VARNA STREET COUNTY PRIMARY SCHOOL, BESWICK, MANCHESTER

ECOLOGICAL ASSESSMENT

Doc Ref 1990.001

for

Bramall Construction Ltd
The Lighthouse
The Quays
Salford
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April 2009

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D1990.001 Phase 1 Habitat Map 2009

1.0 INTRODUCTION

1.1 TEP was commissioned by Bramall Construction Ltd, to undertake an ecological assessment of land off Ashton Old Road, Beswick, Manchester.

1.2 An extended walkover survey following Phase 1 Habitat survey techniques and an assessment for species of conservation concern were carried out and are described in this report.

1.3 This report provides ecological information for the site, helping to outline potential implications for development and inform recommendations for conserving biodiversity within development proposals for the site.

1.4 This report has the following objectives

- to describe the existing vegetation and habitats present on the sites;
- to identify whether there are any features of conservation value; such as legally protected species or habitats of biodiversity importance[1];
- to advise of further surveys or mitigation requirements that might be needed prior to development of the site;
- to outline potential implications for development;
- to inform recommendations for enhancing and conserving biodiversity.

1.5 A general overview of planning policy and legislation in England is available to download from the TEP website (www.tep.uk.com).

[1] Such as habitats prioritised in the UK Biodiversity Action Plan (BAP) or the Local BAP

2.0 SITE DESCRIPTION

2.1 The site is situated within an urban setting to the south east of Manchester city centre (OS grid reference SJ 887 972) (Figure 1).

2.2 The site comprises two plots of land, divided by Chisholm Street. The main plot is bounded to the north by Ashton Old Road, to the south by residential housing, to the west by a public footpath followed by industrial units and to the east by a Chisholm Street. The smaller plot is bounded by roads to all sides. A railway line lines approximately 300m south of the survey area.

2.3 In brief, the site is dominated by amenity grassland with areas of scattered trees, plantation woodland and dense scrub.

Figure 1: Survey area and surrounding context



3.0 METHODS

Phase 1 Habitat survey

3.1 A field survey following Phase 1 methods (JNCC 2003) was carried out by TEP ecologist Sally Cowley AIEEM, during daylight hours on the 31st March 2009. Weather conditions during the course of the walkover survey were warm and overcast.

3.2 The survey gives an overview of key habitats, wildlife corridors and the likely sites for species of conservation concern. It included an inspection for invasive species such as Japanese knotweed.

Assessment for species of conservation concern

3.3 During the walkover survey, the habitats present were assessed for their potential to support species of conservation concern, particularly statutorily protected species or Biodiversity Action Plan priority species. Incidental observations of birds were also made during the walkover survey.

4.0 RESULTS

Phase 1 Habitat survey

4.1 The Phase 1 Habitat survey is illustrated at Drawing D1990.001.

4.2 The following habitat types are most dominant on site, brief descriptions of the key species and relative importance of which are set out below:

- Broad-leaved plantation
- Dense scrub
- Scattered broad-leaved trees
- Tall ruderal herbs
- Amenity grassland

Broad-leaved plantation

4.3 There is a small strip of young broad-leaved plantation located in the south western area of the main plot. It contains a mixture of holly (*Ilex aquifolium*), cherry species (*Prunus sp*.), London plane (*Platanus x hispanica*) and willow species (*Salix sp*.) with an understorey comprising bramble (*Rubus fruticosus*) and nettle (*Urtica dioica*).

Dense scrub

4.4 There are three areas of dense scrub located along the south-western boundary of the main plot which is dominated by bramble.

Scattered broad-leaved trees

4.5 There are numerous scattered broad-leaved trees across the site. The trees have been planted and include species such as ash (*Fraxinus excelsior*), cherry species (Prunus sp.) willow and London plane.

Tall ruderal herbs

4.6 There is a small area of tall ruderal herbs located on the eastern boundary of the site which is dominated by stinging nettle.

4.7 Three notable areas of Japanese knotweed (*Fallopia japonica*) are present within the south west of the site and a fourth area of Japanese knotweed is located just outside the western boundary of the site on the adjacent side of a public footpath. This plant is an extremely invasive alien species requiring control.

4.8 The Japanese knotweed is highlighted on TEP drawing D1990.001 as tall ruderal herbs and labelled Japanese Knotweed.

Amenity grassland

4.9 Short, regularly mown, grassland is the most extensive vegetation throughout the site. This habitat type is lacking in both structural diversity and species-richness. Its main contribution to the site's biodiversity is as feeding habitat for some species of bird.

Incidental bird observations

4.10 The following bird species were noted within the site during the March 2009 survey visit:

- Blackbird
- Blue tit
- Robin
- Wood pigeon

4.11 None of the birds recorded on site during the field survey are statutorily protected under Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended), nor are they listed as UKBAP priority species or on the UK list of Birds of Conservation Concern. All are widespread in the Manchester area and are common within an urban or semi-urban setting. However, all wild birds in the UK are protected under the *Wildlife and Countryside Act 1981* while they are nesting.

Other species of concern

Amphibians

4.12 There are no permanent waterbodies or wetlands within or adjacent to the site. There are no suitable habitats within the site to support breeding populations of great crested newts or other species of amphibian.

Bats

4.13 There are no buildings located within the site. The majority of the trees on site are either too small or do not possess features suitable for roosting bats. There is one mature willow tree and one mature sycamore tree on site which have some damage to the lower limbs and trunk. However the cracks caused by the damage are relatively large and/or exposed to the elements, making them drafty and liable to flooding from rain water.

