Preliminary Ecological Appraisal and Biodiversity Recommendations

Hamilton Hill Farm, Cauldwell Road, Sutton In Ashfield, NG17 5LB

Client: Hamilton Solar Ltd

Report Reference: Wildscapes_P3229_01_V2_PEAR

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Quality Assurance and Project Details

PROJECT NUMBER	P3229
CLIENT	Hamilton Solar Ltd
PROJECT NAME	Solar Farm, Hamilton Hill Farm
SITE LOCATION	Hamilton Hill Farm, Cauldwell Road, Sutton In Ashfield, NG17 5LB
REFERENCE	Wildscapes_P3229_PEAR_01_V2

Report authors and Quality check				
Originated	Jonathan Pounder, BSc (Hons), Full Member CIEEM	Freelance Ecologist	J Pounder	18th May 2025
Review	David Pounder	Freelance Ecologist	DW Pounder	23rd May 2025
Technical Review				
Approved for Issue				

Field Investigations and Data

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Wildscapes CIC and Sheffield and Rotherham Wildlife Trust for inaccuracies in the data supplied by any other party.

Declaration of Compliance

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed within this document are our true and professional bona fide opinions.

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TABLES

Summary

i. Wildscapes were commissioned by to undertake a Preliminary Ecological Appraisal of the site at Hamilton Hill Farm as a whole and to assess the potential ecological constraints to the proposed solar farm development scheme (this is referred to as the Scheme going forward).

ii. The land within the Scheme Boundary is hereafter referred to as the Site is located at Hamilton Hill Farm, Cauldwell Road, Sutton In Ashfield, NG17 5LB (Grid Reference of the farmhouse between the two areas is SK5158 8978). The Site comprises of two fields, Area A (3.699Ha) and Area B (5.937ha) which sit on opposite sides of the farm (see Figure 2 for location details). The fields are currently used for arable farming.

iii. The report establishes the baseline BNG metric score based on the site as it currently presented (baseline) and the current proposed design (Figure 7 in Appendix 2).

iv. The report makes recommendations for biodiversity improvements where possible. It will also provide suggestions for ecological enhancement opportunities where relevant.

v. Below is a summary of the ecological features on Site, the potential they have to affect the scheme and finally whether any further surveys or mitigation is required.

Table 1 Summary of Features and Impacts

ECOLOGICAL FEATURE	THE POTENTIAL TO BE AFFECTED BY THE SCHEME	**ARE FURTHER SURVEYS, ASSESSMENT OR MITIGATION REQUIRED?**	
Designated sites	No	No	
Habitats	No	No	
Invasive species	Yes	Ongoing prevention monitoring	
Great crested newts	Potential	Yes	
Bats – Tree Roosts	No	No – based on assumption no trees are being removed	
Bats – Building Roosts	No	No	
Bats – Activity	Potential	No, Winter working associated with hedgerow will minimise any potential impacts	
Otter and water vole	No	No	
White-clawed crayfish	No	No	
Reptiles	No	No	
Birds	No	No, Bird box installed in the final project design Winter working associated with hedgerow will minimise any potential impacts	
Hazel dormouse	Yes	No	
Badgers	No	Yes	Consideration during the delivery of the development, access arrangement need to be made. PWMS needed
Other notable species	Yes	No	
Fish	No	No	
Aquatic Invertebrates	No	No	
Terrestrial invertebrates	No	No	

vi. A BNG calculation was undertaken on the 16th May 2025; using the Statutory Metric which showed that the habitats on site had a habitat score of 32.93 habitat units and 9.75 hedgerow units on the baseline.

vii. Based on the provided development proposal the onsite post intervention will result in 30.24 habitat units (-8.14% loss) and 15.03 hedgerow units (+54.05% gain). Trading rules are not satisfied.

viii. To develop a compliant metric development proposal, it is suggested to:

- Investigate possible ways to reconfigure the design to provide areas of grassland for enhancement
- Purchase of off-site credits

ix. The following are a list of enhancements which could be delivered as part of the Scheme to enhance biodiversity and that do not contribute towards the calculation for the biodiversity net gain.

- Create amphibian refugia/ log piles in site corners
- Install several bat boxes into the surrounding trees and taller hedgerows
- Install bird boxes in the surrounding trees and hedgerow, consideration to a pole mounted owl box
- Install insect hotel in the hedgerows

x. Development considerations including:

- Carry out the development work (heavy equipment movement) in the winter months to avoid bird nesting season and the terrestrial movement of Great Crested Newts
- Consider hedgehog and badger movements through the development area – try not to have excavations open overnight (where possible) and if needed ensure there is a suitable ramp constructed that will allow animals to escape the excavations themselves; and a visual inspection of the trenches each morning before work commences
- Badger gate provision should be made within the boundary fence to be installed
- Hedgehog access provision (holes 15cm x 15cm in the fence) to allow hedgehogs to pass through and a hedgehog box installed.

1. Introduction

Purpose and Scope

i. Wildscapes were commissioned by Hamilton Solar Ltd to carry out a Preliminary Ecological Appraisal (PEA) at Hamilton Hill Farm, Cauldwell Road, Sutton in Ashfield, NG175LB, which is being proposed for the construction of a solar farm (hereafter titled the Scheme). The land within the red line boundary within the Scheme is hereafter titled 'the Site'. The Site is comprised of by the agricultural land that is either side of the existing farmstead (shown in Appendix 2).

ii. Current good practice guidelines[1] are adhered to as part of the technical information, which is supplied by the client. The results of the PEA are presented in this report and adhere to and address the relevant wildlife legislation and planning policies (Appendix 1).

iii. The current proposal will see the existing arable agricultural fields transformed into two areas of solar farms, with associated site infrastructure, and boundary works – details can be found in Appendix 2.

iv. The PEA contains information from both the desk-based assessment, the Phase 1 Habitat Survey and a preliminary protected species assessment. The desk study was undertaken on 21st April 2025 to obtain records of statutory and non-statutory designated sites[2], notable habitats and both protected and notable species[3] 2.5km from the Site boundary. The ecological walkover survey of accessible land within boundary was undertaken on 2nd March 2025

v. The survey area is based on the client's plans and the desk study data and applicable legislation. It is shown in the Site Location Plan (Figures 1 & 2) and the Phase 1 Habitat plan (Figure 4).

vi. The assessment for this report is a preliminary assessment until further ecological surveys. These results may then need to be fed in to a planning application or in to 'Ecological Impact Assessment' once proposals are finalised and the further surveys have been completed.

Zone of Influence

vii. The ecological zone of influence (ZOI) is shown as the extent of any potential impacts of the proposed development. It is determined by individual species ecological requirements as per best practice guidelines.

viii. For bats, it varies as they are a very mobile species and can be up to 5km from a site, which has high quality habitat as per Bat Conservation Trust (BCT) guidelines[4].

[1] CIEEM (2017). Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

[2] Notable habitats are those which are principal habitats under Section 41 of the Natural Environment and Rural Communities Act 2006, those which are under the Sheffield Biodiversity Action Plan (BAP) and hedgerows which are 'important' under Hedgerow Regulations Act 1997.

[3] Notable species are those which are principal species under Section 41 of the Natural Environment and Rural Communities Act 2006, those which are listed in the International Union for Conservation of Nature Red Data Book and any species which is listed under the Sheffield LBAP.

[4] Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London.

ix. For badgers, the ZOI is between 30-50m from the Site boundary as this is the distance which badgers' setts can be damaged or disturbed by heavy machinery.

x. For designated sites, the ZOI can be >10km from the Site Boundary and this is referred to as the Impact Risk Zone (IRZ). If a site is within an IRZ, it can trigger the need for an Environmental Impact Assessment (EIA) or for a Habitat Regulations Assessment (HRA).

xi. For great crested newts (GCN), the ZOI can be up to 500m from the Site boundary (the distance Natural England would consider for a GCN licence).

Site Context and Location

xii. The Hamilton Solar site is located in the area between Mansfield (north), Sutton-in-Ashfield (west) and Kirby-In-Ashfield (south west). The site is currently agricultural farm land surrounded by industrial development – presumably because of the road links to the A617 (north east), B6139 (South west) and A611 (south east) which form a triangle around the site.

xiii. Hamilton Hill LWS is located between the two identified proposed areas, creating an elevated landscape feature.

xiv. A small area of residential housing is present to the south of the proposed development which have large gardens and fringed by woodland.

Figure 1 Site Location Plan

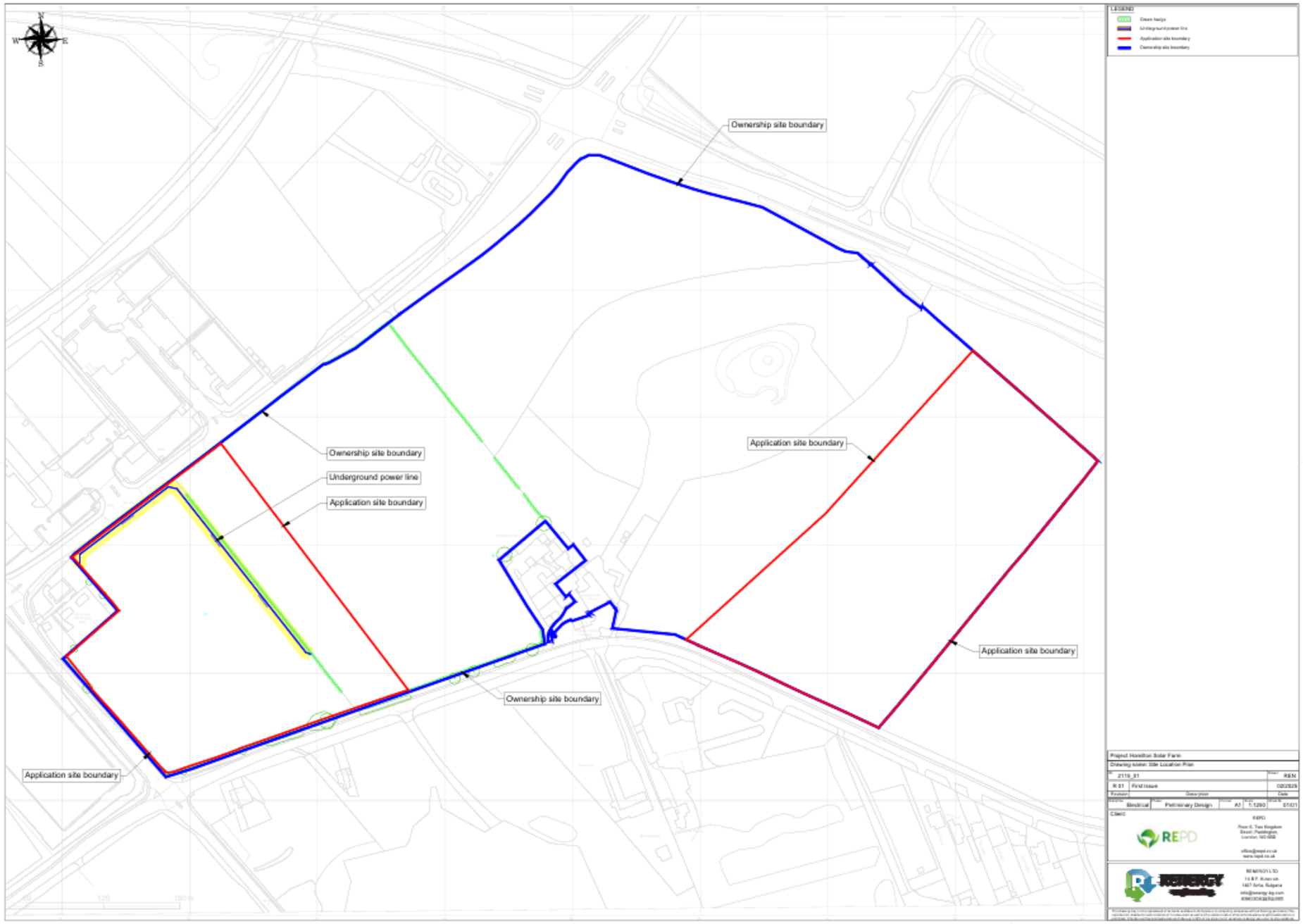


Figure 2 showing an aerial view of the two proposed development areas in relations to the surrounding land, with identification used in the document.

