

7th October 2008

09 / 0163



Mr L Moore
Leisure and Environment
Three Rivers District Council
Three Rivers House
Northway
Rickmansworth, Herts
WD3 1RL

Dear Mr Moore

Re: Part Retrospective: Addition of watercress silt pits; proposed renewal of boundary fences and gate, re-positioning of processing plant including farm shop, new fishing club house, new farm workers accommodation, installation of solar panels and turbines, installation of water pump houses, installation of bio digesters and construction of paths for disabled access

Address: Croxley Green Watercress Farm and Fisheries, Rousebarn Lane, Croxley Green

Ref: 08/1640/FUL

The location of this retrospective application is on an identified Wildlife Site (Cassiobury Park, Ref W/S 83/038, 2.7ha, Grid Ref TQ095970), an extensive area of wetland habitats supporting a mosaic of old cressbeds, tall fen, willow carr, damp woodland and aquatic marginal vegetation. The variety of habitats support a diverse range of flora and fauna.

We have surveyed the site with the applicant and agreed terms of appropriate management in order to protect and enhance the nature conservation interests. Under the terms of the proposal and our recommended Conditions, we consider that this development will have a positive impact on this Wildlife Site. Furthermore we support the above proposals in terms of the attention to sustainability options, local food production, and restoration of the site's historical use, and the proposal for improved disability access. We are requesting that a habitat management plan be agreed with the Wildlife Trust and the Herts Biological Records Centre, within the first year of permitted development, to be broadly outlined and assured by Condition, should permission be granted.

Wildlife Sites are selected because they meet agreed scientific criteria for their important habitats and species. They represent critical natural



Herts & Middlesex

Grebe House
St Michael's Street
St Albans
Hertfordshire
AL3 4SN

Tel: (01727) 858901
Fax: (01727) 854542
Email: Info@hmwt.org
www.wildlifetrust.org.uk/herts



INVESTOR IN PEOPLE

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President
Sir Simon A Bowes Lyon, KCVO

capital with regard to Hertfordshire's environment and are therefore, included in Local Plans. The adopted Three Rivers Local Plan contains 6 policies (N1 to N3 and N15 to N17) that relate to nature conservation: Policies N1 to N3 refer to the identification, protection and enhancement of rare species and wildlife habitats, including statutory and non-statutory designations. N15 to N17 concern the protection and enhancement of trees, woodlands and hedgerows during and following development. The protection of Local Wildlife Sites is also enshrined in the County Structure plan review 1991-2011 (as adopted in 1998). Planning Policy Statement 9 states that Local Wildlife Sites have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education....Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests." The protection and enhancement of the natural environment is also reflected in PPS1, and policies ENV1 (Green Infrastructure), ENV3 (Biodiversity and Earth Heritage), and ENV5 (Woodlands) of the East of England Plan (May 2008).

We would also encourage Three Rivers Council to permit new fencing to be erected around the site to protect the site from fly-tipping. The Wildlife Site is currently being degraded by fly-tipping and its associated environmental hazards contaminants. Fencing will provide improved protection of the Wildlife Site from contaminants/pollutants and hazards both to future visitors to the site, and wildlife, and would reflect policies N1 to N3 and N15 to N17 of the Three Rivers Local Plan.

We suggest that the following Conditions be attached to any permission to secure the nature conservation interests of the site:

- **HABITAT MANAGEMENT PLAN**, to be agreed with the Herts & Middlesex Wildlife Trust and the Herts Biological Records Centre, is to be submitted to the LPA for approval in writing within 12 months of permission being granted. As shown in the map in section 4.4.2 of Document 24 'Wildlife Biodiversity and Fisheries', and clarified in Document 25, areas 1, 5, 6, 8 and 14 are not to be affected by the development proposals. The Habitat Management Plan is to provide a clear management strategy for these areas to demonstrate how they are to be managed sympathetically for wildlife. Improved fencing of the site is also strongly recommended to further secure the nature conservation interests.

Reason: to protect, and provide appropriate management of the habitats within Wildlife Site 83/038, in compliance with Policies N1 to N3 and N15 to N17 of the Three Rivers Local Plan, and with guidance in paragraphs 5.32 to 5.36 of PPS9, and the NERC Biodiversity Duty, and in compliance with policies ENV1 (Green Infrastructure), ENV3 (Biodiversity and Earth Heritage), and ENV5 (Woodlands) of the East of England Plan (May 2008).

- **BIRDS**: No removal of trees, scrub or hedges, shall be carried out on site between the 1st March and 31st August inclusive in any year, unless searched beforehand by a suitably qualified ornithologist.

Reason: nesting birds are protected from disturbance under the Wildlife & Countryside Act 1981 (as amended).

- **LIGHTING**: No external lighting shall be installed or affixed to any structure on the site unless the LPA has first approved in writing details of position, height, design and

intensity. The woodland/water habitats on this site make it highly suitable as a foraging area by bats, and any new lighting associated with the proposed development will affect their behaviour. Therefore we advise that all external lighting should be kept to a minimum, and any lighting to be installed should be of minimal light spillage, downward-facing and directed away from the woodland/water habitats.

Reason: The site itself (Wildlife Site 83/038) and its surrounding habitats (including Wildlife Site 83/016, Grand Union Canal) provide ideal habitat for nocturnal species such as owls and bats, which are adversely affected by artificial light pollution in sensitive areas.

- **TREES AND BATS:** No trees on site are to be felled until a bat mitigation scheme has been submitted to the LPA. This is to include the results of a survey to determine which trees for felling contain or are likely to contain bat roosts (those with cracks, rot holes, splits, dense ivy cover, etc) and mitigation measures if they need to be removed.

