middlesex Wildlife Trust.</p> <p>Harrop and Harrop (2005)¹ report that pyramidal orchid takes readily to man-made habitats, including abandoned industrial sites and disused quarries, and is one of the first orchids to move into such newly created habitats. They also report that bee orchids occur on similar sites as pioneer species and behave <i>"...like 'weeds', colonising areas of bare or disturbed ground. They increase rapidly in numbers until a closed sward develops and then, being 'poor' competitors, they disappear."</i> They also report that this species is tolerant of heavy grazing and trampling.</p> <p>Orchids within the CWS are assumed to have colonised naturally on the former landfill site from wind-blown seed from the wider area. It should be noted that within Section 4 of Appendix AA to the Ecology Baseline Report [AS-035] it was noted that the lack of regular livestock grazing at Wigmore Park means that Bramble and expanding rhizomatous patches of introduced Michaelmas-daisy are, and will continue to be, a threat to the extent and quality of herb-rich neutral and calcareous vegetation.</p> <p>The Applicant has control over land in the new open-space and the ability to specifically manage newly created, enhanced and retained habitats for orchids and other species. Through the detailed design stage, final habitat management prescriptions will be refined and further input from LBC and HCC ecologists will be welcomed. Paragraph 10, sub paragraph 1, of Part 2 of Schedule 2 of the draft DCO [REP3-004] includes a suitable control measure, making provision for the landscape and biodiversity management plan to be approved by the relevant planning authorities.</p> <p>There is opportunity to review seed sources and mixes through the detailed design stage. Although not currently proposed, seed from orchids including common spotted and pyramidal orchid can be included in bespoke seed mixes and is available from seed merchants. Orchid seeds are very small and light, and such seed does not form significant percentages in proprietary mixes but could be added into the mix to be sown in discrete locations if required.</p>

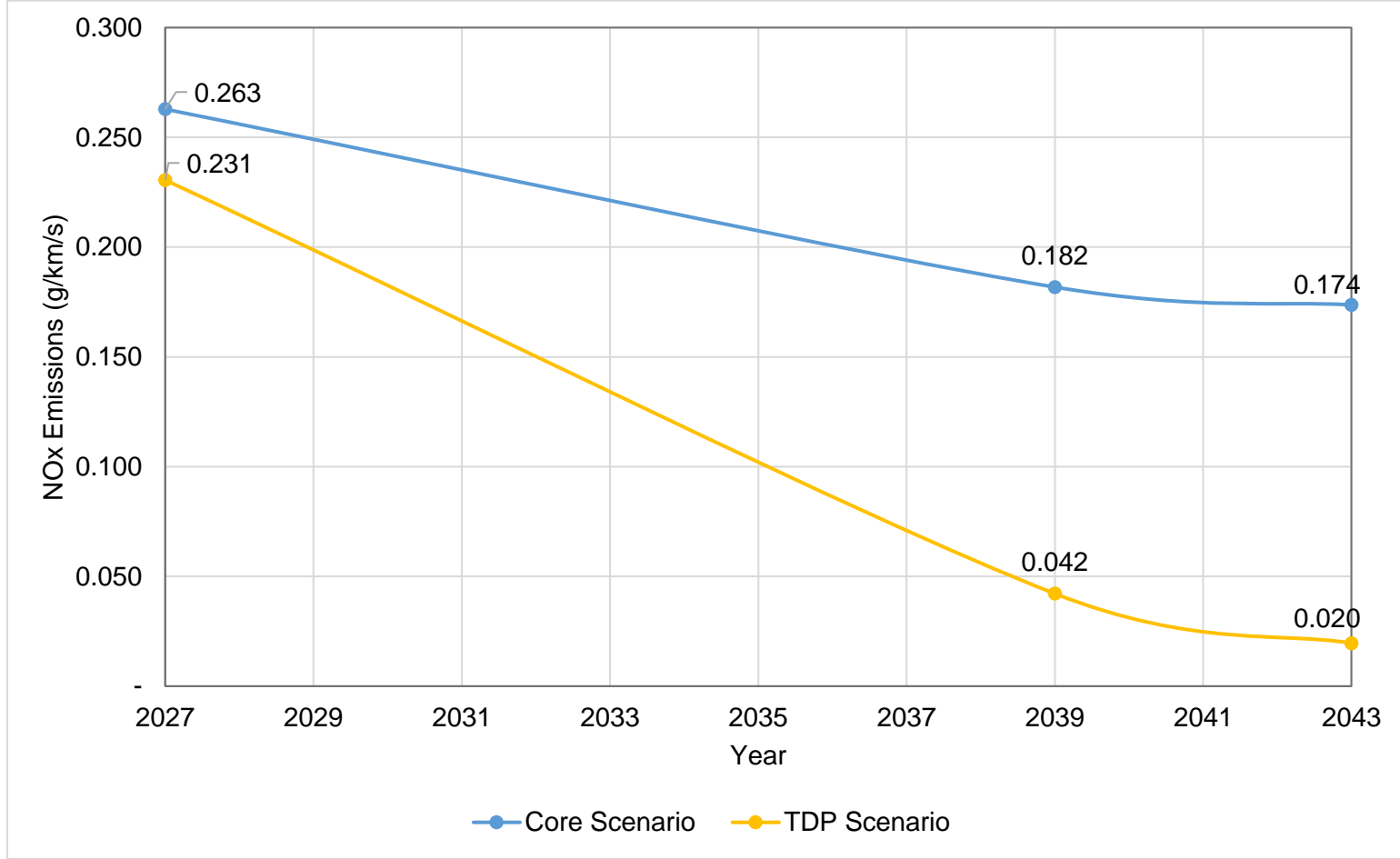
PINS ID	Question / Response
	<p>¹ Harrop, A. and Harrop, S: <i>Orchids of Britain and Ireland, a Field and Site Guide, 2005, A&C Black publishers Ltd.</i></p>
BIO.1.2	<p>Question: Nitrogen deposition Provide comment on the appropriateness of applying the approach advocated in the 'Design Manual for Roads and Bridges' to the Local, District and County Wildlife Sites, protected habitats and protected species given the potential sources of nitrogen from the Proposed Development. As part of this, confirm if you are satisfied, or not, with the use of 0.4 kg/N/ha/yr as a maximum dose threshold applied as an average.</p> <p>The effects of atmospheric NO_x (nitrogen oxides) and NO₂ on all receptors are screened out [AS-027, paragraph 8.5.59] because the equivalent concentrations of sulphur dioxide are not anticipated. Confirm whether or not you agree with this approach.</p> <p>Response: The Applicant notes that this question is directed to Natural England and the Joint Host Authorities and does not consider it necessary to provide a response in this instance.</p>
BIO.1.3	<p>Question: Nitrogen deposition At ISH6 and in the Applicant's response at Deadline 3 [REP3-053, paragraph 3.1.19] it is stated that agriculture is a significant source of nitrogen and that the proposed removal of land from agricultural production would counterbalance the modelled nitrogen deposition on protected habitats and species.</p> <ol style="list-style-type: none"> 1. Provide an assessment, ideally quantitative, of the anticipated reduction in nitrogen deposition from removal of agriculture and the associated timescales for this. 2. Provide the equivalent assessment of the anticipated reduction in nitrogen deposition from the shift to electric vehicles referred to in [REP3-053, paragraph 3.1.21]. <p>The results of the air quality modelling in Appendix 7.3 [APP-063] and mapping of these [AS-099] are noted. However, the plans are not clear in respect of ecological receptors because cross-referencing is still required with the results tables. Please provide clear illustrations for the different phases of modelling of:</p>

PINS ID	Question / Response
	<p>3. Exceedances of the mean NOx critical level and contribution of the Proposed Development to this, highlighting where it is more than 1% [APP-053, Table 3.37].</p> <p>4. Exceedances of a 1% increase in nitrogen deposition and the change against the lower critical load [APP-053, Table 3.38].</p> <p>5. These should be provided on a background map and scale to clearly illustrate the effects on identified ecological receptors.</p> <p>Table 3.3 [AS-028] sets out the location of sensitive ecological receptors, including transect locations, which are illustrated in Figure 7.3b [AS-099]. It is noted that transects are not shown for (at least) receptors E10, 31, 37, 39, 48, 63, 64, 65, 114, 119, 120 and 121. Receptor locations and transect locations are missing for (at least) E123, 124, 125, 127, 128 and 129.</p> <p>6. Provide an updated Figure 7.3b showing the location of missing receptors/ transects and confirm that no other receptor locations are missing. Transect sub-numbering e.g. E120.x should also be provided.</p> <p>Response: Question 1</p> <p>For clarity, the Applicant did not say that removing land from agricultural production would counter-balance the impacts of the Proposed Development, if 'counterbalance' is interpreted as meaning 'entirely offset'. At ISH6 the Applicant stated that they did not believe the benefit of the removal of land from agricultural production could be quantified (hence no quantification is presented in Chapter 8 of the ES [AS-027]). However, the Applicant noted (in ISH6 and in the ISH6 Post Hearing Submission [REP3-053] and in Chapter 8 of the ES [AS-027]) that agriculture is a significant source of atmospheric nitrogen at all the modelled sites. This can be verified by using the Site Relevant Critical Load App on the APIS website (https://www.apis.ac.uk/app), entering the coordinates for each designated site, selecting 'results' on the left hand menu and then selecting the 'source attribution' tab and the 'local contributions to nitrogen deposition' pie chart. As examples:</p> <ul style="list-style-type: none"> • 29.2% of background nitrogen deposited in the 5km grid square in which Winch Hill Wood is situated derives from agriculture (livestock and fertiliser), compared to 36% from transport (road transport and 'other transport' i.e. the airport and the railway); • 21.6% of background nitrogen deposited in the 5km grid squares in which Burnt Wood, Stubbocks Wood, and Diamondend Springs, Limekiln Wood & Pondcroft are situated derives from agriculture, compared to 25.3% from transport;

PINS ID	Question / Response
	<ul style="list-style-type: none"> • 25.9% of background nitrogen deposited in the 5km grid square in which Watkins Wood and Lords Wood are situated derives from agriculture, compared to 20% from transport; and • 21.1% of background nitrogen deposited in the 5km grid square in which Kidney & Bulls Wood are situated derives from agriculture, compared to 23% from transport. <p>The Proposed Development will remove at least 56 ha of land from agricultural production (at least 72 ha if agricultural land that is currently fallow is included) to create Wigmore Valley Park and to extend the airport itself. Removing this amount of land from agricultural production within 2km (and in some cases within 1km or less) of these sites will undoubtedly reduce nitrogen from this source, but the Applicant does not believe the tools or emission factors exist to quantify it, and therefore it has not been accounted for in the modelling. It is, however, one more factor to take into account when determining the significance of the likely ecological effect of the modelled air quality impact, as the Applicant has done in Chapter 8 of the ES [AS-027]. With regard to timescales, the reduction in nitrogen deposition will occur the year the land ceases to be farmed agriculturally (i.e. fertilised or grazed).</p> <p>Questions 2</p> <p>Similarly, to question 1, the uptake of electric vehicles (EVs) is not relied upon when determining the significance of the likely ecological effect of the modelled air quality impact, as carried out in Chapter 8 of the ES [AS-027]. It was noted in ISH6 and in the ISH6 Post Hearing Submission [REP3-053] to demonstrate the conservative basis for the conclusions reached in Chapter 8 of the ES [AS-027].</p> <p>A review of the Transport Decarbonisation Plan (TDP) (Ref i) and the Department for Transport (DfT) transport analysis guidance (TAG) data book (Ref ii) was undertaken to evidence the proportions of EVs have been revised upwards since the Defra Emissions Factor Toolkit (EFT version 11) (Ref iii) was released. EFT v11 was the tool used to calculate the emissions from road vehicles in the assessment.</p> <p>The future assumptions of fleet proportions, including EV proportions, in the TDP and TAG data book are available from the DfT. The fleet proportions behind the EFT are based on National Atmospheric Emissions Inventory (NAEI), vehicle fleet composition projections (base 2019). The fleet proportions of cars and Light Goods Vehicles (LGVs) using electricity from these different data sources are provided in Figure 1 and 2 respectively. It can be seen that the uptake of EVs in the DfT datasets are greater than that assumed in the NAEI. Therefore, the uptake of EVs assumed in the air quality assessment can therefore be assumed to be conservative.</p>





PINS ID	Question / Response												
	<p data-bbox="347 239 1998 383">A comparison of emissions calculated for a stretch of the M1 has been undertaken to provide a quantitative example of the implications of the different predictions of EV uptake. Figure 3 provides the data from this example, which demonstrates that the air quality assessment approach using the EFT is more conservative with respect to nitrogen oxide (NOx) and ammonia (NH3) emissions, which contributes to nitrogen deposition.</p>  <table border="1" data-bbox="347 391 1881 1340"> <caption>Data for Figure 3: M1 emissions example</caption> <thead> <tr> <th>Year</th> <th>Core Scenario (g/km/s)</th> <th>TDP Scenario (g/km/s)</th> </tr> </thead> <tbody> <tr> <td>2027</td> <td>0.263</td> <td>0.231</td> </tr> <tr> <td>2039</td> <td>0.182</td> <td>0.042</td> </tr> <tr> <td>2043</td> <td>0.174</td> <td>0.020</td> </tr> </tbody> </table> <p data-bbox="347 1356 817 1396">Figure 3: M1 emissions example</p>	Year	Core Scenario (g/km/s)	TDP Scenario (g/km/s)	2027	0.263	0.231	2039	0.182	0.042	2043	0.174	0.020
Year	Core Scenario (g/km/s)	TDP Scenario (g/km/s)											
2027	0.263	0.231											
2039	0.182	0.042											
2043	0.174	0.020											

PINS ID	Question / Response
	<p>It is important to consider the effect from traffic will be different at each ecological site depending on the change in vehicle emissions associated with the Proposed Development, the distance to roads and the key sources of pollutants at each site. Therefore, the change in NOx emissions at each ecological site, as a result of the reductions in road emissions demonstrated in the above figures will not be equal at each location, but would still be beneficial compared to the values presented in the ES (Appendix 7.3 Air Quality Results [APP-063]).</p> <p>Questions 3-6</p> <p>In response to points 3 to 6, for clarity additional figures (rather than updates to existing) have been produced and are provided in Appendix B to this document. It is noted that Figure 7.3b [AS-099] did include the receptors being flagged as missing. The original Figure 7.3b [APP-148] was missing those sites..</p>
BIO.1.4	<p>Question:</p> <p>Citations for Wildlife Sites</p> <p>Provide citations for all County, District and Local Wildlife Sites listed in Table 8.12 of Chapter 8 [AS-027].</p> <p>Response: The Applicant notes that this question is directed to the Joint Host Authorities and does not consider it necessary to provide a response in this instance.</p>
BIO.1.5	<p>Question:</p> <p>Invertebrates</p> <p>Chapter 8 [APP-027, Table 8.14] recognises that invertebrates identified in the Main Application Site include 'Key Species', those of 'principal importance' and beetles not otherwise identified locally. Table 8.17 [APP-027] describes a loss of habitats supporting a notable assemblage, leading to a 'significant moderate adverse' effect, which would reduce to a minor effect once habitats have established within five years. Mitigation referred to in the Orchid and Invertebrate Mitigation Strategy [AS-035] relates to creation of new habitat areas and management of the wider green corridor network of hedgerows and trees, and translocation of trefoil and orchids, amongst other things.</p> <ol style="list-style-type: none"> 1. Explain in detail how the additional mitigation measures listed in Table 8.17 [AS-027] reduce the assessed effect on invertebrate species from a moderate to minor adverse effect during the first five years. 2. Is it anticipated that the invertebrate populations would increase elsewhere across the site to compensate for the loss during construction and that the existing range of species would be maintained? If so, explain the

PINS ID	Question / Response
	<p>mechanism for this in more detail, including for those beetle species currently only identified on the Main Application Site.</p> <p>Table 8.17 [AS-027] notes that work during construction would inevitably result in the death of a range of ground dwelling invertebrates, particularly slower moving, flightless arthropods that cannot avoid the area. Can you:</p> <ol style="list-style-type: none"> 3. Confirm if any of those referred to are protected species. 4. Explain how their loss would be mitigated if they are unable to easily migrate. 5. In light of the above, confirm whether or not the effect on these species should be 'minor adverse'. <p>Response: Sub-questions 1 and 2: As stated within Chapter 8 Biodiversity of the ES [AS-027], Table 8.17 provides a summary of the mitigation measures taken into account when recognising the level of effects on each receptor. The embedded mitigation measures, which form part of the design of the Proposed Development, are taken into account for the initial effect, of which it is stated as reducing to a minor adverse effect after 5 years. Further additional mitigation is then taken into account when establishing the residual effect, which is stated as a minor adverse, reducing to a negligible effect in the long term.</p> <p>The invertebrate assemblages were noted within elements of Wigmore Valley Park area and within the wider area to the east which will comprise the embedded mitigation measures for invertebrates include the habitat creation of the provision of open space, comprising over 47ha of creation, enhancement and management of broadleaved woodlands, neutral meadow grassland, amenity grassland, native scrub, mixed-species hedgerows with trees; with delivery prior to the existing habitats (including large areas of arable land) being lost, and calcareous grasslands being created at a later phase of the Proposed Development. Variation within each field is expected and will be encouraged and is likely to include having some patches of bare ground, in particular during establishment, and then managed for where appropriate. Features such as buffer strips will be left adjacent to areas of scrub, so that a well-developed edge can be created between the grassland and scrub habitats, and retained adjacent arable margins to woodland and hedgerow belts. These margins will be managed to encourage retention and proliferation of the notable arable plant species and associated invertebrates. Retention through design of veteran/ancient trees will benefit invertebrates (all but one will be retained in situ within the Proposed Development, with the affected tree being translocated) which offer important habitats for a range of species including rare saproxylic invertebrates and</p>

PINS ID	Question / Response
	<p>fungi. Felled dead wood from mature trees that could be lost will be kept in as large sections as possible and incorporated into the landscape design of the new areas of habitat creation within the open space. This embedded habitat creation within the design will provide a range of habitats for invertebrates adjacent to the areas of habitat loss.</p> <p>The assemblage of invertebrates found within the Proposed Development included species of principal importance. Within the initial surveys conducted, 18 of the 21 Section 41 species were moths or butterflies that are still widespread and common, although declining. The three remaining include species such as the dingy skipper (<i>Erynnis tages</i>). The dingy skipper butterfly is found in a wide range of habitats in Britain which support its larval foodplant common bird's-foot-trefoil (<i>Lotus corniculatus</i>). The invertebrate surveys conducted noted that a key habitat of the survey area generally was 'shorter, more flower-rich grassland swards', and that 'such grasslands occur in small patches in all parts of the survey area. This habitat will be mitigated for within the design of the Proposed Development (embedded) through the creation of 21.9ha of neutral meadow grassland habitat, of which the LBMP includes provision for a seed mix that includes common birds-foot-trefoil. In addition, 12.83 ha of calcareous grassland will be created as part of the Landscape Restoration in Phase 2b which will also support this species. The Orchid and Invertebrate Mitigation Strategy [AS-035] includes monitoring for the dingy skipper.</p> <p>The set-aside downy-back beetle (<i>Ophonus laticollis</i>) is found in arable field edges and margins and other disturbed ground on calcareous soils, being typically found adjacent to thick hedges with tussocks and accumulations of leaf litter. The retained and created woodlands managed including for their edge habitats, along with the creation or restoration of approximately 4.2km of mixed-species hedgerows with hedgerow trees, included as part of the design of the Proposed development will provide suitable habitat for this species. In addition, implementation of suitable management regimes of retained and created habitats to encourage establishment of notable arable plant species in field margins will also be of benefit.</p> <p>The picture-winged fly (<i>Dorycera graminum</i>), occurs on a wide range of grasslands, growing on a range of soil types, typically with some anthropogenic disturbance. The wide areas of grassland as part of the replacement open space will be of benefit to this species.</p> <p>Surveys for the Noble Chafer (<i>Gnorimus nobilis</i>) were focussed on a veteran apple at Winch Hill Farm which will be retained, along with all but one (which will be translocated) ancient/veteran tree found to be present within the Proposed Development.</p>

PINS ID	Question / Response
	<p>The Outline LBMP [AS-029] has been developed in consultation with local stakeholders and includes details for implementation, establishment, maintenance and monitoring of created/enhanced habitats. It provides detailed management and monitoring requirements for the first five years from time of planting, for a period of 50 years, with a requirement for review initially every five years, to ensure that management is appropriate and habitats created/enhanced are in line with those proposed.</p> <p>It is expected that the retained habitats through appropriate management, and the large areas of created habitats will be established/improved sufficiently to mitigate the loss of the areas by the first five years enough to reduce the level of effect to minor adverse, which will also include areas of disturbed and bare ground during establishment. These habitats will continue to progress/mature through the appropriate adaptable and monitored management within the LBMP.</p> <p>Furthermore, the habitat creation area will provide an additional 43 ha of habitats. Establishment of this Area will involve the conversion and management of largely arable land into a mosaic of neutral grassland maintained by low intensity grazing, neutral meadows, planted woodland blocks, and a cluster of small wildlife ponds. The Habitat Creation Area would integrate existing habitats of higher biodiversity value within this landscape, such as woodland, with newly created habitats, increasing connectivity using hedgerow restoration to establish a coherent ecological network. In addition, 6.5 km of hedgerows in the wider area will be strengthened, translocation of bird's-foot trefoil will be undertaken (the food plant of the dingy skipper), appropriate management of field margins, retention of deadwood for saproxylic invertebrates, and monitoring of invertebrates will provide further mitigation to protect the invertebrates.</p> <p>The majority of the beetles noted to be present reside in habitats such as woodlands, woodland edges, ground layers including leaf litter, decaying wood, fungi and grassland margins. All of these habitat types lost as part of the Proposed Development are included within the habitats to be created and or retained/enhanced. Many beetles are very good at colonising new areas, just like the populations present in Wigmore Park CWS have colonised a former land fill habitat. Although the area will be developed, the mitigation in the form of habitats created as part of the design of the Proposed Development are immediately adjacent to the area lost, with habitats including hedgerows and woodland being retained and enhanced within and around the site. The majority of the beetles, although ground-dwelling or associated with low vegetation, their adult stages are fully winged and capable of flight. Many of the rarer species were found to be present in habitats within the eastern area which will be largely retained as part of the replacement open space and habitat creation areas.</p>

PINS ID	Question / Response
	<p>Sub-questions 3-5: The Applicant can confirm that none of the invertebrates covered by this row entry are legally protected species. Note that the legally protected Roman snail is covered by other rows within Table 8.17 of Chapter 8 Biodiversity of the ES [AS-027] with associated mitigation measures identified.</p> <p>Incidental mortality of ground dwelling invertebrates caused by construction is inevitable. However, specific mitigation for this effect is not required as incidental mortality alone (such as via collision with or crushing from vehicles) is unlikely to have any effect at population levels of species that can live at high densities, such as weevils in/on soil horizons and associated low-growing vegetation.</p> <p>Of the key species identified, many including the ladybird <i>Scymnus schmidtii</i>, set-aside downy-back beetle <i>Ophonus laticollis</i> and the ground beetle <i>Amara montivaga</i>, although ground-dwelling or associated with low vegetation, their adult stages are fully winged and capable of flight. As such, it is expected some will avoid injury by leaving the working areas in response to disturbance associated with vibration and visual effects. Accordingly, the Applicant does not consider the effect on these species needs changing.</p> <p>Habitat loss is a greater threat to invertebrate populations, but this effect and associated mitigation is discussed in the rows above those for risk of harm in Table 8.17 of Chapter 8 Biodiversity of the ES [AS-027].</p>
BIO.1.6	<p>Question: Ancient Woodlands In written submissions [REP1-112 and RR-0462] it was stated that a buffer strip should be planted between the car park and Winch Hill Ancient Woodland due to the potential for noise, light and dust pollution, and that measures should be put in place to safeguard ancient woodland at the A1081 roundabout. It was also stated that a larger buffer zone than the standard 15 meters (m) might be necessary where an assessment shows that impact could extend beyond this distance [RR-0462].</p> <p>Please provide an update on your position on this matter in light of the Applicant's comments in 'Response to Relevant Representations – Part 2D of 4' [REP1-024].</p> <p>Response: The Applicant notes that this question is directed to Natural England, Forestry Commission and the Woodland Trust and does not consider it necessary to provide a response in this instance.</p>

PINS ID	Question / Response
BIO.1.7	<p>Question: General It is understood from the Applicant's submission [REP1-027] that consultation has been undertaken with the local Wildlife Trusts through Technical Working Groups.</p> <p>The Wildlife Trusts are invited to provide comments on the assessment of the potential effects of the Proposed Development on biodiversity [AS-027], the Outline Landscape and Biodiversity Plan [AS-029] and update us on the status of any discussions with the Applicant on these matters.</p> <p>Response: The Applicant notes that this question is directed to the Wildlife Trusts and does not consider it necessary to provide a response in this instance.</p>

REFERENCES

Ref i DEFRA (2021) Decarbonising Transport: a better, greener Britain

Ref ii Department for Transport (2023) Transport Analysis Guidance data book, May 2023 v1.21

Ref iii Department for Environment Food and Rural Affairs. Emissions Factors Toolkit v11.0, November 2021. (Online)

APPENDIX A – ADDITIONAL FIGURE IN RESPONSE TO QUESTION 1.1



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All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

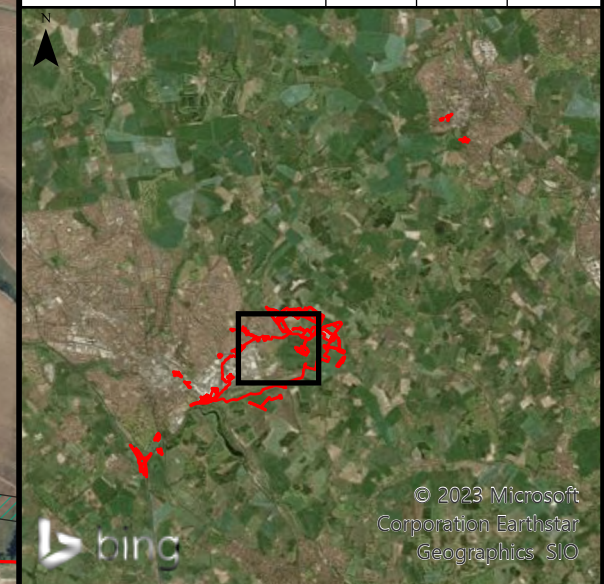
- Order Limits
- Target Notes
- OS Grid Square 100m
- Wigmore Park County Wildlife Site (CWS)

Site clearance boundaries

- Assessment Phase 1
- Assessment Phase 2a
- Assessment Phase 2b

Note: Roman snail locations are shown on confidential version submitted to the Planning Inspectorate

Additional Submission Deadline 4	AB	NL	CS	08/11/23	P03
Amended following section 51 advice	AB	NL	CS	04/04/23	P02
First Issue	AB	NL	CS	22/02/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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Hart House Business Centre
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www.lutonrising.org.uk

**London Luton Airport Expansion
Development Consent Order**

Drawing Title
Applicants response to ExA Written Question BIO.1.1:
Orchid Location Plan

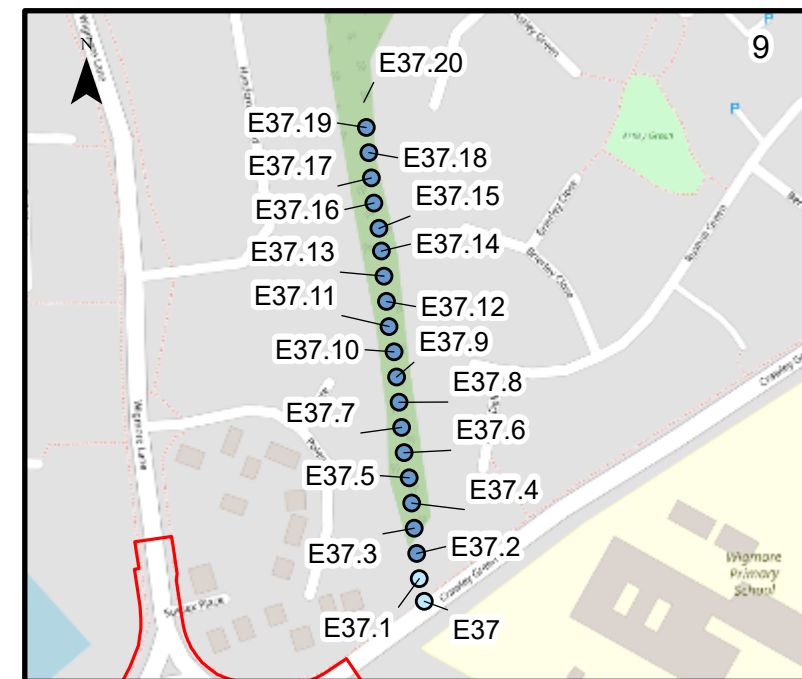
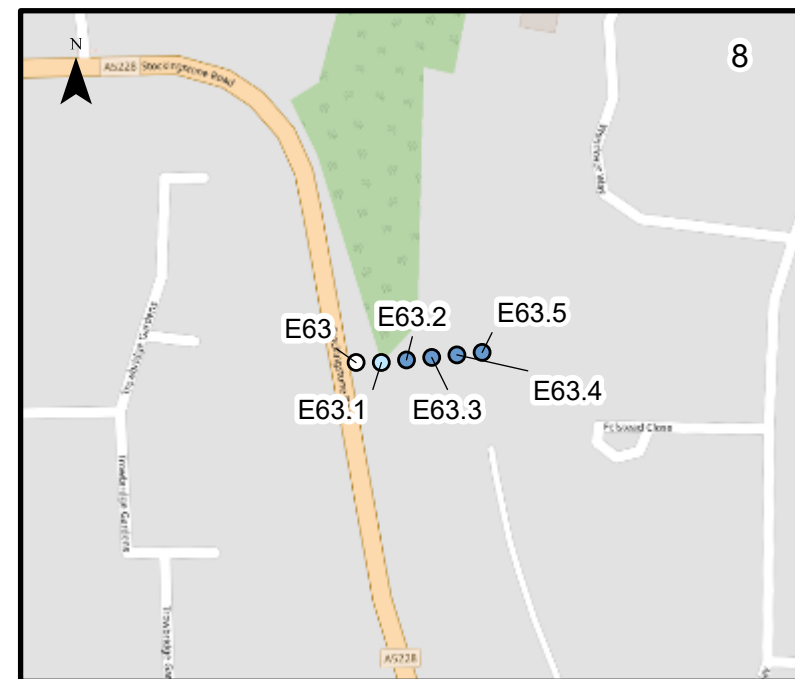
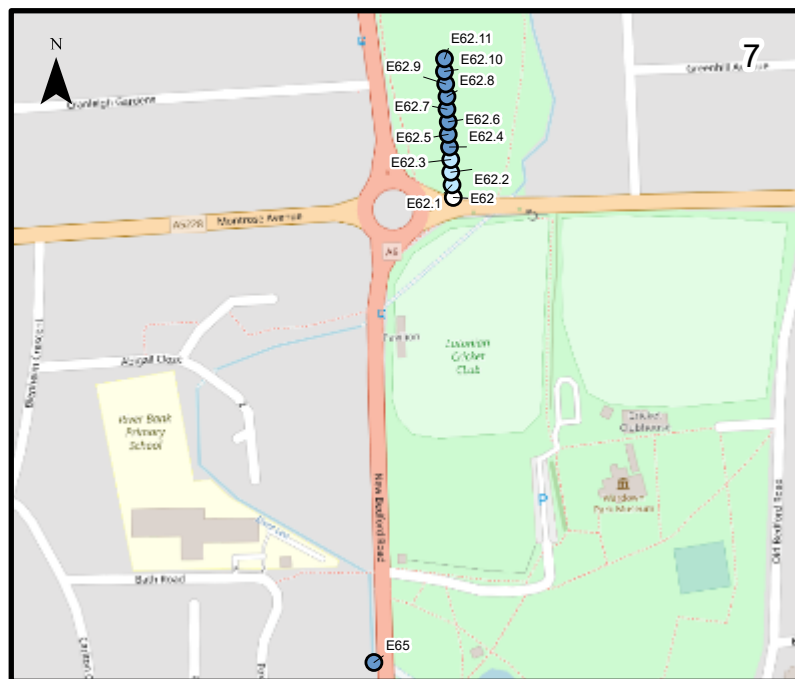
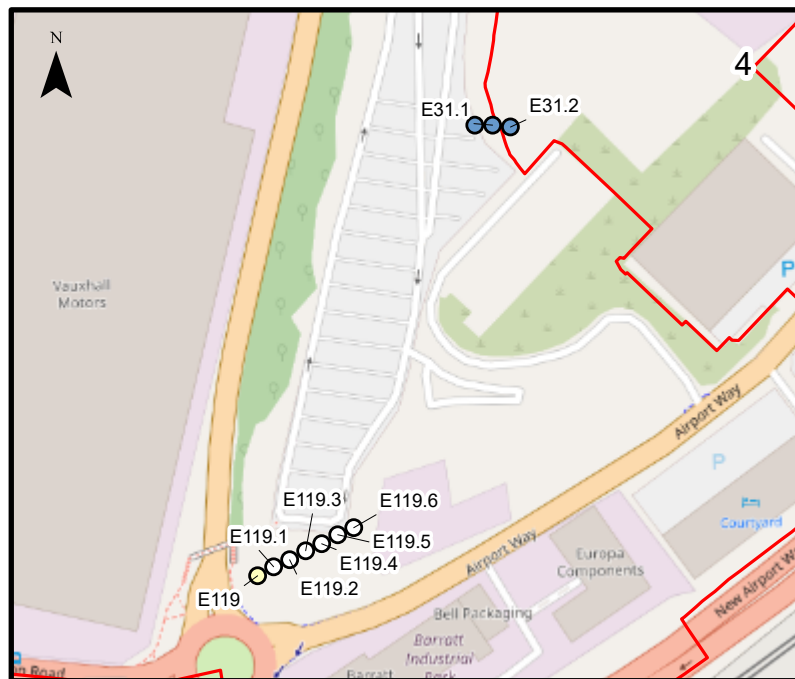
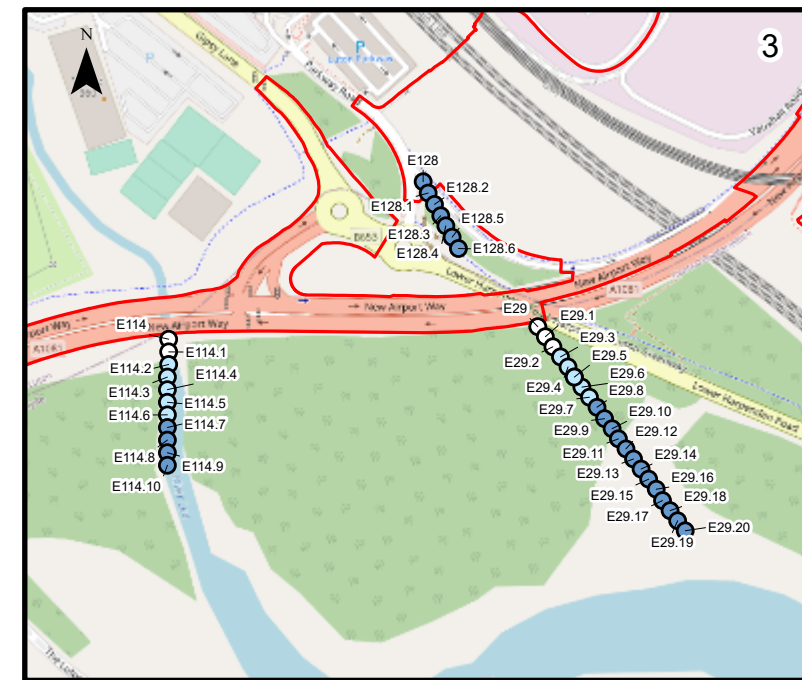
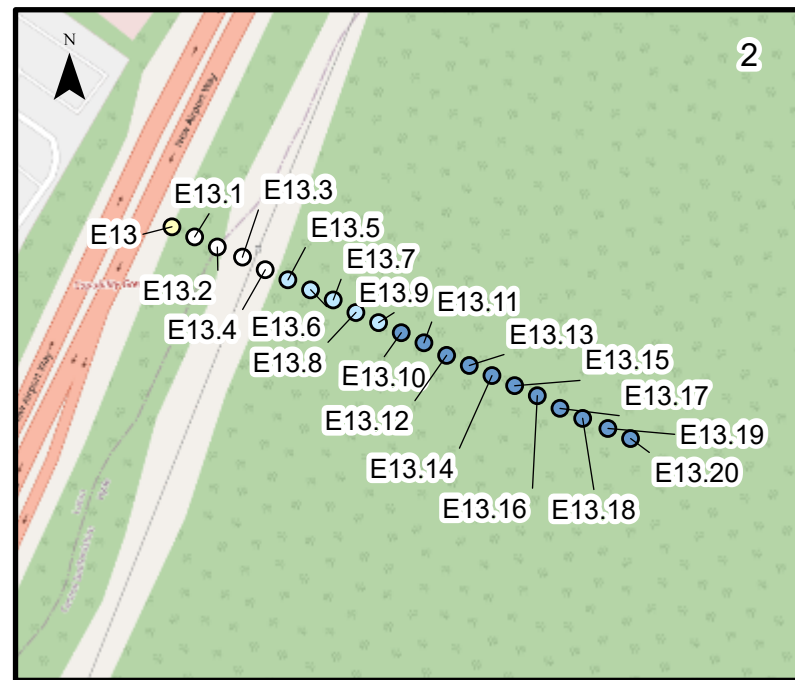
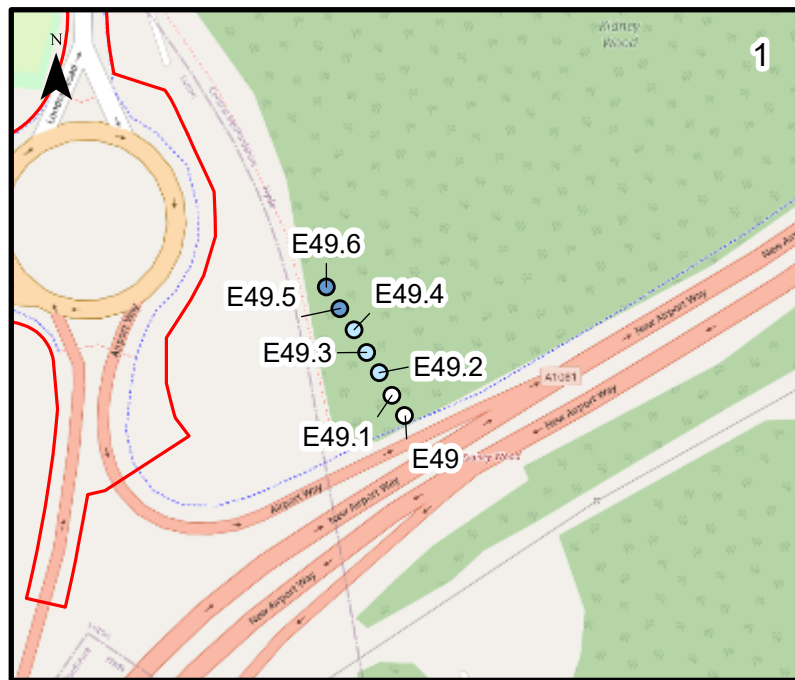
Purpose of issue Additional Submission Deadline 4				Suitability S2	
Drawn AB	Checked NL	Approved CS	Date 08/11/23	Scale 1:7,500	Size A3

