



Tiverton Eastern Urban Extension

Ecological Appraisal

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ABBREVIATIONS

CRoW	Countryside and Rights of Way Act 2000
EA	Environment Agency
EU	European Union
Ha	Hectare
MAGIC	Multi-Agency Geographic Information for the Countryside
NERC	Natural Environment and Rural Communities Act
NPPF	National Planning Policy Framework
SSSI	Site of Special Scientific Interest
TN	Target Note
UK	United Kingdom

EXECUTIVE SUMMARY

Engain was instructed by Chettiscombe Estate to undertake an Ecological Appraisal of a proposed development site within the Tiverton Eastern Urban Extension, Devon.

An extended phase 1 survey was carried out in spring 2012 and updated during visits in September 2013. The extended phase 1 survey included an evaluation of habitats present and the potential for protected species. The ecological appraisal also evaluates the potential implications of the proposed development upon designated wildlife sites within 2 km – 8 km of the site.

The site is of high ecological value overall, with features of national, county and district significance. The main features of ecological value include the Tidcombe Lane Fen Site of Special Scientific Interest (SSSI), Devon hedgerows, Devon lanes and tracks, mature and veteran oak and ash trees, Ailsa Brook and ditches. The site has good ecological connectivity with the wider landscape via Devon hedgerows and the Grand Western Canal County Wildlife Site, which is located adjacent to the southern boundary of the site.

Designated and Non-Designated Sites

Part of Tidcombe Lane Fen SSSI is located within the site boundary at the western end of the site. The SSSI is of national value and will be protected and enhanced as part of the proposed development. A buffer area of green-space will be provided around the fen and the public access to the fen will be restricted and discouraged.

Residents of the proposed development are likely to make use of established public footpaths that pass through statutory and non-statutory designated sites within 2 km of the site, however public green space will be provided as part of the proposed development which is likely to limited the extent of additional use. It is considered unlikely to be significant to these sites.

Protected Species and Habitats

The following detailed ecological surveys will be carried out at the proposed site. The results of the protected species and habitats surveys will be used to inform the masterplan and appropriate mitigation and enhancement for the site:

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- Hedgerow Regulations assessment;
- Two bat transect surveys per month (May-September 2013);
- Building and tree assessment and inspection for bats and barn owls (no seasonal constraints);
- Three dormice nest tube surveys (May-December 2013);
- White-clawed crayfish habitat assessment (May-September 2013);
- Otter and water vole survey (May-September 2013);
- Breeding bird survey (April – mid June 2013);
- Reptile Survey (March – October – weather and temperature dependant);
and
- Badger survey (avoiding very cold spells).

Ecological mitigation and enhancement

Depending on the proposals at this site, it is likely to be necessary to use biodiversity offsetting and habitat creation to provide net enhancement. The following enhancement measures may also be considered within the plans:

- Green infrastructure throughout the site and ‘wildlife corridors’ linking to habitats in the landscape surrounding the site;
- An Ecological Management Plan to protect, manage and monitor the ecological resource in the short and long-term;
- Green roofs where possible, with native plant species and habitat structure implemented by a qualified ecologist;
- ‘Rain gardens’ or swales to implement Water Sensitive Urban Design;
- The inclusion of appropriate locally native plant species in landscape planting plans. The Devon Local Biodiversity Action Plan could be used as a guide to appropriate species/habitats;
- Setting ecological targets (e.g. Code for Sustainable Homes Assessment Guidelines) to improve habitat structure and diversity and increase species diversity;
- Installation of bat, bird and insect boxes on trees and buildings at the site;
and
- Management and enhancement of hedgerows and other retained habitats to improve ecological quality and structure.

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1 INTRODUCTION

- 1.1 Engain was instructed by Chettiscombe Estate, to undertake an ecological appraisal of a proposed development site at the Tiverton Eastern Urban Extension, Devon. This report sets out the findings of an extended phase 1 ecological survey and a review of ecological data records for the site.
- 1.2 The site is being considered for a mixed-use development.
- 1.3 The ecological appraisal includes an evaluation of habitats present and the potential for protected species. The ecological appraisal also evaluates the potential implications of the proposed development upon designated wildlife sites within 5 km of the site, and within 8 km for bats.
- 1.4 This report presents the findings of the ecological survey with the collated data records, the evaluation of the current ecological status of the site, the assessment of the potential effects of the use of the developed area upon sensitive ecological resources within 2 km to 8 km of the site, and any additional ecological investigation and/or mitigation. This report also sets out the proposed ecological enhancement for the site.

2 SITE LOCATION AND GENERAL DESCRIPTION

Site Location

- 2.1 The site is located to the east of Tiverton, mid-Devon, approximately 2 km to the east of the town centre. The majority of site currently consists of farmland. The Ordnance Survey grid reference for the centre of the site is SS 983 128.

General Description

- 2.2 The total area of the proposed development site is approximately 143 ha.
- 2.3 The site is bound to the north by the A361 and Blundell's Road, Post Hill and the Mayfair residential area run through the north of the site. Tidcombe Lane and the residential neighbourhood of Glebelands Road, Litelbury Road and Follett Road form the western boundary of the site. The southern boundary lies adjacent to the Grand Western Canal and the site is bound by an unnamed road to the east.
- 2.4 In a broader context the site area is well connected to the wider landscape by hedgerows, woodland, the River Lowman to the west and the Grand Western Canal to the south and east, however the A361 is likely to pose a barrier to the dispersal of certain species to the north as well as surrounding development and the town of Tiverton to the west. The wider landscape consists predominately of arable and cattle grazed farmland.
- 2.5 The soil at the site consists of two types: freely draining slightly acid loamy soils; and loamy and clayey floodplain soils with naturally high groundwater within the lower western areas of the site around the River Lowman and Tidcombe Lane Fen SSSI (MAGIC Map)¹.

3 LEGISLATION AND POLICY

Relevant Legislation

- 3.1 The two principal European Union (EU) Directives relating to nature conservation are the EU Habitats Directive (1992)² and the EU Birds Directive (1979)³. Both of these Directives are transposed into National legislation through the Conservation of Habitats and Species (Amendment) Regulations 2011⁴. The Birds Directive is also implemented through the Wildlife and Countryside Act 1981⁵ (as amended).
- 3.2 In addition, the Wildlife and Countryside Act 1981 provides protection to other habitats and species at a national level. The Countryside and Rights of Way Act 2000 (CRoW)⁶ adds additional enforcement, making offences arrestable, increasing time limits for some prosecutions and increasing penalties.
- 3.3 Badgers and their sett are protected under the Protection of Badgers Act 1992⁷ as amended by The Hunting Act 2004⁸.
- 3.4 The EU Habitats Directive makes provision for the designation of wildlife conservation areas as Special Areas of Conservation. The EU Birds Directive makes provision for the designation of conservation areas for rare and vulnerable birds as Special Protection Areas.
- 3.5 The Wildlife and Countryside Act 1981 with further protection from the CRoW Act 2000 makes provision for the designation of Sites of Special Scientific Interest (SSSI).
- 3.6 The Natural Environment and Rural Communities Act (NERC) 2006⁹ extends the biodiversity duty set out in the CRoW Act 2000 to public bodies and statutory undertakers to take due regard to the conservation of biodiversity. The planning authority has a duty to ensure that there is no net loss of biodiversity on a site, no net loss in habitat connectivity and there is provision for adequate biodiversity enhancement.

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Relevant Policy

- 3.7 Regional and local planning authorities are to follow key principles to ensure that the potential impacts of planning decisions on biodiversity conservation are fully considered. The National Planning Policy Framework (NPPF)¹⁰ sets out the Government's policies for the protection and enhancement of biodiversity through the planning system. The NPPF encourages the planning system to contribute to and enhance natural and local environments, through minimising the impacts on biodiversity and providing net gains in biodiversity where possible.
- 3.8 Planning authorities should follow key principles to ensure that the potential impacts of planning decisions on biodiversity conservation are considered. Circular 06/05: Biodiversity and Geological Conservation¹¹ provides guidance on the application of the law relating to planning and nature conservation and complements the NPPF.
- 3.9 The presence of species protected under UK and European legislation are a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm of the species or habitat. Therefore the results of ecological appraisals and protected species surveys are required by planning authorities to inform a planning application.
- 3.10 The UK Post-2010 Biodiversity Framework¹² is the UK Government's response to their renewed commitment to the Convention on Biological Diversity, following a summit in Nagoya, Japan in 2010, which identified targets to halt biodiversity loss. The UK Framework identifies the requirements to galvanize and complement the strategies for England, Scotland, Ireland and Wales, in pursuit of the targets.
- 3.11 The Natural Environment White Paper¹³ and Biodiversity 2020: A strategy for England's wildlife and ecosystem services¹⁴, are the country level strategies for England. The 56 habitats of principle importance and 943 species of principle importance listed under Section 41 of the NERC Act are those identified as requiring action in the UK and continue to be regarded as conservation priorities in England under the UK Framework.