4.14 The trees on site provide some foraging and commuting opportunities for local bat populations.

Water voles

4.15 There are no permanent waterbodies or watercourses within the site. There are no suitable habitats to support water voles or other riverine wildlife.

Badgers

4.16 No signs of badgers using the site or land adjacent to the site were found during the course of the daytime site visit in March 2009.

Wildlife corridors

4.17 The trees on site provide a strong wildlife corridors within the site and help to link the site to the railway line to the south of the site.

5.0 CONCLUSIONS AND IMPLICATIONS

5.1 A field survey following Phase 1 methods was carried out in March 2009. The habitat survey is illustrated at Drawing D1990.001. A general overview of planning policy and legislation in England is available to download from TEP's website (www.tep.uk.com).

Species and habitats of conservation concern

5.2 Generally the site contains few areas of natural or wildlife-friendly habitat. The site consist of intensively maintained grassland. However, there are many trees of planted origin which provide potential opportunities for bird nesting and foraging and commuting bats. The trees on site are not currently considered to provide any roosting opportunities for local bat populations.

5.3 There are no waterbodies or wetlands within the site and therefore the site has no potential to support breeding populations of great crested newts or water voles.

5.4 No evidence was found to suggest that badgers are present on site, there are therefore, no apparent implications for development works in relation to badgers.

5.5 All the bird species noted on site were common, widespread species typically associated with garden, woodland and urban habitats. Although the trees on site provide nesting and foraging opportunities for local bird populations the habitats are not considered to be important either in type, extent or diversity with regards to nesting or foraging birds.

5.6 However, all UK wild birds are protected at the nest under the *Wildlife and Countryside Act 1981 as amended*, which makes it an offence (in addition to possession, control and sale offences) to kill, injure or take any wild bird; take, damage or destroy the nest of any wild bird while it is in use or being built; and take or destroy the egg of any wild bird. Best practice interprets this legislation such that UK wild birds receive protection from the point of constructing a nest to fledging the young birds and vacating the nest. Generally this period is considered to last from March to August inclusive, although there is variation between species and latitude. There is no derogation from this legislation by means of a licence for the purpose of disturbing nesting UK wild birds in the course of a development.

Other issues

5.7 The walkover identified three stands of Japanese knotweed (*Fallopia japonica*) within the site boundary and one stand located just outside the site boundary (Drawing D1990.001).

5.8 Japanese knotweed is a perennial plant with an extensive system of rhizomes (underground stems). The rhizome system is particularly invasive and readily

reaches depths of 2-3 metres and 7 metres laterally. Regeneration occurs vegetatively from the smallest rhizome fragments (weighing less than 1 gram) in both soil and aquatic environments. Dispersal of rhizome/regenerating material occurs by watercourse translocation and by human activity.

5.9 Any waste containing Japanese knotweed is classed as controlled waste under the *Environmental Protection Act (Duty Of Care) Regulations 1991*, which requires all producers, carriers and disposers of waste to follow a code of practise and keep records. Under provisions made within the *Wildlife and Countryside Act 1981*, it is an offence to spread Japanese knotweed. Liability may also extend in situations where a landowner has knowingly permitted the spread of the plant onto neighbouring land. There are therefore implications for development with the regard to Japanese knotweed control and removal.

5.10 Failure to manage and dispose of Japanese knotweed in accordance with current guidelines can lead to prosecution. Due to the persistent and invasive nature of the plant, failure to manage Japanese Knotweed on a development site may also result in future structural damage to buildings and hard surfaces. Further information is presented at Appendix A.

6.0 OPPORTUNITIES FOR ENHANCEMENT

6.1 Under PPS9 local planning authorities have a duty not only to halt wildlife losses but also to seek biodiversity gain, when appropriate, when determining planning applications. The following paragraphs provide examples of how biodiversity within the site can be maintained and enhanced.

6.2 It is recommended that the trees on site be retained and protected where possible. If tree removal is required, then replacement planting should be incorporated into the site design. Increasing the current levels of tree habitat on site would further benefit a range of species including birds, bats and invertebrates. Tree planting should use native species, ideally of local stock. Shrub and wildflower planting could also be used to create a diverse under-storey.

6.3 Consideration could be given to planting new hedgerows, with at least five native species (e.g. holly, blackthorn, hawthorn, hazel, dog rose, grey willow or elder). along the site boundaries. These new hedgerows could incorporate existing trees. Additionally, linear native planting across the site would help maintain wildlife links throughout the development with other open spaces near to the site.

6.4 Other potential enhancement measures include the provision of wildlife refuge features such as log piles, insect houses, bat boxes and bird nest boxes. As well as nesting boxes, incorporation of breeding ledges or fixing of artificial nests to new buildings, to attract black red starts, swallows, house martins and swifts is also recommended (Appendix B).

6.5 The roofscape of the new school buildings may offer a unique opportunity to incorporate “living roof” technology and "green walls", both as an education and as an amenity/wildlife asset. Creating further areas of wildlife-friendly habitat within this intensively managed site would have a beneficial effect on local biodiversity. The benefits of living roofs are also recognised by the Building

Research Establishment when it comes to assessing the effects of developments and awarding credits towards high scores in the BREEAM Landuse and Ecology section. There is a wide range of green roof options potentially applicable in this situation; these are discussed further in Appendix C of this report.

