Document data

Client	CEG Ltd
Project	Oughtibridge Mill
Report title	Oughtibridge Mill, Sheffield. Ecological Appraisal
File reference	689_Report_chca
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Issue date	21 March 2016

Revision tracking

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Reviewed	Rich Hall	Senior Ecologist	10 February 2016
Revised	Carlos Abrahams	Technical Director	21 March 2016

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Report Contents

1 Key Issues

1.1 The Proposed Development

1.1.1 CEG wishes to progress a planning application to develop the mill complex at Oughtibridge Mill, Sheffield (referred to below as 'the Site'), which consists primarily of large areas of hard-standing and industrial buildings. CEG proposes to develop up to 300 residential units on the site.

1.1.2 The proposed development could potentially result in impacts on the ecological features of the site and/or its surroundings. This report details the results of our ecological assessment of the site and describes features of ecological value found to be present. It also provides advice to help minimise impacts, thereby enabling the development to comply with current nature conservation policy and legislation.

1.2 Ecological Receptors

1.2.1 The ecological assessment, set out in detail below, has found a moderate level of nature conservation interest on the site.

1.2.2 The key ecological receptors identified are the Local Wildlife Sites and ancient woodland neighbouring the Site, and the presence of bat roosts within some of the buildings on Site.

1.3 Required Actions

1.3.1 Management plans will need to be put in place to ensure issues such as pollution prevention, invasive plant species and other appropriate mitigation as advised in Section 5: Recommendations.

1.3.2 Buffer zones will need to be established to protect the integrity of Wharncliffe Woods, and any new footpath along the River Don will be carefully planned to minimise potential ecological impacts.

1.3.3 Further survey will also be required to advise the specifics of this mitigation, including that for bats on several buildings; the data from these surveys will also feed into a European Protected Species licence.

1.4 Conclusions

1.4.1 Overall, the conclusion of this report is that there will be a net gain in biodiversity resulting from the development, as long as appropriate mitigation is provided and all recommendations of this report followed.

2 Methodology

2.1 Site Description

2.1.1 The Oughtibridge Mill site is located on Langsett Road North, Oughtibridge, Sheffield. The central Ordnance Survey grid reference is SK302940.

2.1.2 The site is bordered to the south by Langsett Road North. The River Don bisects the site from west to east, and is flanked with scattered trees and low ground-flora along its banks. Wharncliffe Wood borders the site to the north and east, with buildings located on Langsett Road North forming the western-most extremity of the site.

2.1.3 The site is approximately 11.5ha of disused industrial buildings and hard-standing, with the River Don winding through the site, and smaller areas of tall ruderal vegetation, scrub, rubble patches from demolished buildings and bare ground.

2.1.4 The proposed development is the "demolition of existing buildings and structures and erection of residential development (Use Class C3) with means of site access including a new vehicular bridge and a pedestrian/cycle bridge across the River Don, and associated landscaping and infrastructure works".

Figure 1. Site Location with approximate red-line boundary

2.2 Study Scope

2.2.1 Baker Consultants was commissioned by the client to undertake the following works in relation to the Site:

1. A desk-based study including written consultation with consultees and searches of online databases to identify statutory and non-statutory designated sites of nature conservation importance and records of protected and/or notable species;

2. An Extended Phase 1 Habitat survey to record the nature and extent of vegetation and habitats within and adjacent to the Site, with an appraisal of the suitability of the habitats present to support protected or notable species or assemblages;

3. An inspection of the buildings for evidence of bat roosts, through daytime internal and external surveys for the presence of bats, such as droppings, feeding remains and live/dead bats;

4. An assessment of the buildings for their potential to support barn owl roosts or nest sites, through a daytime internal and external search for the presence of barn owls such as droppings, feeding remains, pellets and live/dead barn owls;

5. Additional surveys to establish the potential impacts of increased public access to the river corridor and woodland areas. Targeted surveys for the Wharncliffe Woods habitat, otter and water vole and invasive species were undertaken subsequent to the initial Extended Phase 1 Habitat survey. The results of these additional surveys are included within this report.