Reason: Some of the trees on site may contain features which could be used by roosting bats. If any of these are due to be removed as part of the development, they need to be checked for evidence of use by bats beforehand. Because bats are such a mobile species, this should be carried out as close to the time of felling as possible. Any that are found to contain bats will need to be left until the bats have gone or been excluded (which would require a licence), although it would be preferable to retain on site those specimens considered likely to be used by them. Felling techniques on all trees with potential bat habitat must be felled following all guidelines in 'Trees and Bats' (Arboricultural Association Guidance Note 1, May 2003, 2nd Ed), and in the presence of a bat ecologist. If bats are discovered Natural England will need to be consulted and a DEFRA (Department of Food and Rural Affairs) licence will need to be obtained prior to any recommencement of work, and mitigation measures proposed. All Bats and their roosts are legally protected by the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats & c.) Regulations 1994. If bats are present it is illegal to intentionally kill, injure or catch them, damage, destroy or obstruct their roosts, or to disturb bats. Bat roosts are also legally protected, even when bats are not present all of the time.

- **GREAT CRESTED NEWTS:** No works of ground clearance or construction to take place until a great crested newt assessment/survey has been submitted to the LPA and agreed. If great crested newts are present, a Method Statement, a Mitigation Strategy and Works Schedule stating how it is proposed to accommodate great crested newts within the new development.

Also please add the following Informative:

If great crested newts are found to be present then a Habitat Regulations Licence (from Natural England) will be required, before any works can begin, to make this permission lawful

The application site is also adjacent Wildlife Site *Grand Union Canal - Rousebarn Lane N. to Ironbridge Lock* (Ref W/S 83/016, ha, Grid Ref TQ089968), Canal with associated banks, locks and towpath. The site supports botanical and faunal interest along its length and provides a valuable wildlife corridor and link between Wildlife Sites.

The Trust wishes to seek assurances that the integrity of the adjacent Wildlife Site (*Grand Union Canal - Rousebarn Lane N. to Ironbridge Lock* (Ref W/S 83/016, ha, Grid Ref

TQ089968), Canal with associated banks, locks and towpath. The site supports botanical and faunal interest along its length and provides a valuable wildlife corridor and link between Wildlife Sites) is protected from any indirect effects associated with this development. We therefore request the following Condition also be attached, to protect the integrity of the adjacent Wildlife Site:

- No materials, debris, pollutants, vehicles or machinery associated with this development are stored or used within, or leached into, the Wildlife Site (Ref 83/016 Grand Union Canal).

Reason: to prevent any degradation of the adjacent Wildlife site, and to comply with Policies N1 to N3 (identification, protection and enhancement of rare species and wildlife habitats, including statutory and non-statutory designations) of The adopted Three Rivers Local Plan. The protection of Local Wildlife Sites is also enshrined in the County Structure plan review 1991-2011 (as adopted in 1998). Planning Policy Statement 9 states that "Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests". PPS1 states that account must be taken of natural hazards such as flooding, such as by enabling a larger buffer zone to be provided for along any river corridors.

The following should also be considered to be included as Conditions or Informatives in any permission, to encourage sustainability in new developments, and in compliance with the objectives of PPS1 (Delivering Sustainable Development).

- **BAT BOXES:** Erect bat boxes (Schwegler 1FQ) or bricks (Schwegler N27 or 1FR) onto/into the new buildings. These maintenance free roosts need to be installed at least 3m off the ground, protected from the elements and facing in a southerly/westerly direction.

Reason: to increase opportunities for wildlife in new developments, in compliance with guidance in paragraphs 5.32 to 5.36 of PPS9, the NERC Biodiversity Duty, and PPS1.

- **BIRD BOXES:** Erect Schwegler swift, starling and house-sparrow nest boxes and/or bricks on/in any tall building at least 5 metres above ground, protected from the elements and north/east facing. For further advice see http://www.rspb.org.uk/advice/helpingbirds/roofs/internal_boxes.asp.

Reason: to increase opportunities for wildlife in new developments, in compliance with guidance in paragraphs 5.32 to 5.36 of PPS9, and the NERC Biodiversity Duty.

- **GREEN ROOFS** should be considered in the construction of any flat roofed buildings contribute greatly to on-site biodiversity by attracting a range of insects and birds. They also provide natural insulation, rainwater attenuation and cooling, and are visually attractive and innovative. **GREEN WALLS** provide many of the same benefits, and have been shown to provide considerable temperature regulation, as well as contributing to on-site biodiversity by providing habitat for insects and nesting birds.

Reason: to aim towards biodiversity enhancements in new developments in compliance with guidance in paragraphs 5.32 to 5.36 of PPS9, PPS1 and the NERC Biodiversity Duty.

- **WATER SAVING MEASURES:** Consider including grey-water recycling, external water butts etc in new building design (http://www.environment-agency.gov.uk/subjects/waterres/286587/286599/286911/548861/862159/?version=1&lang=_e and <http://www.greenbuildingstore.co.uk/water-reedbeds.php>).

Reason: to aim towards sustainable water usage in new developments, in compliance with sustainability guidance in PPS1.

Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9)

PPS9 (August 2005) contained two important new protections for biodiversity in general and for UKBAP species in particular:

1. The new **alternative sites** principle: This favoured the locating of any development which stood to compromise biodiversity at alternative sites resulting in no or less harm
2. A new requirement that planning authorities should *refuse* permission where harm to the species or their habitats would result, unless the need for, and benefits of, the development clearly outweighed the harm.

PPS9 also states that "Local Nature Reserves and Local Sites have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education."

"Plan policies and planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests"

Article 10 of the EU Habitats Directive (which has been transposed into UK law in regulation 37 of the Habitats Regulations 1994) says that "Member states shall endeavour, where they consider it necessary, in their land use planning and development policies, and, **in particular, with a view to improving the ecological coherence of the Natura 2000 network**, to encourage the management of features of the landscape which are of major importance for wild flora and fauna.....**Local Sites systems and ancient hedgerows contribute to fulfilling this requirement** and can play a very important part in maintaining the links that join up and support the nationally and internationally recognised sites."