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- 3.12 Local Biodiversity Action Plans also give valuable information on local conservation priorities. Devon Biodiversity Action Plan (The Nature of Devon – A Biodiversity and Geodiversity Action Plan)¹⁵ is the local BAP relevant to this site.

4 METHODOLOGY

Desk Study of Existing Ecological Records

- 4.1 A desk study of existing ecological records for the site and the immediate surrounding land (to within a radius of 2 km for protected and notable species and up to 8 km for designated habitats) was conducted in April 2012. An assessment of site plans and aerial photographs has been undertaken in conjunction with a review of web-based information.
- 4.2 During this process, the Devon Biodiversity Record Centre has been contacted in conjunction with a review of the National Biodiversity Network¹⁶ and Natural England's Nature on the Map¹⁷ to obtain records for protected and notable species and information on sites with non-statutory conservation designations.
- 4.3 Information on sites with statutory conservation designations was found using the UK Government's Countryside Geographic Information website (MAGIC Map)¹.

Extended Phase 1 Habitat Survey

- 4.4 An extended phase 1 habitat survey was conducted on the 5th, 19th and 20th of July 2012 by Tessa Pepler, (BSc (Hons), MSc, MCIEEM), Jen Weaver (BSc (Hons), MCIEEM) and Alex Crossman (BSc (Hons), MCIEEM), all experienced ecologists. Jen Weaver carried out survey visits during August and September 2013 to update these results.
- 4.5 The survey is based on the phase 1 habitat survey methodology (Joint Nature Conservancy Council 2007)¹⁸. In this, the main habitat types present within the survey area are mapped using standard codes. The additional (extended) work relates to the assessment of the suitability of the habitats present to support protected species and includes searching for the more obvious signs of such species.
- 4.6 Target notes (shown on the ecological figure accompanying this report) are used to indicate ecological points of interest and describe details of the habitats found.

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4.7 Particular protected species considered during the survey include bats, dormice (*Muscardinus avellanarius*), great crested newts (*Triturus cristatus*), white-clawed crayfish (*Austropotamobius pallipes*), otters (*Lutra lutra*), water voles (*Arvicola amphibious*), reptiles, nesting birds and badgers (*Meles meles*). The potential or actual presence of any other species that could present a constraint to the proposed development was also noted (e.g. invasive species).

Limitations and Assumptions

- 4.8 Engain can take no responsibility for the accuracy of any third party information, which includes data from Biological Records Centres and information provided by the Applicant or their consultancy team.
- 4.9 Access was available to the whole site at the time of survey with the exception of land owned by Blundell's School. The broad habitats within this area have been mapped from adjacent land. Some areas of dense scrub and hedgerow vegetation prevented complete investigation of these areas.
- 4.10 Extended phase 1 surveys are not definitive and represent a snapshot of the ecological status of a site. Data records help to provide a historical context, however a negative survey result for a species does not mean that it never uses the site.

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5 ECOLOGICAL FINDINGS

- 5.1 The following section describes the main habitats and notable species (or signs of) recorded during the survey and information collated from the desk study. Appendix 1 provides a plan of the habitats present on the site and should be referred to throughout this section. Target Notes (TN 1 to TN 11 – Map 1 of 2) (TN 1 to TN 3 – Map 2 of 2) show particular points of ecological interest.

Desk Study Findings

- 5.2 Ecological data records were provided by Devon Biodiversity Records Centre and the following summarises this information.

Statutory Designated Site Records

- 5.3 There are two statutory designated sites within 2 km of the site
- 5.4 Tidcombe Lane Fen (SS91/077) Site of Special Scientific Interest (SSSI) is located within the proposed site boundary. The site is approximately 7 ha in area and contains wet woodland and fen meadow vegetation, which is nationally scarce and rare in Devon. Over 100 species of flowering plants have been recorded within the site. Appendix 2 provides photographic plates (1-3) of Tidcombe Lane Fen.
- 5.5 The Grand Western Canal Country Park (Local Nature Reserve) is located adjacent to the southern boundary of the site. The canal is approximately 51.4 ha in area. The site is designated for waterfowl and bird species, hedgerows, bankside vegetation, otters, orchids and insects. Appendix 2 provides photographic plates (4) of the canal.

Non-Statutory Designated Site Records

- 5.6 There are 16 non-statutory designated sites within 2 km of the site. Table 5-1 provides a summary of the non-statutory designated wildlife sites.

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Table 5-1 Non-Statutory Designated Wildlife Sites within 2 km of the Site

<i>File Code</i>	<i>Site Name</i>	<i>Area (ha)</i>	<i>Description</i>	<i>Status</i>
SS91/076	Knightshayes Park	79.1	Parkland with veteran trees. Lichen, saproxylic invertebrate and bat interest	CWS
SS91/078	Snake's Wood	5.5	Ancient semi-natural woodland, wet in areas	CWS
SS91/079	Grand Western Canal	27.5	Canal with associated wetland flora & marshy grassland	CWS/ Country Park/Local Nature Reserve
SS91/083	The Guoil	10.8	Ancient and secondary broadleaved woodland along a steep-sided river valley	CWS
SS91/096	South Hill Plantation and Field	5.8	Secondary broadleaved woodland and semi-improved neutral grassland	OSWI
ST01/043	Lower Coombe Farm Wood	1.1	Broadleaved woodland	UWS
SS91/091	May's Copse	7.9	Broadleaved woodland	UWS
SS91/092	Turley Down	3.2	Broadleaved woodland	UWS
SS91/081	Cranmore Castle Wood	5.1	Broadleaved woodland	UWS
SS91/086	Bingwell Wood	3.5	Broadleaved woodland	UWS
SS91/088	Tidcombe Brake & Ridge Copse	4.9	Broadleaved woodland	UWS
SS91/089	Warnicombe Plantation	2.8	Broadleaved woodland	UWS
SS91/090	Thornes Wood	3.4	Broadleaved woodland	UWS
SS91/080	Tiverton Branch Railway	2.7	Species-rich disused railway line	UWS
New Site	Knightshayes	39.7	Parkland with veteran trees.	Proposed CWS
	Willand - Cullompton Marsh	261	Possible floodplain grazing marsh	UWS

Key: CWS – County Wildlife Site; OSWI - Other Sites of Wildlife Interest; UWS – Unconfirmed Wildlife Sites.

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Habitats and Species of Principal Importance

5.7 There are several habitats of principal importance within 1 km of the site recorded on the Natural England Nature on the Map.

- Deciduous woodland;
- Traditional orchard; and
- Ancient and semi-natural woodland.

5.8 There are several habitats of principal importance and habitats listed on the Devon Biodiversity Action Plan within the site. Habitats of principal importance are marked with (*) and Devon Biodiversity Action Plan habitats with a (**):

- Hedgerows*;
- Species rich hedges**;
- Purple moor grass and rush pasture;*;
- Traditional orchard*;
- Fens*;
- Oak woodland**;
- Deciduous woodland*; and
- Streams/rivers* **.

5.9 There is the potential for the following species of principal importance and Devon Biodiversity Action Plan species to use the habitats within and adjacent to the site. The species of principle importance are marked with (*) and Devon Biodiversity Action Plan species with a (**):

- House sparrow (*Passer domesticus*)*;
- Bullfinch (*Pyrrhula pyrrhula*)*;
- Starling (*Sturnus vulgaris*)*;
- Song thrush (*Turdus philomelos*)*;
- Yellow hammer (*Emberiza citronella*)*;
- Linnet (*Carduelis cannabina*)*;
- Skylark (*Alauda arvensis*)*;
- Barn owl (*Tyto alba*)**;
- Brown hare (*Lepus europaeus*)* **;
- Hedgehog (*Erinaceus europaeus*);

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- Harvest mouse (*Micromys minutus*)*;
- Dormouse (*Muscardinus avellanarius*)* **;
- Otter (*Lutra lutra*)* **;
- Water vole (*Arvicola amphibious*)* **;
- Barbastelle Bat (*Barbastella barbastellus*)*
- Bechstein's bat (*Myotis bechsteini*)*;
- Greater horseshoe bat (*Rhinolophus ferrumequinum*)* **;
- Lesser horseshoe bat (*Rhinolophus hipposideros*)*;
- Soprano pipistrelle (*Pipistrellus pygmaeus*)*;
- Brown long-eared bat (*Plecotus auritus*)*;
- Noctule bat (*Nyctalus noctula*)*;
- Golden hair lichen (*Teloschistes flavicans*)**;
- Primrose (*Primula vulgaris*)**;
- Fresh water pearl mussel (*Margaritifera margaritifera* L.)**;
- White clawed crayfish (*Austropotamobius pallipes*)* **; and
- Great crested newt (*Triturus cristatus*)*.