6.6 Living roofs and green walls also contribute significant environmental benefit, including reducing surface water run-off, thermal insulation, noise insulation, reduction in solar reflection and reduction in visual impact of large buildings.

6.7 Some outlines of options for their construction, along with a summary of their wildlife value (in addition to more general environmental value) are found in Appendix C.

7.0 REFERENCES AND FURTHER READING

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APPENDIX A

Environment Agency guidelines for the control and treatment of Japanese knotweed

ENVIRONMENT AGENCY
CODE OF PRACTICE FOR THE MANAGEMENT, DESTRUCTION AND DISPOSAL OF JAPANESE KNOTWEED

Managing Japanese knotweed on development sites.

Timely and appropriate management of land infected by Japanese knotweed can avoid excessive cost, potential prosecution and prevent physical damage to buildings and hard surfaces.

Early identification of Japanese knotweed on a site allows a developer to assess and cost options for disposal and management.

The most important element to knotweed management for a developer is the early application of an appropriate herbicide prior to any land disturbance.

The most effective time to apply a herbicide is from July to September (or until the first frosts cause leaf fall). Spring treatment is acceptable, but less effective. Herbicides are not effective during the winter dormant stage. Chemical control usually takes a minimum of three years to totally eradicate Japanese knotweed. Therefore, Japanese knotweed must still be regarded as infective within that three year period, or whilst regrowth still occurs during spring. Rhizome can remain dormant for a considerable period after regrowth has apparently stopped, and therefore the viability of rhizome would need to be ascertained prior to disturbance. However, treatment with an appropriate herbicide can reduce the vigour of knotweed material, even if it were only treated a few weeks prior to disturbance. If a developer is in a situation where their timescale prohibits effective chemical eradication of Japanese knotweed, the plant should still be treated, if it is in leaf, at the earliest possible convenience.

Combined treatment methods.

Site trials have shown a combined digging and spraying treatment method to be effective in reducing the time period required for chemical control. Great care is required with this method to avoid spreading plant material.

The majority of Japanese knotweed rhizome exists in the upper layers of topsoil. It has been estimated that in an infected area, 14,000 kg/ha dry weight of knotweed may exist in the top 25cm (Brock, 1994). An excavator may be used to scrape surface crowns and rhizomes into a pile. The exposed ground can then cultivated to a depth of 50cm, and the piled material re-spread over the cultivated area. This process stimulates the rhizome to produce a higher density of stems, which renders it more vulnerable to herbicide treatment. Subsequent herbicide treatment has been observed to eradicate knotweed after only two applications, which may be performed within the same growing season.

Digging can be carried out during the winter months, and regrowth treated during the spring and summer. Extreme care must be taken to ensure that all equipment used on site is free of Japanese knotweed material before leaving the site to avoid contravention of the Wildlife & Countryside Act, 1981. To reduce the risk of contaminating vehicles, excavators with caterpillar tracks should be avoided.

Soil contaminated with knotweed may also be stockpiled on an area of the site that will remain undisturbed. Knotweed regrowth should be regularly treated with herbicide to avoid re-

infestation. The upper 50cm of topsoil, which will contain all the crowns and the majority of the rhizome should be stockpiled separately from the other, less infested material. This will avoid burial of the bulk of the rhizome at the bottom of a large stockpile, where it may remain dormant and escape treatment. Regrowth, which will predominantly arise from the stockpile of topsoil can then be treated until the knotweed is killed. Larger pieces of rhizome and crowns can be isolated and burned where appropriate.

Material must not be reused until all the knotweed material has been confirmed as unviable.

Which herbicide should I use?

The most important questions regarding the selection of a herbicide are;
Is the site in or near water?
Do I wish to re-use the soil from the treated area for replanting, and if so, how long before I intend to landscape with it?

Wherever there is a risk of contamination to a watercourse, choice is limited to formulations of Glyphosate and 2,4-D Amine that are approved for use in or near water. Not all herbicides containing these active ingredients are suitable for use in or near water. Use of a herbicide in or near water requires consultation with the Environment Agency.
If the site poses no risk to a watercourse, there is a greater choice of herbicide. Where soil is intended for continued use, or immediate reuse, for landscaping purposes, a non-residual herbicide, such as Glyphosate or 2,4-D Amine would be appropriate. In the event that replanting is likely to be delayed for a period of at least six weeks, a formulation containing triclopyr may be considered. If it is the intention to cover the area in a hard surface, or delay replanting for at least two years, persistent chemicals such as picloram and imazapyr would be appropriate.

Developers are advised to seek the advice of a qualified landscape gardener or BASIS[1] registered pesticides advisor prior to commencing a spraying programme.

When using a herbicide, always adhere to the advice given on the label.

Herbicide	Affects grasses?	Approved for use in or near water?	Persistency
Glyphosate	Yes	Yes	Non-persistent
2,4-D Amine	No	Yes	1 month
Triclopyr	No	No	6 weeks
Imazapyr	Yes	No	9 months
Picloram	No	No	2 years

Under the Duty of Care[2], persistent chemicals must be included within the description of the waste if the material is being disposed of within the period of activity of that particular chemical.

[1]BASIS is an organisation committed to ensuring individuals involved in the handling and use of pesticides are competent. BASIS maintain a register of trained advisors, who need to demonstrate an annual programme of continual professional development to maintain their qualification. Details on the BASIS Professional Register are available from 34, St John Street, Ashbourne, Derbyshire DE6 1GH. Tel: 01335 343945.

