Preliminary Ecological Appraisal

Greenside Mills, Skelmanthorpe

Report reference: R-2586-01
May 2016

Report Title:	Greenside Mills, Skelmanthorpe
Report Reference:	R-2586-01
Written by:	Rob Weston BSc MSc MCIEEM Technical Director
Technical review:	Sam Kitching BSc (Hons) Grad CIEEM Ecologist
QA review:	Victoria Baker BSc (Hons) MSc Graduate Ecologist
Approved for issue	Rob Weston BSc MSc MCIEEM Technical Director
Date	20.05.16

The information which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions. This report does not constitute legal advice.

Brooks Ecological
Grounded advice

Unit A, 1 Station Road, Guiseley, Leeds, LS20 8BX
Phone: **01943 884451**
01943 879129
Email:admin@brooks-ecological.co.uk
www.brooks-ecological.co.uk
Registered in England Number 5351418

smas worksafe consultant
www.smasltd.com
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Non-technical Summary

Purpose of report

This report is produced to present an initial assessment of the potential ecological constraints and opportunities relating to a Site known as Greenside Mills; to inform the Site's potential for development.

The report has been prepared to advise the client of potential ecological constraints and opportunities, in preparing an application for planning permission.

This survey and report will require the support of further surveys / reports.

Methodology

The report is based on a Desk Study of designated wildlife sites and records of protected or notable species, and an extended Phase 1 Habitat Survey carried out in May 2016.

Findings Key-Points

The Site is suitable for the proposed development.

However, the Site presents potential roost sites and its level of use by bats will need to be clarified prior to any works.

Due to the level of use of the Site's buildings by nesting birds there will be a constraint on the timing of clearance and demolition and mitigation should be provided in relation to the loss of nesting.

Introduction

1. Brooks Ecological Ltd was commissioned by Paramount Retail Group to carry out a Preliminary Ecological Appraisal of land at Greenside Mills, Saville Street, Skelmanthorpe SE 233 109.

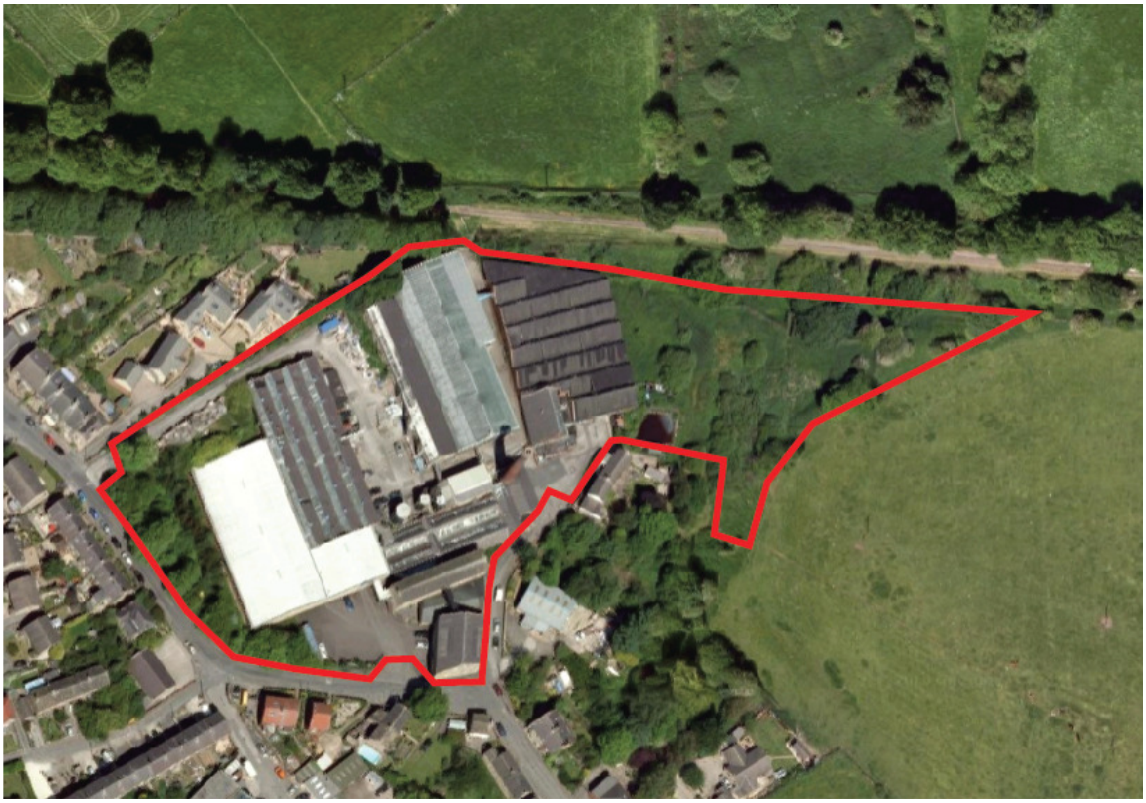
2. This report is produced with reference to British Standard BS42020 'Biodiversity Code of Practice for Planning and Development' and the CIEEM (2013) Guidelines for Preliminary Ecological Appraisal.

Scope

3. The application site 'the Site' is a complex of old Mill buildings on the northern extent of the town of Skelmanthorpe. It is defined in figure 1 below.

4. The assessment uses a 2km area of search around the Site for records of protected and notable species and locally or nationally designated wildlife sites.

Figure 1 The Site



Proposals

5. Proposals for the Site are not yet known but are likely to involve the building of c.50 new homes. Surveys have been commissioned at such a time that they will be able to inform detailed proposals for the Site.

Site context

6. The Site overlies the surface geology of the Pennine Flags and Lower Coal Measures, which are likely to lead to neutral to slightly acidic conditions locally. This said, the Site has been heavily influenced by its former use, with all habitats present representing the colonisation of built development or made ground.