2.3 Surveyor Qualifications and Experience

2.3.1 Technical Director Carlos Abrahams B.Sc. Pg.C. M.Sc MCIEEM has 25 years experience in ecology and nature conservation, with 15 years in consultancy.

2.3.2 Senior Ecologist Rich Hall B.Sc MCIEEM has over nine years of experience as a professional ecologist, and is a Natural England Class 2 licenced bat worker (2015-14882-CLS-CLS). He is also licenced by Natural England to inspect barn owl nests (CL29/00056).

2.3.3 Senior Ecologist Matt Cook B.Sc. MCIEEM has been a professional ecologist for over seven years and has been licensed by Natural England to carry out professional bat surveys for over four years. Matt holds a Natural England Level 3/4 Class professional survey licence for bats (2015-10167-CLS-CLS / 2015-10176-CLS-CLS) and a British Trust for Ornithology (BTO) nest inspection licence for barn owls.

2.3.4 Senior Ecologist Mark Woods B.Sc. MCIEEM CEcol has more than 25 years experience of working in the ecology sector and has over ten years experience of providing ecology survey and assessment for the commercial sector.

2.3.5 Ecologist Courtenay Holden B.Sc. GradCIEEM has over three years of consultancy experience, and is considered appropriately qualified to complete the required survey to a good standard.

2.3.6 Ecologist Jake Robinson B.Sc. ACIEEM has over five years of consultancy experience and is a mammal specialist.

2.4 Desk Study

2.4.1 A data search was undertaken for records of protected and priority species in the UK, locally important species of conservation concern and statutory and non-statutory designated sites of nature conservation interest. Data was gained through the sources listed in Table 1 below:

Table 1. Desk Study Data Sources.

Organisation/source	Data sought	Search area
Natural England (website) and Multi-Agency Geographic Information for the Countryside (website)	Statutory designated sites of nature conservation importance.	2km
Local Biological Records Centre	Non-statutory designated sites of nature conservation and records of protected/notable species.	2km

2.5 Field Survey

Extended Phase 1 Habitat Survey

2.5.1 A Phase 1 Habitat Survey was carried out by Senior Ecologist Rich Hall, assisted by Ecologist Courtenay Holden, on the 18th November 2015. The vegetation types and habitats present were described and mapped during a walkover of the site, using the standard published guidelines for Phase 1 Habitat survey (JNCC, 2010). Features of particular interest were recorded as Target Notes (TNs).

2.5.2 In addition, the habitats within the site and surrounding land were appraised for their suitability to support protected or notable species, or assemblages that could be sensitive to the development proposals, in accordance with 'Guidelines for Baseline Ecological Assessment' (IEA, 1995).

2.5.3 The protected and notable habitats and species referred to above include those listed under the Wildlife and Countryside Act 1981 (as amended); The Conservation of Habitats and Species Regulations 2010; and Species and Habitats of Principal Importance in England/Wales, listed under the Natural Environment and Rural Communities (NERC) Act 2006.

2.5.4 During the survey, consideration was given to features such as potential breeding bird habitat, bat roosting locations, badger sett locations, reptile habitat and the suitability of water features for amphibians and riparian mammals.

2.5.5 Exotic and invasive species, such as Japanese knotweed *Fallopia japonica* and giant hogweed *Heracleum mantegazzianum*, were noted by the surveyor if present. These species can have implications for development activity and human health respectively.

2.5.6 Weather conditions during the survey were light wind (BF3), with showery periods. The temperature was 10C, with over 80% cloud cover throughout the survey.

2.5.7 The survey approach taken is designed to identify broad habitat types at a site and the potential of these habitats to support notable/protected species, and to assist in providing an overview of the ecological interest at a site. It is the most widely used and professionally recognised method for initial ecological site appraisal.

Bat Roost Assessment

2.5.8 An external bat roost inspection of the buildings in the survey area, and an internal inspection of some of the buildings, was undertaken by Rich Hall and Courtenay Holden on the 18th November 2015, with a subsequent internal inspection of the remaining accessible buildings by Matt Cook and Courtenay Holden on the 25th November 2015. Weather conditions during the first survey were cool, breezy and wet, and cool and dry with a slight breeze during the second survey.

