

A12 Chelmsford to A120 widening scheme

TR010060

9.25 Technical Note on Ecological Mitigation

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Technical Note on the Selection of the Ecological Mitigation Areas

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Abbreviations

LNR	Local Nature reserve
LWS	Local Wildlife Site
NERC	Natural Environment and Rural Communities
DCO	Development Consent Order
NNNPS	National Networks National Policy Statement
NPPF	National Planning Policy Framework
NSIP	Nationally Significant Infrastructure Projects
EWTRC	Essex Wildlife Trust Record Centre
EFC	Essex Field Club
HLoD	Horizontal limits of deviation
N	Nitrogen
ARN	Affected road network

1 Purpose of mitigation areas

1.1.1 Section 9.9 of Chapter 9 Biodiversity of the Environmental Statement [APP-076] presents an assessment of the effects caused by the construction and operation of the A12 Chelmsford to A120 Widening Scheme (the proposed scheme) on designation sites, habitats, flora and fauna. Ecological impacts can be mitigated in different ways, for example timing of works to avoid sensitive periods, however some impacts can only be mitigated through the creation of new habitats. These new habitats would require additional land take within the Order Limits. Impacts of particular relevance to this report, due to the need to mitigate through additional land take, are outlined below.

- The temporary and permanent loss of terrestrial and aquatic habitats, including those located within designated sites, priority habitats and habitats likely to be used by or to support protected and notable species including notable vascular plants.
- Loss of features directly used by protected and notable species for shelter, including two main badger setts (paragraph 9.11.159 of Chapter 9 Biodiversity of the Environmental Statement [APP-076]).
- Mortality and injury of protected species including reptiles and badgers during construction (paragraphs 9.11.217 and 9.11.154 of Chapter 9 Biodiversity of the Environmental Statement [APP-076]).
- An increase in nitrogen (N) deposition due to operation of the proposed scheme at Whetmead Local Nature Reserve (LNR) and Local Wildlife Site (LWS) of 6.49kg N/ha/yr (32.5% of the lower critical load) affecting a large proportion (5.25ha, 46%) of the LNR/LWS (paragraph 9.11.273 of Chapter 9 Biodiversity of the Environmental Statement [APP-076]).
- An increase in N deposition due to an increase in traffic along Inworth Road after opening of the proposed scheme at Perry's Wood LWS and ancient woodland of 2.82kg N/ha/yr (28.2% of the lower critical load), affecting more than 20% of the site for 11 years (paragraph 9.11.288 and 9.11.289 of Chapter 9 Biodiversity of the Environmental Statement [APP-076]).

1.1.2 The requirement to mitigate impacts to protected species is also driven by legislation. With respect to those species for which impacts would be mitigated through the creation of environmental mitigation areas, the key legislation and policy is as follows.

- The Wildlife and Countryside Act 1981 (as amended) gives protection to native species of animals (including grass snakes, common lizards, slow worm, water vole and birds), plants and certain habitats (especially those at threat).
- The Protection of Badgers Act 1992 makes it an offence to kill, injure or take a badger, or to damage or interfere with a sett unless a licence is obtained from Natural England.

- The Natural Environment and Rural Communities Act 2006 (NERC), section 40 places a duty on public authorities, including local authorities and government departments, to consider the purpose of conserving biodiversity in a manner consistent with their normal duties, such as policy and decision-making (biodiversity duty). Species and habitats of principal importance for the conservation of biodiversity in England are listed under section 41 of NERC (NERC s41). This list is used to guide decision-making by public bodies, in exercising their biodiversity duty. The species and habitats listed are priorities for nature conservation action and therefore require due consideration within the environmental assessment.
- The Environment Act 2021 provides for the setting of government environmental targets related to air, biodiversity, waste and water. In addition, the Secretary of State must, by regulations, set a new species abundance target to be met by the end of 2030. Draft regulations have been produced (the Environmental Targets (Biodiversity) (England) Regulations 2023) although these are not yet in force and are therefore subject to change. The Act will amend section 40 of the NERC Act 2006 by defining ‘the general biodiversity objective’ for public authorities as being the conservation and enhancement of biodiversity in England. The Environment Act 2021 will amend the Planning Act 2008 so as to provide for biodiversity gain objectives to be set out in a statement of government policy for projects that require a Development Consent Order (DCO) under the Planning Act, although it is unlikely that this will be in place prior to the determination of the DCO application for the proposed scheme.

1.1.3 The National Networks National Policy Statement (NNNPS) (Department for Transport, 2014) sets out the Government’s policies to deliver the development of Nationally Significant Infrastructure Projects (NSIP) on the national road and rail networks in England. The Secretary of State uses the NNNPS as the primary basis for making decisions on DCO applications. Of particular relevance to this report are the policies set out in Table 1-1 below (emphasis added).

Table 1-1 Requirements of the NNNPS

NNNPS paragraph	NNNPS requirement
5.25	Development should avoid significant harm to biodiversity conservation interests, including through appropriate mitigation and consideration of alternatives
5.33	Development proposals potentially provide many opportunities for building in beneficial biodiversity or geological features as part of good design. The applicant should maximise such opportunities in and around developments.
5.36	Appropriate mitigation measures are considered an integral part of a proposed development and the applicant should include

NNNPS paragraph	NNNPS requirement
	<p>these in their assessment, including identifying how these measures will be secured. The applicant should demonstrate that: they will seek to ensure that activities will be confined to the minimum areas required for works during construction;</p> <ul style="list-style-type: none"> • standard mitigation will be followed to ensure that risk of disturbance or damage to species or habitats is minimised during construction and operation; • developments and landscaping will be designed to provide green corridors and minimise habitat fragmentation; and • opportunities will be taken to enhance existing habitats and create new habitats within the site landscaping proposals.

1.1.4 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2021) sets out the government’s planning policies for England and how these should be applied, although it does not contain specific policies for nationally significant infrastructure projects¹. The requirements of the NPPF for this aspect are not materially different from the NNNPS, with a focus on protecting and enhancing sites of biodiversity value, minimising impacts on, and providing net gains for biodiversity, taking a strategic approach to maintaining and enhancing networks of habitats and green infrastructure.

1.1.5 In addition to the national policy set out in the NNNPS, the proposed scheme has also had regard to relevant local plans and policy. A summary of the local policies relevant to biodiversity are included in the Environmental Statement, Chapter 9 Biodiversity Table 9.5 [APP-076].

¹ See footnote 5 to the NPPF.

2 Survey data

2.1 Introduction

- 2.1.1 This section provides a summary of the available information on reptiles for the proposed scheme, collating data from desktop study and field surveys undertaken over three surveys. This data has been used to inform the reptile mitigation for the proposed scheme as presented in the DCO submission and will be used by the Applicant to develop the detailed design.
- 2.1.2 Where survey results indicate absence of reptiles from a particular area, data has been used with this technical note to refine the estimates of loss of reptile habitat presented within Chapter 9 of the Environmental Statement [APP-076].
- 2.1.3 The population size class estimates presented in Table 2.1 provide an indication of the quality of habitat within the Order Limits, as low quality habitats would generally be expected to support low population sizes, whereas good populations would indicate the habitat quality is high.

2.2 Desktop

- 2.2.1 A desk study was undertaken in 2020 to obtain information pertaining to reptiles in the study area and surrounding landscape. The extent of the data search included the length of the proposed scheme and an additional 2km buffer on either side. Essex Wildlife Trust Record Centre (EWTRC) and Essex Field Club (EFC) were contacted to provide desk study records of protected and notable species.
- 2.2.2 Data from EWTRC and EFC returned 115 records of adder *Vipera berus*, 217 records of common lizard *Zootoca vivipara*, 91 records of slow worm *Anguis fragilis* and 108 records of grass snake *Natrix helvetica* within 2km of the proposed scheme (see Annex A of Appendix 9.9 Reptile Survey Report [APP-133]). None of the adder records are located within Order Limits.

2.3 Field Study

- 2.3.1 Reptile surveys of optimal reptile habitats were conducted between August and October 2017, and in 2022 (see Figure 1) at 32 survey sites distributed throughout the Order Limits and adjacent to the proposed borrow pits. The baseline section of Chapter 9 of the Environmental Statement [APP-076] was based on the 2017 data as the 2022 surveys had not been completed at the time of submission of the Environmental Statement. Areas of optimal reptile habitat were identified from the results of the Extended Phase 1 Habitat Survey undertaken in 2017 (Appendix 9.8 Phase 1 Habitat Survey Report [APP-133]) and interpretation of habitat type and quality from aerial photographs. These included rough grassland and areas with interfaces of tall and short vegetation, such as dense scrub or tall ruderal vegetation around field margins. Arable habitat excluding field margins was considered of negligible potential for reptiles.
- 2.3.2 Optimal habitats within the footprint of the proposed scheme were surveyed for reptiles where access was permitted by landowners. The full survey

methodology and raw data are presented in Appendix 9.9 Reptile Survey Report [APP-133], Tetra Tech Reptile Survey Report [Rep2-034], and Supplementary Reptile Survey Report (Blue Mills) [REP2-028].

- 2.3.3 The Froglife guidance upon which these assessments is based does not define 'a site'. For the purposes of these surveys 'a site' was generally taken to mean a discrete location of refugia, often separated from the next by a field boundary.

