
Ecological Appraisal

Bordesley Extension

Prepared for
Gallagher Estates Limited

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ECOLOGICAL APPRAISAL

Bordesley Extension

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Executive Summary

CH2M HILL was commissioned by Gallagher Estates Limited to undertake an ecological appraisal of a proposed residential development scheme in Bordesley, to the north of Redditch, Worcestershire. The site is centred on Ordnance Survey Grid Reference SP044698. This report provides a technical appraisal, undertaken through desk study combined with a field survey, of the likely potential impacts of the proposed scheme on habitats and species present within and adjacent to the scheme, in order to inform mitigation and the need for further detailed surveys.

The River Arrow Special Wildlife Site (SWS) runs through the site, and the Dagnell Brook SWS is located adjacent to the site. A Site of Special Scientific Interest is located approximately 175m downstream, and twelve other SWSs are located within 2km of the site. The two SWS watercourses will be avoided by sensitive design and therefore no direct impacts to these designated sites are anticipated, although there is potential for indirect construction related impacts. Recommendations for the construction of the proposed development include:

- Development of a Construction Environmental Management Plan and appointment of an Ecological Clerk of Works.
- That construction mitigation measures should be implemented in accordance with best practice to prevent impacts from dust, noise, run-off or other potential pollutants; and
- Water pollution prevention measures should be adhered to as set out in the Environment Agency's Pollution Prevention Guidelines (PPG 5: Works and maintenance in or near water).

Habitats recorded within the site include:

- Arable land of importance within the immediate zone of influence only;
- Grassland, watercourses, hedgerows and trees of up to local importance for nature conservation; and
- Ponds of up to district importance for nature conservation.

Recommendations for habitats are:

- Avoid loss of habitats (particularly hedgerows, mature trees and ponds) through sensitive design;
- Protect retained trees and hedgerows during construction works, in accordance with British Standard BS 5837 2012: *Trees in relation to design, demolition and construction – Recommendations*;
- Replace habitat losses following specifications provided in the report; and
- Secure on-going maintenance of replacement habitats.

Protected and priority species with potential to be present in the site are badger, bats, nesting birds, amphibians (including great crested newt), hedgehog and brown hare. Recommendations for further survey are:

- Badger surveys including bait marking survey;
- Bat roost potential and inspection surveys on buildings and trees;
- Bat roost emergence/re-entry surveys and activity surveys across the site;
- Breeding bird survey across the site;
- Great crested newt survey of ponds in the site and within 250m of the site;
- Otter survey on the River Arrow and Dagnell Brook if bank-side impacts are unavoidable; and
- Invertebrate survey of any veteran trees to be impacted.

The appraisal concludes that subject to the implementation of the recommended measures and findings of the protected species surveys, the proposed scheme could be implemented without significant adverse ecological impacts and will be in accordance with legal and policy requirements.

Introduction

1.1 Background

CH2M HILL was commissioned by Gallagher Estates Limited to undertake an ecological appraisal of a proposed development scheme in Bordesley, to the north of Redditch, Worcestershire. The site is centred on Ordnance Survey Grid Reference SP044698.

The site is to be developed by Gallagher Estates with the overall intention to create a sustainable urban extension to the existing urban area. The two red lines, as shown on the drawings in Appendix A indicate the study areas and for the purpose of this report are referred to as Land East of Birmingham Road and Land West of Birmingham Road.

The current concept masterplan produced by Pegasus Urban Design (Pegasus) is shown on BIR.4226_01A, titled 'The Composite Development Strategy' in Appendix A. The Composite Development Strategy illustrates the four proposed development parcels, planted buffer zones around the residential development, a proposed bypass route and green corridors. Whilst the shape and form of the development parcels may alter as the masterplan progresses, they will be contained within the proposed red line boundaries and will be linked and integrated as far as possible through green infrastructure and promoted as one development on each site.

The purpose of this report is to provide a technical appraisal of the likely potential impacts of the proposals on the habitats and species present within and adjacent to the site, and to inform the need for further detailed species and habitat surveys, mitigation and/or compensation.

1.2 Report Structure

The report is structured as follows:

- Section 2 – *Methodology*: summarises the methodology used for undertaking the desk study and field surveys, and describes the basis for the evaluation of ecological features;
- Section 3 – *Legislation, Planning Policy and Biodiversity Action Plan Context*: sets out the legislative and policy background to the ecological appraisal and informs the recommendations set out in Section 5;
- Section 4 – *Baseline Conditions*: describes the survey findings and context of the site with respect to the Natural Area profile, designated sites, habitats and flora and fauna, and identifies any actual or potential protected/notable habitat or species issues which have been found;
- Section 5 – *Evaluation*: assesses the importance of the designated sites, habitats, flora and fauna on the site; and
- Section 6 – *Recommendations*: sets out the recommendations and conclusions of the ecological appraisal in relation to relevant legislation, planning policy and nature conservation strategies as set out in Section 3.

Methodology

2.1 Desk Study

A desk study was conducted for the site and a 2 kilometre (km) search area surrounding the site, extended to 5km for internationally important sites. This area was considered to be sufficient to cover the likely zone of influence of the proposed development.

The desk study sought records for fauna, flora, habitats and sites designated for their nature conservation value. Understanding nature conservation issues in the wider area helps in the assessment of the ecological value of a site and the habitats and species that it supports.

The following data sources were consulted during the desk study:

- the Government's 'Multi-agency Geographic Information for the Countryside' (MAGIC) website for statutory designations;
- Joint Nature Conservation Committee (JNCC) and Natural England websites for descriptions of statutory designated sites;
- Worcestershire Biological Records Centre (WBRC), for protected, notable and Biodiversity Action Plan (BAP) species data, and descriptions for Local Nature Reserves and non-statutory designated sites; and
- Previous ecological appraisal of the site (Halcrow, 2010).

Where applicable, information supplied by these organisations has been incorporated into the following account with due acknowledgement. Only species records from the last ten years have been included in the report (post 2002).

2.2 Field Survey

An extended Phase I habitat survey of the site was undertaken by an experienced ecologist on the 14th August 2013 with the northern extremities surveyed by the same ecologist on the 1st October 2013. The field survey technique adopted was at a level intermediate between the Joint Nature Conservation Committee standard 'Phase I' habitat survey and 'Phase II' more detailed survey (JNCC, 2010). The scope and detail of the survey undertaken follow the recommendations made by Institute of Ecology and Environmental Management (2012).

The habitats were classified and mapped, and dominant plant species were recorded. Nomenclature for plant species follows that of Stace (2010). Note was taken of the more conspicuous fauna, and any evidence of, or potential for the presence of protected, notable or BAP species within the survey area.

Ponds holding water at the time of the survey were assessed for habitat suitability for great crested newts, following the methodology of Oldham *et al.* (2000). Full results are provided in Appendix C.

The weather conditions during the August survey were cool (15°C) but sunny, with a light south-westerly breeze, becoming overcast with occasional slight drizzle. During the October survey the temperature was 16°C with overcast conditions and a moderate easterly breeze.

2.3 Evaluation

The habitats and species evaluations are based on guidance from the Institute of Environmental Management (IEEM, 2006). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, county, district, local and lastly, within the immediate zone of influence of the proposals only.

Value judgements are based on various characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations (such as Sites of Special Scientific Interest (SSSI)), or for undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological resource. In terms of the latter, 'quality' can refer to habitats (for instance if they are particularly diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats) or species populations or assemblages.

2.4 Limitations

August is an optimal month for undertaking an extended Phase 1 habitat survey. However flora and fauna species are often transient in nature and survey visits can only provide a general indication of species present on site. A small area along the northern limits of the site was surveyed in early October which is normally suboptimal for phase 1 survey, but the weather conditions had continued to be warm and it is considered that the conditions were still optimal.

During the survey, every attempt was made to access the whole of the site; but close inspection of areas of dense scrub or woodland was not always possible. In such areas where there was evidence of animal activity, the potential for the scrub to conceal features such as mammal holes has been noted. The area between the River Arrow and Birmingham Road was not accessed, as permission was not granted to survey this area, but the site was viewed from adjacent land. It was considered unlikely that there had been any significant changes to the ecological features of this area since a previous Ecological Appraisal that covered this area (Halcrow, 2010).

The recommendations made within this report take full account of these limitations.

SECTION 3

Legislative, Planning and Biodiversity Action Plan Context

3.1 Legislation

Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Hedgerow Regulations 1997;
- Natural Environment and Rural Communities (NERC) Act (2006); and
- The Conservation of Habitats and Species Regulations 2010 (as amended).

Where relevant, the ecological appraisal takes account of the legislation protection afforded to specific habitats and species.

3.2 Planning Policy

3.2.1 National Planning Policy

The National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2012) was published on March 27th 2012 and supersedes the previous guidance (*Planning Policy Statement 9: Biodiversity and Geological Conservation*). The document sets out the Government's planning policies for England and provides guidance on how these policies are expected to be applied.

The NPPF includes a chapter on biodiversity, *Chapter 11 – Conserving and Enhancing the Natural Environment*. In addition to being concerned with the protection of statutorily designated sites, the Chapter outlines ways in which the planning system is required to contribute to and enhance the local environment and sets out guidance for local authorities in respect of the consideration of biodiversity and green infrastructure. The NPPF is a material planning consideration.

3.2.2 Local Planning Policy

The scheme is located within Bromsgrove District Local Authority area. Current planning policies comprise saved policies from the Bromsgrove District Local Plan (2004). Those policies of relevance to biodiversity are:

C6 Sites for Environmental Improvements "The District Council will identify sites and implement schemes for environmental improvements at 'gateway' locations into the District and along main transport routes and waterways, particularly within urban areas. The Council will liaise with land owners and other relevant agencies when implementing and maintaining schemes."

C9 Development Affecting SSSI's and NNR's "Development proposals which would destroy or adversely affect, directly or indirectly, a designated or proposed Site of Special Scientific Interest or National Nature Reserve will not be permitted. In the event of a designated or proposed site of international importance being identified within the District it will be subject to the extra protection and special procedures appropriate to the designation."

C10 Development Affecting SWS's and LNR's "Development proposals which would destroy or adversely affect, directly or indirectly, a Special Wildlife Site, Local Nature Reserve or sites subject to an Agreement under Section 39 of the Wildlife and Countryside Act 1981, will only be permitted where it can be demonstrated that the net adverse impact of the proposal is not significant, having regard to the value of the nature conservation features which were the reason for the designation of the site."

C10A Development Affecting Other Wildlife Sites "The District Council will seek to minimise the effects of development proposals on features of nature conservation importance in the District. This will include woodlands, ponds, lakes or streams, marshland and wetlands and unimproved grasslands."

C12 Wildlife Corridors "The District Council will protect major wildlife corridors wherever possible. Development proposals should minimise the damage to such corridors by careful layout and design retaining the existing overall structural framework of the landscape as far as possible. Adequate new landscaping to maintain existing wildlife corridors will be required. Proposals to enhance or extend corridors will be welcomed."

C16 Effect of Infrastructure Development on the Landscape "Schemes involving transport and related infrastructure should be planned to minimise the impact on the landscape and wildlife, in particular avoiding the fragmentation of wildlife sites and the destruction or diminution of important elements in the landscape."

C17 Retention of Existing Trees "Development proposals should retain existing trees wherever possible. New planting should be related in scale, size and species to the existing indigenous planting."

C18 Retention of Existing Woodland "The District Council will seek to retain and enhance existing woodland particularly all ancient semi-natural woodland and promote sound woodland and countryside management by other bodies. The District Council will encourage the planting of trees, favouring the use of indigenous species both in hedgerows and as new woodland areas (in suitable locations) through the appropriate agencies. It will encourage and support the use of appropriate woodlands meeting multiple objectives such as timber production, recreational use and the creation of wildlife habitats. These principles will be taken into account, when that is appropriate, in considering applications for planning permission and when formulating planning conditions which relate to matters affecting woodland, hedgerows and trees."

C19 Tree Preservation Orders "The District Council recognises the importance of mature trees and woodlands within the District and will serve Tree Preservation Orders (T.P.O.'s) on appropriate trees under threat and on other trees and woodlands of high environmental amenity or ecological value in order to ensure their long term protection."

3.3 UK Post-2010 Biodiversity Framework

Following the Convention on Biological Diversity (CBD) (1992), the UK BAP was published in 1994 and revised in 2007 to guide national strategy for the conservation of biodiversity. BAPs were the key nature conservation initiative in the UK, working at national, regional and local levels. The 'UK Post-2010 Biodiversity Framework' (July, 2012) succeeds the UK BAP, and is the result of a change in strategic thinking following the publication of the CBD's 'Strategic Plan for Biodiversity 2011–2020'. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work in the UK countries, with UK BAP habitats and species included under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006) as habitats or species of Principal of Importance for Biodiversity in England. The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Local BAPs are still applicable. The Worcestershire Local BAP (LBAP) (2008) currently contains 17 Habitat Action Plans (HAPs) for key habitats, of which the following are considered potentially relevant to the scheme and adjacent areas:

- Arable farmland;
- Traditional orchards;
- Ancient and species-rich hedgerows;
- Semi-natural grassland;
- Scrub;
- Woodland;
- Veteran trees, lowland wood pasture and parkland;

- Ponds and lakes;
- Rivers and streams; and
- Road verges.

The LBAP lists 25 Species Action Plans (SAPs) (including grouped SAPs for bats and farmland birds). Of the SAPs the following are considered potentially relevant to the scheme:

- Otter *Lutra lutra*;
- Bats;
- Water vole *Arvicola amphibius*;
- Stag beetle *Lucanus cervus*;
- Noble chafer *Gnorimus nobilis*;
- White-clawed crayfish *Austropotamobius pallipes*;
- Slow worm *Anguis fragilis*;
- Great crested newt *Triturus cristatus*;
- Farmland birds; and
- True service tree *Sorbus domestica*.

Baseline Conditions

4.1 Context

The site is located on agricultural land adjacent to the northern edge of Redditch, Worcestershire, centred on Ordnance Survey Grid Reference SP044698. The site is split into land west of Birmingham Road bounded in the west by the mainline railway, and land east of Birmingham Road. The River Arrow flows north to south through the site between the railway and Birmingham Road. Housing is present on both sides of Birmingham Road and also along Dagnell End Road in the south. Agricultural land forms the northern edge to the site and Weights Lane and Dagnell End Road are the southern boundaries. Pasture and woodlands on hills are a prominent feature of the surrounding countryside.

The following accounts should be read in conjunction with Figure 1 *Phase 1 Habitat Plan* (Appendix A) and the target notes and accompanying photographic plates presented in (Appendix B).

4.2 Natural Area

The site is in the Natural England defined Midlands Plateau Natural Area (Number 43), which forms the watershed for Central England, draining into the Trent to the north and the Severn and Avon valleys to the south. Geology is mainly sedimentary and the plateau supports important heathland, farmland and under-represented woodland habitats. The area is 40% urbanised; nevertheless these urban areas contain significant habitats as remnants of ancient habitats. In addition, gardens and public green-space can be diverse.

4.3 Designated Sites

The desk study has confirmed that there are no internationally designated sites within a 5km radius of the site. A search within a 2km radius of the site identified one statutory designated site for its nature conservation value, and records provided by WBRC (September 2013) show that there are fourteen non-statutory Special Wildlife Sites (SWS) within a 2km radius of the site. All these designated sites are described in Table 1.

TABLE 1

Designated Sites

Information provided by WBRC and www.magic.gov.uk

Site Name	Designation	Distance and Direction from the site	Description
Dagnell End Meadow	SSSI	~175m south	The meadow is designated for its ancient permanent pasture and represents one of the last surviving areas of such pasture in this part of Worcestershire. Less common species including spotted orchid <i>Dactylorhiza fuchsia</i> , southern marsh orchid <i>D. praetermissa</i> , marsh valerian <i>Valeriana dioica</i> , lady's mantle <i>Alchemilla vestita</i> and tubular water dropwort <i>Oenanthe fistulosa</i> occur throughout the meadow with some in large numbers.
River Arrow	SWS	Within the site	The River Arrow flows south through Redditch to join the River Avon in Warwickshire. For much of its length it is lined with trees and shrubs (which in some places broaden out into woodland) and creates an important wildlife corridor through the landscape. It is a particularly valuable feature where it flows through the centre of Redditch

TABLE 1

Designated Sites

Information provided by WBRC and www.magic.gov.uk

Site Name	Designation	Distance and Direction from the site	Description
			<p>where both the river and its attendant valley form a significant green wedge through the town. Overshadowing by bankside trees means that the aquatic flora is limited in most stretches although in places there are beds of both in-stream and marginal vegetation. In combination with a full range of natural features, including fast flowing riffle sequences, these help to support a reasonable aquatic fauna.</p> <p>Otters are known to be present and kingfishers <i>Alcedo atthis</i> breed in several places.</p>
Dagnell Brook	SWS	Adjacent to the site	<p>The Dagnell Brook is a small tributary of the River Arrow, rising from springs around Weatheroak Hill north-east of Alvechurch and entering the Arrow on the northern edge of Redditch. Though the brook itself is rather narrow it is tree lined for much of its length and forms an important wildlife corridor through this part of the county, especially where it flows through otherwise improved farmland. Aquatic vegetation tends to be rather limited as a result of the significant shade cast by bankside trees, but these, together with occasional areas of marginal vegetation and associated scrub add value to the corridor as a whole.</p> <p>Faunal records for the brook are incomplete but otters are known to be present and there are past records for white-clawed crayfish. Their current status here is unknown but the brook contains abundant suitable habitat for the species and it is possible that a relict population still persists.</p>
Butler's Hill Wood	SWS	100m west	Similar history and ecology to Brookhill Wood, see below.
Rowney Green	SWS	~1km north	<p>The site comprises a mosaic of woodlands, alder <i>Alnus glutinosa</i> carr, unimproved acidic grassland, bracken <i>Pteridium aquilinum</i> scrub, wet flushed areas, and unusually, elements of a valley mire habitat. Though this vegetation type is barely surviving here, acidic carr of valley mire type is still an unusual ecotone in Worcestershire.</p> <p>The stream, a headwater of the Dagnell Brook, has recent records for native crayfish. Slow worm is reported from the Spinney. Bird breeding records include:- common buzzard <i>Buteo buteo</i>, great spotted woodpecker <i>Dendrocopos major</i>, green woodpecker <i>Picus viridis</i> and nuthatch <i>Sitta europaea</i>.</p>
Abbey Forge and Mill Pond	SWS	~0.8km south	<p>A group of four ancient mill and fish ponds ranged around the site of Bordesley Abbey and falling within the wider Scheduled Ancient Monument. The pools feed into the River Arrow, which flows to the north of the pool complex, via a narrow outflow stream and are for the most part fringed with a mixture of woodland and grassland. Between them they support a reasonable aquatic flora and marginal swamp vegetation, whilst some of the surrounding woodland trends towards a wet woodland community with alder in the canopy. Some of the surrounding grassland is unimproved and there are past records for meadow saxifrage <i>Saxifraga granulata</i>.</p> <p>Faunal records are incomplete for the site but the pools are likely to be important for a range of invertebrates including dragonflies. The site is also considered to be valuable for breeding birds and is likely to provide foraging habitat for bats.</p>
Storage Wood	SWS	~1.2km north	<p>Storage Wood is an Ancient Semi-Natural Woodland site on the south slopes of a small hill north of Redditch. Although ancient in origin in the past has been re-planted with a mix of broadleaved species and conifers. The site contains both sessile <i>Quercus petraea</i> and pedunculate oak <i>Quercus robur</i>, over a dense under storey of holly <i>Ilex aquifolium</i>, hazel <i>Corylus avellana</i>, birch <i>Betula</i> sp. and rowan <i>Sorbus aucuparia</i>. Climbing corydalis <i>Ceratocarpus claviculata</i> has been recorded in the ground flora, an unusual plant in Worcestershire, with bluebell <i>Hyacinthoides non-scripta</i>, foxglove</p>