7. The Site is bounded to the south and west by the residential development of Skelmanthorpe, to the east by agricultural pasture and to the north it is separated from further pasture land by the Kirklees Light Railway.

8. Beyond the landscape is characterised by rolling mixed agricultural land interspersed with small woodland and areas of parkland.

Wildlife corridors

9. The only corridor influencing the Site is that formed by the Kirklees Light (narrow gauge) Railway bordering it to the north. This is tree bordered and links the Site with open countryside to the east and west and designated sites such as Blacker Wood and Park Gate Dyke. The Dearne Valley is found some 1.5km to the south of the Site but is not well linked to it.

Figure 2 Analysis of wildlife corridors and higher value habitat in relation to the Site.
Orange hatching denotes high value habitat, white and blue line shows wildlife corridors.

Water bodies

10. There are two waterbodies within the Site boundary.

    - A brick sided former dying pit to the immediate east of the mill building.
    - An area where a small watercourse passing through the east of the Site floods into what appears to be the base of a former settling pool - presumed to be part of the mills former operation. This creates an area of damp unconsolidated sediment with ephemeral pools and a flowing watercourse within it.

11. There are a further two areas of standing water within 500m of the Site visible on mapping.

    - A garden pond some 340m north of the Site, from which it is separated by a large expanse of open pasture, a busy road (Station Road) and a flowing watercourse (Baildon Dike).

- A recently created field pond and an ornamental garden pond in property c.400m west of the Site and separated from it directly by the development of Skelmanthorpe, but with less direct links along the Kirklees Light Railway line.

Designated Sites

Statutory Designations

12. There are no statutory designated sites within a 2km radius of the Site.

SSSI Impact Risk Zones (IRZs)

13. The site does not fall within any IRZ.

Non-Statutory Designations

14. There are five locally designated sites within 2km of the Site.

- Blacker Wood Local Wildlife Site (LWS) is c. 0.3m east.
- Park Gate Dyke LWS and Site of Wildlife Significance (SWS) is c.7km east
- Hob Royd Shrogg and Miry Greaves Shrogg LWS is c.1km southeast
- High Bridge Wood LWS is c. 1.3km southeast
- Wither Wood SWS is c. 1.7km southwest.

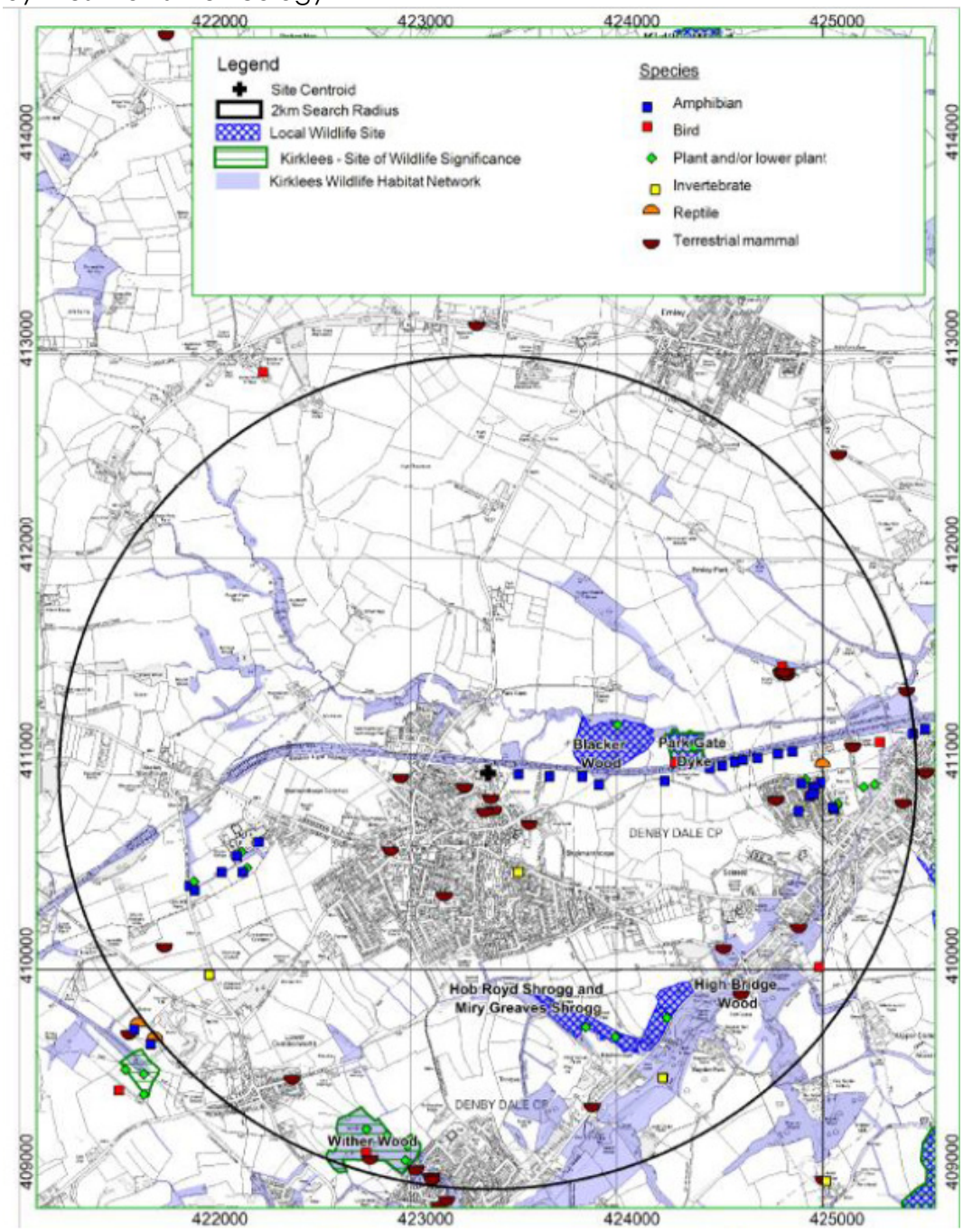
15. As can be seen in the below figure, only two of the local designations are connected to the Site via the Kirklees Habitat Network. In addition, given the lack of shared habitat types, development here is considered unlikely to impact on any of the surrounding locally designated sites.

