

BIODIVERSITY IMPACT ASSESSMENT

LAND AT JUNCTION 11 OF M40, BANBURY, OXFORDSHIRE

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1.0 INTRODUCTION

Site Information

- 1.1 Rachel Hacking Ecology Limited was commissioned in 2021 by Euro Garages via PWA Planning to carry out a Biodiversity Impact Assessment of Land off Junction 11 of the M40, Banbury, Oxfordshire (O.S. grid reference: SP 47218 42057 – see Figure 1). The proposed development site currently comprises a field of improved grassland bordered with broad-leaved plantation woodland, hedgerows and neutral grassland.
- 1.2 A Biodiversity Impact Assessment is required to provide a measurement of the changes in biodiversity and demonstrate if the site will be in net gain or net loss as a result of the proposed development on site.



Figure 1 showing the location of the site

Description of Development

- 1.3 The site was the subject of a hybrid planning application with Cherwell District Council which was granted in January 2019 (19/00128/HYBRID). The permission is for: *“Part A: Full planning application - the development of a new priority junction to the A361, internal roads and associated landscaping with 2 no. commercial buildings having a maximum floorspace of 33,110m² and with a flexible use [to enable changes in accordance with Part 6 Class V of the Town and Country Planning (General Permitted Development) Order 2015 (as amended)] within Class B2 or B8 of the Town and Country Planning (Use Classes) Order 1987 as amended, and ancillary Class B1 offices; and Part B: Outline planning application - the development of up to 2 no. commercial buildings having a maximum floorspace of 16,890m² and having a flexible use [to enable changes in accordance with Part 6 Class V of the Town and Country Planning (General Permitted Development) Order 2015 (as amended)] within*

Class B2 or B8 of the Town and Country Planning (Use Classes) Order 1987 as amended, and ancillary Class B1 offices, with all other matters reserved for future approval”.

Biodiversity in Planning

- 1.4 Biodiversity is a material consideration, and Local Planning Authorities (LPAs) have a requirement to consider biodiversity and protected species when determining planning applications. Section 15 of the National Planning Policy Framework (July 2021) gives specific reference to minimising the impacts of development on biodiversity. Local and Neighbourhood plans also provide guidance towards protecting and enhancing biodiversity, including priority habitats and notable species.

2.0 METHODOLOGY

Phase 1 Habitat Survey

- 2.1 A Phase 1 Habitat survey was undertaken to JNCC standards (JNCC, 2010). The site was walked, and each habitat was assigned a Phase 1 habitat category. Species lists were taken at locations of botanical interest. All botanical nomenclature follows Stace, 2019. The survey was carried out on the 31st January 2018 by Kate Reed (Senior Ecologist) and Rosie Fisher (Ecologist). The site has now been cleared as the first two phases of the site are currently under construction.
- 2.2 There were no constraints to the survey of the site. All habitats were accessible and all plants identifiable.

DEFRA Biodiversity Metric 3.0 Calculation

- 2.3 Biodiversity net gain was calculated using Biodiversity Metric 3.0 Auditing and accounting for biodiversity Calculation tool.
- The onsite habitat baseline calculations are measured on MapInfo GIS software using the Phase 1 Habitat map.
 - The Phase 1 habitat classifications are translated to UK Habitat Regulations using the translation tool in the Biodiversity Metric.
 - The habitat conditions are based on the condition assessments listed in the habitat condition sheets excel document.
 - The ecological connectivity for area and linear habitats are determined using this method: medium/ low habitat distinctiveness= low connectivity; high habitat distinctiveness= medium connectivity.
 - The strategic significance is determined by deciding if the habitat is desirable within the location and seeing if it is identified within a local strategy.
 - The areas to be retained or enhanced are calculated using the Proposed Landscaping Masterplan.
 - The site habitats and are calculated using measurements provided by David Yeadon Ltd and JCA Ltd and over-laying site plans onto the MapInfo GIS software and taking area measurements. These habitats are considered as above.
 - The hedgerow conditions are determined following the condition assessment of hedgerows and lines of trees in the habitat condition sheets excel document.
- 2.4 The change in Biodiversity is calculated by subtracting the Baseline unit values from the post-development values of the broad habitat types. This is combined with any off-site gains or losses to give a final Biodiversity Unit Value for the Scheme.
- 2.5 As part of the planning application (19/00128/HYBRID) a Biodiversity Impact Assessment was carried out by Rachel Hacking Ecology for Zones A and B of the development (see *Ecology Surveys and Biodiversity Assessment of Land to the North-east of Junction 11 of The M40, Banbury, Oxfordshire* – 2019). The Warwickshire Coventry and Solihull Biodiversity Impact Assessment Calculator was used and accepted by Cherwell District Council. The data within this report has been input into this DEFRA Metric 3.0 Calculation along with the data

for the revised Zone C proposals to provide an in-combination impact assessment of the site proposals.