TABLE 1

Designated Sites

Information provided by WBRC and www.magic.gov.uk

Site Name	Designation	Distance and Direction from the site	Description
			<i>Digitalis purpurea</i> , male-fern <i>Dryopteris filix-mas</i> and soft rush <i>Juncus effusus</i> .
Brockhill Wood	SWS	~1km southwest	<p>Though shown on the Inventory of Ancient Woodland (NCC 1986), much of the native broadleaf canopy was cleared in the late 20th Century and replaced by commercial broadleaves for timber to supply the brush handle industry. Virtually none of the site retains its original canopy trees, except around the wood's boundaries. However, this is an extensive site, with varied terrain, springs, ditches, damp grassland rides and at least three different broadleaved woodland habitats present. Therefore it remains a valuable wildlife resource.</p> <p>Special/local flora found throughout:- Past records (the damp rides and springs) include lesser scullcap <i>Scutellaria minor</i> – a rare species in Worcestershire, lesser spearwort <i>Ranunculus flammula</i> and heath woodrush <i>Luzula multiflora</i>.</p> <p>Mammals: Muntjac <i>Muntiacus reevesi</i>, red fox <i>Vulpes vulpes</i>. Badger <i>Meles meles</i> sett complexes.</p>
Shortwood Rough Grounds	SWS	~1km northwest	A large wood between Redditch and Bromsgrove that is bisected by the Worcester and Birmingham Canal. Part of the site is Ancient Semi-Natural Woodland. Part of the site has been replanted with broad-leaved and coniferous species for use in the brush handle industry. The site retains a sizeable native broad-leaved component and supports a varied ground flora and good breeding bird population.
Peck Wood	SWS	~1km west	<p>This wood lies on a flank of Newbourne Hill near Rowney Green. The south-western section is shown on the Inventory of Ancient Woodland (NCC 1986), however much of the rest of the site originated as wood-pasture, and the eastern end is secondary woodland - part planted during the early-mid 20th Century. The wood lies on a spring line, giving rise to alder carr dingles, so there are at least three different broadleaved woodland vegetation types present and hence a good diversity of wildlife.</p> <p>Bird species: nuthatch, green woodpecker, buzzard and tawny owl <i>Strix aluco</i> were seen or heard in 2008. There are records for woodcock <i>Scolopax rusticola</i>, garden warbler <i>Sylvia borin</i>, spotted flycatcher <i>Muscicapa striata</i> and redstart <i>Phoenicurus phoenicurus</i>. The last two species are reported as breeding here in the past.</p> <p>Mammals: Muntjac deer are commonly seen. Other species – badger, yellow-necked mouse <i>Apodemus flavicollis</i>. No comprehensive data available for invertebrates.</p> <p>Typical woodland butterfly and moth species occur.</p>
Worcester and Birmingham Canal	SWS	Approximately 1.5km northwest	The canal forms a valuable wildlife corridor through the county and is of particular importance where it flows through the built up area of Worcester City. For much of its length it is approximately 6 meters wide though there are one or two areas with significant associated riparian habitat that help to augment the corridor. In addition the canal is often lined with trees, which in places broaden into small woodlands and scrub belts. Due to the heavy summertime boat traffic there is little submerged aquatic vegetation, but the marginal vegetation is fairly well developed in places and supports a rich flora with extensive beds of common reed <i>Phragmites australis</i> . As a result the canal supports good numbers of breeding reed warblers <i>Acrocephalus scirpaceus</i> , particularly on stretches near to Worcester City. Coarse fish are numerous in some sections and otters and kingfishers are known to use the canal on a regular basis.
Foxydiate and Pitcher Oak Woods	SWS	~2km southwest	This site comprises two large ancient semi-natural woodlands split into a total of four compartments by roads and housing development. Between them they form a significant habitat block and a particularly important component of Redditch's green

TABLE 1
Designated Sites
Information provided by WBRC and www.magic.gov.uk

Site Name	Designation	Distance and Direction from the site	Description
			<p>infrastructure. Both woods are listed on the NCC Inventory of Ancient Woodland and have a diverse structure with significant open glade areas adding to the overall diversity. These are predominantly oak woodlands with other species. The ground flora is diverse with a range of woodland indicators augmented by rich grassland in the glades. In places the flora tends towards a more acidic mix with species including heather <i>Calluna vulgaris</i> and tormentil <i>Potentilla erecta</i> occurring.</p> <p>Faunal records for the two woods are incomplete but bats and a variety of nesting birds are likely to use both and there are records for a range of butterflies, particularly associated with Pitcher Oak Wood.</p> <p>Both Woods are also designated as Local Nature Reserves by Redditch Borough Council.</p>
Pitcher Oak Golf Course	SWS	~2km south	<p>A council owned golf course in the centre of Redditch this site forms an important part of a wider complex including Foxlydiate and Pitcher Oak Woods. It has a fringe of mature trees and some areas have a diverse, and often acidic, ground flora.</p> <p>To the north of the golf course, and within this site, is Holm Wood, an oak woodland with some ornamental planting on an ancient woodland site. There is still a sizeable natural component to the wood canopy. The ground flora is not especially rich but includes yellow archangel <i>Lamlastrum galeobdolon</i>, wood sage <i>Teucrium scorodonia</i> and bluebell <i>Hyacinthoides non-scripta</i>.</p> <p>Faunal records for the site are incomplete but it is likely to provide suitable habitat for a wide range of birds and invertebrates as well as foraging opportunities for bats.</p>
Holt End Meadows	SWS	~1.8km east	<p>Three triangular shaped damp meadows surrounded by overgrown hedgerows and tree-lined shelter belts situated to the north of the village of Holt End. Beoley. This is a generally flat site but a small brook (a minor tributary of the River Arrow) crosses the fields. The site is part of a valuable and intimate landscape of herb-rich meadows and thickly hedged boundaries in the vicinity of Beoley, north-east of Redditch.</p>
Old Fish Ponds	SWS	~1.8km north	<p>This SWS is on part of the site of the 13th century Bishop's Palace, a site of archaeological interest. The palace was destroyed in the 17th century but the earthworks of the moat and fish ponds are still visible. The River Arrow flows along the south boundary of the site and a major tributary of the Arrow flows along the west boundary; a small tributary flows through the centre of the site and a wet flush feeds into the Arrow at the south end of the site. Low-lying ground holds diverse rush-pasture and marsh vegetation whereas higher ground holds a neutral to slightly acidic grassland. Areas of scrub and woodland occur along the watercourses and around the old fish ponds.</p>

4.4 Habitats

4.4.1 Arable

Arable fields comprise a large proportion of the land to the east of Birmingham Road and, at the time of the survey, were planted with maize. Uncultivated field margins are generally narrow and dominated by false oat-grass *Arrhenatherum elatius*.

4.4.2 Grassland

Most of the site is poor semi-improved or improved pasture, grazed by cattle. The dominant grass species is perennial ryegrass *Lolium perenne* with crested dog's-tail *Cynosurus cristatus*, Yorkshire-fog *Holcus lanatus*, common bent *Agrostis capillaris* and white clover *Trifolium repens* but pockets of meadow foxtail *Alopecurus pratensis* and sweet vernal-grass *Anthoxanthum odoratum* are present scattered through fields. Road verges comprise coarse grass species (Target Note (TN)2) except at TN15 where the bank supports relatively species-rich grassland (TN15).

4.4.3 Hedgerows, trees, scrub and woodland

Field boundaries are mainly species-poor hedgerows, with the majority recently trimmed. Hawthorn *Crataegus monogyna* and elm *Ulmus* sp. are the dominant species, but hazel (frequent), blackthorn *Prunus spinosa* (locally abundant) and elder *Sambucus nigra* (rare) do feature in some hedgerows. In places the hedgerows have become defunct or have been replaced with post and wire fencing.

Mature trees are frequent within these hedgerows and a prominent feature of the landscape within the site. The mature trees are mainly mature pedunculate oak *Quercus robur* with some ash *Fraxinus excelsior*. Many of these are stag-headed and include standing deadwood in the canopy. Some mature oak and ash trees are in lines within fields indicating former field boundaries that have since been removed. Mature pear *Pyrus communis* trees are a characteristic feature of the eastern half of the site; some occurring in hedgerows and others in lines along removed field boundaries. Other species include willow *Salix* spp., alder and cherry *Prunus* sp.

Mature alder, willow and oak line the corridor of the River Arrow with almost continuous tree coverage on the right bank and intermittent trees on the left bank.

New tree planting with mixed broadleaved species (whitebeam *Sorbus aria*, ash, rowan *Sorbus aucuparia*, horse-chestnut *Aesculus hippocastanum* and cherry) has been undertaken recently along the track to Lower Park Farm in the east of the site (TN2).

Scrub is not a common habitat within the site except as an understorey along the river corridor or as bushes along removed or defunct hedgerows. Small areas of bramble *Rubus fruticosus* agg., hawthorn and blackthorn scrub is present all along the northwest boundary of the land between Birminham Road and Bordesley Park Farm and along the railway embankment to the west.

A small area of riparian woodland is located in the far east of the site adjacent to the Dagnell Brook (TN 31), and this woodland is part of a larger wood along the stream corridor. Trees present include mature oak, hawthorn, ash and alder, and the ground-flora is grassy with nettles.

4.4.4 Watercourses

The River Arrow flows north to south through the land east of Birmingham Road. This is a permanent flowing stream with few modifications and therefore high quality river corridor habitat (TN 37). The river has an incised channel with poached, eroding, un-vegetated sandy cliffs up to 2.5m high. The channel is about 4m wide and is almost completely unmodified with riffles and pools greater than 1m deep. There are many overhanging roots and banks with potential habitat for crayfish. The right bank has almost continuous tree cover of mature oak, ash, crack willow *Salix fragilis* and alder. Ivy *Hedera helix* cladding is very dense on some trees and, therefore, there is high bat roost, commuting and feeding potential. Willow and alder dominate at the northern end of the site, and hawthorn and hazel form the understorey. Native bluebell and dense ramsons form the ground flora. The left bank is more open with grassy banks and reed canary-grass *Phalaris arundinacea* on slumped bank toes.

The far eastern boundary of the site is adjacent to a short length of the Dagnell Brook. This stream also flows in a southerly direction and has the character of a woodland stream (TN 31). The channel has a cobble/pebble bed with riffles, pools and high quality habitat features such as side-bars,

bankside/underwater tree roots and fallen trees. There are no visible artificial modifications to the stream adjacent to the site. Banks are well vegetated although shaded by mature alders and oaks, and the in-channel habitats have potential for crayfish.

In addition there are two small, possibly ephemeral flowing ditches on or adjacent to the site. One flows south-westerly into the River Arrow at the far north of the site. This stream was not accessible during this survey but the description from Halcrow (2010) is that this is a shaded channel that becomes open near to the River Arrow. It had little aquatic vegetation and has the appearance of having recently been re-profiled. Another stream flows parallel to the A441 main road into the River Arrow, and the third is a stream issuing from the ground northeast of Bordesley Park Farm.

Wet and dry ditches are occasionally present across the site but generally have few wetland plant species. Those present include water cress, great willowherb and soft rush.

4.4.5 Ponds

There are four field ponds within the site and one field pond immediately adjacent to the northern boundary. All are to the east of Birmingham Road. Within the site, two of the ponds (TNs 17 and 18) are next to a field boundary immediately east of Birmingham Road, one pond (TN 23) is to the west of Bordesley Park Farm, and the fourth (TN 13) is immediately north of Bordesley Park Farm. All four ponds were heavily poached by cattle, with turbid water, no or little emergent vegetation and no aquatic vegetation visible. These ponds all supported low numbers of mallard *Anas platyrhynchos* ducks and at least some of the shoreline overshadowed by mature oak and ash trees. The pond immediately adjacent to the north of the site (TN 33) is fenced off from livestock, but it was also turbid and impacted by abundant mallard *Anas platyrhynchos* ducks. Ordnance Survey mapping suggests that field ponds are a feature of the surrounding landscape and therefore the area supports a network of ponds.

4.5 Species

4.5.1 Amphibians

Data provided by WBRC show there are recent records of great crested newt presence within a 2km area surrounding the site. There are four breeding ponds (three created for mitigation) approximately 1.8km west of the site. Another breeding pond which has also been part of mitigation is present approximately 1.2km southwest of the site.

There is a recent record of common toad *Bufo bufo* approximately 1.9km south of the site, within the River Arrow Valley.

Habitat suitability assessments for great crested newt were undertaken for all five ponds on or adjacent to the site (TN14, 17, 18, 23 and 33). The habitat suitability index (HSI) scores for each of these ponds are provided in Appendix C. HSI results for all five ponds indicate poor suitability for great crested newts mainly due to turbidity and lack of aquatic and marginal vegetation as a result of cattle poaching and/or wildfowl.

No evidence of amphibians was observed during the survey.

4.5.2 Badgers

Data provided by WBRC show there are many recent records of badger presence within the 2km area surrounding the site; these records include three active setts. There are no records from within the site boundary but the 2010 ecological appraisal of the site (Halcrow, 2010) reported a main sett on the northern boundary of the site and two single hole outlier setts near Bordesley Park Farm.

The large main sett was found to still be active during the field survey (TN28). Badger activity including damage to maize crops was detected across the whole of the site to the east of Birmingham Road, particularly focussed along the northern edge. Prominent well-used paths are shown on Figure 1. Recently

used badger latrines (two very large latrines of 15+ dung pits) were found at TN4, 6, 7, 9, 26, 28, 29, 30, 32 and 37. Some mammal paths may be that of fox. One fox individual was observed on-site (TN5) and evidence of predation by foxes was found in two locations (TN8 and 24).

4.5.3 Bats

Data provided by WBRC show that there are recent records of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and brown long-eared *Plecotus auritus* presence within 2km of the site within the last ten years. The records include roosts.

Mature trees with potential to support bats were recorded across the site with particular potential for roosting bats noted at TN10, 11, 12, 13, 16, 19, 20, 21, 22, 25, 31, 34 and 39. No evidence of bats was observed during the survey.

Two buildings are within the site and also have potential to support roosting bats. These are the fishing club building at TN35 and Bordesley Park Farm at TN36. The fishing club building is modern with a pitched roof and waney-edge horizontal cladding on gable ends. The farm is a traditional brick structure that is in good condition with refurbished outbuildings used as offices.

4.5.4 Birds

Four recent bird records were returned by WBRC for the 2km search area:

- Reed Bunting *Emberiza schoeniclus* (listed on NERC Act (2006) Section 41 as species of concern for biological conservation). Recorded approximately 0.75km south of the site;
- Nightingale *Luscinia megarhynchos* (amber status¹, Worcestershire BAP). Recorded approximately 1.5km north of the site;
- House Sparrow *Passer domesticus* (listed on NERC Act (2006) Section 41 as species of concern for biological conservation, red status). Record approximately 0.65km east of the site; and
- Barn Owl *Tyto alba* (Schedule 1 Wildlife and Countryside Act (1981) as amended). Record approximately 1.5km south west of the site.

Mature trees with potential to support breeding birds were recorded across the site. Direct observations of birds during the survey included wren *Troglodytes troglodytes*, magpie *pica pica*, collared dove *Streptopelia decaocto*, jackdaw *Corvus monedula*, red-legged partridge *Alectoris rufa*, mallard *Anas platyrhynchos*, moorhen *Gallinula chloropus* and pied wagtail *Motacilla alba*.

4.5.5 Invasive plant species

Himalayan balsam *Impatiens glandulifera* is present along the banks of the River Arrow.

4.5.6 Invertebrates

Data provided by WBRC show that there are recent records of invertebrate species listed on NERC Act (2006) Section 41 as species of concern for biological conservation, within 2km of the site:

- Shaded broad-bar moth *Scotopteryx chenopodiata* just under 2km south-east of the site;
- Lattice heath *Semiothisa clathrata* just under 2km south-east of the site;
- Cinnabar moth *Tyria jacobaeae* just under 2km south-east of the site; and
- Broom moth *Ceramica pisi* approximately 1km southeast of the site.

Invertebrates observed during the survey included the common butterfly species peacock *Aglais io* and meadow brown *Maniola jurtina*. Mature trees across the site, including mature fruit trees, have potential to

¹ Under qualifying criteria, species listed on the Red and Amber lists of birds of conservation concern (Eaton *et al.*, 2009) are of High conservation concern, with species needing urgent action (Red) and of Medium conservation concern (Amber).

support invertebrate assemblages, and habitat suitable for white-clawed crayfish was seen in the River Arrow.

4.5.7 Otter

Data provided by WBRC show that there is a recent record of otter approximately 0.25km south of the site on the River Arrow.

No signs of otter were observed during the survey.

4.5.8 Reptiles

Data provided by WBRC show that grass snake *Natrix natrix* and slow worm have been recorded recently within 2km of the site. There are seven recent records of grass snake, including breeding in compost heaps, from locations approximately 0.5km north, over 1km northwest, approximately 1km south and just under 2km southeast of the site. There is one record of a large number (32) of slow worms approximately 2km south of the site.

No evidence of reptiles was observed during the survey.

4.5.9 Water vole

One recent record of water vole was provided by WBRC, located approximately 2km east of the site.

No evidence of water vole was observed during the survey. No habitats suitable for water vole were recorded within the site, therefore this species is not considered further in this report.

4.5.10 Other notable species

Data provided by WBRC show that there are two records of European or brown hare *Lepus europaeus* between 1 and 2km north and north-east of the site, and juvenile hares were observed frequently to the north of the site during the 2010 ecological appraisal (Halcrow, 2010). There are also several records for hedgehog *Erinaceus europaeus* NERC S41 from around the search area.

No evidence for the presence of these species was noted during this extended Phase 1 habitat survey.

Evaluation

5.1 Designated Sites

The River Arrow SWS² runs through the site and a short section of Dagnell Brook SWS is located adjacent to the site. Both are high quality habitats having many and varied natural features and have potential to support protected species such as otter, water vole, white-clawed crayfish, kingfisher and others. The quality of the sites and their importance as green corridors for wildlife movement through the county is recognised by their designations as SWSs and both are considered of **County** importance for nature conservation.