Habitats and species in UK and Local Biodiversity Action Plans: habitats and species of principal importance in England

Paragraph 84. The potential effects of a development, on habitats or species listed as priorities in the UK Biodiversity Action Plan (BAP), and by Local Biodiversity Partnerships, together with policies in the England Biodiversity Strategy, are capable of being a material consideration in the preparation of regional spatial strategies and local development documents and the making of planning decisions.

Paragraph 85. Section 74 of the Countryside and Rights of Way Act 2000 places new duties on Government Ministers and Departments in respect of the conservation of biodiversity. In exercising his duty, the First Secretary of State may include local authorities to promote the taking of steps by others to further the conservation of the habitat types and species of principal importance for biodiversity. In PPS9, the Government has indicated that local authorities should take steps to further the conservation of habitats and species of principal importance through their planning function (see PPS9 paragraphs 11 and 14). The lists of the habitat types and species subject to this duty were published by Defra in 2002 and comprise the list of species and habitats identified as priorities under the UK Biodiversity Action Plan.

Building in Biodiversity

Paragraph 5.32 of PPS9 states that plan policies should promote opportunities for the incorporation of beneficial biodiversity and geological conservation features within the design of development. The design, layout and landscaping of new developments offer enormous opportunities to add to, or enhance, biodiversity or geological conservation. These can range from minor additions to the fabric of buildings, for example to provide nesting spaces for species such as swifts, through to providing major new areas of biodiversity habitat alongside development. One example provides suggestions for accommodating reptiles and amphibians in designed landscapes. The type of measures introduced may be guided by priorities established in local and regional BAPs.

Paragraph 5.33: The England Biodiversity Strategy makes specific reference to the need to incorporate more biodiversity elements into buildings and uses the 'green roofs for black redstarts' work in London as a case study. Green roof initiatives provide a prominent example of incorporating biodiversity in the design of new buildings. London, for example, has a number of green roofs which have attracted particular attention. The Laban Dance Centre, winner of the Stirling Prize for Architecture 2003, has an aggregate-based roof created for black redstarts from building rubble on site.

Paragraph 5.34: Other species, such as bats and swifts, are highly dependent on built structures for survival. Maintenance of existing, and the design of new, buildings can take account of this. Biodiversity can be incorporated into small-scale developments through wildlife-friendly landscaping, installation of sustainable drainage schemes, and features such as green walls, balconies, roofs and nesting and roosting spaces.

Paragraph 5.35: At a simple level, nest and roosting boxes can be easily incorporated in or onto existing and new buildings. A wide range of boxes to benefit birds, bats and some invertebrates are available. There are also opportunities for incorporating artificial nesting burrows in the walls and embankments of civil engineering structures to benefit species such as the sand martin and kingfisher.

Paragraph 5.36: Development control decisions which embrace biodiversity and geological conservation can be of broad benefit to communities by creating employment through new projects, creating cost effective naturally functioning utilities (such as for flood relief and drainage), enhancing the local economy through tourism and improving local surroundings which enhance quality of life.

PPS1 – Delivering Sustainable Development:

Objective 5 of the above states that "Planning should facilitate and promote sustainable and inclusive patterns of urban and rural development by protecting and enhancing the natural and historic environment, the quality and character of the countryside, and existing communities".

Paragraph 17 states that "the Government is committed to protecting and enhancing the quality of the natural and historic environment, in both rural and urban areas. Planning policies should seek to enhance the quality, character and amenity value of the countryside and urban areas as a whole. A high level of protection should be given to most valued townscapes and landscapes, wildlife habitats and natural resources. Those with national and international designations should receive the highest level of protection."

Paragraph 19 (*Protection and enhancement of the Environment*) states that “planning decisions should be based on recognition of the limits of the environment to accept further development **without irreversible damage.**”

Paragraph 20 (*Protection and enhancement of the Environment*) states that “Development plan policies should take account of environmental issues such as: - mitigation of the effects of, and adaptation, climate change through the reduction of greenhouse gas emissions and the use of renewable energy; air quality and pollution; land contamination; the protection of groundwater from contamination; and noise and light pollution”.

PPS 1 also states that “The policies set out in this PPS....may also be material to decisions on individual planning applications”.

Policy ENV3 (*Biodiversity and Earth Heritage*) of the East of England Plan (May 2008)

Planning authorities and other agencies should ensure that the region’s wider biodiversity, earth heritage and natural resources are protected and enriched through the conservation, restoration and re-establishment of key resources by:

- ensuring new development minimises damage to biodiversity and earth heritage resources by avoiding harm to local wildlife sites and, wherever possible, achieving net environmental gains in development sites through the retention of existing assets, enhancement measures, and new habitat creation;
- promoting the conservation, enhancement, restoration, re-establishment and good management of habitats and species populations in accordance with Regional and Local BAP targets;
- ensuring the appropriate management and further expansion of wildlife corridors important for the migration and dispersal of wildlife;
- having regard to the need for habitats and species to adapt to climate change; and
- establishing networks of green infrastructure, maximising their biodiversity value, as provided for under Policy ENV1.

Policy ENV1 (*Green Infrastructure*) of the East of England Plan (May 2008)

Areas and networks of green infrastructure should be identified, created, protected, enhanced and managed to ensure an improved and healthy environment is available for present and future communities. Green infrastructure should be developed so as to maximise its biodiversity value and, as part of a package of measures, contribute to achieving carbon neutral development and flood attenuation. In developing green infrastructure opportunities should be taken to develop and enhance networks for walking, cycling and other non-motorised transport.