Personnel and Timing

- 2.6 Ben Crossthwaite carried out the calculations and assessment in August 2021, based on the results of the aforementioned Phase 1 Habitat Survey and the proposed landscape areas provided by DEP Landscape Architecture Limited (See Appendix A). As Ben is an experienced ecologist and trained in Biodiversity impact assessment.

3.0 BIODIVERSITY IMPACT ASSESSMENT

- 3.1 The following calculations are based on the Phase 1 Habitat Map and Biodiversity Impact Assessment found in the Extended Phase 1 habitat report carried out by Rachel Hacking Ecology (*Ecology Surveys and Biodiversity Assessment of Land to the North-east of Junction 11 of the M40, Banbury, Oxfordshire* – 2019). The baseline habitats and their condition assessments are based on the Extended Phase 1 Habitat Survey of the site are described below.
- 3.2 The baseline habitat units of the site are calculated to be 33.42 (see Appendix B). 1.14 habitat units will be retained as part of the proposals. The habitat conditions were assessed using the Biodiversity Metric 3.0 Habitat Condition Assessment Sheets document.

Existing Habitats

Baseline Habitat Units

Improved Grassland (Zones A, B and C)

- 3.3 This habitat dominates the site comprising livestock grazed, species-poor grassland. This habitat is categorised as Grassland – Modified Grassland under the UK Habitat Regulations. The areas of improved grassland have a total measurement of 15.06ha.
- 3.4 This habitat is assessed as having poor condition. The grassland is dominated by Perennial Rye-grass over 25% and on eutrophic soils. The management consists of livestock grazing. The cover of undesirable species is greater than 15%.

Tall, Ruderal Herb (Zone B)

- 3.5 This habitat is located in the central part of the site along the eastern boundary. This habitat is categorised as Sparsely Vegetated Land – Ruderal/Ephemeral under the UK Habitat Regulations. The area of tall, ruderal herb is measured at 0.8ha.

Neutral Grassland (Zone C)

- 3.6 This habitat exists as a linear feature along the eastern boundary. This habitat is categorised as Grassland – Other Neutral Grassland under the UK Habitat Regulations due to its poor condition. The area of neutral grassland is measured at 0.14ha.
- 3.7 The condition of the neutral grassland is considered poor due to its lack of species diversity and has over 25% of Perennial Rye-grass, on eutrophic soils and the cover of undesirable species is greater than 15%.

Broad-leaved Plantation Woodland (Zone C)

- 3.8 This habitat is located along the south-eastern and southern boundaries as a linear feature. This habitat is categorised as Woodland and Forest – Other Woodland; Broadleaved under the UK Habitat Regulations. The area of this habitat is 0.26ha.
- 3.9 The woodland has trees of a similar age and structure, there is no evidence of successful tree regeneration and there are signs of nutrient enrichment. There is no evidence of fallen

dead wood of over 20cm in diameter due to the juvenile nature of the plantation woodland and the woodland only comprises three species. The mixed species show a consistent planting pattern across the site and the original planting lines can be seen. Therefore, the woodland fails four of the twelve condition criteria, and is assessed as having a poor condition.

Scattered Trees (Zone C)

- 3.10 One mature scattered tree is located within the field of improved grassland. This habitat is categorised as Woodland and Forest – Wood-pasture and Parkland under the UK Habitat Regulations and covers a total of 0.01ha. The calculator would not allow for the input of this figure.
- 3.11 The Woodland and Forest – Wood-pasture habitat has been assessed as having poor condition as they lack diverse and height and structure, there is no evidence of successful tree regeneration and there are signs of nutrient enrichment and there is no evidence of fallen dead wood of over 20cm in diameter.

Baseline Hedgerow Units

- 3.12 The baseline hedgerow units are calculated to be 7.94 (see Appendix C).

Native Defunct Hedgerow (Zone C)

- 3.13 This hedgerow type is classified as Native Hedgerow under the UK Habitat Regulations and has a total measurement of 0.36km and has 1.58 hedgerow units. The hedgerow that is located along the south-eastern and southern boundaries and fails on the condition criteria A2, B2, C2 and D2. This has failed four attributes in different functional groups resulting in a moderate condition assessment.