2017 surveys

- 2.3.4 Three species of reptile were recorded across the survey area by Jacobs' ecologists during field surveys. These were common lizard, slow worm, and grass snake.
- 2.3.5 Peak counts of adults for each species of reptile were calculated for each survey site. This data was compared to values in Froglife (1999) to determine if populations were 'low', 'good' or 'exceptional'.
- 2.3.6 In 2017, a peak count of thirteen adult common lizards were recorded at survey Site 7 (Feering). A peak count of eight adult slow worms were recorded at survey Site 12 (Witham) and a peak count of one adult grass snake was recorded at survey Sites 9 (Kelvedon) and 18 (Boreham). The size of the reptile population varied from 'good' to 'low' across the proposed scheme (Figure 1).
- 2.3.7 All three species of reptile were recorded at survey Site 18, located near Boreham. Two species of reptile were recorded at survey Sites 7 (Feering), 8 (Marks Tey), 11 (Rivenhall End), 13 (Whetmead LNR), 17 (Hatfield Peverel), and 19 (Witham). A single species of reptile was recorded at Sites 5 (Kelvedon), 6 (Easthorpe Green), 9 (Kelvedon), 12 (Witham), 14 (Junction 21), 15 (Witham), 16 (Junction 21), 20 (Kelvedon), 21 (Feering) and 22 (Hatfield Peverel) and 25 (Kelvedon).
- 2.3.8 A database of incidental records of reptiles has been maintained throughout the duration of field surveys. Eight records of common lizard, one record of slow worm, one record of grass snake and two anecdotal (and unconfirmed) records of adder reported by members of the public were recorded between July 2016 and October 2017.

2020 surveys

- 2.3.9 An update to the field survey was not undertaken in 2020 as agreed with Natural England (in an email dated 10 December 2020) because habitats throughout the proposed scheme footprint remained largely the same as in 2017.
- 2.3.10 In 2020 five records of common lizard, one record of slow worm and four records of grass snake were recorded by ecological surveyors while undertaking surveys for other species. One record of grass snake was returned from a landowner.

2022 surveys

- 2.3.11 Surveys undertaken by National Highways in 2022 identified a low population of slow worms and common lizards on land affected by the gas main diversion

(survey area J29) (see Figure 1 of the Supplementary Reptile Survey Report (Blue Mills) [REP2-028]).

- 2.3.12 Surveys undertaken by Tetra Tech in 2022 identified grass snake, common lizard and slow worm within the survey areas. Five of the sites where reptiles were present (T11, T13, T16, T17 and T24) supported low populations of reptiles, and one site (T13) supported a good population of slow worm. All three species were recorded in site J16 which is therefore classed as a 'key reptile site' in accordance with Froglife (1999). The survey sites are presented in Figure 1 of the Tetra Tech Reptile Survey Report [REP2-034].

Summary of field surveys

- 2.3.13 When reviewed as a complete data set, the results of the reptile surveys are summarised as follows.
- 2.3.14 Of the four areas surveyed to the south-west of Boreham, no reptiles were recorded in three areas, however a good population of common lizard and low populations of slow worm and grass snake were recorded in the fourth area. To qualify as a key reptile site, a site must meet at least one of the criteria as defined by Froglife (1999), one of which is to support three or more reptile species. The fourth survey area is therefore a 'key' reptile site as defined by Froglife (1999).
- 2.3.15 This site was an area of road verge on the south bound carriageway, predominantly grassland with localised areas of scrub. The verge is adjacent to an arable field which contains a ditch. It is highly unlikely the extent of the survey area is the extent of the localised population and reptiles are likely to be present in other contiguous habitats along and connected to the highway verge, albeit most could not be safely surveyed.
- 2.3.16 The majority (eleven out of thirteen) of the sites between Hatfield Peverel and Witham surveyed for reptiles over the three survey periods supported reptiles. One of the two sites where reptiles were not recorded is now located outside the Order Limits following minor adjustments to the Order Limits during design development. Of the eleven sites that supported reptiles, 'good' common lizard populations were recorded at four of the sites surveyed, and 'good' slow worm populations were recorded at three of the sites surveyed. Otherwise, populations were low with only one site recording grass snakes.
- 2.3.17 The extent of refugia deployment was fairly limited for two key reasons – changes to the Order Limits from 2017 to the date of DCO submission and restricted permissions for land access. For example, in 2017 refugia were only deployed in a localised area within a much wider area of suitable habitat which otherwise would have been surveyed had access been permitted, and so it is likely that the population of reptiles extends beyond the records shown for the survey area into the wider habitat. Presence of reptiles was assumed in areas which could not be surveyed where suitable reptile habitat was present as results for areas which could be surveyed proved presence of reptiles along most of the proposed scheme within similar and connected habitats.
- 2.3.18 Another cluster of survey sites and records is located between Rivenhall End and Kelvedon. Of the eight sites surveyed across the three survey periods,

seven were positive for reptiles. An area south-west of Borrow Pit I was identified as a 'key' reptile site as defined by Froglife 1999 due to the fact it supports three reptile species. Slow worm were only recorded to the north of the existing A12 whereas grass snake and common lizard were recorded to the north and south. Only a single population of these species was sufficiently large to be classed as 'good' (common lizard), whereas other populations of slow worm, common lizard and grass snake were classed as 'low'.

- 2.3.19 Further common lizard populations were recorded south and north-east of Feering, and south of Marks Tey, both north and south of the carriage at these locations. The population of common lizard north-east of Feering and one of the populations south of Marks Tey were 'good', the remainder were 'low'. Both 'good' sites also supported 'low' populations of slow worm.

Table 2-1 Summary of reptile survey results ('-' denotes no reptiles recorded)

Location	Survey area	Survey Years	Common lizard	Slow worm	Grass snake	Key reptile site
South of Boreham	T1	2022	-	-	-	-
	J23	2017	-	-	-	-
	T3	2022	-	-	-	-
	J18	2017	Good	Low	Low	Yes
Hatfield Peverel to Witham – north of A12	J17		Low	Low	-	-
	J12 / T13	2017 / 2022	-	Good	-	-
Hatfield Peverel to Witham – south of A12	J22	2017	-	-	Low	-
	J16	2017	Good	-	-	-
	J14	2017	Good	-	-	-
	J15 / T11	2017 / 2022	Low	-	-	-
	J10	2017	-	-	-	-
	J19	2017	Good	Good	-	-
	J29	2022	Low	Low	-	-
	J13	2017	Good	Good	-	-
	T16	2022	Low	Low	Low	Yes
	J11	2017	Low	Low	-	-

Location	Survey area	Survey Years	Common lizard	Slow worm	Grass snake	Key reptile site
Rivenhall End to Kelvedon	T17	2022	Low	-	-	-
	J25	2017	Low	-	-	-
	T15	2022	-	-	-	-
	J9	2017	-	-	Low	-
	J5	2017	Good	-	-	-
	J20	2017	Low	-	-	-
South of Feering	J3	2017	-	-	-	-
	J27	2017	-	-	-	-
	J21	2017	Low	-	-	-
North-east of Feering	T24/J7	2017 / 2022	Good (2017) / None recorded (2022)	Low (2017) / None recorded (2022)	-	-
Easthorpe Road to Junction 25	J8/T27	2017 / 2022	Good (2017) / Low (2022)	Low (2017) / None recorded (2022)	-	-
	J6	2017	Low	-	-	-
	J2	2017	-	-	-	-
	J26	2017	-	-	-	-
	T28	2022	-	-	-	-
	J1	2017	-	-	-	-

2.3.20 In summary, discounting sites 24 and 28 from 2017 which are now outside the Order Limits, of the 32 areas surveyed (**Error! Reference source not found.**), reptiles were confirmed present within 21 of them. Nine of the 21 sites supported at least a 'good' population of one reptile species (and one of the nine sites (J18) was a key reptile site (i.e. supported all three reptile species)). The other 12 of the 21 sites supported only low populations of reptiles, although one site (T16) was a key site for reptiles as it supported (low) populations for all three reptile species.

Reptile mitigation

- 2.3.21 The majority of ecological mitigation areas are included within the design for the proposed scheme for the purpose of reptile mitigation. Reptile mitigation would include the creation of new habitat to provide receptor sites.
- 2.3.22 Prior to construction activities within a particular section of the Order Limits, reptiles would be captured by competent and suitably experienced ecologists and moved (translocated) to a receptor site. This would prevent reptiles being killed or injured during construction. The areas of new habitat created within receptor areas would mitigate for the areas of habitat lost within the construction footprint. The receptor sites are located within ecological mitigation areas as shown on the Environmental Masterplan [APP-086 to APP-088].
- 2.3.23 Construction of the proposed scheme would be preceded by site clearance which would be the first activity which would impact reptiles. Translocation would be undertaken prior to site clearance.
- 2.3.24 Newly created habitats within the mitigation areas would take up to one year to mature to a sufficient quality to be suitable for reptiles. Therefore, the Applicant has opted to create some receptor sites (mitigation areas) in advance of DCO consent (subject to separate planning consents where required and subject to landowner agreement). This would enable site clearance for parts of the Order Limits to commence soon after DCO consent as newly created habitats would have had sufficient time to mature and so would be ready to receive reptiles from construction areas.
- 2.3.25 Advanced mitigation areas are within plots 1/11a, 2/12g, 4/9a, 5/36a, 5/12c, 5/13a, 6/12b, 6/18c, 7/10j, 7/10i, 8/45b, 10/20e, 11/4c, 11/4d, 12/9a, 15/15a, 17/3c, and 18/6b as shown on the Land Plans [APP-018] and detailed within the Book of Reference [APP-044]. Where planning consent or landowner agreement is not obtained in advance these areas would be created at the start of the construction phase, following the grant of the DCO. In this circumstance clearance of sections of the proposed scheme would be delayed in order to allow sufficient time for establishment of habitats. A programme is being developed by the detailed design team to determine which are the higher and lower priority areas for site clearance should this eventuality arise.
- 2.3.26 A small number of mitigation areas (Plots 11/8a and 11/4k) would be created during construction, following the construction of adjacent attenuation ponds. When the relevant localised construction activity has been completed, the mitigation areas would be created to receive reptiles from other parts of the proposed scheme which are to be cleared later in the construction programme.