[2]Section 34 of the Environmental Protection Act 1990 (EPA90) imposes a duty of care on persons concerned with controlled waste. The duty applies to any person who produces, imports, carries, keeps, treats or disposes of controlled waste, or as a broker has control of such wastes. Breach of the duty of care is an offence, with a penalty of an unlimited fine if convicted on indictment.

Stems must not be pulled, which tends to remove the highly infectious crown material with the stem. Where it is the intention to treat regrowth with a herbicide, cut material should be removed from the treatment area to allow effective spray contact with the emergent growth. It should be policy to chemically treat Knotweed, rather than continuously cut the regrowth.

Cut stems should be left in a situation that will encourage drying. This can be achieved by laying the cut stem on the 4 - 8" stumps of the Knotweed, thus preventing contact between the stems and the soil. Once the stems have dried to a deep brown colour they are dead. This is not the case with crown or rhizome material.

If it is intended to bury knotweed on site, it is essential that non-persistent herbicides, such as glyphosate, be used.

Burning & Burial of knotweed

CODE OF PRACTICE FOR THE DISPOSAL OF JAPANESE KNOTWEED ON THE SITE OF PRODUCTION

Where insufficient time is available to ensure complete eradication, it will be necessary to treat the remaining material in a manner that avoids further infestation. It is recommended that, wherever possible, this approach be adopted, even when a chemical control programme has been completed.

Controlled burning of stem and crown material may be used as part of the control programme. This reduces the viability of material and the volume for burial or off site disposal. Such burning must take into account any local by-laws and take account of the potential for nuisance or pollution that may occur as a result of the activity.

Burning in the open may be undertaken in accordance with a registered exemption as described in Paragraph 30 of Schedule 3 of the Waste Management Regulations 1994. The exemption also covers associated storage, which will allow for the drying of the material that is likely to be required before burning can take place. Japanese Knotweed stems can be left on site after cutting in preparation for burning if;

- The stem is of sufficient size to prevent dispersal by wind or traffic movement.
- There is no risk of dispersal into a watercourse.
- The stem has been neatly cut near its base using a cutter, hook or scythe.

Where the activity is taking place on a site other than that specified in para.30 of the 1994 Regulations, then provided all the other criteria are met (including the Relevant Objectives in schedule 4 of the 1994 Regulations) the Agency would not normally consider pursuing enforcement action.

Soil containing knotweed material and burnt remains of knotweed may be buried on site of production. Ideally, at least one application of non-persistent herbicide will have been performed to reduce the vigour of infective material. Soil to a depth of at least 3m and within a perimeter of 7m of the plant growth area should be excavated for burial. Site managers should check the periphery of the excavation for rhizome, to ensure that an adequate volume of material has been removed to account for all of the infective material.

On site burial must be performed to a depth of at least 5m The potentially viable knotweed material should then be covered with a geotextile layer (e.g. Lowtrak) or a heavy gauge polythene sheet prior to infilling.

To ensure compliance with the Wildlife and Countryside Act and reduce the risk of spreading knotweed any such on site burial and any controlled burning must be done in accordance with this code of practice. If on site burial is undertaken in accordance with this code, then enforcement action would not normally follow for not having a Waste Management Licence for those operations that would require one.

Where on site burial is undertaken it is strongly advised that to prevent potential disturbance and re-infestation the burial site location is recorded, and that any future owners are advised of its position.

The local Environment Agency Area office environment protection team must be informed at least one week prior to the burial or burning activity.

Soil contaminated with knotweed may also be stockpiled on an area of the site that will remain undisturbed. Knotweed regrowth should be regularly treated with herbicide to avoid re-infestation.

OFF SITE DISPOSAL

The option to bury material on site is not available where other contamination of the site requires compliance with waste management or other legislation unless it is done in accordance with that legislation. It is important to note that on site burial and/or burning of knotweed contaminated material is primarily an invasive weed control mechanism.

If the development cannot allow for burying or stock-piling infected soil on site, it must be disposed of at an approved disposal facility, having informed the site operator of the presence of viable knotweed within the material.

If off site disposal is used then great care must be taken to avoid loss of material on route. For small quantities this may include sealing the material in black bags. For larger quantities that are being moved in skips or trailers, this will include covering the skip etc. with sheeting.

Landfill operators dealing with material contaminated with Japanese Knotweed must ensure that:

i They are licensed to receive it, and

ii They have sufficient capacity to ensure the material can be dealt with in accordance with the following:

For material, including contaminated soils, rhizome and the crown at the base of the stem.

- Burial to a depth of at least 5 metres, (immediately cover to 1-2 metres, final depth after 2-4 weeks)
- Burial at least 7 metres from the margins of the site or any engineering features, eg drains or bunds, of the site,
- Burial at least 5 metres above the base/liner of the landfill.

Duty of Care for Hauliers

Prior to accepting waste material for transfer or disposal, it must be inspected for knotweed contamination. If knotweed material is found, the waste cannot be regarded as soil or construction material only waste, and inappropriate disposal may result in prosecution. Material containing any infestation of knotweed should be taken to a landfill site or other disposal site that is licensed to receive Japanese knotweed, and the landfill operator must be informed of the nature of the waste so that it can be disposed of appropriately within the site.