2. Methodology

2.1 Desk study

i. Ecological record information for the Site and surrounding area (up to one and a half kilometres) was requested from the organisations included within Table 2.

Table 2 Organisations consulted about biological records

DATE CONSULTED	ORGANISATION	RECORDS REQUESTED	SEARCH RADIUS FROM BOUNDARY
21/04/2025	Nottinghamshire Biological and Geological Records Centre (NBGRC)	Non-Statutory Site Designation	2.5km
		Protected/Principal Species Records	2.5km
21/04/2025	(www.magic.gov.uk)[5]	Statutory Site Designations (Including IRZ)	10km
		Habitats of Principal Importance (NERC Act, 2006)	2km
		European Protected Species Licences	5km

ii. In addition to the above online mapping sources, Google Earth Pro and Grid Reference Finder were used to view both satellite imagery and maps of the site and surrounding land.

iii. Measurements taken from Promaps and MAGIC maps.

2.2 Preliminary Ecological Appraisal

iv. The PEA is based on the Chartered Institute of Ecology and Environmental Management (CIEEM) best practice guidelines (CIEEM, 2017). The assessment identifies the following features: habitats, species, sites and other ecological features especially the ones which have more protection and are of a higher value such as those with legal protection, statutory or local such as and those on the Red Data Lists or Local Biodiversity Action Plan. This assessment will then provide recommendations for any further surveys to confirm presence / likely absence of protected species.

v. The constraints identified will be reviewed based on the client's plans, the recommendations from this and have considered the following: avoidance, mitigation, compensation and enhancement.

[5] Multi-Agency Geographic Information for the Countryside Interactive GIS Map

2.3 Phase 1 Habitat Survey

vi. A Phase 1 was carried out on the Site to identify habitats present. All habitats present within the Site boundary were noted and mapped following the standard Phase 1 Habitat Survey Methodology (JNCC, 2016) which looks at the identification of individual plant species and identifying the habitat type.

2.3.1 Condition Assessment

vii. Each habitat area was assigned a condition assessment based on the relevant 'habitat condition sheet' as per the Statutory Biodiversity Metric – Technical Supplement.

viii. Habitat areas are assigned one of the following categories: Good, Moderate or Low. If the conditions vary across an area of the same habitat type, then the habitat will be split in two separate parcels, with each one being assigned a different condition category.

ix. A fixed condition score is assigned to certain habitat categories and therefore do not require their own condition assessment as per the Technical Supplement.

x. The habitat condition sheets for each land parcel are provided within the Appendix.

2.3.2 Use of Calculation Tool

xi. Biodiversity Statutory Metric Calculation Tool is used to calculate biodiversity units for existing baseline conditions within the Site.

xii. The habitat type, area (ha) and condition score, which have been calculated above, are entered in to the metric for each parcel of habitat present within the proposed development site.

xiii. The metric then assigns a 'distinctiveness' category and score to each of the habitat parcels.

xiv. Each habitat parcel is then assigned a 'Strategic Significance'. Initially the strategic significance is based on the local planning policy.

xv. Based on the above, the metric then calculates Biodiversity Units for each of the habitat parcels and also a total number of Biodiversity Units for the proposed development area.

2.4 Legally protected or Priority species

xvi. The site was assessed for its suitability to support legally protected or priority species, which would be affected by the proposed development: badger, invertebrates, bats, reptiles, hazel dormouse, otter, water vole, birds, great crested newts, protected or notable plans, other notable species. This includes invasive non-native plant species e.g. Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegassianum*).

2.5 Constraints

xvii. The survey was carried out at an appropriate time of year and in good weather conditions.

2.6 Lifespan of data

xviii. The survey results contained within this report are considered accurate for 18 months from the date of the survey, assuming no considerable changes to the Site conditions or the presence of mobile species e.g. badgers, bats and otters.

3. Results

3.1 Surveyor competency and Survey Conditions

i. The initial Phase 1 survey was carried out by Jonathan Pounder BSc (Hons) PGCE, who has been a professional ecologist for 24+ years and is appropriately experienced and qualified to undertake this survey. He holds Natural England species licenses for Great Crested Newts (Survey Level 1 Class Licence 2015-18919-CLS-CLS) and Bat (Level 2 Survey Class Licence 2015-11439-CLS-CLS since 2007), Bat Earned Recognition Level 1 (BER001) and full membership of CIEEM.

ii. The survey was carried out in suitable weather conditions. See Table 3.

Table 3 Survey weather conditions

SURVEY	DATE	TEMPERATURE (^{O}C)	WIND (BEAUFORT SCALE)	CLOUD COVER (OKTAS SCALE)	PRECIPITAION
PEA	02/03/25	9	2, south west	0	None

3.2 Desktop study

iii. A total of no statutory designated sites were recorded within the search area or within 2km of the Site. The site is located within the IRZ of the statutory designated sites.

iv. The Site lies within 10km of 16x SSSI's:

- Kirby Grives SSSI (4.35km to the south west),
- Strawberry Hill Heath SSSI (4.81km to the east)
- Teversal Pasture SSSI (3.43km to the north west)
- Bogs Farm Quarry SSSI (5.94km to the south west)
- Bagthorpe Meadows SSSI (8.07kam to the south west)
- Friezeland Grassland SSSI (9.24km to the south west)
- Annesley Woodhouse SSSI (6.39km to the south)
- Linby Quarries SSSI (6.16km to the south east)
- Rainworth Lakes SSSI (5.52km to the East)
- Rainworth Heath SSSI (6.86km to the East)
- Sherwood Forest Golf Course SSSI (6.56km to the north east)
- Clipstone Heath SSSI (6.6km to the north east)
- Hills & Holes and Sookholme Brook, Warsop SSSI (7.84km to the north)
- Lord Stubbins SSSI (9.63km to the north)
- Pleasley Vale Railway SSSI (5.72km to the north west)
- Dovedale Wood SSSI (6.66km to the north west)

v. The proposal is potentially (depending on the proposed energy output) a type that are included within the IRZ for the designated sites listed above. These are listed below:

- **Infrastructure:** Airports, helipads and other aviation proposals.

- **Air Pollution:** Any industrial/agricultural development that could cause AIR POLLUTION (including: industrial processes, livestock & poultry units with a floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500 tonnes).
- **Combustion:** General combustion processes >50MW energy input. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.

vi. Further investigation is needed and potentially discussions with Natural England.

vii. There are 16 Local Nature Reserves (LNR) located within 10km on the site – listed in Table 4.

viii. There are 13 Local Wildlife Sites (formerly Sites of Importance for Nature Conservation - SINCs) in or adjacent to the search area – listed in Table 6 . Detailed boundaries are viewable on the Nottingham Insight website.

ix. Records of European Protected Species Licences (EPSL) were found within 5km of the search area. This includes:

- 1 record (5 different licenses) of GCN licences was returned – 2016-26062-EPS-MIT 1 to 5 located 439m to the south east (2017 to 2022).
- 3 records of bat license returns covering 45 pipistrelle, 55 pipistrelle and BLE and including roost destruction at 1845m to the north east.
- No records of bat licences were returned.

x. There are 5 Habitats of Principal Importance under Section 41 of the NERC Act, 2006 that are located within 2km of the Site. These are shown in Table 5.

Table 4 Local Nature Reserves designated within 10 km

LOCAL NATURE RESERVE NAME	DISTANCE TO SITE (km)	DIRECTION FROM THE SITE (NEAREST HABITAT)
The Hermitage	0.904	North
Oakham	1.1	North east
Quarry Lane	1.4	North east
Teversal/ Pleasley Network	3.22	North west
Brierly Forest Park	3.53	North west
Portland park	4.27	South west
Tipping's Wood	7.13	South east
Rainworth Water	7.77	East
Oak Tree Heath	4.84	North east
Vicar Water Nature Reserve	6.85	North east
Ravensdale	4.14	North east
Maun Valley Park	3.89	North east
Pleasley Vale	5.88	North
Rowthorne Trail	5.64	North west
Pleasley	5.54	North west
Doe Lea	9.66	North west

Table 5 Habitats of Principal Importance within 2 km

HABITAT TYPE	NUMBER	DIRECTION FROM THE SITE (NEAREST HABITAT)	DISTANCE TO SITE (NEAREST HABITAT)
Lowland Dry Acid Grassland	1	Between the two areas of the site	Adjacent
Lowland Heath	1	South east	876m
Reedbed	1	North west	707m
Deciduous Woodland Priority Habitat (including ancient and PAWs woodland)	23	South west	366m
No main habitat but additional habitats present	4	South west	800m

xi. Table 7 below shows the protected species records from Nottinghamshire Biological and Geological Records Centre (NBGRC). The table provides a summary of the records, which were considered the most relevant to this Site and the proposed works.

xii. No records where returned from the site.