Badger mitigation

- 2.3.27 Areas required for badger mitigation would be created in advance of DCO consent (subject to landowner agreement) to allow time for badgers to find the artificial setts prior to exclusion of the existing setts. The locations of these areas are confidential due to the legal protection afforded to this species. Where planning consent or landowner agreement is not obtained in advance these areas would be created at the start of the construction phase, following the grant of the DCO.

- 2.3.28 The Applicant has opted to create the mitigation areas in advance of the grant of the DCO (subject to landowner agreement) because a period of time is required to enable the badger clan from the affected main setts to locate and begin to use the artificial setts. Once the DCO has been granted and the Applicant has sufficient evidence (for example through monitoring with wildlife cameras) that badgers are using the artificial sett, a licence application for the closure of the main sett would be submitted to Natural England. Only once the licence has been granted would construction activities be undertaken in the vicinity of the existing main setts. Therefore, by creating mitigation areas in advance of the grant of the DCO, construction in the vicinity of the main setts could begin earlier in the construction programme.

Perry's Wood

- 2.3.29 Woodland to be planted to offset operational impacts due to changes in nitrogen deposition on Perry's Wood LWS and Ancient Woodland would be created within Plot 7/15a post construction. The timing of this mitigation is determined by the requirement for the land to be used for borrow pits.

Whetmead LNR / LWS

- 2.3.30 Land within Plot 8/45b is being used to offset ecological impacts to Whetmead LNR/LWS. Part of this land is also being used for reptile mitigation, and so for the reasons outlined above, and subject to a separate planning consent and landowner agreement, the ecological mitigation would be created in advance of construction. Where planning consent or landowner agreement is not obtained in advance, this area would be created at the start of the construction phase following granting of the DCO.
- 2.3.31 The more western part of Plot 8/45b which contains woodland planting would be created post construction when landscaping of the wider Order Limits is undertaken. This is due to the fact that construction activities such as creation on an attenuation pond, are required within this area.

3 Calculation of loss of habitats

- 3.1.1 Paragraph 9.11.28 of Chapter 9 of the Environmental Statement [APP-076] states the loss of reptile habitats due to construction of the proposed scheme would be a total of 154.5ha², comprising 86.66ha of grassland, 44.78ha of woodland and forest, and 23.06ha of heathland and scrub. These numbers have been derived from the Defra 3.0 Biodiversity Net Gain Calculator. As per Appendix 9.14 Biodiversity Net Gain Report [APP-138], areas of lost habitat were calculated by subtracting the areas of retained habitats as identified using the Retained and Removed Vegetation Plans [APP-035 and APP-036]. It is acknowledged that the Retained and Removed Vegetation Plans are based upon a canopy model, and therefore only show the retention of trees and scrub and not underlying habitats such as grassland. This will result in a precautionary estimate of reptile habitat loss as any retained low-lying habitat surrounding this vegetation (which may include areas of reptile habitat) was not identified as retained in the Metric. Therefore, the estimated 154.5ha of reptile habitat loss is precautionary. This approach was considered to be appropriate for presenting a 'worst-case' scenario within the Environmental Statement and the Biodiversity Net Gain Calculations.
- 3.1.2 Standing Advice from Natural England advises receptor sites '*[are] at least the same size as the habitat that will be lost, and larger if the lost habitat is of high quality*'. The total area to be provided by the mitigation areas for the proposed scheme would be 48.67ha (NB this figure differs slightly to the 48.83ha previously stated by the Applicant due to the Applicant reducing the size of one of the mitigation areas by 0.16ha to avoid a small overlap between the mitigation area and another development that is under construction, thereby avoiding any conflict). This would be achieved by planting of grassland, scrub and woodland, provision of ponds and ditches, and the creation of basking sites, egg-laying habitat for grass snakes, hibernation sites (hibernacula) and log piles to be undertaken in advance of any translocation works (Chapter 9 of the Environmental Statement [APP-076] and as committed to in B143 of the Register of Environmental Commitments in the first iteration Environmental Statement [APP-185]).
- 3.1.3 Although the area of habitat within the mitigation areas is lower than the area of reptile habitat to be lost this is considered appropriate as the habitats across the proposed scheme were generally of low quality for reptiles as evidenced by the low populations recorded during surveys. Whereas the quality of habitats in receptor sites would be much higher than in donor sites as it would be designed to include features which are required by reptiles (Edgar *et al.* 2010), for example south facing banks for basking, hibernacula to provide habitats with a stable temperature to overwinter, grassland and ponds for foraging, log piles to provide cover during the active period and a diverse habitat structure.
- 3.1.4 Following completion of construction of the proposed scheme and implementation of the landscaping scheme as shown on the Environmental

² NB: There is a calculation error within paragraph 9.11.28 which states 123.5ha.

Masterplan [APP-086 to APP-088] there would be a series of high quality habitat parcels along the length of the proposed scheme (the reptile receptor sites) which would act as stepping stones across the landscape. These would be connected by habitats such as the grassland along the new road verges and around attenuation ponds allowing the movement of reptiles between the core habitat parcels. This would ensure the favourable conservation status of reptiles.

4 Principles for suitable mitigation areas

4.1.1 As stated in Section 9.10 of Chapter 9 Biodiversity in the Environmental Statement [APP-076], the environment team worked in close collaboration with the infrastructure design team to avoid or reduce environmental impacts through the proposed scheme design.

4.2 Natural England Standing Advice – Reptiles

4.2.1 In their standing advice³, Natural England states measures to avoid impacts to reptiles.

4.2.2 Natural England's standing advice also states that:

Mitigation and compensation measures could include:

- *using temporary, secure reptile fencing to prevent reptiles moving into harmful areas*
- *encourage displacement by making habitats unsuitable, for example by cutting vegetation in stages during the active season*
- *creating links to other habitats*
- *creating new habitat*
- *improving existing habitat*

Translocation

If there is no reasonable alternative habitat close by, the proposal could include capturing reptiles and moving them to a different location, known as translocation. The new habitat must be capable of supporting reptiles. The proposal should include evidence that translocation would benefit reptile conservation. Translocation should be considered as a last resort.

If translocating reptiles, the proposal needs a receptor site:

- *close to the development site, and within the same Local Planning Authority if possible*
- *that is at least the same size as the habitat that will be lost, and larger if the lost habitat is of high quality*
- *that will serve the same function as the habitat to be lost, for example it has hibernation features*
- *with similar habitat to the area that will be lost, including water bodies*
- *that does not currently support the same species, but can be improved to make it suitable*

³ <https://www.gov.uk/guidance/reptiles-advice-for-making-planning-decisions#assess-the-effect-of-development-on-reptiles>

- *that will be safe from future development and managed in the long term*

The proposal could introduce small numbers of reptiles to an area with an existing population if the habitat is improved to support the increased numbers. It must allow enough time for new habitats to become suitable for the reptiles before capturing them.

4.3 Reptile Habitat Management Handbook

4.3.1 The Reptile Habitat Management Handbook (Edgar *et al.* 2010), summaries the key habitat requirements for reptiles as:

- Warmth
- Structural complexity, and
- Habitat connectivity

4.3.2 Warmth and structural complexity would be of relevance to the detailed design of individual mitigation areas and do not relate to the selection of sites, however habitat is of relevance and as mentioned above was one of the key general design principles. The periodic movement of individual animals between local populations effectively combines them into a larger metapopulation, increasing effective population size and viability. This is essential to support genetic diversity in the long term, avoiding the ill-effects of inbreeding. It also reduces the risk of populations becoming extinct due to locally catastrophic events, such as fire (Edgar *et al.* 2010).

4.4 General design principles

Reptiles

4.4.1 Displacement of reptiles was considered to mitigate the impacts of the proposed scheme; however, this was not considered appropriate for the majority of the construction phase as this would likely result in the movement of animals from within the Order Limits into adjacent habitats which may either be unsuitable to support reptiles or would already be at carrying capacity and so would be ineffective at sustaining additional reptiles.

4.4.2 The design principles applied with respect to reptiles were based around Natural England's standing advice (see Section 4.1 above) and professional experience. In particular for this proposed scheme, receptor sites were identified on the basis of the following factors.

- Future development – receptor sites had to be located in land which is not subject to proposals for future development in order to avoid impacting the same populations more than once.
- Location – due to the size and linear nature of the proposed scheme it was important to identify multiple receptor sites along the length of the proposed scheme, with some either side of the existing A12 for practical and welfare reasons during translocation (i.e., so reptiles could be moved quickly over relatively short distances from donor to receptor site). Other concerns relate

to the potential for detrimental impacts at the receptor site (either on the translocated animals or any already present) due to genetic differences, pathogen transfer and local adaptation (Natural England, 2011).

- Location – the mitigation areas also need to be created in advance of the construction that will result in the impact to the species occurring, to allow newly created and enhanced habitats to become sufficiently established prior to introducing the animals. It was therefore not possible to make use of areas being acquired temporarily for construction, or residual land around areas of hard engineering such as borrow pits, unless the design team could guarantee these would be unaffected by construction activities.
- Condition – receptor sites had to be of suboptimal or negligible potential for reptiles with an existing low or negligible reptile populations, and therefore there were minimal impacts to existing populations and the quality of habitats could be easily improved to increase the carrying capacity of the site for reptiles. In the context of this proposed scheme, it meant receptors sites were arable or improved grassland, with the exception of Plot 7/10j which comprises 0.87ha of semi-improved grassland.
- Connectivity – receptor sites had to be in a location where there was existing connectivity with reptile habitat in the wider landscape, or in a location where new planting could be created to provide this connectivity.
- Flood plain – a large proportion of the land within each mitigation area had to sit outside the flood plain so that reptiles could inhabit the area all year round without the risk of drowning and being able to move to higher ground.

Badgers

4.4.3 The design principles applied with respect to badgers were primarily based around professional judgement and consultation with Natural England (during meetings held on 26 November 2020 and 18 February 2021). In particular for this proposed scheme, locations for artificial setts were identified on the basis of the following.