DCO Application Ref. TR020001	APFP Regulation N/A	DCO Document Ref. TR020001/APP/8.68
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Drawing Number LLADCO-3C-ARP-00-00-DR-YE-0262	Revision P03
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Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number

APPENDIX B – ADDITIONAL FIGURES IN RESPONSE TO QUESTION 1.3 (3-6)



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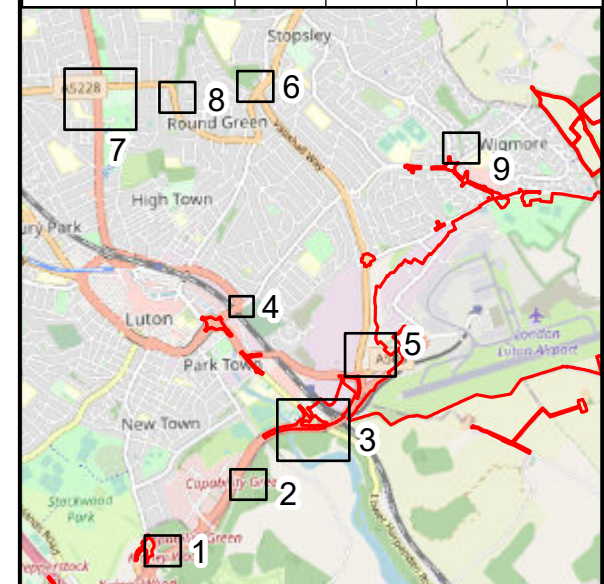
All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

- Order Limits
- Change in nitrogen deposition as % of lower critical load
- 1 - 2
- 2 - 4
- 4 - 10
- 10 - 18
- 18 - 28

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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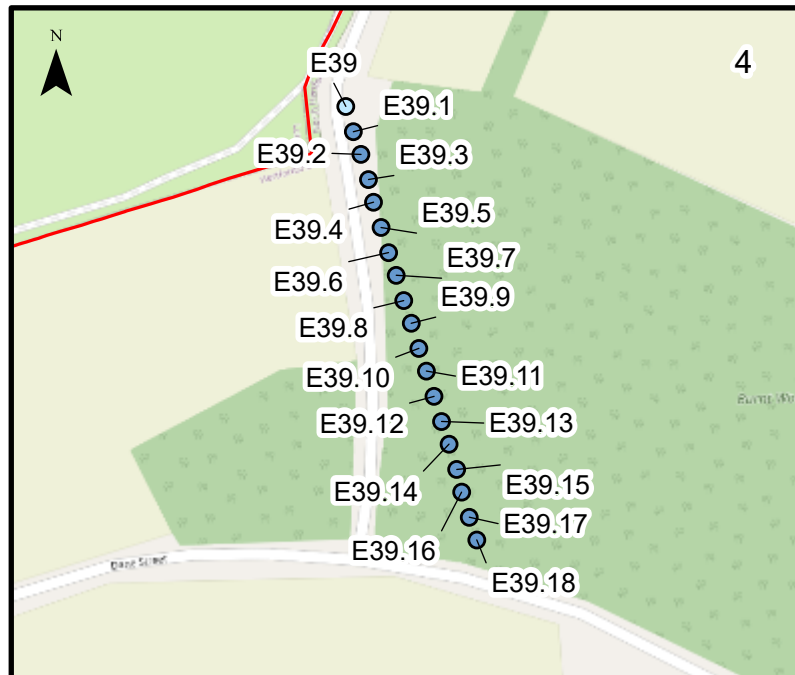
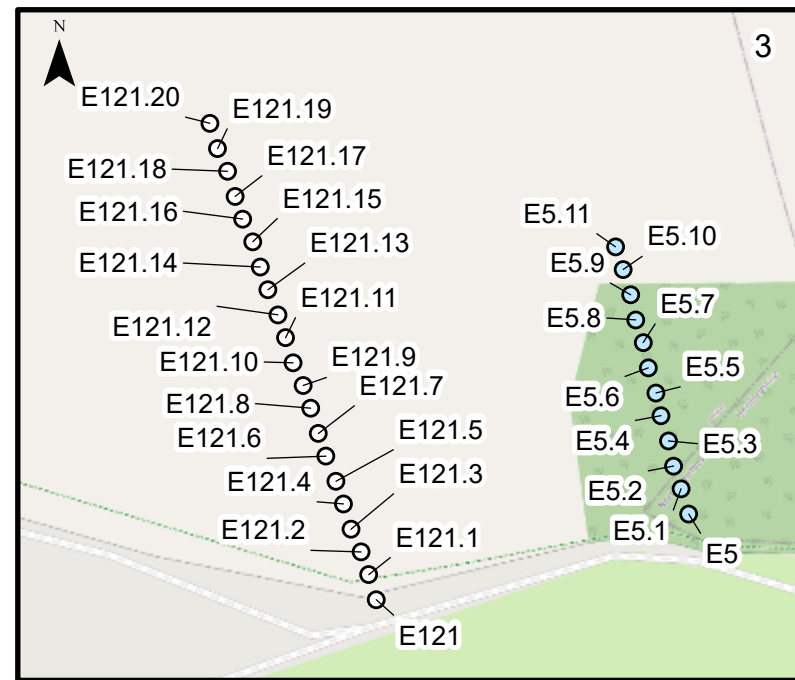
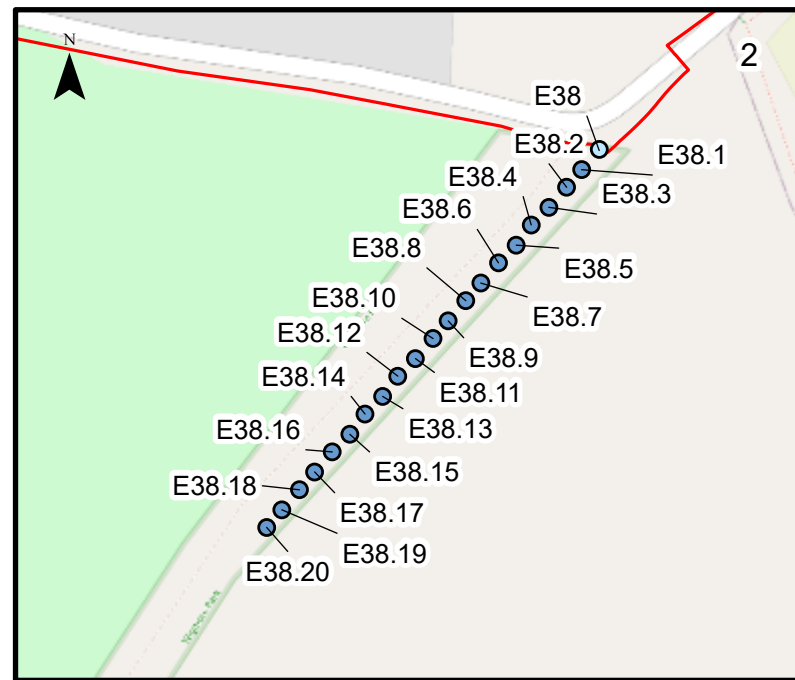
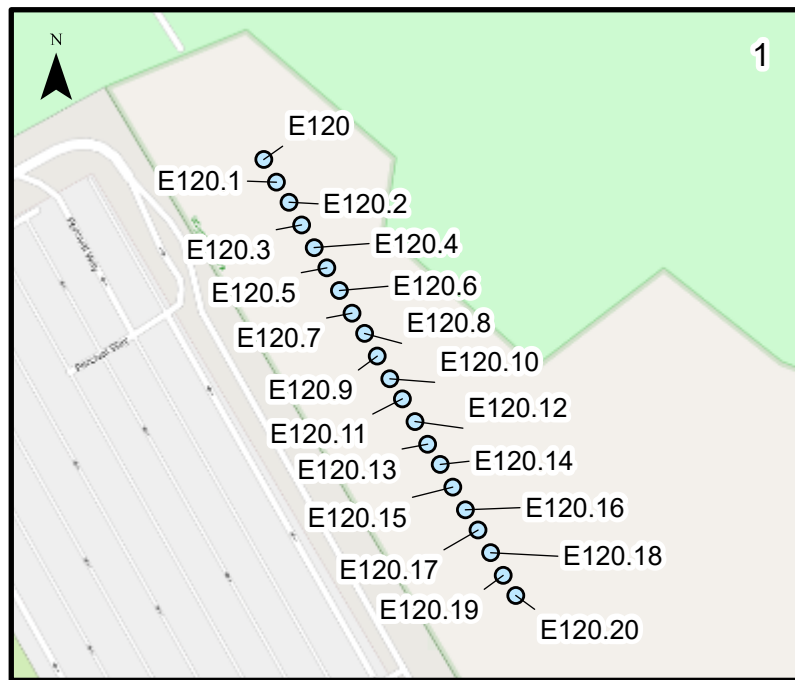
London Luton Airport Expansion Development Consent Order

Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 1
 Page 1 of 2

Purpose of issue	Suitability				
Additional submission Deadline 4	S2				
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0528	P01



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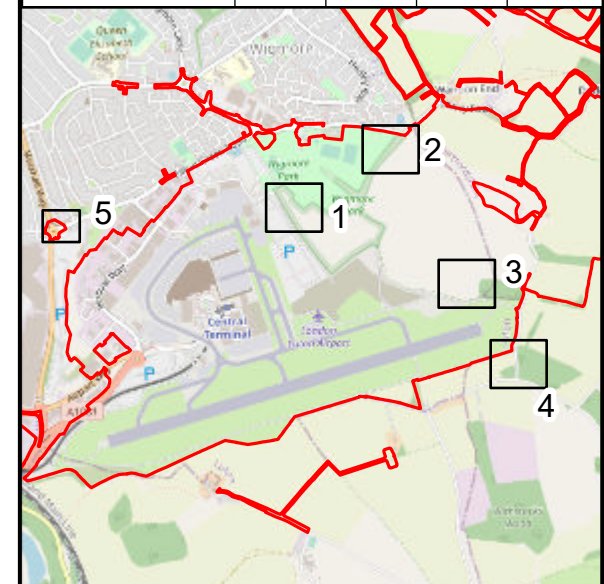
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Legend

- Order Limits
- Change in nitrogen deposition as % of lower critical load
- 1 - 2
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- 10 - 18
- 18 - 28

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

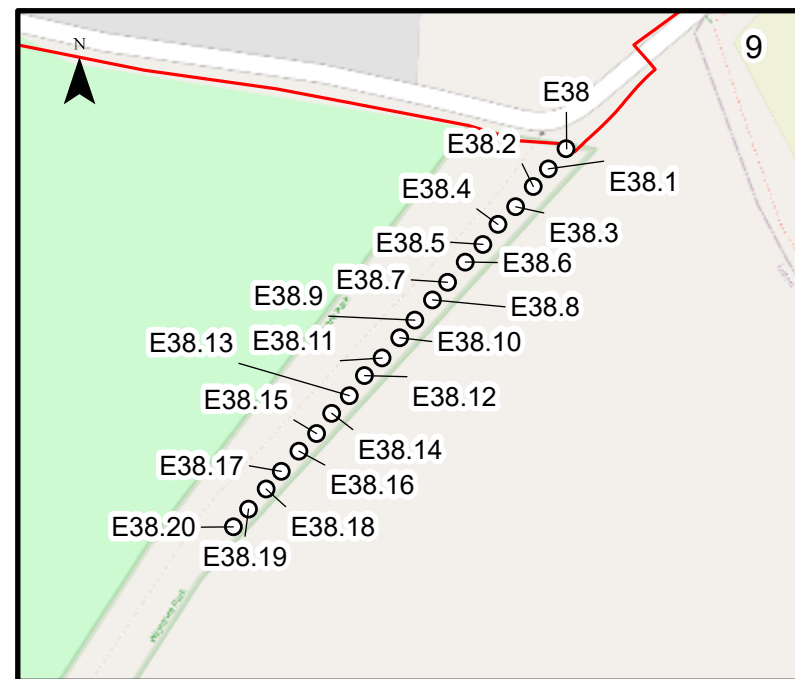
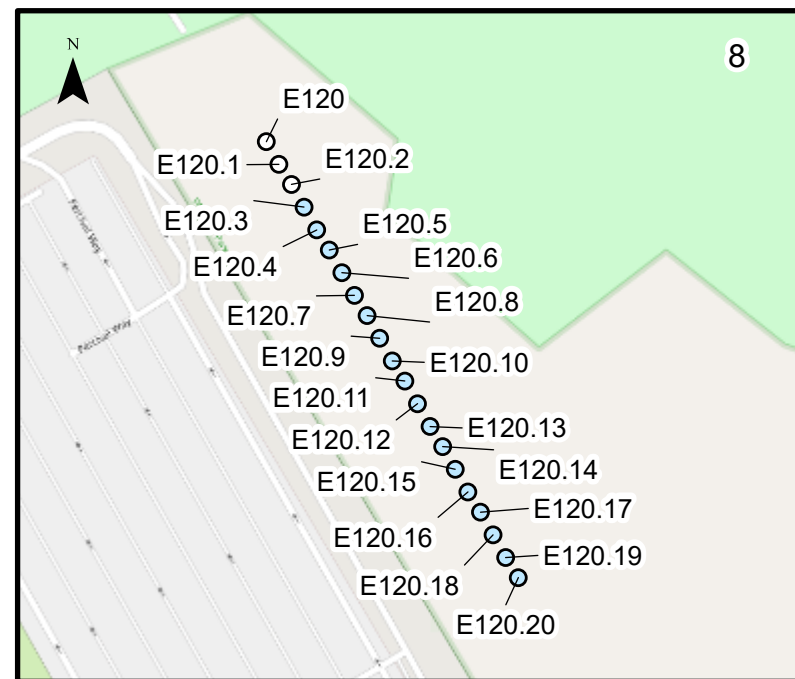
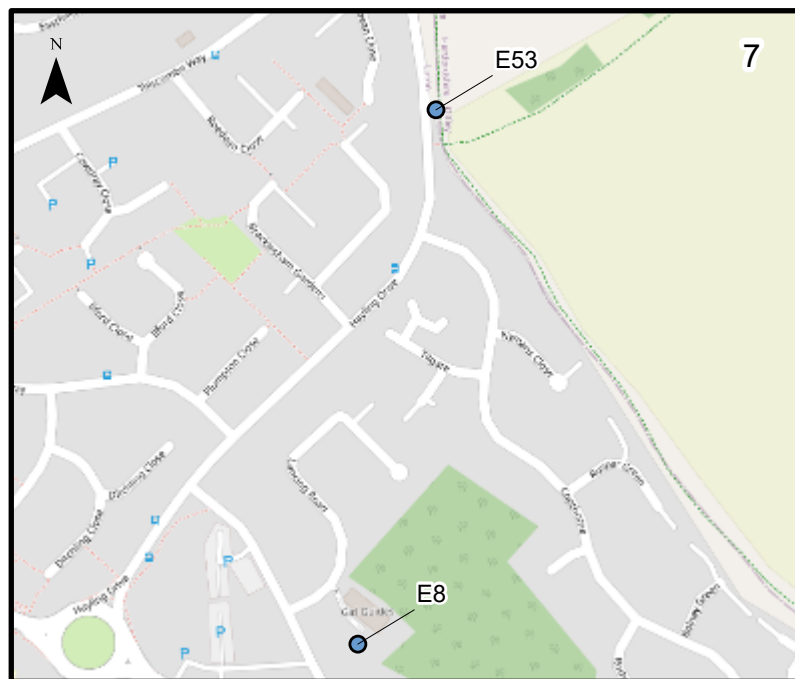
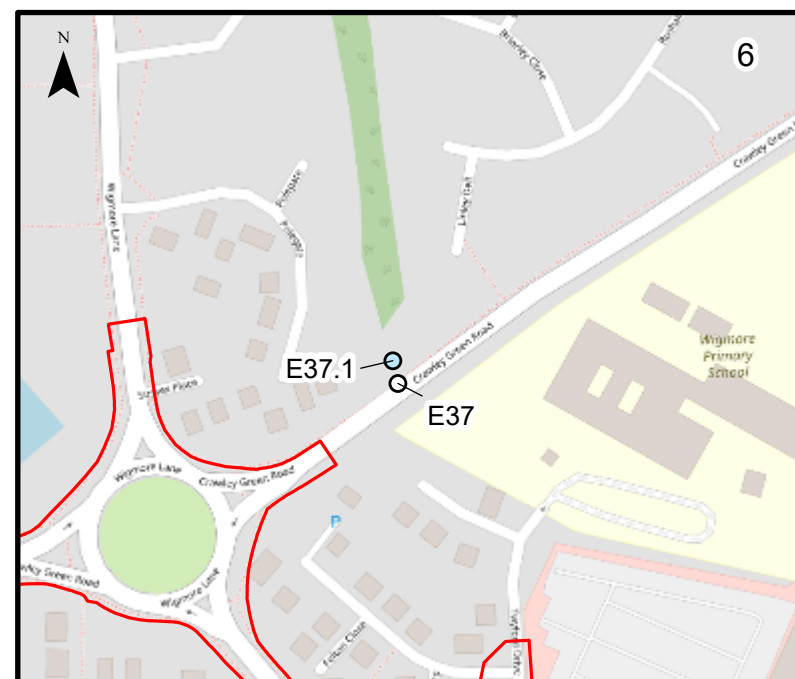
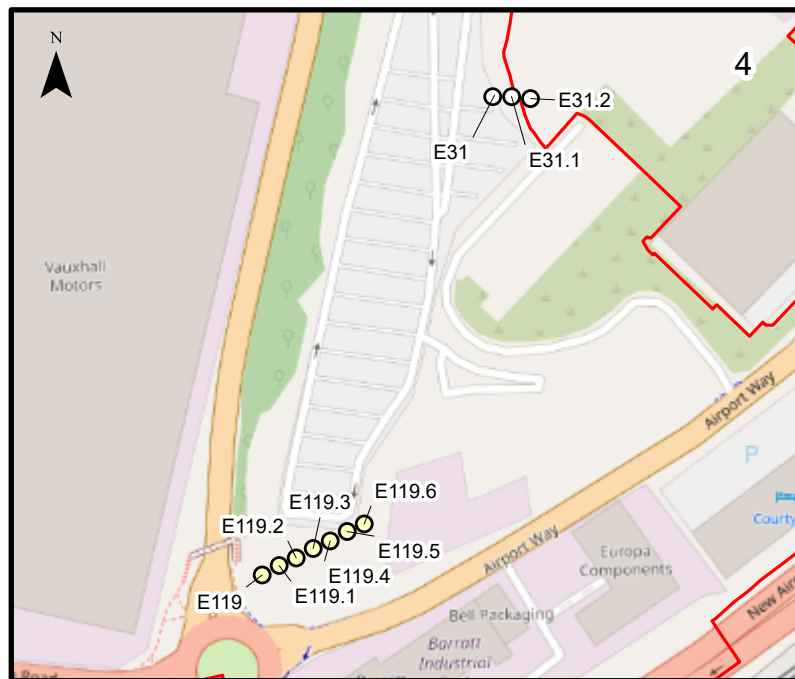
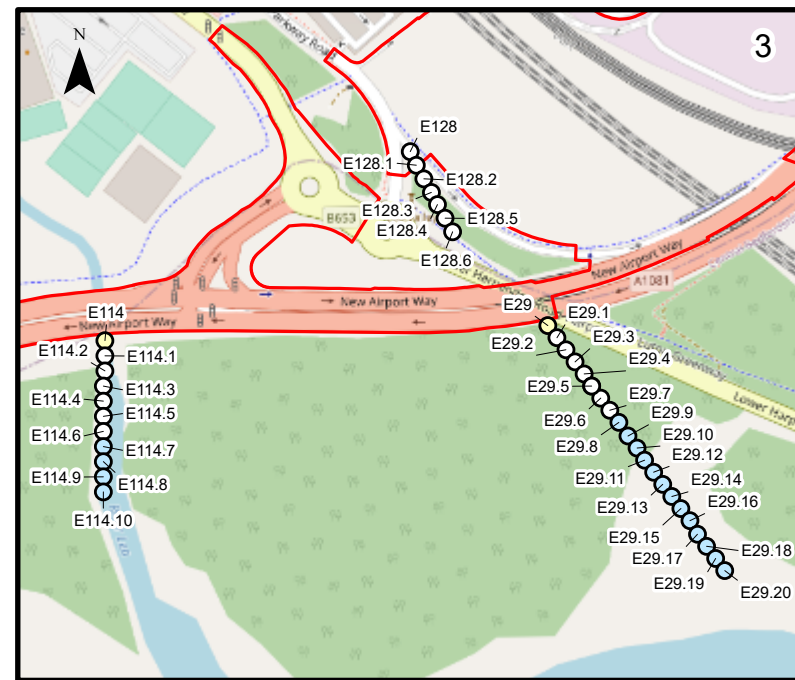
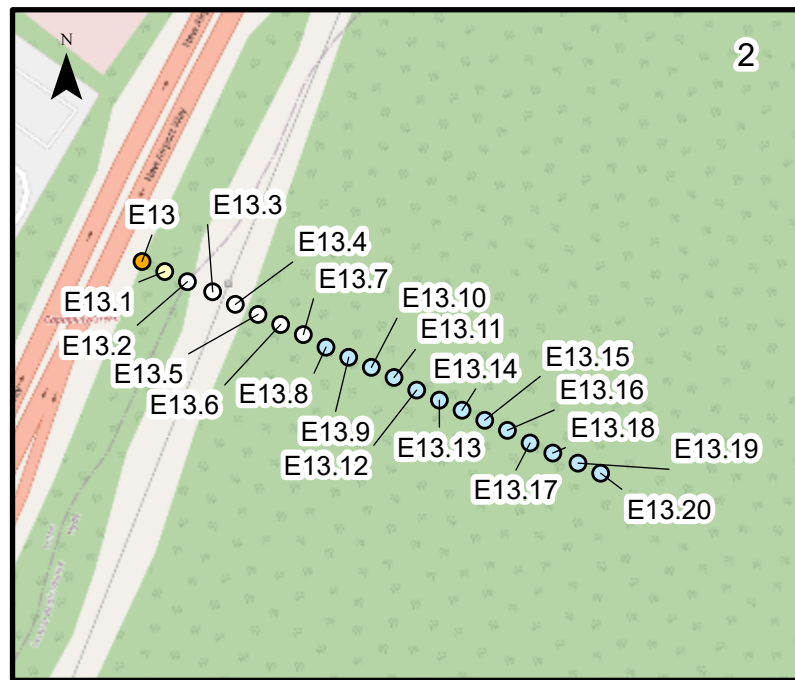
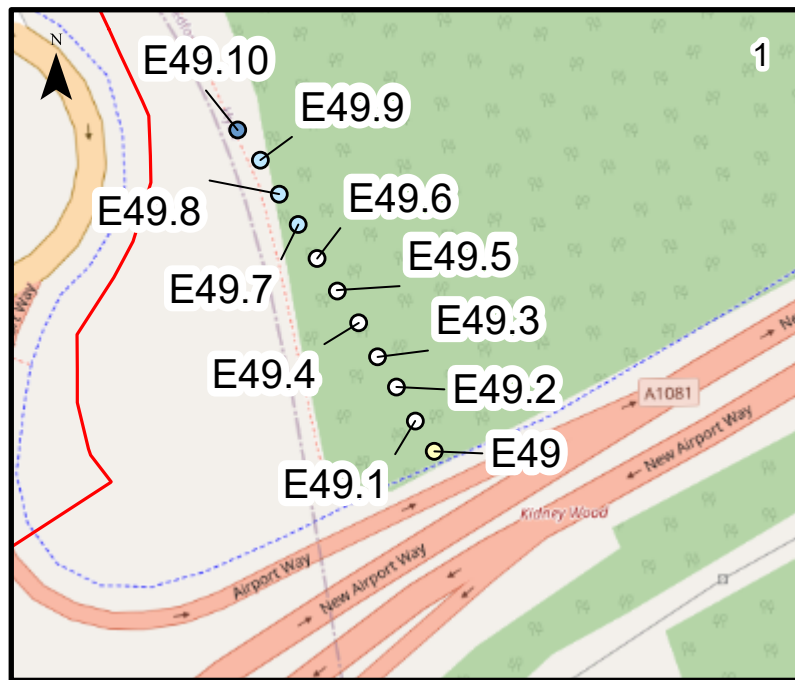


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Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 1
 Page 2 of 2

Purpose of issue				Suitability	
Additional submission Deadline 4				S2	
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
DCO Application Ref.	APFP Regulation	DCO Document Ref.			
TR020001	N/A	TR020001/APP/5.03			
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0528					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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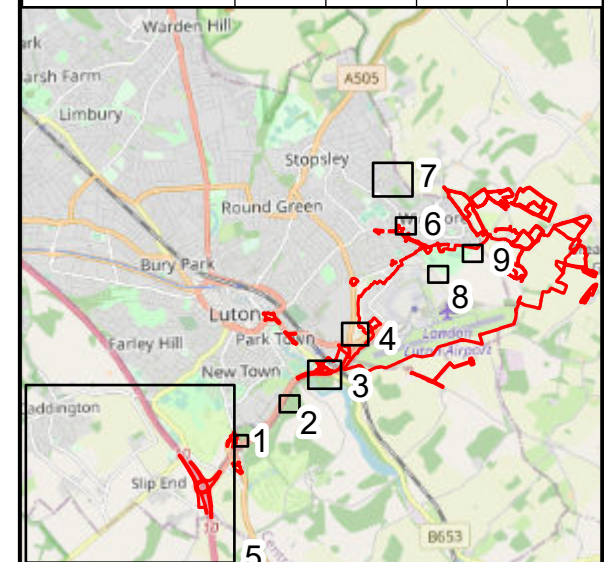
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Legend

- Order Limits
- Change in nitrogen deposition as % of lower critical load
- 1 - 2
- 2 - 4
- 4 - 10
- 10 - 18
- 18 - 28