Assets of regional significance for the retention, provision and enhancement of green infrastructure includes: the Chilterns Areas of Outstanding Natural Beauty and other areas of landscape, ecological and recreational importance, notably the Watling Chase Community Forest), Epping Forest, Hatfield Forest, the Lee Valley Regional Park and green infrastructure projects around the fringes of Greater London and associated corridors.

The Natural Environment and Rural Communities Act (2006) Biodiversity Duty

Section 40(1) of the NERC Act places a direct statutory duty to conserve biodiversity on all public authorities:

Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.

Section 41(3); the Secretary of State must take such steps as appear to him to be reasonably practicable to further the conservation of the living organisms and types of habitats included in the list of species of principal importance (the UKBAP list). He is further required to promote the taking by others (such as public bodies) of such steps to further the conservation of the statutory priority species. Section 40(3); conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat. **Local Authorities have a duty therefore to work to increase populations of species and create and enhance BAP habitats.**

If you wish to discuss this matter further then please contact me.

Yours sincerely

Carol Lodge
Conservation Officer (Planning)
E-mail Carol.Lodge@hmwt.org

Wildlife Site : WS 83/038 Croxley Green Watercress Farm & Fisheries Area 15acres (c 6.5ha)

Grid Ref: TQ089963 District: Three Rivers

Date of Survey: 14.10.08 Surveyors: J Moss, Brenda Harold, N Holmes-Smith, Carol Lodge, D Laming

Commentary. The following list of higher plant species derives from a brief examination of the more accessible areas of the site. The marginal woodland and canal bank were not examined. Nonetheless, 110 plant species were recorded, including 17 assorted indicator species and several other significant species, displaying considerable plant and habitat diversity. The sensitive management proposed for the site could maintain and even increase this diversity. A more systematic survey earlier in the season could reveal further plant species. Similarly, summer visitors could significantly increase the number of bird species.

Birds recorded: Blue Tit, Great Tit, Siskin (c 25), Heron, Dabchick, Mallard (2), Ring-necked Parakeet (3 over), Robin, Blackbird, Wren, Jay, Moorhen, Greater Spotted Woodpecker, Woodpigeon, Black-headed Gull (15 – 20), Nuthatch, Long-tailed Tit, possible Willow Tit.

NB. The DAFOR code "R" is used here in a number of cases merely to record a species' presence rather than its rarity.

Latin Name	English Name	DAFOR	Indicator sp
<i>Acer pseudoplatanus</i>	Sycamore	O	
<i>Achillea millefolium</i>	Yarrow	R	
<i>Alliaria petiolata</i>	Garlic Mustard	R	
<i>Alnus glutinosa</i>	Alder	A-D	
<i>Anagallis arvensis</i>	Scarlet Pimpernel	R	
<i>Angelica sylvestris</i>	Wild Angelica	R	η/κ
<i>Anthriscus sylvestris</i>	Cow Parsley	O	
<i>Artemisia vulgaris</i>	Mugwort	R	
<i>Aster sp</i>	Michaelmas Daisy	R	
<i>Betula pendula</i>	Silver Birch	R	
<i>Brachypodium sylvaticum</i>	Wood False Brome	F	
<i>Buddleja davidii.</i>	Butterfly Bush	LO	(seedlings)
<i>Calystegia silvatica</i>	Large Bindweed	O	
<i>Carex pendula</i>	Pendulous sedge	F	•
<i>Carex riparia</i>	Greater Pond-sedge	LA	
<i>Circaea lutetiana</i>	Enchanter's-nightshade	R	•
<i>Cirsium arvense</i>	Creeping Thistle	R	
<i>Cirsium palustre</i>	Marsh Thistle	R	η/κ
<i>Cirsium vulgare</i>	Spear Thistle	R	
<i>Clinopodium vulgare</i>	Wild Basil	LO	
<i>Conyza canadensis</i>	Canadian Fleabane	LO	
<i>Cornus sanguinea</i>	Dogwood	R	
<i>Cotoneaster Sp.</i>	Cotoneaster	R	
<i>Crataegus monogyna</i>	Hawthorn	O	
<i>Dactylis glomerata</i>	Cocksfoot	O	
<i>Daucus carota</i>	Wild Carrot	LF	
<i>Dryopteris filix-mas</i>	Male Fern	R	
<i>Epilobium hirsutum</i>	Great Willowherb	LA	
<i>Equisetum palustre</i>	Marsh Horsetail	LF	κ
<i>Eupatorium cannabinum</i>	Hemp-agrimony	F	κ