- Flood plain – artificial setts had to be located outside the floodplain, firstly to maximise suitability for badgers so that setts were not in the groundwater zone and liable to flooding, and secondly because construction within the flood plain would be contrary to the requirements of other stakeholders, in particular the Environment Agency.
- Future development – artificial setts had to be located in land which is not subject to proposals for future development in order to avoid impacting the same badger clan more than once.
- Existing structures – locations where there is the potential for badgers to cause damage to property or infrastructure when creating new tunnels were discounted from consideration.

- Disturbance – locations where there was a high chance of human disturbance, for example near public footpaths, were discounted.
- Proximity to existing sett – taking the above into account, locations as close to the existing sett(s) as possible were selected to facilitate the relocation of badgers within their existing territory.

4.5 On-site vs off-site mitigation

4.5.1 Whilst it is possible to deliver mitigation for some species, for example great crested newts (GCN), through strategic landscape scale mitigation as is being done for the proposed scheme through contributions to Natural England's GCN District Level Licencing Scheme, the same mechanism does not currently exist for reptiles. The district level licence for great crested newts provides a mechanism for avoiding breach of the legislation afforded to great crested newts by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations (2019) as amended. There are however no mitigation licences for grass snakes, common lizards or slow worms and so it would be impossible for National Highways to discharge its legal responsibilities with respect to reptiles in the same way as is possible for GCN, and so National Highways has no alternative but to undertake trapping and translocation of reptiles to prevent killing and injury of animals.

4.5.2 Whilst it is feasible to consider offsite receptor areas, in the absence of a wider strategic scheme to feed into, it is considered the best option is to retain populations locally. The proposed mitigation would create a local network of receptor sites which would act as stepping stones through the landscape, connected by the verges of the A12 and other landscaping (such as planting around attenuation ponds). An offsite receptor area would not have the benefit of the connectivity with these habitats, and it is therefore assessed that offsite mitigation would be less beneficial to maintaining the local conservation status of reptiles

4.6 Feedback from other consultees

4.6.1 During the statutory consultation process, a number of proposed ecological mitigation areas were challenged by landowners, requiring a review of the location and scale of the proposed land take. Stakeholders were consulted to discuss options. Each location was then reviewed in-line with the stakeholder comments, and consideration given to the size and location of each area, as well as the type of mitigation habitat proposed within each area. Table 3.4 in Chapter 3: Assessment of Alternatives of the Environmental Statement [APP-070] summarises how feedback from stakeholders influenced the design. Extracts from Table 3.4 are included within Section 5 of this document where relevant to individual mitigation areas.

5 Selection of ecological mitigation areas

5.1 Reptiles

5.1.1 The design principles applied with respect to reptiles were primarily based around Natural England's standing advice (see Section 3.2 above). In particular for this proposed scheme, receptor sites were identified on the basis of location, condition and connectivity. It was important for receptor sites to be well-distributed across the proposed scheme within close proximity to the existing A12 to minimise the distance between donor and receptor sites, and for mitigation areas to be created in advance of construction to allow newly created and enhanced habitats to become sufficiently established prior to use. Receptor sites also had to be of low value to reptiles currently, to maximise opportunities to enhance the sites without impacting existing reptile populations. Consideration was also given to identifying sites within whole fields to avoid affecting a larger number of landowners than necessary and avoiding areas designated for development, as well as avoiding land within Flood Zones 2 and 3 as far as practicable.

Locations of receptor sites

5.1.2 The plot numbers used in the section below are taken from the Land Plans [APP-018]. NB: the first number represents the sheet number within the Land Plans, and the second number and letter represent the plot within that sheet.

Plot 1/11a

5.1.3 There are two ecological mitigation areas within Plot 1/11a, referred to here as Plot 1/11a south and Plot 1/11a north (Plate 1). Of relevance to the selection of these mitigation areas are the results of the preconstruction water vole surveys (Appendix 9.10 Riparian Mammal Survey Report of the Environmental Statement [APP-134]) which recorded low levels of water vole activity within two ditches in this part of the proposed scheme. Chapter 9 Biodiversity of the Environmental Statement [APP-076] assesses the effects of construction of the proposed scheme on water vole. As per paragraphs 9.11.178, 9.11.185 and 9.11.186, due to the distance between the burrows identified during the baseline field surveys and the nearest construction activity there would be no impacts from mortality or injury of water vole, nor would there be an impact from disturbance, therefore mitigation for water voles would not be required.

5.1.4 However, as per paragraph 9.11.179, the sizes of water vole populations can fluctuate significantly, particularly should management of American mink *Neovison vison* (a predator of water vole) be undertaken within the river catchment, and therefore the baseline may change in the period up to construction. Pre-construction surveys would be undertaken for all watercourses and ditches with potential to support water vole within the Order Limits. Where practicable, the design of the proposed scheme would be modified to avoid impacts to any new burrows, for example through micro-siting of haul roads and access tracks. Where impacts could not be avoided, a licence would be sought from Natural England for the displacement or translocation of water voles as appropriate.

5.1.5 Both of the proposed mitigation areas to the south of junction 19 (shown on Sheet 1 of 21 of the Environmental Masterplan [APP-086] and presented on Plate 1) were selected for reptiles because they could also be used as receptor sites for water vole mitigation if required at a later date should the results of preconstruction surveys shown water vole numbers had increased and therefore mitigation was required to avoid impacts and/or to ensure legal compliance. By using the mitigation areas for both species there would be a reduction in the overall land take compared to having separate reptile and water vole mitigation areas. A further mitigation area which combines reptile mitigation with water vole enhancements on this same basis is provided on Plot 8/45b south of the River Brain and Whetmead LNR/LWS, which is discussed later in this report.

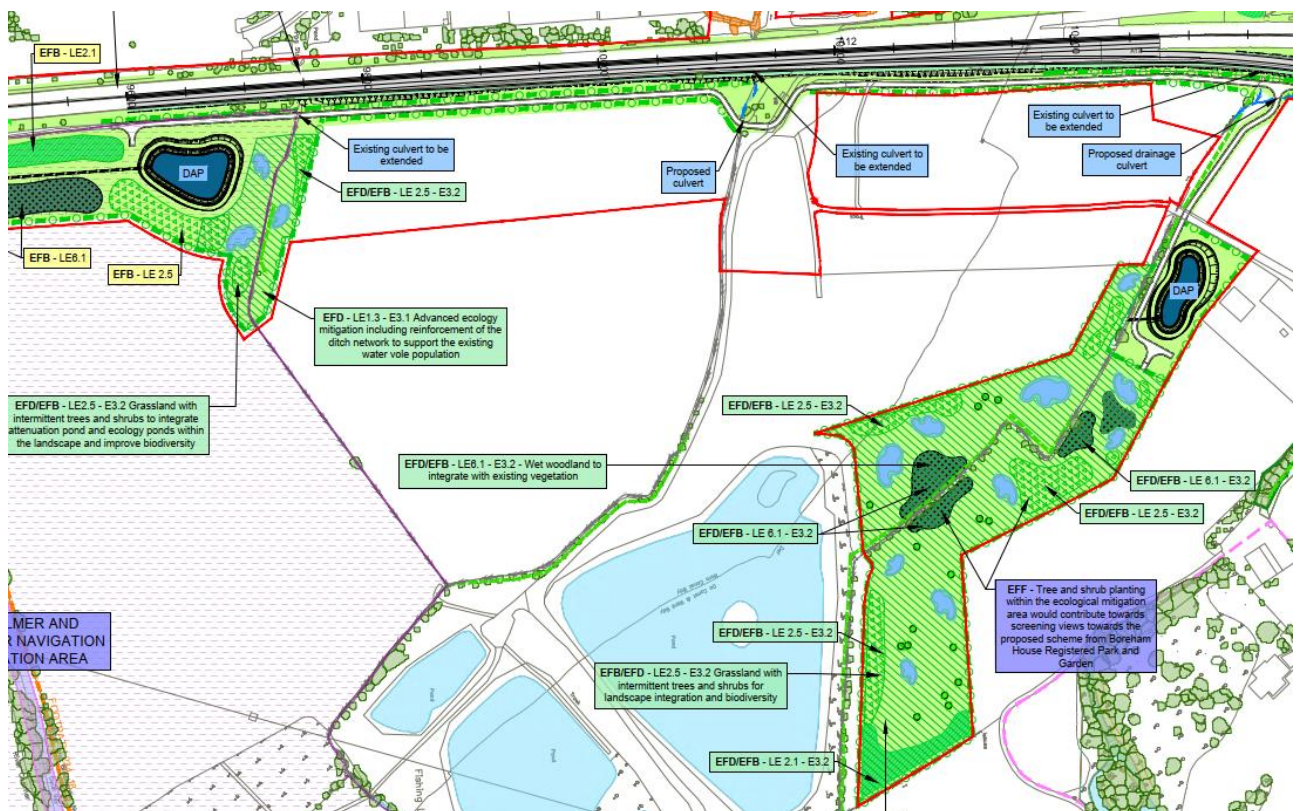


Plate 1 Plot 1/11a taken from Sheet 1 of 21 of the Environmental Masterplan Part 1 [APP-086]

- 5.1.6** The locations of these mitigation areas relate to the presence of an existing ditch network and the records of low levels of water vole activity from the baseline surveys. Siting them south of Junction 19 is also in accordance with one of the overarching principles to the mitigation design 'to identify multiple receptor sites along the length of the proposed scheme' (see Section 5.1 above). Translocating reptiles here would help increase the local distribution of grass snake, common lizard and slow worm.
- 5.1.7** Should the results of the preconstruction surveys indicate that water vole mitigation is still not required, the habitats created would still provide mitigation for reptiles and therefore acquisition of the land is still required. The habitats

created would also form part of the biodiversity enhancements provided by the scheme. NNNPS policy (paragraph 5.23) requires the Applicant to describe how the proposed scheme plans to conserve and enhance biodiversity conservation interests. In accordance with this policy the Applicant has sought opportunities to enhance biodiversity as described within Section 9.10 of Chapter 9 of the Environmental Statement [APP-076].