Habitats and Flora

Manmade Structures

- 5.10 The Dutch barn, located in the north west corner of the site (Appendix 1, Map 1 of 2, TN 1), has corrugated iron cladding with the lower sections open. Two sides of the structure are open. Appendix 2 provides a photographic plate (5) of the barn.
- 5.11 A metal and concrete building was recorded in the north eastern corner of the site (Appendix 1, Map 1 of 2, TN 2).
- 5.12 An old barn recorded at Copplestone (Appendix 1, Map 1 of 2, TN 3) was constructed from stone and cob with an open side. Appendix 2 provides a photographic plate (6) of the barn.
- 5.13 Manley Railway Bridge is located at the eastern end of the dismantled railway line (Appendix 1, Map 1 of 2, TN 4). Appendix 2 provides a photographic plate (7) of the bridge. Pool Anthony Bridge is located at the western end of the

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dismantled railway line within the site. Both bridges are constructed from bricks.

Watercourses

- 5.14 The southern boundary of the site borders the Grand Western Canal. Species recorded along the canal included bulrush (*Typha latifolia*) and yellow flag iris (*Iris pseudacorus*). A tow-path along the canal is located in between the canal and the southern site boundary. Appendix 2 provides a photographic plate (4) of the canal.
- 5.15 Ailsa Brook runs in a westerly direction to the south of West Manley lane. The brook is shallow and fast flowing with brooklime (*Veronica beccabunga*), fools watercress (*Apium nodiflorum*), floating sweet grass (*glyceria fluitons*) and hairy bittercress (*Cardamine hirsute*) recorded in the bankside marginal vegetation. The brook is culverted under a narrow track at Pool Anthony Bridge (Appendix 1, Map 1 of 2, TN 5). Appendix 2 provides a photographic plate (8) of the brook.
- 5.16 The River Lowman is located in the north western corner of the site. The river is 8 –10 m wide and meandering with a strong flow, stony substrate and gravel and earth banks. The banks are heavily shaded. Bank vegetation included hemlock water dropwort (*Oenanthe crocata*) willow and alder (*Alnus glutinosa*).

Standing Water

- 5.17 One water body was recorded within the site, located to the south of Pool Anthony within an orchard, which appeared to be used by ducks (Appendix 1, Map 1 of 2, TN 6). The pond contained blanket weed (filamentous algae).
- 5.18 A pooled area of water was recorded at Black Bridge to the east of Ailsa Brook (Appendix 1, Map 1 of 2, TN 7).
- 5.19 Several ponds are recorded within 500 m of the site within connecting habitat.

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Grassland

- 5.20 The majority of the site comprises improved perennial ryegrass (*Lolium perenne*) grassland, which is intensively managed and frequently cattle grazed. Species recorded included meadow grasses (*Poa* sp.), occasional dandelion (*Taraxacum officinale*) and stitchwort (*Stellaria* sp.). Appendix 2 provides a photographic plate (9) of the grassland.
- 5.21 Semi-improved fields are grazed to a short sward with creeping thistle (*Cirsium arvense*), dandelion, and stitchwort.
- 5.22 Occasional arable fields were recorded with no headlands or margins. Crops include maize and oilseed rape.
- 5.23 Several areas of marshy grassland are present within the site. The marshy grasslands at the southern end of the site are waterlogged and generally species poor with soft rush (*Juncus effusus*) dominated areas.
- 5.24 The area of fen to the south of Pool Anthony Farm, within Tidcombe Lane Fen SSSI comprises a matrix of willow scrub, areas of cattle grazed rushes and lesser pond sedge (*Carex acutiformis*) with ragged robin (*Lychnis flos-cuculi*) and marsh thistle (*Cirsium palustre*). Also present are a number of tussock sedge (*Carex paniculata*) dominated areas within the wettest parts of the fen.
- 5.25 At the time of survey part of the north eastern field had been recently ploughed and prepared for seeding. Improved grasslands to the north and south of Blundell's road are cattle and sheep grazed and comprise species-poor swards dominated by perennial rye-grass (*Lolium perenne*) and white clover (*Trifolium repens*). Other species present include occasional dandelion (*Taraxacum officinale*), and creeping buttercup (*Ranunculus repens*).
- 5.26 Two smaller fields of rough semi-improved grassland are present to the north west of the site beyond an area of woodland and either side of the River Lowman. These areas are dominated by meadow foxtail (*Alopecurus pratensis*) and cock's-foot (*Dactylis glomerata*) with frequent dandelion, creeping buttercup and occasional spear thistle (*Cirsium arvensis*), cuckoo

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flower (*Cardamine pratensis*), hogweed (*Heracleum sphondylium*) and cow parsley (*Anthriscus sylvestris*).

- 5.27 Amenity grasslands form the playing fields of Blundell's School. These habitats were surveyed from a distance due to access constraints but appear to comprise a mix of common and widespread hardy species such as perennial rye-grass, with minimal herb content.

Hedgerows

- 5.28 The fields within the site are divided by hedgerows with occasional standard trees. The majority of these hedgerows were species-rich 'Devon hedgerows' upon vegetated raised earth banks.
- 5.29 West Manley Lane, the un-named lane bordering the eastern edge of the site and the Drovers Track in the centre of the site (Appendix 1, Map 1 of 2, TN 8), are all 'Devon lanes' with tall, vegetated hedgebanks on either side. Appendix 2 provides a photographic plate (10) of a Devon lane on site.
- 5.30 Hedgerows contained elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), gorse (*Ulex europaeus*), pendunculate oak (*Quercus robur*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*), rose (*Rosa* sp.), beech (*Fagus sylvatica*) and honeysuckle (*Lonicera periclymenum*).
- 5.31 The majority of the site to the north of West Manley Lane and to the south of the dismantled railway line contained native species-rich intact hedgerows containing standard trees.
- 5.32 Several native, intact species rich hedgerows were recorded in the north-eastern section of the site. The hedgerows to the north of the dismantled railway line and to the south of West Manley Lane are native, intact and species poor.
- 5.33 The hedgerow which bordered the Grand Western Canal was unmanaged, overgrown and dominated by oak and ash. Parts of the hedgerow had been re-laid.

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- 5.34 A species poor hedgerow dominated by hawthorn (*Crataegus monogyna*), separates the site from the A361 to the north and from Blundell's Road to the south. Devon hedgerows, much of which lie within the curtilage of adjacent residential properties, form boundaries to the east and lie along Uplowman Lane. These hedges sit on high, vegetated banks, some of which are supported at the base by stone walls.
- 5.35 A floodlit fence line forms the north-western boundary adjacent to Lowman Way and the business park. This adjoins woodland and Devon hedgerows further south. An old trackway comprising two parallel Devon hedges with trees lies along the south western boundary.
- 5.36 Hedgerow ground flora species included cow parsley (*Anthriscus sylvestris*), cleavers, ground ivy (*Glechoma hederacea*), common nettle, lords and ladies (*Arum maculatum*), ivy (*Hedera helix*), greater stitchwort (*Stellaria holostea*), broad-leaved dock (*Rumex obtusifolia*), garlic mustard (*Alliaria petiolata*), bracken (*Pteridium aquilinum*), red campion (*Silene dioica*), bush vetch (*Vicia sepium*), primrose (*Primula vulgaris*), bluebell (*Hyacinthoides non-scripta*), greater burnet saxifrage (*Pimpinella major*) and early purple orchid (*Orchis mascula*).