<i>Euphorbia helioscopia</i>	Sun Spurge	R	
<i>Fallopia japonica</i>	Japanese Knotweed	O	
<i>Festuca gigantea</i>	Giant Fescue	R	•
<i>Filipendula ulmaria</i>	Meadowsweet	LO	η/κ
<i>Fraxinus excelsior</i>	Ash	F-A	
<i>Galium aparine</i>	Cleavers	O	
<i>Geranium dissectum</i>	Cut-leaved Cranesbill	R	
<i>Geranium robertianum</i>	Herb Robert	R	
<i>Geum urbanum</i>	Wood Avens	O	
<i>Glechoma hederacea</i>	Ground Ivy	O	
<i>Glyceria maxima</i>	Reed Sweet-grass	R	
<i>Hedera helix</i>	Ivy	A	
<i>Heracleum sphondylium</i>	Hogweed	F	
<i>Ilex aquifolium</i>	Holly	F	•
<i>Iris pseudacorus</i>	Yellow Iris	LO	
<i>Juglans regia</i>	Walnut	LF	
<i>Juncus bufonius</i>	Toad Rush	LF	
<i>Juncus effusus</i>	Soft Rush	R	
<i>Juncus inflexus</i>	Hard Rush	R	
<i>Juncus sp</i>	Rush sp	R	
<i>Lamium album</i>	White Dead Nettle	R	
<i>Lamium purpureum</i>	Red Dead-Nettle	R	
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	LO	©η
<i>Lolium perenne</i>	Perennial Rye-grass	R	
<i>Lonicera nitida</i>	Chinese Honeysuckle	R	
<i>Lycopus europaeus</i>	Gipsywort	F	
<i>Lysimachia nummularia</i>	Creeping-Jenny	R	η
<i>Medicago lupulina</i>	Black Medick	LO	
<i>Myosotis sp</i>	Forget-me-not	R	
<i>Myosoton aquaticum</i>	Water Chickweed	R	
<i>Persicaria maculosa</i>	Redshank	R	
<i>Petasites hybridus</i>	Butterbur	LA	
<i>Picris echioides</i>	Bristly Oxtongue	O	
<i>Plantago lanceolata</i>	Ribwort Plantain	LO	
<i>Plantago major</i>	Greater Plantain	O	
<i>Poa annua</i>	Annual Meadow-grass	R	
<i>Poa trivialis</i>	Rough Meadow-grass	LA	
<i>Polygonum aviculare</i>	Knotgrass	R	
<i>Populus tremula</i>	Aspen	LO	•
<i>Potentilla reptans</i>	Creeping Cinquefoil	LO	
<i>Prunella vulgaris</i>	Selfheal	R	
<i>Prunus avium</i>	Wild Cherry	R	•
<i>Prunus laurocerasus</i>	Cherry Laurel	R	
<i>Quercus robur</i>	Pedunculate Oak	R	
<i>Ranunculus acris</i>	Meadow Buttercup	R	η
<i>Ranunculus repens</i>	Creeping Buttercup	LF	
<i>Ranunculus sceleratus</i>	Celery-leaved Buttercup	LF	
<i>Rhamnus catharticus</i>	Buckthorn	R	
<i>Ribes rubrum</i>	Red Currant	R	
<i>Rorippa nasturtium-aquaticum</i>	Water-cress	LA	
<i>Rosa canina agg</i>	Dog Rose	O	

<i>Rubus fruticosus</i>	Bramble	O	
<i>Rumex hydrolapathum</i>	Water Dock	R	
<i>Rumex obtusifolius</i>	Broad-leaved Dock	R	
<i>Salix sp</i>	Willow sp	A-D	
<i>Sambucus nigra</i>	Elder	R	
<i>Scrophularia auriculata</i>	Water Figwort	O	
<i>Scutellaria galericulata</i>	Skullcap	R	
<i>Senecio jacobaea</i>	Common Ragwort	R	
<i>Silene dioica</i>	Red Campion	O	
<i>Sinapis arvensis</i>	Charlock	R	
<i>Solanum dulcamara</i>	Bittersweet	R	
<i>Solidago canadensis</i>	Canadian Goldenrod	O	
<i>Sonchus asper</i>	Prickly Sow thistle	R	
<i>Sparganium erectum</i>	Branched Bur-reed	R	
<i>Stachys sylvatica</i>	Hedge Woundwort	O	
<i>Symphytum x uplandicum</i>	Russian Comfrey	F	
<i>Taraxacum officinale agg</i>	Dandelion family	R	
<i>Thlaspi arvense</i>	Field Pennycress	LO	
<i>Trifolium hybridum</i>	Alsike Clover	R	
<i>Trifolium pratense</i>	Red Clover	R	
<i>Trifolium repens</i>	White Clover	LF	
<i>Tussilago farfara</i>	Colt's-foot	R	
<i>Typha latifolia</i>	Bulrush	LF	
<i>Ulmus glabra</i>	Wych Elm	R	•
<i>Urtica dioica</i>	Stinging Nettle	O	
<i>Veronica beccabunga</i>	Brooklime Speedwell	LO	
<i>Viburnum opulus</i>	Guelder-rose	R	•
<i>Vicia sativa,</i>	Common Vetch	LO	
<i>Viola riviniana</i>	Common Dog Violet	R	•

List revised October 2004

Grassland indicator species revised June 2008

Total Number of Species = 110

KEY: •: Ancient woodland (10 species required) indicator species = 9

η: Neutral grassland (8 species required) indicator species = 2

η: Marshy grassland (5 species required) indicator species = 4

κ - Fen and Swamp species indicator species = 2

DAFOR SCALE

D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare
L	Locally

Title: Wildlife, biodiversity and fisheries
Location: Croxley Green Watercress Farm and Fisheries
Address: Rousebarn lane, Rickmansworth, Hertfordshire, WD3 3GG
Date: 12 January 2009
Version: 501

This document is to be read in conjunction with the whole planning application – specifically the following documents which are referenced in the text:

- 1.) Tree survey
- 2.) Core planning document
- 3.) Wildlife survey report
- 4.) Wildlife report
- 5.) A0 site plans and tree plans

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1 Introduction

The purpose of this planning application is to improve the security of Croxley Green Watercress Farm and Fisheries. The improved security will then enable improvements in environmental management and good farming compliance. The end result will lead to the creation of new farming jobs and an increased supply of watercress for the domestic market.

1.1 Items covered in the planning application

- 1.) Renewal of boundary fence and gate
- 2.) Relocation of watercress processing plant
- 3.) Part - retrospective application for the removal of asbestos cement and the replacement with timber for the water pump houses and processing plant
- 4.) Retrospective application for the addition of watercress silt pits

1.2 Project benefits

Local employment:

- To have 5 full time employees, and 6 part time workers

Environmental

- CO₂ footprint will show an uptake of 6 tonnes per year
- The cleaning of the fly tipped land will create a new fertile area of 4 acres
- The cleaning of the watercress beds will create a habitat for wildlife and see new growth
- The enhancement and improved efficiency to the floodplain

Historic site of Interest

- The regeneration of an old established industry

Nutritional

- The removal of a suburban food desert, and the creation of a new local food producer
- The supply of watercress and water mint (up to 4% of the UK supply)

1.3 Site Background

There are references that this farm has been growing watercress since 1820. The farm was purchased in July 2007 from the Sansom family who have been recognised since the early 1800's as UK experts in the production and commercialisation of watercress. (ref: hertscc.gov.uk).