Dagnell End Meadow SSSI³ is located adjacent to Dagnell Brook less than 0.2km downstream. This site is of **National** importance for nature conservation due to the rarity of its ancient permanent pasture habitat type and the uncommon plant species it supports.

In addition, Butler's Hill Wood and Rowney Green SWSs are located within very close proximity to the site. Rowney Green supports a valuable mosaic of habitats including unusual mire habitats for Worcestershire. Butler's Hill Wood is a characteristic woodland type for Worcestershire and being a large site is a particularly important example and valuable resource for the County. Therefore both are considered to be of **County** importance for nature conservation.

5.2 Habitats

5.2.1 Arable

Arable fields are a WBAP habitat. The interiors of arable fields with annual crops are of limited value for biodiversity but do provide some foraging opportunities for a range of animals including. Arable field resources are widespread in the surrounding landscape and the fields on the site do not have intrinsic value to wildlife therefore these fields are considered to be of importance for nature conservation in the **immediate zone of influence only**.

5.2.2 Grassland

The improved and poor semi-improved grasslands within the site are a characteristic habitat of Worcestershire and considered to be of **Local** importance for nature conservation in providing foraging opportunities and habitat connectivity for a range of animal species.

5.2.3 Hedgerows and Trees

The network of hedgerows across the site is a WBAP habitat and is valuable for habitat connectivity, shelter and foraging for many animal species and considered to be of up to **Local** importance. Mature trees are important habitats for many species and provide shelter and food. Veteran trees are a WBAP habitat and are not replaceable in the short or medium term. The frequency of mature trees in the landscape of the survey area means that they are a significant biodiversity resource within the local area and are considered to be of at least **Local** importance for nature conservation.

² SWSs are areas of land that are rich in wildlife and criteria for selection take in threats and declines in certain species, national priorities and local distinctiveness. SWSs are considered to be of County value for nature conservation.

³ SSSIs provide statutory protection for the best examples of the natural environment in England and are therefore of National Importance. They were originally notified under the National Park and Access to the Countryside Act 1949 and re-notified under the WCA 1981. Improved provisions for their protection and management were introduced in the Countryside and Rights of Way Act 2000.

5.2.4 Watercourses

The River Arrow and Dagnell Brook are considered in section 5.1. Ditches on the site were found to be limited in quality mainly due to heavy shade and low water levels and low flows. These receptors are therefore considered to be of no more than **Local** value for nature conservation.

5.2.5 Ponds

Ponds and streams are WBAP habitats. The network of ponds within and beyond the site boundary is an increasingly rare ecological resource and constitutes a greater level of importance for nature conservation than the individual ponds in the site considered alone. Therefore, although currently of relatively low quality (having little marginal or aquatic flora and high turbidity due to poaching and wildfowl) the ponds have potential for restoration and are considered as being of up to **District** importance for nature conservation.

5.3 Species

5.3.1 Amphibians

Great crested newts are fully protected by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended). Other amphibians are partially protected by the Wildlife and Countryside Act, 1981 (as amended). Despite being rare elsewhere in the country, great crested newts are fairly common in Worcestershire

Other amphibians do not receive full legal protection; however common toad is a UK BAP species.

Although the ponds currently lack aquatic flora (required by great crested newts as egg laying sites), due to the network of ponds on site and records in the surrounding area, it is considered that a meta-population of great crested newts may be present.

5.3.2 Badger

Badgers and their setts are protected under The Protection of Badgers Act 1992.

Badgers have been found to be resident on and immediately adjacent to the site, and badger activity across the site shows that it is part of an active badger territory. The Badger Protection Act is not related to nature conservation value and it is considered that the population on the site may be of **Local** importance for nature conservation.

5.3.3 Bats

All bat species and their places of refuge are fully protected under European and UK legislation under Schedule 2 of the Conservation and Habitats Regulations 2010 (as amended) and Schedule 5 of the WCA 1981 (as amended).

The mature trees have potential to support roosting bats. The grasslands, ponds, hedgerows and watercourses all have potential to be important for bat foraging and commuting.

5.3.4 Birds

All breeding birds, whilst actively nesting, are protected in the UK under the WCA 1981 (as amended). Some species, including barn owl and hobby are further protected as listed under Schedule 1 of the same Act.

The survey area supports features (hedgerows, mature trees, scrub, arable land and grassland), which are likely to be used by breeding birds.

5.3.5 Invertebrates

Habitats with potential to support important invertebrate populations within the site are mature trees.

5.3.6 Otter

Otters receive legal protection in the UK under the Wildlife and Countryside Act 1981 (as amended) and under Schedule 2 of the Conservation and Habitats Regulations (2010).

Although no signs of otter were found during the survey, the habitat of both the Dagnell Brook and the River Arrow and previous records suggest it is likely that otter use these watercourses and may therefore travel through the site. Otters are highly mobile and have a widespread distribution in the UK. The site is therefore of up to **Local** importance for otter.

5.3.7 Reptiles

Common reptiles receive a limited degree of protection in the UK under the WCA 1981 (as amended). Reptiles found in this area of Worcestershire (e.g. slow worm and grass snake) are protected against killing, injury and sale. The habitats on site are considered unlikely to support a population of reptiles.

5.3.8 Other Notable Species

The existing habitats within the site may provide habitat opportunities for hedgehog and brown hare. Both are listed as species of principle importance for nature conservation in England under Section 41 of the NERC Act 2006, due to declining populations.

Recommendations

6.1 Further Survey

The evaluation indicates that there is potential for the site to support protected species including:

- Great crested newt;
- Badger;
- Bats;
- Breeding birds;
- Invertebrates (in veteran or over-mature trees); and
- Otter (in relation to outfalls).

Therefore to support a planning application it is recommended that detailed ecological surveys are undertaken for these species to provide sufficient information to inform appropriate mitigation and compensation measures.

6.2 Mitigation

Potential impacts on designated sites, habitats, fauna and flora can be mitigated by sensitive design and other measures. In order to comply with legislation and planning policy it is recommended that:

- Designs for the development scheme should avoid loss of hedgerows, mature or veteran trees, ponds or construction works within 10m of the River Arrow and Dagnell End Brook as much as possible.
- A Construction Environmental Management Plan (CEMP) should be developed to co-ordinate all mitigation and compensation actions.
- An Ecological Clerk of Works (EcCW) should be appointed to ensure that features to be retained are correctly protected, to supervise site clearance and to ensure that new, reinstated and enhanced features are implemented according to recommendations.
- Indirect impacts on any ecological receptors, including designated sites, should be prevented by implementing construction mitigation measures in accordance with best practice to prevent impacts from dust, noise, run-off or other potential pollutants.
- Water pollution prevention measures should be adhered to as set out in the Environment Agency's Pollution Prevention Guidelines (*PPG 5: Works and maintenance in or near water*) in order to avoid impacts to watercourses.
- Retained trees and hedgerows are to be subject to protective measures during the construction works in accordance with British Standard BS 5837 2012: *Trees in relation to design, demolition and construction – Recommendations*.
- Night working should be limited to avoid disturbance to otters and bats.
- Any site clearance of trees and scrub vegetation should be undertaken between September and February, which is outside the bird nesting season. If this is not possible, then vegetation should only be cleared where an ecologist has confirmed that active nests are not present. Should active birds nests be found then an appropriate buffer should be instigated around the nest. Clearance can continue after it is confirmed that young birds have fledged, on the advice of a suitably qualified ecologist.
- A precautionary approach should be taken with regard to reptiles with vegetation cut and cleared using sensitive techniques to be agreed with an ecologist. Should any reptiles be found at any time during the works then works must halt and an ecologist should be consulted.

6.3 Compensation and Enhancement

Where impacts on important habitats or species are unavoidable it will be necessary for on-site compensation for loss of ecological integrity in order to achieve no net loss in biodiversity. The following compensation measures are recommended where design and mitigation measures are not sufficient to maintain the ecological value of the site:

- Loss of grassland should be compensated by creation of species-rich grassland using native seed mixes of local provenance.
- Any loss of mature or veteran trees should be compensated by replacement tree planting of large standard trees of local provenance and of the same species. Three times the number of trees lost should be planted. Replacement trees should be sited in locations to complement the existing trees in the landscape and to maintain and where possible enhance landscape connectivity and green infrastructure;
- Any loss of hedgerow within the scheme should be mitigated by replacement hedgerow planting of equivalent length and composition using a species-rich mixture of native and locally appropriate species. Replacement hedgerows should reinstate and enhance connectivity of the hedgerow network; and
- Any impacts on watercourses should be compensated by enhancement of retained ponds or new wetland features for the purposes of maximising biodiversity.
- On-going maintenance of compensation habitats should be secured.

In addition there are opportunities to enhance the retained and new habitats on the site.

- New ponds created for surface water drainage purposes should be designed to enhance the pondscape of the site.
- All new and retained habitats should be connected by wildlife corridors such as wetland swales, hedgerow and native shrub planting, lines of trees or meadow strips.

6.4 Conclusion

In conclusion, it is considered that subject to the implementation of the recommended measures set out above in relation to avoiding or mitigating for potential impacts to designated sites and subject to recommendations for detailed species and habitat surveys, that the proposed development could be implemented without significant adverse ecological impacts and be in accordance with relevant legislation and planning policy.

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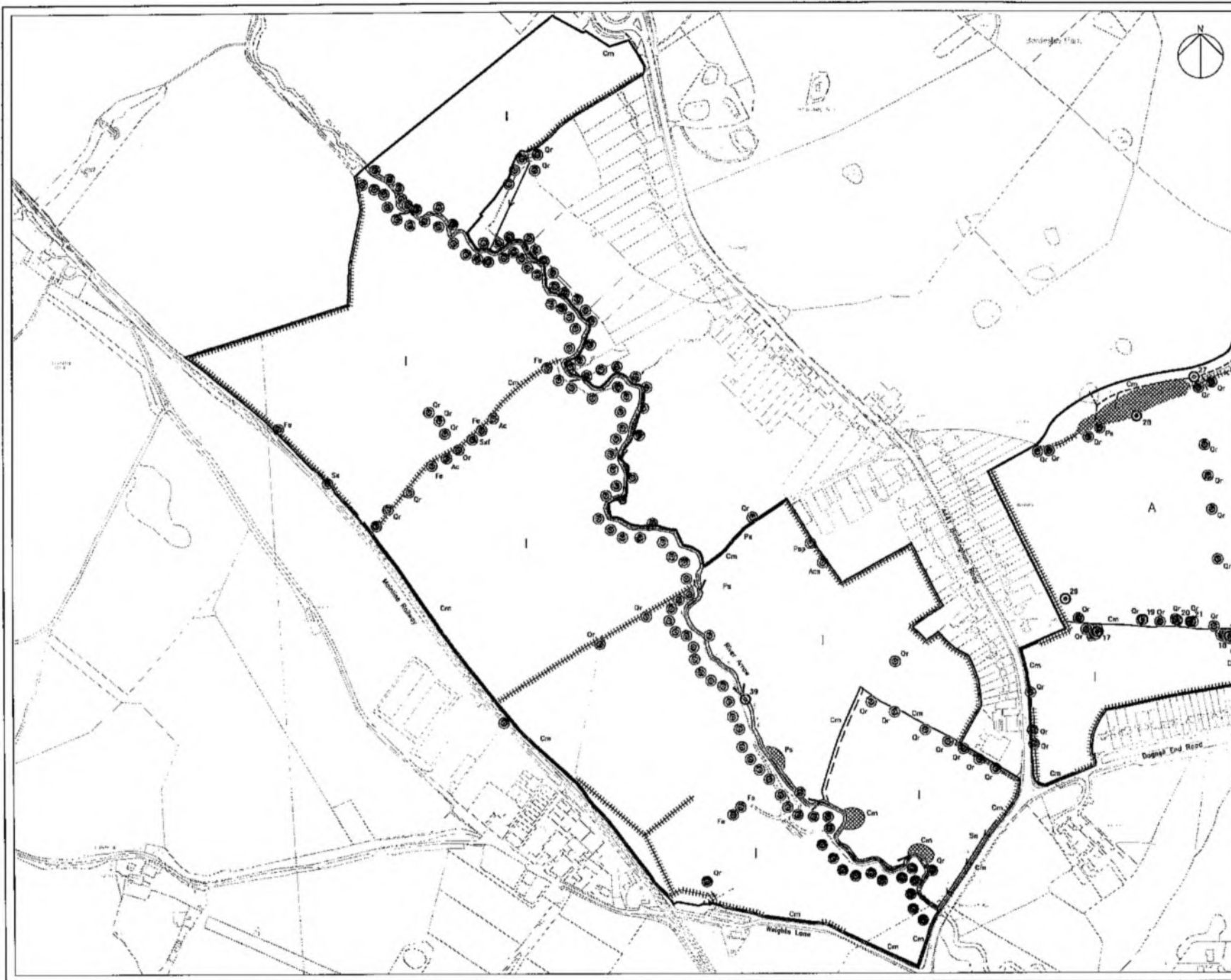
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Appendix A Figures



Key:

- Site boundary
- Intended greater 1
- Fence
- Species-rich hedgerow
- Tree
- Oak-leaved scrub
- Broad-leaved woodland
- Flowering wetter
- Dry ditch
- Area
- Standing water
- Defined hedgerow
- Hedgerow with trees
- Wet ditch
- Poor or overgrazed grassland
- Bare ground
- Target area
- Natural path

Code	Scientific Name	Common Name
Cm	<i>Castanea sativa</i>	Hawthorn
Qr	<i>Quercus robur</i>	Pedunculate Oak
Fr	<i>Fraxinus excelsior</i>	Ash
Ps	<i>Prunus spinosa</i>	Sourcherry
Pls	<i>Prunella sp.</i>	Wild Plum
Ac	<i>Acer sp.</i>	Maple
Sr	<i>Salix sp.</i>	Willow
Sl	<i>Salix caprea</i>	Willow
Usp	<i>Ulmus sp.</i>	Elm
Py	<i>Pyrus domestica</i>	Pear
Mt	<i>Malus domestica</i>	Apple

No.	Fr	Qr	Ac	Sl	Py	Usp	Pls	Ps	Fr	Cm
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Gallagher Estates Limited

CH2M HILL

Bordasley Extension

Habitat Plan Sheet 1 of 2

Drawn by: [Name] Date: 12/05/13
Checked by: [Name] Date: 12/05/13
Approved by: [Name] Date: 12/05/13

Figure 1

Geometric Scale: 1:5000 A3

Appendix B Target Notes and Photographs

TABLE 1
Target Notes and Photographs

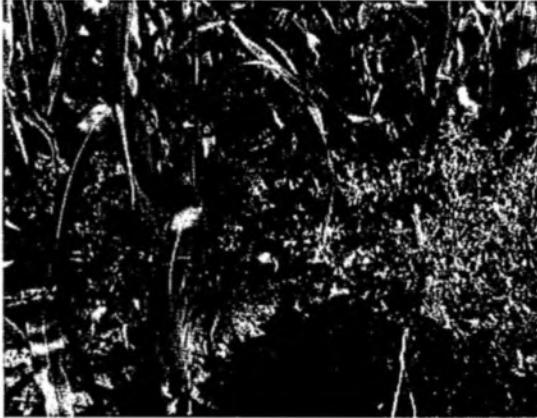
Target Note Ref.	Description	Photograph
1	Mounds of tipped earth.	
2	West verge planted with young mixed broadleaved trees. Whitebeam, rowan, ash, horse-chestnut and cherry. Coarse grass groundflora comprising cock's-foot, dandelion, creeping cinquefoil, Yorkshire-fog, timothy and false oat-grass.	
3	Badger damage to maize crop.	
4	Mammal path and badger dung pit.	
5	Fox lying-up in grass.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
6	Recently used badger dung pit.	
7	Latrine with two badger dung pits.	
8	Pigeon carcass, predated by fox.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
9	Two dung pit badger latrine.	
10	Two mature oaks, only partly living. Rot holes and peeling bark. Potential for bats.	

TABLE 1
Target Notes and Photographs


Target Note Ref.	Description	Photograph
11	Ivy clad stag-headed oak. Bat potential.	

TABLE 1
Target Notes and Photographs


Target Note Ref.	Description	Photograph
12	Mature oak with rot holes. Bat potential.	

TABLE 1.
Target Notes and Photographs



Target Note Ref.	Description	Photograph
13	Mature oak with low potential for supporting bats.	
14	Pond. Mallard and breeding moorhen present. No aquatic vegetation and poor water quality. Cattle poached.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
15	Bank beneath hedgerow supports relatively species-rich grassland including lady's-bedstraw, bird's-foot-trefoil, black knapweed, ribwort plantain, yarrow, germander speedwell, golden oat-grass, creeping bent, Yorkshire-fog, red fescue and selfheal.	
16	Ash with bat potential. Cavities where a bough has broken.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
17	Pond. Cattle poached and no aquatic vegetation. Mallard present.	
18	Pond. Moorhen present. No aquatic vegetation. Cattle poached. Recently fallen oak in pond.	

TABLE 1
Target Notes and Photographs


Target Note Ref.	Description	Photograph
19	Mature oak with some potential for bats.	

TABLE 1
Target Notes and Photographs


Target Note Ref.	Description	Photograph
20	Mature oak with large split in dead bough and half the tree is dead. Bat potential.	

TABLE 1
Target Notes and Photographs


Target Note Ref.	Description	Photograph
21	Mature oak with low bat potential.	
22	Oaks with bat potential.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
23	Pond, poached by cattle. No aquatic vegetation present.	
24	Two-holed burrow under hedgerow. Bedding present. Remains of a predated duck. Potentially a fox hole rather than a badger sett.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
25	Half dead oak. Bat potential.	
26	Badger dung pit.	

TABLE 1
Target Notes and Photographs


Target Note Ref.	Description	Photograph
27	Small rabbit warren.	
28	Main badger sett on bank under scrub and trees. At least 15 entrances with evidence of fresh digging. Many dung pits with fresh dung in latrine on edge of arable field in front of the sett. Snuffle holes in grass around oak tree.	

TABLE 1
Target Notes and Photographs

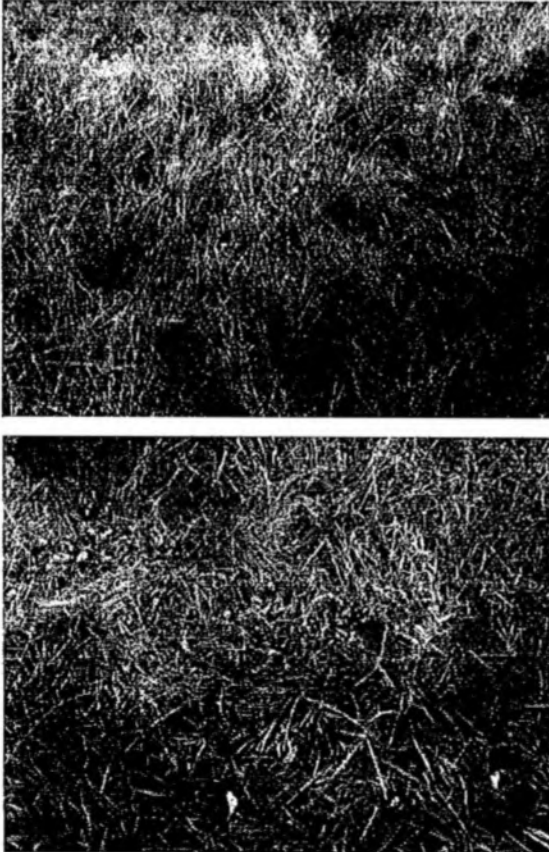
Target Note Ref.	Description	Photograph
29	Three pit badger latrine and extensive badger damage to maize crop.	

