M11 J7a

Essex County Council

Biodiversity Offsetting Report

| 0

May 2017

M11 J7a

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Document history and status

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Executive Summary

This report presents the results of a Biodiversity Offsetting assessment for the proposed M11 Junction 7a Scheme (hereafter known as the Proposed Scheme). The assessment considers existing habitat within the Proposed Scheme footprint and proposed landscaping, including habitat creation, to be established upon completion of the Scheme. The 'biodiversity units' of each of these sets of habitats have been calculated. The number of units following completion of the Proposed Scheme has been calculated to be greater than that for the habitats lost. The landscape plans therefore represent a 'gain' for biodiversity within the boundary of the Proposed Scheme.

1. Introduction

1.1 The Proposed Scheme

Essex County Council Major Programmes and Infrastructure is developing a proposal for improving access to and from the M11 near to Harlow. The project is for the provision of a new motorway Junction (7A) for the M11 between Junctions 7 and 8, new roads linking the proposed junction to the existing B183 (Gilden Way) and widening of Gilden Way itself. This work is hereafter referred to as the 'Proposed Scheme'. This report has been prepared in response to consultation comments received on the planning application for the Proposed Scheme (application number CC/EPF/08/17) regarding biodiversity offsetting. The comment regarding biodiversity offsetting is presented below:

The calculations should be revised to include additional calculations: they currently do not take into account the length of time that habitats will take to establish or factor in how difficult they are to create. For example, woodland can take 25 years to become established.

1.2 Biodiversity Offsetting

Biodiversity offsets are conservation activities designed to deliver biodiversity benefits in compensation for losses, in a measurable way. Biodiversity offsets are distinguished from other forms of ecological compensation by the formal requirement for measureable outcomes: the losses resulting from the impact of the development and the gains achieved through an offset are measured in the same way, even if the habitats concerned are different (Defra, 2012).

Biodiversity in its entirety is impossible to measure so a 'metric' is used to represent, and provide a measure of, overall biodiversity. Metrics are a combination of measurements that together provide an assessment of the biodiversity value of a particular area. The metric allows the biodiversity impact to be quantified so that the offset requirement, and the value of the compensatory action, can be clearly defined. Metrics are transferable between sites and habitats, allowing an impact on one habitat type to be offset with conservation action elsewhere, or involving a different habitat type and/or quality of habitat (Defra, 2012).

The key principles of biodiversity offsetting in England are as follows:

Offsetting should:

1. Not change existing levels of protection for biodiversity;
2. Expand and restore habitats, not merely protect the extent and condition of what is already there;
3. Contribute to enhancing England's biodiversity network by creating more, bigger, better and joined areas for biodiversity;
4. Be managed at a local level as far as possible;
5. Be as simple and straight forward as possible, for developers, local authorities and others; and
6. Be transparent, giving clarity on how the offset calculations are derived and allowing people to see how offset resources are being used.

2. Methods

2.1 The Biodiversity Metric

2.1.1 Habitat assessment

A metric is a tool that allows biodiversity losses and compensation to be measured. For the purposes of this report, the methodology set out in DEFRA (2012) was used to calculate the biodiversity metric for a unit of habitat. The area of each habitat in hectares was multiplied with multipliers for the 'distinctiveness' and 'condition' of each respective habitat, as described below. The resulting score gives the number of 'biodiversity units' the habitat is worth.

Hedgerows were assessed separately from non-linear habitats following DEFRA (2012). The biodiversity units of a hedgerow are calculated by multiplying its length in metres by its condition. A distinctiveness multiplier is not applied.

The Integrated Habitat System (IHS) is an integrated approach to habitat classification, using GIS technology, can provide a sound basis for survey, monitoring and analysis of resource. It allows for different habitat classifications to be brought together into an integrated system (SERC, 2007). The habitats within the Proposed Scheme, both those existing pre-construction and those proposed for post-construction compensation, were assigned to categories within the IHS. This used information gathered from ecological surveys undertaken to inform the Proposed Scheme's Environmental Impact Assessment (EIA), and from the Proposed Scheme's landscape plans for post-construction habitats (see Section 2.2 for a list of sources used). The classification of habitats employed in previous ecological surveys followed the standard Phase1 Habitat Classification (JNCC, 2010) so that habitats were easily placed within the IHS. The area covered by a particular unit of habitat or length of hedgerow was calculated using GIS data.

Following this assessment, the scores for each habitat unit were summed, with hedgerows and non-linear habitats given separate totals. This gave the total number of 'biodiversity units'. Pre-construction and planned post-construction biodiversity units were then compared.

2.1.2 Distinctiveness and condition

The simplest two multipliers contributing to the total biodiversity score for a habitat assesses the 'distinctiveness' and 'quality/condition' of the habitat.

Distinctiveness corresponds to the nature conservation value of the habitat under consideration. The scoring system is shown in Table 1. Distinctiveness scores have been assigned to habitats in the IHS (DEFRA, 2013), and each habitat, before and after construction, was therefore assigned a distinctiveness score following this system.

Table 1. Scores for habitat distinctiveness and associated habitat types (DEFRA, 2012)

Habitat distinctiveness	Score	Broad habitat type covered
High	6	Priority habitat, as defined in Section 41 of the NERC Act 2006
Medium	4	Semi-natural
Low	2	E.g. intensive agricultural, but may form an important part of the ecological network in the area

Condition of habitat is similarly based on a three-tier scale (Table 2). The assessment of condition of habitat is a matter of professional judgement. Existing survey data were used to judge the condition of pre-construction habitats. The condition of habitat to be created was scored from a realistic estimate of what can be attained with time and suitable habitat management (see Section 2.3 assumptions and limitations).

Table 2. Scores for habitat condition (DEFRA, 2012)

Habitat Condition	Score
Good	3
Moderate	2
Poor	1

2.1.3 Difficulty of restoration/recreation and years to target condition

Habitat distinctiveness and condition scores are the simplest multipliers contributing toward the calculation of the biodiversity metric. Further multipliers are proposed as part of biodiversity offsetting (DEFRA, 2012). Those considered in this assessment are 'difficulty of restoration/re-creation' and 'years to target condition'. Scores used in this assessment are shown in Tables 3 and 4.

Table 3. Scores for difficulty of recreation/restoration of habitat (DEFRA, 2012)

Difficulty of recreation/restoration	Score
Very High	10
High	3
Moderate	1.5
Low	1

Table 4. Scores for years to target condition of habitat (DEFRA, 2012)

Years to target condition	Score
5	1.2
10	1.4
15	1.7
20	2.0
25	2.4
30	2.8
32	3

2.2 Assessment Sources

The following documents were used as source material for habitat data:

- Phase 1 habitat survey report (Jacobs, 2016a); and
- Landscape plans (Jacobs, 2016b).

The relevant maps from these are included as figures in Appendix A.

2.3 Assumptions and Limitations

This biodiversity offsetting assessment is based on the following assumptions:

- Only habitats within the Proposed Scheme red line boundary were considered. This area is smaller than that shown on the Phase 1 plan for the Proposed Scheme.

- The calculations assume that all woodland and hedgerows would be retained except those specifically marked for removal. All other habitats within the redline boundary would be removed or destroyed during the works. It is assumed that habitat lost to construction works is precisely as shown in the drawings used in this assessment and that habitat creation and landscaping will exactly follow the landscape plans (see Appendix A).

- The areas covered by the canopies of isolated trees have been excluded from the assessment, both of existing habitat and planned post-construction habitat. These do not fit into any standard area habitat type.

Limitations of the above approach and of the assessment methodology are as follows:

- There is an inevitable error in the measurement of habitat area, due e.g. to uncertainties in digitising habitat polygons based on field observations.

- The assessment of habitat 'condition' is based on professional judgement. There is no guidance as part of the biodiversity offsetting pilot on how to assess condition of habitats or what precisely constitutes 'good', 'medium' and 'poor' quality of each habitat type.