Kirklees Wildlife Habitat Network

16. The Kirklees Light Railway passing along the northern boundary of the Site forms part of the Kirklees Wildlife Habitat Network (see below figure). This continues for many miles to the east and west, forming connections to areas of woodland and other suitable semi- natural habitat.

17. Development of the Site is considered unlikely to impact on the railway's function as part of a landscape scale wildlife corridor and in fact provides the opportunity for its enhancement. This could be achieved though the planting of native trees and scrub along the Sites northern boundary.

Figure 3 Locally designated sites and Kirklees Wildlife Habitat Network provided by West Yorkshire Ecology



Habitats

Method

18. The survey was carried out during May 2016[1] and followed Phase 1 habitat survey methodology (JNCC, 2010).

Limitations

19. The vast majority of the Site was accessible with exceptions being the densest bramble scrub within land in the eastern extent of the Site. This accounts for no more than 10 % of the Site by area.

20. Sufficient time was afforded the surveyor to carry out the survey. The survey was not constrained by poor weather.

Results

21. The Site's use as a mill has apparently declined over the years with the dying pit and settling pond to the east having been abandoned some time ago, now being overgrown by competitive vegetation and scrub. The more modern elements of the mill have been in use until 2015.

22. The following habitats were identified within the Site and on its immediate boundaries:

- Built development
- Abandoned landscaped areas
- Scrub and competitive vegetation on made ground
- Standing water
- Flowing water

Built development

23. Much of the Site is occupied by a complex of former mill buildings and associated hard-standing. These have potential to support bat roosts and several nesting birds were observed around the building during survey. Otherwise this area provides little in

[1] This Report has been prepared during May 2016 following a visit to the site in May 2016 and our findings are based on the conditions of the site that were reasonably visible and accessible at that date. We accept no liability for any areas that were not reasonably visible or accessible, nor for any subsequent alteration, variation or deviation from the site conditions which affect the conclusions set out in this report.

the way of habitat with vegetation being limited to ephemeral species such as smooth sow thistle (Sonchus oleraceus), dandelion (Taraxacum vulgare agg.), red valerian (Centranthus ruber), Buddleija, yellow loosetrife (Lysimachia vulgaris), creeping bent (Agrostis stolonifera), soft brome (Bromus hordaceus) and honesty (Lunaria annua) alongside common mosses such as Kindbergia praelonga and Brachythecium rutabulum and saplings of ash (Fraxinus excelsior), goat willow (Salix caprea) and sycamore (Acer pseudoplatanus) , growing on the less trafficked edges of hard standing areas.

24. The Site's buildings are described in consideration of their bat roost potential later in the report.

Figure 4

Typical view of the built development at the Site – showing vegetated hardstanding.

Abandoned Landscaped areas

25. In parts of the Site's old lawns, planting beds and screening belts have been left unmanaged.

26. Along the western flank of the Site is an area of former lawn which, whilst still supporting grasses such as perrenial rye grass (Lolium perenne) and red fescue (Festuca rubra (agg)) also present are colonising forbs such as bush vetch (Vicia sepium), creeping buttercup (Ranunculus repens), spanish bluebell (Hyacynthoides hispanica), cow parsley (Anthriscus syvestris) and common sorrel (Rumex acetosa), as well as sward forming mosses and saplings of maple (Acer sp.) and cherry (Prunus sp.).

27. This lawn area contains two larger mature trees - an ash and a sycamore.

28. Between this area and the modern factory unit (Building 8) to its east is an area of screen planting comprised of mixed species such as *Leylandii,* silver birch (Betula pendula.), pine (Pinus sp.), cherry (Prunus spp.), maple (Acer sp.) and spruce (Picea sp.). Ground flora in this area comprise ivy (Hedera helix) and former mown banks closer the factory unit. A very small section of this bank at the south western corner of

the unit contains bugle (Ajuga reptans), hedge bedstraw (Galium mollugo), ox-eye daisy (Leucanthemum vulgare) and meadowsweet (Filipendula ulmaria) - assumed to represent the seeding of this area with wildflowers.

29. The former shrub borders to the north of Building 7 are now overgrown with competitive species such as false oat grass (Arrhenatherum elatius) and cocksfoot (Dactylis glomerata) but also provide a source for the spread of *Cotoneaster* horizontalis across the car park area.

Figure 5

Over grown lawn area to the west of building 8

Scrub and competitive vegetation on made ground

30. The land to the east of the mill compound appears to comprise made ground and tipped material surrounding an old dying pit and settling pool (now drawn down). This land has been colonised by a mosaic of dense competitive vegetation dominated by nettle (Urtica dioica) and greater willowherb (Epilobium hirsutum), dense bramble (Rubus fruticosus agg.) scrub and stands of goat willow (Salix caprea) and hawthorn.

Standing water

31. The only standing water habitat on the Site is that within the former dying pit to the east of the mill. This is a deep brick lined pond surrounded by other brick lined channels also holding water and old machinery. The nature of the pond means that any emergent vegetation is limited to a few stems of greater willowherb in one corner, and some bankside figwort (Scrophularia nodosa). The only floating vegetation present at the time of survey being rafts of filamentous algae.

Figure 6

Competitive vegetation and scrub in the east of the Site

Figure 7

The old dying pit

Flowing water

32. A small stream issues in a business park to the south of the Site, this then flows through a mix of culverts and open channels to pass through an overgrown channel in land within the east of the Site. Much of this course is through what used to be a detention basin or settling pond. It appears that water levels in this feature have fallen and the basin has infilled with sediment, it now presents a large area of wet unconsolidated silt colonised by reedmace (Typha latifolia) and goat willow (Salix caprea).