Hauliers should not accept such infested waste unless they can guarantee its appropriate disposal. If hauliers are aware of waste producers who are failing to inform their hauliers of the presence of Japanese knotweed, or of hauliers who are knowingly disposing of knotweed infested material in an inappropriate manner, they should inform their local Environment Agency Area office.

Hauliers must also ensure that during the removal of material off site, vehicles do not carry knotweed containing soils on the wheels or bodies of their vehicles and that the vehicle is suitably covered or enclosed to prevent escape during transport. Where the material is being carried to landfill sites for disposal or where vehicles are involved in movements on the site of production great care should be taken to clean off material at the point of discharge so as not to transport the knotweed elsewhere. Vehicles should be brushed down and inspected for trapped pieces of rhizome.

The use of knotweed-infested soils for exemptions under Waste Management Licensing is not appropriate and the Environment Agency would treat any use in such exemptions as not complying with either Section 33 or 34 of the Environmental Protection Act 1990.

Failure to appropriately dispose of any material containing Japanese knotweed may lead to prosecution under Sections 33 and 34 of the E P A 1990 and Section 14 of the Wildlife & Countryside Act 1981.

Remember:

Failure to manage and dispose of Japanese knotweed responsibly may lead to prosecution.

Spreading Japanese knotweed is harmful to native plants and animals.

Failure to manage Japanese knotweed on a development site may result in eventual structural damage, especially to tarmac surfaces.

APPENDIX B

Examples of habitat enhancement measures for bats and birds

SCHWEGLER BAT BOXES (LONG LIFE WOODCRETE BOXES)

Suppliers (prices correct as of Oct 2004):

Alana Ecology
The Old Primary School
Church Street
Bishop's Castle
Shropshire
SY9 5AE

Tel: +44 (0)1588 630173
Fax: +44 (0)1588 630176
Email: sales@alanaecology.com

BRICK BOXES - TO INCORPORATE INTO BUILDINGS

These bat boxes are designed to be built into buildings, or underneath bridges, arches or tunnels, where conditions are relatively humid. There are particularly useful for incorporating into new buildings or bridges to attract bats or to provide new roost sites where existing buildings with bats are being renovated.

N27



This box should be cemented into a wall. It contains a single internal wooden panel which simulates a crevice. The removable front panel allows for easy cleaning. *No painting is required, but if it is necessary, a natural breathable paint should be used*
Woodcrete (75% wood sawdust, concrete and clay mixture)
Width 18cm
Height 29cm
Depth 23.5cm

A02006 N27

No 750/6



This long box can be installed within brick masonry, beneath plasterwork or wood panelling, or incorporated into concrete structures such as factory buildings or bridges. Inside it contains a woodcrete surface, a roughened wood board, and a metal mesh, providing a choice of roosting areas depending on the weather conditions and the bats' habits. This box is maintenance-free as the entrance slit is at the bottom, allowing for self cleaning. *No painting required, but if painting is necessary a natural breathable paint should be used*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Width 20cm
Height 47.5cm
Depth 12.5cm
Entrance width 15cm
Entrance depth 2cm

A02057 No 750/6

GENERAL BOXES

2F Bat Box
A popular general purpose box attractive to the smaller British bats. A simple design with a narrow entrance slit on the front.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 33cm

A02002 2F Bat Box



2F-DFP Bat Box
A general purpose box attractive to the smaller British bats, with a roughened wooden panel inside the box which simulates a crevice.
This box is favoured by Daubenton's bat and Nathusius' pipistrelle.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 33cm

A02003 2F-DFP Bat Box



2FN Bat Box
A larger box with both a wide access slit at the base and an access hole on the underside. Suitable for the larger British bat species. Particularly successful in attracting noctule and Bechstein's bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 36cm

A02004 2FN Bat Box



1FF Bat Box
The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract pipistrelle and noctule bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Width 27cm
Height 43cm

A02000 1FF Bat Box



1FD Bat Box
A large general purpose bat box, with two roughened wood panels inside the box which simulate crevices.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 36cm

A02058 1FD Bat Box



1FS Bat Box
A larger capacity general purpose bat box.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 28cm
Height 44cm
Weight 10kg

A02005 1FS Bat Box



1FW Hibernation Box
This monster box is designed to provide a protected environment, particularly through the cold winter months when bats hibernate. It has three internal wooden panels imitating crevices. *Supplied with special fixing brackets. It is important to fit this heavy box very securely if mounting above the ground, and to site it well away from public areas.*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 38cm
Height 50cm
Weight 30kg

A02001 1FW Hibernation Box



Schwegler 1FQ Bat Box
The latest model from Schwegler is an attractive box designed specifically to be fitted on the external wall of a house, barn or other building. Equally appealing to bats as a roost or a nursery, it features a special porous coating to help maintain the ideal temperature inside as well as a roughened front panel to enable the bats to land securely. Access into the box is via a step-like recess.
Inside the box, rough pieces of wood are incorporated into the back of the box which are good insulators and are used by the bats as perches. The internal layout offers three different areas with varying degrees of brightness and temperature.
This durable box is easy to attach to most walls, requires no maintenance or cleaning and will last for decades. *Please note that this box is designed to be fitted to a wall. Due to the weight it is unsuitable for fences or sheds.*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Height 565mm; Width 350mm Depth 85mm Weight 13kg

A02092 Schwegler 1FQ Bat Box



BIRD BOX SPECIFICATIONS

Supplier:

Alana Ecology
The Old Primary School
Church Street
Bishop's Castle
Shropshire
SY9 5AE