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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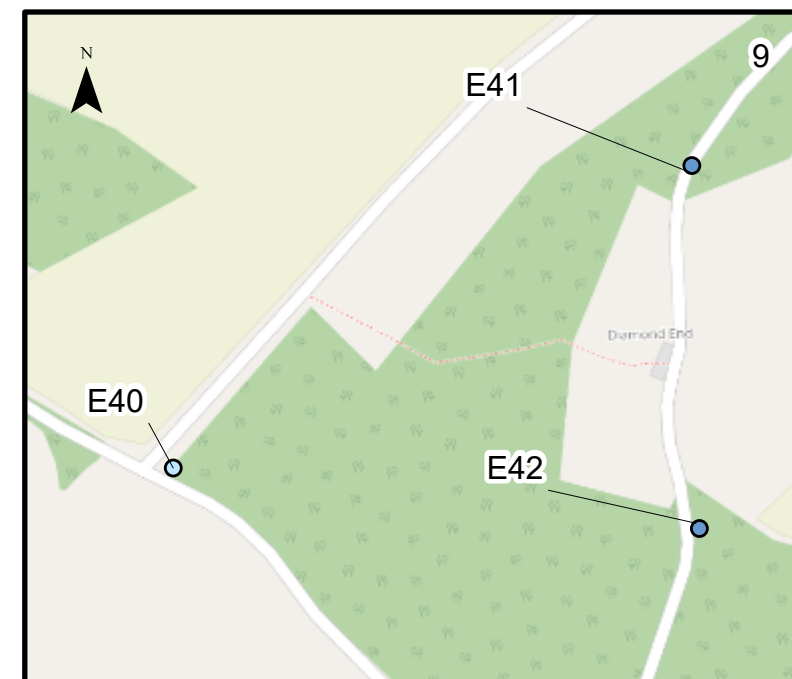
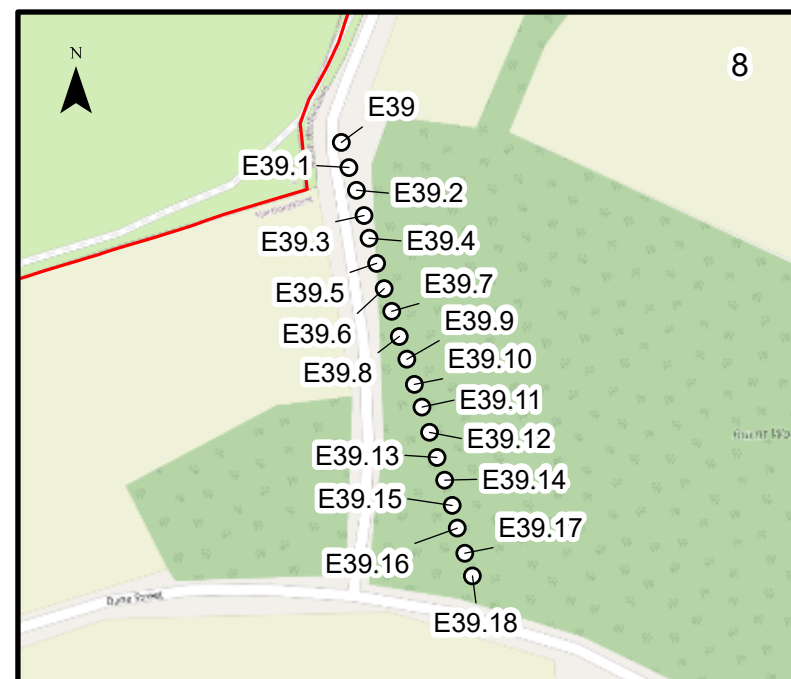
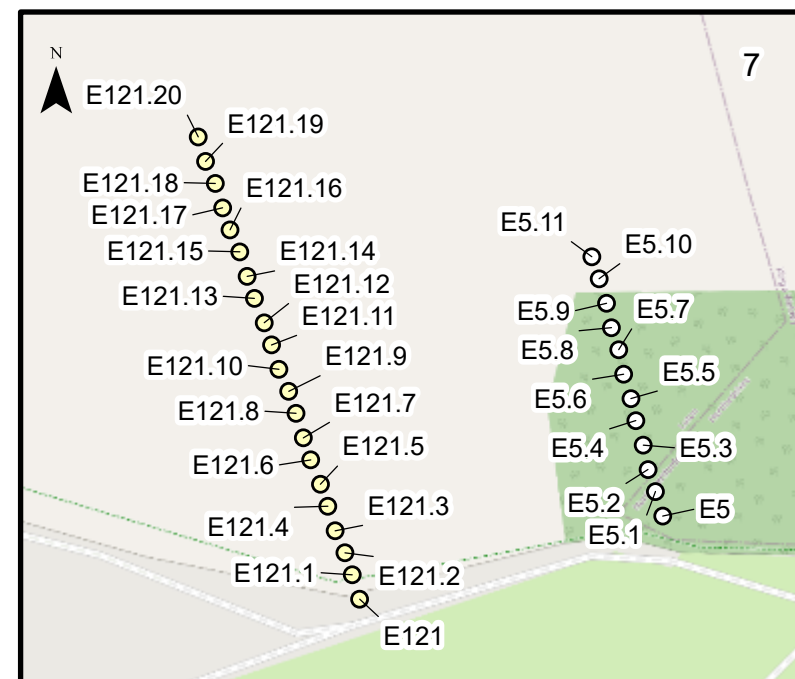
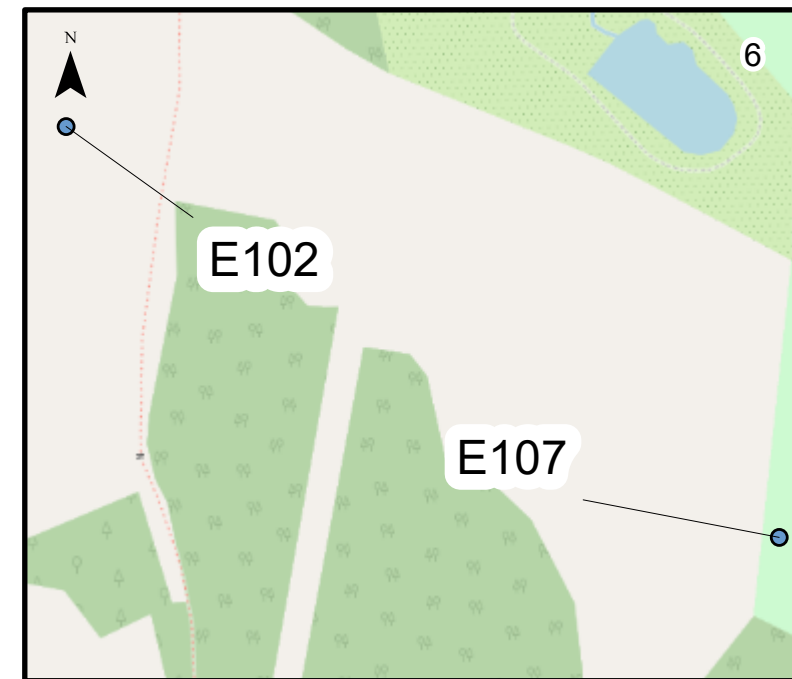
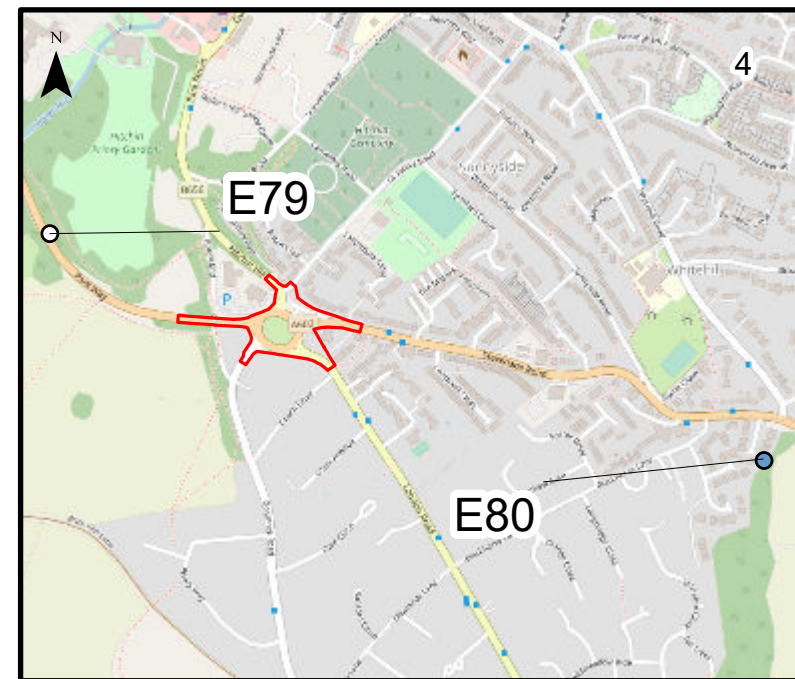
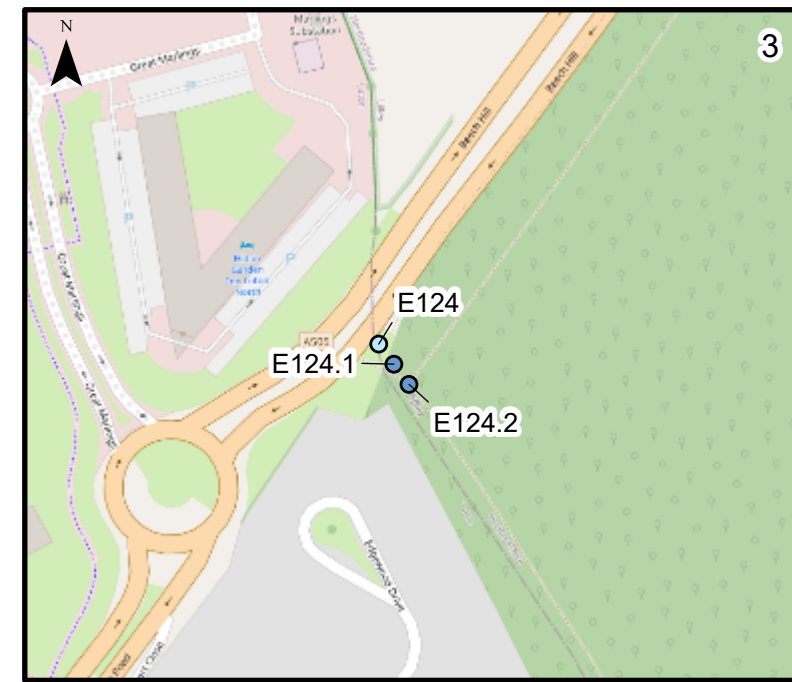
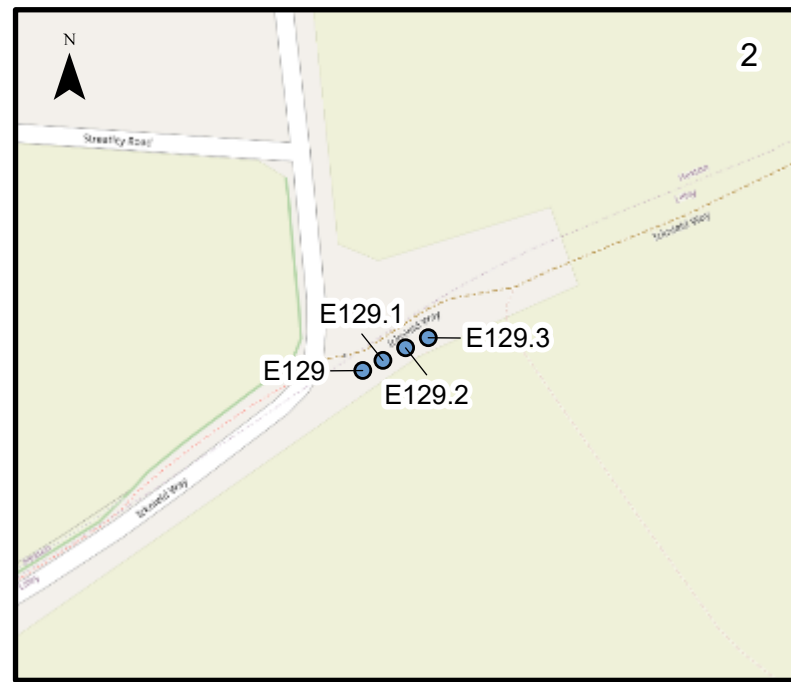
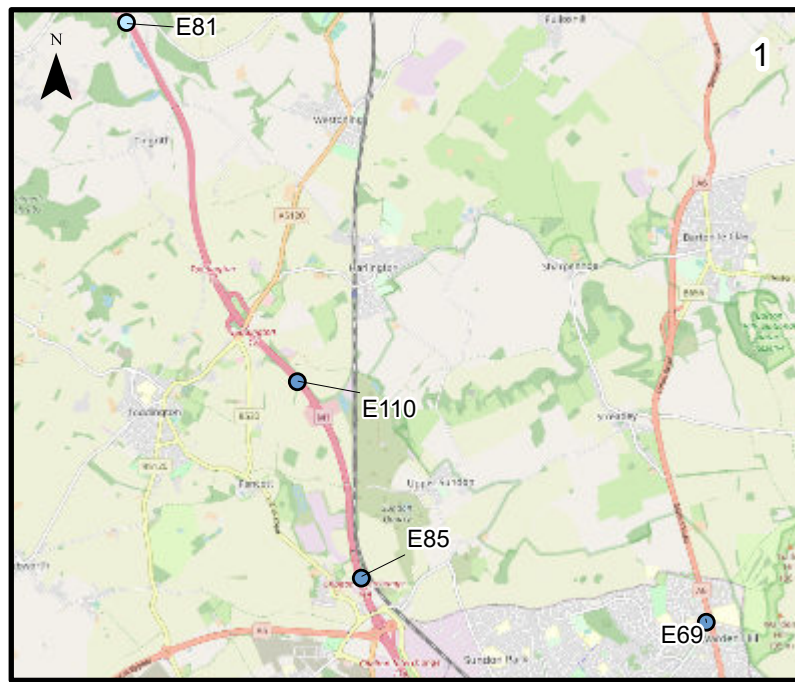
London Luton Airport Expansion Development Consent Order

Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 2a
 Page 1 of 3

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0529	P01



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Legend

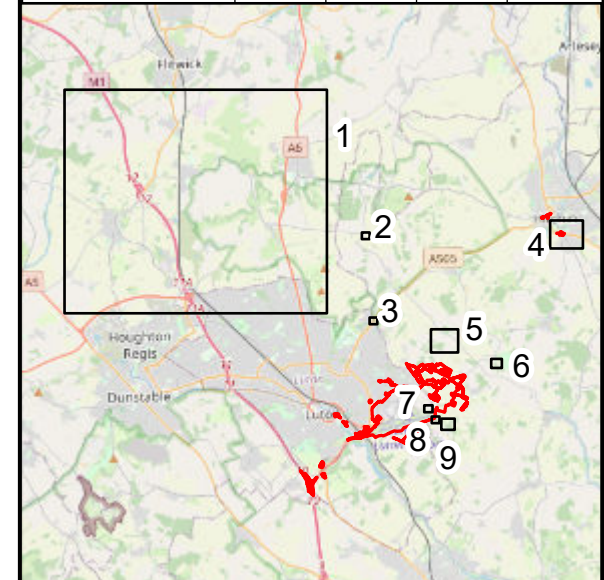
Order Limits

Change in nitrogen deposition as % of lower critical load

- 1 - 2
- 2 - 4
- 4 - 10
- 10 - 18
- 18 - 28

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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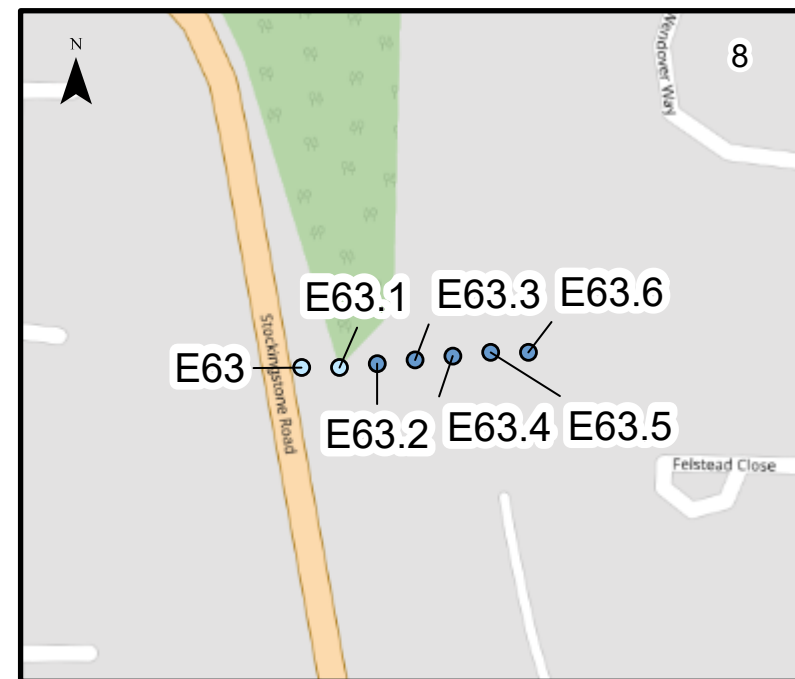
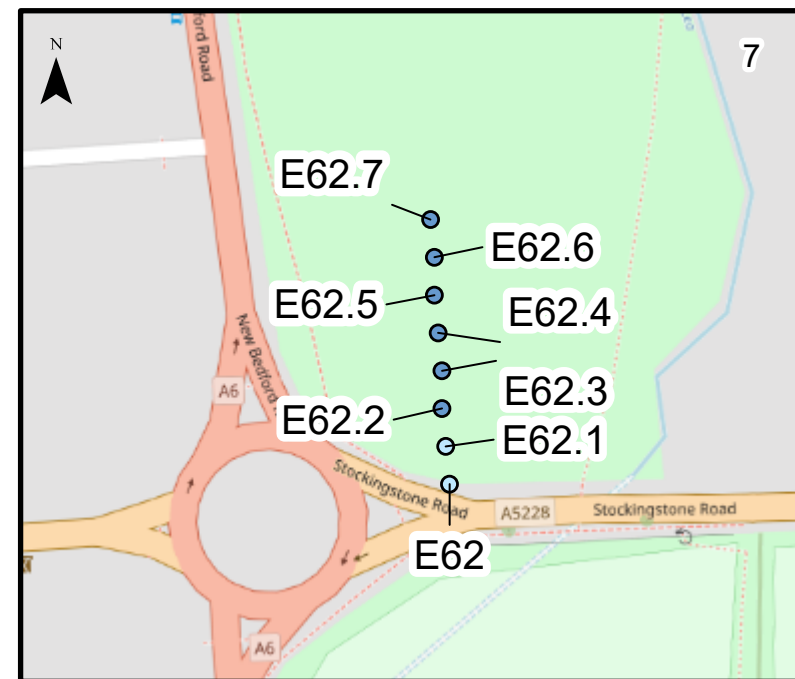
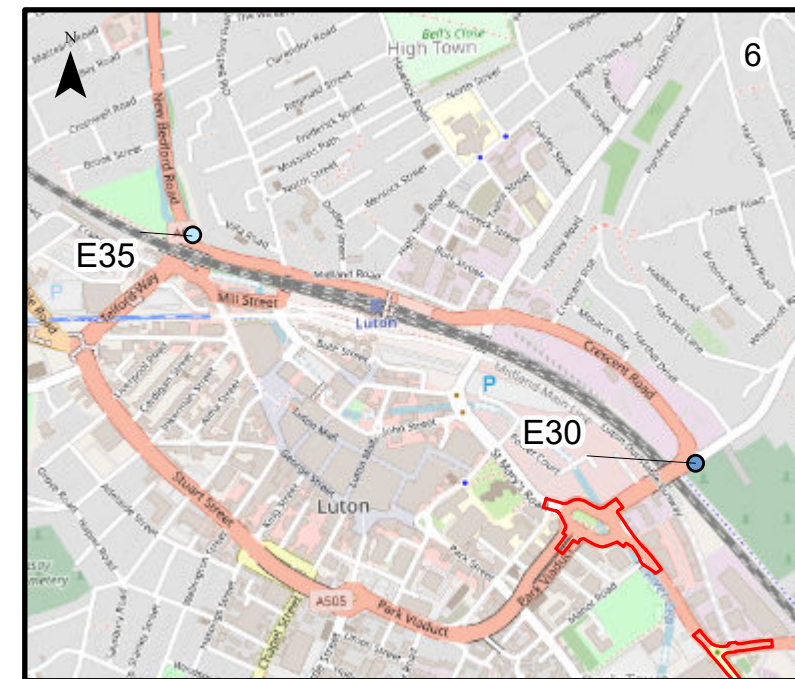
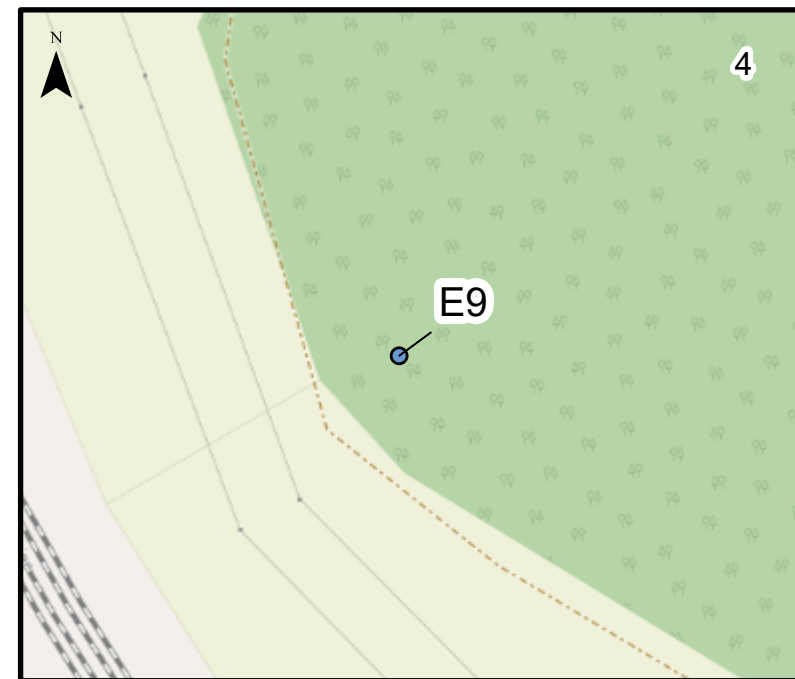
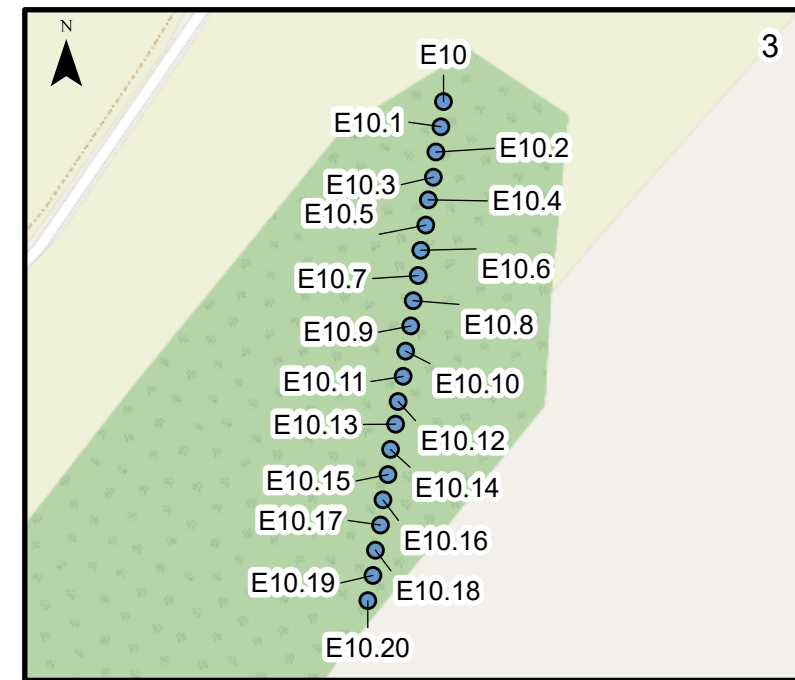
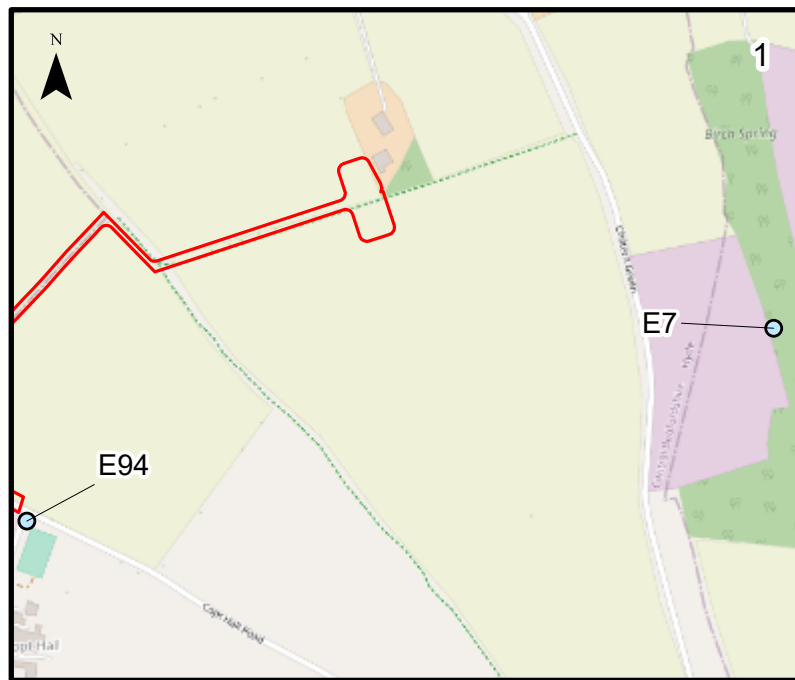
Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 2a
 Page 2 of 3

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0529	P01

Project - Phase - Originator - Asset/Zone - Sub Asset - Type - Discp. - Number



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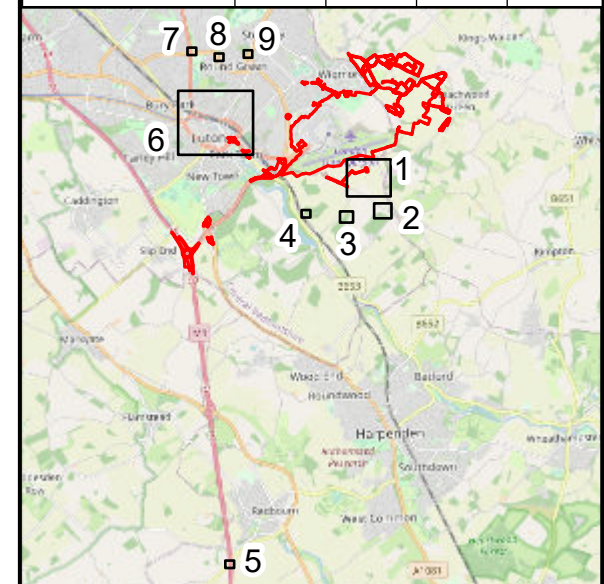
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Legend

- Order Limits
- Change in nitrogen deposition as % of lower critical load
- 1 - 2
- 2 - 4
- 4 - 10
- 10 - 18
- 18 - 28

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

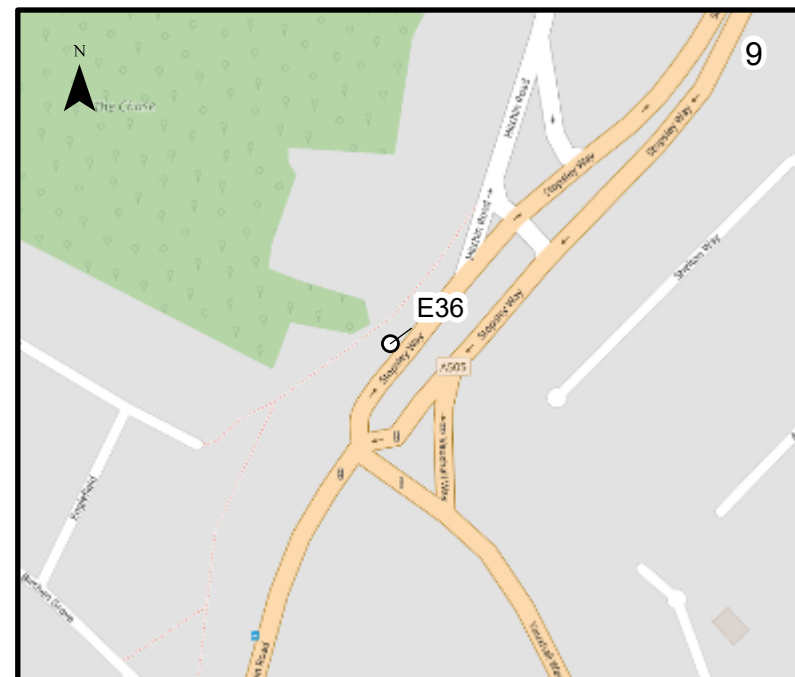
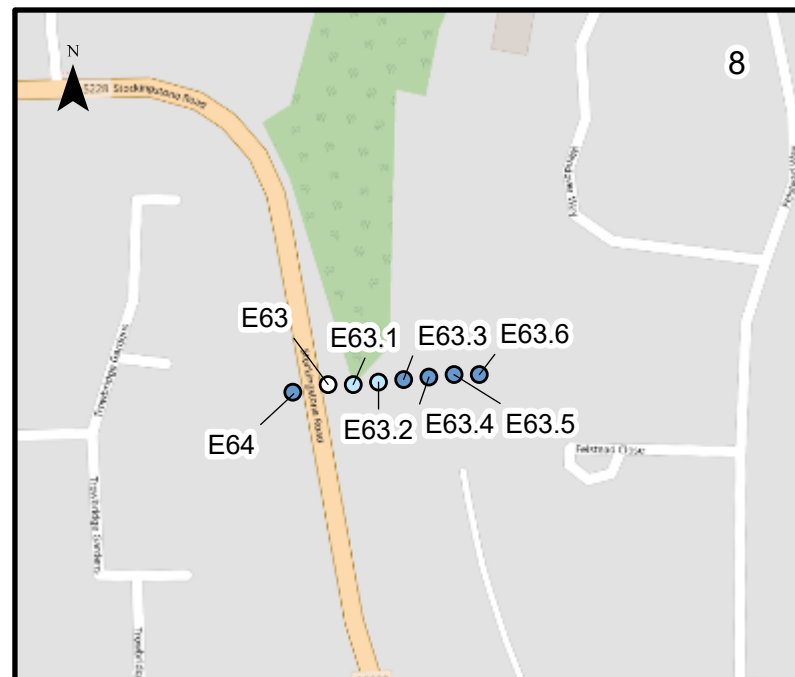
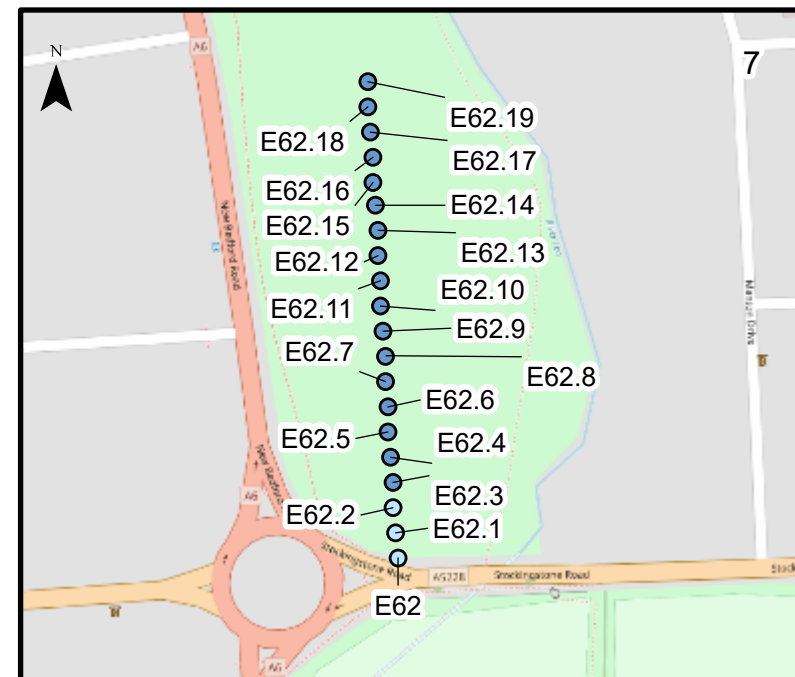
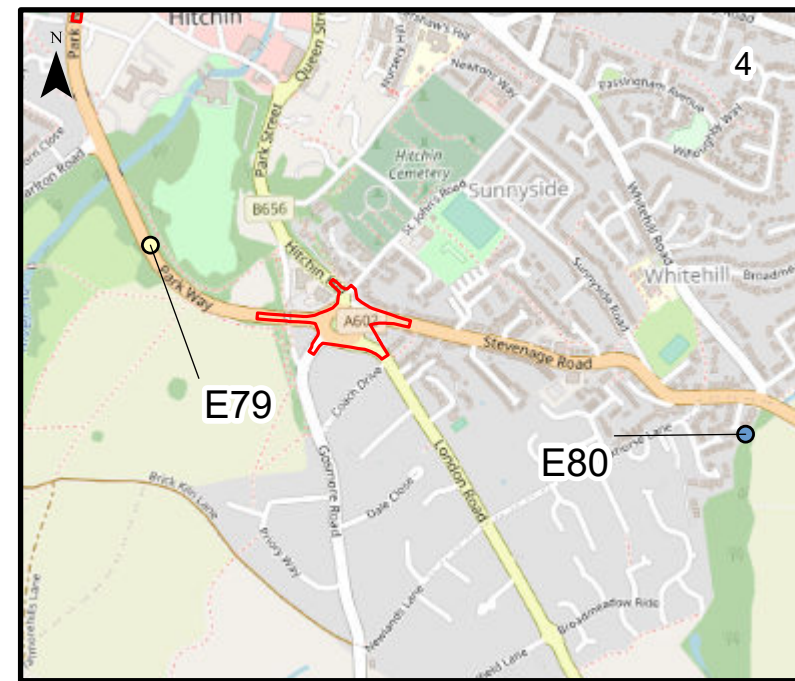
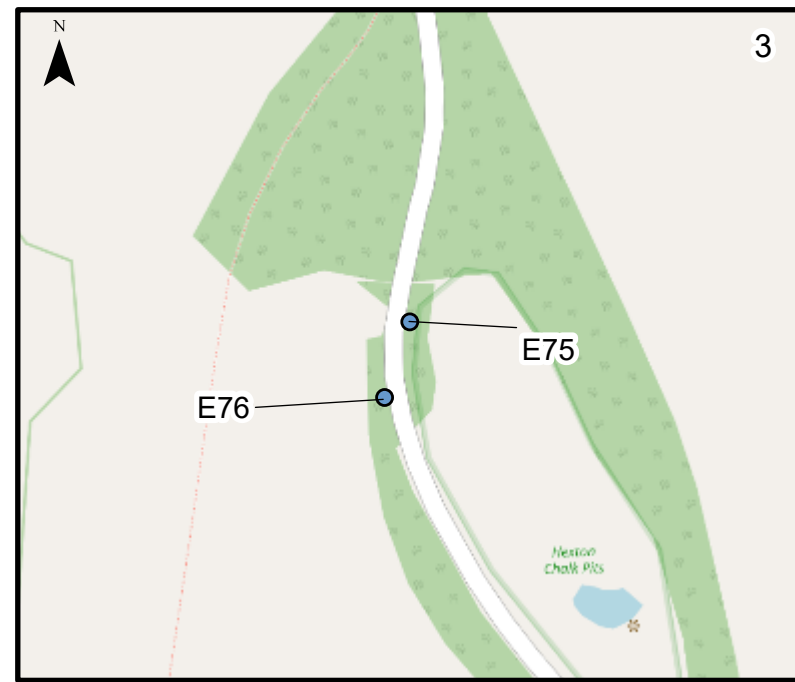
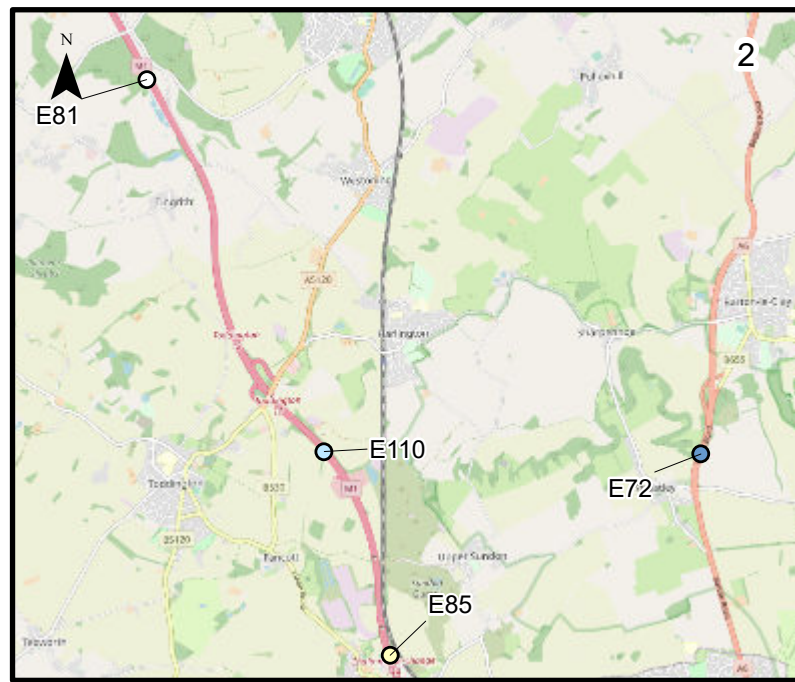
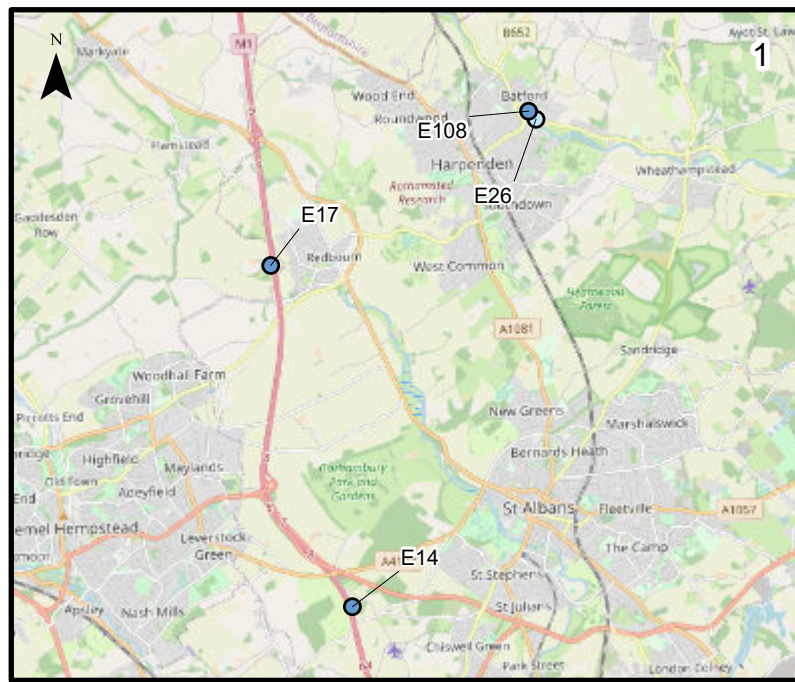


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Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 2a
 Page 3 of 3

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
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DCO Application Ref.		APFP Regulation	DCO Document Ref.		
TR020001		N/A	TR020001/APP/5.03		
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0529					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type - Discp. - Number					