5.1.8 As per Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], feedback from the landowner has been taken into consideration in determining the location of these mitigation areas. Initially, a single, large mitigation area was proposed to link the ditches in which water vole had been recorded. Because of concerns raised by the landowner, and potential impacts on access to adjacent fields, alternative solutions were discussed during a meeting with the landowner, resulting in a reduction in size of the mitigation area, and the subsequent creation of a smaller, secondary area (Plot1/11a south), located further south along another part of the ditch network.

Plot 2/12g

5.1.9 This ecological mitigation area is immediately adjacent to reptile survey Site 18 (Appendix 9.9 Reptile Survey Report [APP-133]), an area of road verge which surveys have identified as a ‘key reptile site’, as defined by professional guidance (Froglife, 1999).

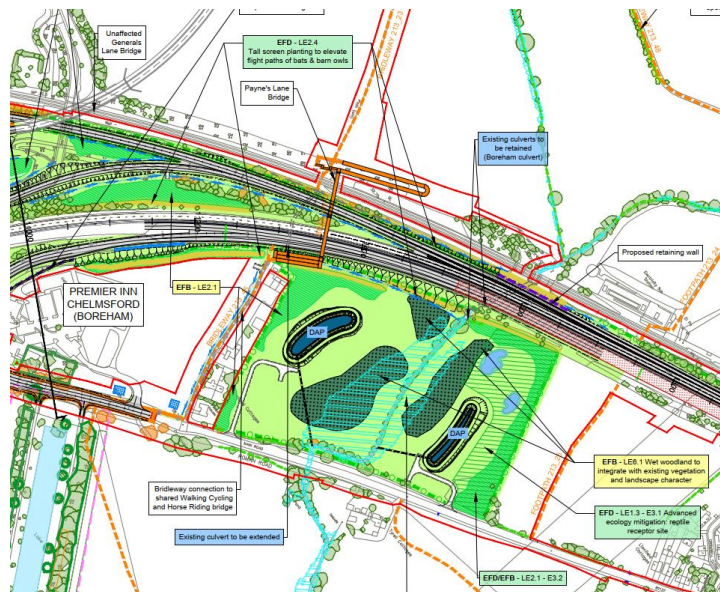


Plate 2 Plot 2/12g taken from Sheet 2 of 21 of the Environmental Masterplan Part 1 [APP-086]

5.1.10 Its location is therefore optimal for the preservation of an important population of reptiles within the local area. As per Chapter 3 Assessment of Alternatives in the Environmental Statement [APP-070], following consultation with the landowner the footprint of the attenuation pond adjacent to this mitigation area was reconfigured, allowing enough space to relocate the ecological mitigation area into its immediate surroundings, and thereby reducing the overall land required in this area.

Plot 4/9a, Plot 5/36a and Plot 5/12c

- 5.1.11 As per Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], originally a single large mitigation area was proposed to the north-east of the proposed new J21, sited between an attenuation pond and borrow pit E. The landowner wanted to retain as much land as possible in this location, and through discussion, this area was reduced in size, with the shortfall in mitigation habitat compensated by relocating it elsewhere within the same land ownership. As a result, two new areas were formed in land parcels located to the west of J21. The first site (Plots 4/9a and 5/36a) makes partial use of a field located between the existing A12 and railway line, immediately east of Terling Hall Road, and the second area (Plot 5/12c) would be located north of Bury Lane, in a triangular patch of land adjacent to the railway line (see Plate 3).



Plate 3 Plot 4/9a, Plot 5/36a and Plot 5/12c taken from Sheets 4 and 5 of 21 of the Environmental Masterplan Part 1 [APP-086]

- 5.1.12 The area to the west of the balancing pond as shown in Plate 3 was assessed as unsuitable due to the presence of Flood Zone 3 and woodland.
- 5.1.13 The locations of the mitigation areas are of particular benefit to reptiles due to the connectivity with the corridor of existing habitat along the railway immediately to the north. Both plots are also connected to the new verges of the proposed scheme, either directly (Plot 4/9a and 5/36a) or indirectly (Plot 5/12c) through connectivity with grassland around the attenuation pond immediately to the south, which in turn connects to the verges of the new A12, thus connecting to the wider landscape.
- 5.1.14 Lastly as well as having a benefit in terms of connectivity, the location of Plot 5/12c next to the attenuation pond and associated planting increased the overall area of available habitat for reptiles in the long term as the pond design would be sympathetic to reptiles.

Plot 5/13a

- 5.1.15 This area was chosen for reptile mitigation because it was also required for construction of a balancing pond for the proposed scheme. Placing the mitigation area adjacent to it had two benefits: it made use of the remaining

area within the land parcel, but also from an ecological perspective would in the long term (post construction) enable reptiles to use the areas of grassland planting around the attenuation pond.

- 5.1.16 In addition, Plot 5/13a was preferable over an area of semi-improved grassland to the east as semi-improved grassland has higher ecological value and the area would be separated from the attenuation pond by the River Ter, reducing the overall area of continuous grassland available for reptiles in the long term. Similarly, Plot 5/13a was preferable to an area of improved grassland to the west as this would be separated from the attenuation pond by a strip of broadleaved woodland and so the overall area of continuous grassland would be reduced.



Plate 4 Plot 5/13a taken from Sheet 5 of 21 of the Environmental Masterplan Part 1 [APP-086]

- 5.1.17 The attenuation pond would also provide a benefit for reptiles, in particular grass snakes which predate on amphibians which may breed in the ponds, as drainage features such as attenuation ponds and ditches would incorporate wildlife-friendly design such as varying depths including shallow margins, native wetland plant species and macrophytes, and be surrounded by wildflower and grassland areas seeded from a species-rich seed mix, where practicable (paragraph 9.10.11 Chapter 9 Biodiversity of the Environmental Statement [APP-076]).

Plot 6/12b

- 5.1.18 This parcel of land was selected primarily because it made good use of a fragment within the Order Limits which was not required for construction (NB only a small area for Plot 6/12b is proposed for ecological mitigation).

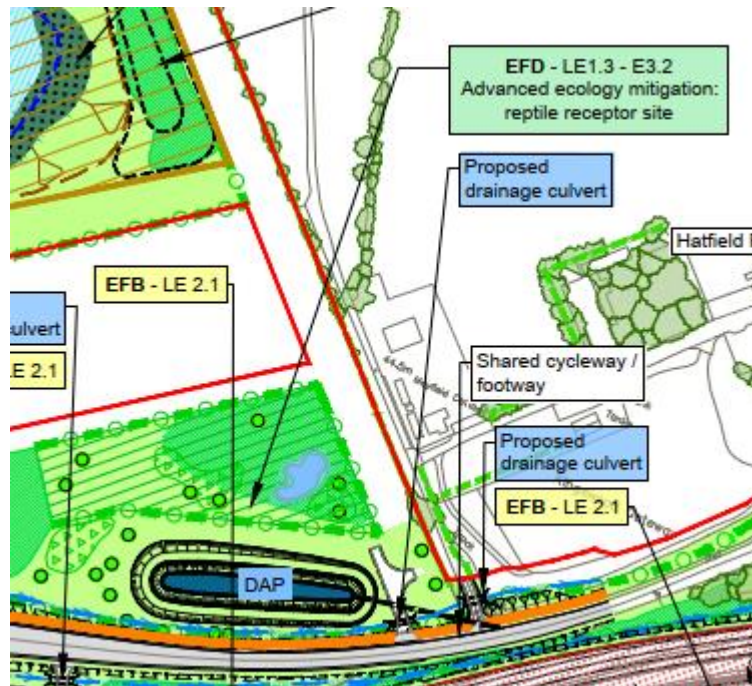


Plate 5 Plot 6/12b taken from Sheet 6 of 21 of the Environmental Masterplan Part 1 [APP-086]

- 5.1.19 Post construction, its continuity with planting around the attenuation pond immediately to the south would be beneficial for reptiles by increasing the overall area of suitable terrestrial habitat available and because reptiles (in particular grass snakes) could benefit from the attenuation pond for predated amphibian species. There is also connectivity through this planting to the new A12 verges and therefore the wider landscape.

Plot 6/18c

- 5.1.20 As per Chapter 3 Assessment of Alternatives [APP-070] a single, large mitigation area was proposed to the south-west of the proposed new J21, adjacent to proposed attenuation ponds. Concern was raised by the landowner regarding possible future use of the land. This land could also be used for a potential future link road connecting Maldon Road to J21. The mitigation area was therefore relocated to the south-east of J21. This layout has been included within the proposed scheme design and is shown on sheet 6 of the General Arrangement Plans [APP-021].