Native Intact Hedgerow (Zone C)

- 3.14 This hedgerow type is classified as Native Hedgerow under the UK Habitat Regulations and has a total measurement of approximately 1.445km and has 6.36 hedgerow units. These sections of hedgerow, located along the eastern boundary and forming intra-site field boundaries, fail on condition criteria's A2, B2, C2 and D2. This has failed four attributes in different functional groups resulting in a moderate condition assessment.

Baseline River Units

- 3.15 The baseline for river units is calculated to be 1.47 river units (see Appendix D).

Flowing Water (Zones A and B)

- 3.16 Two ditches are located on site running east-west, parallel to intra-site boundary hedgerows. This habitat is categorised as Lakes – Ditches under the UK Habitat Regulations with a total measurement of 0.33km and providing 1.32 river units.
- 3.17 The ditches fail on criteria's 1, 2, 4 and 6 of the Condition Assessment Criteria. Therefore, the condition of the ditches is poor. There is no development within the channel or the banks, therefore the category "no encroachment" of the water course is appropriate. No riparian

encroachment has been selected for this habitat as there is no development within 10m of the bank-top.

- 3.18 The most northerly ditch on site enters a culvert. This has a separate category within the calculator. The culvert is approximately 0.1km long and is by default, in poor condition and provides 0.15 river units.

Proposed Habitats

- 3.19 The new habitats proposed are calculated to provide 36.58 units (see Appendix E). The Biodiversity Impact Assessment shows an increase of 3.16 habitat units which is 9.44% biodiversity net gain.

Retained Habitats

Broad-leaved Plantation Woodland (Zone C)

- 3.20 This habitat is to be retained as part of the site proposals measuring 0.26ha and calculated as retaining 1.14 habitat units.

Habitat Unit Creation

Urban - Developed; Sealed Surface (Zones A, B and C)

- 3.21 Much of the site will be covered with hardstanding and buildings, calculated to be approximately 10.12ha which is Urban - Developed land; sealed surface in the UK Habitat Regulations. This is a habitat with no strategic importance or distinctiveness.

Grassland – Modified Grassland (Zones A, B and C)

- 3.22 Areas of 'wildflower meadow mix' are proposed as part of the landscaping proposals covering approximately 2.8ha. The grassland is classified as modified grassland and not neutral grassland as there will be no soil stripping carried out, resulting in the existing eutrophic soils and seedbanks being retained. The proposed final condition for this habitat is good. This will take 7 years to achieve and provide 14.4 habitat units.

Grassland – Other Neutral Grassland (Zones B and C)

- 3.23 Areas of 'marginal and emergent vegetation' are proposed along the newly created/diverted drainage ditch and across the wetland area covering approximately 1.01ha. The grassland is classified as Other Neutral Grassland and not Wetland – Fens or Wetland – Reedbeds due to the introduced nature of the habitat. The proposed final condition for this habitat is moderate. This will take 5 years to achieve and provide 7.43 habitat units.

Grassland – Modified Grassland (Zones B and C)

- 3.24 Areas of 'wetland wildflower meadow mix' are proposed along the newly diverted/created drainage ditch and wetland. The grassland is classified as modified grassland and not Wetland – Fens or Wetland – Reedbeds due to the introduced nature of the habitat. The proposed final condition for this habitat is moderate. This will take 4 years to achieve and provide 1.14 habitat units.

Grassland – Modified Grassland (Zone C)

- 3.25 Areas of 'species-rich grassland mix' are proposed across the site. The grassland is classified as modified grassland and not neutral grassland as there will be no soil stripping carried out, resulting in the existing eutrophic soils and seedbanks being retained. The proposed final condition for this habitat is moderate. This will take 4 years to achieve and provide 0.65 habitat units.

Urban – Introduced Shrub (Zones A, B and C)

- 3.26 Areas of 'ornamental shrub bed planting' are proposed across the site. The proposed final condition is poor and will take 1 year to achieve providing 0.18 habitat units.

Heathland and Shrub – Mixed Scrub (Zones A, B and C)

- 3.27 The planting of 'native shrub mix' is proposed along many of the site's boundaries. The proposed final condition is moderate. This will take 5 years to achieve and provide 11.19 habitat units.