Table 6: Non-statutory designated sites within 2km of the site

No.	Name	Area	District	Grid Ref.	Description	Interest
1/36	Coxmoor Golf Course	65.222 ha	Ashfield District	SK 526574	An excellent habitat mosaic	Botanical
2/78	Thieves Wood	166.263 ha	Ashfield District	SK 543567	An extensive coniferous plantation with ancient deciduous portions	Botanical, Moth
2/80	Cauldwell Dam and Drain	1.749 ha	Ashfield District	SK 530583	A pond, marsh and drain with a noteworthy community	Botanical
2/226	King's Mill Reservoir	26.811 ha	Ashfield District, Mansfield District	SK 516596	A notable water body	Botanical
5/39	Kirkby Dismantled Railway	1.777 ha	Ashfield District	SK 501573	A scrubby dismantled railway with a notable calcicolous grassland community	Botanical
5/289	Maun Woodland And Scrub	1.131 ha	Mansfield District	SK 534601	A relict semi-natural woodland	Botanical
5/1090	Nottingham Road Cemetery	10.475 ha	Mansfield District	SK 540588	A notable grass heath and acid grassland communities in a cemetery	Botanical
5/2190	Hamilton Hill	3.53 ha	Ashfield District	SK 520589	A remnant acid grassland on an isolated hill	Botanical
5/2205	Cauldwell Brook	0.734 ha	Ashfield District, Mansfield District	SK 531590	A length of stream of zoological importance	White-clawed Crayfish
5/2206	River Maun, Mansfield	0.468 ha	Mansfield District	SK 532601	A stretch of river of zoological interest	White-clawed Crayfish
5/3443	Oakham Local Nature Reserve	2.164 ha	Mansfield District	SK 530596	Relict area of grassland with noteworthy species	Botanical
5/3444	Cauldwell Brook Marsh	2.349 ha	Ashfield District, Mansfield District	SK 529589	Marshy grassland in willow plantation by a tributary of Cauldwell Brook	Botanical
5/3471	Hermitage Mill Pond	2.69 ha	Mansfield District	SK 521598	Former Mill Pond with heronry	Bird - nesting Grey Herons
5/2190 Hamilton Hill and 5/3444 Cauldwell Brook Marsh are candidate botanical Local Wildlife Sites. No details of 5/2190 Hamilton Hill to share.						

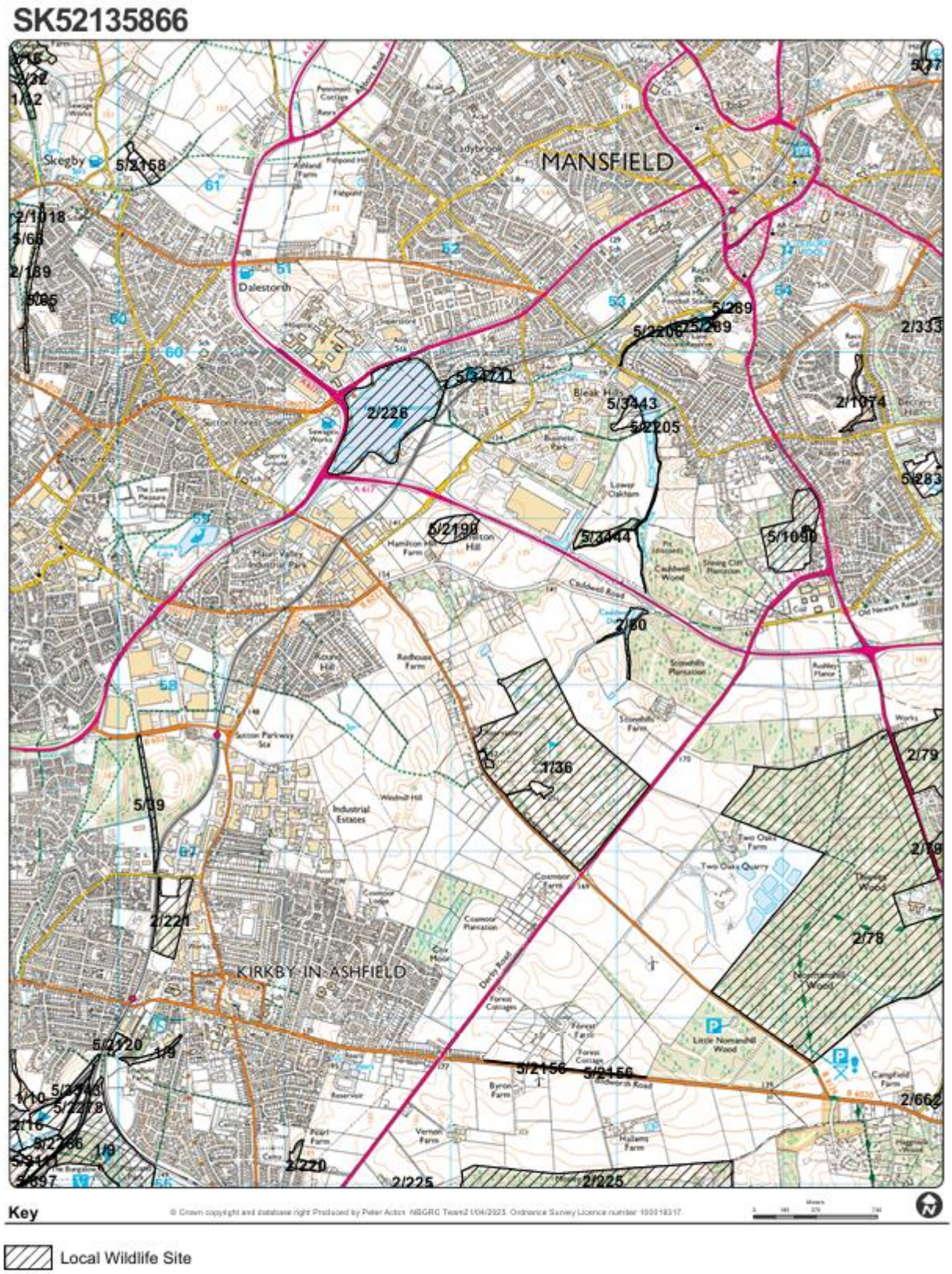


Figure 3 showing the locations of the Local Wildlife sites in the surrounding area

Table 7 Summary of notable and protected species records from within 2.5km of the site.

COMMON NAME	SCIENTIFIC NAME	RECORD NUMBERS	CONSERVATION STATUS
Amphibians			
Common Frog	*Rana temporaria*	89	
Common Toad	*Bufo bufo*	47	
Great Crested Newt	*Triturus cristatus*	29	WCA
Smooth Newt	*Lissotriton vulgaris*	101	WCA
Palmate Newt	*Lissotriton helveticus*	1	WCA
Nearest GCN record	0.59km to the east		
Bats			
Brown Long-eared Bat	*Plecotus auritus*	33	WCA
Common Pipistrelle	*Pipistrellus pipistrellus*	215	WCA
Daubenton's bat		14	WCA
Leisler's Bat	*Nyctalus leisleri*	7	WCA
Myotis Bat species	*Myotis*	27	WCA
Nathusis pipistrelle	*Pipistrellus nathusii*	1	WCA
Natterer's	*Myotis nattereri*	3	WCA
Noctule	*Nyctalus noctula*	61	WCA
Nyctalus spp	Nyctalus	4	WCA
Pipistrelle	*Pipistrellus pipistrellus*	37	WCA
Whiskered Bat	*Myotis mystacinus*	7	WCA
Whiskered/Brandt's Bat	*Myotis mystacinus/brandtii*	5	WCA
Bat	*Chiroptera*	6	WCA
Nearest recorded bat roost	1.06km to the south west for 45 pipistrelle and BLE		
Birds			
Barn Owl	*Tyto alba*	6	WCA
Black-tailed Godwit	*Limosa limosa*	6	Red/ Amber Listed
Bullfinch	*Pyrrhula pyrrhula*	51	Red/ Amber Listed
Curlew	*Numenius arquata*	2	Red/ Amber Listed
Dipper	*Cinclus cinclus*	1	Red/ Amber Listed, WCA
Dunnock	*Prunella modularis*	126	Red/ Amber Listed
Fieldfare	*Turdus pilaris*	10	BAP Species, WCA
Grasshopper Warbler	*Locustella naevia*	1	BAP Species, Red/ Amber Listed
Green Woodpecker	*Picus viridis*	3	Red/ Amber Listed
Greenfinch	*Carduelis chloris*	24	Red/ Amber Listed
Grey Partridge	*Perdix perdix*	1	WCA, Red/ Amber Listed
Herring Gull	*Larus argentatus*	44	Red/ Amber Listed
House Martin	*Delichon urbica*	62	Red/ Amber Listed

Kestrel	*Falco tinnunculus*	18	Red/ Amber Listed
Kingfisher	*Alcedo atthis*	73	WCA
Lapwing	*Vanellus vanellus*	234	BAP Species, Red/ Amber Listed
Lesser Redpoll	*Acanthis cabaret*	3	Red/ Amber Listed
Linnet	*Carduelis cannabina*	5	Red/ Amber Listed
Mallard	*Anas platyrhynchos*	261	Red/ Amber Listed
Meadow Pipit	*Anthus pratensis*	2	Red/ Amber Listed
Mistle Thrush	*Turdus viscivorus*	37	Red/ Amber Listed
Oystercatcher	*Haematopus ostralegus*	3	Red/ Amber Listed
Peregrine Falcon	*Falco peregrinus*	2	WCA
Pink-footed Goose	*Anser brachyrhynchus*	2	Red/ Amber Listed
Red Kite	*Milvus milvus*	7	WCA
Redstart	*Phoenicurus phoenicurus*	3	Red/ Amber Listed
Redwing	*Turdus iliacus*	34	WCA, Red/ Amber Listed
Reed Bunting	*Emberiza schoeniclus*	51	BAP Species, Red/ Amber Listed
Rook	*Corvus frugilegus*	17	Red/ Amber Listed
Skylark	*Alauda arvensis*	16	Red/ Amber Listed
Song Thrush	*Turdus philomelos*	61	Red/ Amber Listed
Sparrowhawk	*Accipiter nisus*	37	Red/ Amber Listed
Spotted Flycatcher	*Muscicapa striata*	5	BAP, Red/ Amber Listed
Starling	*Sturnus vulgaris*	37	Red/ Amber Listed
Stock Dove	*Columba oenas*	91	Red/ Amber Listed
Swift	*Apus apus*	110	Red/ Amber Listed
Swallow		61	Red/ Amber Listed
Tawny Owl	*Strix aluco*	3	Red/ Amber Listed
Tree Pipit	*Anthus trivialis*	3	BAP, Red/ Amber Listed
Tree Sparrow	*Passer montanus*	3	BAP, Red/ Amber Listed
Turtle Dove	*Streptopelia turtur*	2	BAP, Red/ Amber Listed
Whitethroat	*Sylvia communis*	27	Red/ Amber Listed
Willow Tit	*Parus montanus*	61	Red/ Amber Listed
Willow Warbler	*Phylloscopus trochilus*	47	Red/ Amber Listed
Woodpigeon	*Columba palumbus*	5	Red/ Amber Listed
Wren	*Troglodytes troglodytes*	213	Red/ Amber Listed
Yellowhammer	*Emberiza citrinella*	5	BAP, Red/ Amber Listed
Invasive Species			
Himalayan Balsam	*Impatiens glandulifera*	31	WCA
Japanese Knotweed	*Fallopia japonica*	59	WCA
Invertebrates			
White Clawed Crayfish	*Austropotamobius pallipes*	117	WCA
Glow-worm	*Lampyris noctiluca*	1	
Mammals			
Badger	*Meles meles*	8	Badger Act

Brown Hare	*Lepus europaeus*	2	
Hedgehog	*Erinaceus europaeus*	43	BAP
Water vole	*Arvicola amphibius*	82	WCA
Water shrew	*Neomys fodiens*	1	WCA
Plants			
147 records returned from the Nottinghamshire Rare Plant Register Species			
Fish			
Brown Trout		1	
Bullhead		9	WCA
Brook Lampreys		3	WCA

3.3 Wider Landscape and Connectivity

xiii. The Hamilton Solar site is located in the area between Mansfield (north), Sutton-in-Ashfield (west) and Kirby-In-Ashfield (south west). The site is currently agricultural farm land surrounded by industrial development – presumably because of the road links to the A617 (north east), B6139 (South west) and A611 (south east) which form a triangle around the site.

xiv. Hamilton Hill LWS is located between the two identified proposed areas, creating an elevated landscape feature.

xv. A small area of residential housing is present to the south of the proposed development which have large gardens and are fringed by woodland.

xvi. The wider landscape is dominated by the urban centres of Sutton-in-Ashfield, Mansfield and Kirby-in-Ashfield; with the main area of countryside to the south east of the site. There are several reservoirs or large waterbodies surrounding the site with Chadwell Brook flowing to the west of the site. The River Maun also flows through the industrial areas to the north west of the site

xvii. A large plantation woodland (Harlow Wood) is located to the south east and several smaller mixed woodlands are present in the wider landscape.