- Yet-to-be created habitat introduces a further element of subjectivity as its condition is purely aspirational. With only landscape plans available, the direction of habitat development is uncertain, and it is not clear that a particular created habitat will develop into one of 'good' condition comparable to that of a corresponding semi-natural habitat.

3. Results

Table summarises the non-linear habitats present within the Proposed Scheme and their biodiversity units. Table 6 summarises the results for hedgerows.

Habitats have been assigned to the relevant IHS habitat type, and 'distinctiveness' scores for each habitat type were taken from DEFRA (2013). The evaluation of habitat condition was based on professional judgement of field survey results, assessing e.g. the structural diversity of habitat within each habitat.

Table 5. Non-linear habitats to be removed as part of the Proposed Scheme, their IHS codes, areas, scores for 'distinctiveness', 'condition', 'difficulty of restoration/recreation' and 'years to target condition', and numbers of biodiversity units. Figures accurate to 2 decimal places

IHS code	Phase 1 habitat	Multiplier				Area (Ha	Units
		Distinctiveness	Condition	Difficulty of restoration/ recreation	Years to target condition		
CI0	Amenity grassland	2	1	1	1	1.62	3.24
CRZ	Arable	2	1	1	1	27.52	55.04
GU0	Semi-improved neutral grassland	4	2	1	1.2	2.40	23.04
OVZ	Tall ruderal	2	1	1	1	1.60	3.20
WB2	Dense/continuous scrub	4	2	1	1.4	0.32	3.58
WB3	Broad-leaved woodland	6	2	1.5	3	0.01	0.54
WB3Z	Broad-leaved plantation woodland	6	2	1	2.4	1.79	51.55
WCZ	Coniferous plantation woodland	2	1	1	2.4	0.09	0.43
						Total units	140.62

Table 6. Lengths of hedgerows to be removed as part of the Proposed Scheme, their scores for 'condition', and the total number of pre-construction hedgerow biodiversity units. Lengths accurate to the nearest metre

Condition	Difficulty of restoration/recreation	Years to target condition	Length (m)	Biodiversity units
3	1	1.4	435	1827.00
1	1	1.2	446	535.20
			Total units	2,362.20

Table 7 and Table 8 summarise, respectively, the biodiversity units for non-linear habitats and hedgerows to be retained and created within the Proposed Scheme following construction.

Table 7. Non-linear habitats to be created within the Proposed Scheme following construction, their IHS codes, areas, scores for 'distinctiveness' and 'condition', and numbers of biodiversity units. Figures accurate to 2 decimal places

		Multiplier			
IHS Code	**Phase 1 Habitat**	**Distinctiveness**	**Condition**	**Area (ha)**	**Units**
WB3Z	Broad-leaved plantation woodland	6	2	5.03	60.36
WB2	Scattered scrub	4	2	0.52	4.16
N/A	Non-native shrub	2	2	0.16	0.64
N/A	Semi-improved neutral grassland[1]	6	3	6.28	113.04
GI0	Improved grassland[2]	2	1	3.92	7.84
AP11	Eutrophic standing water[3]	6	1	0.56	3.36
				Total units	189.40

Table 8. Lengths of hedgerows to be created within the Proposed Scheme following construction, their scores for 'condition', and the total number of post-construction hedgerow biodiversity units. Lengths accurate to the nearest metre

Condition	Length (m)	Biodiversity units
3	4,647	13,941.00
	Total units	13,941.00

Table 9 shows the net biodiversity units for non-linear habitats associated with the Proposed Scheme, i.e. the number of units for habitats to be retained or created post-construction minus those for existing, pre-construction habitats. Table 10 shows the analogous figures for hedgerows.

[1] Comprising a species-rich native grass and wildflower seed mix
[2] Comprising all other grassed areas to be created
[3] Comprising three drainage ponds with no additional planting

Table 9. Summary of net biodiversity units for non-linear habitats associated with the Proposed Scheme

	Total units
Pre-construction habitats to be removed	140.62
Post-construction habitats to be created	189.40
Net units	48.78

Table 10. Summary of net biodiversity units for hedgerows associated with the Proposed Scheme

	Total units
Pre-construction hedgerows to be removed	2,362.20
Post-construction hedgerows to be created	13,941.00
Net units	11,578.80

4. Discussion

The results of this biodiversity offsetting assessment have shown that the post-construction landscape plan for the Proposed Scheme has a greater number of biodiversity units than the existing habitats present within the Proposed Scheme footprint, both for hedgerows and for non-linear habitats. The net increase is 11,578.80 units for hedgerows, 48.78 units for non-linear habitats. Using the DEFRA biodiversity offsetting process, the Proposed Scheme therefore represents a ‘net gain’ for biodiversity.

5. References

DEFRA. (2011). *Biodiversity offsetting: Guiding Principle for Biodiversity Offsetting.*

DEFRA. (2012). *Technical Paper: the metric for the biodiversity offsetting pilot in England.*

DEFRA. (2013). *Appendix 1 - Distinctiveness Bands for the Biodiversity Offsetting Pilot.*

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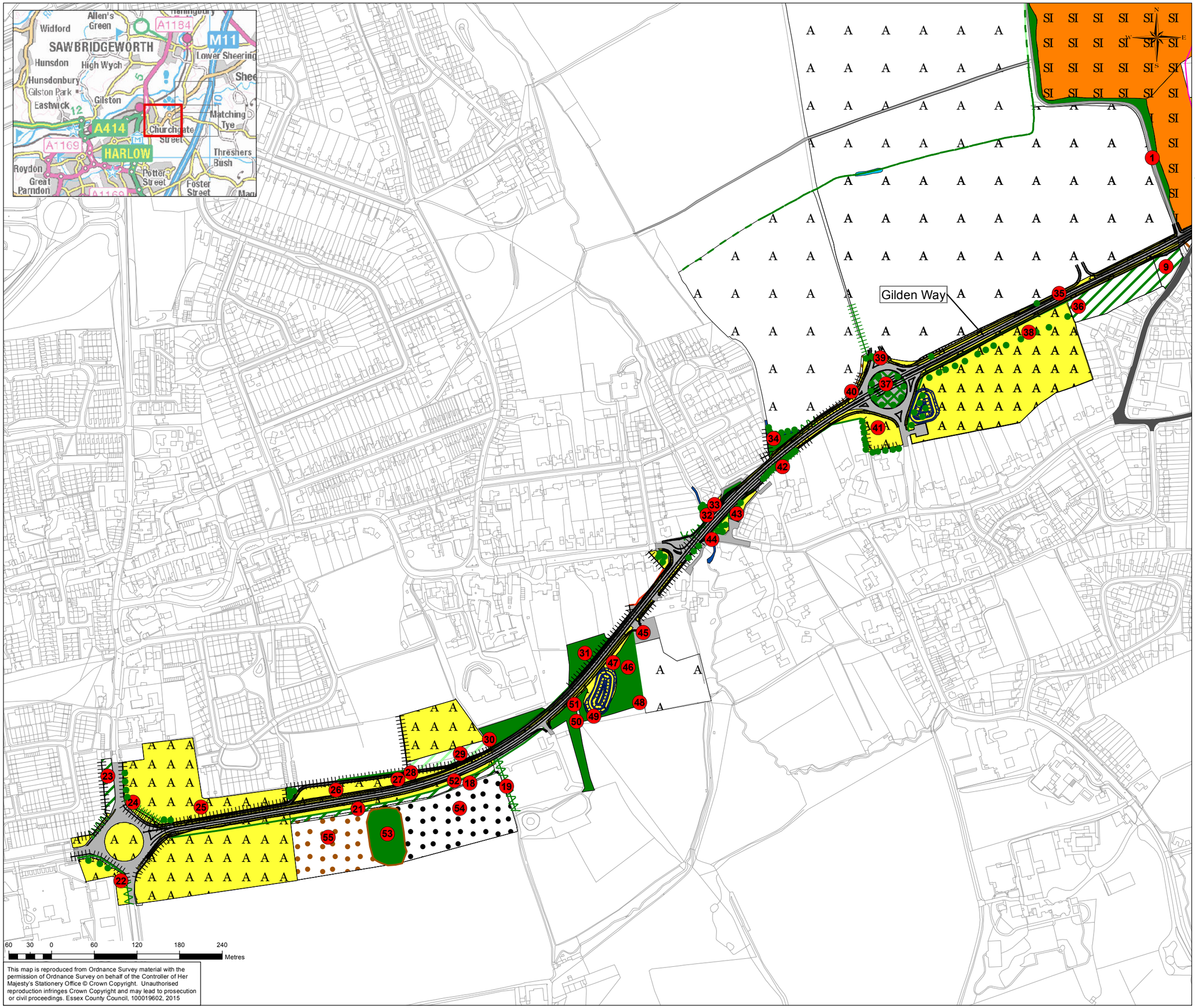
Jacobs (2016b). *Landscape mitigation. Sheets 1-3.*