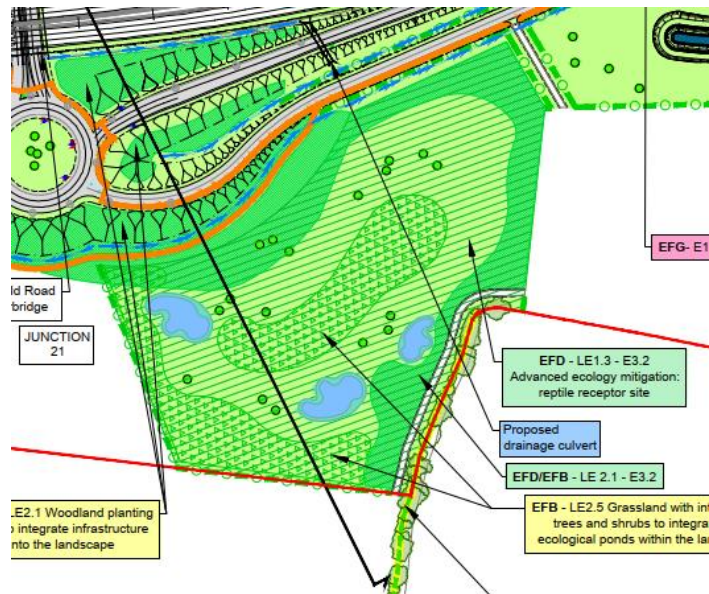


Plate 6 Plot 6/18c taken from Sheet 6 of 21 of the Environmental Masterplan Part 1 [APP-086]

- 5.1.21 The location of the mitigation area in this part of the proposed scheme is beneficial to reptiles because it would be well connected to grassland habitat surrounding attenuation ponds, plus the network of verges around junction 21 which would have some connectivity through culverts. By selecting this land plot as a receptor site, the areas of habitat available to reptiles in the long term would be increased.

Plot 7/10j and Plot 7/10i

- 5.1.22 As stated in Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], two ecological mitigation areas were proposed either side of Howbridge Hall Road (which runs parallel to the existing A12, joining the B1018 Maldon Road to the south) in areas of habitat with the potential to be improved for reptiles, which were unaffected by construction activities. The landowner asked if land take could be reduced as much as possible on the western side of the road to leave them with a more usable field. Alternative land take layouts were proposed around this location, with several iterations discussed with the landowner. The current proposal has removed the plot completely from the field on the western side of Howbridge Hall Road and has increased the area to the east as much as possible by re-aligning the access track within this land parcel and around the proposed attenuation pond. Not all the ecological mitigation could be accommodated within this space however, so through discussions with the landowner, an alternative part of their field – located slightly further south (Plot number 7/10j) – which was of a suitable size would be used to make up the shortfall. This layout has been included within the proposed scheme design and is shown on sheets 7 and 8 of the General Arrangement Plans [APP-022].

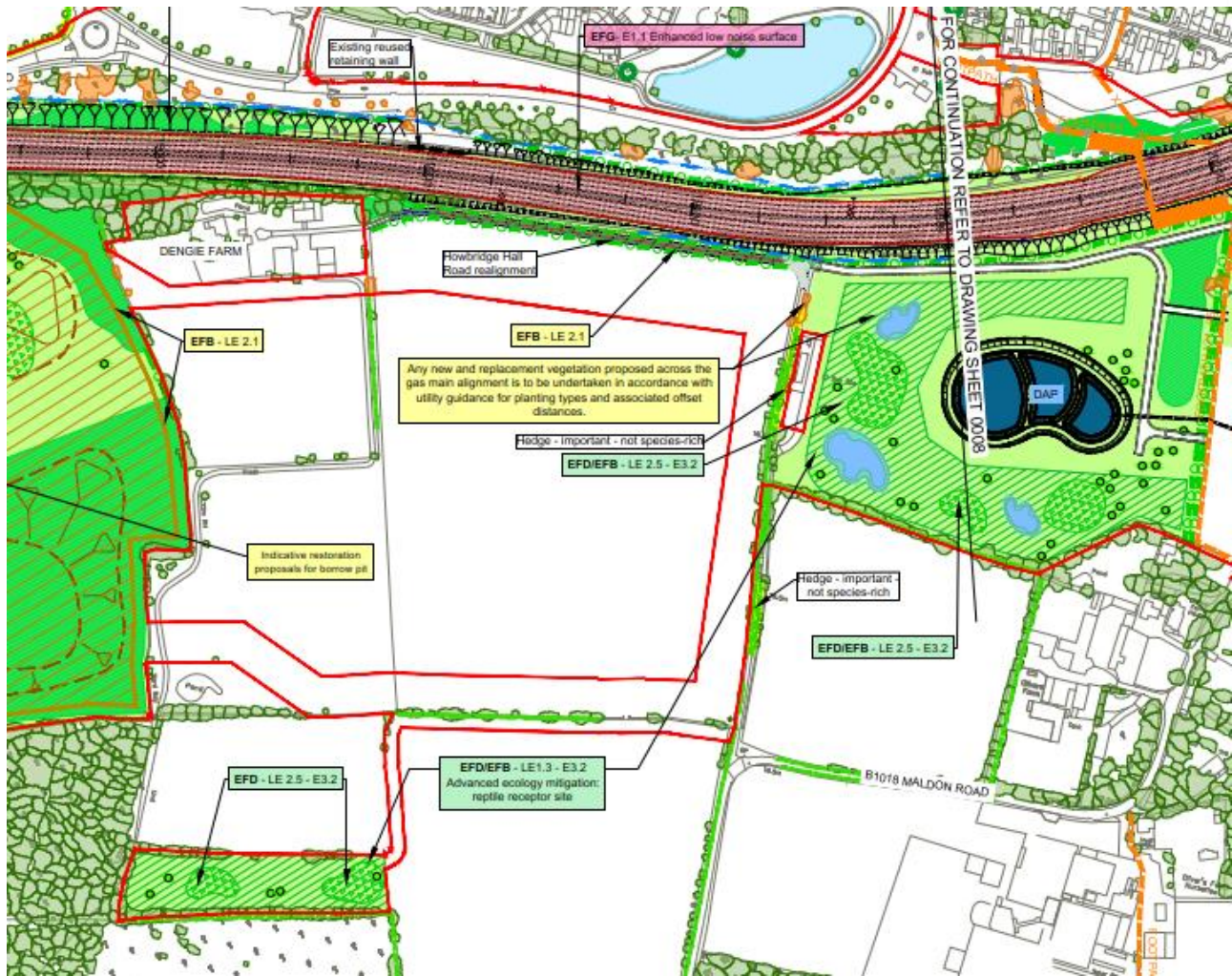


Plate 7 Plot 7/10j and Plot 7/10i taken from Sheet 7 of 21 of the Environmental Masterplan Part 1 [APP-086]

5.1.23 The benefit of this arrangement from an ecological perspective is the connectivity with woodland and grassland around Plot number 7/10j, and the connectivity with planting around the attenuation pond and along highway verges (Plot number 7/10i). This would mean in the long term (post construction) the total area of suitable habitat available to reptiles would be larger, and the connectivity would enable them to disperse into the wider landscape. The attenuation pond may also provide a source of amphibian prey for grass snakes.

Plot 8/45b

5.1.24 Plot 8/4b provides mitigation for reptiles and impacts to Whetmead LNR/LWS. It is discussed in section 5.2 of this report.

Plot 10/20e

5.1.25 As stated in Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], three individual mitigation areas were proposed south of J22. The northernmost area was reconfigured following a request from the landowner to move the area as far away from their property as possible,

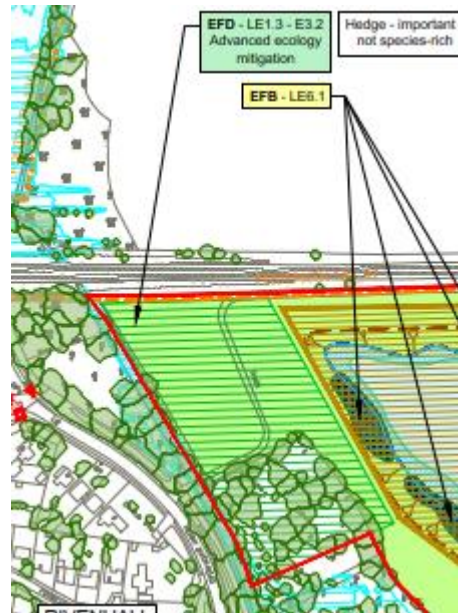


Plate 10 Plot 11/4c and 11/8d taken from Sheet 11 of 21 of the Environmental Masterplan Part 1 [APP-087]

Plot 11/8a and Plot 11/4k

- 5.1.28 As stated in Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], a single mitigation area was proposed adjacent to the land south of the proposed A12 and east of Braxted Road. A request was made by the landowner to remove the southern portion of this mitigation area. The mitigation area was therefore split into two smaller areas, with the footprint removed from the original area relocated into an area on the northern side of the Rivenhall Brook. The landowner made a further request to free as much of the original land parcel as possible, so the remaining area to the south was relocated eastwards and reconfigured to sit around the proposed attenuation pond. This layout has been included within the proposed scheme design and is shown on sheet 11 of the General Arrangement Plans [APP-023].

5.1.29

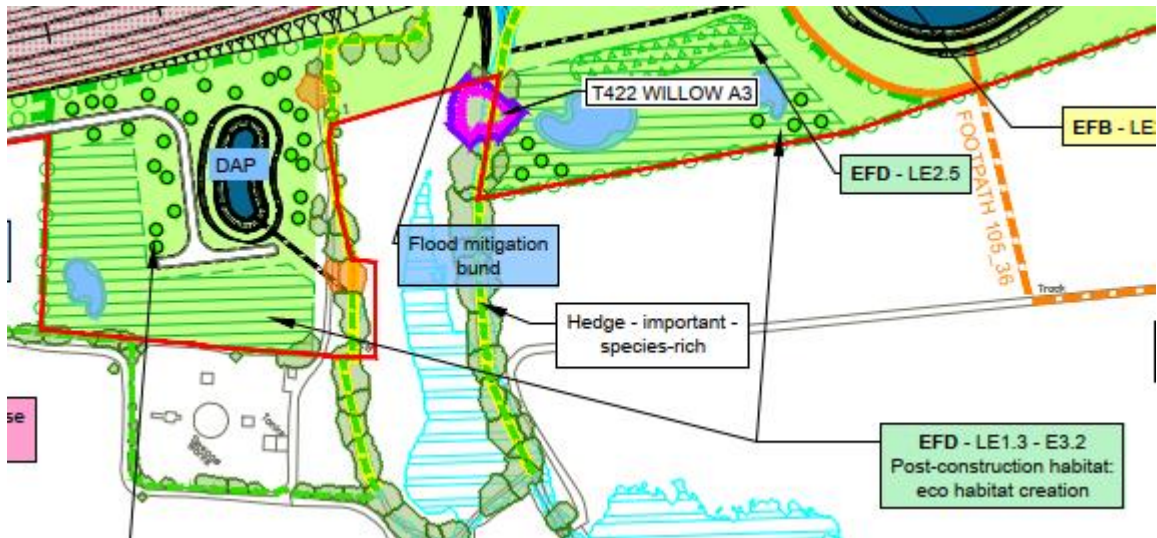


Plate 11 Plot 11/8a and Plot 11/4k taken from Sheet 11 of 21 of the Environmental Masterplan Part 1 [APP-087]

- 5.1.30** The benefit of this arrangement from an ecological perspective is the connectivity with retained grassland between the two mitigation areas, and the connectivity with planting around the attenuation pond and along the highway verges. This would increase the overall area and quality of habitat for reptiles within the long term. In addition, by clustering the mitigation areas around other highway features (in this case, attenuation ponds), there would be less overall land-take while still providing a large area through connectivity with nearby sites.