3.4 General protected species information

xviii. Species such as badger and hedgehog are transient and move around a large geographical area and could therefore utilise the site and the surrounding habitats. The data search showed that both species are present in the surrounding area.

xix. 488 bat records where returned in the data search across 11 species (and a number of unknown species bat records). This shows that bats are active in the area. The nearest roost was recorded 1.06km to the south west of the site (45 pipistrelle and BLE).

xx. 29 Great Crested Newt records where returned in the data search with the closest record 0.59km to the east of the site; with a license return (2016-26062-EPS-MIT 1 to 5 between 2017 and 2022) was identified in the desktop study, located 439m to the south east.

xxi. 8031 bird records where returned within 2.5km of the site, across 162 species. The records where largely associated with several larger sites (Kings Mill Reservoir, Cauldwell Woods and Oakham LNR) associated with birds. The closest records was 0.36km to the North north west.

3.5 Phase 1 Habitat Survey

xxii. The habitat descriptions and photos are provided in Table 8 and follow the order of the JNCC (2010) handbook. Figure 4 below shows a phase plan 1 of the Site.

Table 8 Phase 1 Habitat descriptions

JNCC code and habitat	Description	Measurement	Ecological importance	Photograph
J1.1	Agricultural Field Area A Arable farm field which has recently been ploughed in preparation for seeding.	2.96Ha	None	

J.2.1.2	Area A Infield hedgerow Single species Hawthorn *Crataegus monogyna* hedge with small surface drainage ditch below, crossing through the development area. Small area of rank grassland habitat with perennial rye grass *Lolium perenne* and cocksfoot *Dactylis glomerata.*	195m	BAP habitat	
J.2.1.2	Area A Boundary Hedge Predominately Hawthorn hedgerow with some Blackthorn *Prunus spinosa,* Ash *Fraxinus excelsior* and Sycamore *Acer pseudoplatanus*. Flailed to a uniform height and evidence that has been occurring for an extended period of time at the plants have started to get leggy. Some hedgelaying evidence present, a taller hedge section is present close to the substation. Bracken *Pteridium aquilinum* is present at the base of the hedge along the southern boundary line.	309m	BAP habitat	 

J.2.1.2	Roadside hedge Old leggy Hawthorn hedge with extensive flailing damage and very gappy at its base.	508m	BAP habitat	
J1.1	Agricultural Field Area C Arable farm field which has recently been ploughed in preparation for seeding.	4.81Ha	None	

J.2.1.2	Infield hedgerow Single species Hawthorn hedge.	131m	BAP habitat	
J1.1	Agricultural Field Area D Arable farm field which has recently been ploughed in preparation for seeding.	2.89Ha	None	
J.1.2	Amenity Grassland Small area of roadside grass verge dominated by perennial rye grass with some daisy *Bellis perennis* and creeping buttercup *Ranunculus repens* present.	0.1Ha	None	
	Tarmac track	0.005Ha	None	

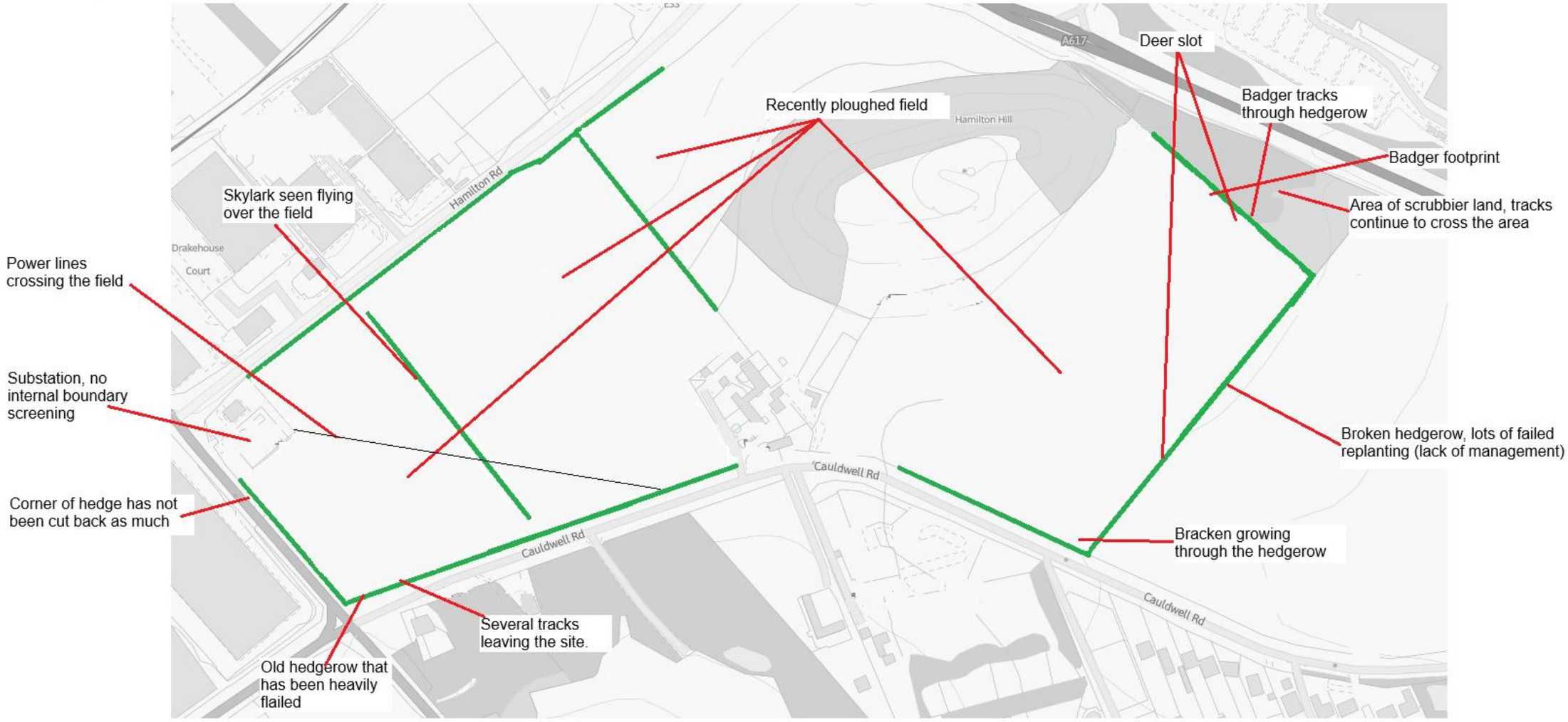
J1.1	Agricultural Field Area B Arable farm field which has recently been ploughed in preparation for seeding.	5.937Ha	None	
J.2.1.2	Roadside Hedgerow Predominately Hawthorn hedgerow that has been flail shaped in some areas, whilst left un managed in others. A strip of unmanaged ground with extensive littering with perennial rye grass, cocksfoot, Germander speedwell *Veronica chamaedrys*, spear thistle *Cirsium vulgare* and stinging nettle *Urtica dioica*. Some bramble *Rubus fruticosus* and bracken extending out from the hedge in places.	168m	BAP habitat	

J.2.1.2	Eastern boundary hedgerow A very gappy hedge with lots of recently planted whips including holly *Ilex aquifolium* and field maple *Acer campestre*. The unmanaged vegetation strip is present in places, but in others the ploughing activity extends right to the hedge.	270m	BAP habitat	 

J.2.1.2	Northern Boundary Hedge A tall hawthorn hedge runs along the northern field boundary, with the only flailing work has been to remove any growth towards the field. Canopy extends down to the base of the hedge, some clear evidence of badger moving through the hedge into the scrub beyond with footprint evidence found.	182m	BAP habitat	

Figure 4: Phase 1 Habitat Plan

Figure 5: showing the results of the field survey.



3.6 Habitat Assessment

3.6.1 Statutory and Non-Statutory Designated Sites

xxiii. There are no statutory designated sites recorded within the search area or within 2km of the Site.

xxiv. The Site lies within 10km of 16x SSSI's designated sites.

xxv. The Site is within 10km of 16x Local Nature Reserve designated sites.

xxvi. The Site is within 2km of 13x Local Wildlife Sites designated sites.

xxvii. The nearest non-statutory site is Hamilton Hill Local Wildlife Site which is located between Area A and Area B. It is designated for being a remnant acid grassland on an isolated hill.

3.6.2 Habitats

xxviii. The majority of the habitats identified on site were of limited ecological and botanical interest and were of poor species diversity. The site is largely agricultural land (ploughed at the time of survey) with hedgerow boundary – with the hedgerows being the main habitat interest feature.

xxix. The hedgerows have largely been managed by tractor flailing and so are not the best quality, but there is some evidence of hedgelaying in the past occurring.

xxx. There were no priority and protected plant species observed on site and are either common, widespread or characteristic of the habitats present.

3.6.3 Invasive species

xxxi. There are no invasive species present on Site at the time of survey but a fairly large number of records of Himalayan Balsam and Japanese Knotweed returned in the data search within 2.5km of the site. These species are all listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) where it is an offence to cause them to spread in the wild.

3.7 Priority and protected Species Assessment

3.7.1 Great Crested Newt (GCN)

xxxii. There were no ponds on the site. There are 11 ponds identified within 500m of the Site, all being within privately owned land.

xxxiii. The desktop study revealed an historic GCN license return 439m to the south east of the site; whilst the data search returned 29 historical records within 2.5km of the site.

xxxiv. The hedgerows on site do offer potential habitat and transport corridors.

xxxv. The site is largely arable farmland which has limited habitat potential for the local population, with the A617 and the industrial developments across the northern boundary of the site providing effective barriers to potential movement.

xxxvi. This does leave some ponds to the south that could have GCN potential, as such GCN should be considered as potentially impacting on the proposed development. Further survey work should be considered.