JNCC. (2010). *Handbook for Phase 1 Habitat.*

SERC. (2007). *Integrated Habitat System*. (Online) http://ihs.somerc.co.uk/index.php {Accessed 24.05.2017}

Appendix A. Figures



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Notes

1. Do not scale

Key

- Design Iteration 1 PCF Stage 3
- Attenuation Pond
- Target note
- Tree
- Hedge
- Hedge with trees
- Line of trees
- Native species-rich hedge and trees
- Species poor hedge and trees
- Species poor intact hedge
- Wet ditch
- Earth bank
- Fence
- Wall
- Semi-natural broad-leaved woodland
- Broad-leaved plantation woodland
- Coniferous plantation woodland
- Dense/continuous scrub
- Amenity grassland
- Arable
- Semi-improved grassland
- Tall ruderal
- Ephemeral/short perennial
- Bog
- Running water
- Standing water
- Campions residential area
- Bare ground
- Building
- Hardstanding
- Road

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
0	11/16	ISSUED FOR PLANNING APPLICATION	KK	CB	SK	SG

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Scheme Title

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PLAN 1 - PHASE 1 HABITAT SURVEY
SHEET 1 OF 3

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EW	KK	CB	SB	SK
DATE 04/11/2016	DATE 04/11/2016	DATE 04/11/2016	DATE 04/11/2016	DATE 04/11/2016

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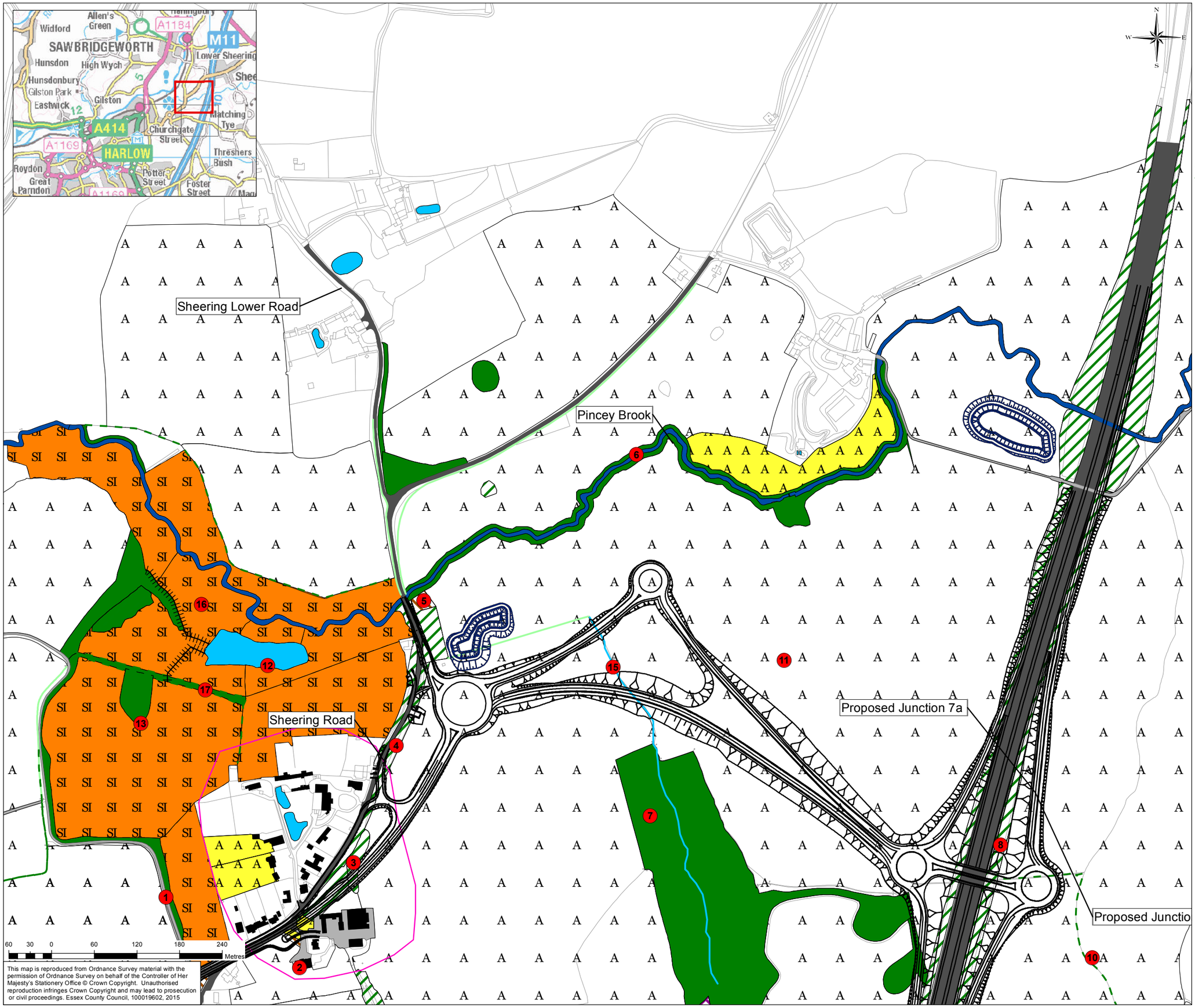