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Legend

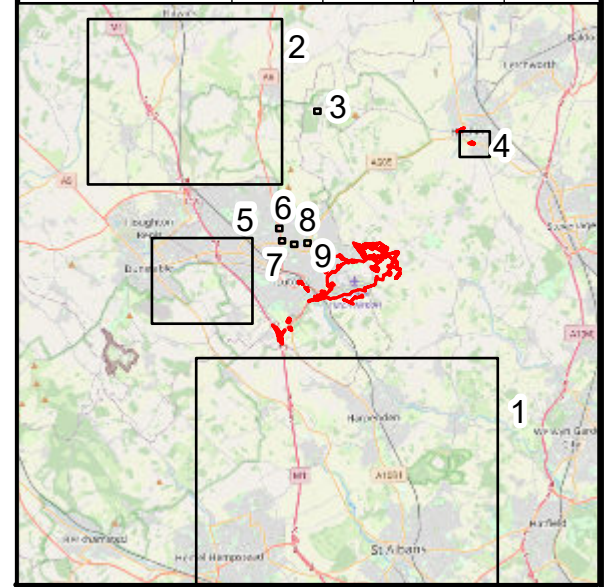
Order Limits

Change in nitrogen deposition as % of lower critical load

- 1 - 2
- 2 - 4
- 4 - 10
- 10 - 18
- 18 - 28
- 28 - 32

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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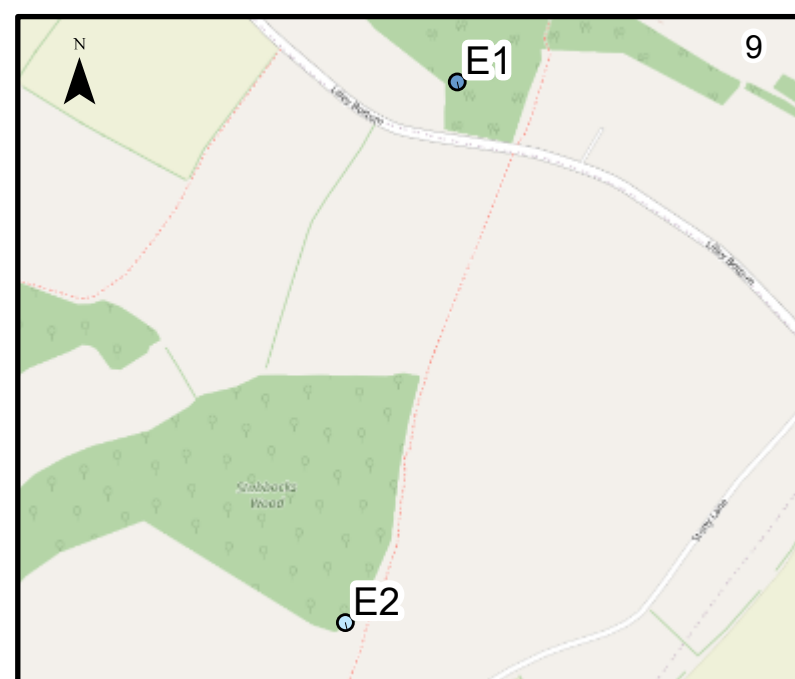
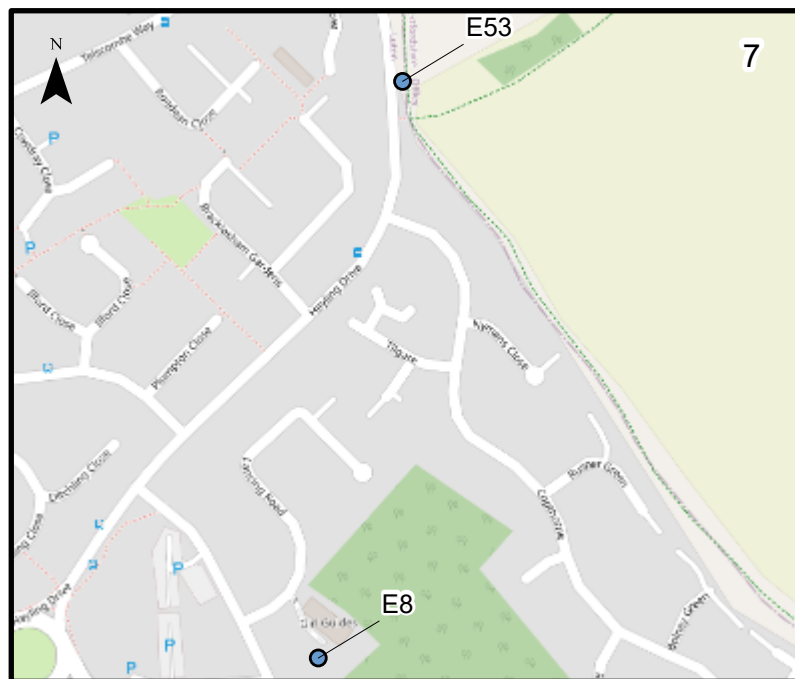
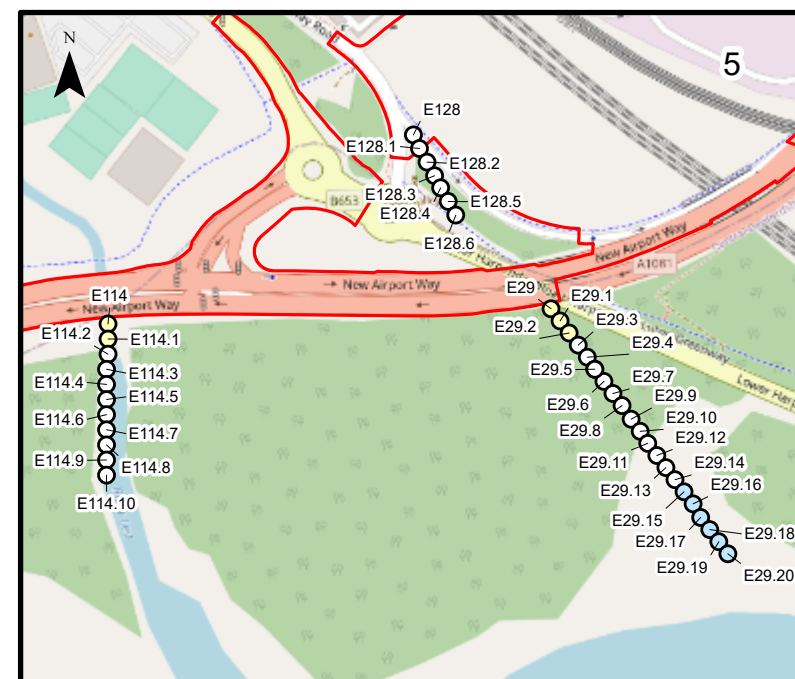
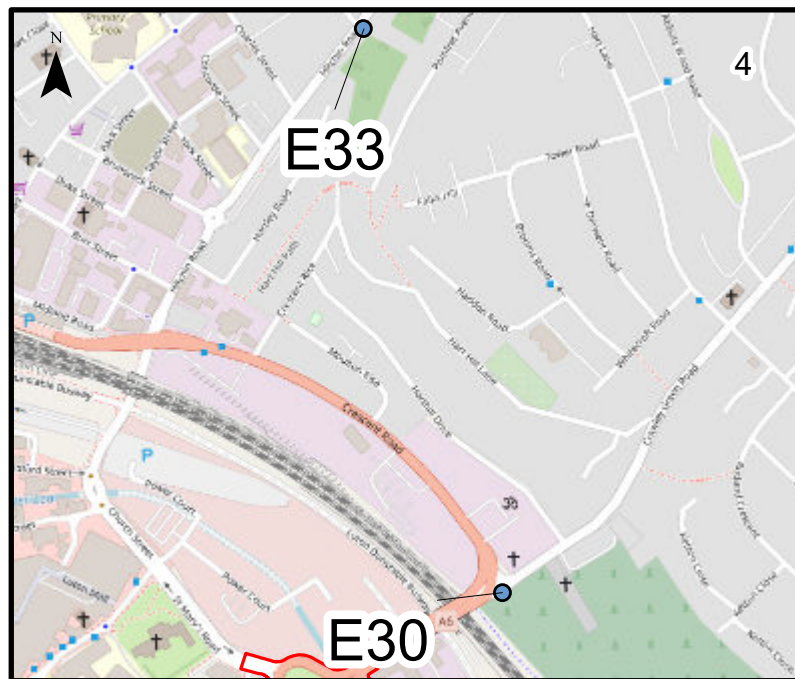
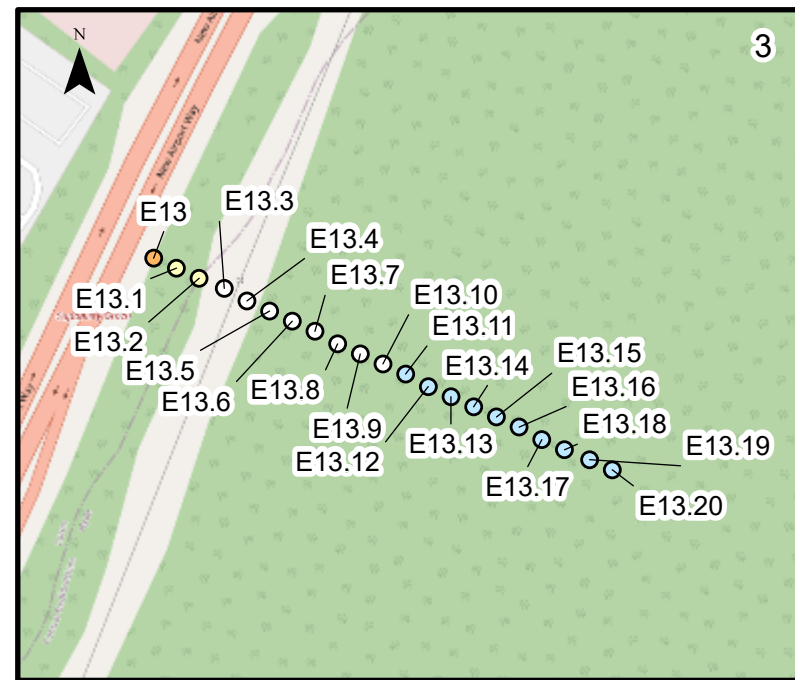
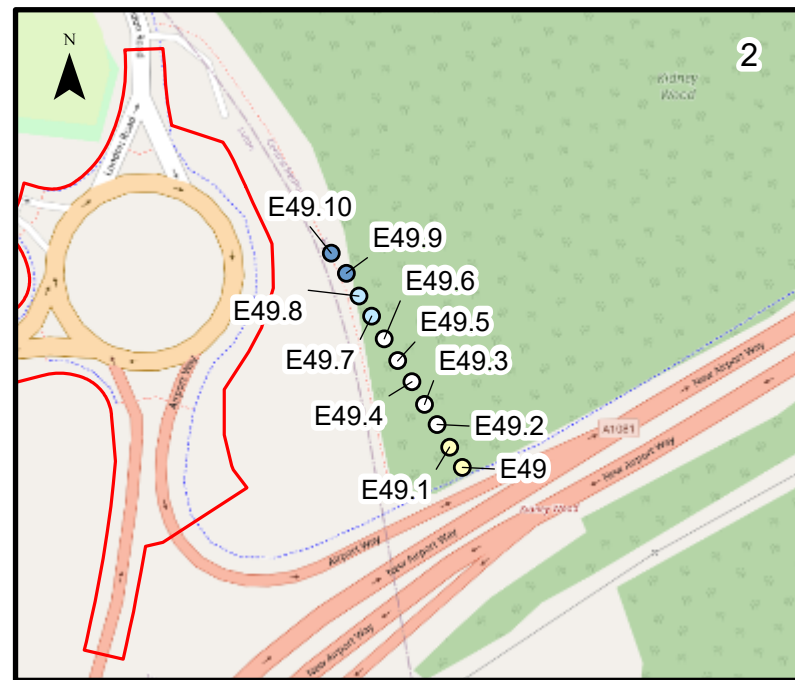
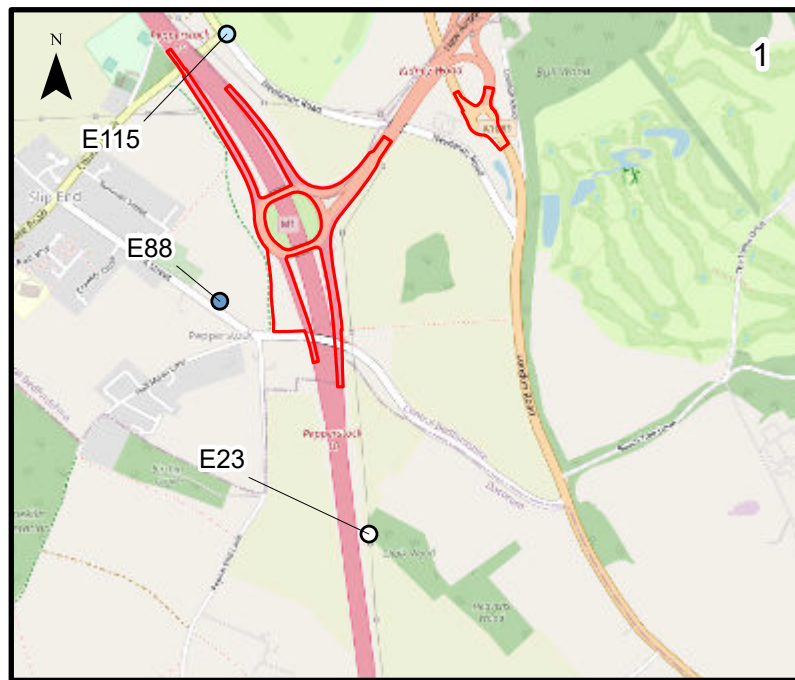
Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 2b
 Page 1 of 4

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0530	P01

Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number



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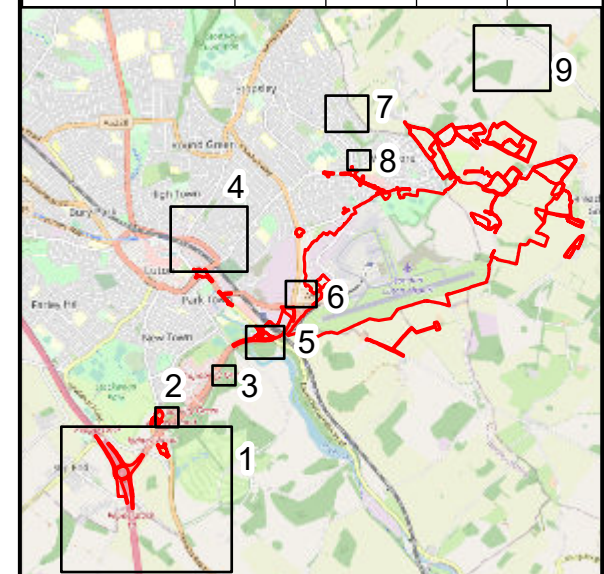
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Legend

- Order Limits
- Change in nitrogen deposition as % of lower critical load
- 1 - 2
- 2 - 4
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- 18 - 28
- 28 - 32

Note: Transect Maps are at different scales

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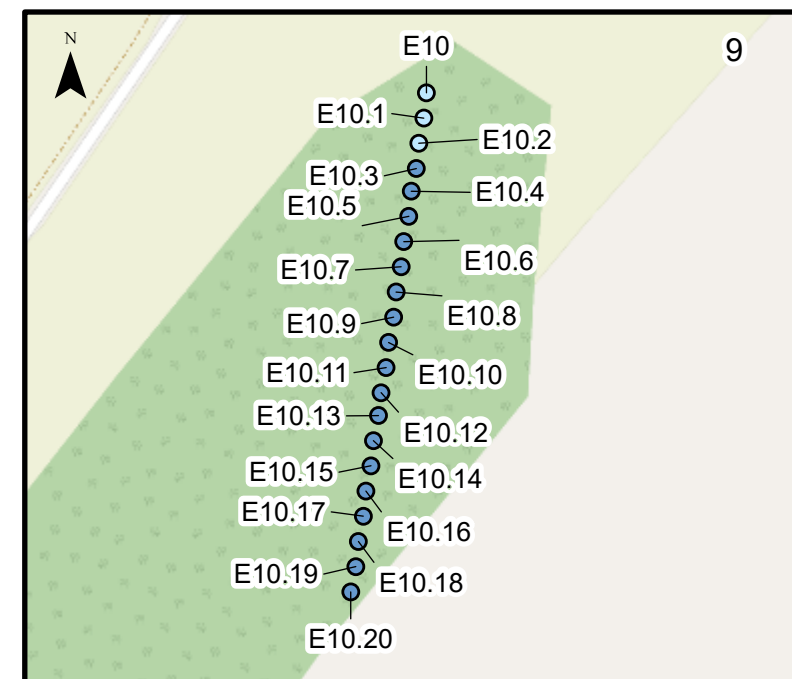
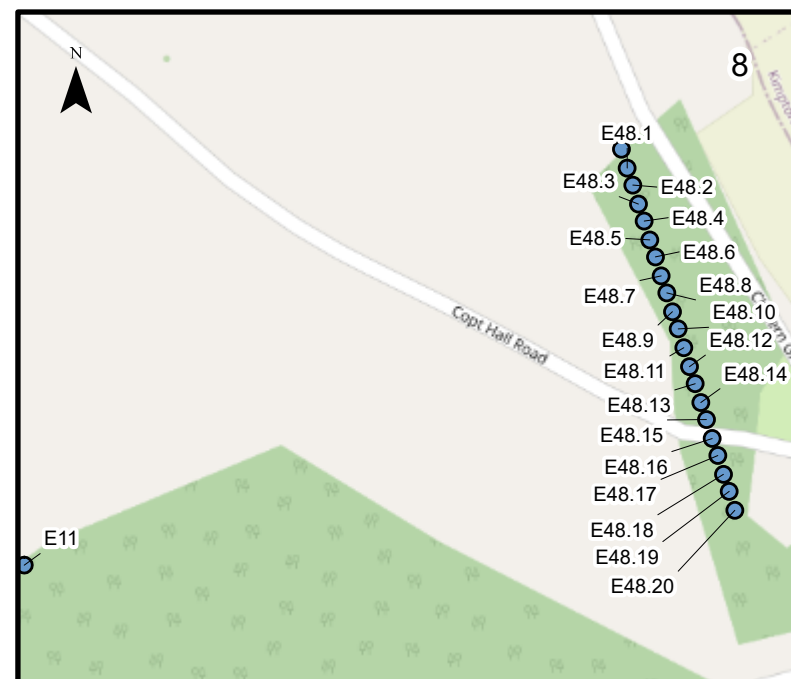
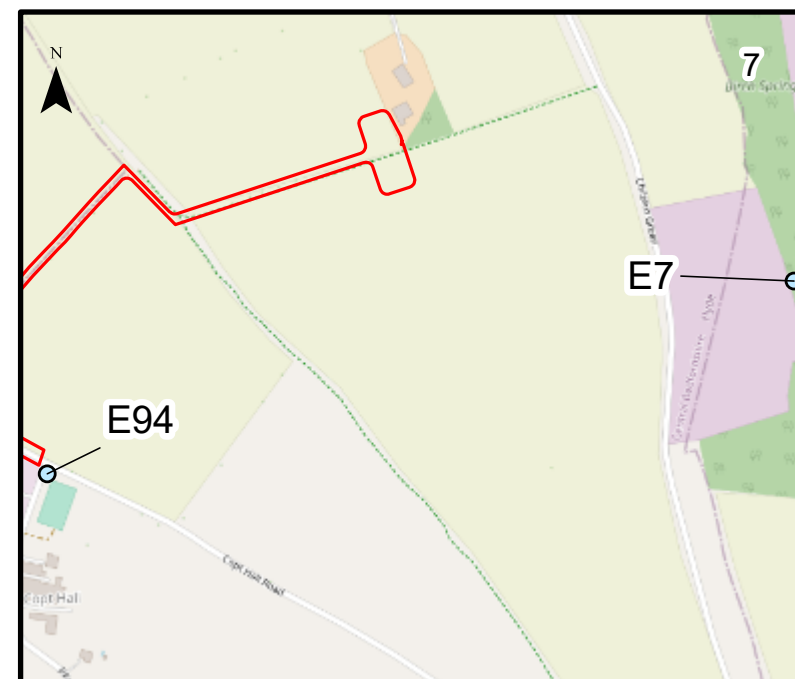
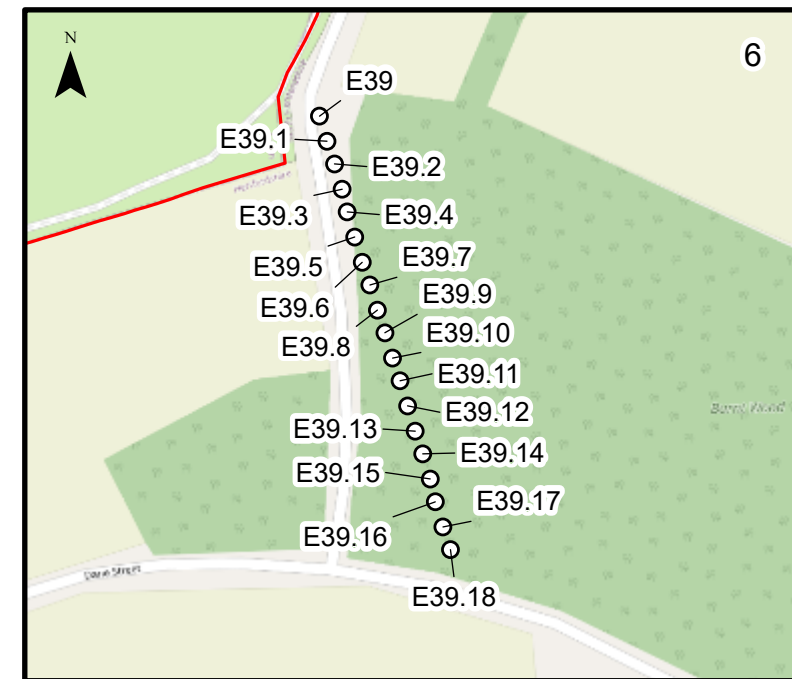
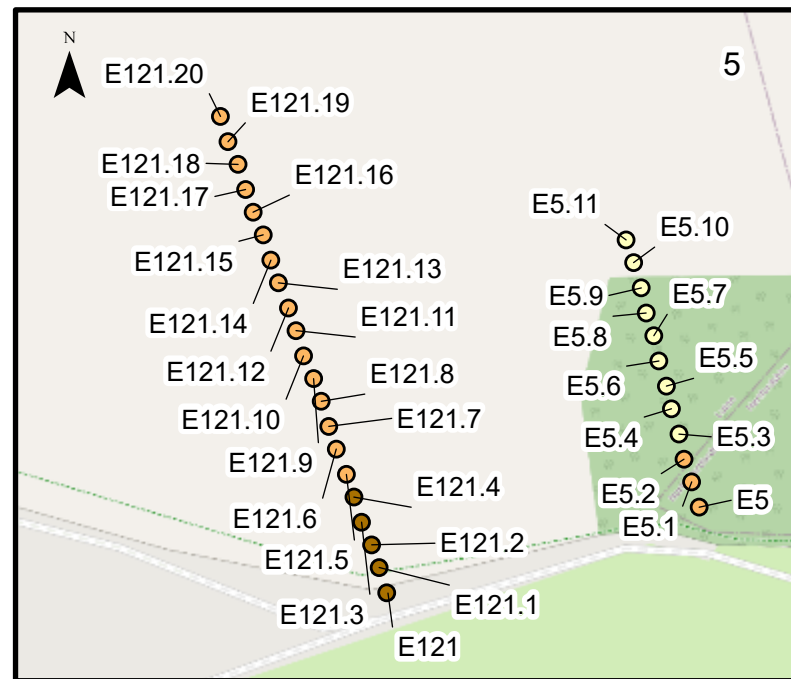
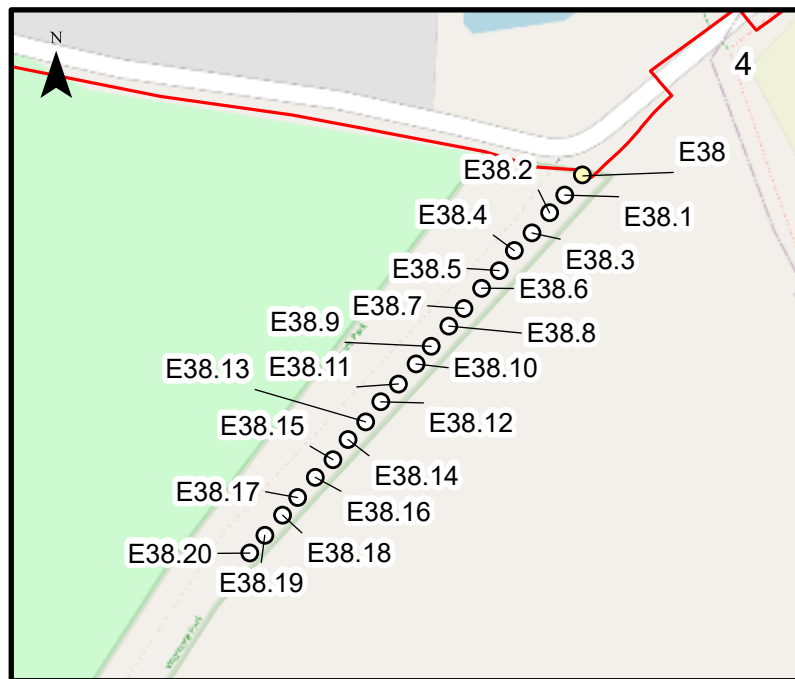
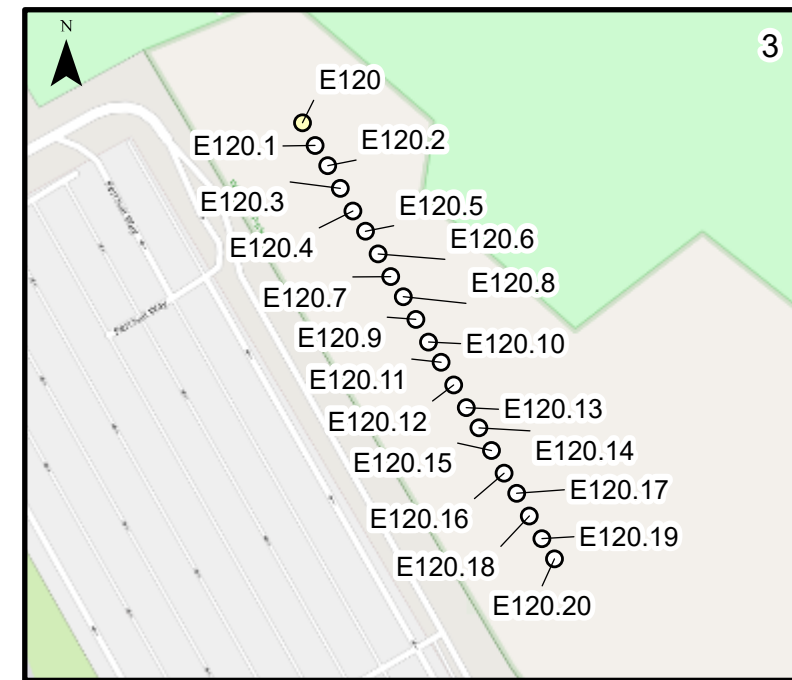
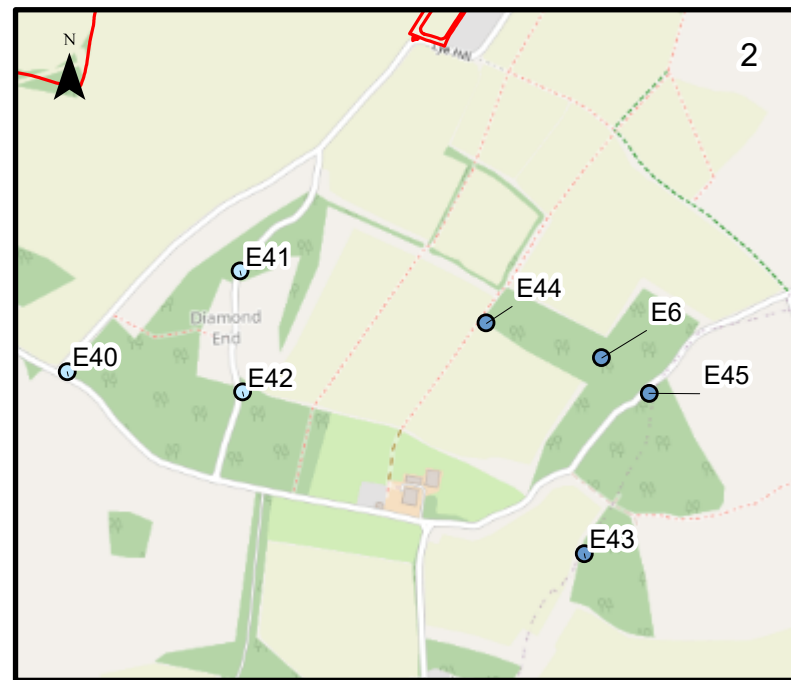
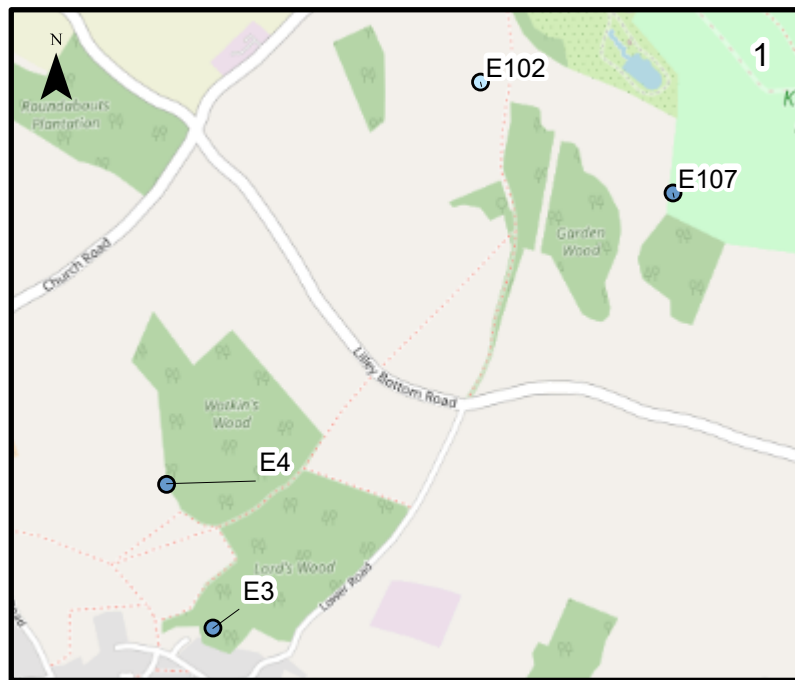
Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 2b
 Page 2 of 4

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
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DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0530	P01

Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number



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Legend

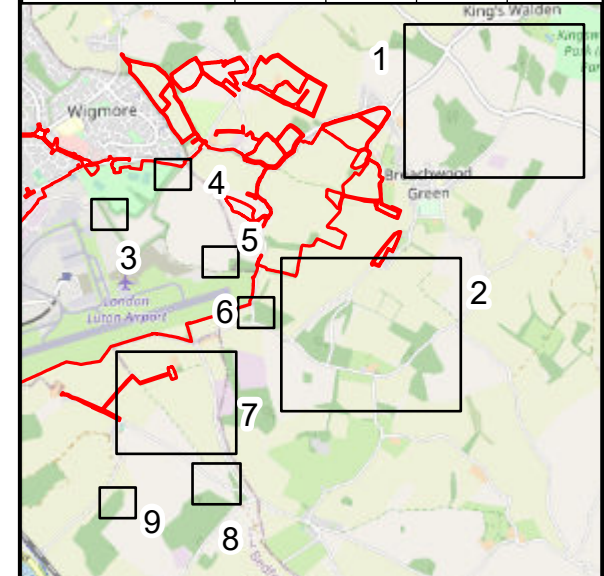
Order Limits

Change in nitrogen deposition as % of lower critical load

- 1 - 2
- 2 - 4
- 4 - 10
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Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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 Assessment Phase 2b
 Page 3 of 4

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
DCO Application Ref.		APFP Regulation	DCO Document Ref.		
TR020001		N/A	TR020001/APP/5.03		
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0530					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