3.7.2 Bats

xxxvii. There are 488 records of bats identified during the desk study, these included Brown Long Eared, Common pipistrelle, Leisler's, Daubenton's bat, Whiskered, Leisler's Bat, Nathusis pipistrelle, Natterer's, Noctule, Whiskered Bat; and unknown bat spp.; including Myotis Bat species, Nyctalus spp., Pipistrelle spp., Whiskered/ Brandt and bat spp.

xxxviii. The closest record roost is 1.06km to the SW for 45 pipistrelle and BLE.

xxxix. There are no trees within the Site. There are trees present adjacent to the site boundary but at the time of writing no impacts are being planned and these trees will remain. If this changes then appropriate surveys will need to be undertaken.

xl. The habitats on site offer moderate suitability for commuting and foraging bats as per BCT 2023 guidance based on the rural habitat, linear features (hedgerows) and varied habitat. The development will not have any significant impact on bat foraging and commuting habitat as the infield habitat is currently arable crops and the resulting development will improve this to grassland habitat. For this reason, no further surveys are advised.

3.7.3 Water vole, white clawed crayfish and otter

xli. There are 199 records white clawed crayfish within 2.5km of the site; but no suitable watercourses are on site to support any populations.

xlii. There are 82 records of water vole within 2.5km of the site; but no suitable watercourses are on site to support any populations.

xliii. No otter records where returned in the data search, with no suitable watercourses on site to support any populations.

xliv. No further surveys are required

3.7.4 Reptiles

xlv. No reptile records where returned in the data search.

xlvi. The habitats on site were dominated by arable farmland and so not suitable for local reptile populations and as a result this provides a negligible opportunities for reptiles.

3.7.5 Birds

xlvii. The following bird species where noted during the site visit: Crow, Magpie and Skylark (which flew across Area A).

xlviii. The hedges on site provide suitable habitat for birds to nest.

xlix. There was no suitable nesting habitat for Schedule 1 birds on site.

l. The data search returned a large number of records within 2.5km of the site, the vast majority of these records came from a low number of sites known for birds (honey pot sites).

li. It is considered likely that the development could have some impact on populations of birds and their breeding success. There is a risk of disturbing nesting birds during the nesting bird season (i.e. March to August inclusive).

3.7.6 Hazel Dormouse

lii. The site is outside of the known distribution area for this species and it will not be considered further.

3.7.7 Deer spp.

liii. The site visit identified the presence of deer on site through footprints being identified, the exact species cannot be confirmed but based on the size of the print it is likely to be Muntjac *Muntiacus reevesi.*(as pictured).

3.7.8 Hedgehogs

liv. The data search returned 43 records of hedgehogs within 2.5km of the site; with the habitat being suitable for their use of the site, but no field evidence was found during the survey.

lv. Potential use of the site by local hedgehog populations must be considered.

lvi. Access through the perimeter fence must be provided.

3.7.9 Brown hare

i. The data search returned 2 records of brown hares within 2.5km of the site and a Brown Hare seen during the site visit.

ii. Potential use of the site by local hare populations must be considered.

3.7.10 Badgers

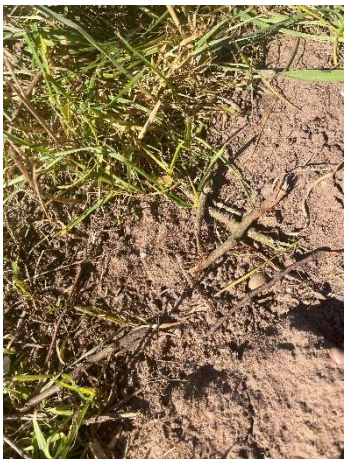
iii. Fields signs of badger activity where detected in both areas:

iv. Area B showed several tracks/ paths through the hedgerow showing movement between the site and the adjacent scrub to the north of the site (as pictured right).

v. A badger footprint was also identified (as pictured centre).

vi. Area A showed several tracks/ paths through the hedgerow showing movement between the site and the roadside to the south (as pictured left).

vii. 8 badger records where returned in the data search; showing that badgers are active in the surrounding area.



viii. Badgers should be considered in this development. An update survey should be undertaken 3 months before the work start date and any changes considered.

ix. Access through the perimeter fence must be provided.

4. Biodiversity Impact Assessment

i. High-level biodiversity impact assessment, based on current scheme design, has been undertaken. This involves comparing the biodiversity value of the habitats present on site prior to the development (baseline) and the predicted biodiversity value of the habitats following the completion of the scheme (post-development). The comparison looks at 'biodiversity units' using a 'biodiversity metric' to provide biodiversity values which are to be calculated and compared.

ii. The baseline biodiversity values of the site are:

- 32.93 units of baseline habitats (area)
- 9.75 units of baseline habitats (linear)
- 0 units of baseline habitats (river)

iii. Post development the value of the site are:

- A loss of 2.68 area habitat units, equating to a -8.14% loss;
- A gain of 5.27 linear habitat units; equating to a +54.05% gain
- No loss/gain of river habitat units.

iv. Trading rules are not satisfied.

v. The assessment and figures above do not include and additional potential compensation or enhancement measures. The methods for undertaking the BIA are in Appendix 3 and the assessment calculations in Appendix 4

5. Discussion and recommendations

5.1 Priority Species and Habitats

i. The potential for the protected species and habitat to be present on the Site and the impacts based on the current proposals are provided below.

Table 9 Summary of impacts

HABITAT/SPECIES	IS THERE SUITABLE HABITAT ON SITE?	ANY LOCAL RECORDS?	LIKELIHOOD OF IMPACTS BY THE PROPOSALS?	ANY MITIGATION?	FURTHER SURVEYS?
Designated Sites	No	Yes	No	N/A	No
Habitats	No	Yes	No	N/A	No
Invasive species	No	Yes	Yes	Yes	Ongoing prevention monitoring
Great crested newts	No	Yes	Potential	Yes	Yes
Bats – Tree Roosts	No	Yes	No	N/A	No – based on assumption no trees are being removed
Bats – Building Roosts	No	Yes	No	N/A	No
Bats – Activity	Yes	Yes	Potential	Winter working associated with hedgerow will minimise any potential impacts	No
Water Vole	No	Yes	No	N/A	No
Otter	No	No	No	N/A	No
White clawed crayfish	No	Yes	No	N/A	No
Reptiles	No	No	No	N/A	No
Birds	Yes	Yes	Yes	Bird box installed in the final project design Winter working associated with hedgerow will minimise any potential impacts	No
Dormice	No	No	No	N/A	No
Badgers	Yes	Yes	Yes	Consideration during the delivery of the development, access arrangement need to be made	Yes
Other priority species	Yes	Yes	Yes		No
Fish	No	Yes	No	N/A	No
Freshwater invertebrates	No	Yes	No	N/A	No

Terrestrial invertebrates	Yes	Yes	No	N/A	No

6. Enhancements

ii. This section highlights the opportunities for ecological enhancements based on the current design proposals.

6.1 Biodiversity Net Gain

iii. Using the current proposed development plan the scheme would result in a loss of 2.68 area units; a gain of 5.27 linear units and no river units. In order to offset the losses and to potentially achieve a net gain the following things would need to be delivered:

- Investigate possible ways to reconfigure the design to provide areas of grassland for enhancement
- Purchase of off-site credits

6.2 Other enhancements

iv. The following are a list of enhancements which could be delivered as part of the Scheme to enhance biodiversity and that do not contribute towards the calculation for the biodiversity net gain.

- Create amphibian refugia/ log piles in site corners
- Install several bat boxes into the surrounding trees and taller hedgerows
- Install bird boxes in the surrounding trees and hedgerow, consideration to a pole mounted owl box
- Install insect hotel in the hedgerows

v. Development considerations including:

- Carry out the development work (heavy equipment movement) in the winter months to avoid bird nesting season and the terrestrial movement of Great Crested Newts
- Consider hedgehog and badger movements through the development area – try not to have excavations open overnight (where possible) and if needed ensure there is a suitable ramp constructed that will allow animals to escape the excavations themselves; and a visual inspection of the trenches each morning before work commences
- Badger gate provision should be made within the boundary fence to be installed
- Hedgehog access provision (holes 15cm x 15cm in the fence) to allow hedgehogs to pass through and a hedgehog box installed.

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Appendix 1: Legislation and Planning Policy

General and Regionally Specific Policies

i. Articles of British legislation, policy guidance, Local Biodiversity Action Plans (BAP's) and the NERC Act (2006) and referenced throughout this report. The context of these are explained within the relevant sections of this report. Relevant legislation is:

- The Hedgerow Regulations 1997;
- Local planning policies in Sheffield Local Plan;
- The Wildlife and Countryside Act 1981 (as amended);
- EC Council Directive on the Conservation of Wild Birds 2009/147/EC;
- The Environment Act (2021);
- Local Biodiversity Action Plan for Sheffield ;
- The Natural Environmental and Rural Communities (NERC) Act 2006;
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2021;
- National Parks and Access to the Countryside Act 1949;
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
- The National Planning Policy Framework (2021);
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000; and
- The Hedgerow Regulations 1997.

Hedgerows

ii. All native hedgerows, including those, which are species poor, are listed under Section 41 of the NERC Act (2006) and are a Local Biodiversity Action Plan (LBAP) habitat. All native hedgerows are considered to be of high conservation value.

iii. The Hedgerow Regulations (1997) classify a hedgerow as 'important' when it is:

- Satisfies at least 1 of the criteria listed in Part II of Schedule 1;
- Has existed for more than 30 years.

iv. If a hedgerow is to be removed, a person is required to submit a hedgerow removal notice to the Local Planning Authority. Legislation for hedgerows include:

- Hedgerow Regulations 1997;
- Planning Policy Statement (PPS) 9: Biodiversity and Geological Conservation;
- Natural Environment and Rural Communities Act (NERC) 2006;
- The Countryside Rights of Way Act 2000.

Bats and Great Crested Newts

v. Great crested newt and species of bats are fully protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion in Schedule 5. They are protected from:

- Intentional or reckless killing, injuring or taking;
- Damage to or the destruction of, or, obstruction of any place or shelter, breeding or resting;
- Disturbance of an animal occupying a structure or place;
- Possessing or controlling live or dead animals;
- Selling, bartering or exchanging of these species or parts of.

vi. The WCA is reinforced by the UK's transposition of the EU Habitat's Regulations under The Conservation of Habitats and Species Amendments (EU Exit) Regulations 2019 (as amended). These Regulations prohibit:

- The deliberate killing, injuring or taking of bats or great crested newts;
- The deliberate disturbance of any bat species or great crested newts in a way that will significantly likely affect:
  - Their ability to survive, hibernate, migrate, breed or rear or nurture their young;
  - The local distribution or abundance of that species;
  - Damage or destruction of a breeding or resting place;
  - The possession or transporting of bat species or great crested newts or any part of.

vii. Certain circumstances may mean a licence needs to be granted by Natural England to permit activities that would otherwise constitute an offence. Regarding a development, a scheme must have full planning permission before a licence application can be made.

viii. There are seven British bat species, which are listed as Species of Principal Importance (SPI) under the Natural Environment and Rural Communities (NERC) Act, 2006. These are barbastelle (*Barbastellus barbastellus*), Bechstein's (*Myotis bechsteinii*), brown long-eared (*Plecotus auritus*), greater horseshoe (*Rhinolophus ferrumequinum*), lesser horseshoe (*Rhinolophus hipposideros*) noctule (*Nyctalus noctula*) and soprano pipistrelle (*Pipistrellus pygmaeus*).

ix. The National Planning Policy Framework 2021 gives protected species material consideration in planning. It states the impacts arising from development proposals must be avoided where possible or must be adequately mitigated/compensated for and opportunities for ecological enhancement should be sought.