TABLE 1
Target Notes and Photographs

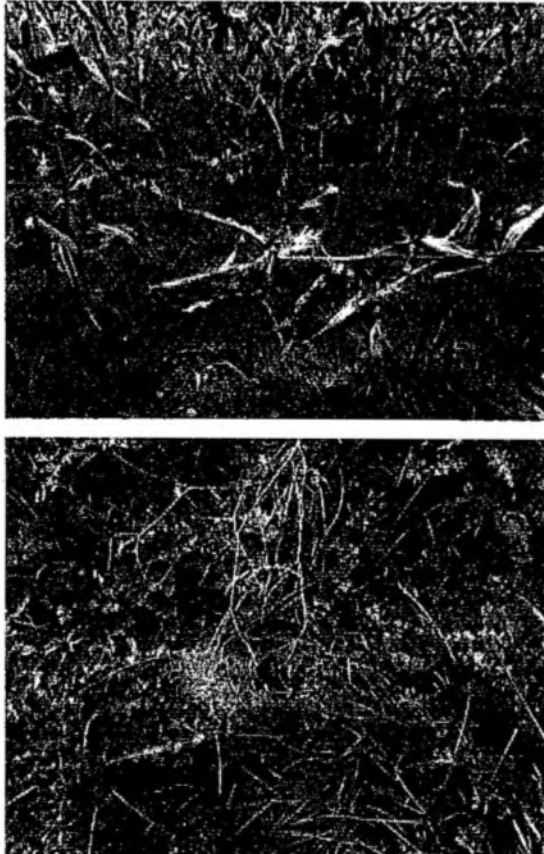
Target Note Ref.	Description	Photograph
30	Single pit badger latrine.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
31	Riparian woodland. Oak, hawthorn, ash and alder. Common nettle and cock's-foot understorey.	
32	Major badger latrine with 12+ recently used dung pits.	

TABLE 1
Target Notes and Photographs



Target Note Ref.	Description	Photograph
33	Pond. Flock of mallard present. Overhanging trees. No aquatic vegetation present.	
34	Mature oak with potential to support bats. Significant rot hole and trunk cavity.	

TABLE 1
Target Notes and Photographs




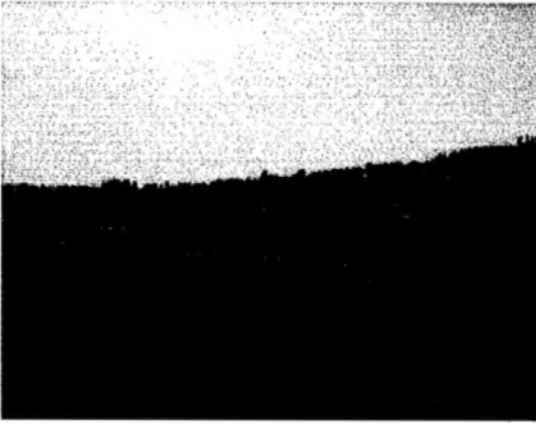
Target Note Ref.	Description	Photograph
35	Fishing Club building. Modern with a pitched roof and waney-edge horizontal cladding on gable ends.	
36	Bordesley Park Farm. Traditional brick structure that is in good condition with refurbished outbuildings used as offices.	-
37	Five pit badger latrine.	

TABLE 1
Target Notes and Photographs

Target Note Ref.	Description	Photograph
38	Single entrance annex sett.	
39	River Arrow. Tree-lined river corridor including mature trees.	

Appendix C Great Crested Newt Habitat Suitability Assessment

Introduction

In order to determine the potential for great crested newts to be present within ponds the survey area, a Habitat Suitability Index (HSI) assessment was undertaken of all water-bodies within 500m of the scheme. This appendix presents the results of these HSI assessments.

Methodology

The Habitat Suitability Index (HSI) (Oldham *et al.*, 2000) is a method of assessing the suitability of ponds to support great crested newts. The technique assesses the water-body on the basis of ten ecological, spatial and geographical variables, all of which are factors known to affect the species. These are: geographical location, frequency of pond drying, water quality, macrophyte cover, terrestrial habitat quality, pond area, shade, presence of fowl, presence of fish and the density of ponds within 1km.

A value is recorded for each parameter and the geometric mean calculated for the combined values to provide an index of breeding suitability for great crested newts. The HSI is represented by a value from 0 to 1. The higher the value the more likely the pond is to support breeding great crested newts as presented in Table A1.

TABLE A1
Habitat Suitability Index Scores for Great Crested Newt
Oldham et al. (2000)

HSI Score	Pond Suitability
<0.5	Poor
0.5 – 0.59	Below average
0.6 - 0.69	Average
0.7 – 0.79	Good
>0.79	Excellent

Results

The findings of the HSI assessments undertaken during the extended Phase 1 habitat survey are provided in Table A2 below.

Criteria	TN 14	TN17	TN18	TN23	TN33
Location	1	1	1	1	1
Pond Area	0.8	0.4	0.8	0.8	1
Pond drying	0.9	0.9	0.9	0.9	0.9
Water Quality	0.33	0.33	0.33	0.33	0.33
Shade	1	1	1	1	1
Fowl	0.01	0.01	0.01	0.01	0.01

Criteria	TN 14	TN17	TN18	TN23	TN33
Fish	0.67	0.67	0.67	0.67	0.67
Other ponds	1	0.9	0.9	0.9	0.83
Terrestrial Habitat	0.67	0.67	0.67	0.67	0.67
Macrophytes	0.3	0.3	0.3	0.3	0.3
HSI Score	0.45	0.41	0.44	0.44	0.45
Suitability	Poor	Poor	Poor	Poor	Poor

Cultural Heritage Desk-Based Assessment

Document: Version: 1.0

Redditch Expansion Masterplan, Bordesley,
Redditch, Worcestershire

Gallagher UK

September 2013

Cultural Heritage Desk-Based Assessment

Redditch Expansion Masterplan, Bordesley,
Redditch, Worcestershire

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September 2013

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Document history

Cultural Heritage Desk-Based Assessment

Redditch Expansion Masterplan, Bordesley, Redditch, Worcestershire

Gallagher UK

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Appendix A Gazetteer of Cultural Heritage Features

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1 Executive Summary

This assessment has studied the known and unknown cultural heritage (archaeology, historic buildings and historic landscapes) resource within two large land areas (named Site 1 and Site 2) on the north side of Redditch, Worcestershire. The report aims to assess this resource to inform future development of the two sites, and the constraints and issues that will have to be addressed within the planning process. It will also inform future Environmental Impact Assessment of the two sites, plus the need for, and basic scope of, archaeological investigation to inform future planning applications.

Site 1 has been identified as having a moderate archaeological potential, despite activity within the historic period which has included clay/ marl extraction and pipeline construction.

Site 2 contains archaeological resources and has been subject to archaeological investigation in the past. The masterplan area has historic and archaeological associations with the medieval Bordesley Abbey to the south east, some 400m further along the Arrow valley. The archaeological resource in this site includes leats, fish ponds, oyster beds and other water-management-related earthworks. Owing to natural silting and pasture improvements in the 20th century, the majority of these features now exist as buried archaeology.

The potential impacts of development on the historic landscapes within the sites will be extensive and permanent, with historic field boundaries potentially being permanently erased.

There may be setting impacts to designated buildings.

Prior to any planning submission, programmes of archaeological investigation will be carried out to inform determination. This is in accordance with the National Planning Policy Framework and local planning policies of Bromsgrove District Council. The nature and scope of these investigations will depend on the District Council's archaeological planning advisor.

2 Introduction

2.1 Project Background

CH2M HILL has been commissioned by Gallagher UK to provide cultural heritage consultancy for the Redditch Expansion scheme. The scheme comprises area two areas of land on the north side of Redditch, Worcestershire. The areas are earmarked for development in line with the local housing strategy.

This report aims to quantify the known cultural heritage resource within the two scheme areas, and establish the potential archaeological resource as closely as possible. The potential impacts on the archaeological resource will be established, along with the impacts on the settings (visual and historic) of designated buildings and areas.

2.2 Site Location

The two areas are located either side of the village of Bordesley, which lies along the A441 Birmingham Road, which connects Redditch with Birmingham. Although in very close proximity to Redditch, the land in both areas lies within the Bromsgrove District Council boundary.

2.2.1 Site 1

The eastern site (Site 1) is entirely rural, with the western boundary abutting the rear property boundaries along the east side of the A441 Birmingham Road, and the road itself. The southern boundary is formed by the Dagnell End Road and the properties along it. The eastern and northern boundaries are formed by existing field boundaries in Bordesley Park Farm and a short section of the Dagnell End Brook.

The approximate centre point of the site is located at SP049698.

Site 1 is 79.2 hectares.

2.2.2 Site 2

This site is located in between the Birmingham-Redditch railway line and the A441 Birmingham Road. The eastern boundary is formed by the River Arrow and the Birmingham Road. The western boundary is the railway line, with the southern boundary by Weights Lane. The land is composed of open fields, which belong to Weights Farm in the south and Cobb's Barn Farm in the north.

The approximate centre point of the application area is SP035697.

Site 2 is 54.9 hectares.

2.3 Proposed Scheme

The Redditch Expansion scheme is part of the Core Strategy adopted by both Redditch Borough Council (RBC) and Bromsgrove District Council (BDC). The housing and infrastructure development targets in the Core Strategy were originally set out in the now-defunct West Midlands Regional Spatial Strategy (RSS). However, both councils wish to pursue the option for future housing development in the areas either side of the A441 Birmingham Road.

Both Sites 1 and 2 have been earmarked for various different areas of development, which will include the development of houses, schools, shops and other commercial premises. 'Green' corridors will also be a feature of the developments (BDC and RBC 2009).

2.4 Report Structure

The aims and methodologies for this assessment are set out in Section 3, with the relevant planning and legislative framework by which cultural heritage is assessed and tested against is set out in the following section.

The cultural heritage baseline, which is a synthesis of all the known data relevant to the expansion sites, is presented in Section 5. Further information gathered from the available sources e.g. site walkover, aerial photographs, is presented in Section 6. This information will inform the measurement of archaeological potential (Section 7).

An appraisal of the designated buildings and structures within the expansion areas, and nearby, are presented in Section 8, with the impact assessment on archaeology and historic landscapes in Section 9.

The references for this report are in Section 10.

3 Aims and Methodology

3.1 Aims

It is in the interest of the local community, developer and council that archaeological issues are discussed, with an appropriately qualified specialist, at an early stage in the planning process. This assessment represents a commitment to provide early advice concerning the cultural heritage resource of the site and surrounding study area.

The aims of this desk-study are to provide an indication as to the extent, survival and importance of archaeological, historic landscape and built heritage features potentially affected by development in the two expansion sites. This report will inform an approach to work required for future planning submissions, including pre-planning submission investigation.

This assessment conforms with the requirements set out by the Institute for Archaeologists for the production of archaeological desk-based assessment (IfA 2008).

3.2 Methodology

This assessment was conducted with regard to standards set out by the Institute of Field Archaeologists (IfA) Standards and Guidance for archaeological desk-based assessment (IfA 2008). The general approach and methodology has been to consider the archaeology in terms of the archaeological sites and monuments present within the expansion areas, along with a 500m buffer area projecting outwards from the edges of the site boundaries. This places the known archaeology within a wider local context to assist in interpretation of archaeological potential.

An identical study area has been utilised to assess the indirect impacts (settings) of built heritage and designated areas. Buildings which lie within the study area but which have no inter-visibility with the expansion areas have been excluded from assessment on the grounds of relevance.

The Historic Landscape Characterisation (HLC) data for the expansion areas has been reproduced for the two sites.

These resources may be nationally or locally designated (by registration, listing or scheduling), may appear in the national or local archaeological record, or may be identified here from specialist scrutiny of the landscape and historic records.

In summary the work has involved:

- identifying the client's objectives;
- identifying the sources available for consultation, and;
- assembling, consulting and analysing the available resources within a wider 'study area' surrounding and including the site.

The specific work carried out as part of this assessment has comprised:

- consulting the Worcestershire Historic Environment Record (WHER) for designated and non-designated archaeological sites and monuments data;
- consulting the Historic Landscape Character (HLC) data;

- utilising the English Heritage datasets for listed buildings;
- examination of historic cartographic sources;
- examination of available ground investigation data;
- collation and examination of published archaeological and historical data in Worcester and Redditch Libraries;
- collation and examination of unpublished archaeological reports (known as 'grey literature') from the Worcestershire Archives and Archaeology Service (WAAS) Online Archaeology Library;
- examination of documents held by the Worcestershire Archives Service;
- conducting a comprehensive walkover survey of the site, and;
- preparation of the written report.

A gazetteer listing the cultural heritage features that fall within the study area surrounding the site is provided in Appendix A. Each entry has been identified with the WHER reference numbers, prefixed with WSM for 'Worcestershire Sites and Monuments'.

4 Planning and Legislative Framework

4.1 Introduction

The following section highlights the key national, regional and local planning policies relevant to this project.

4.2 National Legislation and Planning Policy

Ancient Monuments and Archaeological Areas Act (1979, as amended by the National Heritage Act 1983 and 2002)

Scheduled Monuments are defined as nationally important ancient monuments and archaeological sites which are included on a Schedule maintained by the Secretary of State. Scheduled Monuments are afforded statutory protection and require Scheduled Monument Consent for works affecting them, for which statutory consultation with English Heritage will have to be undertaken.

Planning Act 1990 (Conservation Areas and Listed Buildings)

This Act details the guidance that local authorities could put in place to designate individual buildings and Conservation Areas, and the statutory protection afforded them.

National Planning Policy Framework (Adopted March 2012)

The National Planning Policy Framework (NPPF) cancelled (through Annex 3 of the document) Planning Policy Statement (PPS) 5: Planning for the Historic Environment on 27th March 2012, which was originally used in assessing the impacts of this scheme.

The policies below from NPPF states the approach used by local planning authorities to determine planning applications in relation to cultural heritage.

Section 12: Conserving and enhancing the historic environment

'128. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

129. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.

141. Local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible.

They should also require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.'

4.3 Local Planning Policy

'In September 2004 the Government introduced radical changes to the planning system, replacing old style development plans

In short this means that the Adopted Local Plan will eventually be replaced by a suite of Development Plan Documents, as part of the new Local Development Framework.

During the transition to the new system, a number of policies set out in the old style Statutory Development Plans (below) will remain in force for the District until they are replaced or incorporated into the new system.'

(www.bromsgrove.gov.uk)

4.3.1 Bromsgrove District Council Core Strategy

Prior to the full adoption of the Core Strategy, the following policies relevant to potential development across Sites 1 and 2 are reproduced below.

4.3.1.1 Policies Temporarily Retained from Local Plan

Protection Of Buildings Of Merit

S38 Where buildings of architectural or historic value are under threat the District Council will endeavour to protect them. Unlisted buildings which are considered to satisfy the criteria set-down by the Department for Culture, Media and Sport will either be put forward for spot listing or made subject of a Building Preservation Notice. Protection of listed buildings under threat will be achieved by serving a notice for urgent or full repairs.

Historic Parks And Gardens

S48 Planning permission or listed building consent will not be granted for development which would have an adverse effect on the character and setting of historic parks and gardens. Proposals will be assessed against their effect on:

- a) views into or out of the park or garden;*
- b) vistas or sequential views within the park or garden;*
- c) 'natural' elements such as tree belts, avenues, specimen trees, water features, ornamental gardens and plant species;*
- d) structures, statues and garden ornaments;*
- e) the topography of the garden;*
- f) open spaces and their relationship to enclosures.*

The District Council will liaise with English Heritage and the Garden History Society in considering applications either within the boundaries of such parks and gardens or in

proximity to them where important views from the park and/or garden would be materially affected.

Preservation Of Archaeological Resources

C36 There will be a presumption in favour of the preservation of nationally important archaeological remains and their settings. In the cases where development would adversely affect other sites of archaeological interest and their settings, and preservation in situ is not feasible or merited, planning permission may be granted subject to satisfactory provision for excavation and recording. Arrangements should be agreed with the District Council (in the light of archaeological advice) for all aspects of the work. In the case of sites of known archaeological importance or potential, the District Council will require the results of an archaeological evaluation to be submitted with any planning application for development.

Excavation Around Archaeological Remains

C37 Where development requiring below ground excavation is proposed within a site of archaeological interest the District Council may require an evaluation of the site's significance to be submitted by the applicant before a decision is made.

Development Criteria For Archaeological Sites

C38 Where proposals for development are made which will affect a site of archaeological interest applicants will need to demonstrate that:

- a) an archaeological evaluation has been submitted and approved;*
- b) the recommendations of the evaluation have been taken fully into account in the proposed developments design, in order to avoid damage to significant archaeological deposits; or, where this is inappropriate;*
- c) adequate measures are provided to ensure the proper excavation and recording of significant archaeological deposits where these are affected by the proposed development unless specialist advisers deem otherwise.*

Site Access For Archaeologists

C39 Conditions may be imposed in any granting of planning permission to enable reasonable access to the site by nominated archaeologists before and/or during construction, or to facilitate a watching brief to be undertaken during the progress of development, or to ensure that the agreed methods of preservation are enforced on site.

(www.bromsgrove.gov.uk)

5 Cultural Heritage Resource Baseline Data

5.1 Historic Environment Record (HER) Baseline Data

5.1.1 Statutory and Non-Statutory Protected Features

This section deals with those cultural heritage assets which are afforded statutory or non-statutory protection through legislation or planning policies respectively. The spread of assets are reproduced on supporting drawing (Figure 1 and 2 in Appendix C) though owing to the scale of the drawings some designations in the wider study area have not been shown.

5.1.1.1 Site 1

There are no listed buildings, World Heritage Sites, Conservation Areas, Registered Parks and Gardens, Registered Battlefields or scheduled monuments within the site boundary.

The scheduled monument of Bordesley Abbey lies 550m to the south of the site boundary. The topography of the area ensures that there is no inter-visibility between the designation and the site. The Abbey and its grounds have been well researched and form a tangible link with the area's medieval past. More detail on this monument is presented later in this document (Section 6 and Appendix A).

A second scheduled monument lies just outside of the study area; 1.05km to the south east; 'The Mount' on Church Hill, which is presently a wooded hill top.