Stands of Mature/Immature Trees

- 5.37 Mature standard pendunculate oak trees are the dominant tree species within hedgerows. There is a line of mature oak and beech (*Fagus sylvatica*) in the north eastern corner of the site. Historically managed stools of veteran ash are present within hedgerows along the Drove track.
- 5.38 Many mature trees including oak and ash are present within the hedegrows along the Grand Western Canal.

Woodland

- 5.39 A woodland corridor is present each side of the dismantled railway line. The canopy is dominated by oak and ash with willow (*Salix* sp.), horse chestnut (*Aesculus hippocastanum*) and silver birch (*Betula pendula*) also present. A well developed hazel understorey is present along much of the length of the

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corridor on site. Appendix 2 provides a photographic plate (11) of the railway line.

- 5.40 A small patch of oak dominated woodland with a bramble scrub ground layer was recorded to the south of the site.
- 5.41 There is an area of broadleaved woodland along the River Lowman to the north east of the site. The woodland contains mature oak (*Quercus robur*), ash and beech (*Fagus sylvatica*). There is an understory of hazel, holly (*Ilex aquifolium*) and blackthorn (*Prunus spinosa*). Ground flora consists of lords and ladies, ivy (*Hedera helix*), blue bell (*Hyacinthoides non-scripta*), wood anemone, cow parsley and wild garlic.
- 5.42 There is small patch of coniferous woodland to the north west of the site adjacent to the A361. Species include European larch (*Larix decidua*) and dense bramble (*Rubus fruticosus* agg) in the understory.

Orchard

- 5.43 Two areas of apple (*Malus* sp.) orchard were recorded at Pool Anthony, one of which is grazed by horses.

Scrub

- 5.44 Several small areas of scrub were recorded within the site, particularly around buildings. Species include bramble (*Rubus fruticosus* agg.), willow (*Salix* sp.), elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*) and ruderal vegetation.
- 5.45 There is an area of bramble-dominated scrub to the east of the southern boundary adjoining an area of woodland. Holly, elder and hazel were also present.
- 5.46 A fence with bramble scrub borders gardens of residential properties along Westcott Road to the south west of the site.
- 5.47 The overgrown track though the centre of the site (Appendix 1, Map 1 of 2, TN 8) contains dense bramble through the centre of it.

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- 5.48 There is an area of scattered scrub encroaching upon semi-improved grassland within the north eastern corner of the site to the south of the River Lowman. Species included false oat grass (*Arrhenatherum elatius*), common nettle, bramble and willow.

Tall Herb, Tall Ruderal, Short Perennial

- 5.49 Woodland ground flora including dogs mercury (*Mercurialis perennis*), lords and ladies and wild garlic (*Allium ursinum*) were recorded within the banks of the dismantled railway line.
- 5.50 Daffodils (*Narcissus* sp.) and primrose (*Primula vulgaris*) were recorded on either side of Back Bridge, which crosses Ailsa Brook to the east of the site.

Invasive and Notifiable Species

- 5.51 There was evidence of the non-native and invasive plant species Japanese knotweed (*Fallopia japonica*) found within the site close to the River Lowman (Appendix 1, Map 2 of 2, TN 3) and a dense stand adjacent to the cob barn.

Fauna

Bats

- 5.52 There was no evidence of bats recorded using the site during the survey.
- 5.53 The Dutch Barn, located in the north west corner of the site (Appendix 1, Map 1 of 2, TN 1) had no potential for roosting bats due to the open nature of the structure and lack of cracks and crevices for bats to roost within.
- 5.54 A metal and concrete building which is located in the north-eastern corner of the site (Appendix 1, Map 1 of 2, TN 2) has a low potential to be used by roosting bats within cracks in walls, gaps around the purlins and wall plates (at eaves).
- 5.55 The cob barn (Appendix 1, Map 1 of 2, TN 3) is constructed from stone and cob. The building was open sided and is suitable for foraging bats.
- 5.56 The eastern face of Manley Railway Bridge (Appendix 1, Map 1 of 2, TN 4) contains cracks within the brickwork, which provide a low potential to be used

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by roosting bats. Pool Anthony Bridge (Appendix 1, Map 1 of 2, TN 5) is ivy covered and has a low potential for bats.

- 5.57 There was one dead tree with a possible cavity which could provide medium to high potential for bats, should a cavity be present. Several trees were recorded which were covered with ivy and provide a low potential for bats (Appendix 1, Map 1 of 2, TN 9).
- 5.58 There are several mature trees within the site that may provide suitable places of shelter for bats. Some of the trees have holes, cracks and fissures that could potentially be utilised by bats.
- 5.59 The Devon hedgerows within the site and in particular the Drove track, a sunken lane in a north-south direction in the centre of the site (Appendix 1, Map 1 of 2, TN 8), West Manley Lane, and the north-western part of the site containing the River Lowman provide good potential flight paths and foraging corridors for bats.
- 5.60 Devon Biological Records Centre provided records of bats within 4 km of the site. A record for a Daubenton's bat (*Myotis daubentoni*), a noctule and a pipistrelle (*Pipistrellus* sp.) bat were recorded on Grand Western Canal to the south of the proposed site.
- 5.61 Other recent records of bat species recorded include common pipistrelle, brown long-eared, lesser horseshoe and serotine bats (*Eptesicus serotinus*).

Dormice

- 5.62 No evidence of dormice was found during the site visit, although potential for this species is present at the site. The species-rich intact hedgerow habitat within and adjacent to the site is considered to be good for dormice and offers some connectivity to the wider countryside, possibly allowing dormice to colonise the site. Connections are present to patches of woodland that lie within a few kilometres.

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- 5.63 Engain conducted dormice surveys of hedgerows within the site in 2012 and 2013 (final report pending). Dormice have been recorded on site during the survey.
- 5.64 Devon Biodiversity Records centre provided several records of dormice within 2 km of the site. A dormouse was recorded in 2010 within the base of a hedgerow beside the towpath of the Grand Western Canal. A dormouse was also recorded in 2009 in a residential garden at Pool Anthony Drive, close to the northern boundary of the proposal site.

Great Crested Newts

- 5.65 Engain surveyed all ponds within 500 m of the site (where access was permitted) including the pond at Pool Anthony (Appendix 1, Map 1 of 2, TN 6) and a waterbody at Coppelstone (Appendix 1, Map 1 of 2, TN 7) in spring 2012 (final report pending) for great crested newts and none were recorded although palmate newts were found. Depending upon the development proposals, the survey data is relevant for a minimum of two years.
- 5.66 Devon Biodiversity Records Centre provided no records of great crested newts within 2 km of the site. The National Biodiversity Network holds no records for great crested newts within 500 m to 1 km from the site.

White-Clawed Crayfish

- 5.67 Ailsa Brook and the River Lowman contain potential habitat for white-clawed crayfish. Devon Biodiversity Records Centre provided no records of the native white-clawed crayfish or the invasive and non-native American signal crayfish (*Pacifastacus leniusculus*) (which predate upon the native species) within 2 km of the site.
- 5.68 The National Biodiversity Network holds a 2006 record for white-clawed crayfish located approximately 2.5 km to the north east of the site in a water course to the north of Halberton.

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Otter

- 5.69 The survey found that there was suitable habitat along the canal, the River Lowman and Ailsa Brook to be potentially used by otters for spraint (faeces) sites and lying-up sites. There were potential holt (exposed tree root systems or similar structures on river banks) sites found.
- 5.70 Engain conducted an otter and water vole survey of the River Lowman at the site in 2012 and along the Ailsa Brook in 2013 (final report pending). The surveys found signs of otters including recent otter spraints, otter tracks, a lay-up site and an old spraint (Appendix 1, Map 2 of 2, TN 2).
- 5.71 Devon Biodiversity Records centre provided several records of otters within 2 km of the site within the River Lowman and the Grand Western Canal in 2010.

Water Vole

- 5.72 Ailsa Brook, the River Lowman and the Grand Western Canal both contain suitable habitat for water voles. Water voles are rare in Devon, however re-introduction projects have been initiated to increase the population of water voles in Devon. A water vole survey conducted by Engain on the River Lowman in 2012 was inconclusive as possible signs of water vole were recorded (final report pending).
- 5.73 The Devon Biological Records Centre provided no records of water voles within 2 km of the site.

Birds

- 5.74 The site has the potential for nesting birds and contains suitable nesting habitat in hedgerows, trees, scrub and field margins. Various bird species are anticipated to use these areas within the site for nesting and feeding during the breeding season (approximately March to August).
- 5.75 The stone and cob barn (Appendix 1, Map 1 of 2, TN 3) and mature trees within the site have the potential to be used by barn owls (*Tyto alba*) although no evidence of barn owls was found during the site visit. A tawny owl was found roosting within the barn.