Water vole

x. Water voles (*Arvicola amphibius*) are protected under Schedule 5, Section 9 of the Wildlife and Countryside act 1981 (as amended). It is an offence to kill, injure or capture a water vole, to intentionally recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection or to disturb water voles whilst they are using such a place.

Otter

xi. The Eurasian otter (*Lutra lutra*) is the only native UK otter species. It is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This las in reinforced by the UK's transposition of the EU Habitats Regulations under The Conservation of Habitats and Species Amendments (EU Exit) Regulations 2019 (as amended). Together both of these regulations make it an offence to:

- Capture, kill, disturb or injure otters both on purpose or by not taking enough care;
- Damaging or destroying a breeding or resting place, both deliberately or by not taking enough care;
- Obstructing access to their resting or sheltering place both deliberately or by not taking enough care;
- Possessing, selling, controlling or transporting live or dead otter, or parts of.

xii. A conviction could get an unlimited fine and up to 6 months in prison.

White clawed crayfish

xiii. White clawed crayfish (*Austropotamobius pallipes*) are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under the Act, it is an offence to intentionally take white-clawed crayfish form the wild and to sell them. They are also protected under the Habitats Directive, requiring the designation of Special Areas of Conservation (SAC) to protect important populations of this species.

Reptiles

xiv. All reptiles' species are partially protected under Schedule 5 (Sections 9 (1) and 9 (5)) of the Wildlife and Countryside Act 1981 (as amended). This legislation protects reptile from:

- Recklessly or intentionally killing or injuring;
- Selling, offering to sell, possessing or transporting for the purpose of the sale or publishing advertisements to buy or sell a protected species.

xv. In the addition to the above, sand lizards (*Lacerta agilis*) and smooth snakes (*Coronella austriaca*) are listed under The Conservation of Habitats and Species Amendments (EU Exit) Regulations 2019 (as amended). This makes it an offence to:

- Capture, kill, injure and disturb;
- Take or damage eggs;
- Damage or destroy breed/resting places;
- Obstruct access to a resting place; and
- Possess, advertise for sale, sell or transport for sale, live or dead (part or derivative)

xvi. When reptiles are confirmed to be present on land which is going to be affected by development, the following is recommended:

- They should be protected from injury or killing during any construction activities;
- Mitigation should be provided on site to maintain their conservation status of the species locally;
- Under the NPPF 2021, the presence of any protected species should be a material planning consideration. Impacts, which arise from development, must be avoided where possible or be adequately mitigated/compensated for and ecological enhancements should be sought.

Birds

xvii. The priority legislation affording protection to UK wild birds is the Wildlife and Countryside Act 1981 (as amended). This legislation means all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to recklessly or intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird whilst it is being used or is being built;
- Take or destroy an eggs of any wild bird.

xviii. Birds which are listed on Schedule 1 of the Act, it is an offence to disturb any bird whilst it is building a nest, is at or near a nest with young or disturbing the dependent young of a species.

xix. Species which are listed in Annex 1 of the EU Birds Directive 1994 (e.g. peregrine and barn owl) are required to have special conservation measures which preserve their habitat and species to be classified as Special Protection Areas (SPA's) where appropriate.

Badgers

xx. Badgers (*Meles meles*) and their setts are protected by the Protection of Badgers Act 1992 which makes it an offence to:

- Intentionally capture, kill or injure a badger;
- Damage, destroy or block access to their setts;
- Disturb badgers in their setts
- Treat a badger cruelly
- Deliberately send or intentionally allow a dog into a sett; and
- Bait or dig for badgers

Hedgehogs and Common Toads

xxi. Under the NERC Act 2006, the hedgehog (*Erinaceus europaeus*), common toad (*Bufo bufo*) and brown hare (*Lepus europaeus*) are categorised as a 'Species of Principal Importance' (SPI) for biodiversity. SPI are listed due to the populations having suffered a rapid and sustained decline so are a material consideration during planning. All three species are also listed as a priority species in the LBAP.

National Planning Policy Framework

xxii. The National Planning Policy Framework (NPPF) 2021 sets out the Governments planning polices for England and how they are expected to be applied by Local Authorise within their Local Development Frameworks.

xxiii. The key paragraphs from the NPPF are:

8.c) "to protect and enhance our natural, built and historic environment, including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy"

174.d) "minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures"

179.b) "promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."

180.a) "if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused."

180.c) "development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons63 and a suitable compensation strategy exi

Appendix 2: Client Plans

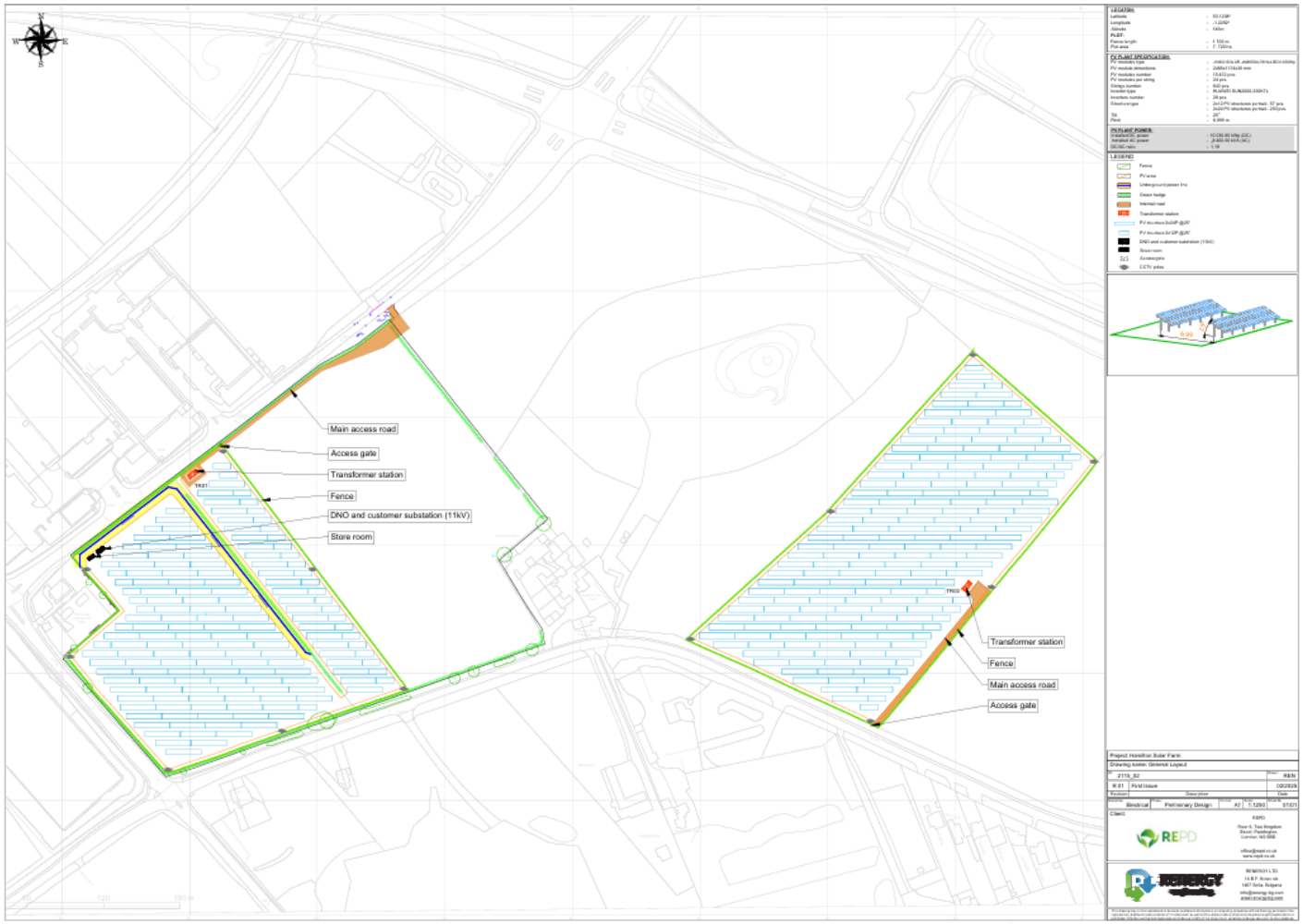


Figure 6 showing the proposed solar farm design

Figure 7: showing the proposed landscape design for the solar farm

Appendix 3: Biodiversity Net Gain Methodology

i. The assessment for biodiversity net gain involves comparing the biodiversity value of the habitats within the Site prior to the development (baseline) and the predicted value after the completion of the Scheme (post development). The comparison looks at the biodiversity units with a 'biodiversity metric', which then allows the biodiversity values to be calculated

ii. The metric provides both area-based habitats, linear based habitat and river calculations. A development will be unable to achieve a net gain until the figures have been provided across all habitats

iii. The calculation is as follows for calculating biodiversity units:

- Before development:

Distinctiveness score[6] x Condition assessment[7] x

Area/Length[8] x Connectivity[9] x Strategic significance[10]

- Post development:

Distinctiveness score x Condition assessment x

Area/Length x Connectivity x Strategic significance /

Time to Target Condition[11] / Difficulty of creation/restoration[12]

iv. Due to the proximity of designated habitats; the Small Site Metric could not be used. Habitat classification cannot be upgraded to species rich when adding enhancements. The final condition score could actually therefore be of a higher net gain.

[6] High, Medium, Low – based on UK Habitat classifications

[7] Good, fairly good, moderate, fairly poor or poor, based on habitat condition assessment

[8] Hectares (ha) and length (km)

[9] High, medium and low

[10] High (within area formally identified in the local strategy), medium (location is ecologically desirable but is not within the local strategy) and low (area/compensation is not within the local strategy/there is no local strategy)

[11] Time (in years) until the target has been achieved.

[12] A score for the risk associated with creating/restoring a different habitat type.