2.5.9 The habitats within the survey area were assessed for their potential to support roosting bats in accordance with current guidance (BCT, 2012). This involved inspection of features such as mature trees and buildings for evidence indicating the presence of roosting bats or for features with the potential to provide bat roost habitats.

2.5.10 Evidence indicating the presence of bats would normally include droppings, characteristic staining, scratch marks or the presence of live or dead bats. Buildings are searched externally and internally for cavities in masonry, the eaves or roof spaces that might offer attractive roosting opportunities for bats.

Barn Owl Nesting Assessment

2.5.11 During the internal inspections for bats, the buildings within the survey area were also assessed for their potential to support nesting barn owl *Tyto alba.* This involved a ground-based inspection of ledges and potential nest/roost spaces within buildings on site, and a search made for evidence of nesting or feeding, such as feathers, droppings and regurgitated pellets.

Public Access Assessment

2.5.12 An assessment of the River Don corridor and Wharncliffe Woods was carried out in order to assess the two locations for potential impacts from increased public access into areas outside the Site boundary. An inspection of the river banks, site boundary and woodland adjacent to the site was carried out by Mark Woods and Courtenay Holden on the 21st December 2015. Weather conditions during the first survey were wet, the temperature was 8C, and there was a slight breeze.

2.5.13 An additional detailed woodland survey was undertaken by Carlos Abrahams on the 28th January 2016. Weather conditions were calm, and clear, with temperatures of 2-9C, and no wind.

River Survey

2.5.14 Ecologists Courtenay Holden and Jake Robinson completed an assessment of the river corridor for invasive species, otter and water vole field signs on the 28th January 2016.

2.5.15 The standard survey methodology for otter involved observing and recording the following field signs: spraints, food remains, rolling places, slides down riverbanks, footprints or paths, and shelters (either holts or couches).

2.5.16 Standard methods for surveying water vole were employed (Strachan & Moorhouse, 2006). Any evidence of water vole presence was recorded, including sightings of water voles, sounds of them entering water, latrines showing discrete piles of droppings, tunnel entrances (above and below water), cropped 'gardens' or 'lawns' around tunnel entrances, feeding stations of chopped vegetation, paths at waters edge, runs in the vegetation and footprints in the mud.

2.5.17 Non-native invasive plant species found along the river corridor were photographed and a note of their grid reference was made.

Badger Survey

2.5.18 During the woodland survey by Carlos Abrahams, a thorough check for badger field signs was made from the site boundary and 30m into the adjacent woodland in accordance with published guidance (Harris *et al*., 1989). This

involved walking across the survey area, looking for signs of badgers, including their setts. Signs are characteristic and include tufts of hair caught on barbed wire fences, conspicuous badger paths, footprints, small excavated pits or latrines in which droppings are deposited, scratch marks on trees, and snuffle holes, which are small scrapes where badgers have searched for insects and plant tubers.

3 Results

3.1 Study Limitations

3.1.1 It is important to note that, even where data is returned for a desk study, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest since the area may simply be under-recorded. Equally, due to the level of recording, some species should be considered more frequent than indicated by the records provided within a desk study.

3.1.2 Whilst every effort was made in the field survey to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment. Also, natural and semi-natural habitats are subject to change, species may colonise the site after surveys have taken place and results included in this report may become less reliable over time.

3.1.3 Although access to the River Don was difficult due to steep banks and fast-flowing sections, significant lengths were accessible on foot, and with the assistance of binoculars all sections of both banks were visually assessed.

3.1.4 Internal access to some of the buildings was not possible at the time of survey, but an external survey was still carried out in these cases.

3.1.5 The surveys were carried out between November and January, which is a sub-optimal time of year for most species groups (such as breeding birds), and potentially renders identification of plant species more difficult. However it is still possible to assess a site's conservation potential and to identify broad habitats. Therefore the time of year was not considered a significant constraint for the aims of this study.

3.1.6 The results of the Phase 1 and targeted surveys are provided together in the following sections by habitat type and species, with additional sections relating to the bat roost and barn owl assessments.

3.2 Designated Sites

3.2.1 The desk study provided information on the designated sites listed below in Table 2. Appendix 1 shows a map of these sites, provided by SBRC.