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- 5.76 Jackdaws (*Corvus monedula*), rooks (*Corvus frugilegus*), buzzard (*Buteo buteo*), song thrush (*Turdus philomelos*), blue tit (*Cyanistes caeruleus*), great tit (*Parus major*), long-tailed tit (*Aegithalos caudatus*), wren (*Troglodytes troglodytes*), gold finch (*Carduelis carduelis*), jay (*Garrulus glandarius*) magpie (*Pica pica*), woodpigeon (*Columba palumbus*), carrion crow (*Corvus corone*), blackbirds (*Turdus merula*), tawny owl (*Strix aluco*), bullfinch (*Pyrrhula pyrrhula*) and house sparrows (*Passer domesticus*) were recorded during the survey.
- 5.77 The desk study includes many records of birds including protected species such as barn owl, peregrine falcon (*Falco peregrinus*) and fieldfare (*Turdus pilaris*).

Reptiles

- 5.78 No evidence of reptiles was recorded on site during the survey. The dense verge vegetation along the tow-path of the Grand Western Canal, the overgrown track through the centre of the site (Appendix 1, Map 1 of 2, TN 5), several areas of scrub vegetation within the site and the fen and marshy grassland habitats all have the potential to support reptiles. In particular slow worms (*Anguis fragilis*), grass snakes (*Natrix natrix*) and common lizard (*Lacerta vivipara*) although the lack of hedgerow margins and the disturbance caused by cattle to much of the pasture habitat limits this potential to an extent.
- 5.79 There is suitable habitat within the north western corner of the site consisting of long grass and scrub, a small area of unmanaged grassland and an area of scattered scrub encroaching upon semi improved grassland. The watercourses also provide potential foraging habitat for grass snakes (*Natrix natrix*).
- 5.80 The Devon Biological Records Centre provided no records of reptiles within close proximity or connecting habitat to the site, although records of slow worm and grass snake were returned within 2 km.

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Badgers

- 5.81 A high amount of badger activity was recorded within the site including at least two main setts, an annexe and outlier badger setts, latrines and badger runs. Information pertaining to the location of badger setts is confidential and as a result is not included within this report (final confidential badger report pending).

Other Mammals

- 5.82 Evidence of rabbit (*Oryctolagus cuniculus*) including droppings and burrows were recorded throughout the site. The site has the potential to support brown hare and hedgehogs. The Devon Biological Records Centre provided a recent record of brown hare approximately 460 m to the south east of the site. Records of hedgehog were also provided within 2 km, but not within close proximity to the site.

Amphibians

- 5.83 Palmate newts were recorded within the pond to the south of Pool Anthony during great crested newt surveys conducted by Engain in spring 2012 (final report pending).

Invertebrates

- 5.84 Hedgerows within the site are likely to support a range of invertebrates. The Devon Biological Records centre provided records of species of principal importance (listed on the NERC Act 2006). The recent records included brown hairstreak (*Thecla betulae*) and wall (*Lasiommata megera*) butterflies.

Invasive/Non-Native Species

- 5.85 There was a raft in the Grand Western Canal, which could be used for surveying non-native mink (*Mustela vison*). Mink are known to heavily predate upon water voles.

6 EVALUATION, MITIGATION & ENHANCEMENT

6.1 This section describes the ecological value and sensitivities of the site, and outlines further investigations or mitigation related to the proposed development. The designated habitats in proximity to the site are firstly evaluated, followed by habitats on site and lastly protected species are evaluated.

Designated and Non-Designated Sites

6.2 There are two designated sites within and adjacent to the proposed site. Tidcombe Lane Fen SSSI is a statutory designation of national importance and this site will be protected and enhanced as part of the proposed development. Public access will be prohibited. The Grand Western Canal Local Natural Reserve and Country Park will be protected and enhanced as part of the proposed development.

6.3 No development will occur within the area of Tidcombe Lane Fen SSSI and a buffer zone will be created around the SSSI and the Grand Western Canal to protect the hydrological integrity of the site and the wildlife value.

6.4 A key aspect of the protection of the Tidcombe Lane Fen SSSI habitat is the retention of or where possible, improvement of the current hydrological regime and by ensuring the quality and quantity of water entering the fen do not change or are beneficial.

6.5 Green space connectivity to the sites and linkages to outside habitats will be maintained and enhanced as part of the proposed development. The potential hydrological effects of the proposed development upon Tidcombe Lane Fen SSSI, Ailsa Brook, the River Lowman and marshy grassland will be investigated and appropriate avoidance, mitigation and enhancement measures will be implemented.

6.6 An Ecological Management Plan and a Construction Stage Environmental Management Plan will be produced to enhance and manage such sensitive ecological issues.

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- 6.7 Residents of the proposed development may make occasional use of established public footpaths that pass through Local Wildlife Sites within 2 km of the site, however public green space will be provided as part of the proposed development which is likely to limited the extent of additional use. It is considered unlikely to be significant to these sites.

Habitat Quality

- 6.8 The site and surrounding countryside supports a diverse, native, species-rich network of Devon hedgerows, many of which are highly likely to be of ecological importance under the Hedgerow Regulations 1997. A Hedgerow Regulations assessment will be conducted on the hedgerows within the site prior to submission of an application.
- 6.9 The majority of the existing ecological value of the proposed development site is considered to be high due to the presence of an extensive network of Devon hedgerows, lanes and tracks as well as veteran trees and wetland habitats. The area of the site that is designated as Tidcombe Lane Fen SSSI is of **national** value.
- 6.10 Hedgerows and standard trees will be retained within habitat corridors, protected and enhanced wherever possible. Early ecological advice to inform the masterplan for the site will be provided. The masterplan will protect green infrastructure and wildlife corridors, including watercourses, hedgerows, tracks and lanes linking the site to outside habitats.
- 6.11 Where hedgerows and trees cannot be retained, appropriate compensatory planting will be carried out of a greater area of habitat. Ideally an overall doubling of hedgerow habitat would be achieved.
- 6.12 The Grand Western Canal, River Lowman and Ailsa Brook are located adjacent to and within the site boundary respectively. These riparian habitats will be protected from environmental pollution during the construction works and ecologically enhanced.

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- 6.13 An Ecological Management Plan and a Construction Stage Environmental Management Plan will be produced to enhance and manage such sensitive ecological issues.

Bats

- 6.14 There is the potential for bats to use mature trees and hedgerows within the site for perching, foraging and commuting flight lines to connecting habitats. Hedgerows and mature trees will be retained and enhanced wherever possible. The desk study included: records of light sensitive species (lesser horseshoe, Daubenton's and brown long-eared bats); light tolerant species (noctule and serotine bats); and common and light tolerant species (pipistrelle species). Lesser horseshoe bats are strictly protected under Annex II and IV of the Habitats Directive and must be maintained at a favourable conservation status.
- 6.15 Native bat species receive full protection under UK and European legislation including the Wildlife and Countryside Act 1981 (as amended), the CRoW Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011. It is an offence to wilfully or recklessly disturb or harm individual bats or to destroy, damage or obstruct a place of shelter used by bats, even if bats are absent.
- 6.16 An inspection for bats will be conducted on the built structures within the site (Appendix 1, Map 1 of 2, TN 2-5) and trees with potential for bats.
- 6.17 Following the Bat Conservation Trust Guidelines²² for a large site (>15 Ha), with a high value habitat for bats, bat transects will be conducted at the site to assess the use of the site by bats and to determine what species are using the site. Two transect surveys will be conducted per month between May and September, one of which will comprise a dusk and dawn transect. Four static data loggers will be placed at suitable points for seven days each month from May to September.
- 6.18 Trees will be retained wherever possible. Bat boxes will be installed within retained/existing trees in the site to enhance the site for bats.

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Great Crested Newts

- 6.19 A great crested newt survey has been conducted following English Nature Guidelines²³ on ponds within 500 m of the site and no great crested newts were recorded. No further survey or mitigation is required for this species at this time. Survey data is relevant for 2 years.

Dormice

- 6.20 Dormice are protected by the Wildlife and Countryside Act 1981 (as amended), the CRoW Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011. It is an offence to willfully or recklessly harm a dormouse or to destroy, damage or obstruct places used for shelter by dormice.
- 6.21 A nest tube survey for dormice will be conducted following Natural England guidelines²⁴. Nest tubes will be installed within suitable hedgerows in April 2013. The tubes will be surveyed three times between June and September 2013.