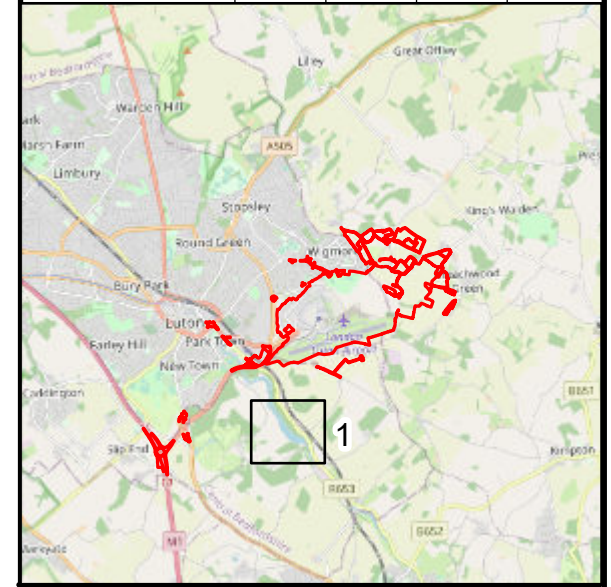
Order Limits

Change in nitrogen deposition as % of lower critical load

- 1 - 2
- 2 - 4
- 4 - 10
- 10 - 18
- 18 - 28
- 28 - 32

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

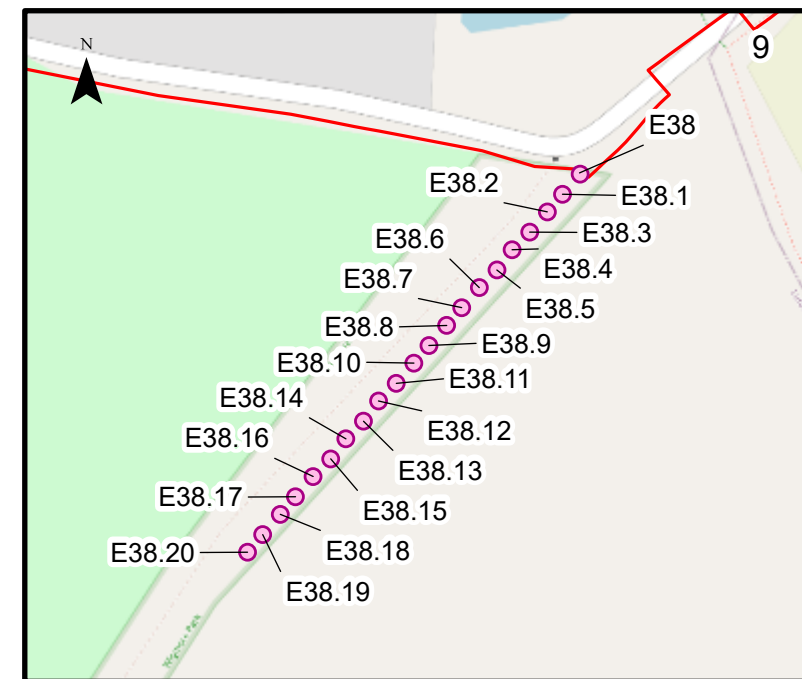
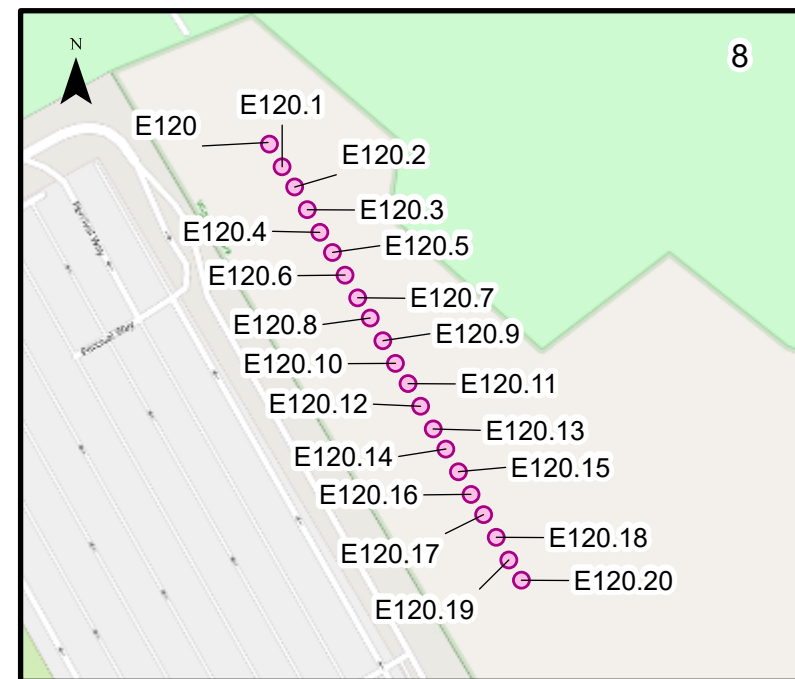
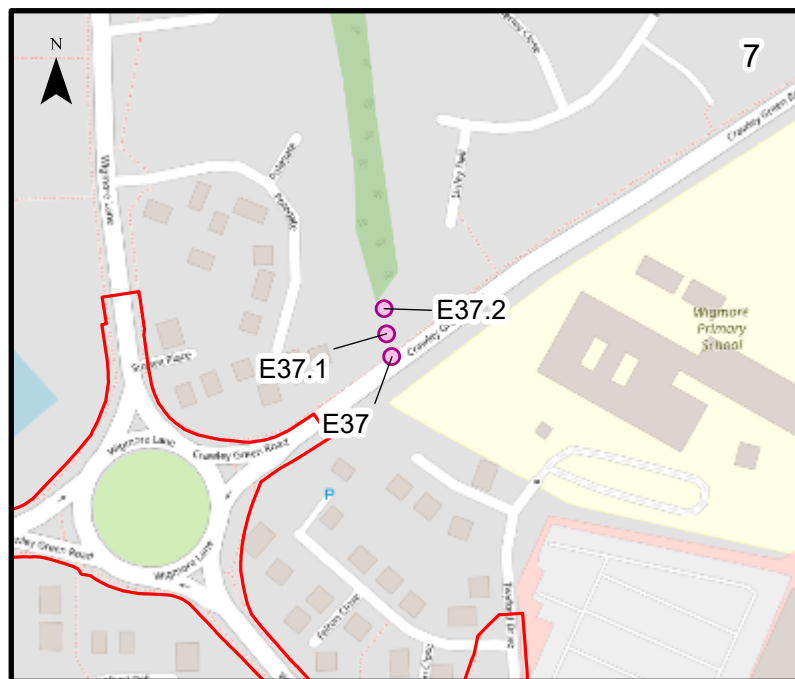
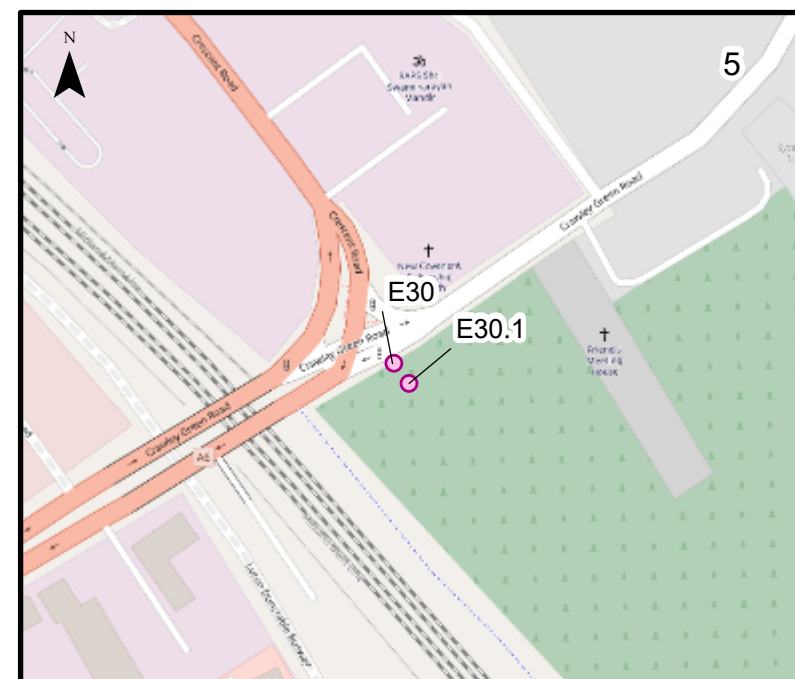
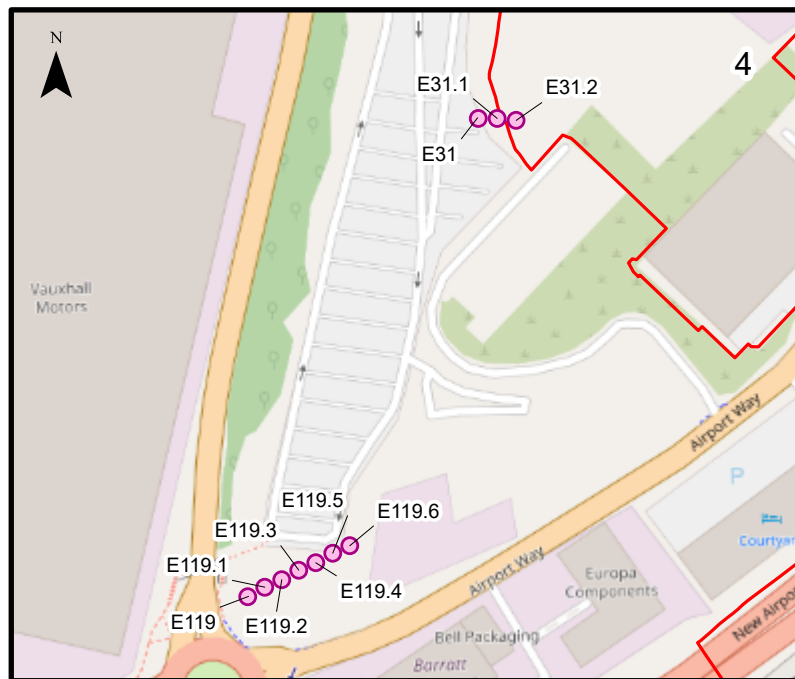
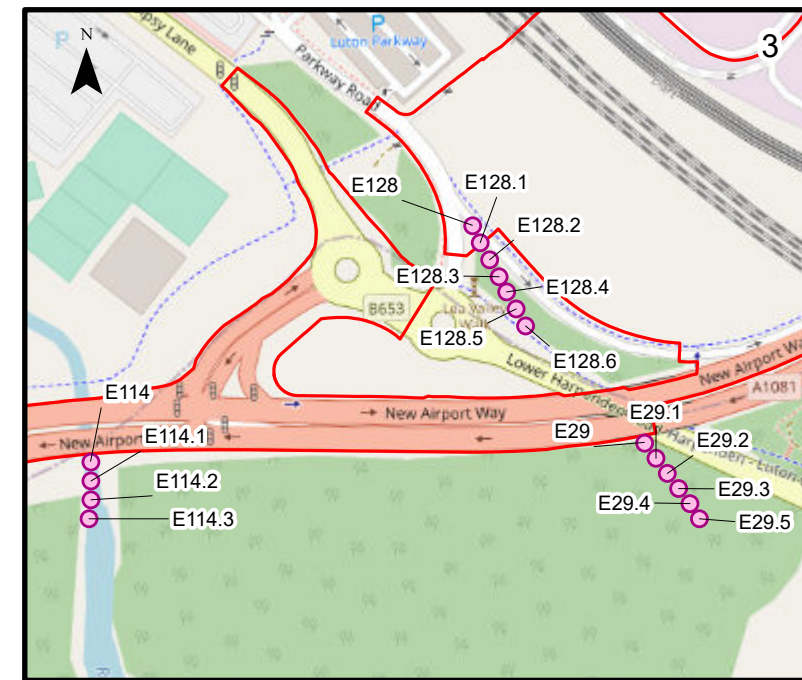
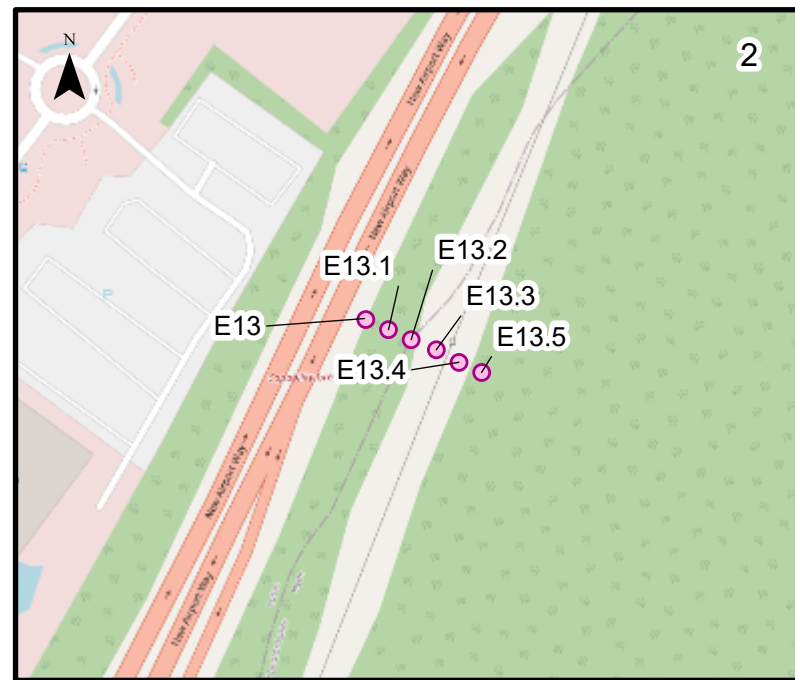
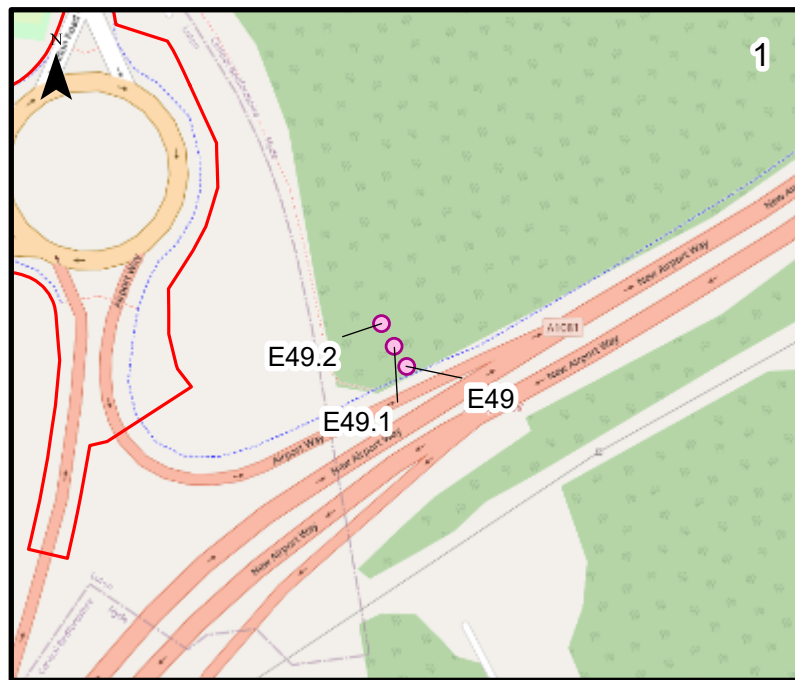


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Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (nitrogen deposition results)
 Assessment Phase 2b
 Page 4 of 4

Purpose of issue				Suitability	
Additional submission Deadline 4				S2	
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
DCO Application Ref.		APFP Regulation	DCO Document Ref.		
TR020001		N/A	TR020001/APP/5.03		
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0530					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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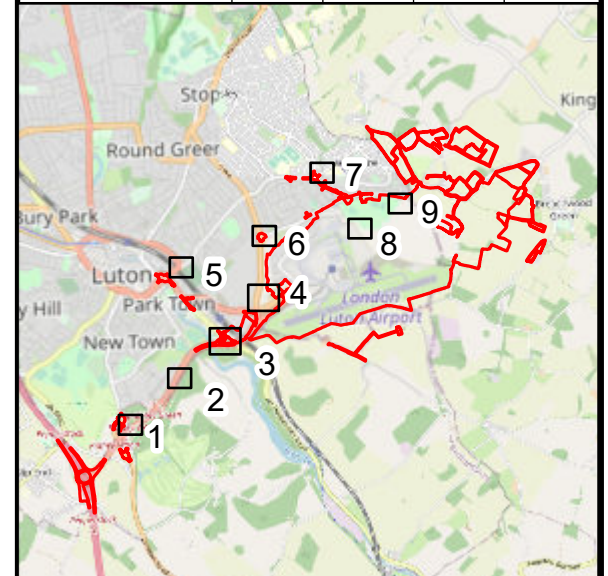
All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



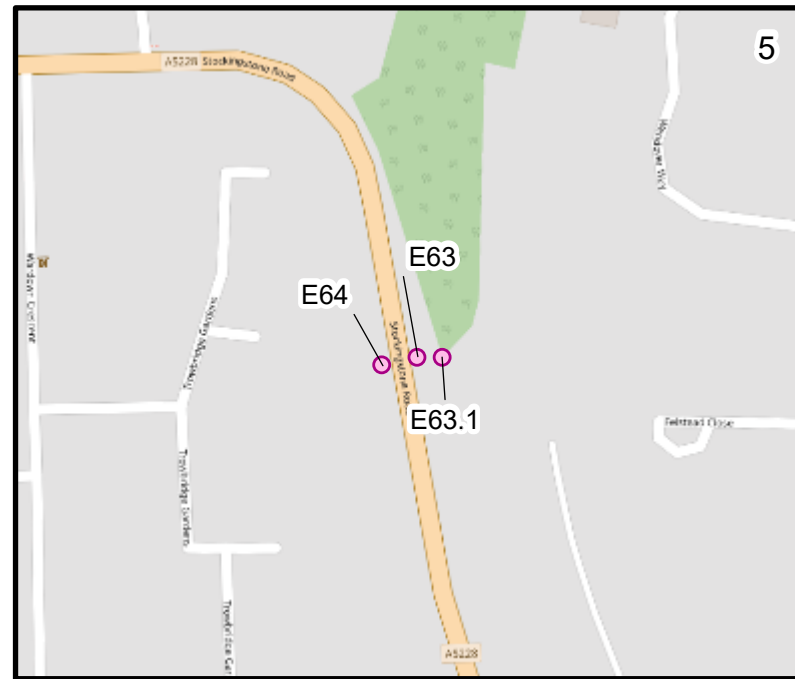
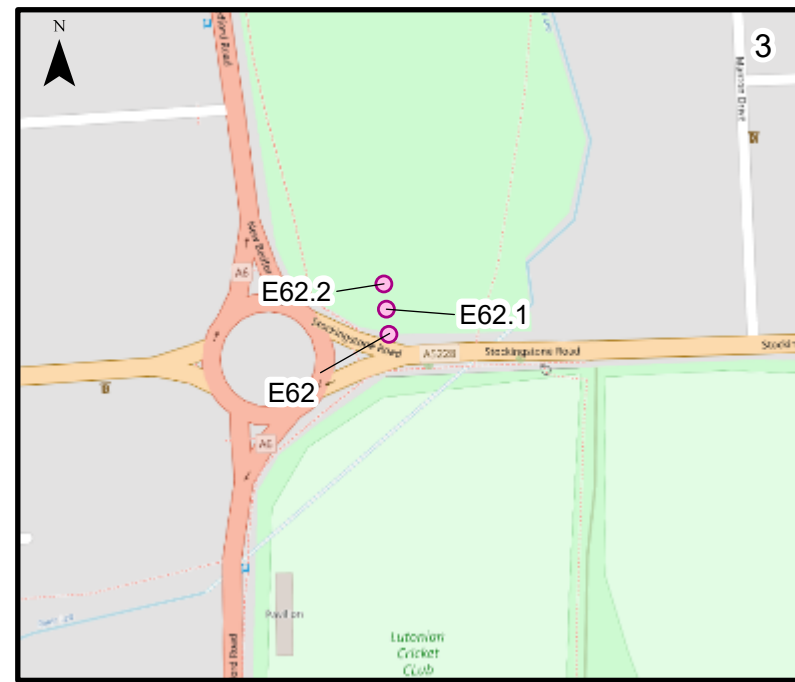
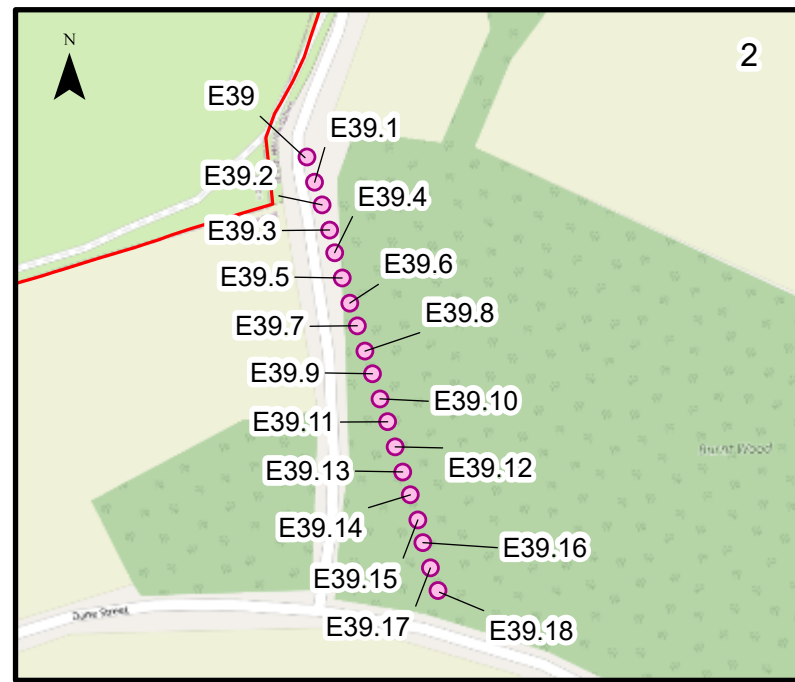
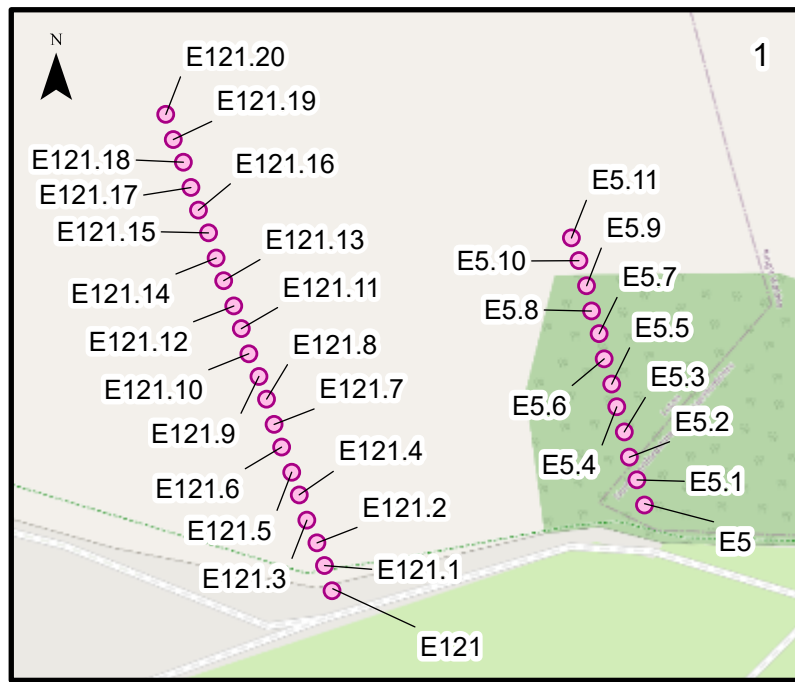
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Drawing Title
Applicant's Response to ExA Written Question BIO.1.3:
Modelled ecological receptors (NOx results)
Assessment Phase 1
Page 1 of 2

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
DCO Application Ref.	APFP Regulation	DCO Document Ref.			
TR020001	N/A	TR020001/APP/5.03			
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0532					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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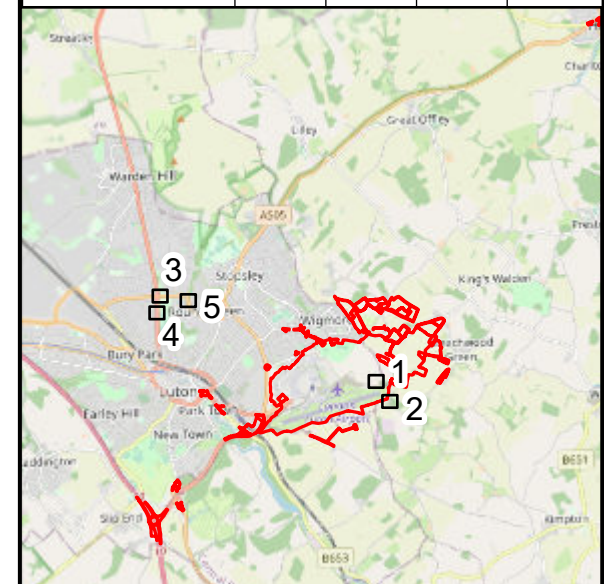
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Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

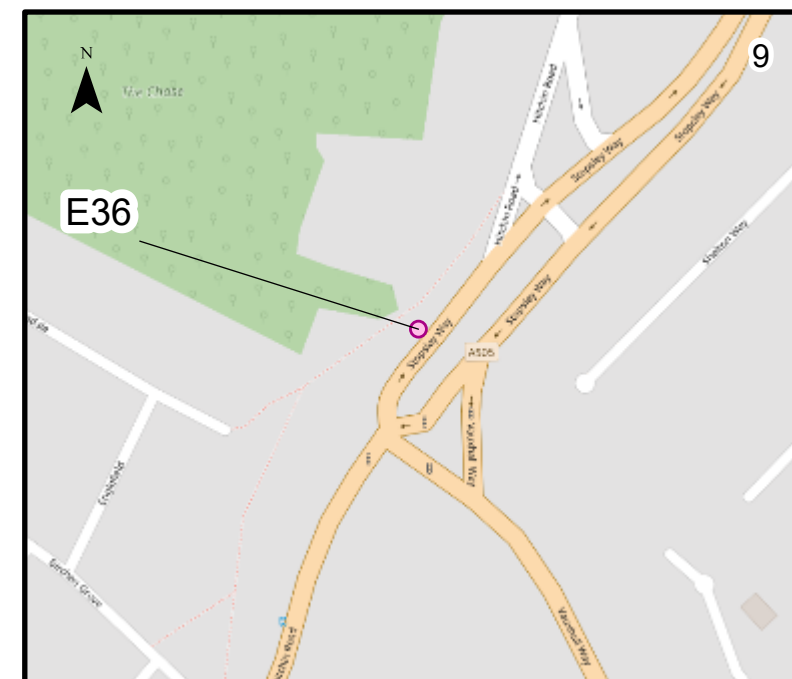
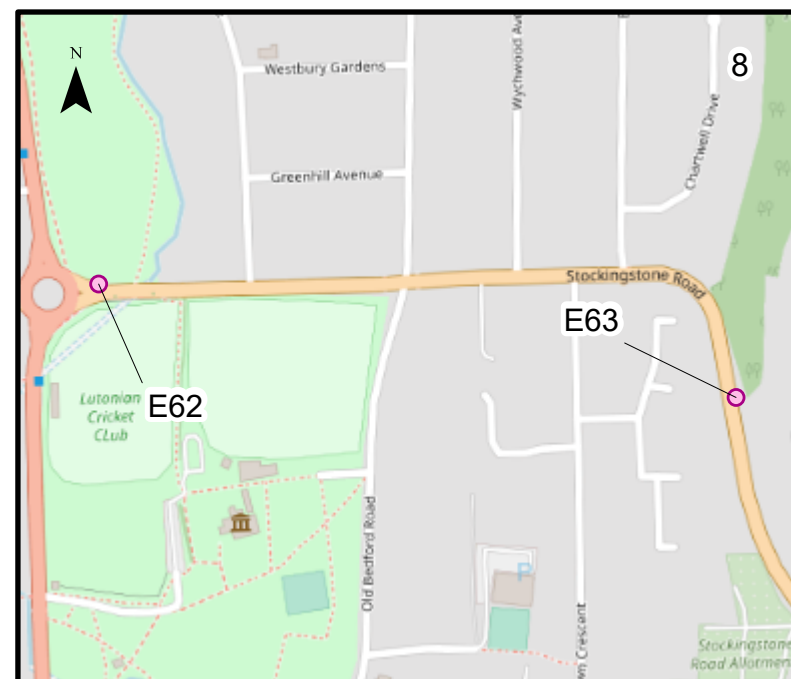
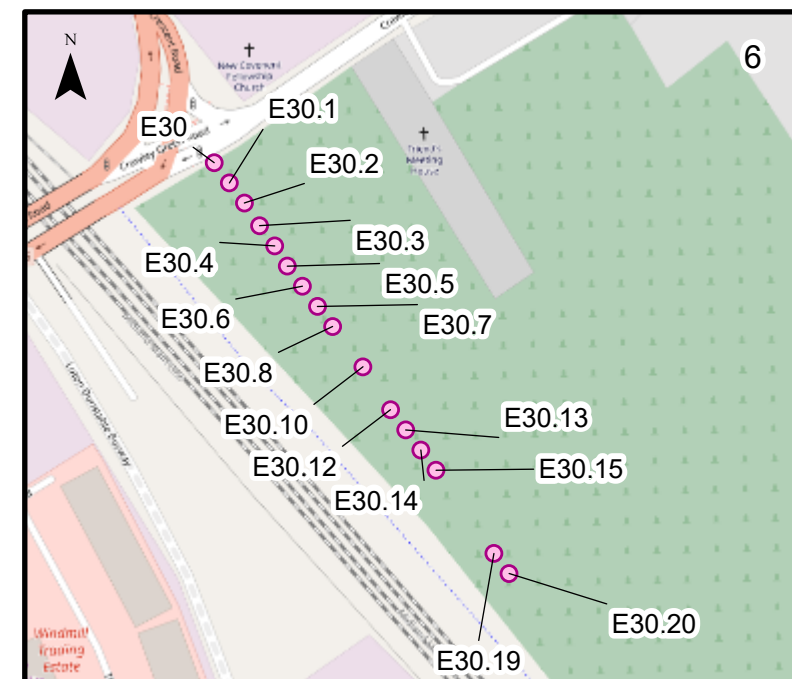
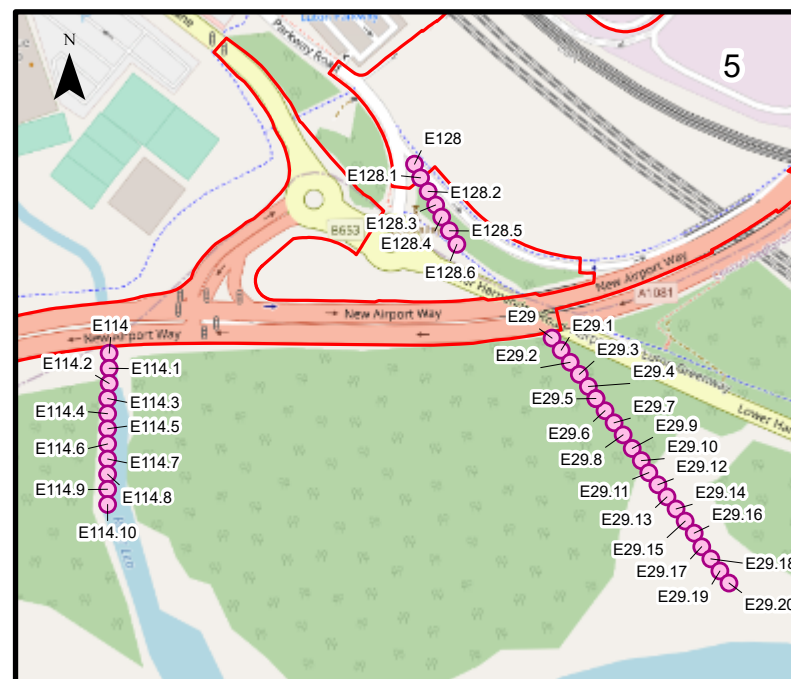
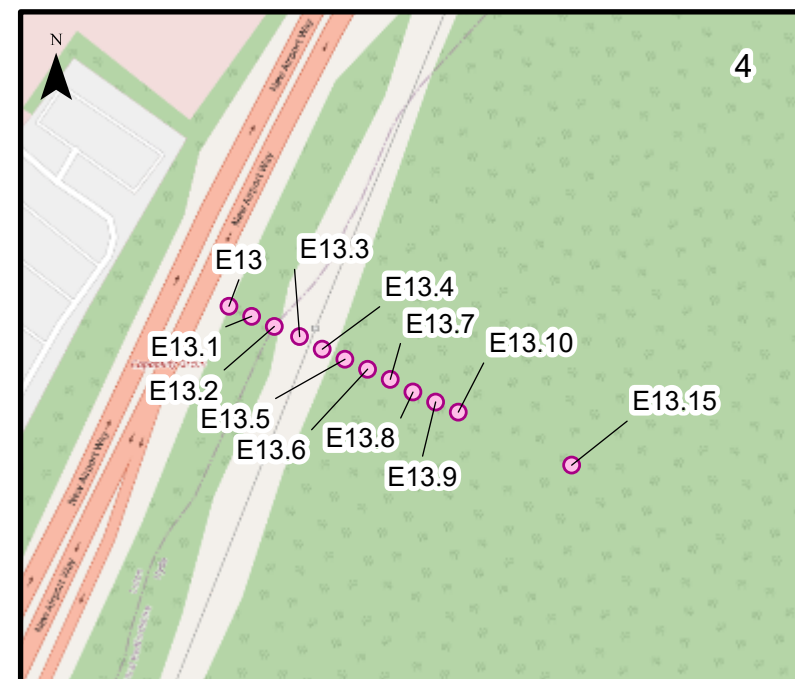
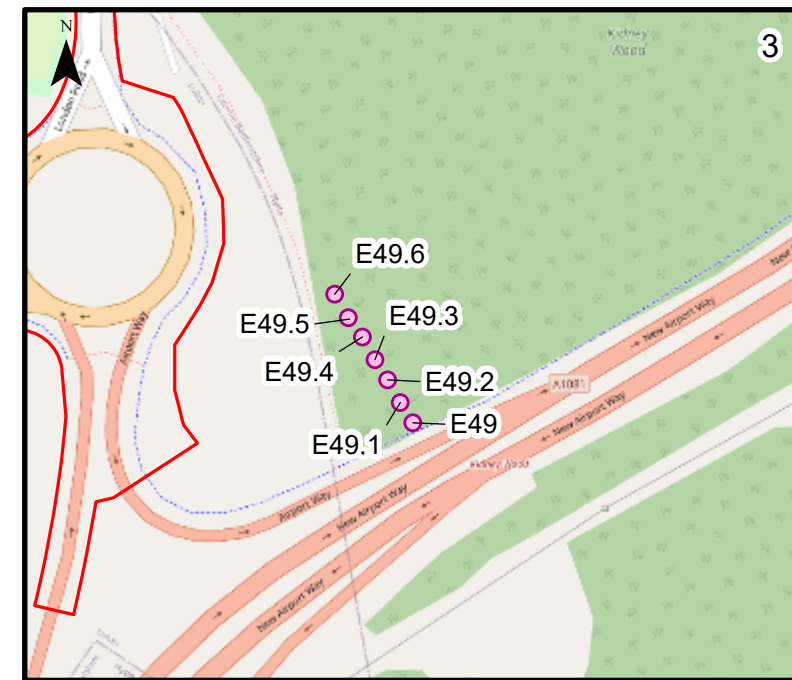
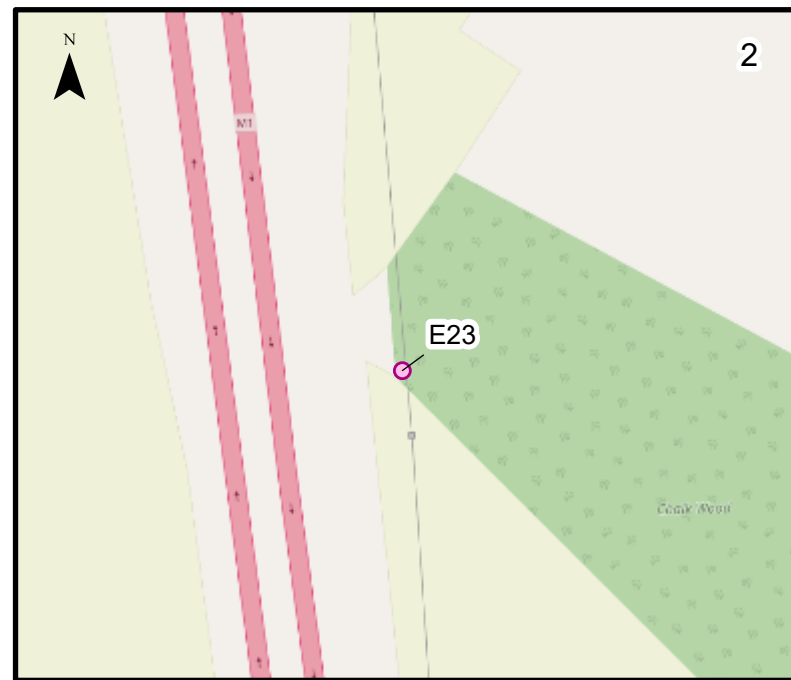


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Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (NOx results)
 Assessment Phase 1
 Page 2 of 2

Purpose of issue				Suitability		
Additional submission Deadline 4				S2		
Drawn	Checked	Approved	Date	Scale	Size	
AB	SB	CS	20/10/23	N/A	A3	
DCO Application Ref.		APFP Regulation	DCO Document Ref.			
TR020001		N/A	TR020001/APP/5.03			
Drawing Number					Revision	
LLADCO-3C-ARP-00-00-DR-YE-0532					P01	
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number						



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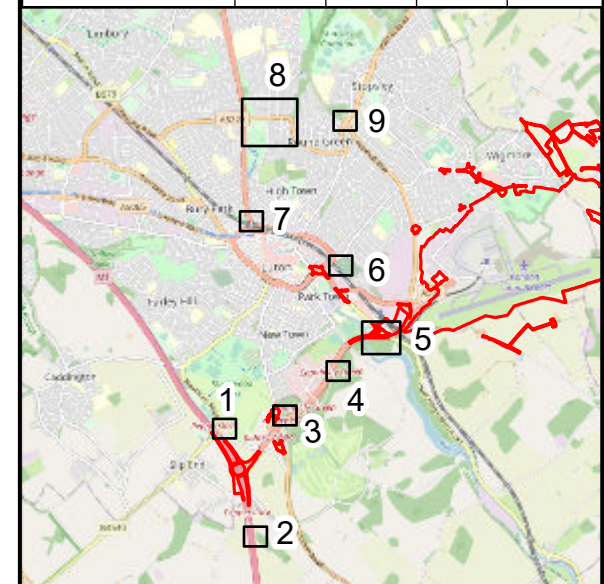
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Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