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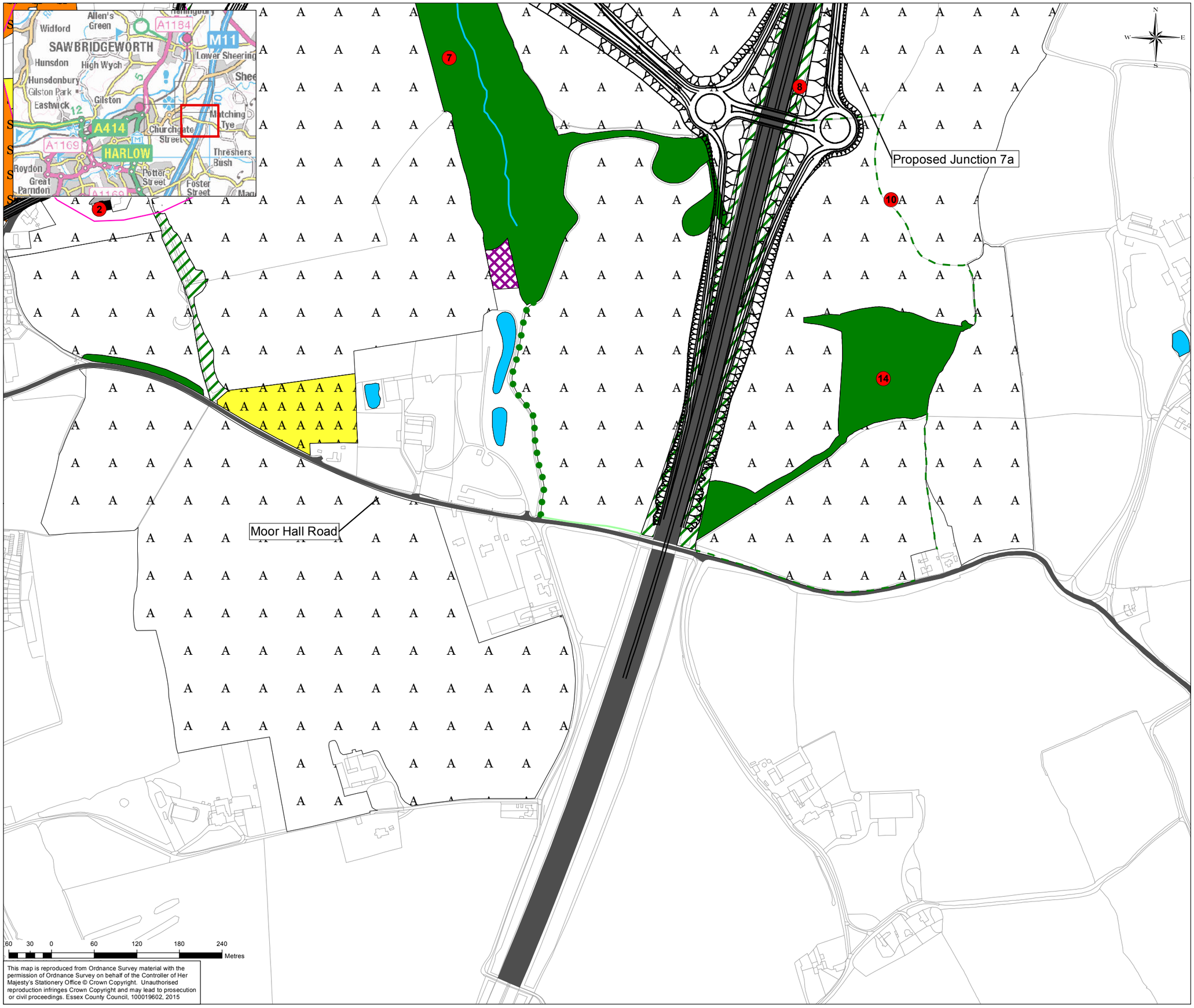

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0 10 20 30 40 50 60 70 80 90 100 m

SCALE 1 : 1000

Notes:

1. All dimensions in metres unless stated otherwise.

Key

- Existing woodland trees & hedges to be retained
- Existing woodland canopy, trees and hedges to be removed
- TPO protected woodland near the proposed scheme
- TPO protected woodland to be removed.
- Public footpath
- Proposed footpath closure
- Proposed path realignment or extension
- Proposed road in cutting
- Proposed road on embankment
- Proposed footway
- Proposed highway drainage pond
- Proposed stream realignment
- Existing streams and ponds
- Potential property for off-site planting
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed individual trees to be planted at large size
- Proposed willows to channel bats along stream to culverts
- Proposed hedgerows
- Proposed grassland
- Proposed area of spring bulbs in grass
- Proposed species-rich grass & wildflowers
- Proposed area with scattered clumps of native scrub
- Proposed mounds and landscape earthworks
- Climbing plants to grow on structures
- Brick facing to retaining structure

Proposed Fencing

- P4R — Post and 4 rail timber
- P4RM — P4R with mesh infill
- HSF2.0 — Wire mesh, ht. 2m
- E — Retention of existing

Indicative Noise Barriers

- 2 — Timber reflective ht2m
- 2.5A — Absorptive, ht. 2.5m
- 2 — Brick wall, ht. 2.5m
- 2 — Barrier with transparent panels, height 2m
- Access gap in barrier, requiring detailed design for public safety

Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
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P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

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LANDSCAPE MITIGATION
FIGURE 7-3
Sheet 1 of 7

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Harlowbury Development

The Oxleys

Section A on Drawing B3553F05-3000-DR-0202 Figure 7.4 Sheet 1

Existing brick wall to be replaced with 2.5m high brick noise barrier

Harlowbury Brook

Sheering Road

Mulberry Green

PROW185_136FP (HARLOW)

PROW185_20FP (HARLOW)

PROW185_22FP (HARLOW)

PROW185_14FP (HARLOW)

PROW185_162FP (HARLOW)

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Location Diagram

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Sheet 2 of 7

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Notes:

1. All dimensions in metres unless stated otherwise.

Key

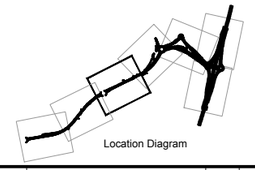
- Existing woodland trees & hedges to be retained
- Existing woodland canopy, trees and hedges to be removed
- TPO protected woodland near the proposed scheme
- TPO protected woodland to be removed.
- Public footpath
- Proposed footpath closure
- Proposed path realignment or extension
- Proposed road in cutting
- Proposed road on embankment
- Proposed footway
- Proposed highway drainage pond
- Proposed stream realignment
- Existing streams and ponds
- Potential property for off-site planting
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed individual trees to be planted at large size
- Proposed willows to channel bats along stream to culverts
- Proposed hedgerows
- Proposed grassland
- Proposed area of spring bulbs in grass
- Proposed species-rich grass & wildflowers
- Proposed area with scattered clumps of native scrub
- Proposed mounds and landscape earthworks
- Climbing plants to grow on structures
- Brick facing to retaining structure

Proposed Fencing

- P4R — Post and 4 rail timber
- P4RM — P4R with mesh infill
- HSF2.0 — Wire mesh, ht. 2m
- E — E — Retention of existing

Indicative Noise Barriers

- 2 — 2 Timber reflective ht2m
- 2.5A — 2.5A Absorptive, ht. 2.5m
- 2 — 2 Brick wall, ht. 2.5m
- 2 — 2 Barrier with transparent panels, height 2m
- Access gap in barrier, requiring detailed design for public safety



Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS Integrated expertise | Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

LANDSCAPE MITIGATION
FIGURE 7-3
Sheet 3 of 7

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16

DRAWING UNITS U.N.O.
DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm)
1:1000

DRAWING No.
B3553F05-3000-DR-0003

REV.
P00.1

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Notes:

1. All dimensions in metres unless stated otherwise.

Key

- Existing woodland trees & hedges to be retained
- Existing woodland canopy, trees and hedges to be removed
- TPO protected woodland near the proposed scheme
- TPO protected woodland to be removed.
- Public footpath
- Proposed footpath closure
- Proposed path realignment or extension
- Proposed road in cutting
- Proposed road on embankment
- Proposed footway
- Proposed highway drainage pond
- Proposed stream realignment
- Existing streams and ponds
- Potential property for off-site planting
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed individual trees to be planted at large size
- Proposed willows to channel bats along stream to culverts
- Proposed hedgerows
- Proposed grassland
- Proposed area of spring bulbs in grass
- Proposed species-rich grass & wildflowers
- Proposed area with scattered clumps of native scrub
- Proposed mounds and landscape earthworks
- Climbing plants to grow on structures
- Brick facing to retaining structure

Proposed Fencing

- P4R — Post and 4 rail timber
- P4RM — P4R with mesh infill
- HSF2.0 — Wire mesh, ht. 2m
- E — Retention of existing

Indicative Noise Barriers

- 2 — Timber reflective ht2m
- 2.5A — Absorptive, ht. 2.5m
- 2 — Brick wall, ht. 2.5m
- 2 — Barrier with transparent panels, height 2m
- Access gap in barrier, requiring detailed design for public safety

Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS — Integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

LANDSCAPE MITIGATION
FIGURE 7-3
Sheet 4 of 7

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16

DRAWING UNITS U.N.O.: DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm): 1:1000

DRAWING No.: B3553F05-3000-DR-0404

REV.: P00.1

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PERMANENT ECOLOGICAL MITIGATION

- Badger fence
- Bat fence: 5m high fine mesh fence to deflect bat flight paths over the traffic
- Road light on low column to limit light spread

Notes:

1. All dimensions in metres unless stated otherwise.

Key

- Existing woodland trees & hedges to be retained
- Existing woodland canopy, trees and hedges to be removed
- TPO protected woodland near the proposed scheme
- TPO protected woodland to be removed.
- Public footpath
- Proposed footpath closure
- Proposed path realignment or extension
- Proposed road in cutting
- Proposed road on embankment
- Proposed footway
- Proposed highway drainage pond
- Proposed stream realignment
- Existing streams and ponds
- Potential property for off-site planting
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed individual trees to be planted at large size
- Proposed willows to channel bats along stream to culverts
- Proposed hedgerows
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- Proposed area of spring bulbs in grass
- Proposed species-rich grass & wildflowers
- Proposed area with scattered clumps of native scrub
- Proposed mounds and landscape earthworks
- Climbing plants to grow on structures
- Brick facing to retaining structure

Proposed Fencing

- P4R — Post and 4 rail timber
- P4RM — P4R with mesh infill
- HSF2.0 — Wire mesh, ht. 2m
- E — Retention of existing

Indicative Noise Barriers

- 2 — Timber reflective ht2m
- 2.5A — Absorptive, ht. 2.5m
- 2 — Brick wall, ht. 2.5m
- 2 — Barrier with transparent panels, height 2m
- Access gap in barrier, requiring detailed design for public safety

Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS Integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

LANDSCAPE MITIGATION
FIGURE 7-3
Sheet 5 of 7

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16

DRAWING UNITS U.N.O.: DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm): 1:1000

DRAWING No.: B3553F05-3000-DR-0005

REV.: P00.1

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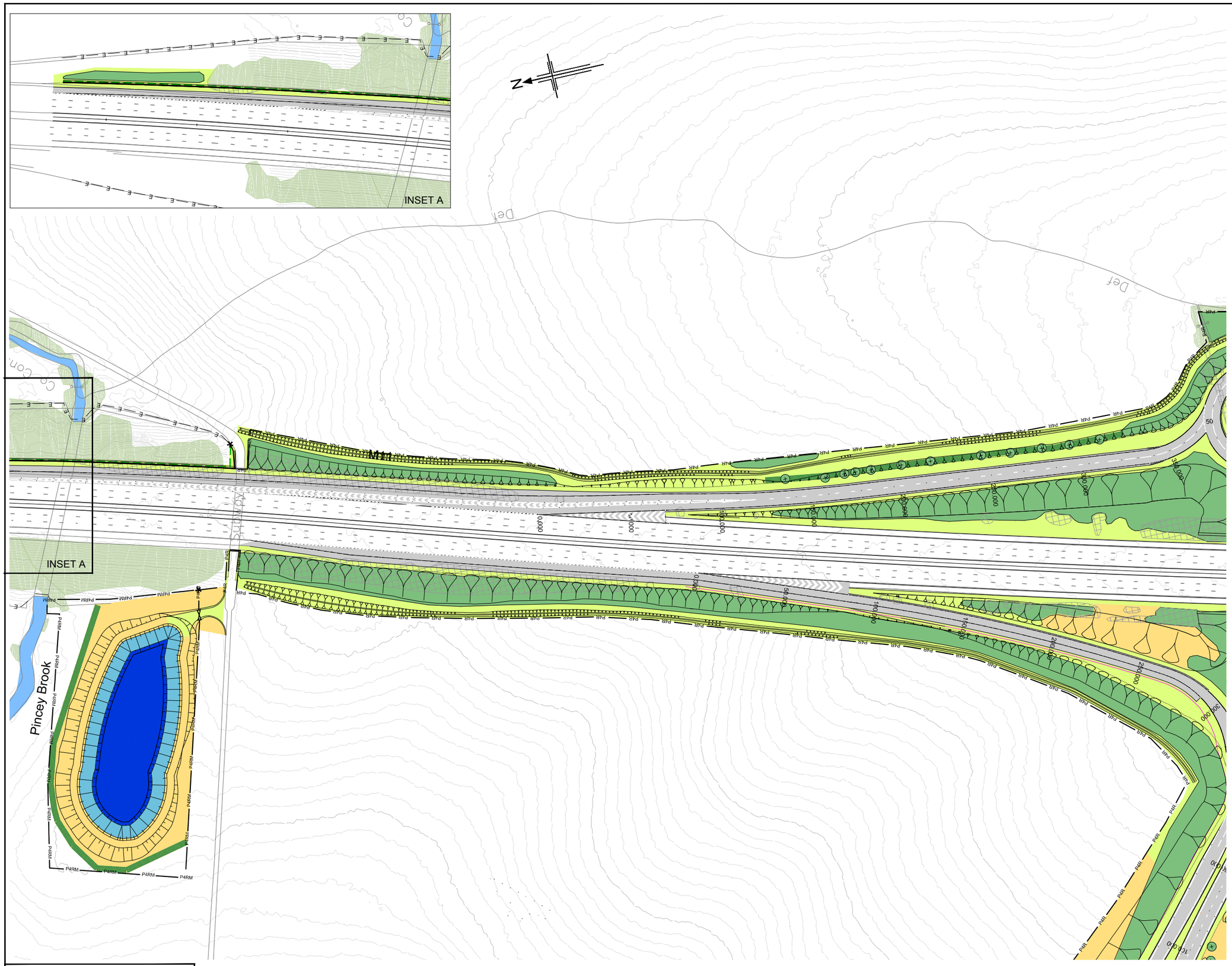

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Notes:

1. All dimensions in metres unless stated otherwise.

Key

- Existing woodland trees & hedges to be retained
- Existing woodland canopy, trees and hedges to be removed
- TPO protected woodland near the proposed scheme
- TPO protected woodland to be removed.
- Public footpath
- Proposed footpath closure
- Proposed path realignment or extension
- Proposed road in cutting
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- Proposed footway
- Proposed highway drainage pond
- Proposed stream realignment
- Existing streams and ponds
- Potential property for off-site planting
- Proposed woodland screen planting
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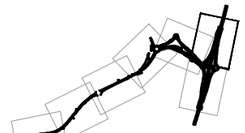
- Proposed species-rich grass & wildflowers
- Proposed area with scattered clumps of native scrub
- Proposed mounds and landscape earthworks
- Climbing plants to grow on structures
- Brick facing to retaining structure

Proposed Fencing

- P4R — Post and 4 rail timber
- P4RM — P4R with mesh infill
- HSF2.0 — Wire mesh, ht. 2m
- E — Retention of existing

Indicative Noise Barriers

- 2 — Timber reflective ht2m
- 2.5A — Absorptive, ht. 2.5m
- 2 — Brick wall, ht. 2.5m
- 2 — Barrier with transparent panels, height 2m
- Access gap in barrier, requiring detailed design for public safety



Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS Integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

LANDSCAPE MITIGATION
FIGURE 7-3
Sheet 6 of 7

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16

DRAWING UNITS U.N.O.
DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm)
1:1000