White-Clawed Crayfish

- 6.22 Ailsa Brook and the River Lowman provide potential habitat for crayfish. There are no records of crayfish or American signal crayfish within close proximity of the site.
- 6.23 Crayfish are protected by the WCA 1981 (as amended), the CRoW Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011 against intentional or reckless harm.
- 6.24 A white-clawed crayfish habitat assessment of Ailsa Brook and the River Lowman will be conducted in 2013 and a further white-clawed crayfish survey may be required should habitat be found to be suitable to support this species.

Otter

- 6.25 Otters could be present within the riparian habitat of Ailsa Brook, the River Lowman and the Grand Western Canal.

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- 6.26 Otters are protected by the Wildlife and Countryside Act 1981 (as amended), the CROW Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011. It is an offence to willfully or recklessly harm an otter and to destroy, damage or obstruct places used for shelter by otters.
- 6.27 The proposed development could have an effect upon the riparian habitat. As a result an otter survey will be carried out to assess whether the proposed development will have an effect upon otters. Otter surveys can be carried out at any time of year.
- 6.28 A Construction Stage Environmental Management Plan will be produced to address control of any potential impacts that could occur to the riparian habitat within and adjacent to the site during construction.
- 6.29 An Ecological Management Plan will include objectives to manage and enhance the riparian habitat of Ailsa Brook and the River Lowman and the terrestrial habitat within the proposed site, to the north of the Grand Western Canal, for otters following consultation with the Environment Agency.

Water Vole

- 6.30 Water voles could be present within the riparian habitat of Ailsa Brook, the River Lowman and the Grand Western Canal. Possible signs of water vole were recorded by Engain in the River Lowman to the north of the site in 2012.
- 6.31 Water voles are protected by the Wildlife and Countryside Act 1981 (as amended) and the CROW Act 2000. It is an offence to willfully or recklessly harm a water vole and to destroy, damage or obstruct places used for shelter by water voles.
- 6.32 A water vole survey will be carried out to assess whether the proposed development will have an effect upon water voles.
- 6.33 A CEMP will be produced to address control of any potential impacts that could occur to the riparian habitat within and adjacent to the site during construction.

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- 6.34 An ecological management plan will include objectives to manage and enhance the riparian habitat of Ailsa Brook and the River Lowman for water voles following consultation with the Environment Agency.

Nesting Birds

- 6.35 A variety of common and widespread bird species were recorded using the hedgerow habitats within the site. House sparrow and song thrush were recorded, which are both red status species and also a species of principle importance listed on the NERC Act 2006. Bullfinch were recorded, which are an amber status species. Bird species are likely to use the site for the purposes of nesting and feeding.
- 6.36 A barn and mature trees within the site have the potential to be used by barn owls.
- 6.37 It is an offence under UK legislation to wilfully destroy or damage the nest of a wild bird while it is being built or is in use in any location (Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000). Barn owls are additionally afforded protection at all times under the Wildlife and Countryside Act 1981 (as amended).
- 6.38 The barn and mature trees within the site will be inspected for evidence of use or nesting by barn owls. Breeding bird surveys will be conducted to assess the level of breeding activity within the site. Three breeding bird surveys will be conducted at the site between April and mid-June 2013.
- 6.39 Where potential bird nesting habitat needs to be removed or altered, this will be undertaken outside of the breeding season (which runs approximately from March to August inclusive).
- 6.40 If ground clearance works are necessary during the breeding season, potential bird nesting habitat will be assessed and the appropriate level of mitigation then applied prior to any works.

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- 6.41 Hedgerows will be retained, protected and enhanced wherever possible and early ecological advice will be provided to inform the proposed masterplan with respect to retaining and enhancing key bird nesting habitats within the site.

Reptiles

- 6.42 The majority of the habitat within the site comprises of improved grassland which is unsuitable for reptile species. However there are several areas of scrub, fen and marshy grassland habitat within the site, which provide potential habitat for common reptile species.
- 6.43 All native UK reptile species are protected by UK legislation including the Wildlife and Countryside Act 1981 (as amended) and the CROW Act 2000, against intentional or reckless harm.
- 6.44 A reptile survey will be conducted on areas with suitable reptile habitat (March - October, the optimal time being April – May and September) prior to development. The survey will determine species presence/absence and population size(s). Seven site visits are usually required to prove presence/absence of reptiles, in accordance with Joint Nature Conservation Committee (Herpetofauna Workers' Manual 2003²⁵) and also prescribed in the Froglife guidelines (Froglife Advice Sheet 10 Reptile Survey²⁶).
- 6.45 An Ecological Management Plan will be produced and will include objectives for the enhancement and management of the site for reptiles.

Badgers

- 6.46 There are main, annexe and outlier badger setts and evidence of recent badger activity recorded within the site.
- 6.47 Badgers and their setts are protected under the Protection of Badgers Act 1992 as updated by The Hunting Act 2004, which makes it an offence to kill, injure or take a badger or to interfere with a badger sett.
- 6.48 A badger survey will be carried out and the results will be presented in a confidential report that will not be placed within the public domain. A badger

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mitigation plan and a badger licence from Natural England may be required, should badger setts be affected by the proposals.

- 6.49 A badger survey can be undertaken at any time of year, although autumn and spring are the most suitable months for conducting badger surveys, when thick vegetation has died back.
- 6.50 The site and surrounding area within 50 m will be surveyed to identify the potential location(s) of sett(s), sett entrances, and direction of tunnels and badger pathways in relation to the existing ground topography and field boundaries.

Invasive Species

- 6.51 A stand of Japanese knotweed was recorded at Copplestone (Appendix 1, Map 1 of 2, TN 3). It is an offence to plant or cause Japanese knotweed to grow in the wild under the Wildlife and Countryside Act 1981 (as amended). All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990.
- 6.52 The Japanese Knotweed Code of Practice (Environment Agency (EA), September 2006)²⁷ provides advice in full. The plant is mainly spread through rhizome (root) fragments or cut stems. Once stem material has dried out and has reached the brown woody stage there is no further regeneration. The dead canes on site cannot re-grow if cut, although the stem bases and roots can, so disturbance to these areas should be avoided.
- 6.53 The area of Japanese knotweed growth will be isolated with fencing with a restricted access sign (Appendix 1, Map 1 of 2, TN 11). As a general rule the area of infestation is 7 m horizontally from the nearest growth, however, new growth is currently not evident at this time of year so the area of infestation is difficult to predict. The stems will be sprayed a bright colour to identify them. Page 13 of the Code of Practice²⁷ for 'good site hygiene' should be referred to.

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- 6.54 A Japanese knotweed management plan will be produced for the site. All contractors will be fully briefed on identification of the plant and their responsibilities.

Ecological Enhancement Options

- 6.55 It is current government policy (NPPF) and legislation (NERC 2006) to protect and enhance areas ecologically. The following section provides measures to achieve this at an appropriate scale for this development.
- 6.56 The site is currently of regional ecological value and has the potential for ecological enhancement. The development will accommodate the following recommended enhancement measures:
- Setting ecological targets (e.g. Code for Sustainable Homes Assessment Guidelines)²⁸ to improve habitat structure and diversity and increase species diversity;
 - An Ecological Management Plan to protect, manage and monitor the ecological resource in the short and long-term;
 - Green roofs where possible, with native plant species and habitat structure implemented by a qualified ecologist;
 - 'Rain gardens' to implement Water Sensitive Urban Drainage;
 - Green infrastructure and wildlife corridors linking open space to habitats in the landscape surrounding the site;
 - The inclusion of appropriate locally native plant species in landscape planting plans. The Devon Local Biodiversity Action Plan could be used as a guide to appropriate species/habitats;
 - Installation of bat, bird and insect boxes on trees and buildings at the site; and
 - Management and enhancement of hedgerows and other retained habitats to improve ecological quality and structure.