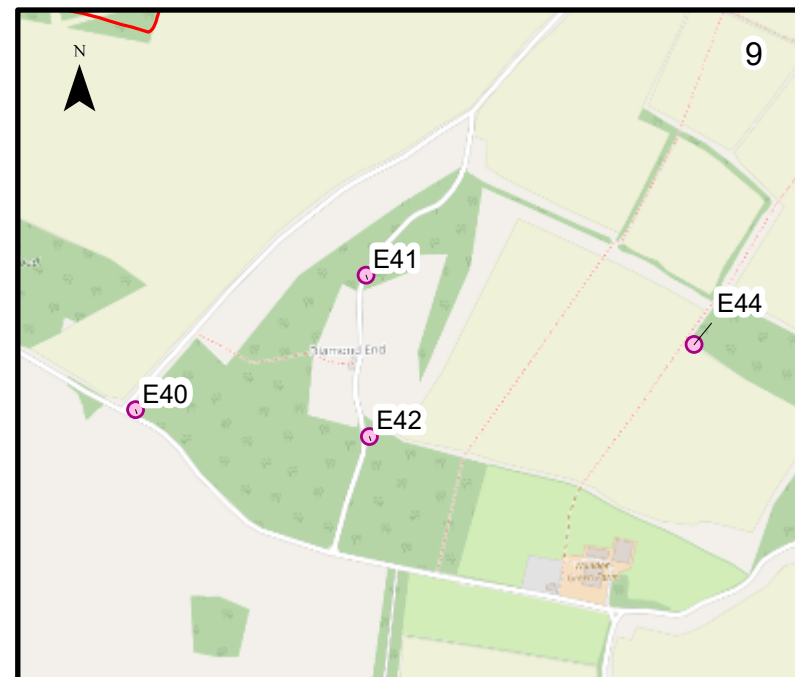
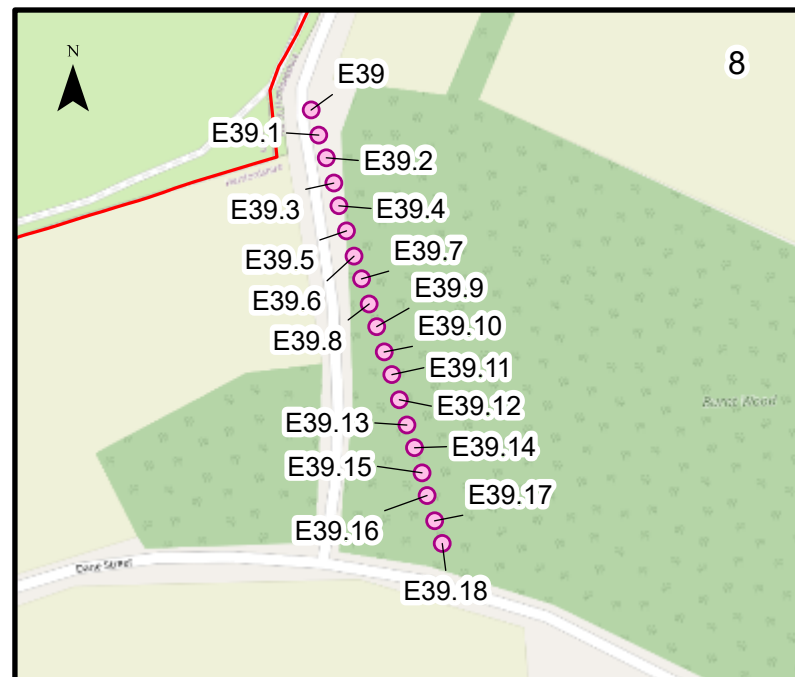
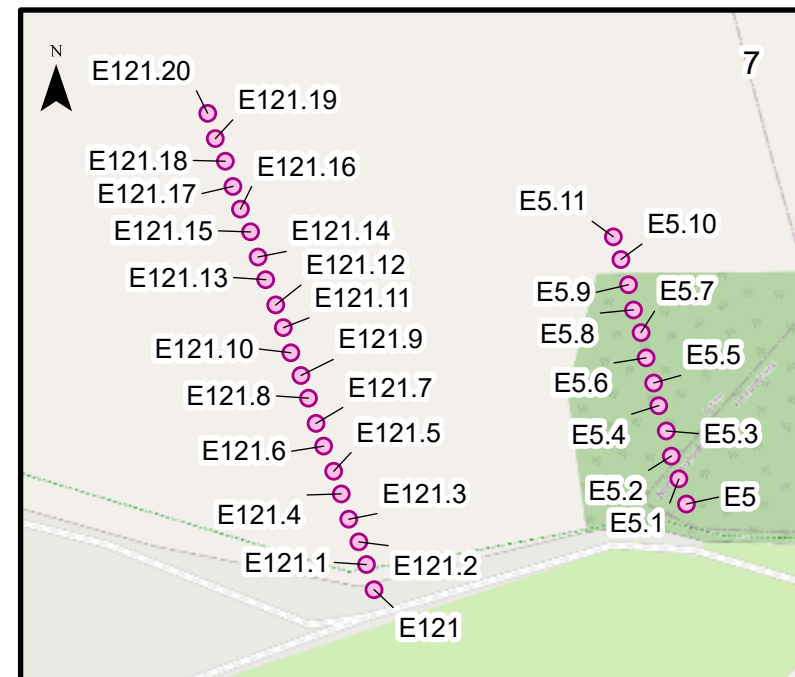
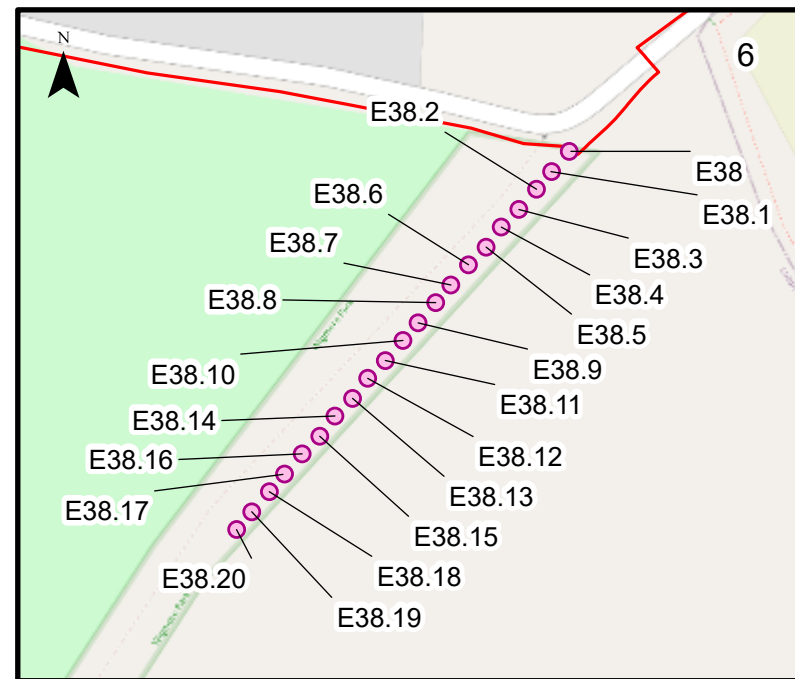
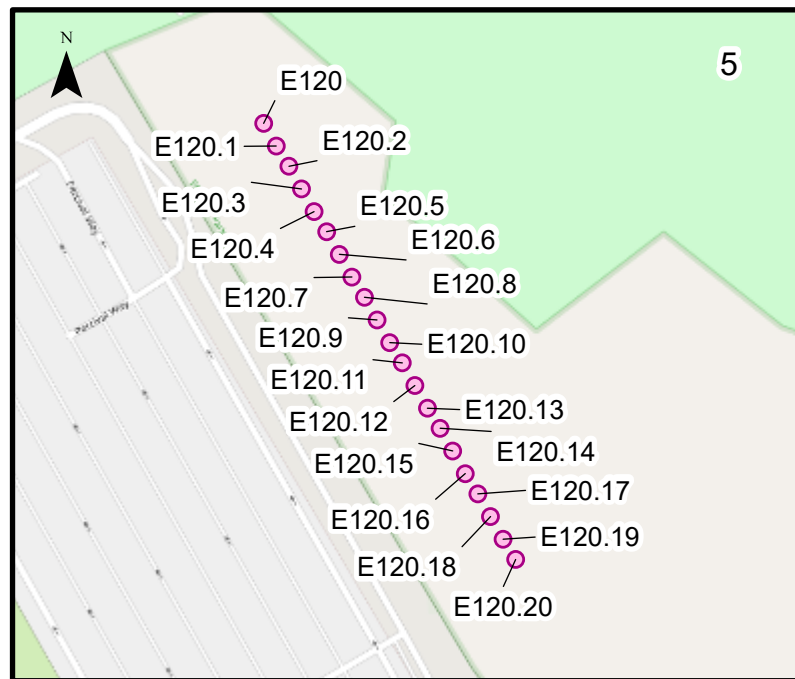
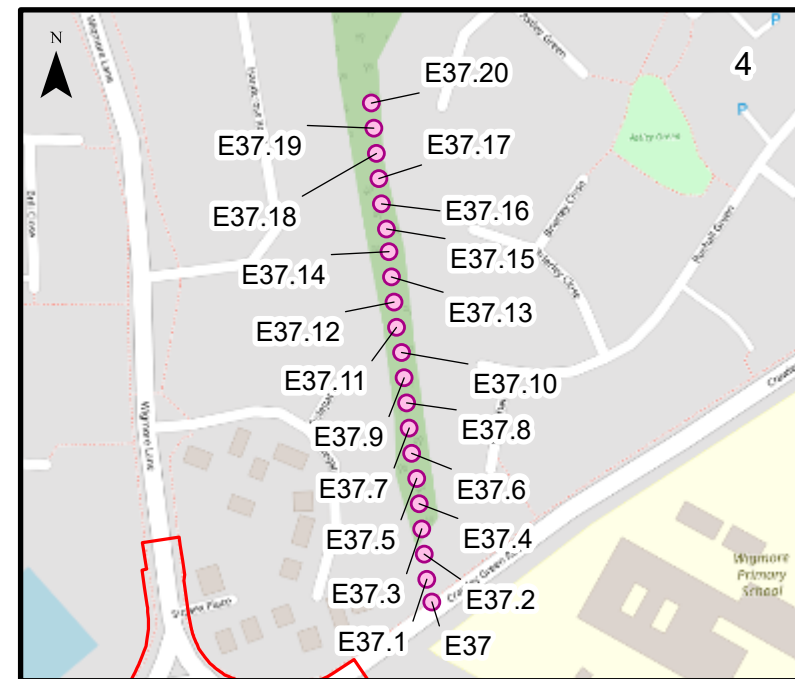
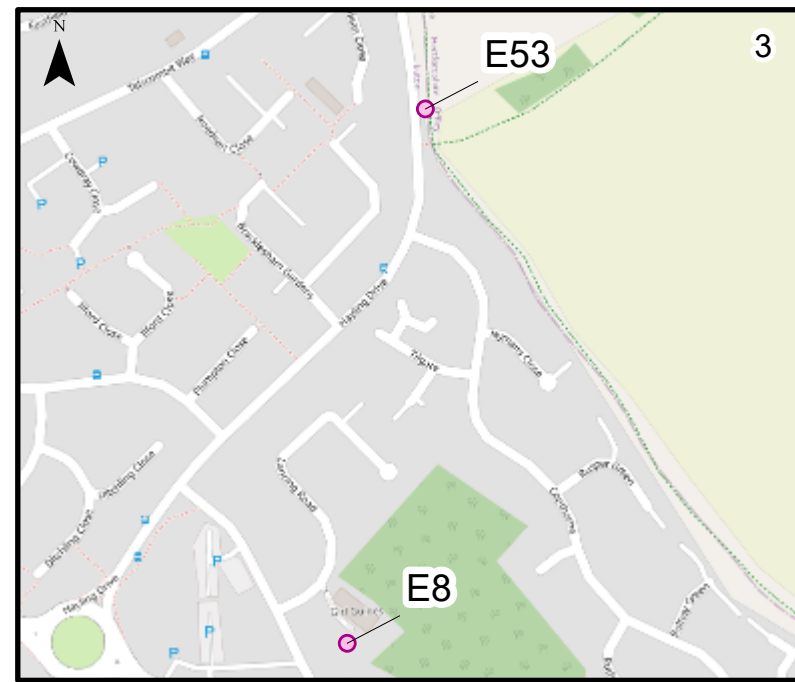
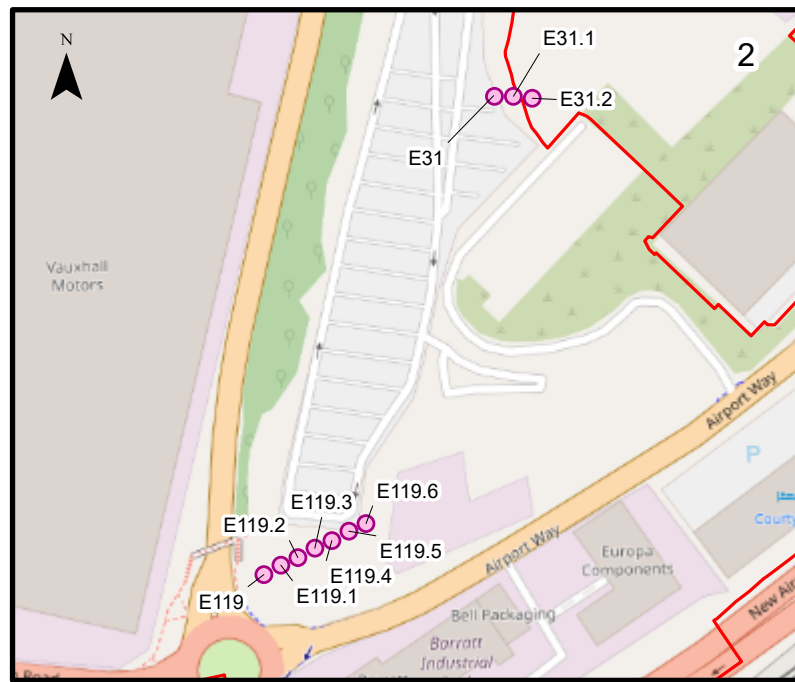


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Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (NOx results)
 Assessment Phase 2a
 Page 1 of 3

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
DCO Application Ref.		APFP Regulation	DCO Document Ref.		
TR020001		N/A	TR020001/APP/5.03		
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0533					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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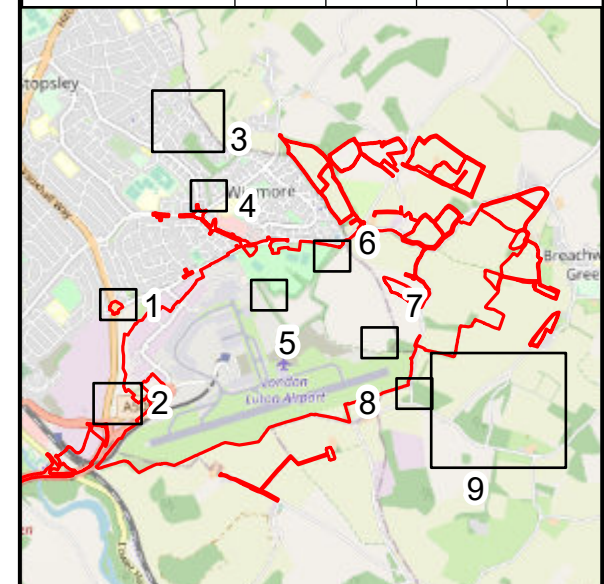
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Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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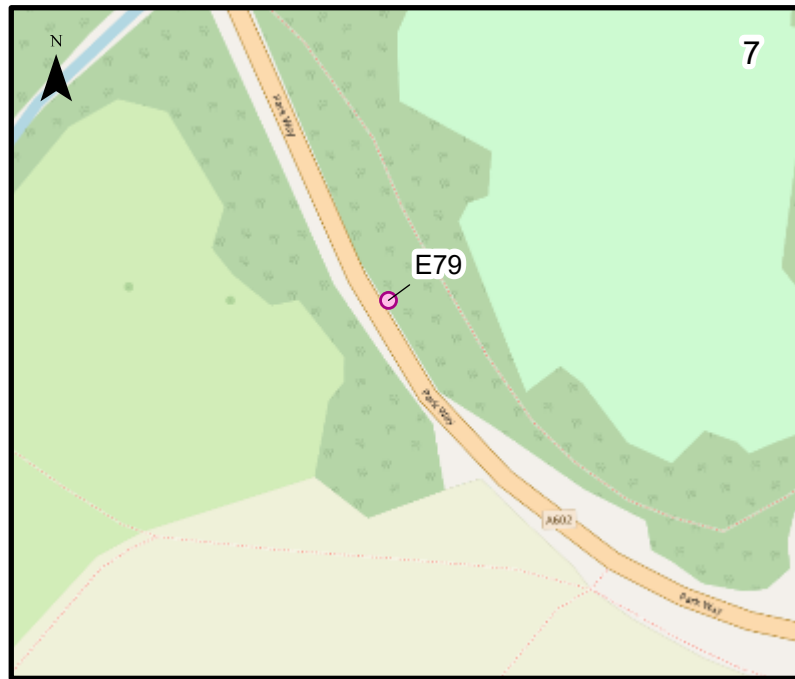
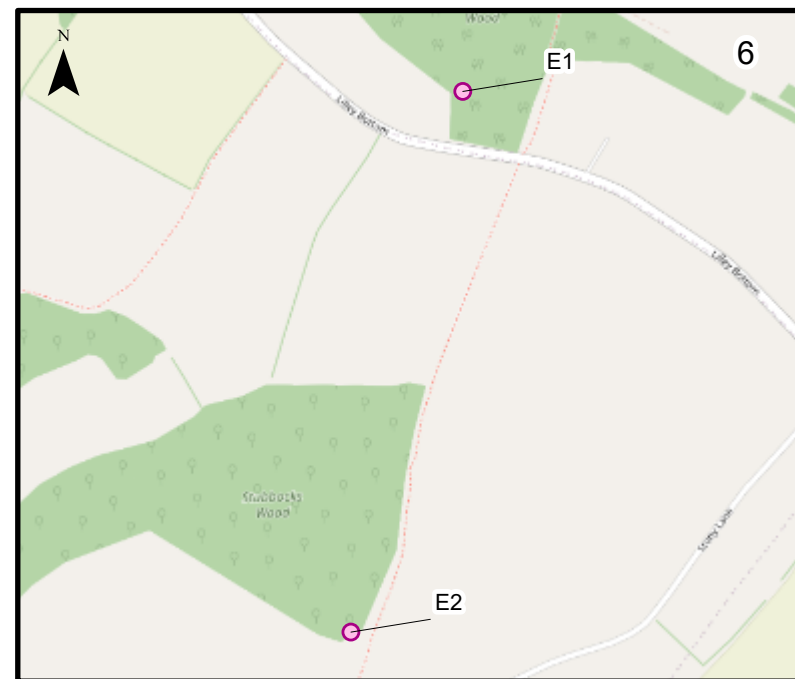
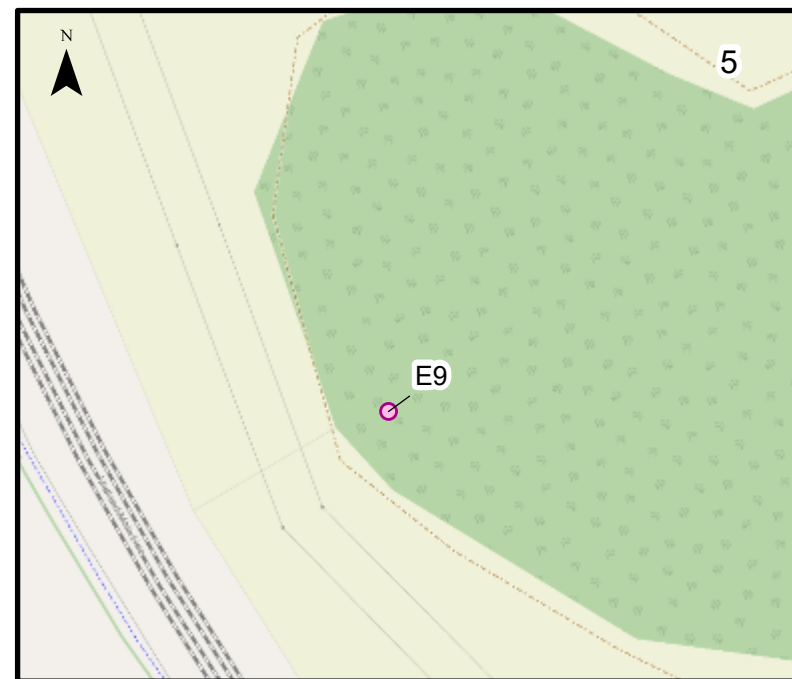
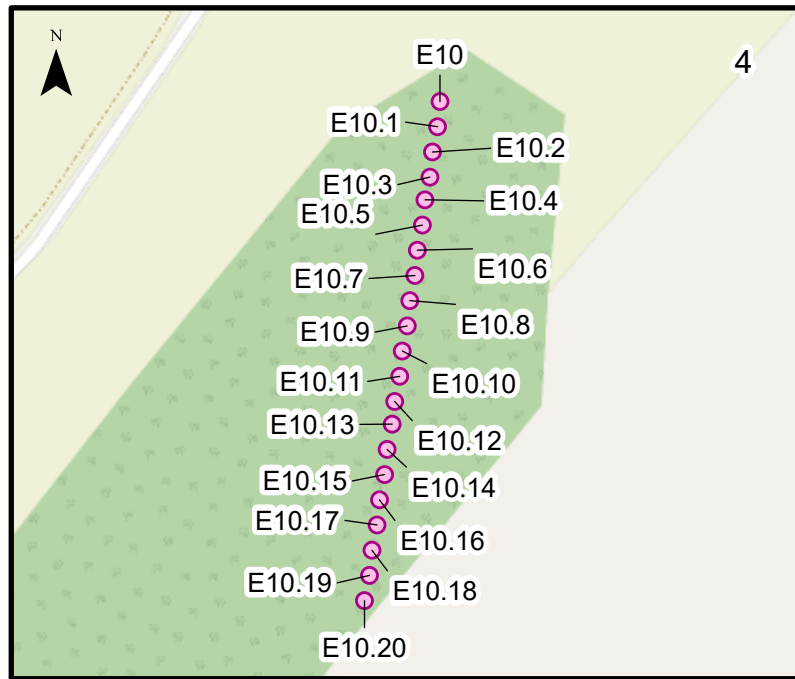
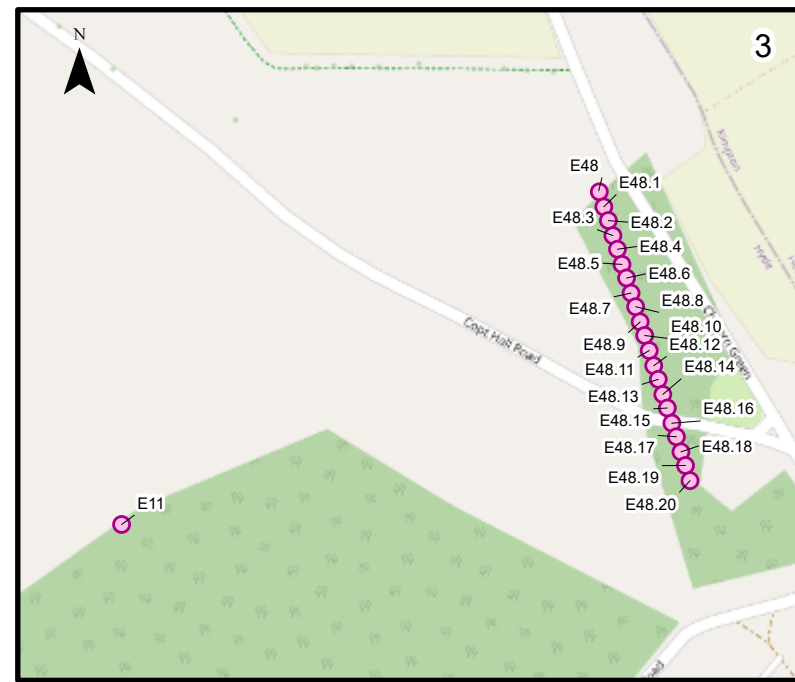
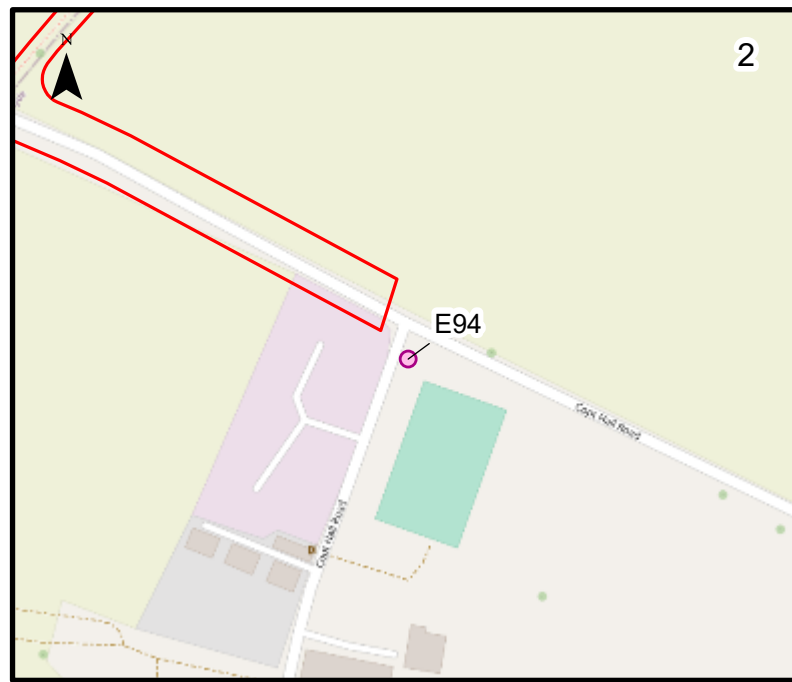
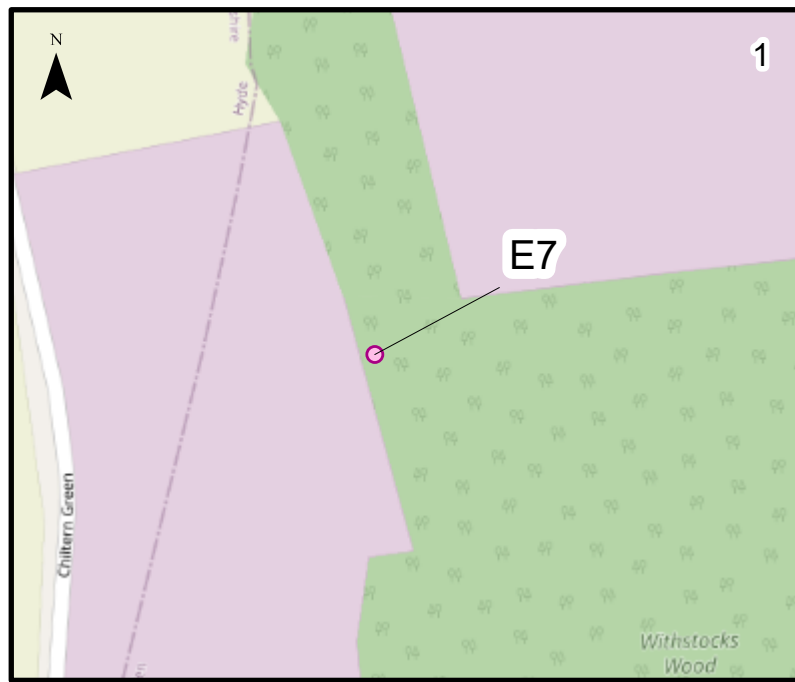
**London Luton Airport Expansion
 Development Consent Order**

Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (NOx results)
 Assessment Phase 2a
 Page 2 of 3

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0533	P01



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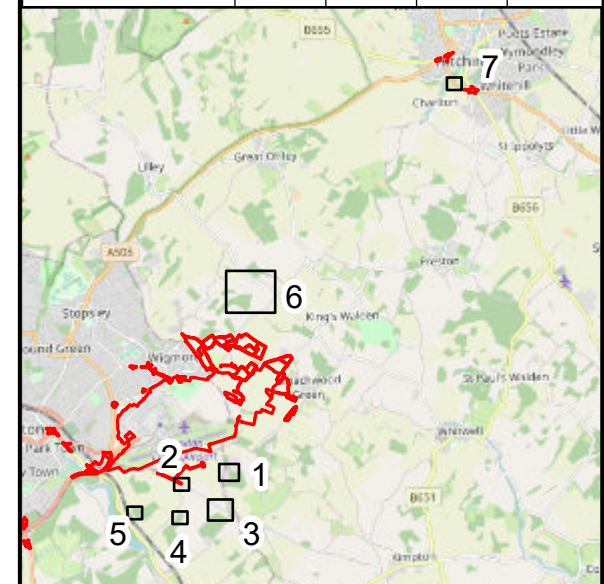
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Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

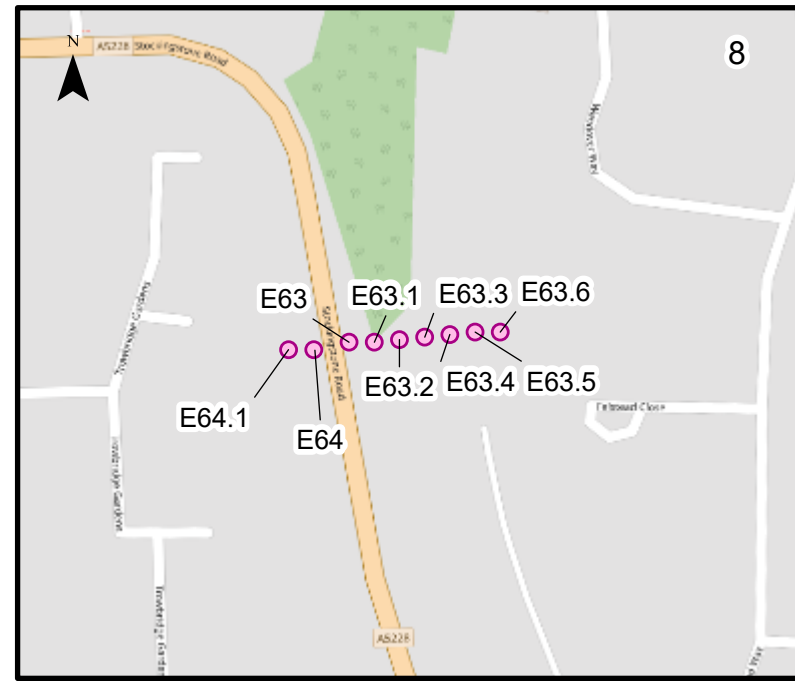
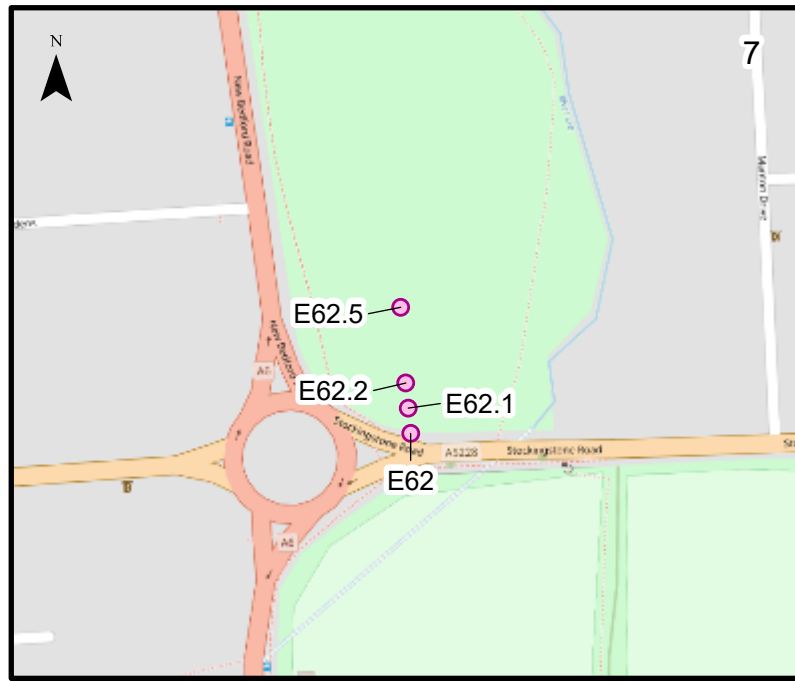
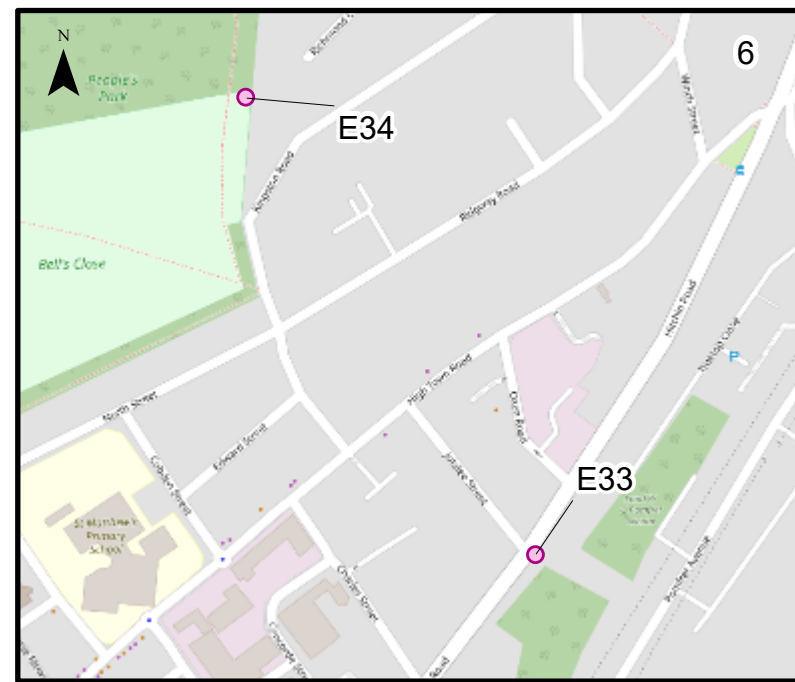
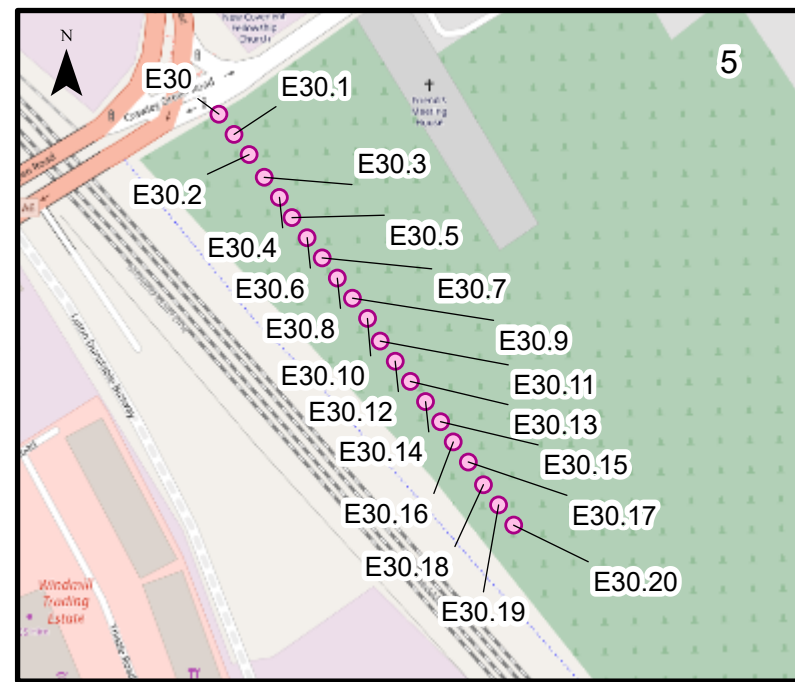
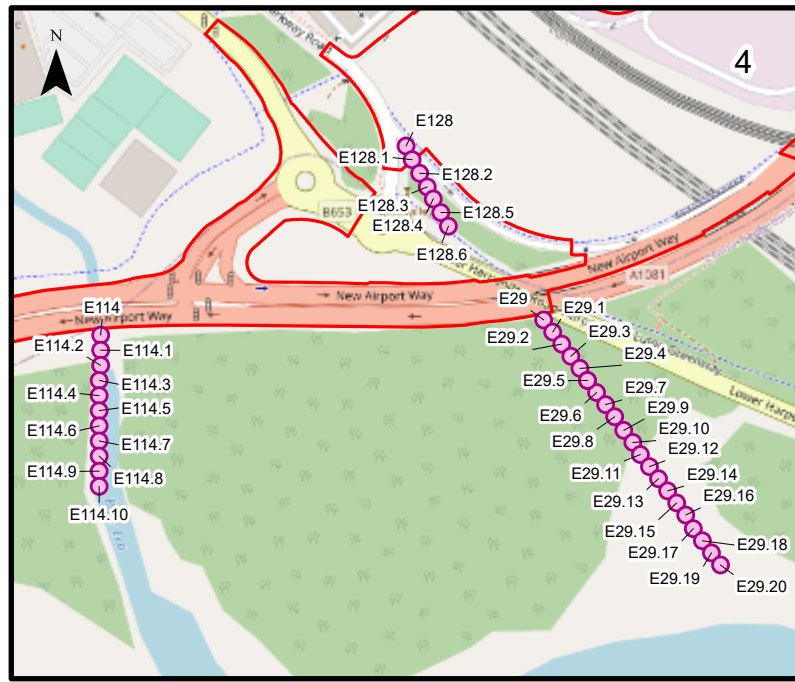
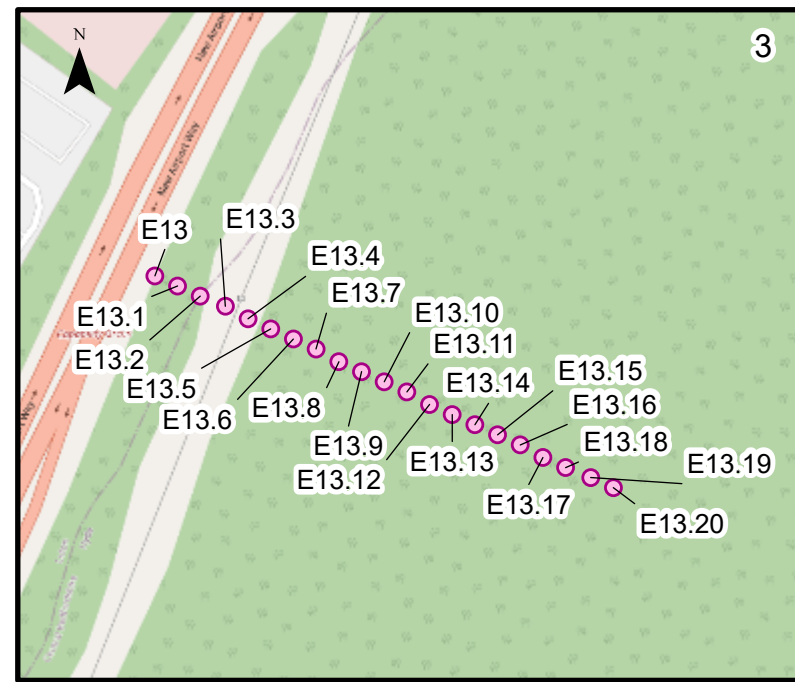
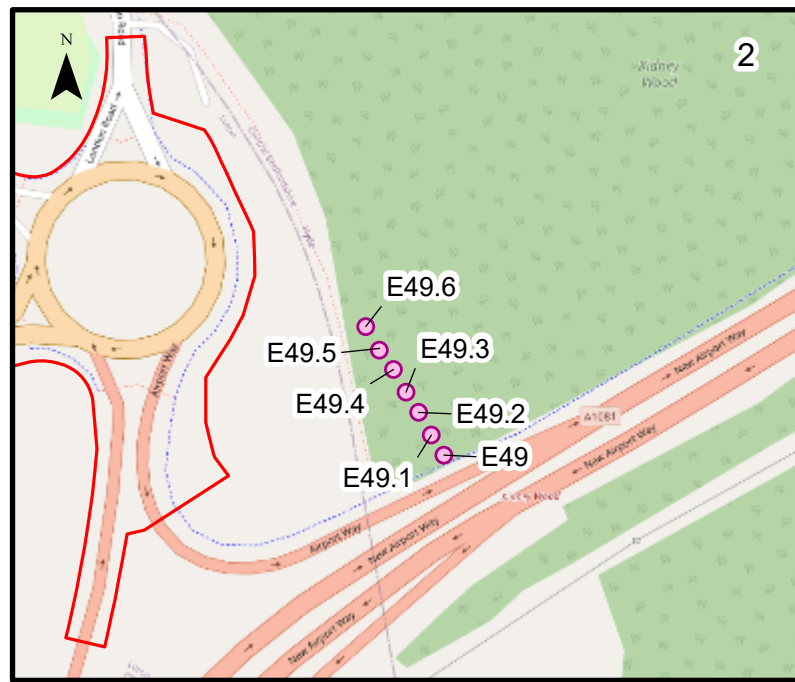
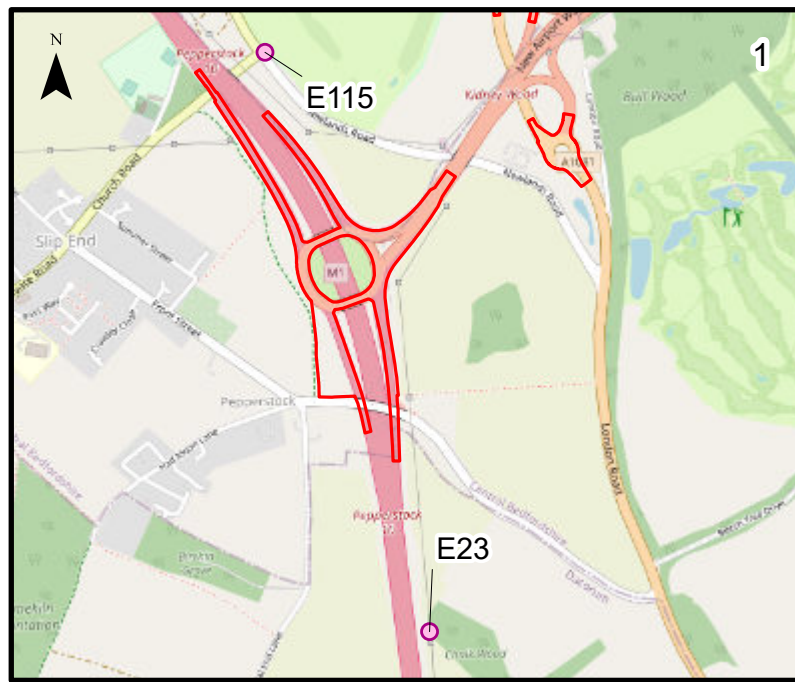