Urban – Street Tree (Zone C)

- 3.28 279 (241no native species, 38no ornamental species) these comprise 14no Extra Heavy Standard, 84no Heavy Standard, 181no are proposed to be planted within the scheme. Using the street tree calculator this covers an area of 0.13ha. This is calculated at providing 0.44 habitat units and will have a proposed final condition of moderate, which will take 27 years to achieve the desired condition.

Hedgerow Unit Creation

Native Hedgerow (Zone C)

- 3.29 The native hedgerows proposed are calculated to measure 0.354km and offer 1.3 hedgerow units (see Appendix F). The target condition is moderate, and this will be achieved in 5 years.

Native Species-rich Hedgerow (Zones A, B and C)

- 3.30 The native species-rich hedgerows proposed are calculated to measure 1.258km and offer 9.26 hedgerow units (see Appendix F). The target condition is moderate, and this will be achieved in 5 years.

River Unit Creation

Lakes - Ditches (Zone C)

- 3.31 Two stretches of open ditch are proposed within the southern part of the site. It was calculated these would have a total length of 100 metres and an average width of 1 metre. There is to be no development within the channel or the banks, therefore the category no encroachment of the water course is appropriate. Major riparian encroachment has been selected for this habitat as access roads and carpark spaces are present within 4m of the bank-top. This habitat was calculated to provide 0.29 habitat units (see Appendix G). The target condition is poor taking 1 year to achieve.

4.0 SUMMARY

- 4.1 The proposed development at land off Junction 11 of the M40, Banbury, Oxfordshire, in its current site layout and design, will provide and increase of 3.16 habitat units which equates to 9.44% biodiversity net gain. This is due to the existing site habitats having relatively low ecological value and the landscape proposals providing more valuable habitats such as the wetland and scrub habitats.
- 4.2 The site in its current layout and design results in the addition of 4.83 hedgerow units which is 60.76% biodiversity net gain in hedgerow units. This is due to the number of hedgerows proposed and the species-rich nature, despite losing some of the existing species-poor hedgerows.
- 4.3 The loss of the existing ditches on site results in a reduction of 1.18 river units which equates to 80.31% biodiversity net loss in river habitat units. This is despite the creation of a new ditch. However, the large wetland habitats provided in Zone B, categorised as Grassland, Other Neutral Grassland in the habitats assessment, provide more than adequate mitigation for the loss of the existing poor ditches. These habitats will hold water and will provide habitat for aquatic, emergent and marginal vegetation, providing species diversity and wetland habitat for wildlife.
- 4.4 The development scheme provides biodiversity net gain in both habitat and hedgerow units. As aforementioned, it is considered the loss of river units is adequately mitigated for by the creation of higher value wetland habitats across Zone B. The existing ditches were of poor condition, with turbid poor quality water, no aquatic or emergent vegetation present and provided sub-optimal aquatic habitat.

Biodiversity Impact Assessment - Land at Junction 11 of the M40, Banbury, Oxfordshire - 2021



APPENDIX B – Baseline Habitat Unit Calculation

Land off junction 11, M40, Banbury, Oxfordshire																
A-1 Site Habitat Baseline																
Condense / Show Columns				Condense / Show Rows												
Main Menu				Instructions												
		Habitats and areas			Distinctiveness	Condition	Strategic significance		Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value					
Ref	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Condition	Strategic significance		Total habitat units		Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area lost	Units lost	
1	Grassland	Modified grassland	3.46	Low	Poor	Area/compensation not in local strategy/ no local strategy		Same distinctiveness or better habitat required	6.92			0.00	0.00	3.46	6.92	
2	Woodland and forest	Other woodland, broadleaved	0.26	Medium	Poor	Location ecologically desirable but not in local strategy		Same broad habitat or a higher distinctiveness habitat required	1.14	0.26		1.14	0.00	0.00	0.00	
3	Grassland	Other neutral grassland	0.14	Medium	Poor	Area/compensation not in local strategy/ no local strategy		Same broad habitat or a higher distinctiveness habitat required	0.56			0.00	0.00	0.14	0.56	
4	Woodland and forest	Wood-pasture and parkland	0	V High	Poor	Location ecologically desirable but not in local strategy		Response compensation likely to be required	0.00			0.00	0.00	0.00	0.00	
5	Grassland	Modified grassland	11.6	Low	Poor	Area/compensation not in local strategy/ no local strategy		Same distinctiveness or better habitat required	23.20			0.00	0.00	11.60	23.20	
6	Sparsely vegetated land	Ruderal/Ephemeral	0.8	Low	Poor	Area/compensation not in local strategy/ no local strategy		Same distinctiveness or better habitat required	1.60			0.00	0.00	0.80	1.60	