Tel: +44 (0)1588 630173
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Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance

BOXES TO FIT ON/IN BUILDINGS

Sparrow Terrace, Stone Colour House sparrows are gregarious and prefer to nest close to each other, so this woodcrete box provides room for three families under one roof. Made from long-lasting, breathable woodcrete. Stone colour. No maintenance required. Dimensions 245 x 430 x 200 mm. Weight 13kg. Designed for fixing to walls (not suitable for fences or sheds due to the weight of the box). A02085 Sparrow Terrace, Stone Colour (also available in brown)	 .
Schwegler 9A House Martin Double Nest These woodcrete nests are durable and ready for immediate use when birds return each summer. Easily fixed under the eaves on the outside walls of buildings, at least 2 metres from the ground. The backing board may be painted to match the building. Model 9A is a double unit with two nests mounted side by side on a backing board, as shown. Model 9B is similar to the 9A above but with one single nest A02018 Schwegler 9A House Martin Double Nest A02019 Schwegler 9B Single House Martin Nest	
Schwegler No 10 Swallow Box This box should be located inside buildings such as barns, stables, sheds or outhouses, ensuring there is always access for the birds through a window or opening. A02020 Schwegler No 10 Swallow Box	
Droppings Board To avoid problems with bird droppings from house martin or swallow nests, this board can be installed where necessary, for example over a window or door. A02021 Droppings Board	

Schwegler No 16 IMF Swift Box, Double Chamber
The design of this box mimics bell tower louvres. It has two removable panels for easy inspection of the two nest chambers.
Designed for fixing on or within walls (not suitable for fences or sheds).
Dimensions 460mm h x 430mm w x 225mm d

A02088 Schwegler No 16 IMF Swift Box, Double Chamber

Schwegler No 16 Swift Box, Single Chamber
Similar to the box above but with a single chamber and single front panel.
Dimensions 240mm h x 430mm w x 225mm d.

A02087 Schwegler No 16 Swift Box, Single Chamber



Nest Mould for No 16 Swift Boxes
This nest mould fits inside the nest chamber of the No16 or No16 IMF boxes above, to encourage nesting. Research shows that the birds are more likely to nest if a nest mould is used.

A02089 Nest Mould for No 16 Swift Boxes



Schwegler No 17 Swift Box
This box is constructed from plant-fibre based material. It should be sited 6-7m above the ground, near the roof of a building or on a steep rock face.
Interior dimensions 14 x 14 cm. Outer length 34cm

A02041 Schwegler No 17 Swift Box



Schwegler No 18 Swift Box
This nest box is suitable for fixing high under the eaves or under the guttering of a building.
Woodcrete on board backing.
Interior dimensions 14 x 34 x 15 cm.
Exterior dimensions 19 x 50 x 22 cm

A02041A Schwegler No 18 Swift Box



Schwegler N24 Nest Brick
Designed for installation into the fabric of a building, this box is suitable for tits and redstart etc. Woodcrete. Weight 7.3kg
Entrance hole 32mm Dimensions 180w x 180d x 240h mm

A02043 Schwegler N24 Nest Brick



Schweger N25 Nest Brick
Designed for installation into the fabric of a building, this box is suitable for swifts. Woodcrete Weight 8.8kg
Entrance hole 55x33mm. Dimensions 260w x 220d x 180h mm

A02044 Schwegler N25 Nest Brick



Schwegler N26 Nest Brick
Designed for installation into the fabric of a building, this box is suitable for pied wagtail, spotted flycatcher and black redstart etc. Woodcrete. Weight 5.4kg
Entrance hole 110mm Dimensions 180w x 180d x 200h mm

A02045 Schwegler N26 Nest Brick



BOXES TO FIT FENCES, WALLS AND TREES

Schwegler 1B Bird Box, natural brown The most popular box for garden birds, the 1B appeals to a wide range of species, and is the official nest box of National Nest Box Week. The box can be nailed to the trunk of a tree, or hung from a branch. Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance. Woodcrete, 23cm high x 16cm diameter. With standard 32mm diameter entrance hole	
The Bird House A decorative yet practical nest box designed for fixing to a tree trunk, wall or fence using the bracket on the back. It will attract similar species to the standard 1B box. Robust and durable Schwegler woodcrete construction A02084 The Bird House	
Gable Nest Box A substantial wooden bird box with a gable roof and 28mm entrance hole. Made of 15mm thick softwood, external dimensions 14.5cm x 14.5cm x 26cm high (to top of gable). Suitable for the smaller garden birds. A03008 Gable Nest Box	
Wooden Bird Box A simple wooden bird box with sloping roof, suitable for the smaller garden birds. Made from substantial 2cm thick softwood. 14cm w x 18cm d x 26cm h (backplate 33.5cm h). The standard model has a 32mm diameter entrance hole attractive to a wide range of smaller garden birds. A03004 Wooden Bird Box	
Roosting Pockets. These attractive roosting/nest pockets can be used by wild birds in autumn, winter and spring. The birds can save energy during the colder months by roosting in a sheltered place. These pockets also provide a warm nesting place in the spring for smaller birds such as wrens. Made from natural materials. The pockets have a wire at the back to fix onto a branch, or they can be stapled or nailed to a fence or trellis with plant cover. Pack of 3 assorted roost pockets (styles may vary). A02090 Roosting Pockets	