Plot 12/9a

- 5.1.31** As stated in Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], a single, large mitigation area was proposed running parallel to the new Essex County Fire and Rescue Service Headquarters access road on the southern side of the A12. A landowner request was made to relocate this plot to allow for better use of their property. The mitigation area was therefore relocated to the south-east side of the land parcel and is now located along the edge of the River Blackwater willow plantation, wrapping up the north-east side around a proposed attenuation pond. This is shown on sheet 12 of the General Arrangement Plans [APP-023].

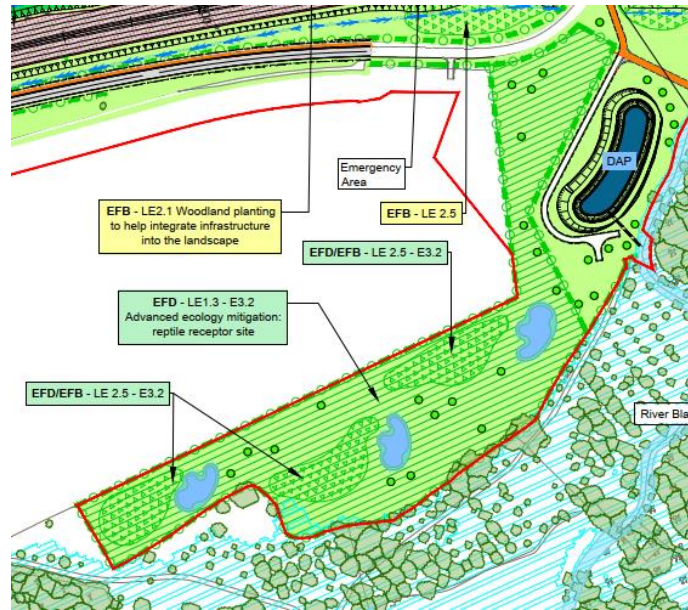


Plate 12 Plot 12/9a taken from Sheet 12 of 21 of the Environmental Masterplan Part 1 [APP-087]

5.1.32 This provides continuity with the willow plantation and corridor of habitats along the River Blackwater which would be of benefit to reptiles as well as other protected and notable species (i.e., water vole).

Plot 15/15a

5.1.33 As stated in Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], a single mitigation area was proposed adjacent to Prested Hall. A landowner request was made to look at the extent of land take across the wider Prested Hall setting. As the mitigation area would be permanent land take, it was decided to move this to the field parcel closer to the A12 corridor, freeing up the majority of the field parcel closest to Prested Hall. This layout has been included within the proposed scheme design and is shown on sheet 15 of the General Arrangement Plans [APP-023].

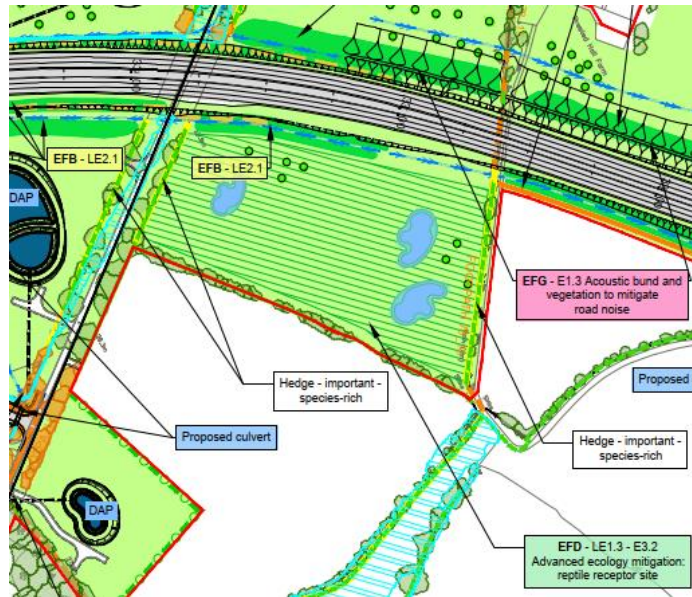


Plate 13 Plot 15/15a taken from Sheet 15 of 21 of the Environmental Masterplan Part 1 [APP-088]

5.1.34 This location provides connectivity with habitats along the corridor of the new A12 verges and with planting around the attenuation ponds to the west of Prested Hall Drive. The mitigation area would also be connected to an area of habitat around Prested Hall via the grassland verges along the current Prested Hall Drive and grassland around the attenuation ponds.

Plot 17/3c

5.1.35 This ecological mitigation area is located immediately adjacent to an attenuation pond and associated grassland planting.

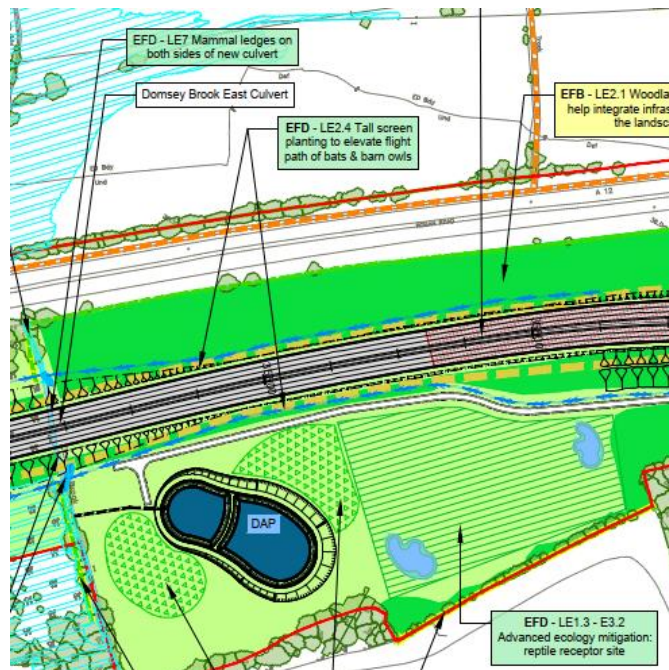


Plate 14 Plot 17/3c taken from Sheet 17 of 21 of the Environmental Masterplan Part 1 [APP-088]

- 5.1.36 As a whole these plots would connect to the Domsey Brook to the south-west and to suitable existing reptile habitats around Easthorpe Green to the south-east. There would also be good connectivity to the new A12 verges immediately to the north. This would aid dispersal of reptiles into the wider landscape and would increase the overall areas of habitat available to reptiles post construction.

Plot 18/6b

- 5.1.37 As stated in Chapter 3 Assessment of Alternatives of the Environmental Statement [APP-070], a single, large mitigation area was proposed south-west of Doggetts Lane, on the northern side of the proposed A12. The landowner requested a review of this land take as they wished to retain as much viable farmland as possible in this location. An initial amendment transferred half of the mitigation area to land on the southern side of the proposed A12, but a second review removed the whole of the mitigation area from its original location across to the new location adjacent to Wishing Well Farm. A second single, large mitigation area was proposed in a field parcel adjacent to the proposed A12, on the southern side, east of Doggetts Farm. The landowner also requested that this mitigation area be relocated to the area around Wishing Well Farm. This request has largely been accommodated, creating one, significantly larger mitigation area around the Wishing Well Farm premises, leaving only a small mitigation area remaining to the northernmost end of the original plot (on the southern side of the new A12) as this area could not be accommodated within the field boundaries of the larger mitigation area. Access track provision has been retained around each new area to enable the landowner to continue to access the land parcels that would remain in their

ownership. This layout has been included within the proposed scheme design and is shown on sheet 18 of the General Arrangement Plans [APP-024].