33. At the time of survey this area was drawn down and consisted of exposed silt over which flowed the watercourse, this being impounded behind an outfall against the Site's northern boundary where the watercourse supports water starwort (Callitriche sp.) and is scrambled over by bittersweet (Solanum dulcamara). Water leaves the Site at this point down a steep bank and into the deep drain which separates this part of the Site from the Kirklees Light Railway.

Summary

34. The Site presents a small variety of common and ubiquitous habitats; of which they are poor quality examples. They do not in themselves present any constraint to the Site's proposed redevelopment.

Fauna

Bats

35. Thirty two records were returned for within a 2km radius of the Site. The closest being a pipistrelle roost located 25m south of the Site. Many records were of bats seen in close proximity to the Site, including a noctule recorded in flight 72m south. All records were either of pipistrelle, noctule or brown long eared bats.

36. Scattered semi-mature and mature trees were located throughout the Site. One mature ash on the northern boundary was noted to have several shallow rot holes and branch scars, which could present a potential feature for roosting bats. This Ash was assessed to have low roosting suitability. All other trees were assessed as having negligible roosting suitability.

37. The Site contains 12 buildings in total, with an associated industrial chimney.

Building 1

38. This is one of the older original factory buildings with cavity stone walls and slate tile and glass north-light style roof. Parts of the walls have been replaced with corrugated metal panels and the roof with asbestos sheet. Gaps are present in the masonry and where the tiles still remain they have become displaced and lifted. Between the new corrugated sheets and wall, gaps are found. Timber windows and doors remain, and gaps have formed between these and the walls. Along the southern elevation, soffit boxes are fitted, again, gaps have formed in these. This building is assessed as having medium roosting suitability.

Building 2

This is a large factory building with brick parapet walls extending above a multi-pitched north-light roof. The roof is felted over corrugated metal making it generally unsuitable and inaccessible for roosting. On the southern and western elevation, wooden soffit boxes are found which are either well sealed or are missing and not providing any suitable enclosed, accessible roost space. As a result, this building is assessed as having negligible roosting suitability.

Figure 8

Building 1

Building 3

39. An original single storey mill building, with the tiles and verge in good repair and the guttering stopping access to the eaves. A small amount of mortar is missing under the ridge tiles providing potential access to space between this feature and the roof lining. This building is assessed as having low roosting suitability.

Building 4

40. Former sub-station building with brick walls and a flat felted roof which ties into the buildings behind. Wooden bargeboards and soffits are fitted, which are either well sealed or are missing. This building is assessed as having negligible roosting suitability.

Figure 9

Building 3 in the foreground and 2 in the background

Building 5

41. This building is a modern factory unit, comprised of brick and sheet steel curtain walls. The roof is pressed metal and metal roller doors are affixed to the front. No features suitable for roosting bats were found on this building and as such it is assessed to have negligible roosting suitability.

Figure 10

Building 5

Building 6

42. An original factory building with cavity stone walls and a double pitched north light roof with ceramic ridge tiles. A wooden gutter is fixed at the eaves, and between this and the wall top, gaps are present. Gaps were noted in the masonry across the building, which could also provide access into the wall cavity. This building is assessed to have medium roosting suitability.

Figure 11

Building 6

Building 7

43. This has the same structure as building 6, but with a multiple pitched north light roof and a brick coarse above the stone wall top. Bricks are missing in places, providing potential access into the roof space. Mortar was also missing under the ridge tiles. This building is assessed as having medium roosting suitability.

44. Two extensions were noted from this building - both having negligible roosting suitability. The first is a brick single storey extension with a flat roof from its eastern elevation. The second is a dilapidated building off the southern elevation, comprised of wooden panelled walls and an asbestos roof.

Figure 12

Building 7

Building 8

45. This building is a modern factory unit of brick and steel curtain wall construction. Most of the building provides no potential roost sites, but the southern elevation is a stone wall with pressed metal verge guards. Between these, gaps are frequent and presumably access the wall tops. A metal roller door with steel frame is present here, and gaps are found between this and the adjoining wall. This building is assessed as having negligible suitability, except for the southern elevation which is assessed as having medium roosting suitability.

Building 9

46. Original 3 storey factory building of stone construction with a double pitched Yorkshire stone roof. The building is potentially accessible to bats in several places; at the gable where there are gaps along the verge, gaps were noted in the masonry, around the wooden windows, under the ridge tiles, and between gaps between the tiles at the

eaves. This building is very accessible but is somewhat isolated within the factory Site, it is assessed as having moderate roosting suitability.

Figure 13

Southern elevation of building 8

Figure 14

Building 9

Building 10

47. This structure is a felt covered wooden walkway, situated above building 11. No features were present and is assessed as having negligible roosting suitability.

Building 11

48. A 2 storey original mill building, with a double pitched felted roof. It is situated between building 9 and 12 and as such has no eaves. Gaps were noted in the

masonry and above the air bricks in the southern aspect of the building but it is apparently otherwise well-sealed. This building is assessed as having low roosting suitability.

Building 12:

49. A 2 - 3 storey, original factory office building. The double pitched blue slate tile roof is in reasonable repair and sealed by stone coping at the verges, gaps were noted under the eaves and between the wooden windows and walls. This building is assessed as having medium roosting suitability.

Figure 15

Building 12

Chimney

50. Attached to building 1, is an industrial brick chimney with a blocked up fireplace at the base. The brickwork of the chimney is in good repair with no apparent crevice roosts. However, the chimney has some decorative masonry and vents near its top and is a tall structure difficult to scope out form the ground. It is assessed as having low roosting suitability.

Amphibians

51. There are several records of common frog, common toad, smooth and great crested newts in the Study Area but not from within the Site.

52. The land in the east of the Site represents good terrestrial habitat for amphibians, although the aquatic habitats within the Site are not likely to provide good breeding habitat due to the difficult access (for amphibians) to the former dying pit (pond 1 in

the plan below) and the flow of water and drying during breeding season of the impounded watercourse (not considered as a pond).