There are listed buildings and structures in the wider study area around the site boundary. These are generally grouped together given the fact they represent clusters of farm buildings or former farm settlements:

- Lower Park Farm (WSM 02055) lies 360m to the north of the site boundary (Figure 1, Appendix C). It occupies quite prominent positions in the area and has extensive views to and from them in most directions.
- Meadow Farm; formerly Bordesley Lodge Farmhouse (WSM 31719) with its associated cast iron water pump (WSM 31718) and old (non-listed) granary lie 60m to the south of the site boundary, on the junction of Dagnell End Road and the Birmingham Road. The two buildings comprise timber-frame structures which have been modernised and are now form part of a hotel and restaurant complex. There is limited inter-visibility between the former farmhouse and the site, given modern housing developments, mature vegetation and topography. Only the south western corner of the site is visible from the building.
- Dagnell End Farmhouse (WSM 37602) with its associated cattle shelter, barn and cartshed/ granary (WSM 3760, 37601 and 37603 respectively) lie near to the south east corner of the site, approximately 250m from the site boundary. This property has a rather limited visual envelope around it, given the topography and mature vegetation.
- Storage House (WSM 37604) on Storage Lane lies 870m north east of the site boundary. This property is likely to have significant views from the upper storey of the house, which might take in the north eastern part of the site.

A number of properties also lie just outside the study area along Icknield Street:

- Rose Cottage (720m from the site boundary);
- Beoley Hall, Gates and Lodge House (900m and 770m east of the site respectively); and
- Poplars Farmhouse (WSM 09945) lies 735m east of the site boundary.

There is likely to be some inter-visibility between these buildings and the site, despite the topography and mature vegetation to the west of Icknield Street, though how much cannot be ascertained without access to these private properties.

5.1.1.2 Site 2

There are no listed buildings, World Heritage Sites, Conservation Areas, Registered Parks and Gardens, Registered Battlefields or scheduled monuments within this site boundary.

There are a collection of listed buildings 80m south east of the site boundary, at the junction of the Birmingham and Dagnell End Roads. These comprise the various buildings and structures of the former Meadow Farm. These are described above.

Slightly further afield from the listed buildings is the Scheduled Monument of Bordesley Abbey (WSM 00010) which lies 500m from the site boundary. The Abbey is not visible from Site 2, and vice versa.

5.2 Non-designated built heritage and archaeology

This section examines the archaeological sites and monuments within the site boundaries. Reference to other sites and monuments are given in the gazetteer of cultural heritage features (Appendix A), the supporting drawings (Figures 3 and 4) appended to the report (Appendix C) and are discussed in more detail later in this document (Section 6). The assets within and adjacent to Site 1 are represented on Figure 3, with Figure 4 representing the known assets associated with Site 2. Owing to the scale of the drawings, some features in the wider study area are have not been shown. The key receptors are included, however.

5.2.1 Prehistoric (circa 500,000 BP to 43 AD)

5.2.2 Site 1

There are no known archaeological features from the prehistoric periods within the masterplan boundary. However in the wider study area is a ring ditch (WSM 09867) which lay to the south of Lower Park Farm and approximately 150m from the site boundary. This possibly dated to the Iron Age or Romano-British period. Modern clay/ marl extraction appears to have removed this feature.

5.2.3 Site 2

There are no known features from this period within this site, or in the wider study area.

5.2.4 Romano-British (43 – 410 AD)

5.2.5 Site 1

The ring ditch mentioned above (WSM 09867) possibly dates to this period, but otherwise there aren't any known features from this period within the masterplan boundary.

5.2.6 Site 2

There are no known features from this period within the masterplan boundary.

Icknield Street; the Roman Road which ran from Bourton-on-the-Water to Templeborough in Yorkshire passed through Redditch, possibly along the line of the present day road to the east of the site at the edge of the study area.

5.2.7 Early Medieval/ Anglo-Saxon (410 – 1066 AD)

5.2.8 Site 1

There are no known archaeological sites or monuments within the masterplan boundary from this period, or in the wider study area.

5.2.9 Site 2

There are no known features from this period within the masterplan boundary or the wider study area.

5.2.10 Medieval (1066 – 1538 AD)

5.2.11 Site 1

The site lies entirely within the Bordesley Park deerpark (WSM 28815). This landscape area took shape from the 11th century, in the wake of the Norman Conquest and continued in usage until the 17th century, before inclosure and assorted farming uses.

5.2.12 Site 2

This site is characterised by abundant known activity throughout the medieval period. The River Arrow is a focus of significant medieval archaeological remains, having been utilised for mills, fishponds and oysterbeds. Much of the activity was associated with Bordesley Abbey, which lay further along the River Arrow to the south east. The known features within the site boundary are:

- A sequence of fishponds (WSM 01780) at the northern end of the site adjacent to Cobbs Barn Farm;
- A pond associated with Lye mill (WSM 01778) overlaps into the northern edge of the site boundary;
- A mill site (WSM 01800) at the northern end of the site;
- An area of ridge and furrow (WSM 00735);
- A series of oysterbeds (WSM 00025) consisting of parallel channels inter-linked with leats;
- The site of two deserted medieval settlements (WSM 05555 and 00017) lie at the southern end of the site.

5.2.13 Post-medieval (1538 – 1900 AD)

5.2.14 Site 1

Bordesley Park deepark (WSM 28815) extended its existence into this period (see above).

5.2.15 Site 2

The area of ridge and furrow (WSM 00735) probably saw continued use into this period.

The 'Bordesley Stream' leat (WSM 33332) is evidence of the milling/ fishpond/ oysterbed history of the River Arrow valley at this location.

The railway bridge at Weights Farm is a structural feature from this period, though technically might abut the site boundary rather than lie within it. The brick construction allows access to the farm buildings via the track that runs from Weights Lane to the farm.

5.2.16 Modern (1900 AD – Present)

5.2.17 Site 1

There are no modern features within the site boundary with the exception of the modern pipelines that run through the site on a rough north-east to south-west alignment (see Section 6.3.1 and Figure 11).

Modern housing development abuts the site boundary both on the Dagnell End and Birmingham Roads.

5.2.18 Site 2

An area of modern gravel extraction (03501) and the former placement of a 'flame fougasse' alongside the railway (WSM 33091) in WWII are the known modern activities in the site. The latter was rare for its type, being embedded within the railway embankment.

5.3 Historic Landscape Character

The historic landscape throughout the area is a rich and varied one. The ancient saltway, the probable Roman road and the prehistoric ridge way add significant time depth to the road network. The settlement pattern is one of farmsteads and strings of wayside dwellings associated with a moderate to high level of dispersal. This is a complex landscape of piecemeal and Parliamentary enclosure with some later field amalgamation and reorganisation. The land use is pastoral and the tree cover comprises interlocking, or frequent, usually large, discrete blocks of ancient woodland. There are large areas of parkland, both relic and surviving.

Towards the River Arrow the fieldscape is dominated by riverside meadows. Historic tree cover is mostly limited to linear belts along ditches, watercourses and in hedgerows. Many of the historic hedgerows survive in the park along with several modern plantations. The course of the Arrow was altered in the 12th century with the building of Bordesley Abbey and has been substantially altered and canalised since. A dominant feature of the zone is the Arrow Valley lake, excavated in the 1970s.

(WHER 2012)

The historic landscape character units are presented on Figure 5 (Appendix C).

5.4 Geology, Soils, Topography and Palaeoenvironment

Both Sites 1 and 2 sits in a gently undulating wooded landscape over mixed mudstones and sandstones, with free draining, mixed brown soils.

5.4.1 Site 1

Site 1 is characterised by a gently undulating landscape with a mix of both pastoral and arable fields. This site is also characterised by disused quarry features spread across the area, which are zones of historic gravel or clay extraction.

The central ridge within the site lies approximately along the line in between Bordesley Park Farm and Lower Park Farm. The area in between the ridge and the Dagnell Brook is the west side of the brook's valley.

5.4.2 Site 2

Site 2 lies within a linear riverine landscape associated with a flat, generally well-defined alluvial floodplain. This is a pastoral landscape, characterised by the River Arrow, flanked by alluvial meadows.

Alluvial deposits survive along the River Arrow floodplain. Environmental evidence shows that this zone has been a river floodplain for thousands of years.

Palaeoenvironmental deposits survive to a depth of up to 5m, which will lie over prehistoric and possibly historic relict land surfaces.

5.5 Previous Archaeological Interventions

5.5.1 Site 1

There have been no formal or recorded archaeological interventions within this site boundary. Archaeological information within the WHER has been collated from aerial photographic and cartographic sources as part of archaeological and historic landscape research.

5.5.2 Site 2

In contrast to Site 1, the area within and adjacent to the masterplan boundary has seen abundant archaeological intervention. Many relate to desk studies and intrusive archaeological investigations along the route of the Bordesley bypass, which has been a long-mooted road proposal.

Initial desk study of the route (Cook 1994) identified several areas of earthworks concentrated principally in the northern and southern ends of the study area, which roughly correlates with the Site 2 boundary. In the area of land south of Weights Lane (and therefore in the study area rather than within the masterplan boundary), the report noted the remnants of a street pattern with a road left over from the ploughing-out of more extant earthworks in the 1980's. The earthwork remains (WSM 00017) had previously been recorded in an earthwork survey (Rowley and Aston 1976) as part of the landscape studies surrounding the nearby Bordesley Abbey complex. A ditched boundary, which might represent a relict mill leat was also

identified. Subsequent archaeological investigation (Cook 1995) identified a possible Holloway as well as the postulated remains of a timber-framed building in this area.

A subsequent phase of archaeological trial trenching was carried out south of Weights Lane (Rogers 2006) which identified 'two linear depressions, infilled fairly recently' and interpreted to be either a Holloway or a mill leat. Subsequent comprehensive trial trenching across this same area of land in 2011 failed to identify any features previously recorded, with the exception of the mill leat. The 'linear features' found in the previous investigations were deemed not to be continuous and were more likely to have been scrapes and hollows that did not form a continuous feature (Headland Archaeology 2011).

Previous reports (Rowley and Aston 1976) had mentioned the presence of up to six house platforms in the area south of Weights Lane, but the 1980's pasture improvement has probably removed any traces of them. The absence of any medieval artefacts found during investigation probably leads to the interpretation that these 'house platforms' were not in fact indicative of a human settlement (Headland Archaeology 2011).

Investigation identified the line of a holloway in the area of the supposed deserted medieval village (WSM 05555) immediately to the north of Weights Lane. This was surfaced with stone and pieces of metallic industrial waste (Cook 1995).

The 1994 assessment highlighted the significance of the earthwork complex (WSM 01780 and WSM 01800, adjacent to Cobbs Barn Farm. These earthworks represent a complex system of water management associated with milling activity. These were almost certainly under the control of the Cistercian monks at Bordesley Abbey, and match the similar system of mill leats and mills that have been identified in and adjacent to the abbey precinct itself (WSM 00010, WSM 00810 and WSM 03887). Most of the earthworks associated with this activity were levelled in the 1980's. Two trial trenches (Cook 1995) did not identify any archaeological features, but further, more extensive investigation (Rogers 2006) aimed to establish the extent of remaining below-ground remains and to establish a model of buried deposits across the River Arrow valley. This succeeded in identifying quite substantial earthwork remains below ground, including one feature of around 3m in depth, which was interpreted to be a former fishpond.

The geoarchaeological investigation of the Cobbs Barn Farm area established:

'There is a tripartite division to the floodplain stratigraphy. The lowest deposits are gravels of the Late Devensian Glacial Power House Terrace. These have low archaeological and palaeoenvironmental potential. The gravel is overlain by fine-grained alluvial deposits which formed in both floodplain and channel environments. The lowest part of the fine-grained alluvial succession is comprised of peats and organic muds. These organic deposits have provisionally (in the absence of a firm chronology) been assigned a moderate archaeological and moderate to high palaeoenvironmental potential. The organic deposits are overlain by homogeneous mineral clay silts of low to moderate archaeological and palaeoenvironmental potential. Laminated silts and clays with properties suggestive of pond sedimentation occur between two earthwork features at the northern margin of the floodplain. These may relate to the mill once thought to have stood on/near the site, and which are therefore of moderate archaeological and palaeoenvironmental potential. The alluvial sediments are overlain by colluvium...'

(Wilkinson 2006)

The majority of the area in between Weights Lane and the 2006 investigations has not been subject to intrusive archaeological investigation, the exception being the very limited trial trenching at the eastern edge of the site (Cook 1995).

6 Additional Cultural Heritage Data

6.1 Historical and Archaeological Background

The River Arrow is the focus of intensive archaeological activity elsewhere along its course, with abundant evidence of prehistoric, Romano-British and early medieval activity found further to the south on the Worcestershire-Warwickshire border (Palmer 1999).

There is no evidence for human settlement in Sites 1 or 2 in the prehistoric periods, with the exception of the 'ring ditch' (WSM 09867) located to the north of Site 1. The River Arrow could have been exploited by prehistoric communities, but owing to the valley floor being a marshy habitat, direct settlement in that part of Site 2 is perhaps unlikely. Settlement would most likely have been on higher ground.

The first evidence of human activity along the River Arrow is demonstrated by placenames. Both Bordesley and Beoley demonstrate the '-ley' word endings that indicate clearings within wooded environments, point to Anglo-Saxon settlement. They cleared areas within what was a heavily wooded environment and commenced farming (Richardson 1986).

Archaeologically, there is little evidence of human activity across the two sites prior to the medieval period. Lands were granted for the Cistercian monks by the 1st Earl of Worcester, Waleran de Beaumont, at 'Easemore' (later to become Redditch). The Earl was a major landowner in Bordesley and Fackenham and issued the land in 1138 at the behest of his father Robert, the Earl of Leicester. At the time the village of Redditch was little more than an 'area of marsh around a hillock' (Rollins 1984). Through their efforts Bordesley Abbey took shape and created the infrastructure around it that shaped the River Arrow valley and the surrounding area.

Settlements along the Arrow valley were often on marginal land and therefore disappeared later in the medieval period, particularly after the Black Death of 1348/9 (Richardson 1986). The landscape was steadily brought under cultivation in the medieval period however, with Bordesley Abbey obtaining a charter in 1230 to enclose woods for clearance and the creation of pasture. The Abbey dominated land management in the area immediately around it, which was broken up upon the Dissolution (Gaut 1939). Lord Windsor requested leave to empark 1000 acres in 1561 at Bordesley and Tardebigge, though the parks at Bordesley Hall and Bordesley Park were already in existence, confirming that Site 1 was not under the direct control of Bordesley Abbey, in contrast to Site 2 (Cook 1994).

6.2 Historic Maps

6.2.1 Site 1

6.2.1.1 Tardebigge (1839) Beoley and Alvechurch Tithe Maps (1840's) – Figure 6

There are no major differences between the site today and how it appears on the Alvechurch and Beoley Tithe Maps. There has been obvious amalgamation of fields since this period, as the Tithe Maps indicate a number of smaller fields within the site boundary.

Bordesley Park Farm is in the same location as today, though there are fewer buildings in the present day than are shown on the Alvechurch map and a slight change in the pattern of buildings, indicating an addition since the 1840's. A farm track is shown extending from the west side of the farm building complex and joining the Birmingham Road to the west.

The Tithe Maps accurately indicate the presence of quarry pits across the site, many of which are still depicted in modern mapping. The mining activity evidently pre-dates the 1840's, as the extraction pits have become established landscape features already by this time.

The map pre-dates the area of modern marl or gravel extraction in between Bordesley Park Farm and Lower Park Farm which abuts the site boundary to the north. In the 1840's the area was enclosed fields showing a pair of small marl extractions.

The areas of modern infill abutting the site boundary both on the Dagnell End and Birmingham Roads do not exist at this time, and the land abutting these roads is entirely undeveloped.

The Dagnell Brook acts as the parish boundary, then as now. Bordesley Park abutting the site to the north west shows clear evidence of being a designed landscape, with tree plantation patterns being a feature of the landscape.

6.2.1.2 Ordnance Survey 1st Epoch 1884-85, 25" inches to 1 mile

There are no major differences between this map and the previous Tithe Maps. A couple of additional quarry pits are marked on, which amounts to the only noticeable difference. It is possible that a couple were missed on the Tithe Map, as the features shown on the OS map are shown with trees growing around the edges, showing they are established landscape features and therefore are probably not indicative of mining activity since the 1840's.

6.2.1.3 Ordnance Survey Worcestershire Sheets XVI.15 and 16, XXIII.3 and 4, 1904-07, 25 inches to 1 mile – Figure 9

There are no obvious changes to the landscape within the site on this map from the 1st epoch OS.

6.2.1.4 Ordnance Survey 3rd Epoch 1927, 25" inches to 1 mile

No changes to the landscape within the site boundary at this time, but the east side of the Birmingham Road shows some ribbon development, which is the first on the east side of the road.

6.2.1.5 Ordnance Survey Worcestershire Sheets XVI.15 and 16, XXIII.3 and 4, 1938 and 1939 – Figure 10

There are no changes to the area within the site boundary, but the abutting zone shows the first housing developments along the north side of the Dagnell End Road.

6.2.2 Site 2

6.2.2.1 Tardebigge (1839) Beoley and Alvechurch Tithe Maps (1840's) – Figure 6

Site 2 is divided between the parishes of Tardebigge and Alvechurch, with the River Arrow existing as the parish boundary.

The site is divided up into a series of mostly very regularly shaped fields, with the exception of those in the southern part of the site, which are much more irregular. It is clear that in the years since there has been substantial removal of field boundaries.

The map shows the site as it existed prior to the construction of the Redditch-Birmingham Railway, and it is clear that the later transport feature had something of a major impact on the landscape at that time.

The line of a leat is shown on the map, in between the River Arrow and the western site boundary. This is predominantly straight in the northern half of the site, but becomes quite sinuous in the southern half. This is the 'Bordesley Stream' and was created in the 18th or early 19th centuries (possibly earlier) to feed a mill, and was backfilled in the latter half of the 20th century.

There is no development along the Birmingham Road and fields about it.

6.2.2.2 Ordnance Survey 1st Epoch 1884-85, 25" inches to 1 mile

The detail in this map includes the presence of 'old clay pits' to the west of 'Halfway House' (presumably a coaching Inn, which is located on the Birmingham Road) and near Cobb's Barn Farm in the north of the site.

In the years since the Tithe map was created, the Midland Railway has been constructed. This is labelled as the Barnt Green, Evesham and Ashchurch Branch. The railway line is still an active one and forms the western boundary of the site.

The leat is shown more obviously as a water management feature, which is less evident on the Tithe Map.

Aside from the appearance of the railway there are no significant changes from the Tithe Maps.

6.2.2.3 Ordnance Survey Worcestershire Sheets XVI.15 and 16, XXIII.3 and 4, 1904-07, 25 inches to 1 mile – Figure 9

There have been no significant changes since the previous 1st epoch map.