DRAWING No.
B3553F05-3000-DR-0006

REV.
P00.1

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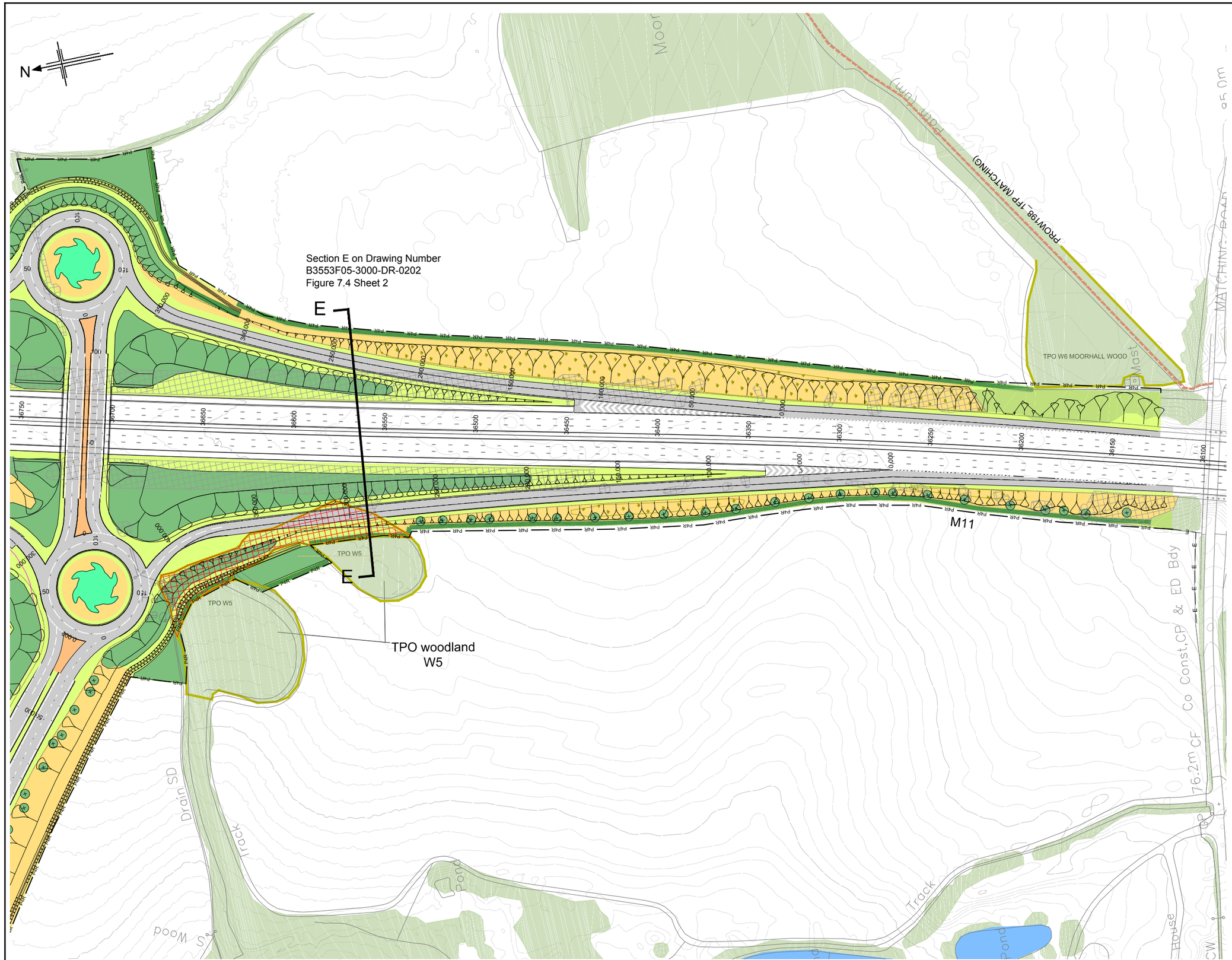

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Notes:

1. All dimensions in metres unless stated otherwise.

Key

- Existing woodland trees & hedges to be retained
- Existing woodland canopy, trees and hedges to be removed
- TPO protected woodland near the proposed scheme
- TPO protected woodland to be removed.
- Public footpath
- Proposed footpath closure
- Proposed path realignment or extension
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- Proposed footway
- Proposed highway drainage pond
- Proposed stream realignment
- Existing streams and ponds
- Potential property for off-site planting
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed individual trees to be planted at large size
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- Proposed hedgerows
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- Proposed area of spring bulbs in grass
- Proposed species-rich grass & wildflowers
- Proposed area with scattered clumps of native scrub
- Proposed mounds and landscape earthworks
- Climbing plants to grow on structures
- Brick facing to retaining structure

Proposed Fencing

- P4R — Post and 4 rail timber
- P4RM — P4R with mesh infill
- HSF2.0 — Wire mesh, ht. 2m
- E — Retention of existing

Indicative Noise Barriers

- 2 — Timber reflective ht2m
- 2.5A — Absorptive, ht. 2.5m
- 2 — Brick wall, ht. 2.5m
- 2 — Barrier with transparent panels, height 2m
- Access gap in barrier, requiring detailed design for public safety

Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS Integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

LANDSCAPE MITIGATION
FIGURE 7-3
Sheet 7 of 7

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16

DRAWING UNITS U.N.O.
DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm)
1:1000

DRAWING No.
B3553F05-3000-DR-0007

REV.
P00.1

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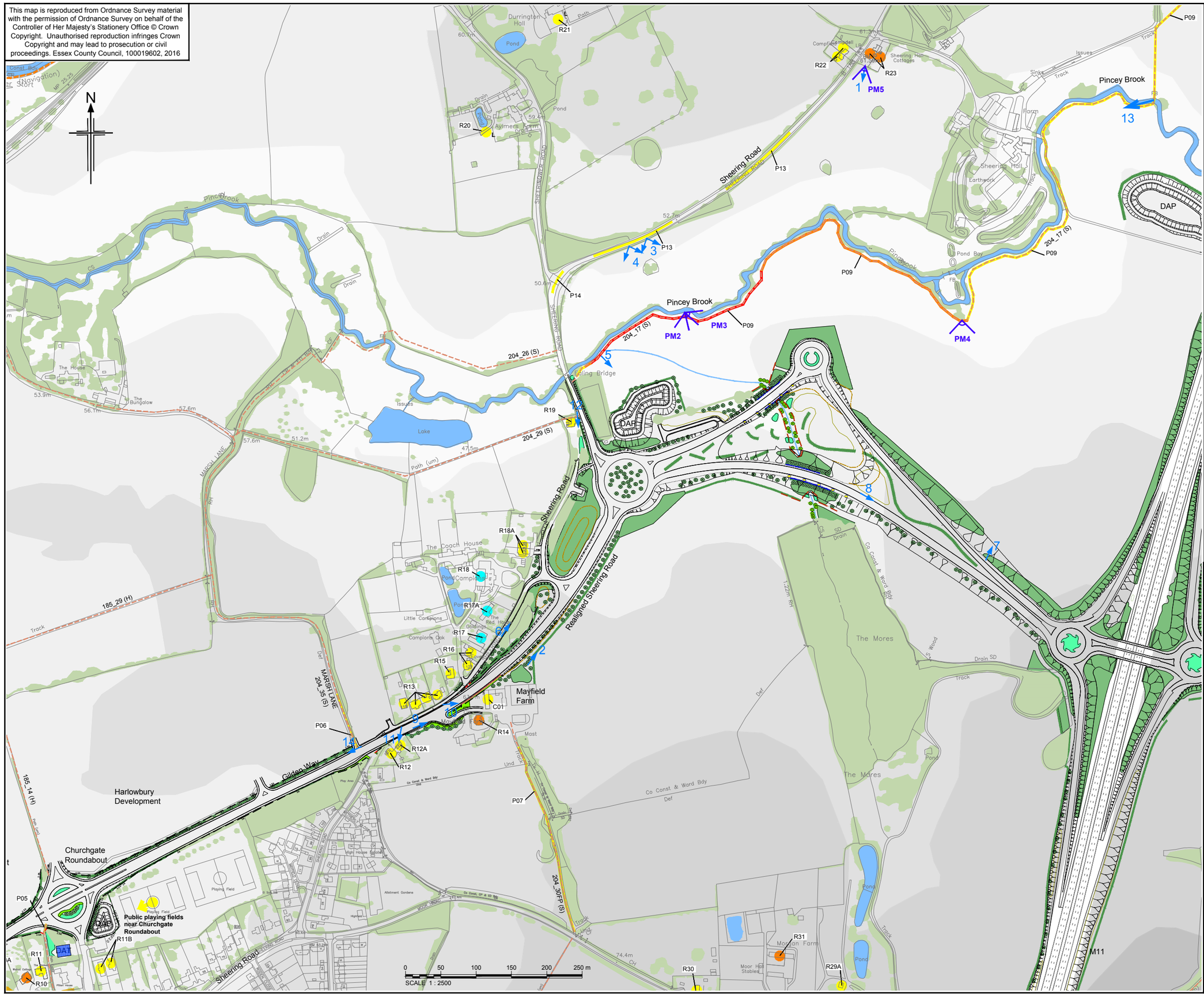


Notes:

1. The letters AOD on the key to topography shading refer to ground to ground levels Above Ordnance Datum.

Key

- Existing woodland/ trees/hedges
- Conservation Area

VISUAL EFFECT SYMBOLS
Colours: significance of visual effects in summer, 15 years after completion of construction (year 15) taking into account growth of landscape mitigation planting.