53. Records of the protected great crested newt (GCN) originate from two known populations. One at Shelly School over 1km from the Site and separated from it by the development of Skelmanthorpe, the other c1.3 km to the east and linked to the Site by the Kirklees Light Railway corridor. Given these distances from the Site, the only chance of GCN occurring within the Site would involve their breeding on Site or in other local ponds.

54. As stated above waterbodies well suited to amphibian breeding were not found on the Site.

55. Three others can be found on mapping within 500m. Pond 2 is a recently created feature in a field 400m to the west and separated from the Site by the built development of Skelmanthorpe. The pond is linked less directly along the Kirklees Light Railway, but is c.600m from the Site via this route. Terrestrial surveys carried out in respect of development in its adjacent field (Kirklees Planning Portal - Redrow Radley Fold 2012) found no evidence of GCN within that field or in nearby ponds on the Kirklees Light Railway corridor. It is not considered possible that amphibians potentially breeding in this pond could access or have any dependence on the Site. This pond, is not considered further in the assessment, other than in terms of the weight added by its previous assessment to our conclusions.

56. Pond 3 is an ornamental pond in the garden adjacent to pond 2 - for the same reasons it is not considered further in the assessment.

57. Pond 4 is a garden pond some 340m north of the Site, from which it is separated by a large expanse of open pasture, a busy road (Station Road) and a flowing watercourse (Baildon Dike). It is not considered possible that amphibians potentially breeding in this pond could access or have any dependence on the Site and it is ruled out of any further study on this basis.

Figure 8 Local waterbodies in relation to the site

58. As a precaution the best aquatic habitat on the Site (the old dying pit) has been tested for environmental DNA linking it to any presence of great crested newt. Negative results for this test have been returned – reinforcing the assessment outlined above.

59. Although the likely absence of great crested newt at the Site is concluded, it does still present potential terrestrial habitat, and potential (though sub-optimal) aquatic breeding habitat for other amphibian species. Consideration should be given to this group in plans / designs for the Site.

Birds

60. The Site provides potential nest sites for a range of common birds many of which will find nesting habitat within the old buildings as well as the scrub habitat and landscape planting. Records of birds returned for the area are few and are consistent with this assessment.

61. Blue tit, grey and pied wagtail, wood pigeon, jackdaw, collared dove, robin, house sparrow and blackbird were all seen to be nesting around the Site during the survey and it will be important to put in place precautions to avoid impacts on nesting birds and to provide mitigation for the loss of nesting habitat.

Badger

62. The Site provides potential habitat for badger, however no evidence of this species was encountered during the survey. Diggings and droppings associated with rabbit and fox were present.

63. Large parts of the land in the east of the Site are inaccessible to survey due to dense scrub and vigilance for large burrows should be applied during clearance of these areas.

Reptiles

64. The only record of reptiles in the area is one of grass snake over 100 years ago. The Site's dense cover of vegetation in any of the semi-natural green space would make habitat here sub-optimal for retiles. Given this, the further consideration of this group at the Site is not considered necessary.

White Clawed Crayfish

65. There is a single record over 1.6km form the Site and dating from 2003. The pond and watercourse at the Site are considered to provide very poor and recently formed potential habitat for this species and given this and the Site's separation from any known population their further consideration is not felt necessary.

Invasive Species

66. Only one species listed on Schedule 9 of the Wildlife and Countryside Act (1981) was found at the Site during the survey, although the lack of access to dense scrub in the east should be noted. This was *Cotoneaster hoizontalis* which is spreading form beds to the north of the mill buildings into the former car park.

67. *Cotoneaster hoizontalis* is listed on Schedule 9 of the Wildlife and Countryside Act (1981), making it an offence to cause or allow it to grow in the wild. Whilst listed on Schedule 9 of the Wildlife and Countryside Act (1981) (as amended). This species is not considered to present a significant risk in this location. Whilst we are not aware of specific guidelines relating to the disposal of this plant it would be a sensible precaution to dispose of it through burning on Site or disposal at approved landfill.

The plant, it berries or seeds should not be buried, mulched or added to rot piles as this is likely to lead to its spread.

Key Findings

68. The majority of the Site (standing water, abandoned landscaped area and scrub and competitive vegetation on made ground) are considered of low ecological value and their removal is not considered a constraint on development.

69. The buildings across the Site, do offer potential for roosting bats and nesting birds. Further information is required in this respect and will require further survey.

70. The mature and semi- mature scattered trees are also of ecological value. The proposals are still yet unknown but the project should be able to demonstrate the retention and protection of as many trees as possible alongside the planting of new landscape feature trees such as oak or lime.

71. Negative impacts on nearby wildlife sites or the KWHN would not be expected due to their distance and lack of functional linkage.

72. A section of the KWHN passed alongside the northern boundary; this provides the opportunity for ecological enhancement.

Ecological Enhancement

73. The requirement for development to make a positive contribution to biodiversity is clearly set out guidance such as the NPPF and BS:42020 - beyond mitigating or compensating any potential impacts.

74. The following themes provide opportunities for the proposals to deliver such a contribution:

- Incorporation of bird and bat boxes within many of the new builds or on any retained trees.

- The northern boundary could be planted with a range of native trees to shrub species, in order to strengthen the adjacent railway line's function as a wildlife corridor.

- A permanent pond feature could be produced in association with the small watercourse in the far east of the Site, this could be complimented by appropriate landscaping including the introduction of riparian / wetland vegetation.

Further ecological input required

75. Guidance provided by Clause 8 BS:42020 and ODPM circular 06/05 (2005) makes it clear that proposals and planning decisions should be informed by sufficient information - this is particularly the case in respect of European Protected Species (EPS).