6.2.2.4 Ordnance Survey 3rd Epoch 1927, 25" inches to 1 mile

There have been no significant changes since the previous early 20th century maps in terms of changes to the area inside the site, though ribbon development along the Birmingham Road now abuts portions of the eastern masterplan boundary.

6.2.2.5 Ordnance Survey Worcestershire Sheets XVI.15 and 16, XXIII.3 and 4, 1938 and 1939 – Figure 10

There are no significant changes to this map from the previous ones, other than the continued housing development along the Birmingham Road.

The farm track from Bordesley Park Farm to the Birmingham Road now ends approximately half way along its length, just to the north of the new properties on the Dagnell End Road.

6.3 Aerial Photographs

Aerial photographs were studied at the National Monuments Record search room on 11th December 2012, following a data search request. The photographs examined were all verticals of the two sites, and those which displayed potentially significant

archaeology or other features of interest, such as modern pipelines, field boundary removal and ridge and furrow, are reproduced in this report (Appendix D).

The results of the photographic study were transposed to a supporting figure (Figure 11, Appendix C).

6.3.1 Site 1

The extent of the ridge and furrow present on the site is evident in the fields immediately adjacent to the Dagnell End Road.

The farmland within the site has undergone a number of episodes of hedgerow removal. Hedgerows visible on features in the 1940's have disappeared later in the 20th century. These areas of sub-division removal are spread quite evenly throughout the site.

Two pipelines pass through the site in between Bordesley Park Farm and the northern edge of the masterplan boundary. These enter the boundary from the north-east and east and pass through the site on mostly a north-east to south-west alignment. The pipelines cross on the site of a building on the modern farm track that leads from Dagnell End Road up to Lower Park Farm. They intersect again at the western end of the row of post-war housing in the south-west corner of the site.

The evidence of quarrying across the site is extensive. These all appear to be surface extraction presumably for clay or gravel. The extant relict quarry pits extend well beyond the site boundary, being present across Bordesley Park, north of Storage Lane and east of Incknield Street.

A number of features were noted to the north of the masterplan site, indicating potential archaeological activity. In between the boundary and Lower Park Farm on Storage Lane, a likely palaeochannel can be traced originating at Bordesley Hall Farm to the north-west, and is aligned on a north-east to south-west alignment. An area of possible archaeological features show up as cropmarks just to the south of Lower Park Farm in photographs from 1990. These overlap with an area of modern extraction which has formed a series of inter-linked lakes.

6.3.2 Site 2

Site 2 differs from Site 1 in that there is more obvious evidence for the presence of archaeological features, with the series of fish ponds and oyster beds inter-linked with a network of leats. These run parallel to (and to the west of) the course of the River Arrow.

Areas of ridge and furrow are clearly identifiable to the north of Weights Farm and adjacent to the buildings which line the Birmingham Road.

The Bordesley Stream leat followed the contours along the base of the west side of the River Arrow valley in the 1940's, before infilling after WWII.

A broad pipeline easement crossed the site in the mid-1990's. Photographs from 1994 clearly show the route of the easement on an approximate east-west alignment, from the junction of the Birmingham Road and Dagnell End Road across to the north of Weights Farm. A smaller easement was picked up running from the roundabout at

the junction of the Birmingham Road and Dagnell End Road to Weights Farm. These must be the same pipelines that were routed across Site 1.

6.4 Site Walkover

A site visit was made on 7th December 2012. The photographs from the walkover are reproduced in Section 10.3 (Appendix B).

6.4.1 Site 1

The site is characterised by its rolling topography. The modern strip developments along the north side of Dagnell End Road back on to fields, which are both pasture and arable.

A modern farm track running through the eastern half of the site connects Dagnell End Road with Lower Park Farm. The majority of the fields on the east side of the track are arable up to a point which is level with the artificial lakes north of Bordesley Park Farm. At the southern end of the site they were heavily waterlogged after persistent rain.

On the west side of the track and in the area in between the artificial lakes and Lower Park Farm the field usage is mixed.

Both the Bordesley Park and Lower Park farmhouses and adjacent buildings are situated on prominent areas. There is a clear level of inter-visibility between the scheme and the listed lower Park Farm.

The site is additionally characterised by extant relict quarry pits, which have been used for either clay or gravel extraction. These appear on historic maps and pre-date the 1840's.

6.4.2 Site 2

This site is characterised by pasture fields across the shallow valley of the River Arrow. As a landscape feature the river seems fairly innocuous, with its winding course marked by vegetation along its course.

From the main vantage points from Weights Lane and the track to Weights Farm, there are no obvious features of note on the west side of the valley. Access to the eastern side of the river Arrow was not possible during the visit, though it is clear there are several sites comprising earthworks of medieval and settlement remains.

It is likely that the farm track from Weights Lane to Weights Farm is along the route of the former mill leat, or at least is very near to it.

Historically, earthwork remains were visible at the northern and southern ends of the site, but these were levelled in the 1980's, though archaeological recording was carried out.

7 Assessment of Archaeological Potential

7.1 Summary of Past Impacts

7.1.1 Site 1

The past impacts within the site boundary can be summarised as:

1. Historic, pre-1840 mining/ quarrying, presumably for the local marl clay, which has left pitted landscape features across the site to this day. This early phase of extraction probably took place in the post-medieval period and appeared to have been completed by the 1840's;
2. Hedgerow removal, which has changed the appearance of the historic landscape, but which can be seen in the context of an evolving landscape, from deer park to enclosure for arable and pastoral farming;
3. The creation of a new farm track linking the Dagnell End Road with Dagnell Park Farm;
4. The pipelines which traverse the southern half of the site would have removed any buried archaeology within the footprint of the pipe trench and damaged the resource within the pipeline easement;
5. The marl clay extraction in the post-war period, which has left an area in between Bordesley Park Farm and Lower Park Farm as a series of small lakes; and
6. The effects of arable farming, which includes regular episodes of sub-soiling, or 'deep-ploughing' every four years or so, which breaks up the subsoil and can have a deleterious impact on the more superficial archaeological deposits.

7.1.2 Site 2

The past impacts within the site boundary can be summarised as:

1. The infilling of the medieval leat that passed through the west side of the River Arrow valley;
2. The large-scale removal of the once-extant earthworks adjacent to Cobbs Barn Farm at the northern end of the site in the 1980's, believed to be part of 'pasture improvement' works; and
3. The removal of the earthworks (initially called 'house platforms') south of Weights Lane as part of the same pasture improvements.

7.2 Archaeological and Palaeoenvironmental Potential

7.2.1 Site 1

Given the large site area, the varied number of prominent points throughout the site created by the rolling topography, and the abundant source of water from the Dagnell Brook, it would appear that the potential for previous human activity prior to the post-medieval period is quite high. The presence of a possible 'ring ditch'

(WSM 09867) or Iron Age/ Romano-British round house indicates that there is, or at least was, some evidence of possible settlement across the site. The ring ditch lies within or partly across the area of modern extraction in the centre of the site, and has presumably been either wholly or partially lost.

Evidence of a former human settlement site abuts the western site boundary. A deserted medieval village (WSM 21306) lies in between the site and Bordesley Park. The abandonment of such settlements formed part of a social change in the later medieval period in the wake of both the Black Death and as a consequence of a natural 'thinning-out' of a countryside with an abundance of very small settlements.

It is clear that in the medieval period this land was used as parkland, like the two areas of park either side of it; Bordesley Park (WSM 28813) and Boeley Deer Park (WSM 41573) so it is likely that there was no direct settlement within the site during that period, meaning that any such settlements probably date to the prehistoric, Romano-British or Anglo-Saxon/ early medieval periods.

This site has a **moderate archaeological potential**.

A possible palaeochannel was identified from aerial photographs (Section 6.3 and Figure 11, Appendix C) in the northern half of the site. The date of this is unknown. It is also likely that there are former courses of the Dagnell Brook in the buried environment, which contain peaty deposits which contain information from which to establish a picture of the prehistoric and historic environments.

7.2.2 Site 2

Unlike Site 1, Site 2 has been subject to desk studies in the past, along with partial archaeological investigation.

The area to the south of Weights Lane has been fully evaluated (Headland Archaeology 2011) and proven negative for significant archaeology, with the exception of the 'Bordesley Stream' leat.

Trial trenching and geoarchaeological work in the northern portion of the site has established the presence of a probable buried fishpond. A deposits model for the Arrow valley has also been obtained and the archaeological and palaeoenvironmental potential accurately established in that part of the site.

Being a known area of medieval activity given its association with Bordesley Abbey, the site has abundant fishponds, oyster beds, leats and lynchets, though the exact form these take can only be estimated from the results of aerial photographs and information from the existing archaeological interventions.

Abundant activity from certain periods (which in the medieval period also includes ridge and furrow agriculture) can disguise archaeological activity from previous periods. It would be possible that this could be the case in Site 2. However, given the nature of much of the site, direct human settlement is unlikely to have been established anywhere apart from the upper sides of the valley, the base of the valley being a marshy environment. Exploitation of the riverine resource would be expected, and features such as trackways or fish traps would have maximised this. These could have been used by communities exploiting the Arrow valley on a seasonal basis.

The potential for previously unknown archaeology within this site is **high**.

8 Built Heritage

8.1 Designated Structures Appraisal

8.1.1 Meadow Farm (Hotel, formerly Bordesley Lodge Farm)

Criteria	Description
Farmhouse	
Age	Originally 15 th century, although this original part of the structure has been wholly enclosed and re-worked by later events, notably 17 th and 18 th century and later improvements
Rarity	There are a number of other timber-framed buildings in the study area, all of which have different levels of later re-builds and additions. Nearby villages such as Tardebigge and Alvechurch have an abundance of these, and therefore does not appear to be rare on a local level
Aesthetic Value	The historic structure has an aesthetic value based on the timber frames. A high aesthetic value given
Group Value	This has a group value with both the granary buildings and the cast iron water pump which both form part of the historic farm complex, and each of which has a separate listing
Evidential Value	Background of building stated in historic building recording report (Williams et al 2007)
Historic Association	The 2007 recording and archaeological investigation established that the former farmhouse may represent the continuation of buildings (moved from their original position) that existed within the precinct of Bordesley Abbey prior to the Dissolution. Timbers within part of the building were dated to the first half of the 14 th century
Archaeological Interest	No buried material found during archaeological recording that suggested a medieval origin
Designed Landscaping	The building has no current relationship with designed gardens or parkland, though must have had an historic setting relationship with the deer parks to the north

Criteria	Description
Landmark Status	The building occupies a prominent position at an historic road junction, and must be a well-known landmark in Bordesley
Social and Communal Value	The building is now a hotel with a restaurant and therefore has a significant social and communal value
Criteria	Description
Former granary	
Age	Late 16 th century
Rarity	Rarity unknown – there are other timber-framed granaries in the county but the level of rarity is unknown
Aesthetic Value	A high value – similar in appearance to the former farmhouse
Group Value	Has a group value with the farmhouse and the cast iron water pump
Evidential Value	No investigation took place for this report
Historic Association	No known historic associations, other than a relationship with the adjacent farmhouse
Archaeological Interest	Building showed some evidence of a central hearth and pitting, which were levelled over by later 18 th and 19 th century floors during a re-building phase
Designed Landscaping	The building has no current relationship with designed gardens or parkland, though must have had an historic setting relationship with the deer parks to the north
Landmark Status	The building occupies a prominent position at an historic road junction, and must be a well-known landmark in Bordesley, taken together with the adjacent farmhouse

Criteria	Description
Social and Communal Value	The building is part of a hotel complex, and therefore has a social and communal value
Criteria	Description
Water pump	
Age	Mid 19 th century
Rarity	Not rare on a national level, but might have a local rarity value
Aesthetic Value	None
Group Value	Has a group value with the former farmhouse and the former granary
Evidential Value	No historic documents relating directly to this feature have been research as part of this study
Historic Association	No known historic association
Archaeological Interest	No archaeological interest
Designed Landscaping	No association with designed landscape or garden
Landmark Status	No landmark status
Social and Communal Value	No social or communal value

8.1.2 Dagnell End Farm

Criteria	Description
Dagnell End Farmhouse	

Criteria	Description
Age	An 18 th century building with predominantly 19 th century additions
Rarity	Little rarity value on a local, regional or national level
Aesthetic Value	Has a low aesthetic value
Group Value	Has a group value with its adjacent historic farm buildings: the cartshed/granary/pigsties to the north, the barn and the cattle shelter
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	No known historic associations
Archaeological Interest	No known archaeological interest
Designed Landscaping	Not set within a designed garden or landscape, but no doubt had historic setting relationships with the medieval and later deer parks surrounding it to the west, north and east
Landmark Status	Little status as a landmark building
Social and Communal Value	Serves a residential function
Criteria	Description
Cartshed, granary and pigsties	
Age	Mid 19 th century
Rarity	Unknown rarity value
Aesthetic Value	Not assessed

Criteria	Description
Group Value	Group value with Dagnell End Farmhouse, the barn and the cattle shelter
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	No known historic associations
Archaeological Interest	No known archaeological interest
Designed Landscaping	Not set within a designed garden or landscape, but no doubt had historic setting relationships with the medieval and later deer parks surrounding it to the west, north and east
Landmark Status	Little status as a landmark building
Social and Communal Value	No social value, other than being utilised for farming purposes
Criteria	Description
Barn	
Age	Mid 19 th century
Rarity	Not known
Aesthetic Value	Not assessed
Group Value	Group value with Dagnell End Farmhouse, the cartshed, granary and pigsties
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	No known historic associations

Criteria	Description
Archaeological Interest	No known archaeological interest
Designed Landscaping	Not set within a designed garden or landscape, but no doubt had historic setting relationships with the medieval and later deer parks surrounding it to the west, north and east
Landmark Status	Little status as a landmark building
Social and Communal Value	No social value, other than being utilised for farming purposes
Criteria	Description
Cattle shelter	
Age	Mid 19 th century
Rarity	Not known
Aesthetic Value	Not assessed
Group Value	Group value with Dagnell End Farmhouse, the cartshed, granary and pigsty and the barn
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	No known historic associations
Archaeological Interest	No known archaeological interest
Designed Landscaping	Not set within a designed garden or landscape, but no doubt had historic setting relationships with the medieval and later deer parks surrounding it to the west, north and east
Landmark Status	Little status as a landmark building

Criteria	Description
Group Value	Has a group value with its gate house and gate piers and gates, which are listed separately
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	The house was built for the Shobdon family but was extensively in 1791 by John Sanders for a Thomas Holmes. The building was divided up into flats in the later 20 th century
Archaeological Interest	No known archaeological interest
Designed Landscaping	The building site within designed gardens, and probably has historic associations with the deer parks that lay to the west of the property
Landmark Status	The building's landmark status is difficult to ascertain because it is not visible from Icknield Street owing to the topography and the mature vegetation that lines the road
Social and Communal Value	The building has been divided up into flats and has residential value

8.1.6 Storage House

Criteria	Description
Age	Construction circa 1837
Rarity	It would appear to be a rare form of construction on a local level
Aesthetic Value	The building has an aesthetic value
Group Value	No group value

Criteria	Description
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	No known historic association
Archaeological Interest	Unknown archaeological interest
Designed Landscaping	The gardens surrounding the property could not be investigated, but the property has an historic setting relationship with the former deer parks to the south
Landmark Status	The building is in a prominent position and is probably visible for some distance directly from the south, but otherwise is positioned on a quiet small lane and is screened by mature vegetation from western and eastern approaches
Social and Communal Value	The property has a residential value

8.1.7 Lower Park Farm

Criteria	Description
Age	Early 17 th century with late 20 th century alterations
Rarity	Will have some local rarity value
Aesthetic Value	The farmhouse has some aesthetic value as a timber-framed building
Group Value	The farmhouse has no group value
Evidential Value	No historic documents were researched for the farm as part of this study
Historic Association	No known historic association

Criteria	Description
Archaeological Interest	Unknown archaeological interest
Designed Landscaping	There is no designed landscaping around the farmhouse at present, though the farm building has historic setting relationships with the former deer park that once surrounded it to the west, east and south
Landmark Status	The building is largely hidden from public view given its location, but occupies a prominent position within the site
Social and Communal Value	The building has residential value

9 Impact Assessment

9.1 Summary of Known Built Heritage

There are no designated buildings within either Site 1 and 2, though there are 14 such designations in the wider study area, mostly to the south, east and north of Site 1.

Some of the buildings are related to the sites in terms of their settings, with most of the buildings having limited inter-visibility with the site.

9.2 Summary of Known Archaeology

9.2.1 Site 1

This site was within a medieval deer park and later formal parkland prior to inclosure. A possible settlement site existed within it, but there is no further evidence of archaeology being present. However, this is due to a lack of formal investigation rather than proof of a dearth of archaeological features. This assessment has estimated the presence of unknown archaeology to be at a **moderate level**.

9.2.2 Site 2

Site 2 has been subject to intensive desk study and archaeological interventions in the past relating to the ongoing Bordesley Bypass project.

Extensive archaeological remains have been identified throughout the site, and archaeological investigation has proved the presence of archaeology in the northern part of the site, by Cobb's Barn Farm.

A series of leats and lynchets connect fishponds and oyster beds, all of which exist in the buried environment, adjacent to the River Arrow (on its western side). The Bordesley Stream is a post-medieval water management feature that also lies buried in the Arrow floodplain.

Extensive archaeological investigation has been carried out south of Weights Lane, outside the masterplan area, and did not identify any significant archaeology, with the exception of the Bordesley Stream.

Buried and extant ridge and furrow might disguise archaeology from earlier periods.

9.3 Potential Impacts from Development

The footprint of future housing will have obvious effects on the buried environment, given the processes involved in enabling works and construction.

The scale of housing required will mean large areas of each site being developed, and supported by a host of services, including gas, water, foul water, electricity etc. The creation of balancing ponds will also have an adverse effect on the buried environment.

In order for new development to have a minimised effect on the local landscape, it is presumed that there will be significant landscaping associated with development. This also has the potential to impact on the buried environment, from bunds to tree plantation.

The road infrastructure within the site will also have a negative effect on the buried environment.

New build housing will change the landscape, and the inter-visibility between the sites and the various vantage points around them will be altered as a result. The settings of listed buildings around the edge of the sites will change, in some cases negatively.

The form of the historic landscapes within the sites will be erased by development. These areas have changed gradually over centuries and modern development will see an abrupt and major change, which will transform the existing landscape signatures to an urban profile.

9.4 Consents Required

No consents will be required to enable development, as no designated structures or areas will be directly affected by development.

9.5 Likely Local Planning Authority Requirements

In line with the directives given in the NPPF and those policies retained from the local plan, planning determination will have to be informed by a suite of archaeological investigation, when desk study does not yield the appropriate amount of information.

Archaeological investigation would inform a robust programme of mitigation. Any archaeological mitigation required would be subject to condition of planning approval.

Ordinarily, a standard preliminary method of determining archaeological potential across a site is to carry out a geophysical survey. This could be complemented beforehand with a study of LiDAR data. These sources can locate any potentially significant anomalies, which would then be subject to follow-up targeted trial trenching. Other trenches would be placed in areas of negative results to test the veracity of the geophysics results.