APPENDIX C

Green roofs and green walls

APPENDIX C: LVING ROOFS AND GREEN WALLS

Living roofs

"Living roofs" or "green roofs" have the potential to benefit urban biodiversity and the wider environment in various ways. Living roofs have been shown to make buildings more thermally efficient, with the wider environmental benefit of reducing fuel consumption as well as running-costs. Living roofs protect the roof structure from the effects of sunlight, prolonging its life and therefore reducing the costs and environmental consequences of replacement of water-proofing membranes. A wide range of benefits have been found to accrue from use of green roofs, including:

- Attenuating rainwater run-off (contributing towards SUDS);
- Improving air quality by trapping and absorbing airborne particulates;
- Improving the microclimate – low reflectivity reduces the "urban heat island" effect;
- Providing extra open space, either accessible or providing visual amenity
- Improving energy consumption by protecting the roof structure from UV radiation and temperature fluctuations (providing an innately more stable thermal environment within the building);
- Reducing construction or running costs for drainage, heating and air conditioning;
- Noise reduction;
- Providing wildlife habitat.

In urban areas, and especially in crowded school sites, it is particularly challenging to maintain and create the natural green spaces that wildlife requires to survive. Rather than fulfil a single function, the roofs and walls of buildings can be transformed into a living skin rather than a series of sterile surfaces protecting the internal environments. Living roofs and green walls, along with nest boxes and other wildlife features, either built into or added to buildings, can support a range of plants and animals identified in biodiversity action plans; including bats, some bird species and various invertebrates including wasps and bees, spiders, and beetle species.

Living roofs have been classified into three main categories:

- Intensive green roofs
- Semi-intensive green roofs
- Extensive green roofs

Intensive green roofs

Intensive roofs can take many forms and are the roof-top equivalent of ground-level gardens or parks, with almost as much scope for variety in planting and layout. For example the landscaping around Canary Wharf station, next to the Thames in London, is all on a green roof structure and comprises large mature trees, lawns, ponds, paving and shrub beds. For intensive green roofs a strong-enough load-bearing structure is required to support the depths of soils to support trees and shrubs as well as the construction materials for paths and walls *et cetera*. These roofs provide accessible external greenspace where the ground level has been covered by paving and the building's footprint. Such schemes also require irrigation to support the large and varied planted biomass and need high levels of maintenance, like any other urban greenspace. The choice of planting treatments is extremely diverse but includes the option of development of a native roof garden, concentrating on local species of known value to local biodiversity.

The intensive green roof is built on multiple layers. Beginning with the substantial structural support, a typical profile would also include: waterproof roofing membrane, membrane protection and root barrier layer, insulation, then a multi-purpose drainage, aeration, water storage and additional root barrier layer, on top of which is the growing medium and then the vegetation.

Semi-intensive green roofs

These roofs are vegetated and still require regular maintenance, including irrigation, feeding and cutting; however, they generally do not incorporate paving or walling and are usually designed to be viewed from surrounding taller buildings rather than directly accessed. Because visual amenity is an important aspect of this type of roof they are usually densely planted, often with a mix of exotic succulent species, and watering may need to be intensive to prevent die-back during periods of drought.

Though a multi-layered structure is still required, the roof itself does not need to be of such heavy construction as roofs with regular use by people and supporting deeper layers of soil. Also each construction layer can be somewhat lighter and thinner than required for a fully intensive green roof.

Extensive green roofs

These roofs require the lightest structure and require only a thin layer of growing medium requiring little maintenance and they are usually not irrigated. There are three main ways of achieving an extensive green roof system:

- Sedum mats
- Green/brown/living roofs
- Substrate-based roofs

Sedum mats

There are now quite a few proprietary mixes of Sedum mat readily available. For this type of roof the structure is waterproofed, then a drainage layer is spread and a moisture retention blanket placed on top of that. This is then topped with a sedum mat, generally about 2cm in depth, which already has a carpet of growing plants established in the light-weight growing medium. The mats are unrolled onto the roof and secured for an instant, but long-lasting effect.



Norfolk Community Primary School, Sheffield. (extensive green sedum roof)