76. Additional surveys will be required in terms of confirming and supporting this preliminary assessment. These are summarised in the tables below:

Table 1 Additional survey required **pre-planning**

Survey	Rationale	Timing
Bat emergence	Bats and their roosts are protected by law*. A minimum of two visits covering all buildings during the main summer period, which runs from the beginning of May to the end of August / early September.	May to August
Bat Activity with period of remote monitoring	Our approach to scoping bat activity surveys is set out in Appendix 4 of the report. Given the size of the Site and suitable habitats largely confined to the Site peripheries dedicated activity surveys are considered inappropriate, and instead the approach taken should involve a walkover of the Site following emergence surveys with periods of remote monitoring to collect an accurate baseline and characterise bats' use of the site.	Combined with bat emergence surveys - carried out between May and August

* Information on relevant legislation is provided in Appendix 5 of the report

77. Some further surveys will inform precautions taken during the Site's development, but will not impact on the layout or planning decisions. These are best carried out once timescales are known. They can be time constrained and information on those required at this Site is provided below to aid project planning.

Table 2 Additional survey required **pre-commencement**

Survey	Rationale	Timing
Nesting bird surveys	Destruction of active nests is prohibited by law* Survey will be needed prior to the Site clearance of vegetation if carried out during the period March - August (inclusive). This would allow and active nests to be identified and protected.	Immediately prior to clearance

* Information on relevant legislation is provided in Appendix 5 of the report

Issues to be addressed in layout or project design

78. The following features should be incorporated into the project in relation to the protection of ecology and compliance with policy and best practice.

Table 3 Issues to be addressed in layout or project design

Feature	Rationale / Comments
Design in Ecological Enhancement - see section above	Producing plans incorporating these can avoid the need for later conditions.

Appendices

1. Extended Phase 1 Habitat Plan
2. Explanatory Notes and Resources
3. Bat Activity Survey Rationale
4. Information on legislation / protection
5. eDNA results

References

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Appendix 1 – Extended Phase 1 Habitat Plan

Buildings

Hardstanding

Scrub and competitive vegetation

Abandondoned Landscaped areas

Detention basin

Standing water

Flowing water

Trees

Target notes:

1 Ash tree- low roost suitability

2 Cotoneaster

Brooks Ecological
Grounded advice

Unit A, 1 Station Road
Guiseley
Leeds
LS20 8BX
www.brooks-ecological.co.uk

T: 01943 884451

Project: Greenside Mills

Title: Extended Phase 1 Habitat Plan

Drawing Number: D-2586-01.1

Scale: Do not scale Date: May 2016

Revision:

Appendix 2 – Explanatory Notes and Resources Used

1. Site context

2. Aerial photographs published on commonly used websites were studied to place the site in its wider context and to look for ecological features that would not be evident on the ground during the walkover survey. This approach can be very useful in determining if a site is potentially a key part of a wider wildlife corridor or an important node of habitat in an otherwise ecologically poor landscape. It can also identify potentially important faunal habitat (in particular ponds) which could have a bearing on the ecology of the application site. Ponds may sometimes not be apparent on aerial photographs so we also refer to close detailed maps that identify all ponds issues and drains. We use Promap Street + scale maps for this purpose.

3. Designated Sites

4. A search of the MAGIC (Multi-Agency Geographic Information for the Countryside) website was undertaken. The MAGIC site is a Geographical Information System that contains all statutory (e.g. Sites of Special Scientific Interest [SSSI's]) as well as many non-statutory listed habitats (e.g. ancient woodlands and grassland inventory sites). It is a valuable tool when considering the relationship of a potential development site with nearby important habitats. In addition, information from the local record holders was referred to on locally designated sites.

5. *Functional linkage with off-Site habitats*

6. When assessing these we consider whether the Site could be functionally linked to them, considering links such as;

7. Hydrological links - is the Site upstream downstream, or could ground water issues affect it?
8. Physical links - is the site in close proximity and could it be directly or indirectly affected by construction and operational effects? Conversely it may be that despite proximity major barriers separate the two.
9. Recreational links - Do footpaths and roads make it likely that increased recreational pressure could be felt?
10. Habitat links - Is the site part of a network of similar habitat types in the wider area? These could be joined by linear corridors or could simply be 'stepping stones of habitat of similar form or function.

11. Kirklees Wildlife Habitat Network

12. The Kirklees Habitat Network affords a level of protection which should be a consideration for planning in relation to being able to maintain physical linkages for wildlife.

13. Method

14. Phase 1 habitat survey methodology (JNCC, 2010). This involves walking the site, mapping and describing different habitats (for example: woodland, grassland, scrub). The survey method was "Extended" in that evidence of fauna and faunal habitat was also recorded (for example droppings, tracks or specialist habitat such as ponds for breeding amphibians). This modified approach to the Phase 1 survey is in accordance with the approach recommended by the Guidelines for Baseline Ecological Assessment (IEA, 1995) and Guidelines for Preliminary Ecological Appraisal (CIEEM 2012).

15. Faunal appraisal

16. This section first looks at the types of habitat found on Site or within the sphere of influence of potential development, then considers whether these could support protected, scarce or NERC Act 2006 Section 41 species (referred to collectively as 'notable species').

17. Records of notable species supplied from a 2km area of search by West Yorkshire Ecology(WYE) are used to inform this appraisal.

18. We discuss further only notable species or groups which could be a potential constraint due to the presence of suitable habitat and their presence (or potential presence) in the wider area. We screen out and do not present accounts of notable species or groups which do not meet these criteria – in some cases it may be necessary to explain this reasoning.

19. Evaluation

20. In evaluating the site the ecologist will take into account a number of factors in combination, such as;

- the baseline presented above,
- the site's position in the local landscape,
- its current management and
- its size, rarity or threats to its integrity.

21. There are a number of tools available to aid this consideration, including established frameworks such as Ratcliffe Criteria or concepts such as Favourable Conservation Status. Also of help is reference to Biodiversity Action Plans in the form of the Local BAP and Section 41 of the NERC Act (2006) to determine if the site supports any Priority habitats or presents any opportunities in this respect.