Negotiation with BDC's archaeological officer should centre around an approach to investigation which would yield the best results for planning determination purposes.

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Appendix A

Gazetteer of Cultural Heritage Features

Appendix A Gazetteer of Cultural Heritage Features

Key

WHER = Worcestershire Historic Environment Record reference number

Most of these features are reproduced on figures supporting this report (Figures 1-5, Appendix C). However, the scale of these has prohibited some features in the wider study area from being shown.

WHER number	Period	Description
SCHEDULED MONUMENTS		
WSM 00010	Medieval	Bordesley Abbey - the 12 th to 16 th century Cistercian abbey. The Abbey came into existence formally from charters of 1140 and 1141 and existed until 1538, when the Dissolution of the monasteries commenced. The site today comprises areas of extant stonework of walls and floors, as well as earthworks and extensive buried archaeology. There have been a number of archaeological investigations and excavations over the years which have revealed, much about the primary areas of worship but also the associated precinct and cemeteries
LISTED BUILDINGS		
WSM 31719	Medieval and Post-medieval	Bordesley Lodge Farmhouse, Dagnell End Road, Redditch – a former farmhouse now converted to a hotel and restaurant. The building has mid-15 th century origins, but is mostly a construct of later (post-medieval) additions/ re-builds. Recorded on Ordnance Survey 1 st edition as Bordesley Lodge Farm but labelled as 'Meadow Farm' on later drawings
WSM 31718	Post-medieval	A mid-19 th century cast iron water pump at Bordsley Lodge Farm (above). It has a group value with the farmhouse and the granary building (below)
No WHER number	Post-medieval	Granary adjacent to Bordesley Lodge Farmhouse (above). This has a group value with the farmhouse and the water pump (also above)
WSM 37602	Post-medieval	Dagnell End Farmhouse, Beoley – an 18 th century brick built structure with 19 th century additions. This has a group value with the listed buildings immediately surrounding it (WSM 37600 – 37603 below)
WSM 37603	Post-medieval	Cartshed, granary and pigsties to the north of Dagnell End Farmhouse (above). These date to the mid 19 th century and are characterised by a red brick on Flemish bond. Part of the Dagnell End Farmhouse group

WHER number	Period	Description
WSM 37601	Post-medieval	Barn associated with Dagnell End Farm (above). Mid 19 th century with Flemish bonded brick. Part of the Dagnell End Farmhouse group
WSM 37600	Post-medieval	Cattle shelter immediately west of Dagnell End Farmhouse. Mid 19 th century and red brick. Part of the Dagnell End Farmhouse group
Not acquired in WHER search data	Post-medieval	Rose Cottage, Icknield Street, Beoley. A red brick built early 19 th century construction with late 20 th century additions
Not acquired in WHER search data	Post-medieval	Beoley Hall, Icknield Street, Beoley. Early 18 th century building which was remodelled in 1791. Composed of stuccoed brick, the house is now converted into flats
Not acquired in WHER search data	Post-medieval	The Gates and Gate Piers to Beoley Hall, Icknield Street, Beoley. Probably late 18 th century with later repairs. Wrought iron on ashlar stone blocks. Pedestrian gates either side of the main gates
Not acquired in WHER search data	Post-medieval	The Lodge House, Beoley Hall, Icknield Street. Adjacent to the wrought iron gates (above) and of similar date. Brick built and stuccoed, with a flat roof
WSM 09945	Post-medieval	Poplars Farm farmhouse, Icknield Street, Beoley. This is an early 17 th century timber-framed house with later brick infill and extensive late 18 th century remodelling. This also includes a mid-18 th century timber-framed barn with weatherboarding
WSM 37604	Post-medieval	Storage House, Storage Lane, Beoley. Circa 1837 construction composed of header-bonded red brick and sandstone
WSM 02055	Post-medieval	Lower Park Farmhouse, Storage Lane, Alvechurch. An early 17 th century timber-framed, gable-ended structure with whitened brick. Late 20 th century alterations
NON-DESIGNATED HISTORIC BUILDINGS		
WSM 37530	Modern	HDA Forgings Ltd, Windsor Road, Redditch. Manufacturer of aeroplane parts and formerly a wartime (WWII) production centre for the same
WSM 02057	Post-medieval	The Homestead, Rowney Green, Alvechurch. A 17 th century timber-framed building almost wholly rebuilt in the modern period and unlisted as a result

WHER number	Period	Description
WSM 25035	Modern	Royal Observer Corps Monitoring Post from WWII. Still extant
None	Post-medieval	Railway Bridge at Weights Farm – red brick construction of historic 19 th century railway. Arch gives access to Weights Farm buildings
NON-DESIGNATED PARKS AND GARDENS		
WSM 28813	Post-medieval	The park at Bordesley Hall, Alvechurch. This park dates from the 18 th century and was formerly wooded. This might have superseded an earlier deer park
WSM 41573	Medieval	Beoley Medieval Deer Park – a late 11 th to 16 th century deer park. The precise boundaries of the park are unknown and the WCHER polygon is based on documentary and field survey evidence. The extents of the park appear to have changed over its lifetime
WSM 28815	Medieval and post-medieval	Deer Park at Bordesley Park, Alvechurch – late 11 th to 17 th century in date.
PLACE NAMES		
WSM 34296	Romano-British	'Blackstitch' – field name. Noted on the 1839 Tithe map for Tardebigge – date is conjectural
NON-DESIGNATED MONUMENTS		
WSM 31398	Modern	The location of a WWII road block at a junction on the Birmingham Road
WSM 21306	Medieval	Osmerley Deserted Medieval Village, Alvechurch – this is an estimated location and there are no extant remains to confirm the presence of such a settlement
WSM 00742	Unknown	Cropmarks west of Rose Cottage, Redditch – an area of cropmarks; irregular and linear. The route of the Esso Birmingham Airport Link pipeline was subject to geophysics and no anomalies of an archaeological origin were identified
WSM 37590	Romano-British to Modern	Saltway, Beoley to Droitwich – a conjectural route of the former Saltway which passed east from Droitwich and ran through Redditch before passing out of the county

WHER number	Period	Description
WSM 30441	Romano-British	Conjectured route of 'Ryckniel Street' Roman Road from Redditch to Northern County Boundary. This is partially marked by sunken lanes and field boundaries
WSM 00025	Medieval	Oysterbeds North East of Weights Farm, Tutnall – a series of parallel channels with interconnecting leats in the River Arrow valley, which have been related to Bordesley Abbey
WSM 00017	Medieval	Deserted settlement, Weights Lane, Redditch characterised by six house platforms, mounds and hollows and an extant mill leat. Archaeological evaluation in 1996 detected a possible wall foundation and a holloway
WSM 05555	Medieval	Deserted Medieval Village, West of Bordesley Lodge Farm. Some earthwork evidence remains, as well as documentary
WSM 03501	Modern	An area of gravel extraction, east of Weights Farm, Weights Lane
WSM 00735	Medieval to post-medieval	Ridge and Furrow north of Weights Farm, Redditch – visible from aerial photographs
WSM 21604	Medieval to post-medieval	Ridge and Furrow, Alvechurch
WSM 27706	Modern	Site of Workers Hostel, Bordesley, Redditch – hutted camp and community buildings for workers transhipped from Slough for High Duty Allos Factory
WSM 05546	Post-medieval	Millponds, southwest of Old Mills, Redditch
WSM 37873	Post-medieval	Quarry, south of Butler's Hill Wood, Bromsgrove – visible on 1 st edition OS map
WSM 35553	Medieval to post-medieval	Ridge and furrow, west of Beoley – north-south oriented and visible from aerial photographs
WSM 09867	Unknown	Ring ditch, south of Lower Park Farm, Alvechurch
WSM 01800	Medieval	Mill site (Lear Mill?), S of Cobs Barn, Alvechurch – a mill site within a series of earthworks
WSM 36395	Modern	Site of Fire Station, Birmingham Road, Redditch – a temporary fire station with Nissen huts constructed early in WWII

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WHER number	Period	Description
WSM 28719	Modern	Site of Communal Air Raid Shelter, Birmingham Road, Redditch – WWII feature demolished in 1990's
WSM 09858	Medieval to post-medieval (r&f) Unknown (cropmark)	Ridge and Furrow and an enclosure cropmark, south west of Weights Farm, Tutnall & Cobley. Archaeological fieldwork did not identify any significant archaeological features
WSM 01780	Medieval	Fishponds, south west of Cobbs Barn, Alvechurch – extensive sequence of fishponds visible from aerial photographs, through no extant earthworks remain. Archaeological survey and evaluation has established that buried remains are likely to exist
WSM 01778	Medieval	Pond, south-west of Cobs Barn, Alvechurch – associated with the former Lye Mill
WSM 35555	Medieval to post-medieval	Ridge and Furrow north of Beoley Hall – north west to south east oriented
WSM 07249	Medieval	Earthworks southwest of Bordesley Lodge Farm. These may represent croft boundaries and earthworks which could be a deserted medieval settlement
WSM 33332	Post-medieval	Bordesley Stream (Old Leat), Bordesley, Redditch. The leat is likely to be 18 th or 19 th century in date to increase the water flow to the Old Mill complex. It was abandoned and infilled by the later 20 th century
WSM 27825	Prehistoric	Burnt Mounds either side of the stream, Rowney Green
WSM 35554	Medieval to post-medieval	Ridge and furrow, Beoley on a north west to south east axis
WSM 32510	Post-medieval	The approximate site of the Old Gasworks, Redditch
WSM 01766	Medieval	Moat, south of Grange Farm, Tutnall & Cobley, with the possible site of a Grange. These are adjacent to Bordesley Abbey
WSM 33045	Modern	Site of Home Guard Grenade Range, Rowney Green, Alvechurch set within a former gravel pit

WHER number	Period	Description
WSM 09876	n/a	Cropmarks west of Clevedon Farm, Beoley. These cover a field which was subject to geophysical survey. Later topsoil removal did not identify any archaeological features, though variations in the natural strata were noticed
WSM 01768	Medieval	Ponds south of Grange Farm, Tutnall and Cobley – a fish pond associated with Lye Mill
WSM 31422	Modern	Site of Rifle Range, Lowan's Hill Farm, Redditch. This was used by the Home Guard in WWII for full bore shooting
WSM 01767	Medieval	Ponds south of Grange Farm, Tutnall and Cobley. Associated with Lye Mill, the pond has been subject to some plough damage though is still a visible earthwork
WSM 28721	Modern	Possible site of Gun Crew Accommodation, Bordesley Lane, Redditch. The crew of a Bofors gun adjacent to an HAD factory were billeted here
WSM 28722	Modern	Possible Site of Bofors Gun Emplacement, Redditch Crematorium, Redditch. The site was composed of three concrete and brick-built structures with a protective pillbox
WSM 09860	Medieval to post-medieval	Ridge and Furrow, SW of Barton Farm, Beoley
WSM 09755	Unknown	Earthworks at Dagnall End Farm, Beoley
WSM 28723	Modern	Possible Site of Bofors Gun Emplacement, Lowan's Hill, Redditch
WSM 03344	Medieval	The line of a Holloway east of Storage House, Storage Lane, Alvechurch
WSM 42973	Medieval	Boundary bank, west of Bordesley Abbey recorded as part of a 1974 survey
WSM 28720	Modern	Approximate Site of Air Raid Shelter, East of Birmingham Road, Redditch. This was a trench shelter roofed over with railway sleepers and for use for up to 12 families
WSM 33091	Modern	Site of Flame Fougasse, Railway Cutting North of Redditch, Redditch. A WWII defensive feature alongside the railway
WSM 33095	Modern	A Home Guard road block, Railway Bridge, Windsor Road, Redditch

WHER number	Period	Description
WSM 35224	Medieval to post-medieval	Ridge and furrow, Bordesley Abbey
WSM 35223	Medieval	Boundary earthworks, entrance and road, north of Bordesley Abbey. Archaeological excavations have uncovered the buried remains of medieval earthworks and road surfaces
WSM 00012	Medieval and post-medieval	St Stephens Chapel, Bordesley Abbey – the only part of the abbey complex to survive the Dissolution, and which served as the parish church for Redditch. This was demolished in 1805 when a new church was built to service the town
WSM 43038	Post-medieval	Old Clay Pits west of Halfway House, Alvechurch
WSM 00036	Post-medieval	New Mills, Windsor Road, Redditch – the site of a 17 th century needle mill which has been partially (informally) excavated
WSM 00038	Post-medieval	Site of Old Mills, Redditch – a needle mill (pins and fish hooks) created partially from a former corn mill. The buildings were demolished in the 1930's
WSM 45426	Post-medieval to modern	Toll House on the Birmingham, Dagnell End Road, Redditch
WSM 47483	Modern	Crash site of a Vickers Wellington Mk III X3932, Rowney Green
ARCHAEOLOGICAL EVENTS (FORMER INVESTIGATIONS, RESEARCH WORK AND DEVELOPMENT MITIGATION)		
WSM 30446	n/a	Archaeological Observation in 1990, Esso Birmingham Airport Link
WSM 30445	n/a	Archaeological Observation in 1990, Esso Birmingham Airport Link
WSM 30447	n/a	Archaeological Observation in 1990, Esso Birmingham Airport Link
WSM 27826	n/a	Observation in 1999, possible Burnt Mounds, south of Woodlands Farm, Alvechurch
WSM 29700	n/a	Evaluation in 1995, Proposed Bordesley Bypass
WSM 15624	n/a	Archaeological Fieldwork in 1991, Birmingham Airport Link Pipeline Recording

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WHER number	Period	Description
WSM 35051	n/a	Evaluation in 2006, Bordesley Bypass, Tutnall and Cobley
WSM 37158	n/a	Geoarchaeological Assessment in 2006, Bordesley Bypass, Tutnall and Cobley
WSM 35085	n/a	Evaluation at 2007, Meadow Farm, Dagnall Road, Redditch
WSM 36084	n/a	Building Recording in 2007, Meadow Farm, Dagnell End Road, Bordesley
WSM 36082	n/a	Watching Brief in 2007, Meadow Farm, Dagnell End Road, Bordesley
WSM 21607	n/a	Desk Based Assessment in 1994, Proposed Bordesley Bypass, Tutnall and Cobley
WSM 21606	n/a	Desk Based Assessment in 1994, Proposed Bordesley Bypass, Redditch
WSM 21605	n/a	Desk Based Assessment in 1994, Proposed Bordesley Bypass, Alvechurch
WSM 21603	n/a	Desk Based Assessment in 1994, Proposed Bordesley Bypass, Alvechurch
WSM 21602	n/a	Desk Based Assessment in 1994, Proposed Bordesley Bypass, Alvechurch
WSM 21601	n/a	Desk Based Assessment in 1994, Proposed Bordesley Bypass, Alvechurch
WSM 45750	n/a	Desk Based Assessment in 2011, Brockhill East, Redditch
WSM 39854	n/a	Site visit during erection of new barn at Poplars Farm
WSM 10651	n/a	Burnt Mound, Rowney Green, Alvechurch
WSM 40467	n/a	Metal Detecting Finds in 1997, Storage House, Beoley
WSM 40468	n/a	Metal Detecting Finds in 1997, South of Storage House, Beoley
WSM 07245	n/a	Excavations 1969-1973, north of Bordesley Abbey
WSM 42965	n/a	Excavations between 1983 and 1987 at St. Stephen's Chapel and graveyard

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WHER number	Period	Description
WSM 46066	n/a	Evaluation, Weights Lane, Redditch
WSM 30067	n/a	Desk Based Assessment of Abbey Stadium, Redditch
WSM 45752	n/a	Evaluation in 2011, Hewell Road, Redditch
WSM 45755	n/a	Desk Based Assessment in 2011, Land north of Riverside, Redditch
WSM 45784	n/a	Ongoing Work - DBA at Church Hill, Redditch
LANDSCAPE COMPONENTS		
WSM 29736	Medieval(?)	Area of settlement, Beoley
WSM 42160	Medieval to post-medieval	Feckenham Forest – 13 th century boundary taken from historic maps and documentary evidence
HISTORIC LANDSCAPE CHARACTER		
SITE 1		
HWR 14427	Post-medieval and modern	Field amalgamation following the construction of the Midland Railway in the 1850s. Predominantly rectilinear fields
HWR 4131	Post-medieval	Interrupted row - Cobb's Barn Farm
HWR 14426	Modern	The housing alongside the Birmingham Road represent post-war ribbon development
HWR 15129	Modern	Post-WWII field amalgamation
HWR 7151	Post-medieval and modern	Field reorganisation due to the Midland Railway in the 1850's, and further sub-divided in the modern period
HWR 14208	Post-medieval and modern	Piecemeal enclosure

WHER number	Period	Description
HWR 7151	Post-medieval and modern	Field reorganisation due to the Midland Railway in the 1850's, and further subdivided in the modern period
HWR 7152	Post-medieval and modern	Piecemeal enclosure
SITE 2		
HWR 7149	Modern	Modern housing expansion along the Dagnell End Road
HWR 7148	Post-medieval	Parliamentary enclosure – characterised by rectilinear fields
HWR 4203	Post-medieval	Isolated farmstead – Bordesley Park Farm
HWR 7144	Post-medieval	Interrupted row on Dagnell End Farm
HWR 7143	Post-medieval	Parliamentary enclosure – characterised by rectilinear fields at Bordesley Park Farm
HWR 14431	Modern	Field amalgamation at Bordesley Park
HWR 4135	Modern	Modern man-made pond within a valley floor
HWR 14779	Post-medieval	Piecemeal enclosure – a large area of irregular enclosure
HWR 4133	Post-medieval	Lower Park Farm – isolated farmstead, dates to early 17 th century
HWR 14432	Post-medieval	Piecemeal enclosure – adjacent to Bordesley Hall Farm

Appendix B

Site Photographs

Appendix B Site Photographs

Designation Settings

Bordesley Abbey



Looking north east across Abbey ruins – site not visible from all perspectives here

Bordesley Lodge Farmhouse (modern Motel)



Looking north east from Abbey Stadium to Bordesley Lodge Farmhouse (Motel)