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Drawing Title
Applicant's Response to ExA Written Question BIO.1.3:
Modelled ecological receptors (NOx results)
Assessment Phase 2a
Page 3 of 3

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
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TR020001		N/A	TR020001/APP/5.03		
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0533					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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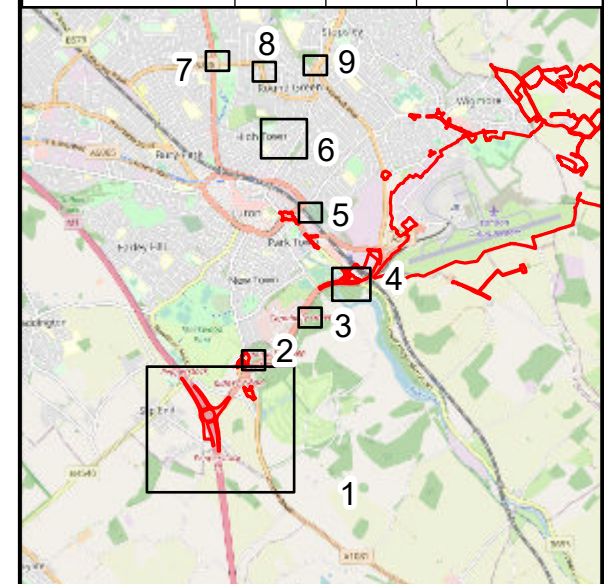
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Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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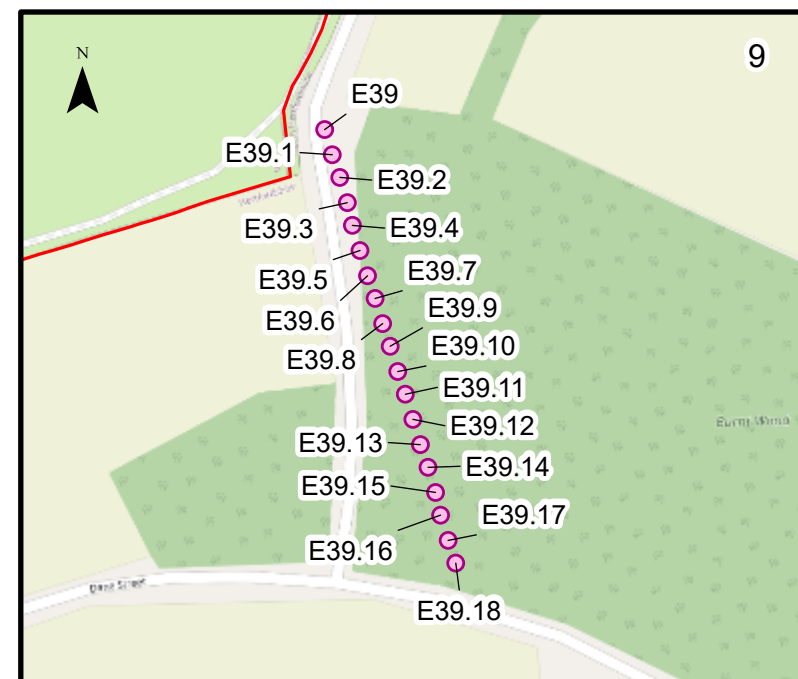
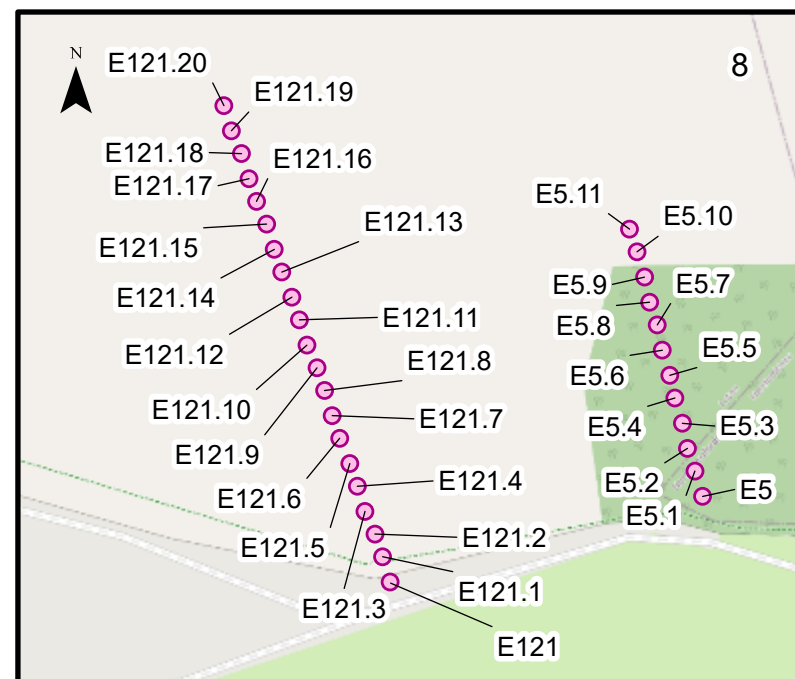
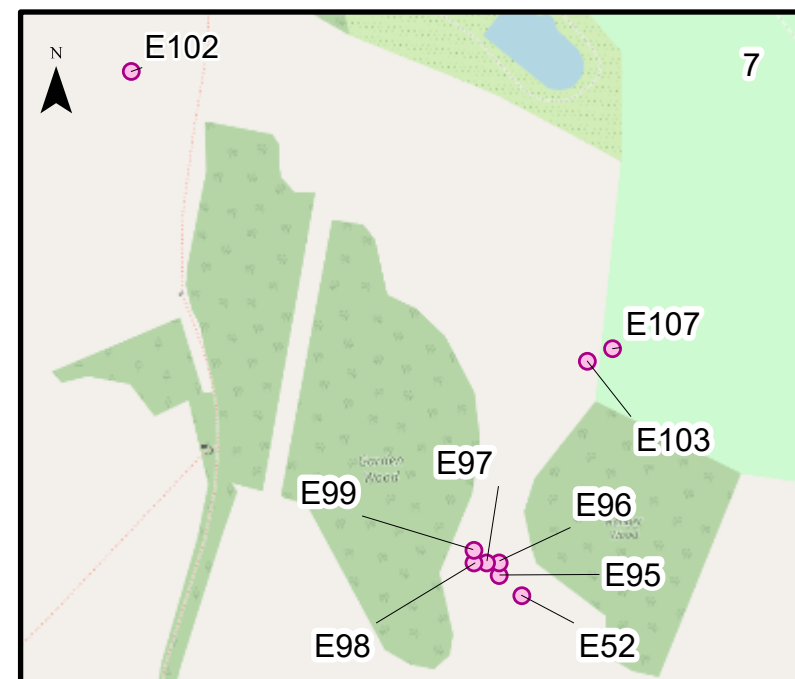
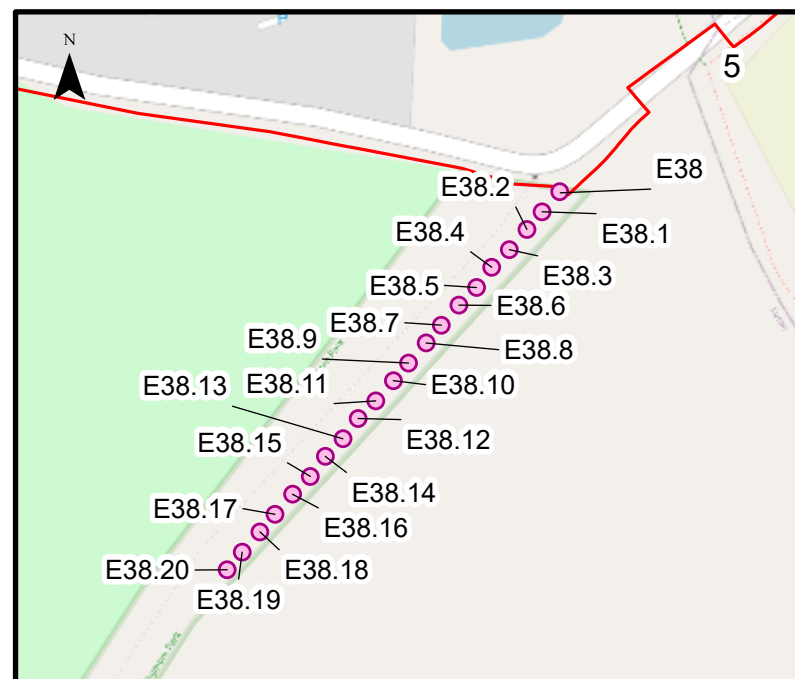
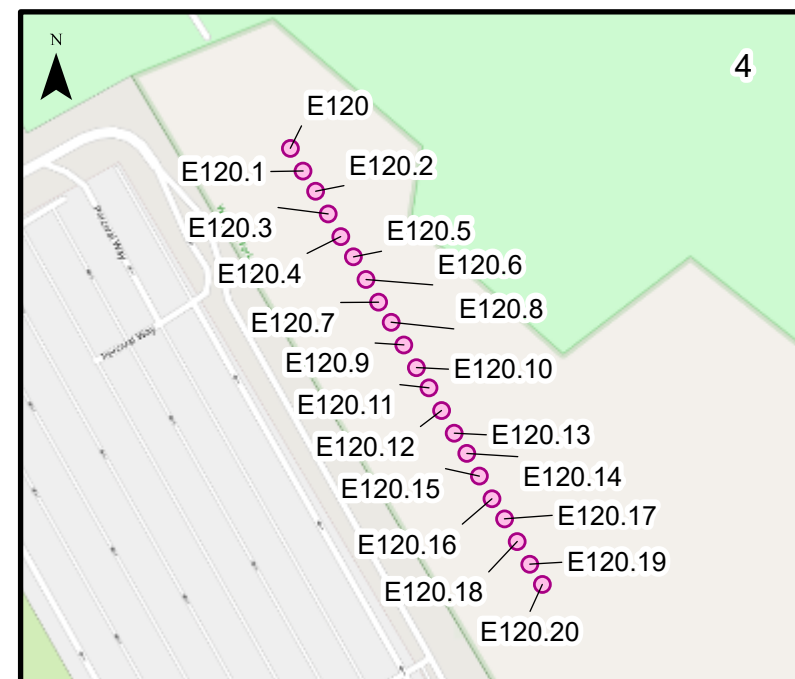
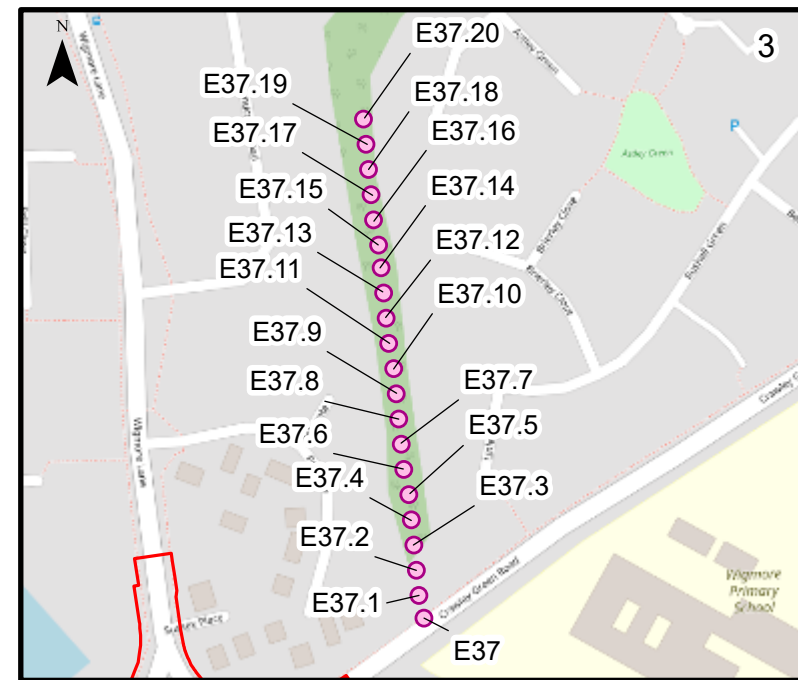
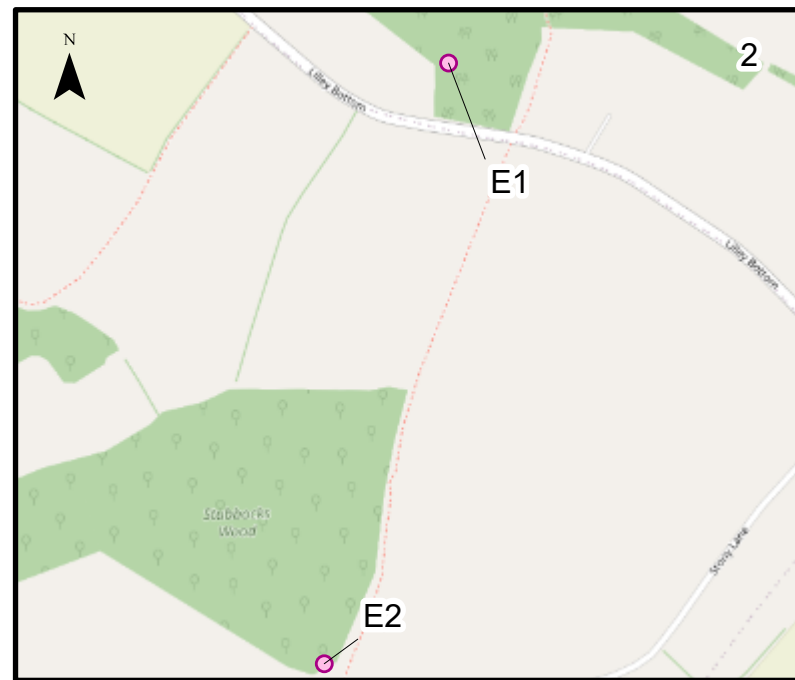
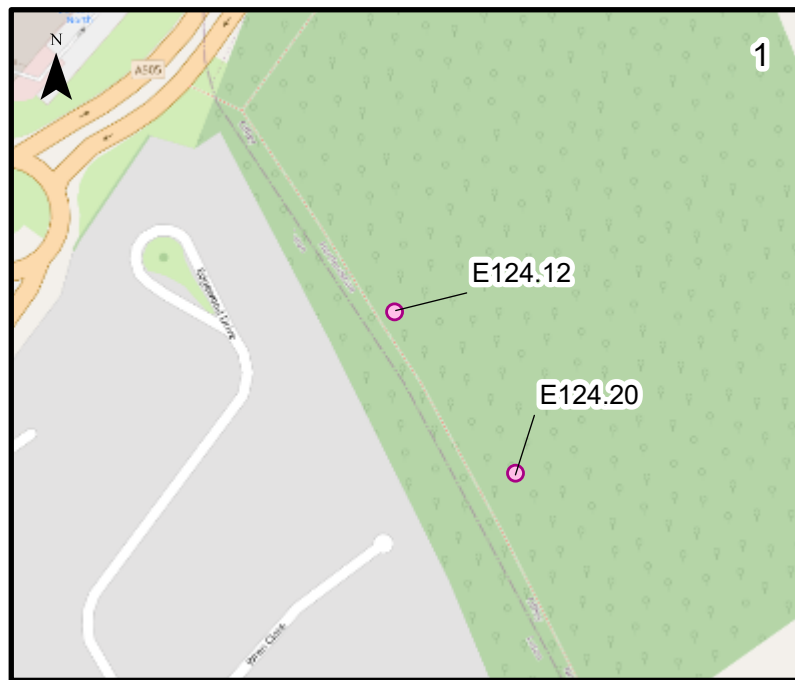
Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (NOx results)
 Assessment Phase 2b
 Page 1 of 4

Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	N/A	TR020001/APP/5.03

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0534	P01

Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number



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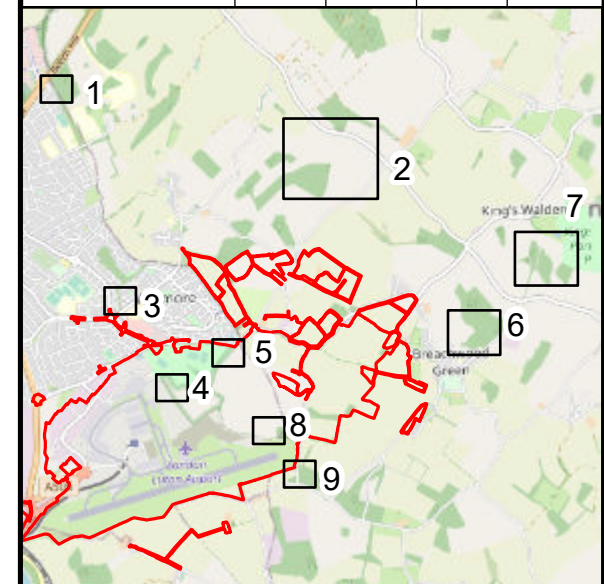
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Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

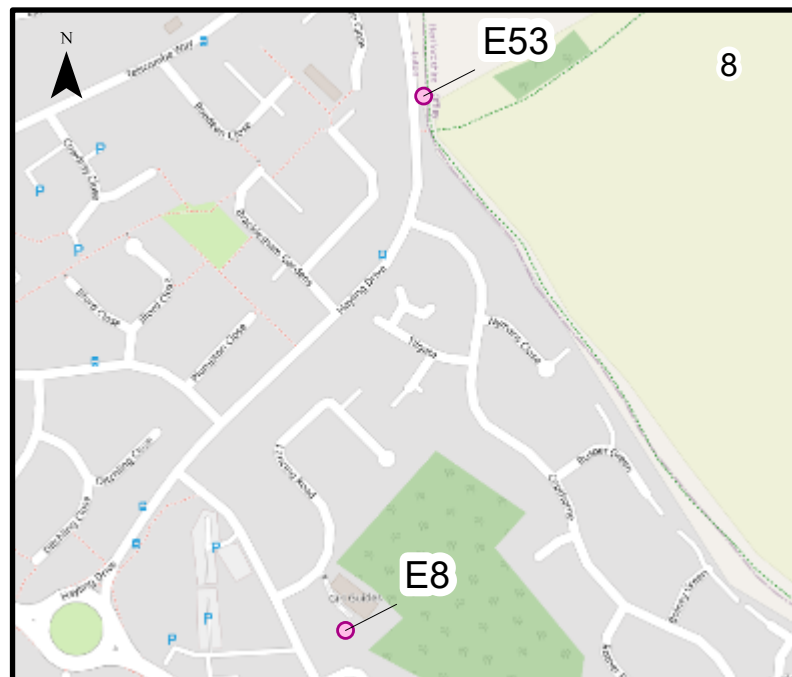
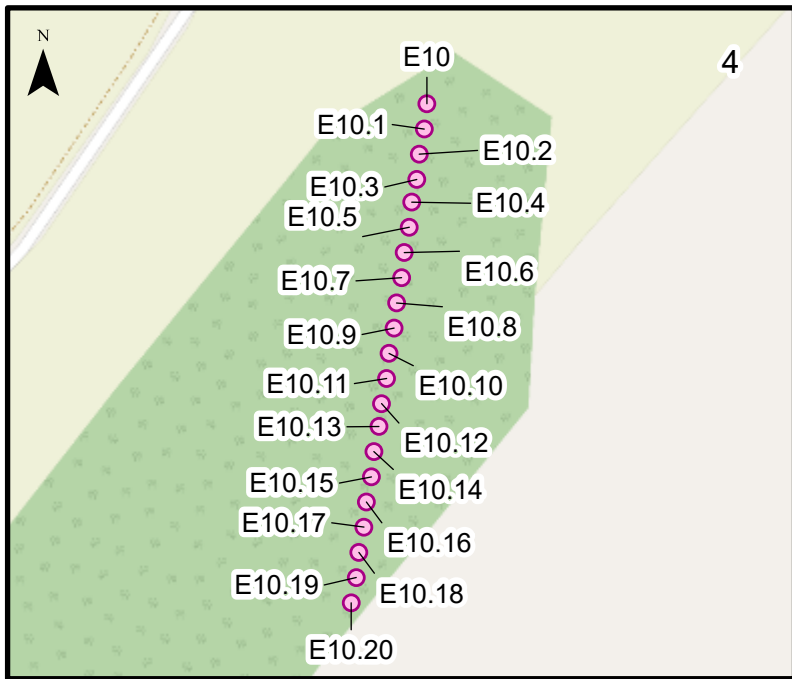
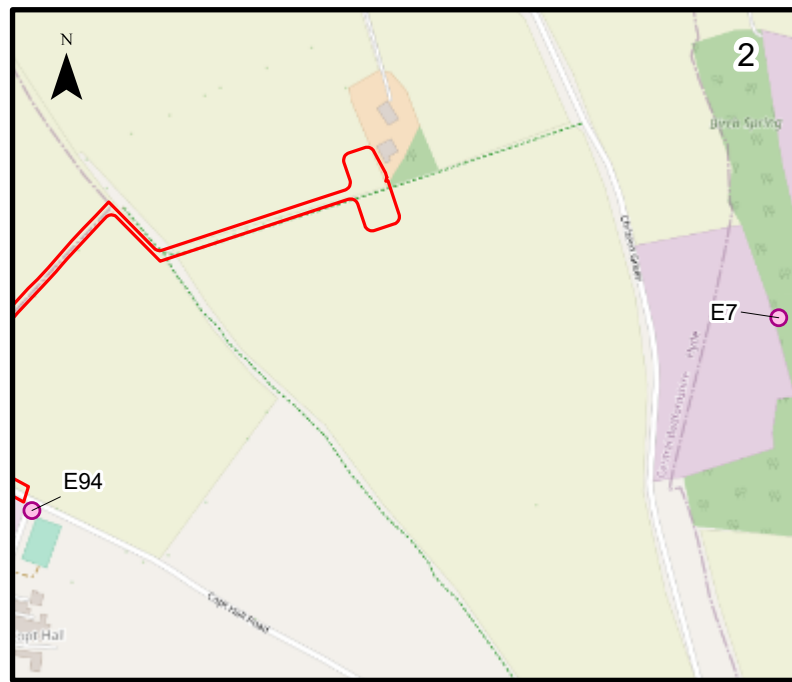
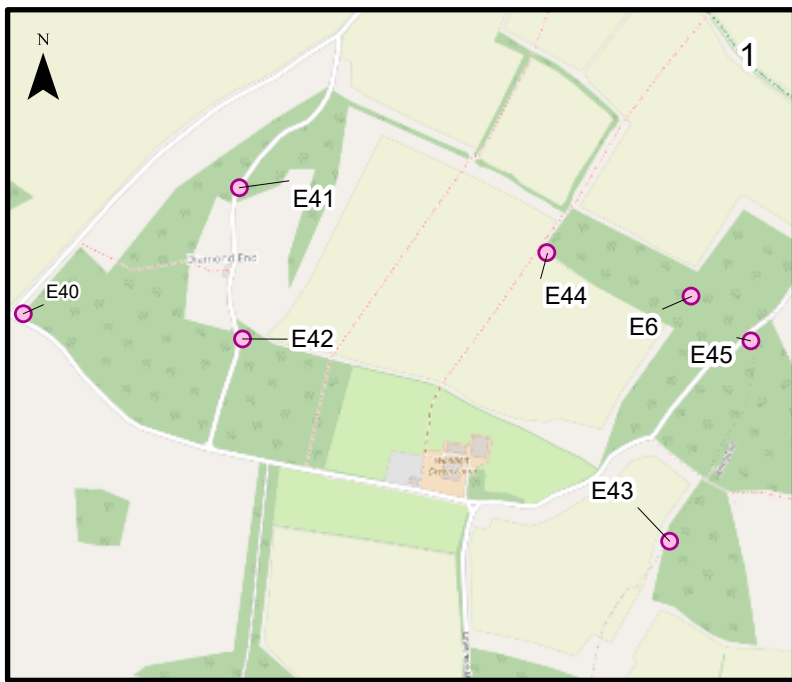


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Drawing Title
 Applicant's Response to ExA Written Question BIO.1.3:
 Modelled ecological receptors (NOx results)
 Assessment Phase 2b
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Purpose of issue			Suitability		
Additional submission Deadline 4			S2		
Drawn	Checked	Approved	Date	Scale	Size
AB	SB	CS	20/10/23	N/A	A3
DCO Application Ref.		APFP Regulation	DCO Document Ref.		
TR020001		N/A	TR020001/APP/5.03		
Drawing Number					Revision
LLADCO-3C-ARP-00-00-DR-YE-0534					P01
Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number					



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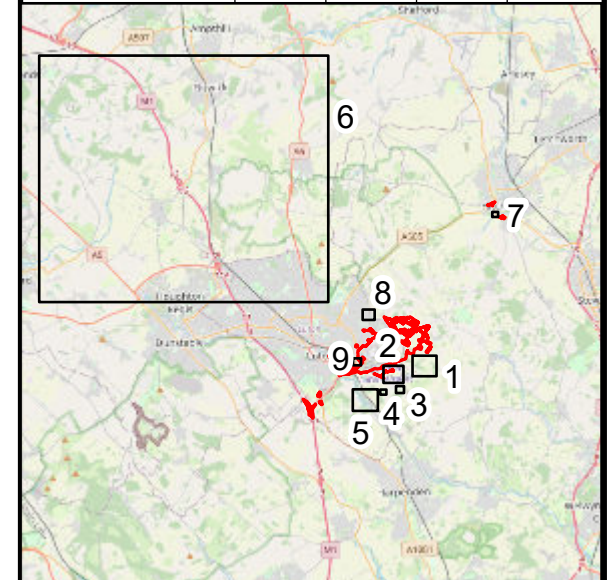
All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

- Order Limits
- Over a 1% change in nitrogen oxides (NOx) as % of the standard

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.



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 Assessment Phase 2b
 Page 3 of 4

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TR020001	N/A	TR020001/APP/5.03			
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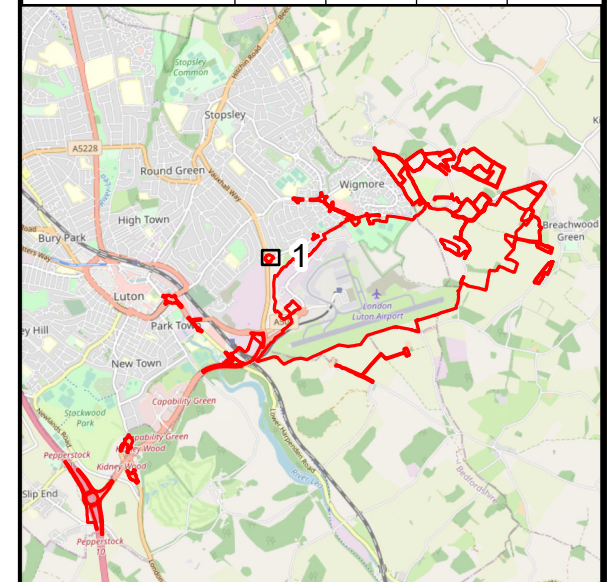
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Legend

- Order Limits
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Note: Transect Maps are at different scales

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Revision History	Drawn	Checked	Approved	Date	Rev.