APPENDIX C – Baseline Hedgerow Unit Calculation

B-1 Site Hedge Baseline								
Condense / Show Columns			Condense / Show Rows			Main Menu		
UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Strategic significance		Suggested action to address habitat losses	
Baseline ref	Hedge number	Hedgerow type	Length KM	Distinctiveness	Condition	Strategic significance	Suggested action to address habitat losses	
1		Native Hedgerow	0.36	Low	Moderate	Location ecologically desirable but not in local strategy	Same distinctiveness band or better	
2		Native Hedgerow	1.445	Low	Moderate	Location ecologically desirable but not in local strategy	Same distinctiveness band or better	

APPENDIX D – Baseline River Unit Calculation

C-1 Site River Baseline										
Condense / Show Columns			Condense / Show Rows							
Main Menu			Instructions							
Existing river type			Habitat distinctiveness	Habitat condition	Strategic significance	Watercourse encroachment	Riparian encroachment	Suggested action	Ecological baseline	
Baseline ref	River type	Length KM	Distinctiveness	Condition	Strategic significance	Extent of encroachment	Extent of encroachment		Total river units	
1	Ditches	0.19	Medium	Poor	Low potential/action not identified in any plan	No Encroachment	No Encroachment	Restore	0.76	
2	Ditches	0.14	Medium	Poor	Low potential/action not identified in any plan	No Encroachment	No Encroachment	Restore	0.56	
3	Culvert	0.1	Low	Poor	Low potential/action not identified in any plan	N/A - Culvert	Major	Restore	0.15	

APPENDIX E – Proposed Habitat Unit Calculation

Land off Junction 11, M40, Banbury, Oxfordshire

A-2 Site Habitat Creation

Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

Post development/ post intervention habitats									
Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance		Temporal multiplier		Habitat units delivered
					Strategic significance	Standard or adjusted time to target condition	Time to target condition/year	Final difficulty of creation	
Urban	Introduced shrub	0.06	Low	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.12
Heathland and shrub	Mixed scrub	0.12	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	0.88
Grassland	Other neutral grassland	0.01	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	0.07
Grassland	Modified grassland	0.44	Low	Good	Location ecologically desirable but not in local strategy	Standard time to target condition applied	7	Low	2.26
Grassland	Modified grassland	0.05	Low	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	4	Low	0.19
Grassland	Modified grassland	0.17	Low	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	4	Low	0.65
Urban	Developed land; sealed surface	2.75	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00
Urban	Urban Tree	0.13	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	27	Low	0.44
Urban	Introduced shrub	0.03	Low	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	0.06
Heathland and shrub	Mixed scrub	1.4	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	10.31
Grassland	Other neutral grassland	1	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	7.36
Grassland	Modified grassland	2.36	Low	Good	Location ecologically desirable but not in local strategy	Standard time to target condition applied	7	Low	12.14
Grassland	Modified grassland	0.25	Low	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	4	Low	0.95
Urban	Developed land; sealed surface	7.37	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Medium	0.00

APPENDIX F – Proposed Hedgerow Unit Calculation

B-2 Site Hedge Creation										
Condense / Show Columns			Condense / Show Rows							
Main Menu			Instructions							
Baseline ref	New hedge number	Proposed habitats		Habitat distinctiveness	Habitat condition	Strategic significance	Temporal multiplier		Difficulty risk multipliers	Hedge units delivered
		Habitat type	Length km	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	
1		Native Hedgerow	0.354	Low	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	1.30
2		Native Species Rich Hedgerow	0.318	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	2.34
3		Native Species Rich Hedgerow	0.94	Medium	Moderate	Location ecologically desirable but not in local strategy	Standard time to target condition applied	5	Low	6.92

APPENDIX G – Proposed River Unit Calculation

C-2 Site River Creation											
Condense / Show Columns			Condense / Show Rows								
Main Menu			Instructions								
Baseline ref	Proposed habitats		Habitat distinctiveness	Habitat condition	Strategic significance	Temporal multiplier		Difficulty multipliers	Watercourse encroachment	Riparian encroachment	River units delivered
	River type	Length km	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of creation	Extent of encroachment	Extent of encroachment	
1	Ditches	0.1	Medium	Poor	Low potential/action not identified in	Standard time to	1	Low	No Encroachment	Major	0.29