View from Beoley Lodge and Gates



Looking west across to site

Dagnell End Farm



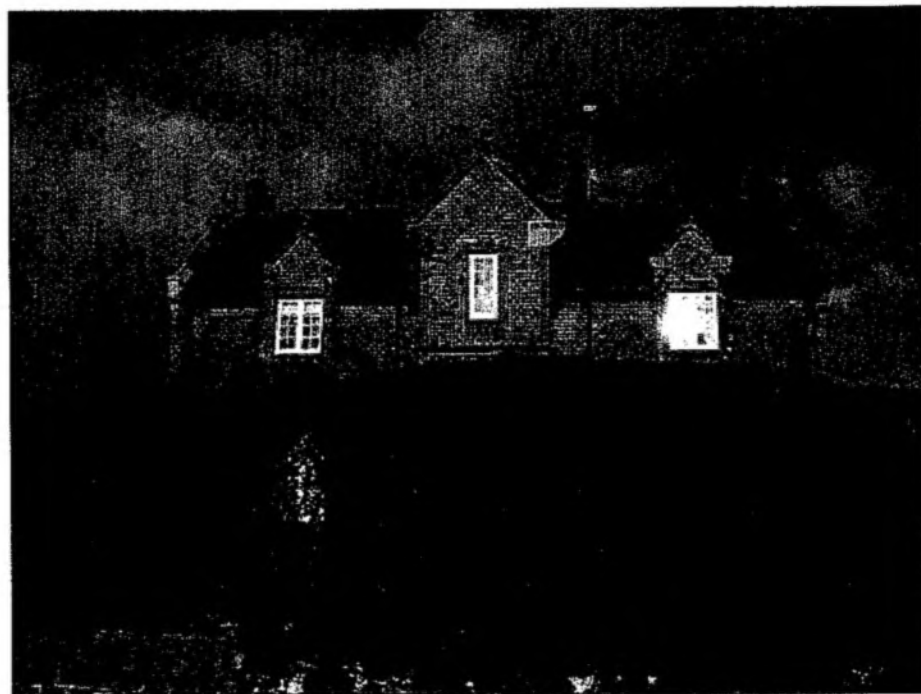
View looking west towards farm from Clevedon Farm

Poplars Farm



Looking west at Poplars Farm from Icknield Street – view beyond farm buildings not known

Storage House



Front of Storage House which has views over fields to the south of Storage Lane

Lower Park Farm



Looking north to Lower Park Farmhouse from northern part of the masterplan area.
The farm sits in a prominent position with views over much of surrounding area

Site walkover

Site 1



Looking north east across Dagnell End Road to the south west corner of Site 1



Looking east from farm track (which leads from Dagnell End Road to Lower Park Farm)



Bordesley Park Farm



Arable and pasture fields at Bordesley Park Farm



Artificial lakes abutting the masterplan boundary



Former extraction/ quarry pit at Bordesley Park Farm



Looking south west across to Site 2 from Bordesley Park Farm



Pond/ former extraction area: Bordesley Park Farm



Rolling topography at Bordesley Park Farm

Site 2



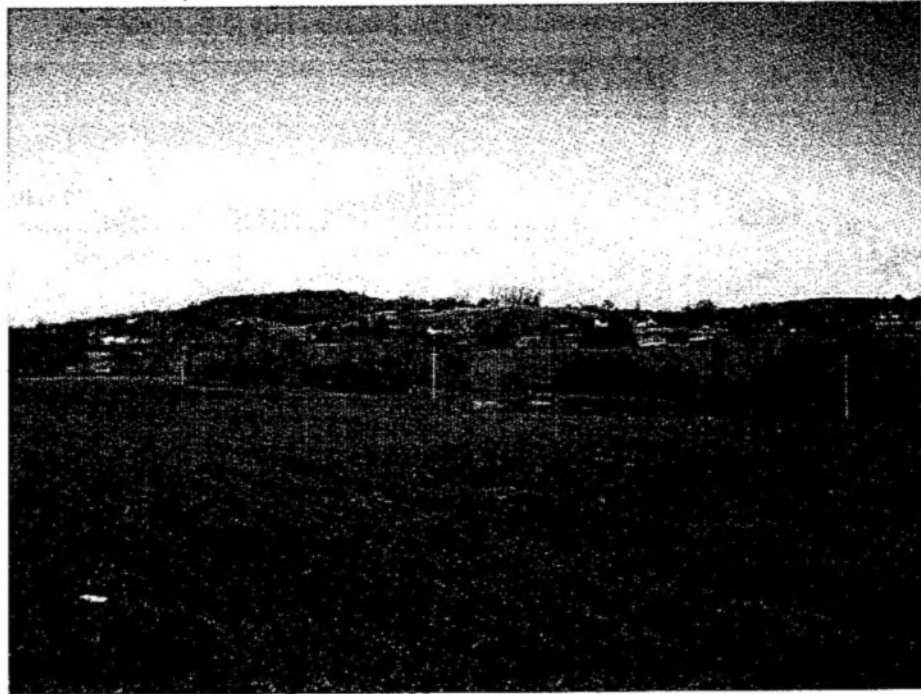
Eastern end of Weights Lane, leading to Business Park



Pasture either side of the River Arrow (defined by hedge on the right of the picture)



View north from Weights Lane



Looking north-east across River Arrow valley



Railway Bridge at Weights Farm

Appendix C

Figures

Appendix C Figures

Figure 1 Site 1: Designated cultural heritage features

Figure 2 Site 2: Designated cultural heritage features

Figure 3 Site 1: Non-designated cultural heritage features

Figure 4 Site 2: Non-designated cultural heritage features

Figure 5 Sites 1 and 2: Historic Landscape Character

Figure 6 Tardebigge (1839), Beoley and Alvechurch Tithe Maps, 1840's

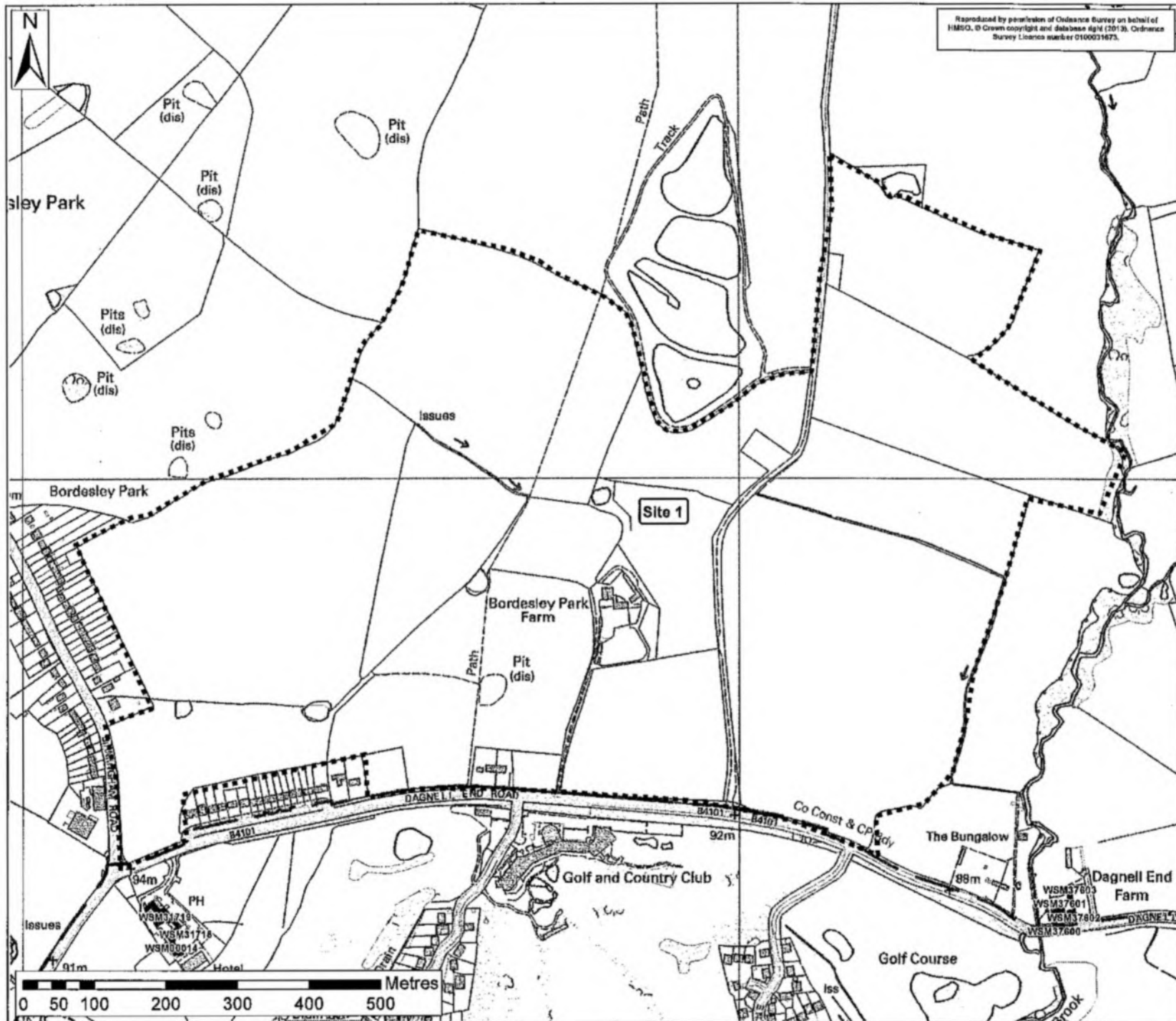
Figure 7 Ordnance Survey 2 inches to 1 mile, 1895

Figure 8 Ordnance Survey 25 inch to 1 mile Worcs Sheets XVI SE and Warks Sheet XXIII NE 1905

Figure 9 Ordnance Survey 25 inch to 1 mile Worcs Sheets XVI.15 and 16, XXIII.3 and 4, 1904-1907

Figure 10 Ordnance Survey 25 inch to 1 mile Worcs Sheet XVI.15 and 16, XXIII.3 and 4, 1938 and 1939

Figure 11 Cropmarks



- Legend**
- Redditch Expansion Area
 - Listed Buildings
 - Scheduled Monuments

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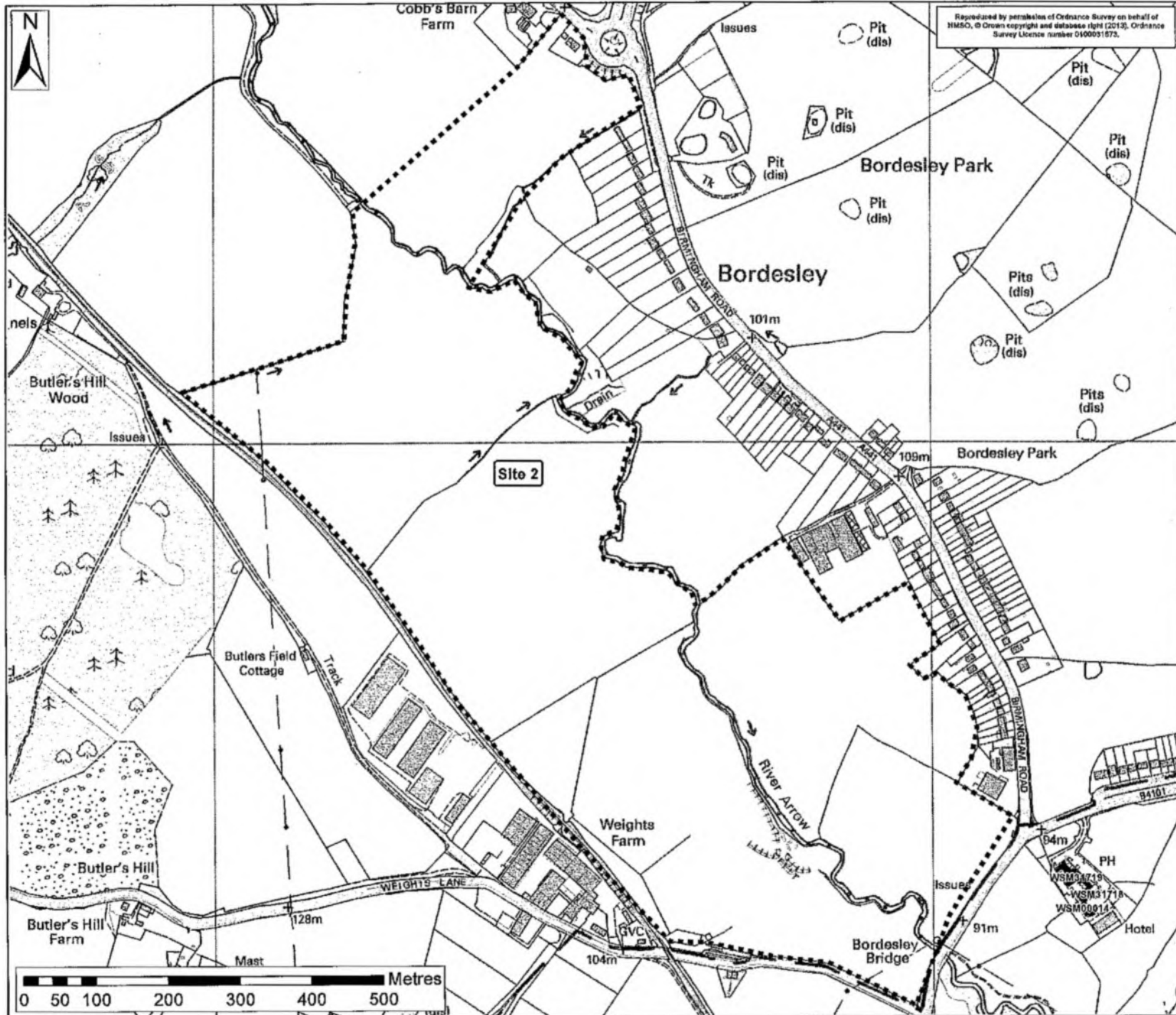
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Project:
Bordesley, Redditch

Drawing:
Site 1:
Designated Cultural Heritage Features

Drawn By: MPC	Date: 16/09/2013
Checked By: TC	Date: 16/09/2013
Approved By: JG	Date: 16/09/2013
Drawing No.: Figure 1	Revision: 1
Drawing Scale: 1:5,000	Plot Scale: 1:1



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Legend

- Redditch Expansion Area
- Listed Buildings
- Scheduled Monuments

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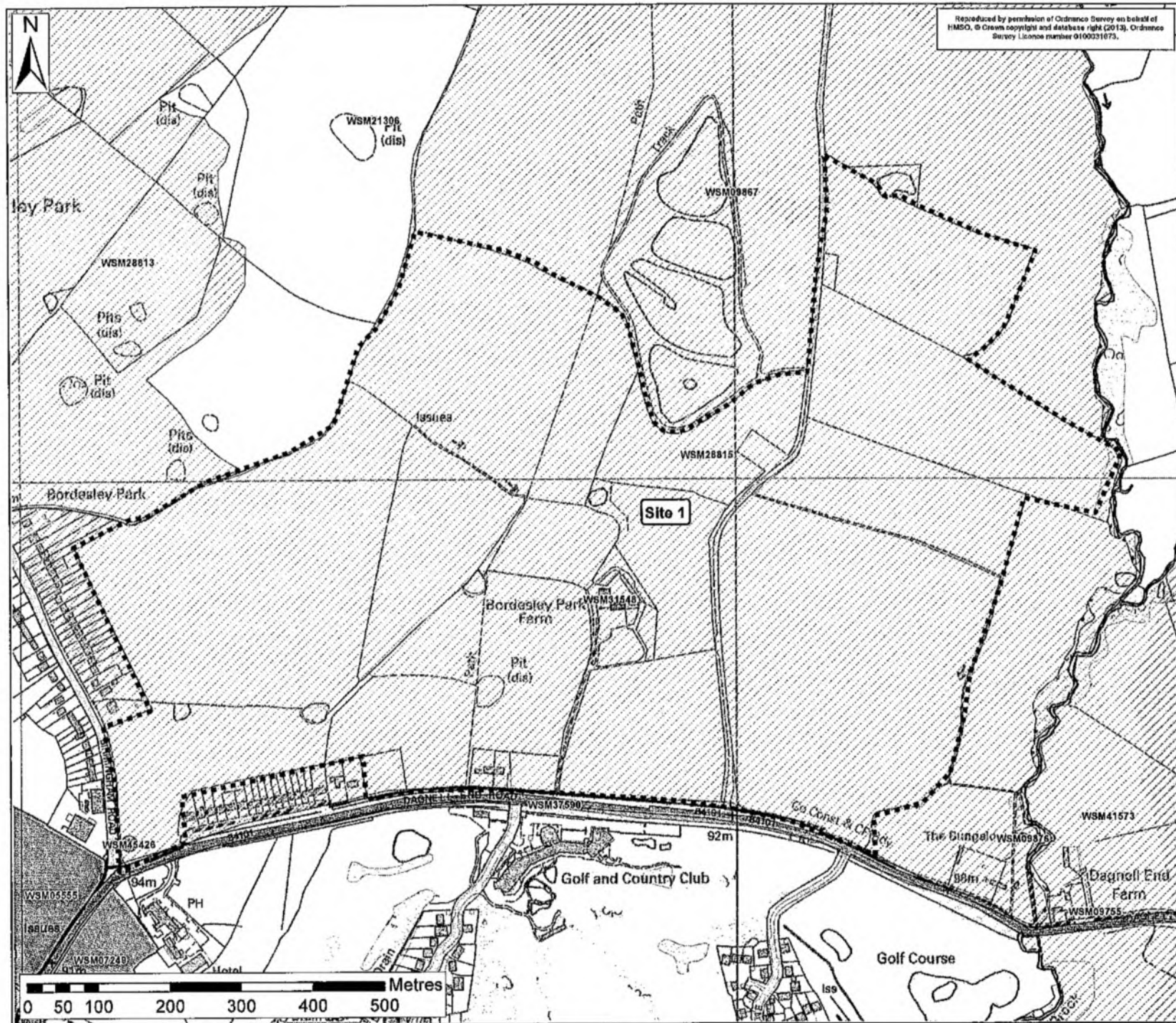
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Project: Bordesley, Redditch

Drawing: Site 2: Designated Cultural Heritage Features

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Approved By: JG	Date: 16/09/2013
Drawing No: Figure 2	Revision: 1

Drawing Scale: 1:5,000 Plot Scale: 1:1



- Legend**
- Redditch Expansion Area
 - Monuments
 - Parks and Gardens

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Bordesley, Redditch

Drawing:
Site 1:
Non-Designated Cultural Heritage
Features

Drawn By: NPC	Date: 16/09/2013
Checked By: TC	Date: 16/09/2013
Approved By: JG	Date: 16/09/2013

Drawing No.: Figure 3	Revision 1
-----------------------	---------------

Drawing Scale: 1:5,000 Plot Scale: 1:1

Legend

Redditch Expansion Area
Historic Landscape Character

- HWR14204
- HWR14208
- HWR14393
- HWR14423
- HWR14424
- HWR14426
- HWR14427
- HWR14428
- HWR14431
- HWR14432
- HWR14456
- HWR14779
- HWR15129
- HWR4125
- HWR4126
- HWR4131
- HWR4133
- HWR4135
- HWR4203
- HWR7143
- HWR7144
- HWR7147
- HWR7148
- HWR7149
- HWR7151
- HWR7152

GALLAGHER

Halcrow
A CH2M HILL COMPANY

Project:
Bordesley, Redditch

Drawn by:
Sites 1 and 2:
Historic Landscape Character

Drawn By:	MPC	Date:	16/09/2013
Checked By:	TC	Date:	16/09/2013
Approved By:	JG	Date:	16/09/2013
Drawing No. / Figure	1	Revision	
Drawing Scale:	1:10,000	Plot Scale:	1:1