Table 2. Designated Sites

Name	Status	Distance / direction
Wharncliffe Wood	Ancient Replanted Woodland & Ancient Semi-natural Woodland	0m
Wheata Woods	LNR	770m E
Glen Howe	Ancient Semi-natural Woodland	530m SW
Green Lane Spring	Ancient Replanted Woodland & Ancient Semi-natural Woodland	1,200m E
Lumb Bush/Coumes Wood	Ancient Replanted Woodland	1,200m SW
Wilson Spring Wood	Ancient Semi-natural Woodland	1,300m SE
Beeley Wood West	Ancient Semi-natural Woodland	1,500m SE

3.3 Habitats

3.3.1 Scientific names are given after the first mention of a species, thereafter, common names only are used. Nomenclature follows Stace (1997) for vascular plant species.

Habitats Overview

3.3.2 The habitat types recorded on site during the Phase 1 Habitat survey are described in turn below. Those of highest value, listed as Habitats of Principal Importance for Conservation under the NERC Act, are shown in Table 3.

Table 3. Important Habitat Types Recorded on Site

Phase 1 Broad Habitat Type	Equivalent Habitat of Principal Importance	Note/location
Cultivated/Disturbed Land	Open mosaic habitats on previously developed land	New bare ground at west of site
Open Water	Rivers	River Don runs through the site
Woodland and Scrub	Lowland mixed deciduous woodland	Ancient woodland to north of site

Hard-standing and Buildings

3.3.3 The majority of the site consists of hard-standing and disused mill buildings, either of stone and slate construction or more modern brick/concrete and pre-fabrication steel composition.

3.3.4 The hard-standing comprises large areas of vehicle access, parking, loading and open-air storage on site, with the inclusion of the footprints of demolished buildings (except where target-noted otherwise). Photographs 1 and 2 below

provide examples of hard-standing areas. Hard-standing is of negligible value to wildlife, and as such is not discussed in this report past this section.

Photograph 1. Hard-standing south of building B4, with woodland beyond

Photograph 2. Hard-standing in front of building B19, viewed from the bridge

3.3.5 Building descriptions and images are provided in the bat roost assessment of this report, below.

3.3.6 Several structures have been recently demolished on site, and areas of building rubble now remain in some areas (TN4, TN14, TN15) (see Photographs 3 to 5). A small scrub and rubble area next to hard-standing and the north bank of the River Don, to the west of the bridge, was target-noted as TN3 (Photograph 6). Its proximity to the river, wooded areas and exposed patches of ground make it potentially suitable for reptile basking and refuge areas, as is the case for most of the other patches of rubble on site.

Photograph 3. Brick rubble pile next to derelict brick structure B4, at TN4

Photograph 4. Stone rubble patch next to the River Don and B20, at TN14

Photograph 5. Rubble area where brick and stone buildings north of B18 have been recently demolished (TN15)

Photograph 6. Rubble and scrub area at TN3, next to the River Don

3.3.7 Rubble and exposed rock forms a long narrow habitat (TN6), overgrown with tall ruderal vegetation, at the northern site boundary where hard-standing meets the edge of Wharncliffe Wood. The exposed rocks and scrubby or ruderal ground-flora form a bank in some areas of >2m in height, and is

south/south-west-facing. These areas are in a sunny spot and close to cover, with open areas for basking being available (see Photographs 7 and 8 below).

Photograph 7. Tall ruderal vegetation (TN6) covers rubble and made-up ground at the boundary with Wharncliffe Wood

Photograph 8. A Rock and scrub bank adjacent to woodland and hard-standing at TN6

Woodland within the Site

3.3.8 Wharncliffe Wood (TN7) meets the northern and eastern boundaries of the site, and consists of young self-set or replanted (plantation) trees and sporadic stands of conifer, at the woodland edge.

3.3.9 Within the perimeter fencing, the woodland edge strip is approximately 10-30m wide to the fence line (Photograph 9). The tree canopy has a straight-grown and open structure, without a dense understorey. The composition is similar to woodland outside the fence and is mostly young beech *Fagus sylvatica* standards, silver birch *Betula pendula*, larch *Larix decidua* and some Scot's pine *Pinus sylvestris*. The ground-layer consists of some low bramble *Rubus fruticosus* agg. with standing and fallen birch deadwood showing bracket fungi.