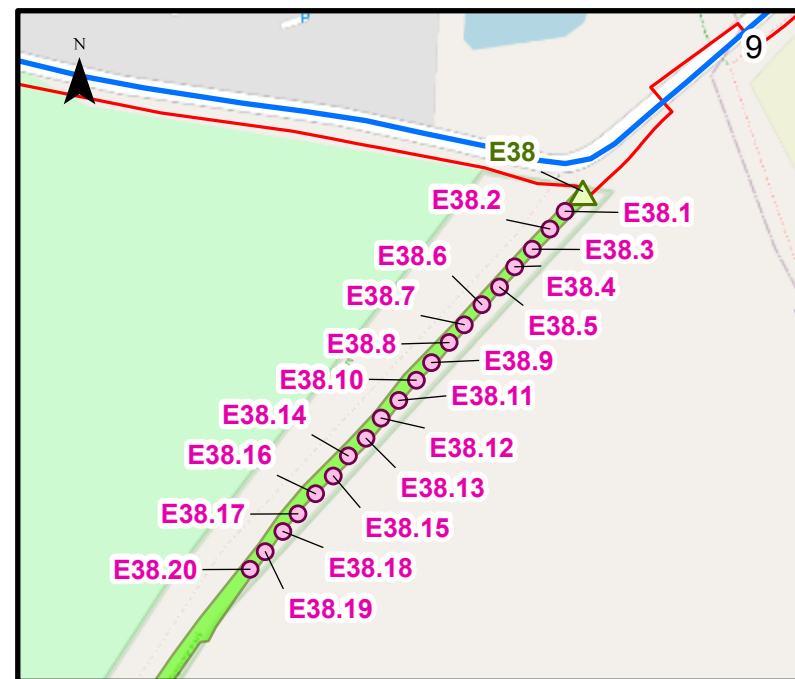
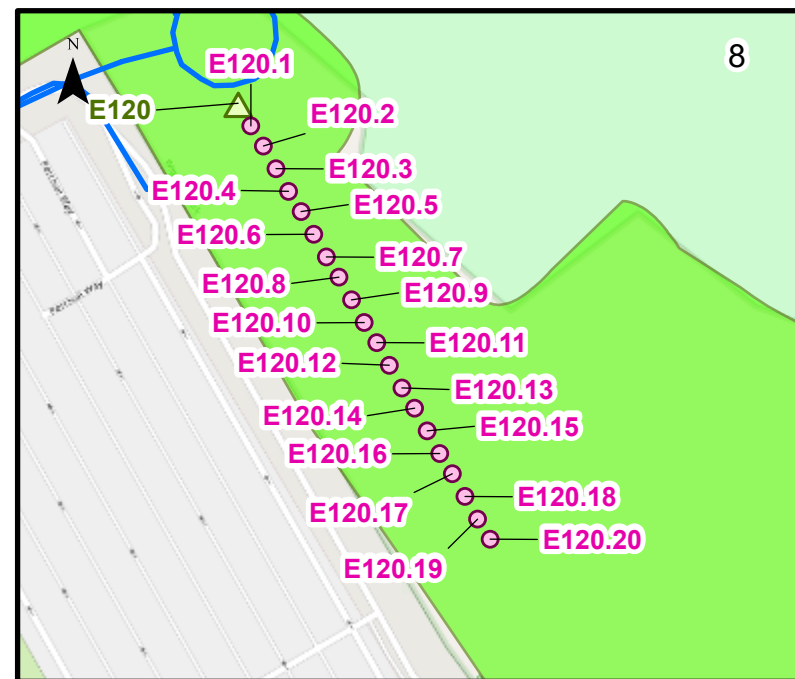
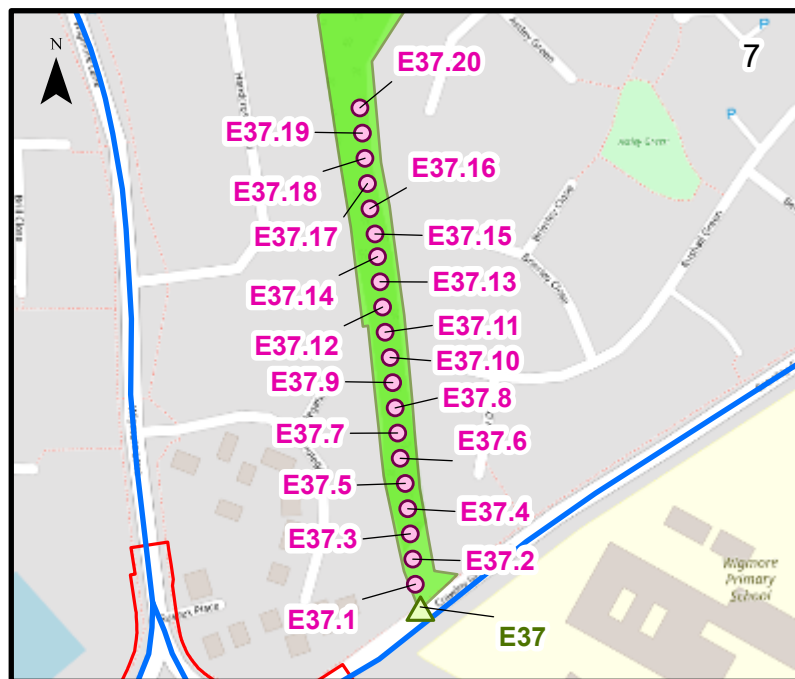
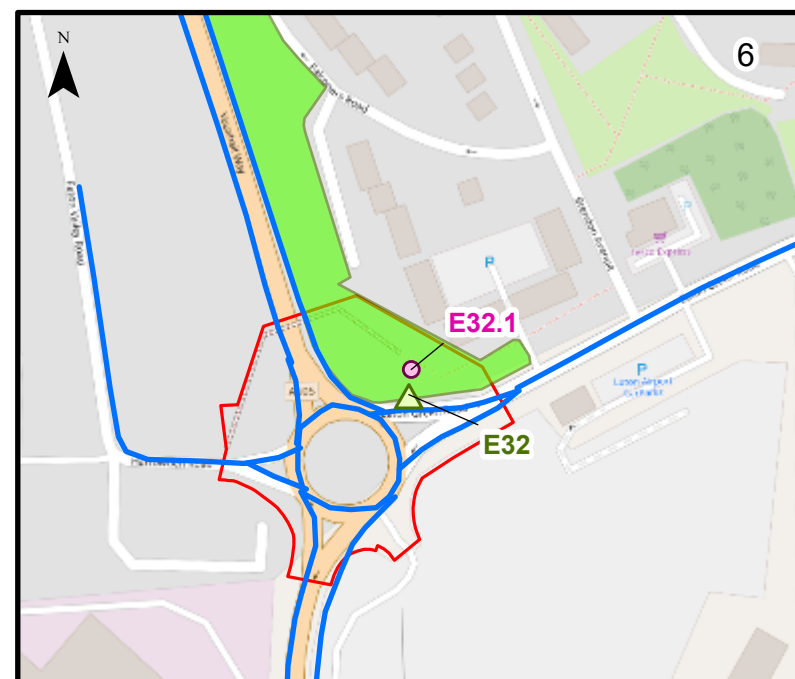
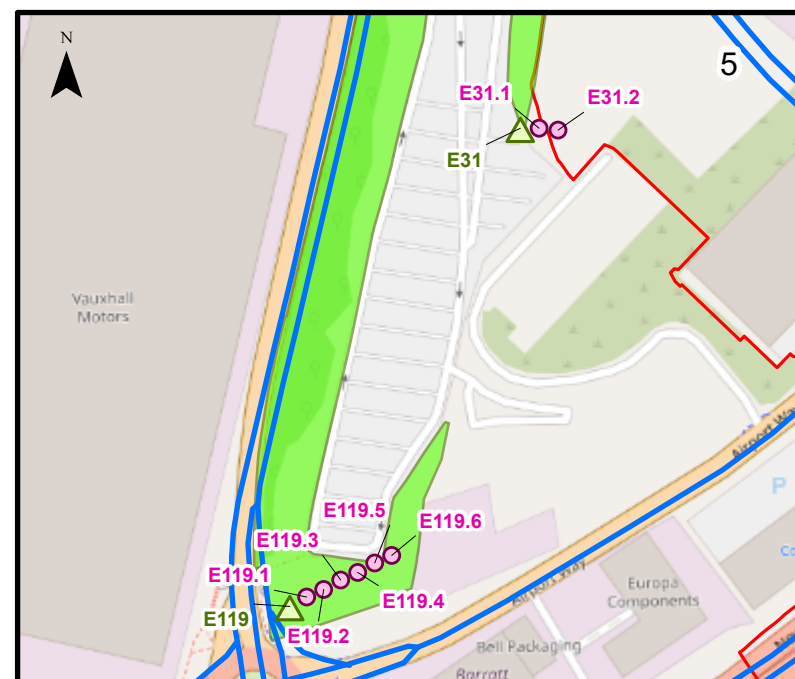
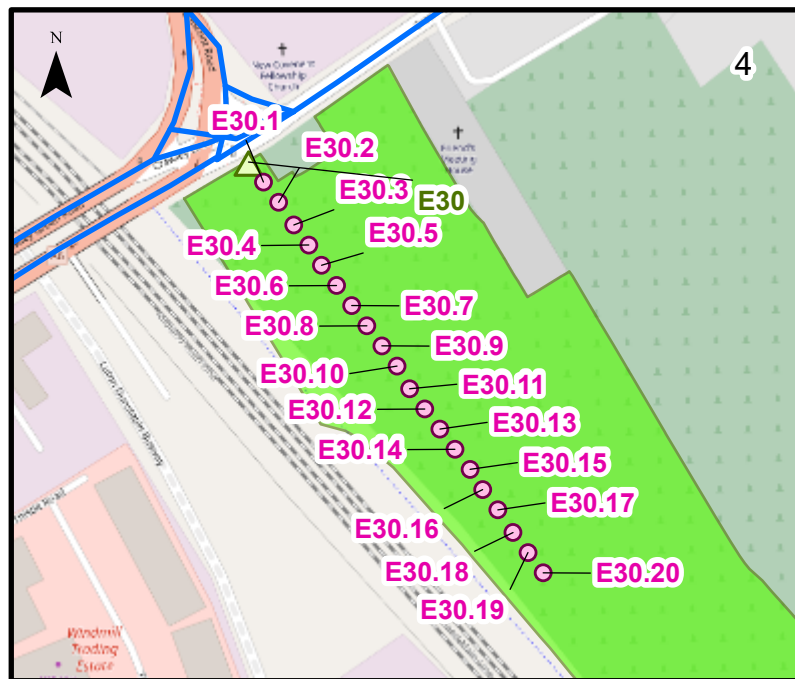
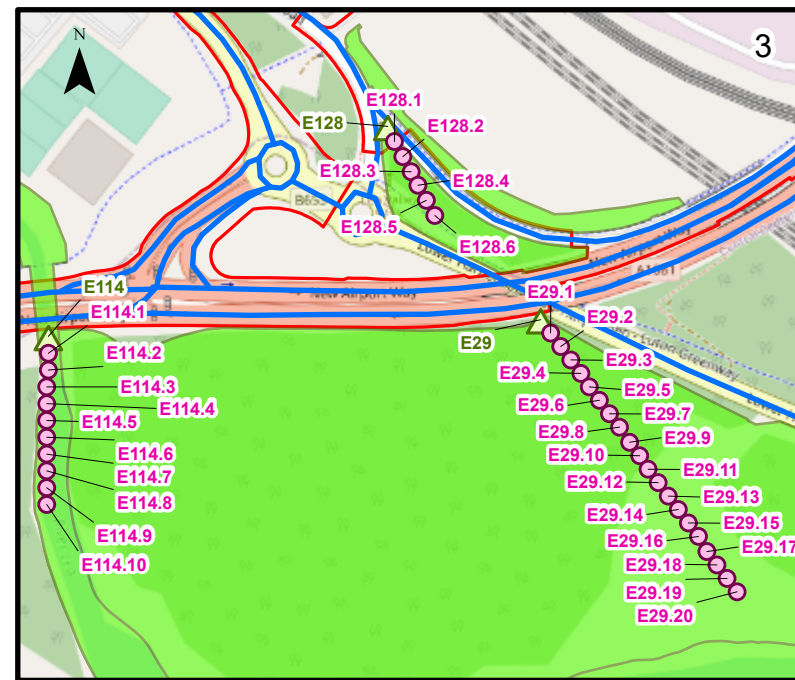
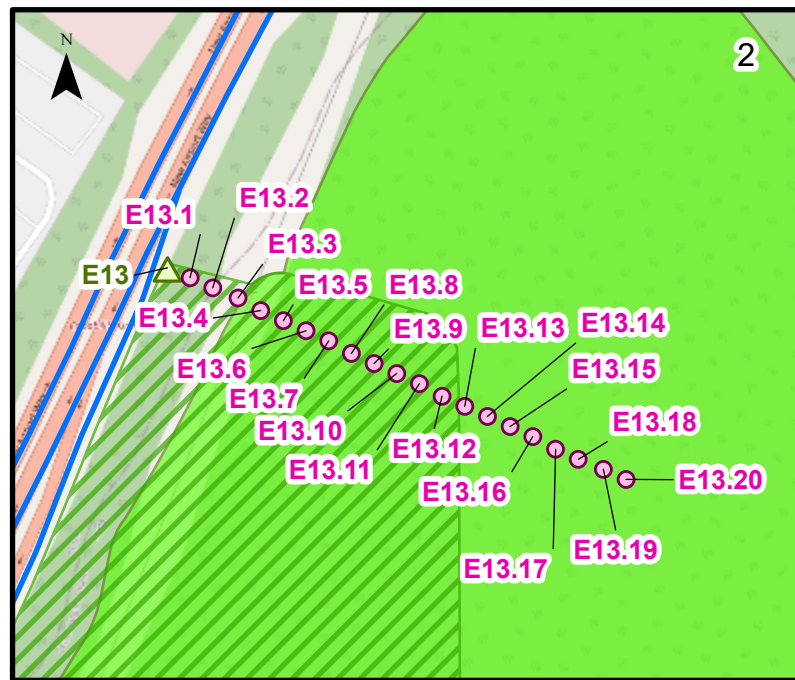
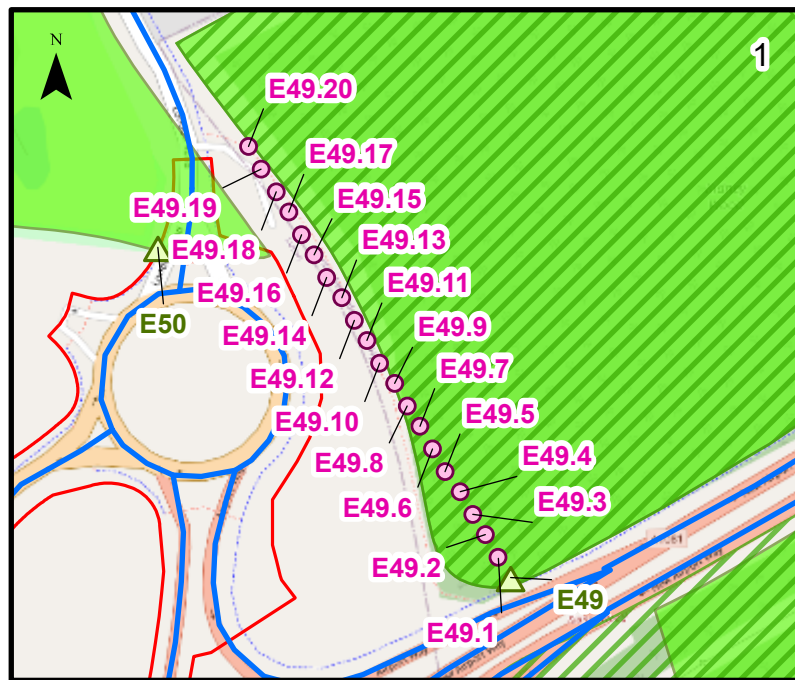


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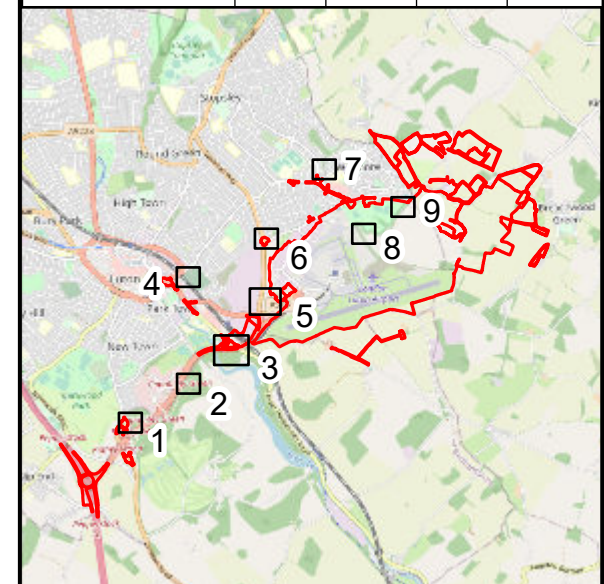
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Legend

- Order Limits
- Modelled Ecological Transect Point
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- Sites of Special Scientific Interest (SSSI) (within 200m of ARN)
- Ancient Woodland (within 200m of ARN)
- Veteran Tree (within 200m of ARN)
- Affected Road Network (ARN)
- Air Quality Management Areas (AQMAs)
- ▲ Modelled Ecological Receptor

Note: Transect Maps are at different scales

Additional submission Deadline 4	AB	SB	CS	20/10/23	P01
Revision History	Drawn	Checked	Approved	Date	Rev.

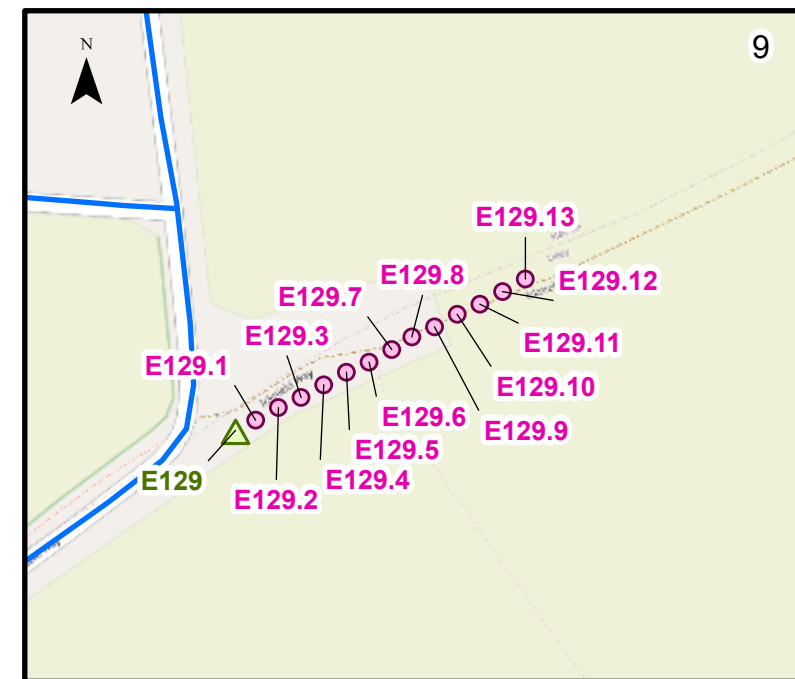
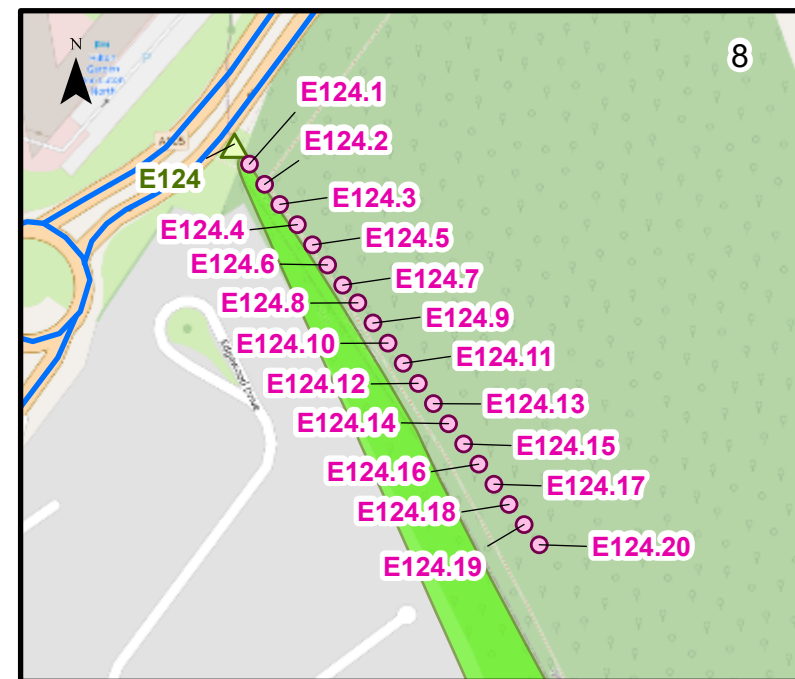
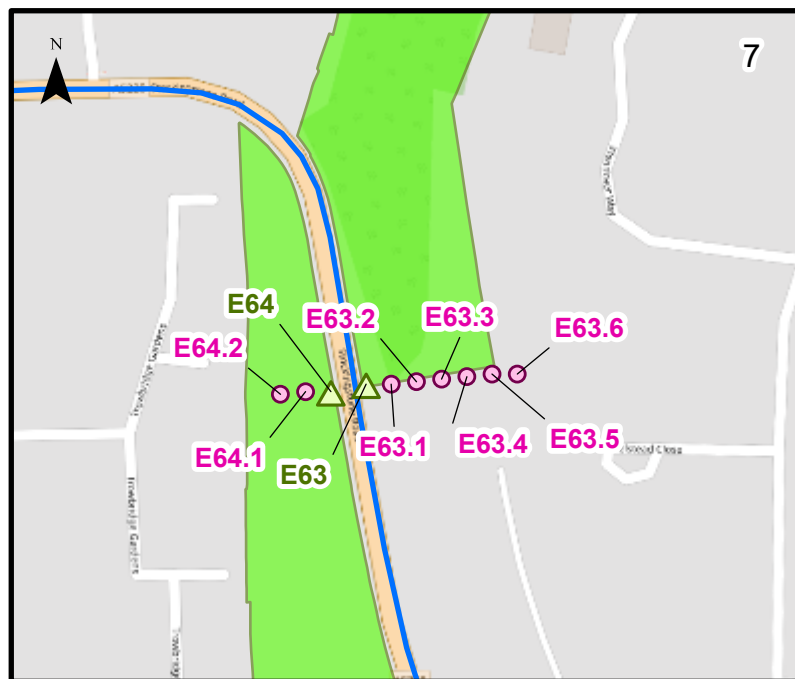
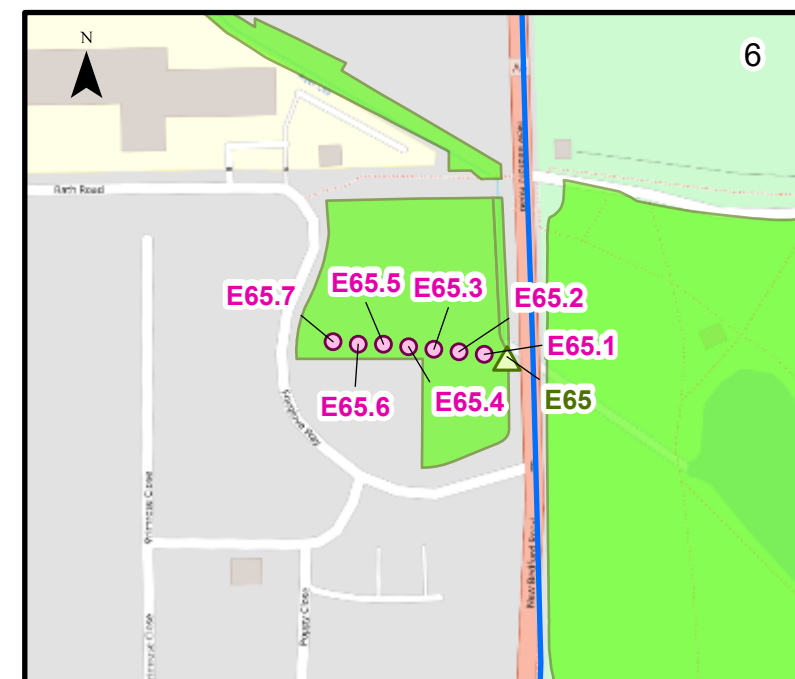
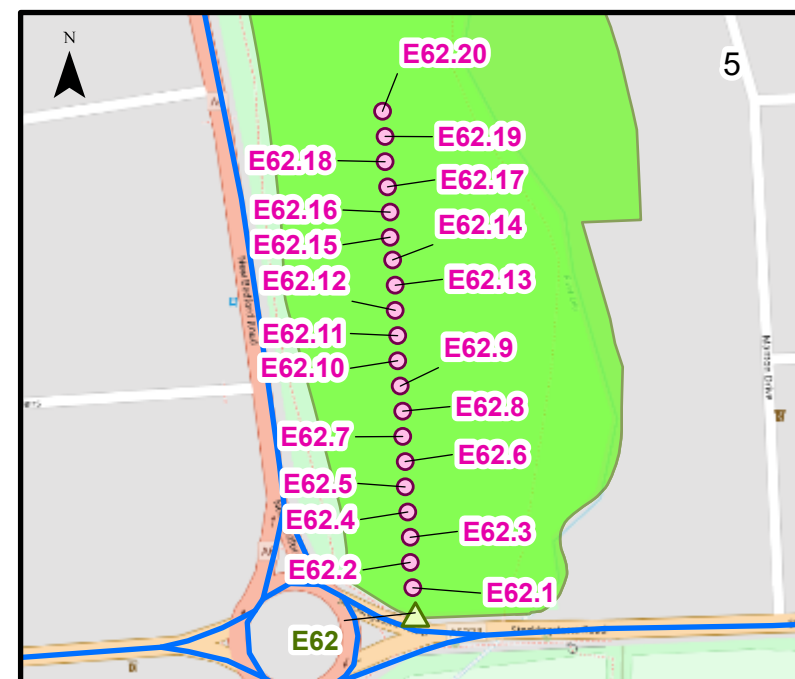
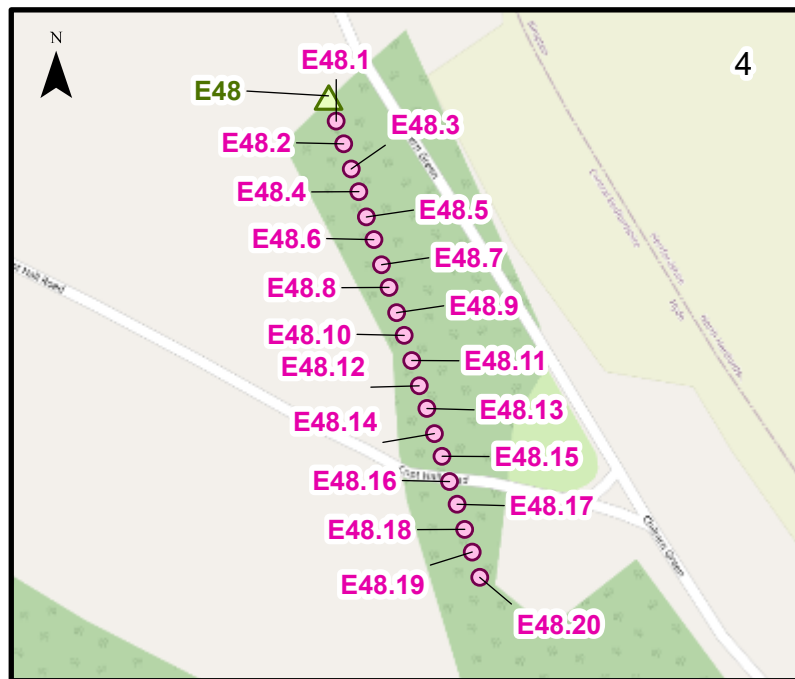
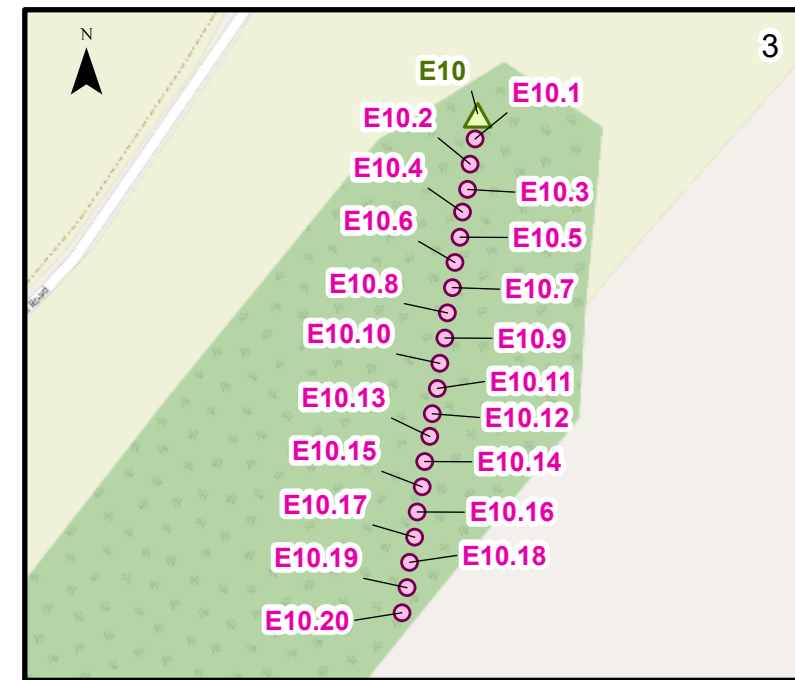
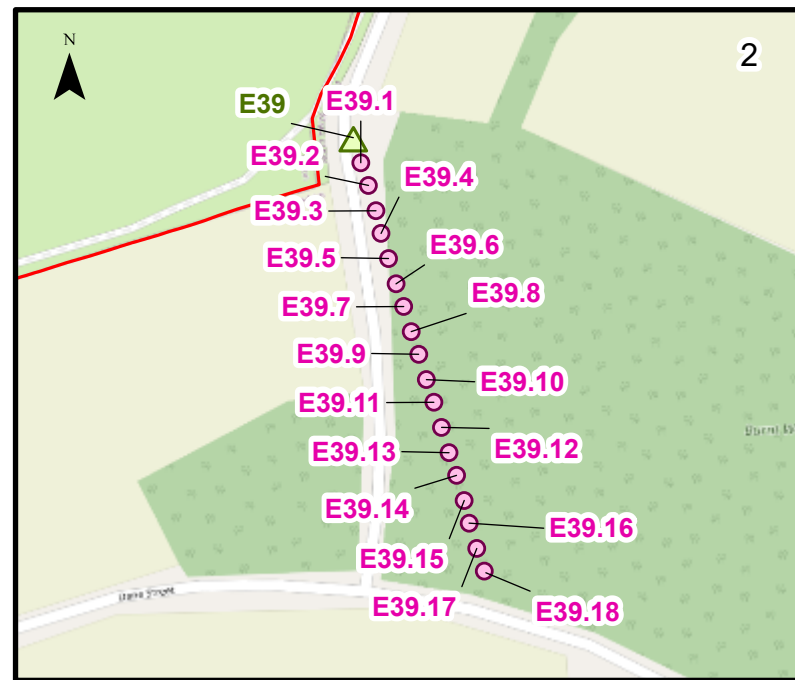
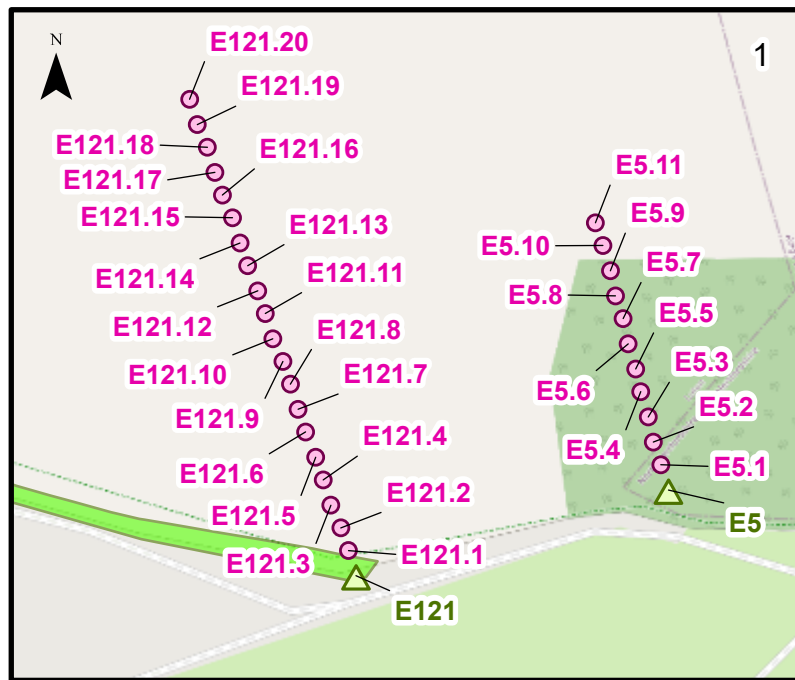


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Drawing Title
Applicant's Response to ExA Written Question BIO.1.3:
Ecological Transects
Page 1 of 3

Purpose of issue			Suitability		
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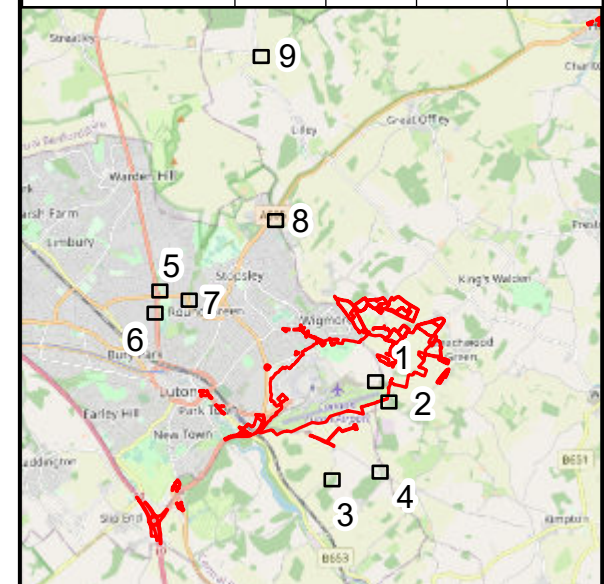
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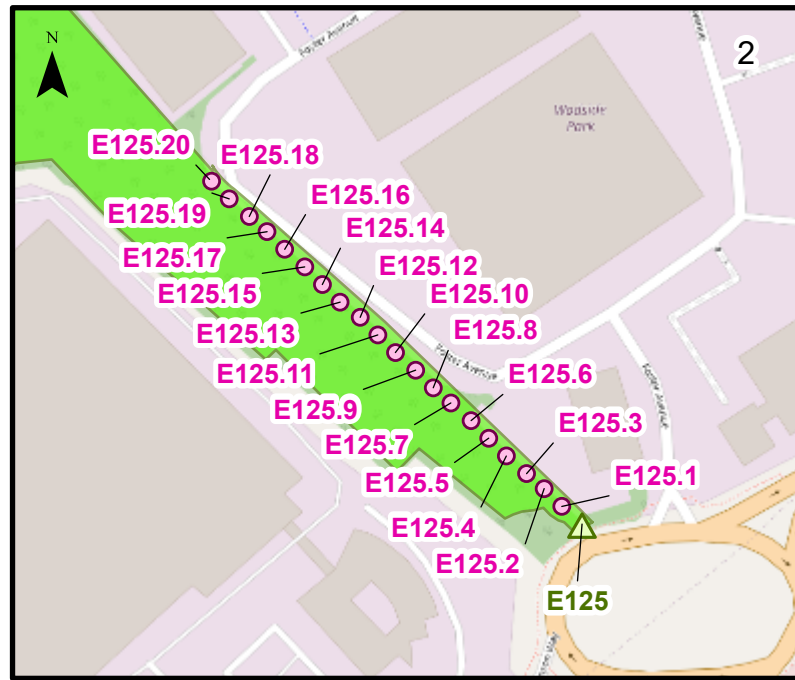
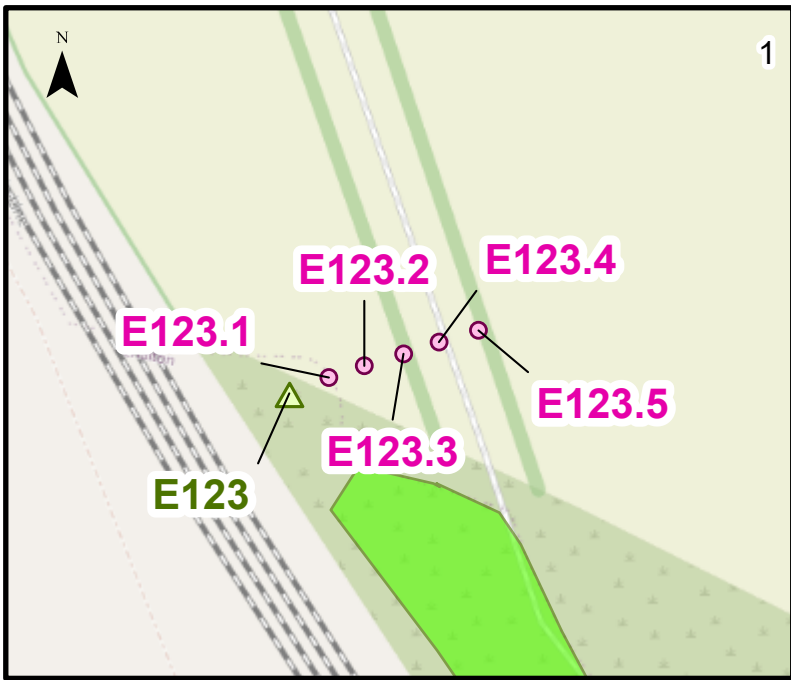


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 Development Consent Order**

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