7 CONCLUSIONS

- 7.1 The majority of the existing ecological value of the proposed development site is considered to be of high ecological value due to the presence of a good network of Devon hedgerows, lanes and tracks. The area of the site that is designated as Tidcombe Lane Fen Site of Special Scientific Interest is of national value.
- 7.2 There is the potential for protected species on site including roosting and commuting bats, dormice, white-clawed crayfish, otters, water voles, nesting birds, reptiles and badgers. Suitable detailed species surveys will be carried out for these species and methods to avoid effects from the proposed development.
- 7.3 The site has the potential for ecological enhancement through good design practice and principles. Such ecological enhancement will take account of connectivity with the surrounding landscape and biodiversity.
- 7.4 Table 7-1 summarises the key ecological management issues. Further additional ecological work will include:
- Hedgerow Regulations assessment;
 - Two bat transect surveys per month (May-September 2013);
 - Building and tree assessment and inspection for bats and barn owls (no seasonal constraints); and
 - Three dormice nest tube surveys (May-September 2013);
 - White-clawed crayfish habitat assessment (May-September);
 - Otter and water vole survey (May-September);
 - Breeding bird survey (April – mid June);
 - Reptile Survey (March – October, April – June and September optimal); and
 - Badger survey (avoiding very cold spells).

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Table 7-1 Ecological Management and Enhancement Measures

<i>Issue</i>	<i>Description and/or Risk</i>	<i>Potential Risk</i>	<i>Action</i>
Bats	<p>Bats may forage within the site and may roost within trees and built structures within the proposed site.</p> <p>Bats are protected under the Wildlife and Countryside Act 1981 (as amended), the CRow Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011.</p>	High	<p>Two transects for bats will be conducted per month (May – September).</p> <p>Automated bat surveys will be conducted with data loggers.</p> <p>Trees and barns will be assessed and potentially be inspected for bats.</p>
Dormice	<p>Dormice have been recorded in hedgerows adjacent to the site.</p> <p>Dormice are protected under the Wildlife and Countryside Act 1981 (as amended), the CRow Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011.</p>	High	<p>A dormice nest tube survey will be conducted (May – September).</p>
White-Clawed Crayfish	<p>Ailsa Brook and the River Lowman provide potential white-clawed crayfish habitat.</p> <p>Crayfish are protected by the WCA 1981 (as amended), the CRow Act 2000, and the Conservation of Species and Habitats (Amendment) Regulations 2011 against intentional or reckless harm.</p>	Medium	<p>A crayfish habitat assessment of Ailsa Brook and the River Lowman will be conducted in June 2013. Should they be found to be suitable for crayfish, a white-clawed crayfish survey will be conducted.</p> <p>Riparian habitat will be enhanced and this will be included in the EMP.</p>

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<p>Otters and Water Voles</p>	<p>Potential for otters and water voles to use Ailsa Brook the River Lowman and the Grand Western Canal.</p> <p>Otters are protected by law (WCA 1981 (as amended), the CRoW Act 2000) and the Conservation of Species and Habitats (Amendment) Regulations 2011.</p> <p>Water voles are protected under the WCA 1981 (as amended), and the CRoW Act 2000</p>	<p>High</p>	<p>Otter and water vole surveys of the Grand Western Canal, the River Lowman and Ailsa Brook to assess presence or absence (April and September) and to recommend any appropriate mitigation if present.</p> <p>Riparian habitat will be enhanced and this will be included in the EMP.</p>
<p>Breeding Birds</p>	<p>Bird species are likely to use hedgerows, scrub and mature trees around the site as nesting habitat during the breeding season (March - August).</p> <p>It is an offence under UK legislation (Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000) to cause wilful or reckless harm to active nests, eggs and dependent young of all native bird species.</p>	<p>High</p>	<p>Breeding birds survey will be conducted.</p> <p>Pre-works nesting bird survey (if works to be carried out between March to August).</p> <p>Works to clear potential nesting habitat preferable to be undertaken between September and February.</p>
<p>Reptiles</p>	<p>Reptiles particularly slow worm, grass snake and common lizard, may use the scrub, fen and marshy grassland areas within the site.</p> <p>Reptiles are protected under the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act 2000.</p>	<p>Medium</p>	<p>A reptile survey will be carried out to determine presence/absence of reptile species on the site.</p>

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Badgers	<p>A high level of badger activity was recorded within the proposed site.</p> <p>Badgers are protected under the Protection of Badgers Act 1992 as updated by the Hunting Act 2004.</p>	High	<p>Full badger survey and confidential report not to be placed within the public domain.</p> <p>Optimal time of year for this survey would be November to April.</p>
Hedgerows and Mature Trees	<p>There is a risk that protected species may be encountered if the trees and hedgerows are to be removed from the site boundary.</p> <p>Good network of Devon hedgerows present within the site which may be 'Important' under the Hedgerow Regulations 1997.</p> <p>Works around the root systems may compress the soil and possibly kill or damage trees.</p>	High	<p>Hedgerow Regulations assessment to be conducted.</p> <p>Hedgerow network to be protected and enhanced with good linkages to the wider landscape. Early ecological advice to masterplanning will be provided.</p> <p>A buffer zone will be put in place around the trees and hedgerows as far out as the canopy spreads.</p>
Ecological Management and Biodiversity Enhancement	<p>A plan cross-referenced to the landscape strategy/planting plan and local biodiversity targets and criteria for eco-homes/sustainable development to provide suitable habitat for local biodiversity improvement and management.</p>	n/a	<p>Develop a plan in agreement with local planning authorities, to enhance the biodiversity of the site, including influencing the landscape strategy, planting and long term maintenance regime. This will include reference to the Devon Biodiversity Action Plan criteria and seek agreement with local conservation objectives. Locally native species will be selected which support fauna and flora of the local biodiversity interest.</p>

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8 REFERENCES

1. UK Government's Countryside Geographic Information website: Url: www.magic.gov.uk. Site accessed on 9th May 2013.
2. European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.
3. European Council Directive 79/409/EEC on the Conservation of Wild Birds.
4. The Conservation of Habitats and Species (Amendment) Regulations 2011.
5. Wildlife and Countryside Act, 1981 (as amended).
6. Countryside and Rights of Way Act, 2000.
7. The Protection of Badgers Act, 1992.
8. The Hunting Act, 2004.
9. The Natural Environment and Rural Communities (NERC) Act 2006.
10. National Planning Policy Framework. Department for Communities and Local Government, March 2012.
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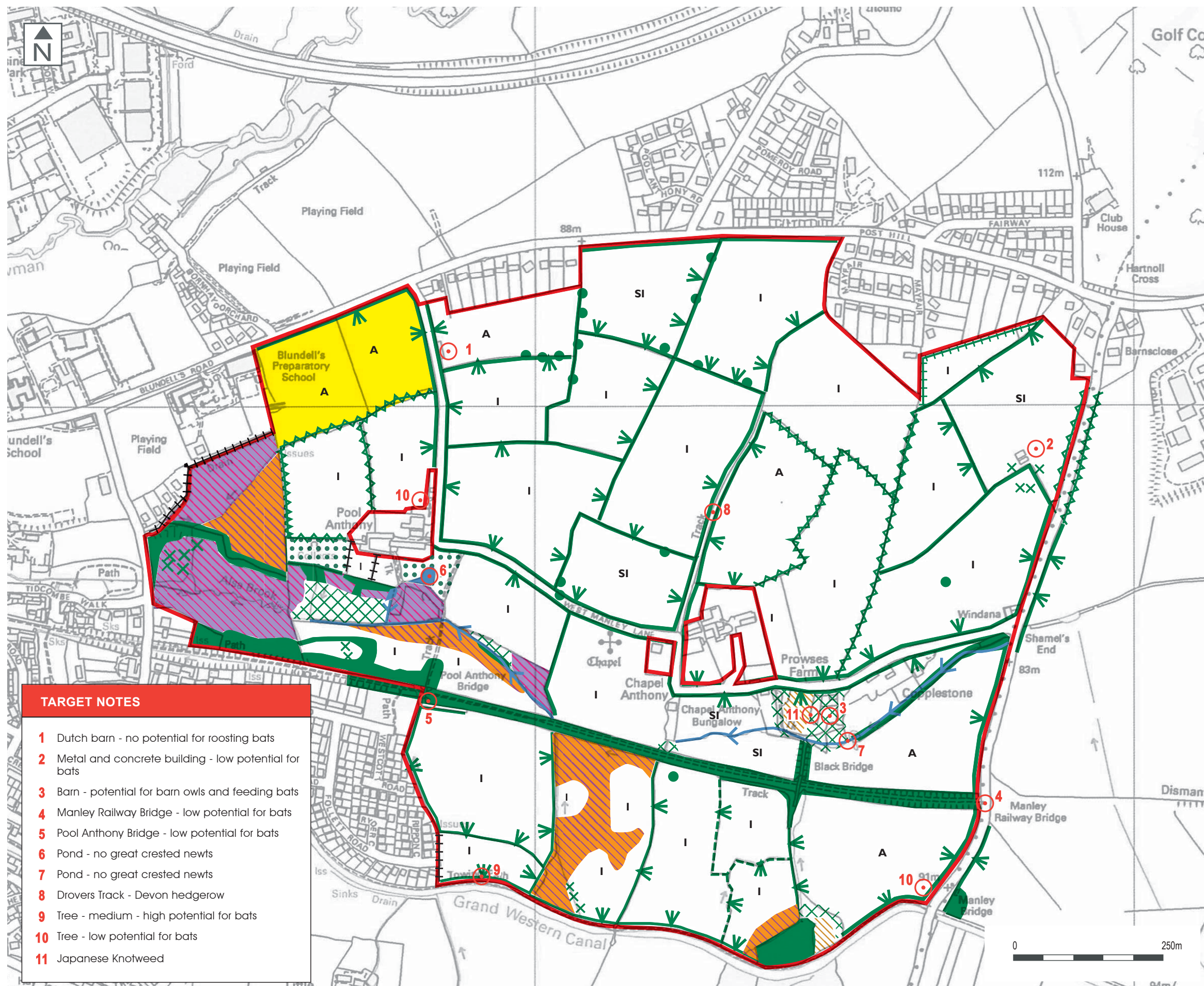
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APPENDICES