Green/brown/living roofs

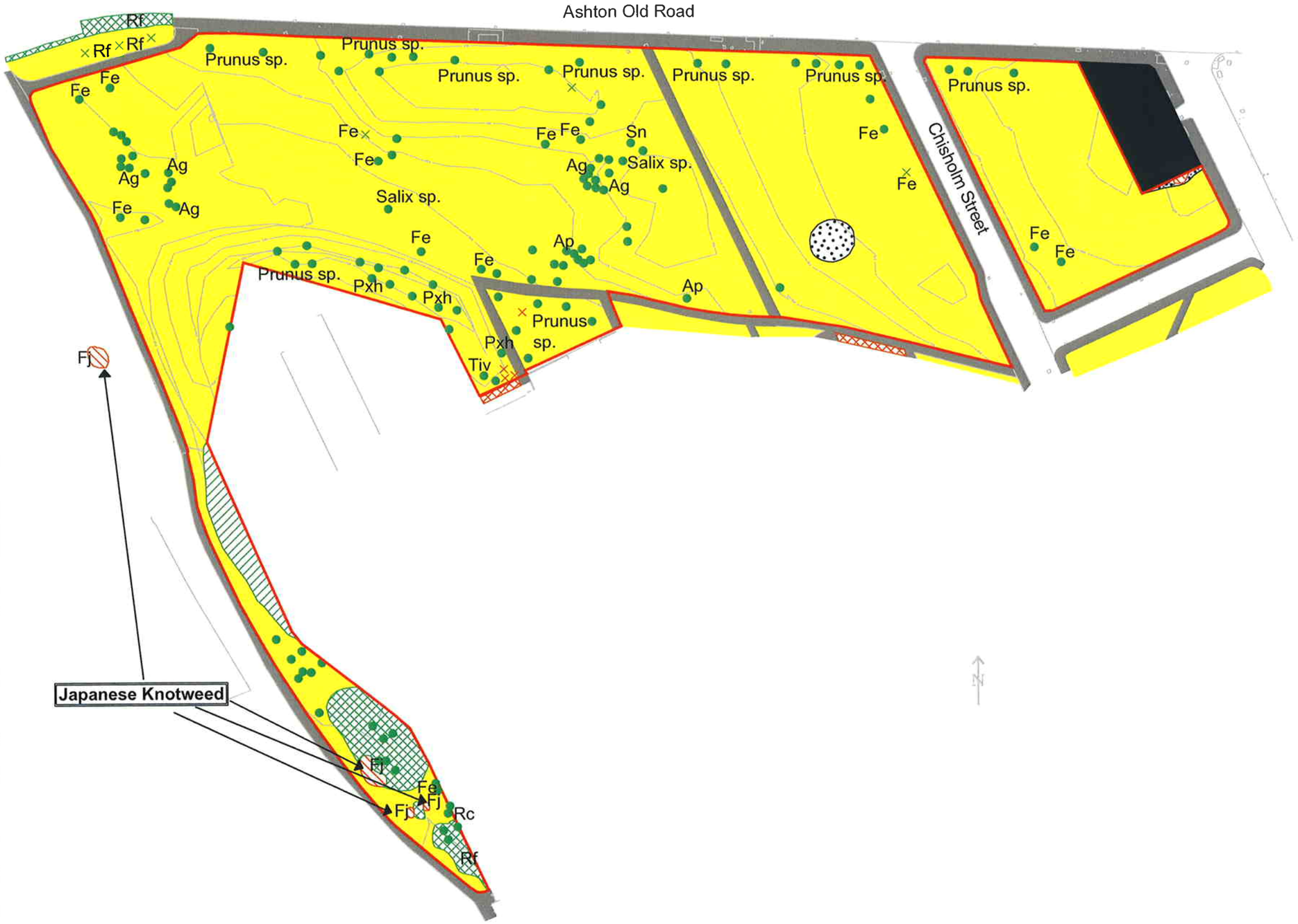
This is quite similar to a sedum mat roof, but on top of the waterproofing and drainage layers there is generally a layer of fleece onto which is placed a varying depth (150mm - 300mm) of crushed substrate. This can be local material, brought from ground level and placed on the roof, or materials recycled from building demolition can be used. The surface can then be left to colonise naturally or be seeded with a mix of local wildflowers and grasses. This method can be used to enhance the value of provision of locally distinctive biodiversity on the roof.

Substrate-based roofs
This is very similar to the preceding treatment, but on top of the fleece a 75mm of crushed porous brick is spread, this can then be plug-planted or hydro-seeded with sedums. Plants of this genus are used that are wind, frost and drought resistant, most of them are non-native but used as a green roof they are wildlife friendly.

Green Walls
These mainly take the form of a wall cladding system composed of self-regenerating climbing plants. Climbing plants have long been a feature of domestic gardens and self-clinging species, such as ivy and Virginia-creeper, will cover large areas of wall space with no further assistance, other than planting them close to the wall. However their growth can be aided by installation of trellises and high-tensile steel cables, allowing light and air all around the plants so that they form dense cover.

These dense layers of vegetation baffle noise reaching the buildings as well as directly provide habitat for invertebrates and nesting birds. By using cables and trellises a wider range of plants can be grown, including honeysuckles, clematis and wisteria. Such green walls will soften the appearance of otherwise blank walls and can dramatically reduce solar gain by shading walls exposed to the sun. Climbers also provide winter insulation, by retaining a pillow of air between the wall and the plants and also reducing wind chill on the wall surfaces. Evergreen species have a greater beneficial regard in this respect than deciduous ones, though these are still of some benefit. Climbers have also been found to be highly effective in trapping airborne dust and in fixing airborne contaminants in their tissues. As well as these wider environmental benefits the populations of insects and spiders they support will, in turn, provide food for bats and insect-eating birds. Green walls will also provide routes linking ground level foliage and habitats with that established on green roofs.

DRAWINGS



Key

- Site boundary
- Broad-leaved plantation
- Dense scrub
- Scattered scrub
- Scattered broad-leaved trees
- Tall ruderal herbs
- Amenity grassland
- Ephemeral/short perennial herbs
- Introduced shrub
- Scattered introduced shrub
- Hardstanding
- Building
- Bare ground

Species list

Ag	Alder
Ap	Sycamore
Fe	Ash
Fj	Japanese knotweed
Prunus sp.	Cherry species
Pxh	London plane
Rc	Dog rose
Rf	Bramble
Salix sp	Salix species
Tiv	Lime

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Rev	Description	Drawn	Approved	Date

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Project

Varna Street County Primary School

Title

Phase 1 Habitat Survey 2009

Drwg No D1990.001

Scale Not to scale

Date 03/03/09

Drawn SMC

Checked EJS

Approved EJS