- Large adverse
- Moderate adverse
- Slight adverse
- Neutral (not shown)
- Slight beneficial

C01 R01 R02 L — Effects at individual properties. Reference No. for visual effects schedule indicated - prefix R for residential, C for commercial, L for Listed Building.

6 R03 — Effects on a close row of properties (number of houses indicated).

P01 — Effects on public rights of way and roads

Effects at other viewpoints

PM1 — Photomontage view 1 viewpoint location

1 — Photo viewpoint (Views in Appendix 7.4)

- Proposed mounds and landscape earthworks
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed hedgerows

DAP — Highway drainage attenuation pond

DAT — Underground drainage attenuation tank

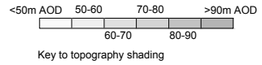
PUBLIC RIGHTS OF WAY
Path & bridleway nos. given with letters indicating Parish/Borough: (H)Harlow (S)Sheering (M)Matching.

185_29(H) — Public footpath 189_29 (Harlow)

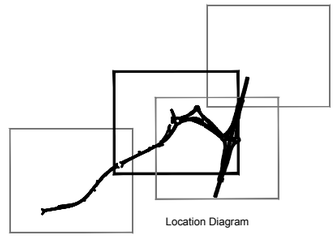
Public bridleway

INDICATIVE NOISE BARRIERS

- Timber, height 2m
- Absorptive, ht. 2.5m
- Brick wall, ht. 2.5m
- Barrier with transparent panels, height 2m
- Red indicates barrier design for public security at access gaps



Key to topography shading



Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS — Integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

VISUAL EFFECTS 15 YEARS AFTER COMPLETION (YEAR 15)
FIGURE 7-7 Sheet 2 of 4

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE	DATE	DATE	DATE	DATE
DEC 16	DEC 16	DEC 16	DEC 16	DEC 16

DRAWING UNITS U.N.O.
DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm)
1:2500

DRAWING No.
B3553F05-3000-DR-0408

REV.
P00.1

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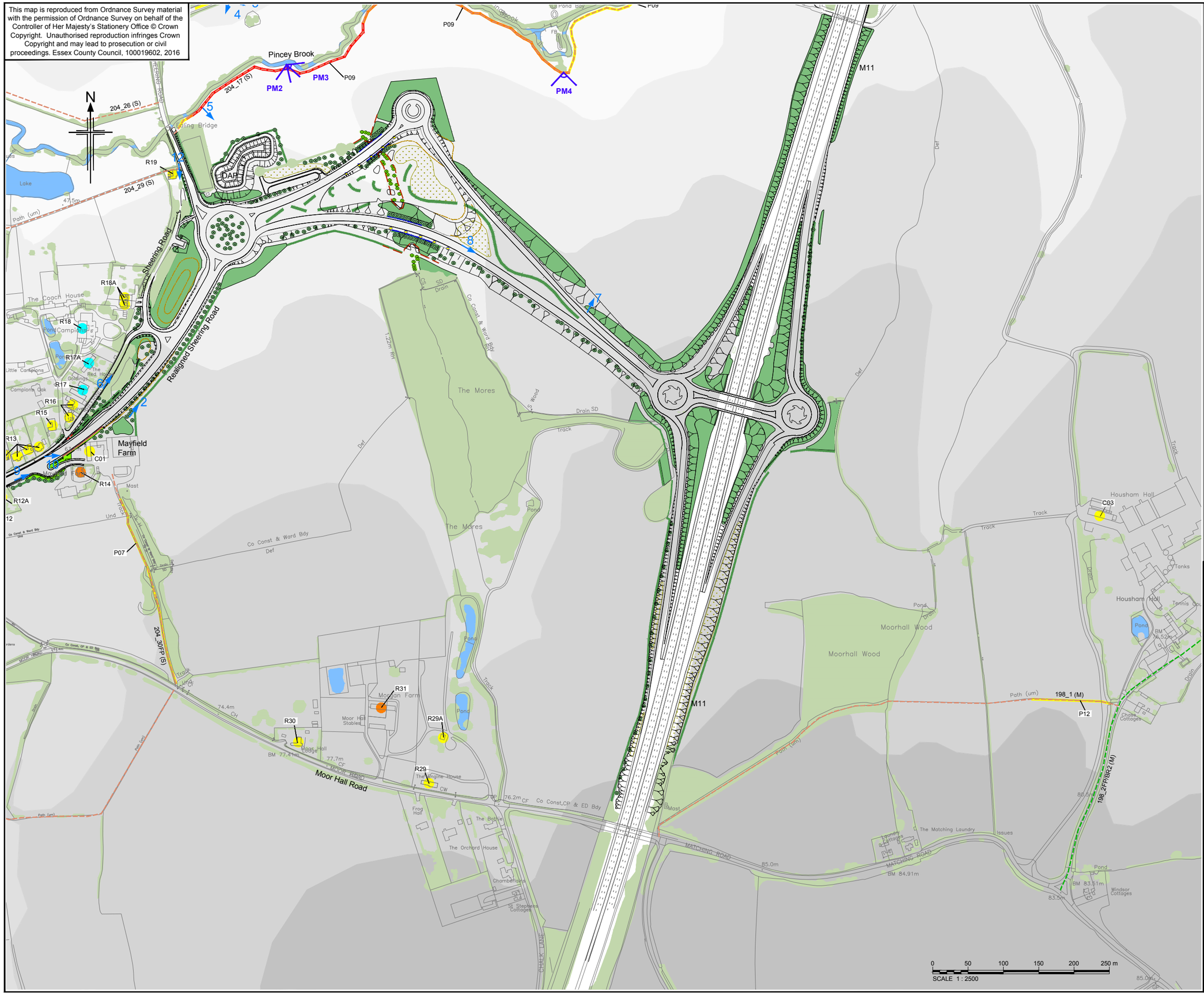


Notes:

1. The letters AOD on the key to topography shading refer to ground to ground levels Above Ordnance Datum.

Key

- Existing woodland/ trees/hedges
- Conservation Area
- Proposed mounds and landscape earthworks
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed hedgerows
- DAP Highway drainage attenuation pond
- DAT Underground drainage attenuation tank

VISUAL EFFECT SYMBOLS
Colours: significance of visual effects in summer, 15 years after completion of construction (year 15) taking into account growth of landscape mitigation planting.

- Large adverse
- Moderate adverse
- Slight adverse
- Neutral (not shown)
- Slight beneficial

C01 R01 R02 L — Effects at individual properties. Reference No. for visual effects schedule indicated - prefix R for residential, C for commercial, L for Listed Building.