Over the last 10 years economic pressures on the Sansom family have forced them to consider their operations. This site is difficult to manage. The main access to the farm is via boat from the Grand Union canal. There is pedestrian and very limited vehicle access to the farm.

As a result of the economic pressures the watercress beds were not harvested for many years.

During this period the site was subject to the abuse of fly tipping, vandalism (including the burning of the processing area, destruction of fences), and other incidents.

It is the ambition of RTSA to continue to grow and harvest watercress at this farm.

A summary of the proposed actions

To harvest the watercress beds and regenerate the 6,000 tonnes (estimated) of silt, peat and decayed organic material (referred to as silt in our application) that has collected.

The canal is fed by the river Gade which runs through the site. Considerable care must be given in any initial harvesting to ensure there is no discharge to the canal.

Silt pits (have been created and used) to enable a drainage channel to be created across the watercress beds. This now allows the clean flow of the river into the canal. It is estimated that it will take two years to remove the silt from the watercress beds using the silt traps.

After this time it will be possible to grow watercress for commercial use. The watercress will then need to be harvested and processed in a plant room. The current plant room has been damaged by fire and a new plant room is required.

There are 4 acres of land which has recently been used for fly tipping and gravel disposal. This area has now been cleared of the fly tipped material and some gravel. The harvested material and silt will be composted around the edge of the land and will be used to regenerate the soil. After seven years of managed pasture the land is hoped to be ready for planned plant growth. Initial pasture planing is planned for April 2008.

A further 3 years is anticipated for planned plant growth to reach maturity and the completion of the farm regeneration.

2 Site plans

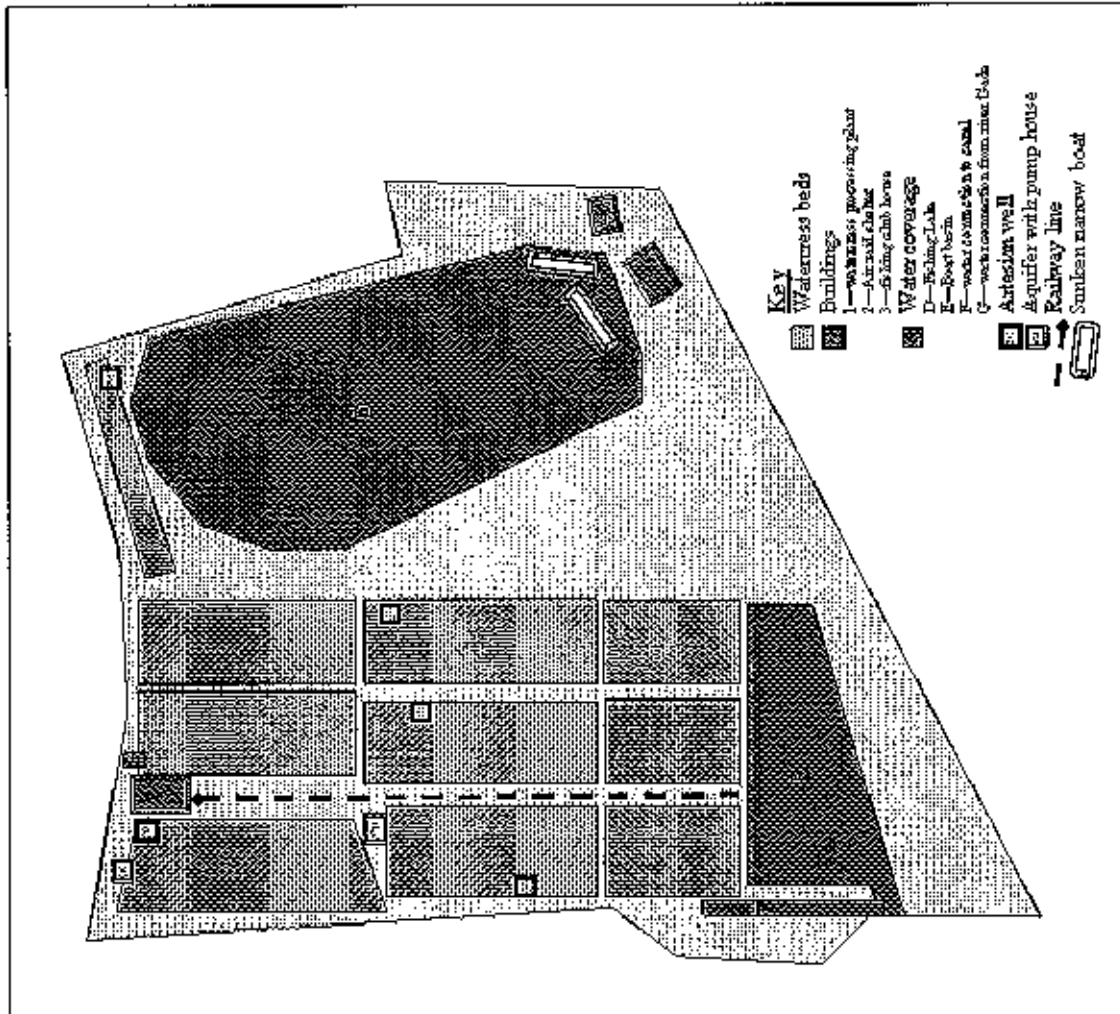
2.1 Aerial photograph

The picture is reference of:

<http://www.multimap.com/maps?qs=wd33gg&countryCode=GB#map=51.6549B,-0.42585|18|32&loc=GB:51.65722;-0.43018:16|wd33gg|WD3%203GG>

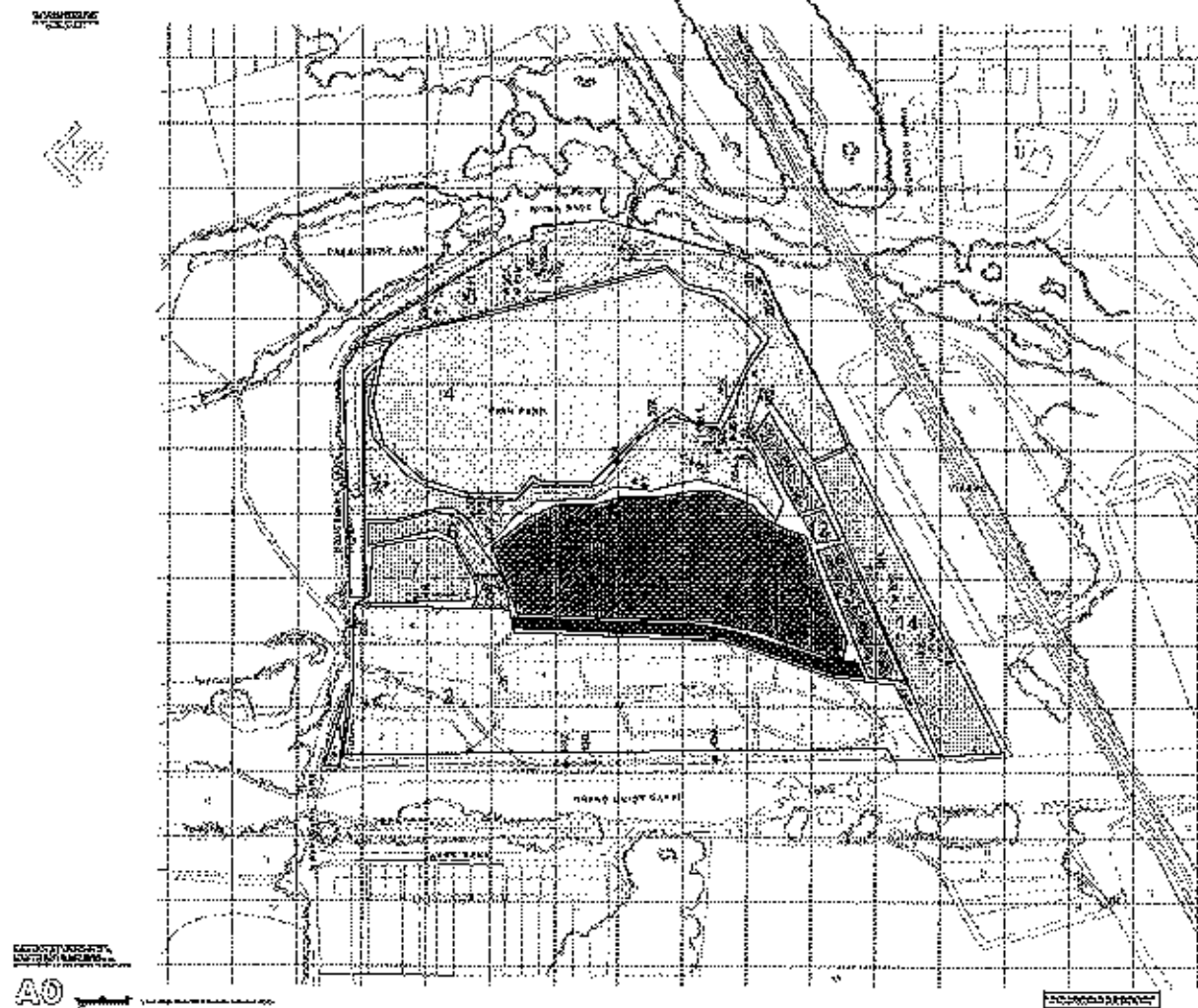


2.3 Diagrammatic layout of farm



2.5 Plan of the site by location description

Arcturay House Farm & Outbuildings



Key

- 1 = roadside border tree lined - see tree survey
- 2 = watercress beds - with boat basin at end
- 3 = watercress beds
- 4 = lake
- 5 = trees and some wetland (to north) around lake
- 6 = trees around car park
- 7 = car park
- 8 = trees around car park
- 9 = area to be converted to pasture, and then to agricultural land
- 10 = composting area between watercress beds and pasture -
- 11 = closed silt pit
- 12 = silt pit operation area
- 13 = Open to closed silt pit
- 14 = tree area to house livestock

2.6 Activity description at each location

2.6.1 1 = roadside border tree lined - see tree survey

The replacement / repair of the fencing around the site, and the removal of fly tipped material.



Note: the removal of litter / fly tipping occurs frequently within Cassiobury park:

<http://www.communicate.co.uk/herts/friendsofcassioburypark/page4.phtml>

The above link describes the frequent litter clearing performed by the friends of Cassiobury park.

2.6.2 2 = watercress beds – with boat basin at end

Years 1 to 2

The watercress beds will be cleared to maintain water flow. (please see appendix A for more details)

The silt will be removed, and re-used for top soil if passing analytical testing.

The pump houses will be renewed.

The levels of water in the bed will be varied on a frequent basis as the site and beds are studied (note: at some periods the beds will contain no water)



Year 3

Watercress seedlings will be planted in the beds

Year 4 to 5

Watercress produced for human consumption

For reference the following activities occur in Cassiobury park on a frequent basis repeated annually:

The watercress beds are no longer in commercial use but provide a habitat for water birds including Snipe, Kingfisher, Grey Wagtail, Grey Heron, Teal and Green Sandpiper. In the absence of management the watercress beds will silt up and revert to marsh then scrub. One of the tasks of Friends of Cassiobury park is to maintain this valuable wildlife habitat by keeping waterways clear and flowing and raking up vegetation in the beds. This is great fun especially if you like playing mud pies come along and try it one day.