3.3.10 Running alongside the inside of the perimeter fence is an access track/fire-break (see Photograph 10).

3.3.11 To the south of the site entrance, along Langsett Road North, a strip of broad-leaved woodland forms a steep bank approximately 500-600m in length. An additional bank of woodland is situated to the north of the site entrance, also following Langsett Road North for approximately 250m. The strip is separated from the road by a long narrow area of car-park hard-standing, a patch of ephemeral / short perennial vegetation and a row of *Leylandii spp.* trees.

3.3.12 The site includes a long strip of sparse broad-leaved woodland along the northern-most access route to loading bays at the eastern end of the mill's largest industrial building (B21) (see Photograph 11 below). It mainly consists of young trees and scrubby ground flora.

3.3.13 A row of *Leyandii* trees demarcates the edge of the site's car park to the west of the site entrance, off Langsett Road North.

Photograph 9. A view of the woodland (TN7) just inside perimeter fencing

Photograph 10. Fire-break at the perimeter fence-line

Woodland outside the Site

3.3.14 The northern extent of Wharncliffe Wood (TN7), adjacent to the Site, but outside the perimeter fencing, is predominantly beech and birch secondary woodland, with some oak *Quercus robur*. Trees are up to c.30cm diameter. Bluebell *Hyacinthoides spp*. is frequent in the ground layer (see Photograph 12). The trees are straight grown and of an open structure, and the woodland floor during the survey was largely leaf litter, dead wood, some perennial *Holcus spp*. grass and scattered gritstone rocks.

3.3.15 Other broadleaved woodland tree species include sycamore *Acer pseudoplatanus*, pedunculate oak, alder *Alnus glutinosa*, holly *Ilex aquifolium*, elder *Sambucus nigra*, and young ash *Fraxinus excelsior*, with some ivy *Hedera helix*.

3.3.16 A stand of larch and Scot's pine is located within Wharncliffe Woods (TN7) to the northeast of the site and is split by a power-line way-leave. Low bramble is abundant under trees, with bracken growing through the way-leave. Trees are young, tall and thin, occasionally up to 35cm diameter, and deadwood is evident in standing/fallen wood and wind-throw. Ground-flora consists of honeysuckle *Lonicera periclymenum*, occasional ferns and holly, some small patches of wavy hair grass *Deschampsia flexuosa*, soft creeping grass *Holcus mollis* and a variety of mosses.

3.3.17 Patches of bramble extend from the fence line into the woodland. Ground flora was largely absent at the time of survey, but some specimens were observed at the woodland edge bramble patches; woodsage *Teucrium scorodonia*, wall lettuce *Mycelis muralis*, wood-rush *Luzula spp*., wild strawberry *Fragaria vesca*, tutsan *Hypericum androsaemum* and buttercup *Ranunculus spp*.

Photograph 11. Small buildings along a strip of woodland, with Wharncliffe Woods (TN7) in the background

Photograph 12. Bluebell showing through in Wharncliffe Woods (TN7)

3.3.18 A number of scattered trees (Photographs 20 and 21) are located along both sides of the banks of the River Don until it meets and follows Langsett Road North, where the south bank tree cover becomes denser and much more resembles Usher Wood found to the south of the road. Scattered tree species

include ash, sycamore, silver birch, pedunculate oak, pines *Pinus* spp., and alder.

Photograph 20. Scattered trees along both banks of the River Don

Photograph 21. Scattered trees along both banks of the River Don

Scrub

3.3.19 Four small patches of scrub (TN3) were found on site, dominated by bramble. and young butterfly bush *Buddleja davidii*. All patches are located adjacent to woodland edge or riparian habitat, and potentially provide suitable foraging habitat and cover/nesting for a small mammals, reptiles and birds.

Running Water

3.3.20 The River Don (TN2) bisects the site (see Photographs 13 and 14), running immediately to the south of buildings B19, B20 and B21, and parallel with Langsett Road North and a strip of mixed semi-natural woodland, as it flows east. Both banks of the river are frequently reinforced with stone/concrete and there are a number of large dilapidated bridge support structures along its length (TN9).