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Ecological Appraisal**

Appendix 1: Extended Phase 1 Figure



- Site boundary
- Broadleaved woodland
- Broadleaved trees
- Orchard
- x x x x Dense scrub
- x x x Scattered scrub
- Native, intact, species-rich hedge with trees
- Native, defunct, species-poor hedge
- Native, intact, species-poor hedge
- Native, intact, species-rich hedge
- Species-poor hedge and trees
- A Amenity grassland
- A Arable
- Marshy grassland
- / / / / / Tall ruderal
- I Improved grassland
- SI Rough semi-improved grassland
- Fen
- Standing water
- Dry ditch
- Fence
- 1-10 Target notes

- TARGET NOTES**
- 1** Dutch barn - no potential for roosting bats
 - 2** Metal and concrete building - low potential for bats
 - 3** Barn - potential for barn owls and feeding bats
 - 4** Manley Railway Bridge - low potential for bats
 - 5** Pool Anthony Bridge - low potential for bats
 - 6** Pond - no great crested newts
 - 7** Pond - no great crested newts
 - 8** Drivers Track - Devon hedgerow
 - 9** Tree - medium - high potential for bats
 - 10** Tree - low potential for bats
 - 11** Japanese Knotweed

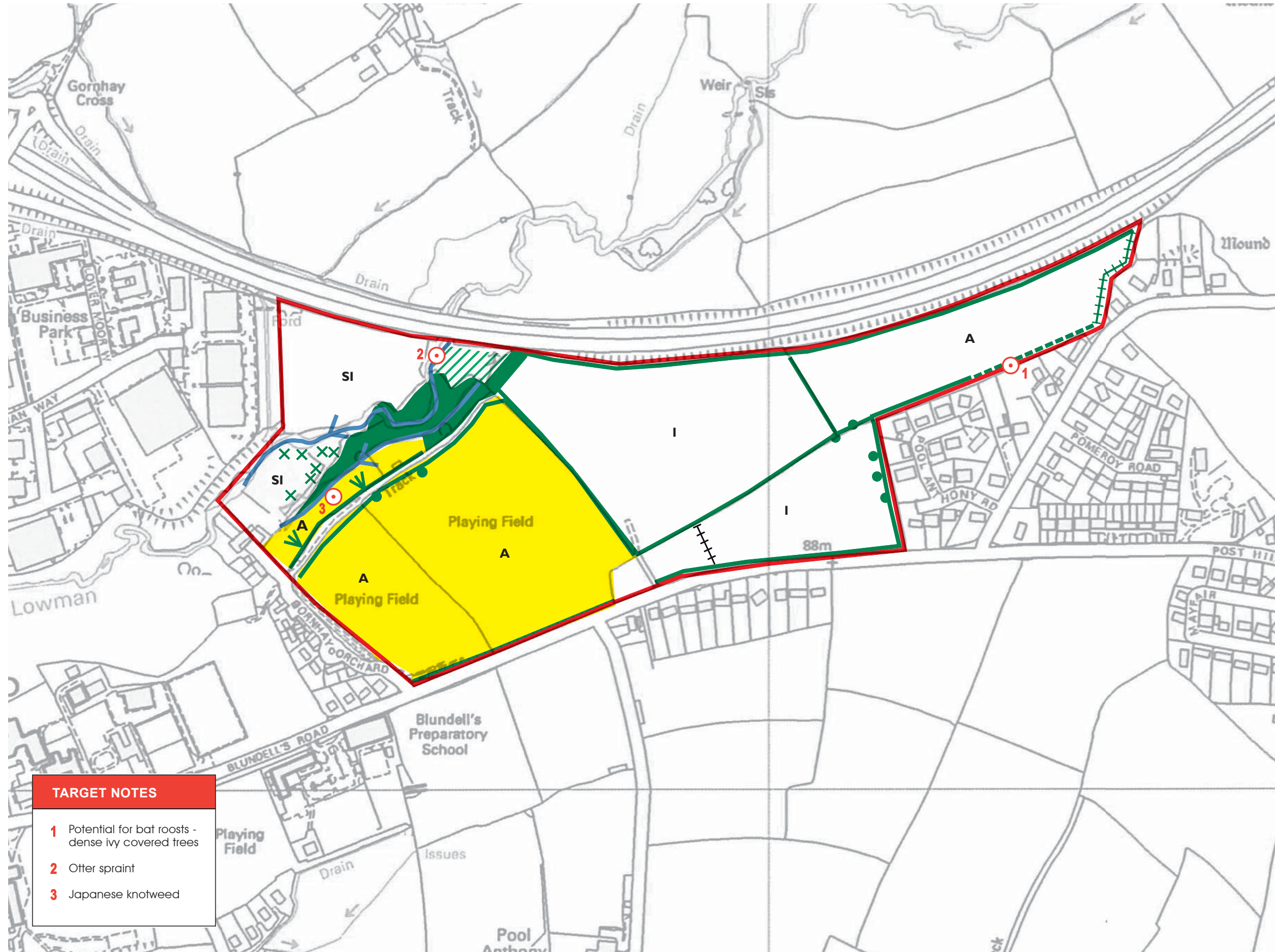
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ON BEHALF OF
Chettiscombe Estate

PROJECT
**Tiverton East Urban Extension
 (Area 3 - South West)**

TITLE
**Tiverton East Urban Extension
 (Map 1 of 2)**

SCALE	DATE	PROJECT NO	APPROVED
See scale bar	Dec 2013	eg12464	JW



TARGET NOTES

- 1** Potential for bat roosts - dense ivy covered trees
- 2** Otter spraint
- 3** Japanese knotweed

- Site boundary
- Broadleaved woodland
- Broadleaved trees
- Coniferous plantation
- Native, intact, species-rich hedge with trees
- Native, defunct, species-poor hedge
- Native, intact, species-poor hedge
- Species-poor hedge and trees
- Scattered scrub
- Amenity grassland
- Arable
- Improved grassland
- Rough semi-improved grassland
- Running water
- Fence
- Target notes



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ON BEHALF OF
Chettiscombe Estate

PROJECT
**Tiverton East Urban Extension
 (Area 2 - North West)**

TITLE
**Tiverton East Urban Extension
 (Map 2 of 2)**

SCALE	DATE	PROJECT NO	APPROVED
See scale bar	Dec 2013	eg12464	JW

**Tiverton Eastern Urban Extension
Ecological Appraisal**

Appendix 2: Photographic Plates

**Tiverton Eastern Urban Extension
Ecological Appraisal**



Plate 1: Tidcombe Fen SSSI



Plate 2: Tidcombe Fen SSSI Wet Wodland



Plate 3: Tidcombe Fen SSSI

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Plate 4: Grand Western Canal Local Nature Reserve



Plate 5: Dutch Barn



Plate 6: Copplestone Barn

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Plate 7: Manley Railway Bridge



Plate 8: Ailsa Brook



Plate 9: Improved Grassland

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Ecological Appraisal**



Plate 10: Devon Lane



Plate 11: Dismantled Railway Line