22. The assessment of impacts considers the generic development proposals from which potential effects include:

- Vegetation and habitat removal
- Direct effects on significant faunal groups or protected species
- Effects on adjacent habitats or species such as disturbance, pollution and severance
- Operation effects on wildlife such as noise and light disturbance

23. Consideration is given to the Local Biodiversity Action Plan (LBAP), which for this site is the '**Kirklees Biodiversity Action Plan**'.

Species/group	**Habitat**
Floating water plantain	Semi-natural pasture
Great-crested newt	Lowland and upland meadows
Marsh helleborine	Lowland dry acid grassland
Northern wood ant	Blanket bog
Twite	Upland heathland
Watervole	Lowland heathland
	Upland oak woodland
	Lowland deciduous and other woodland
	Upland mixed ashwoods
	Wet woodland
	Arable field margins

Hedgerows
Rivers, riverine corridors and associated habitats
Reedbeds
Scrub and habitat mosaics on previously developed land

Appendix 3 – Bat Activity Survey Rationale

24. The Bat Conservation Trust Guidelines (BCTG) (Collins 2016) is now widely accepted as providing a basis and rationale for scoping and conducting bat surveys. It is acknowledged that the guidelines provide a wealth of background and are a very useful tool in standardising approaches to survey, it is also felt that an over reliance on some of the guidelines within this document can result in the provision of complicated surveys where they have significant consequences for the cost, or timescale of a large project, but could never deliver positives for bat conservation.

25. Taking the BCTG document as a whole, Chapter 2 helps the reader understand whether or not surveys are required, and that in the context of planning and development survey is required in relation to ensure;

26. the avoidance of legal offences, and;

27. the provision of a sufficient level of information - such that will allow the Local Planning Authority to make an informed decision on the proposals and their potential impacts on the Favourable Conservation Status (FCS) of bats.

28. Attendance at seminars presented by, and discussions with, those involved in production of the BCTG document has emphasised the point that it is within the remit of the consultant ecologist to make a decision on the necessity and scope of surveys - they will use the guidelines in doing so but are not in any way bound by them: this is reflected in Section 1.1 of the guidelines -

a. *'The Guidelines do not aim to either override of replace knowledge and experience. It is accepted that departures from the guidelines (e.g. either decreasing or increasing the number of surveys carried out or using alternative methods) are often appropriate. However, in this scenario an ecologist should provide documentary evidence of (a) their expertise in making this judgement and (b) the ecological rationale behinethe judgement. '*

29. Such decisions require a consideration of the potential of the project to impact on bat habitat, alongside analysis of the value of habitat on and around the site and of local records and the likelihood that bats might occur in significant numbers. Our reports aim to present information on how we have arrived at our decision on the site, what assumptions we have based this on, and where further survey is recommended we indicate what the objective of this survey should be and how best this would be achieved.

30. The scattered trees across the site are likely to provide structure to foraging bat species in the local area. Given the sites size, the recommended approach to determine the use of the Site by bats is through a walked transect following dusk emergence surveys of the buildings and mature trees with a period of remote monitoring.

31. Objectives of these surveys should be:

- confirm levels of use and the assemblage of bats present on the site generally
- confirm patterns of activity and identify key features
- identify levels of use of the affected foraging or commuting features to be and inform levels of mitigation require (if any).

Appendix 4 Wildlife Legislation, Policy and Guidance

32. This is not an exhaustive list but sets out briefly the relevance of Legislation, Policy and Guidance in terms of planning applications and this assessment.

Legislation

Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (EC Habitats Directive).

Provides framework at an international (EU) level for the consideration / protection of European Protected Species (EPS), and habitats through the designation of sites.

Council Directive 79/409/EEC on the Conservation of wild birds (EC Birds Directive) and The Ramsar Convention on Wetlands of International Importance (1971)

Provides framework at an international (EU) level for the consideration / protection of important bird populations and the sites on which they are dependant.

The Conservation of Habitats and Species Regulations (2010)

This transposes 1) into UK law and provides the basis on which all EPS are protected and impacts on them can be licensed in the UK.

The Wildlife and Countryside Act (1981) as amended

This provides the basis on which UK species are legally protected or restricted and confers protection on Sites of Special Scientific Interest SSSIs. It contains annexes of plants and animals which are legally protected as well as those which are considered to be invasive or harmful. It provides the basis on which impacts on such species can be licensed in the UK and provides controls on work on or near SSSIs.

The Countryside and Rights of Way Act 2000 (CRoW)

Provides a statutory basis for nature conservation, strengthens the protection of SSSIs and UK protected species and requires the consideration of habitats and species listed on the UK and Local Biodiversity Action Plans (UKBAP / LBAP).

Natural Environment and Rural Communities Act 2006 (NERC)

Sets out the responsibilities of Local Authorities in conserving biodiversity. Section 41 of the Act requires the publishing of lists of habitats and species which are "of principal importance for the purpose of conserving biodiversity". At present these largely reflect those making up the UKBAP lists.

Hedgerows Regulations (1997)

Define and provide protection for Important Hedgerows.

Protection of Badgers Act (1992)

Protects badgers from persecution, this includes excavation / development in the proximity of setts.

Protected Sites

Statutory EU / International Protected Sites

Special Areas of Conservation (SACs); and Special Protection Areas (SPAs) and Ramsar Sites contain examples of some of the most important natural ecosystems in Europe. Work on or near these sites is strictly protected and Local Authorities will be expected to carry out 'Appropriate Assessment' of

development in proximity of them. In this case there is often an increased burden on the developer in relation to provision of information and assessment.

Statutory UK Protected Sites

Local Nature Reserves (LNRs); National Nature Reserves (NNRs); Sites of Special Scientific Interest (SSSIs) all receive strict protection under UK legislation. Work in or in proximity to these sites would be restricted with any needing to be agreed with Natural England. Natural England now provide guidance on the nature of development which could impact on SSSIs through Impact Risk Zones.