6 R03 — Effects on a close row of properties (number of houses indicated).

P01 — Effects on public rights of way and roads

Effects at other viewpoints

PM1 — Photomontage view 1 viewpoint location

1 — Photo viewpoint (Views in Appendix 7.4)

PUBLIC RIGHTS OF WAY
Path & bridleway nos. given with letters indicating Parish/Borough: (H)Harlow (S)Sheering (M)Matching

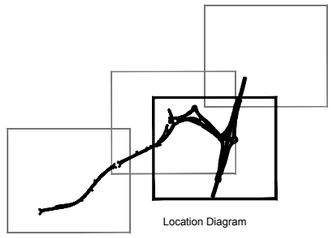
- 185_29(H) 189_29 (Harlow) Public footpath
- Public bridleway

INDICATIVE NOISE BARRIERS

- Timber, height 2m
- Absorptive, ht. 2.5m
- Brick wall, ht. 2.5m
- Barrier with transparent panels, height 2m
- Red indicates barrier design for public security at access gaps

<50m AOD | 50-60 | 60-70 | 70-80 | 80-90 | >90m AOD

Key to topography shading



Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS
PRELIMINARY DESIGN

RINGWAY JACOBS Integrated expertise | Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631
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SCHEME TITLE
M11 JUNCTION 7A

DRAWING TITLE
VISUAL EFFECTS 15 YEARS AFTER COMPLETION (YEAR 15)
FIGURE 7-7 Sheet 3 of 4

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16	DATE DEC 16

DRAWING UNITS U.N.O.: DIMENSIONS AND LEVELS IN METRES
SCALE AT A1 (841X594mm): 1:1000

DRAWING No.: B3553F05-3000-DR-0409
REV.: P00.1

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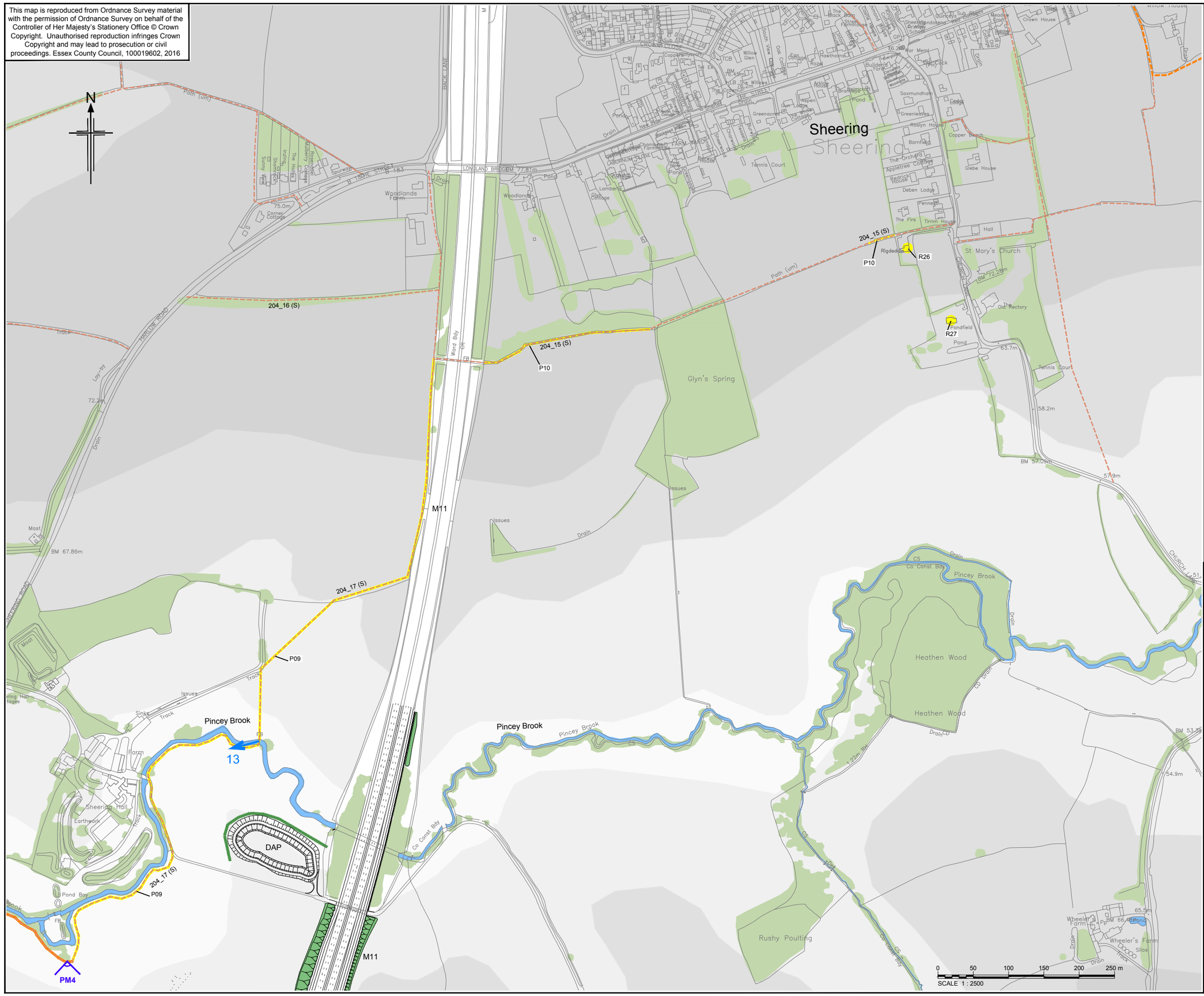


Notes:

1. The letters AOD on the key to topography shading refer to ground to ground levels Above Ordnance Datum.

Key

- Existing woodland/ trees/hedges
- Conservation Area

VISUAL EFFECT SYMBOLS
Colours: significance of visual effects in summer, 15 years after completion of construction (year 15) taking into account growth of landscape mitigation planting.

- Large adverse
- Moderate adverse
- Slight adverse
- Neutral (not shown)
- Slight beneficial

C01 R01 R02 L — Effects at individual properties. Reference No. for visual effects schedule indicated - prefix R for residential, C for commercial, L for Listed Building.

6 R03 — Effects on a close row of properties (number of houses indicated).

P01 — Effects on public rights of way and roads

Effects at other viewpoints

PM1 — Photomontage view 1 viewpoint location

1 — Photo viewpoint (Views in Appendix 7.4)

- Proposed mounds and landscape earthworks
- Proposed woodland screen planting
- Proposed native shrubs
- Proposed amenity planting, decorative shrubs & small trees
- Proposed hedgerows

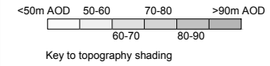
DAP — Highway drainage attenuation pond
DAT — Underground drainage attenuation tank

PUBLIC RIGHTS OF WAY
Path & bridleway nos. given with letters indicating Parish/Borough: (H)Harlow (S)Sheering (M)Matching.

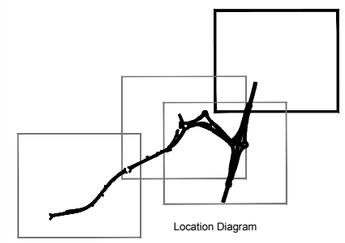
185_29(H) — Public footpath 189_29 (Harlow)
Public bridleway

INDICATIVE NOISE BARRIERS

- Timber, height 2m
- 2.5m Absorptive, ht. 2.5m
- Brick wall, ht. 2.5m
- Barrier with transparent panels, height 2m
- Red indicates barrier design for public security at access gaps



Key to topography shading



Location Diagram

Rev.	Date	Description of revision	Drawn	Checked	Review'd	Approv'd
-	-	-	-	-	-	-
-	-	-	-	-	-	-
P0	DEC 16	ISSUED FOR PLANNING APPLICATION	AC	BC	HM	PM

DRAWING STATUS

PRELIMINARY DESIGN

RINGWAY JACOBS — Integrated expertise

Essex County Council

Mark Rowe, Service Director, Highways
Seax House, Victoria Road South, Chelmsford, CM1 1QH.
Tel: 0345 6037631

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SCHEME TITLE

M11 JUNCTION 7A

DRAWING TITLE

VISUAL EFFECTS 15 YEARS AFTER COMPLETION (YEAR 15)
FIGURE 7-7 Sheet 4 of 4

DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
AS	AC	BC	HM	PM
DATE	DATE	DATE	DATE	DATE
DEC 16	DEC 16	DEC 16	DEC 16	DEC 16

DRAWING UNITS U.N.O.
DIMENSIONS AND LEVELS IN METRES

SCALE AT A1 (841X594mm)
1:2500

DRAWING No.
B3553F05-3000-DR-0410

REV.
P00.1

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.