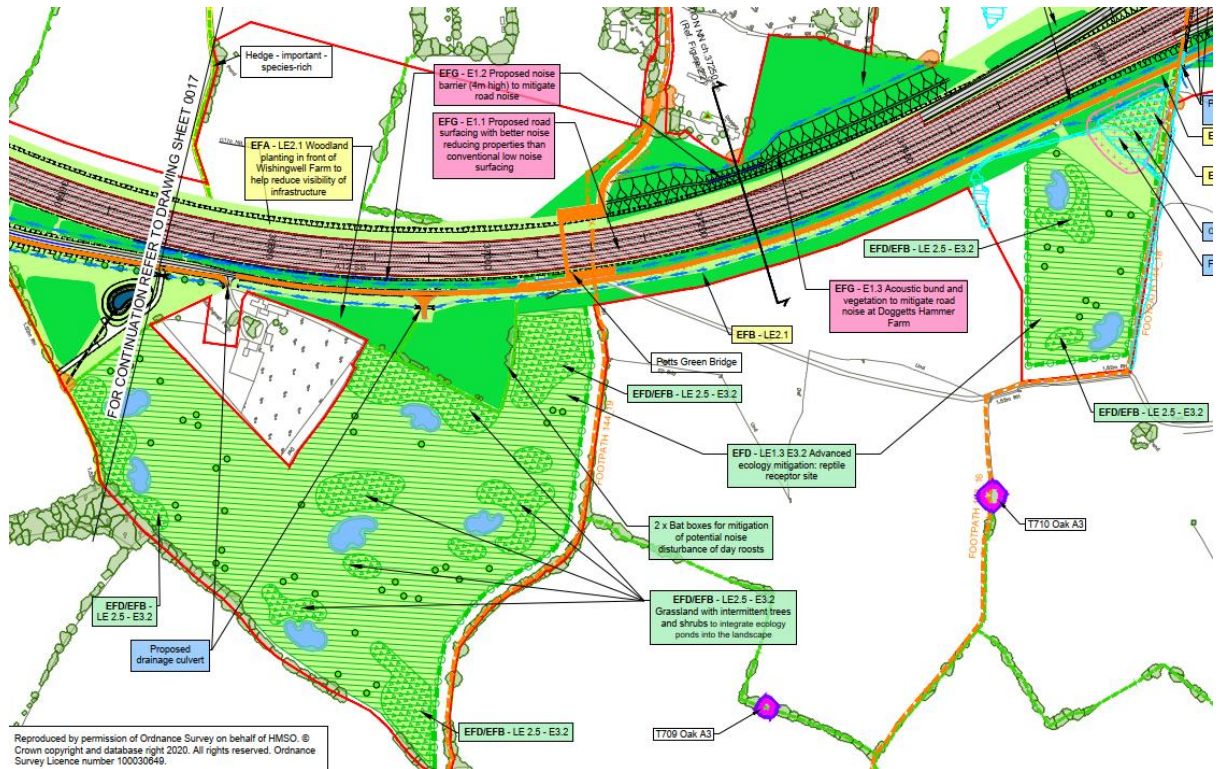


Plate 15 Plot 18/6b taken from Sheet 18 of 21 of the Environmental Masterplan Part 1 [APP-088]

- 5.1.38 As shown on the Environmental Masterplan [APP-086] the larger of the two mitigation areas would be immediately adjacent to woodland planting provided as visual screening for Wishing Well Farm. This woodland would provide suitable hibernation habitat for reptiles within the mitigation area.
- 5.1.39 The larger mitigation area is also connected to an attenuation pond and associated planting to the north-west, increasing the overall area of suitable habitat available.
- 5.1.40 The new verges of the A12 provide connectivity from the larger mitigation area into the wider landscape, including to the smaller ecological mitigation area to the north-east.

5.2 Whetmead LNR and LWS

- 5.2.1 As described in paragraph 9.11.9 of Chapter 9 Biodiversity of the Environmental Statement [APP-076], Whetmead LNR/LWS would be adversely impacted through permanent loss of 0.89ha of semi-natural broadleaved woodland habitats adjacent to the A12 on the western boundary of the LNR to enable widening of the existing A12 carriageway and construction of a retaining wall.
- 5.2.2 To mitigate this effect replacement habitats are required. In order to be most effective, the mitigation should be directly connected to the rest of Whetmead

5.3 Perry’s Wood LWS and Ancient Woodland

5.3.1 As detailed in Section 9.11 of Chapter 9 Biodiversity of the Environmental Statement [APP-076], modelling predicts an increase in N deposition of 2.82kg N/ha/yr (28.2% of the lower critical load) over more than 20% of Perry’s Wood LWS and Ancient Woodland. There is no feasible mitigation for the impact (see Appendix 6.6: Project air quality action plan [APP-105]). Offsetting would therefore be provided through the creation of an area of broadleaved woodland habitat (7.4ha) as part of the restoration of borrow pit F (Plot 7/15a).

5.3.2 The location of the woodland planting to offset impacts was determined on the following basis:

- It is outside the 200m buffer around the operational and construction affected road network (ARN) and so would not be subject to air quality impacts from the proposed scheme.
- It is immediately adjacent to an area of existing broadleaved woodland, providing continuity of habitat and maximising the functional value of the new woodland.
- It makes use of land already being acquired for the proposed scheme (for borrow pit F).

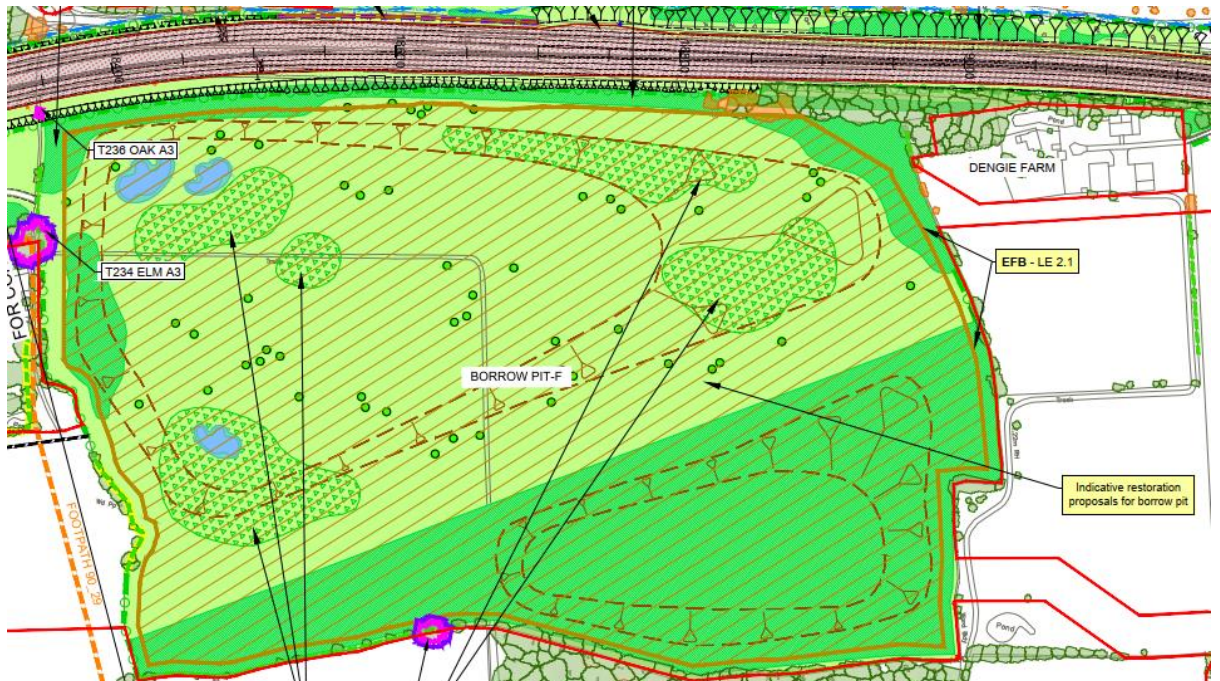


Plate 17 Taken from Sheet 7 of 21 of the Environmental Masterplan Part 1 [APP-086]

5.4 Advanced / post construction mitigation areas

5.4.1 Some of the ecological mitigation areas would be constructed in advance of main construction whereas others would be created during or post construction.

The paragraphs above explain the timing for the creation of mitigation areas for the various ecological receptors.

6 Conclusion

- 6.1.1 Land which would be acquired specifically for ecological mitigation for the proposed scheme is required primarily for the mitigation or offsetting of impacts to reptiles, badgers, Perry's Wood LNR and Ancient Woodland, and Whetmead LNR/LWS.
- 6.1.2 The locations for mitigation were determined based on overarching design principles which in turn were based on Natural England's standing advice and feedback during meetings, and in consultation with key stakeholders including landowners. The locations of mitigation areas have evolved during the design process to reflect the feedback received.
- 6.1.3 The extent of mitigation areas is primarily determined by the areas of suitable reptile habitat to be lost, taking into account the results of field surveys and with consideration to standing advice from Natural England.

7 References

Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.

Froglife (1999). Reptile Survey: An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation. Froglife Advice Sheet 10. Froglife, Halesworth.

Natural England Technical Information Note TIN102: Reptile mitigation guidelines (2011). Available at:

[redacted]
[redacted] [accessed
13/01/2022]

Natural England Standing Advice: Reptiles, available at

[redacted]
[redacted] [accessed 21/12/2022]

Tetra Tech (2022) A12 Chelmsford to A120 widening scheme Reptile Survey Report
Revision 3

Glossary

Ancient Woodland	High priority habitat classified as being wooded continuously since 1600 AD. Classed as irreplaceable habitat and contains several ancient woodland indicator species.
Carrying capacity	The size of a population that a habitat can sustain.
Hibernacula	Structures used by animals as hibernation sites, these include log piles, burrows and large stones.
Lower critical load	A quantitative estimate of exposure to a pollutant, below which significant harmful effects on specified sensitive elements of the environment are not expected to occur.
Metapopulation	The total population of several individual groups of a species which are linked through dispersal of individuals between the groups.
Mitigation	Actions which are taken to reduce the adverse impacts of a development on the environment.
Notable species	Species with conservation designations but no legal protection.
Priority habitats	A range of natural and semi-natural habitats that have been identified as being the most threatened and in need of conservation efforts.
Species and habitats of principal importance	These are species and habitats which have been identified by the government in section 41 of the NERC act as being the most threatened, in the greatest decline or where the UK holds a significant proportion of the world's total population.
Vascular plants	The group of plants which are characterized as containing fluid transporting structures. This includes all flowering and seed producing plants in addition to ferns, horsetails and non-fruit producing plants such as conifers and cycads.

Appendix A Badgers – CONFIDENTIAL