Locally Protected Sites

Local Authorities have a variety of protected wildlife sites designated at a local or regional level. These are gradually being brought under the banner of Local Wildlife Sites (LWS) but at present a plethora of different designations exist - all subject to local policy.

Protected Species

European Protected Species

A number of species (most relevantly bats, great crested newts [GCN], and otters) receive strict protection from killing, injury and disturbance under The Conservation of Habitats and Species Regulations (2010). Protection is also conferred on the habitats on which they rely such as roost space in the case of bats and ponds and fields etc. in the case of GCN.

UK Protected Species

A number of species (including bats, GCN, watervole and white clawed crayfish) are strictly protected under The Wildlife and Countryside Act (1981) as amended, from killing, injury, disturbance and damage or destruction of their resting places etc. Certain species (such as reptiles) and some birds (such as barn owl) receive partial protection e.g. at certain times of the year or form certain activities only. All nesting bird species are protected from damage or destruction of their nests - whilst active.

Invasive species

Schedule 9 of the Wildlife and Countryside Act (1981) as amended, lists these species and makes it an offence to cause or allow their spread in the wild. This often has impacts on development and planning in relation to the presence of invasive plant species such as: himalayan balsam (*Impatiens glandulifera),* japanese knotweed (*Fallopia japonica*) and giant hogweed *(Heracleum mantegazzianum*).

Planning Policy / Guidance

The National Planning Policy Framework (NPPF)

The National Planning Policy Framework was published in 27 March 2012 replacing the majority of previous Planning Policy Guidance notes (PPGs) and Planning Policy Statements (PPSs). The most relevant paragraphs from the NPPF are set out below.

The general approach to assessing the natural environment is now embedded within the definition of what 'sustainable development' is. Paragraph 7 (P7) of the NPPF states that sustainable development should "contribute to protecting and enhancing our natural environment" and "help to improve biodiversity". There is also a need for positive inclusion of the natural environment in

development design and "moving from a net loss of bio-diversity to achieving net gains for nature" (P9). P14 sets out the Frameworks presumption in favour of sustainable development.

The natural environment is stated within the NPPF core principles: development should "*recognise the intrinsic character and beauty of the countryside*" and contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should, "*prefer land of lesser environmental value, where consistent with other policies in this Framework*" (P17).

Section 11 of the NPPF details the approach to the natural environment. The Framework states that development should "*minimise impacts on biodiversity and provide net gains in biodiversity, where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*" (P109).

The Framework sets out ways to minimise the impacts on biodiversity through "*promoting the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets*" (P117).

The NPPF requires the consideration of the impacts of development on the natural environment. The Framework also encourages "*opportunities to incorporate biodiversity in and around developments*" (P118). Importantly this paragraph (P118) sets out the hierarchy of avoiding, mitigating and compensating harm from development - plans should ensure that they can demonstrate engagement with this hierarchy when required.

Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services.

This strategy builds on the Natural Environment White Paper (June 2011) - The Natural Choice: securing the value of nature. Setting out the current UK Government's approach to nature conservation. It promotes a more coherent and inclusive approach to conservation and the valuing in economic and social terms of economic resources.

The strategy promotes initiatives such as Biodiversity Offsetting, Nature Improvement Areas and a focus on well-connected natural networks and introduces the concept of securing a 'no net loss' situation with regard to UKBAP / Section 41 habitats and species.

ODPM circular 06/05 (2005) Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System

Provides guidance to Local Authorities on their obligations to biodiversity – particularly in relation to assessing planning applications and ensuring the adequacy of information.

BSI (2013) British Standards Institute BS 42020:2013 Biodiversity — Code of Practice for Planning and Development.

Provides a standard for the biodiversity assessment and development industries and decision makers such as Local Planning Authorities to work to.

Appendix 5 eDNA results

Technical Report
Confidential

Folio No	**D1656**
Report No:	**1**
Client:	**Brooks Ecological**
Order No:	
Attn:	**Rob Weston**
Date:	**12th May 2016**

TECHNICAL REPORT

EXAMINATION OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

J.Campbell

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Division Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE, UK
Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 2733607

Methodology

When Great Crested Newts (GCN) inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water we can analyse these small environmental traces to detect GCN inhabitation.

The laboratory testing is conducted in two phases. The sample first goes through an extraction process where all 6 tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (or q-PCR). This process amplifies select part of DNA allowing it to be detected and measured.

qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signal during the exponential phase of the reaction is measured for fast and objective data analysis.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no other DNA is amplified.

Samples are tested in a clean room and the different phases of testing are kept separate to reduce any risk of cross contamination.

Each pooled sample is replicated 12 times to ensure results are accurate. If one of the twelve replicates tests positive the sample is declared positive. The sample is only declared negative if no replicates show amplification.

Inhibition and degradation checks are also carried out on each sample using a known DNA marker. Results of these quality control tests are recorded with each sample.

Results

Lab Ref	Sample	Co-Ordinates	Inhibition Check	Sample integrity	Result
22008	Greenhill Mill Pond	Skelmonthorpe	Acceptable	Acceptable	**Negative**

Advice

Negative results may not indicate the absence of GCN just the presence of eDNA below the detection limits of the method. However this method is extremely sensitive. It is still advised to survey a pond using traditional methods within 2km of a positive result or a known habitat for GCN.

Positive results may be true positives but also may be due to contamination of samples from another pond or improper sampling technique. Please ensure traditional surveys are performed on positive ponds and care is taken to avoid spreading GCN DNA.

Samples undergo integrity scores to check for degradation post sampling. Samples which are not acceptable should be re-sampled. Sample integrity scores are based on the amount of degradation of an artificial DNA marker placed in the kits and analysed by qPCR.

PCR inhibitors can cause false results. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Analysed and reported By: **J. Campbell BSc CEng.**

Checked and approved: **Troy Whyte BSc**