Appendix 4: BIA descriptions

Please see accompanying BNG Spreadsheet for further information

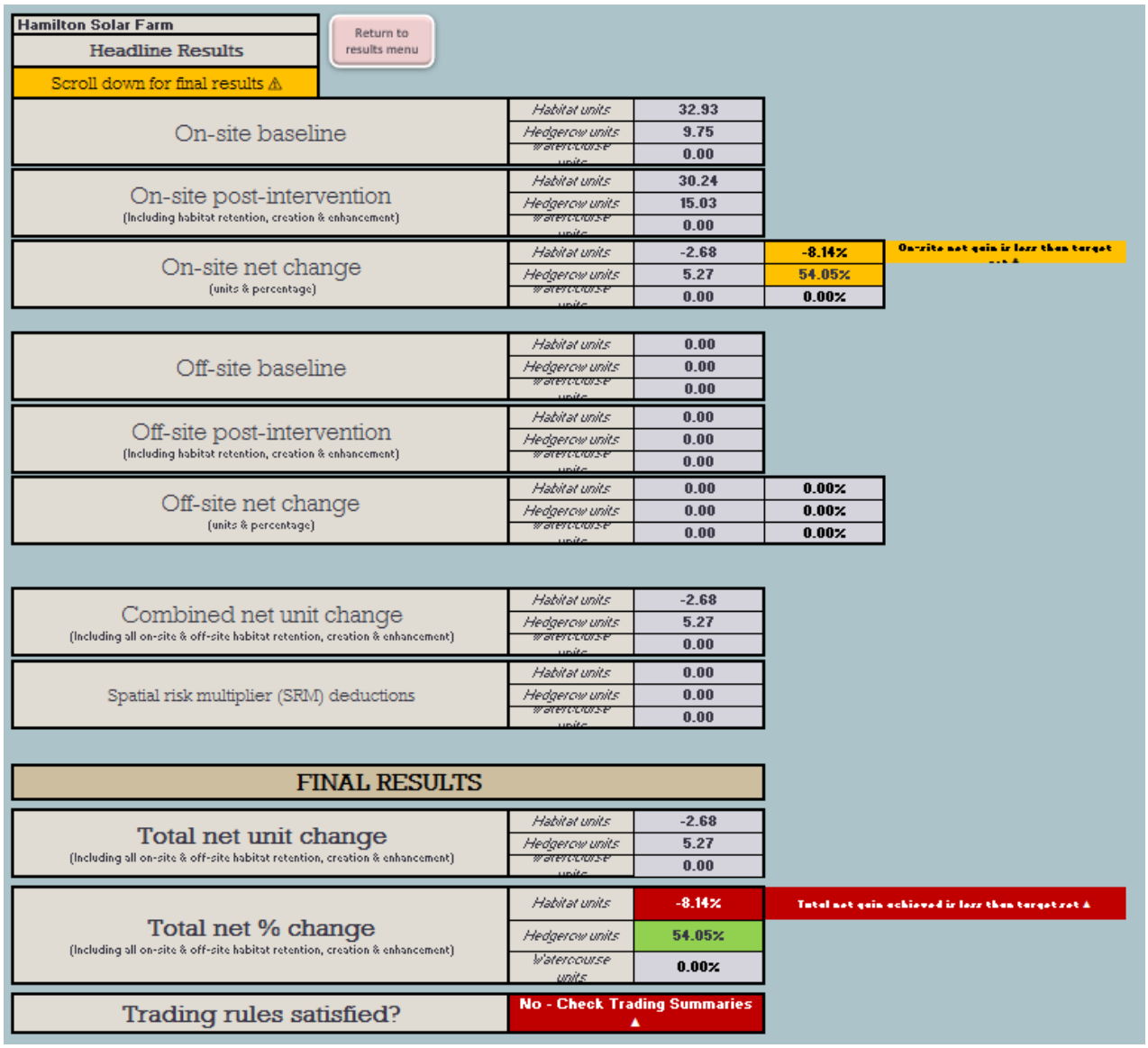
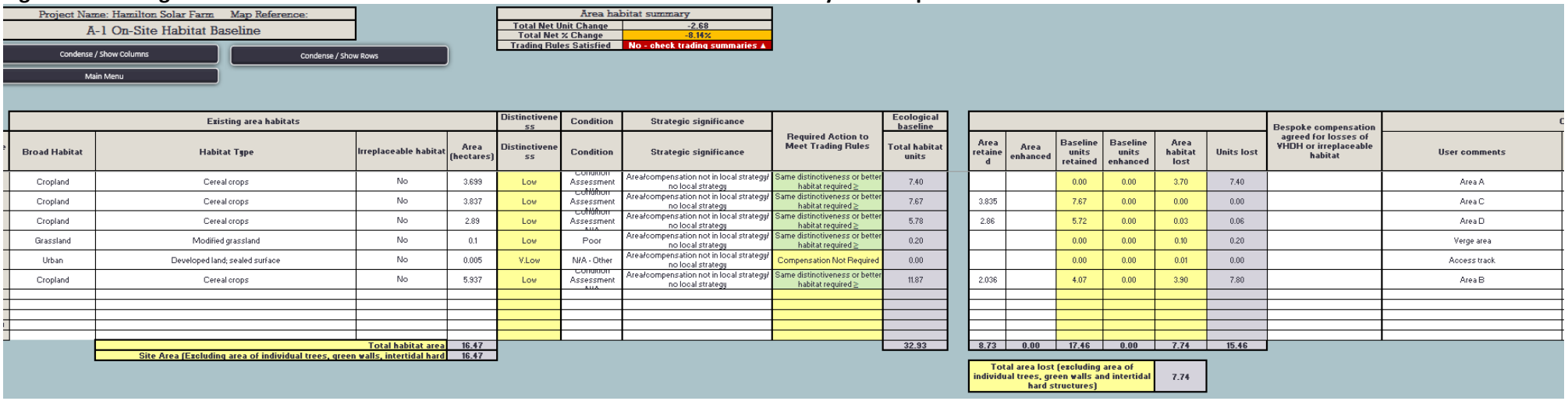


Figure 8: showing the headline results from the BNG Statutory Metric

Table 10 showing the On-site habitat baseline – measurements taken from Magic Maps and Pro Maps

BROAD HABITAT	HABITAT	AREA (ha)	BASELINE UNITS	CONDITION ASSESSEMENT SCORES	HABITAT CONDITION COMMENTS
Cropland	Cereal crops	3.699	5.92	Condition Assessment N/A	Area A
Cropland	Cereal crops	3.837	9.62	Condition Assessment N/A	Area C
Cropland	Cereal crops	2.89	5.78	Condition Assessment N/A	Area D
Grassland	Modified grassland	0.1	0.20	Poor	Verge area
Urban	Developed land; sealed surface	0.005	0.00	N/A - Other	Access track
Cropland	Cereal crops	5.937	11.87	Condition Assessment N/A	Area B

Figure 9: showing a screenshot of the On-site habitat baseline tab on the BNG Statutory metric spreadsheet



Project Name: Hamilton Solar Farm Map Reference:

A-1 On-Site Habitat Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu

Area habitat summary	
Total Net Unit Change	-2.68
Total Net % Change	-8.14%
Trading Rules Satisfied	No - check trading summaries ▲

Existing area habitats				Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline							Bespoke compensation agreed for losses of VHDH or irreplaceable habitat	
Broad Habitat	Habitat Type	Irreplaceable habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance		Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		User comments
Cropland	Cereal crops	No	3.699	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	7.40			0.00	0.00	3.70	7.40		Area A
Cropland	Cereal crops	No	3.837	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	7.67	3.835		7.67	0.00	0.00	0.00		Area C
Cropland	Cereal crops	No	2.89	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	5.78	2.86		5.72	0.00	0.03	0.06		Area D
Grassland	Modified grassland	No	0.1	Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	0.20			0.00	0.00	0.10	0.20		Verge area
Urban	Developed land; sealed surface	No	0.005	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00			0.00	0.00	0.01	0.00		Access track
Cropland	Cereal crops	No	5.937	Low	Condition Assessment N/A	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	11.87	2.036		4.07	0.00	3.90	7.80		Area B
	Total habitat area		16.47					32.93	8.73	0.00	17.46	0.00	7.74	15.46		
	Site Area (Excluding area of individual trees, green walls, intertidal hard		16.47													

Total area lost (excluding area of individual trees, green walls and intertidal hard structures)	7.74

Table 11 showing the On-site habitat creation – measurements taken from Magic Maps and Pro Maps

BROAD HABITAT	HABITAT	AREA (ha)	DELIVERED UNITS	CONDITION ASSESSEMENT SCORES	COMMENTS
Urban	Developed land; sealed surface	0.369	0.00	N/A - Other	Developed land under solar panels Area A 10%
Urban	Developed land; sealed surface	0.002	0.00	N/A - Other	Infrastructure
Grassland	Modified grassland	3.26	6.29	Poor	Grassland under solar panel Area A
Urban	Built linear features	0.08	0.00	Poor	Area A perimeter fence
Urban	Artificial unvegetated, unsealed surface	0.005	0.00	N/A - Other	Track Field A
Urban	Artificial unvegetated, unsealed surface	0.01	0.00	N/A - Other	Track Field C
Urban	Developed land; sealed surface	0.105	0.00	N/A - Other	Entrance way
Urban	Artificial unvegetated, unsealed surface	0.058	0.00	N/A - Other	Access track into Area B
Urban	Built linear features	0.09	0.00	N/A - Other	Area B perimeter fence
Urban	Developed land; sealed surface	0.3901	0.00	N/A - Other	Developed land under solar panels Area B 10%
Grassland	Modified grassland	3.3629	6.49	Poor	Grassland under solar panel Area B
Urban	Developed land; sealed surface	0.369	0.00	N/A - Other	Developed land under solar panels Area A 10%

Figure 10: showing a screenshot of the On-site habitat creation tab on the BNG Statutory metric spreadsheet

Project Name: Hamilton Solar Farm Map Reference:

A-2 On-Site Habitat Creation

Condense / Show Columns | Condense / Show Rows | Main Menu

Area habitat summary	
Total Net Unit Change	-2.68
Total Net % Change	-8.14%
Trading Rules Satisfied	No - check trading summaries ▲
Area Check	Area Acceptable ✓

Post intervention habitats											
			Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty			
Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of creation	Habitat units delivered	User comments	
Urban	Developed land; sealed surface	0.369	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Developed land under solar panels Area A 10%	
Urban	Developed land; sealed surface	0.002	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Infrastructure	
Grassland	Modified grassland	3.26	Low	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	6.29	Grassland under solar panel Area A	
Urban	Built linear features	0.08	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Area A permieter fence	
Urban	Artificial unvegetated, unsealed surface	0.005	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Track Field A	
Urban	Artificial unvegetated, unsealed surface	0.01	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Track Field C	
Urban	Developed land; sealed surface	0.105	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Entrance way	
Urban	Artificial unvegetated, unsealed surface	0.058	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Access track into Area B	
Urban	Built linear features	0.09	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Area B permieter fence	
Urban	Developed land; sealed surface	0.3901	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	0	Low	0.00	Developed land under solar panels Area B 10%	
Grassland	Modified grassland	3.3629	Low	Poor	Area/compensation not in local strategy/ no local strategy	Standard time to target condition applied	1	Low	6.49	Grassland under solar panel Area B	
	Total habitat area	7.73							12.78		
	Site Area (Excluding area of individual trees, green walls, intertidal hard structures)	7.73									

Table 12 showing the On-site hedgerow baseline – measurements taken from Magic Maps and Pro Maps

HEDGE NUMBER	HABITAT	LENGTH (km)	BASELINE UNITS	CONDITION ASSESSEMENT SCORES	RETAINED	ENHANCED
Area A infield	Native hedgerow	0.195	5.92	Good	0.195	
Area A boundary	Native hedgerow	0.309	9.62	Good		0.309
Roadside	Native hedgerow	0.508	5.78	Moderate		0.488
Area C/ D infield hedge	Native hedgerow	0.131	0.20	Good	0.111	
Area B roadside hedge	Native hedgerow	0.168	0.00	Good	0.148	
Area B Eastern boundary	Native hedgerow	0.27	11.87	Poor		0.27
Area B Northern boundary hedge	Native hedgerow	0.182		Good	0.182	

Figure 11: showing a screenshot of the On-site hedgerow baseline tab on the BNG Statutory metric spreadsheet

Project Name: Hamilton Solar Farm	Map Reference:
B-1 On-Site Hedge Baseline	

Condense / Show Columns | Condense / Show Rows | Main Menu

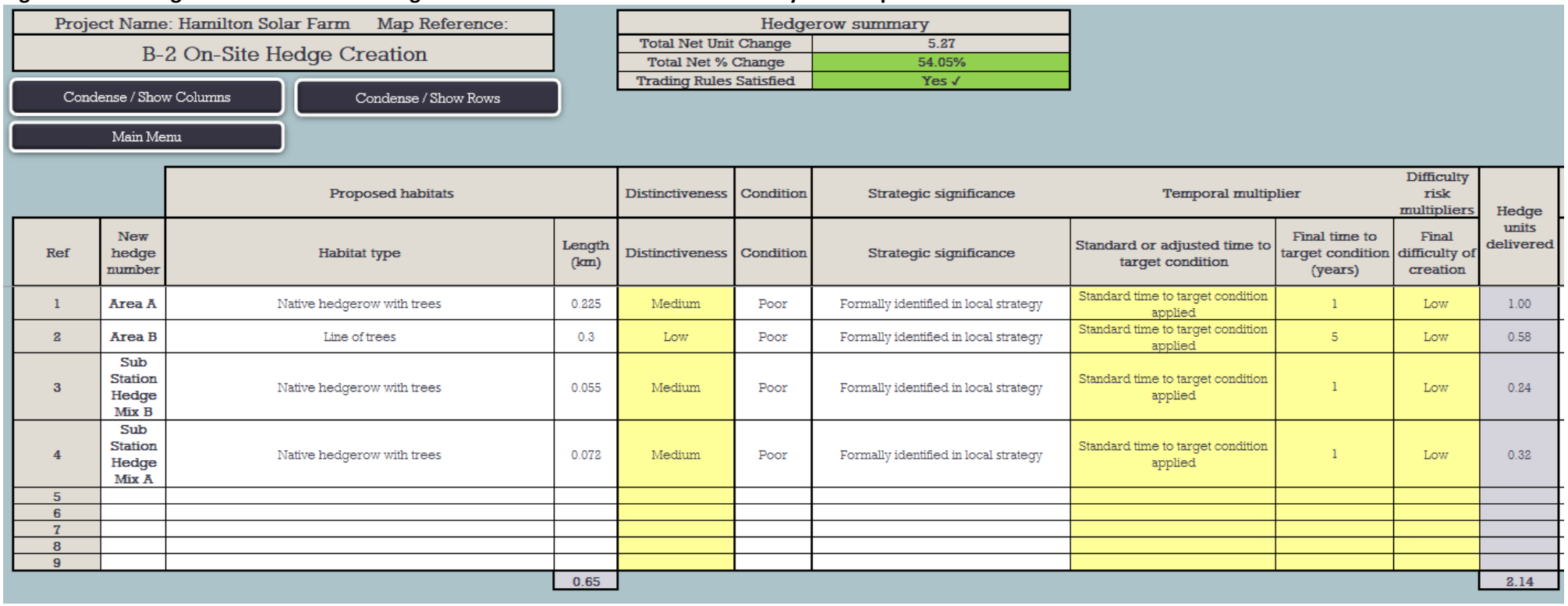
Hedgerow summary	
Total Net Unit Change	5.27
Total Net % Change	54.05%
Trading Rules Satisfied	Yes ✓

	Existing hedgerow habitats			Distinctiveness	Condition	Strategic significance	Required Action to Meet Trading Rules	Ecological baseline						
Ref	Hedge number	Habitat type	Length (km)	Distinctiveness	Condition	Strategic significance		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost
1	Area A infield	Native hedgerow	0.195	Low	Good	Formally identified in local strategy	Same distinctiveness band or better	1.35	0.195		1.35	0.00	0.00	0.00
2	Area A boundary	Native hedgerow	0.309	Low	Good	Formally identified in local strategy	Same distinctiveness band or better	2.13		0.309	0.00	2.13	0.00	0.00
3	Roadside	Native hedgerow	0.508	Low	Moderate	Formally identified in local strategy	Same distinctiveness band or better	2.34		0.488	0.00	2.24	0.02	0.09
4	Area C/D infield hedge	Native hedgerow	0.131	Low	Good	Formally identified in local strategy	Same distinctiveness band or better	0.90	0.111		0.77	0.00	0.02	0.14
5	Area B roadside hedge	Native hedgerow	0.168	Low	Good	Formally identified in local strategy	Same distinctiveness band or better	1.16	0.148		1.02	0.00	0.02	0.14
6	Area B Eastern boundary	Native hedgerow	0.27	Low	Poor	Formally identified in local strategy	Same distinctiveness band or better	0.62		0.27	0.00	0.62	0.00	0.00
7	Area B Northern boundary hedge	Native hedgerow	0.182	Low	Good	Formally identified in local strategy	Same distinctiveness band or better	1.26	0.182		1.26	0.00	0.00	0.00
8														
9														
10														
11														
12														
			1.76					9.75	0.64	1.07	4.39	5.00	0.06	0.37

Table 13 showing the hedgerow creation – measurements taken from Magic Maps and Pro Maps

HEDGE	HABITAT	LENGTH (km)	DELIVERED UNITS	CONDITION ASSESSEMENT SCORES
Area A	Native hedgerow with trees	0.225	1.00	Poor
Area B	Line of trees	0.3	0.58	Poor
Sub Station Hedge Mix B	Native hedgerow with trees	0.055	0.24	Poor
Sub Station Hedge Mix A	Native hedgerow with trees	0.072	0.32	Poor

Figure 12: showing a screenshot of the hedgerow creation tab on the BNG Statutory metric spreadsheet



Project Name: Hamilton Solar Farm Map Reference:

B-2 On-Site Hedge Creation

Condense / Show Columns | Condense / Show Rows | Main Menu

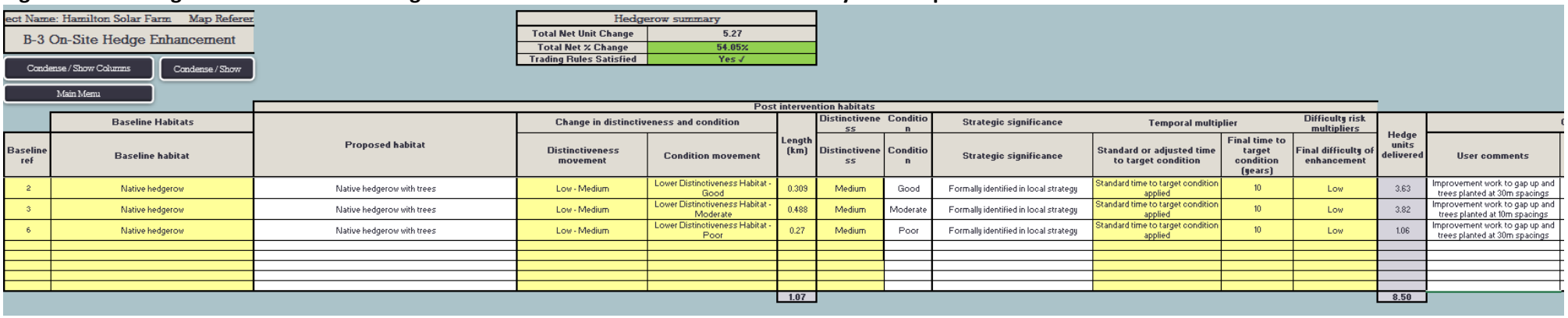
Hedgerow summary	
Total Net Unit Change	5.27
Total Net % Change	54.05%
Trading Rules Satisfied	Yes ✓

		Proposed habitats		Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty risk multipliers	Hedge units delivered
Ref	New hedge number	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	Area A	Native hedgerow with trees	0.225	Medium	Poor	Formally identified in local strategy	Standard time to target condition applied	1	Low	1.00
2	Area B	Line of trees	0.3	Low	Poor	Formally identified in local strategy	Standard time to target condition applied	5	Low	0.58
3	Sub Station Hedge Mix B	Native hedgerow with trees	0.055	Medium	Poor	Formally identified in local strategy	Standard time to target condition applied	1	Low	0.24
4	Sub Station Hedge Mix A	Native hedgerow with trees	0.072	Medium	Poor	Formally identified in local strategy	Standard time to target condition applied	1	Low	0.32
5										
6										
7										
8										
9										
			0.65							2.14

Table 14 showing the hedgerow enhancement – measurements taken from Magic Maps and Pro Maps

BASELINE HABITAT	PROPOSED HABITAT	LENGTH (km)	CONDITION ASSESSEMENT SCORES	DELIVERED UNITS	NOTES
Native hedgerow	Native hedgerow with trees	0.309	Good	3.63	Improvement work to gap up and trees planted at 30m spacings
Native hedgerow	Native hedgerow with trees	0.488	Moderate	3.82	Improvement work to gap up and trees planted at 10m spacings
Native hedgerow	Native hedgerow with trees	0.27	Poor	1.06	Improvement work to gap up and trees planted at 30m spacings

Figure 13: showing a screenshot of the hedgerow enhancement tab on the BNG Statutory metric spreadsheet



ect Name: Hamilton Solar Farm Map Referer

B-3 On-Site Hedge Enhancement

Condense / Show Columns | Condense / Show | Main Menu

Hedgerow summary	
Total Net Unit Change	5.27
Total Net % Change	54.05%
Trading Rules Satisfied	Yes ✓

	Baseline Habitats		Post intervention habitats											
			Change in distinctiveness and condition			Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty risk multipliers			
Baseline ref	Baseline habitat	Proposed habitat	Distinctiveness movement	Condition movement	Length (km)	Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition (years)	Final difficulty of enhancement	Hedge units delivered	User comments	
2	Native hedgerow	Native hedgerow with trees	Low - Medium	Lower Distinctiveness Habitat - Good	0.309	Medium	Good	Formally identified in local strategy	Standard time to target condition applied	10	Low	3.63	Improvement work to gap up and trees planted at 30m spacings	
3	Native hedgerow	Native hedgerow with trees	Low - Medium	Lower Distinctiveness Habitat - Moderate	0.488	Medium	Moderate	Formally identified in local strategy	Standard time to target condition applied	10	Low	3.82	Improvement work to gap up and trees planted at 10m spacings	
6	Native hedgerow	Native hedgerow with trees	Low - Medium	Lower Distinctiveness Habitat - Poor	0.27	Medium	Poor	Formally identified in local strategy	Standard time to target condition applied	10	Low	1.06	Improvement work to gap up and trees planted at 30m spacings	
					1.07							8.50		