<http://www.communicate.co.uk/herts/friendsofcassioburypark/page3.phtml>

Please note that the friends of Cassiobury park are not using best practice and using silt pits in the process of clearing the watercress beds. At all opportunities we are looking to work and manage the farm in the most appropriate of ways.

2.6.3 3 = watercress beds

Years 1 to 2

The watercress beds will be cleared to maintain water flow. (please see appendix A for more details)

The silt will be removed, and re-used for top soil if passing analytical testing.

The pump house will be renewed.

The levels of water in the bed will be varied on a frequent basis as the site and beds are studied (note: at some periods the beds will contain no water)

Year 3

Watercress seedlings will be planted in the beds

Year 4 to 5

Watercress produced for human consumption

2.6.4 4 = lake

The lake will be maintained to support the activities of the fishing club in its usual manner:

Straw bales of barley will be used to control the algae

The knotweed will be continually cut back and disposed of in appropriate manner

The fishing swims will be maintained

Additional work

Over a period of 5 years disabled pathways will be built around the lake to replace the current irregular brick footway



The Grondon Wickfasham Quarry in Oxfordshire produces a material that satisfies all these needs, a natural looking brown gravel that matures and improves with age and is very hardwearing. Coxwell Self-Binding Gravel is a unique material formed in what was once a tropical lagoon at the Faringdon site. A combination of sponge gravel and grit sand, the material is available only through Grondon and is proven on contracts at:

- Richmond Park, London
- Cotswold Wildlife Park, Burford, Oxfordshire
- Westonbirt Arboretum, Tetbury, Gloucestershire
- Barge Walk, Kingston-upon-Thames
- Painshill Park, Chobham
- Waterside Park, Heathrow
- Hambledon Horse Trials, Oxfordshire

The lake is under attack from signal crayfish and a licence to catch using up to 12 traps has been granted. This work will continue on a frequent basis to preserve the current fish stocks.

2.6.5 5 = trees and some wetland (to north) around lake

No work is planned to this area apart from the surface removal of the old fishing club.

2.6.6 6 = trees around car park

The area will be tidied of fly tipped material

2.6.7 7 = car park

Ballast collected from site will be levelled on the car park site to improve the hard standing areas

2.6.8 8 = trees around car park

The area will be tidied of fly tipped material
Trees and ground level plants will be pruned

2.6.9 9 = area to be converted to pasture, and then to agricultural land

It has been estimated that over 160,000 tonnes of wet compost will be required to aid in the regeneration of this land. Initial work has begun with early composted material. Compost will be left to degrade by winter frosts and rain and then once dried (between May to July) will be laid on the area.

For the first 6 to 7 years the land will put to pasture (principally with rye grass). If possible the cut grass from the pasture will be to compost to support the regeneration of the area.

Following this pasture period the area will be converted into scented gardens with design formats aimed at making gardens for the visually impaired and blind.

Depending upon the final soil quality it may become possible to make product fit for human consumption, failing this the area will be used to cultivate scented products and possibly herbs.

The scented and colourful plants will create an insect haven which will encourage additional bird and animal life.

Three buildings and two processing units have been applied for in the planning application.

The replacement watercress processing plant.

The harvesting of watercress is dependent upon the ability to bag and chill the watercress as soon as it has been harvested. The new watercress processing plant will have chilling and plant conversion processes to enable the commercial sale of the product.

2.6.10 10 = composting area between watercress beds and pasture land

The watercress plants will be harvested from the watercress beds and piled in the area between the beds and the pasture land. The plants have a high water and nitrogen content and decompose rapidly. There is no need to for additional nitrogen to be added although it may be suited in controlled areas to consider the addition of animal excretion for specific plant growing areas, or for new watercress seedlings. The process of animal excretion addition will not be considered for the first 3 years.

G. Howard-Williams¹, S. Pickmere¹ and J. Davis¹

(1) Freshwater Section, Ecology Division, D.S.I.R., Box 415, Taupo, New Zealand

Received: 30 March 1982 Revised: 8 June 1982

Abstract We examined the decomposition of watercress in the laboratory at 10° and 20 °C, and in the field. Rates varied from 0.058 g g⁻¹ day⁻¹ in the laboratory to 0.118 g g⁻¹ day⁻¹ in the field. There was a rapid generation of particles of size <900 µm. It is thought that washout of these from the interbags in the field accounted for high field decomposition rate. Formation of dissolved nitrogen compounds during decomposition followed a time series from NH₄⁺ sup⁻ to NO₂⁻ sup⁻ to NO₃⁻ sup⁻ with dissolved organic nitrogen accumulating at the end of decomposition. Ammonification rates were 480 and 667 g NH₄-N g⁻¹ (dry wt) day⁻¹ and nitrification rates on the decomposing tissues were 840 and 571 µg NO₃-N g⁻¹ (dry wt) day⁻¹ at 10° and 20 °C respectively. Fifty-six per cent of the initial plant N was regenerated as NO₃-N 21% as DON and 25% remained as refractory particulate N.

As the watercress decomposes it will be moved to the central areas of the pasture land to complete the composting cycle prior to spreading.

2.6.11 11 = closed silt pit

The closed silt pit is the reserve pit for when main work is being performed in the watercress beds. The pit will be filled and emptied on a regular basis. It is predicted to contain a high level of nitrogen based compounds and have a high pH. The frequent changes to the environmental conditions of the pit are not thought to support a habitat.

2.6.12 12 = silt pit operation area

The site will be cut back during operation. The operation will typically involve the pumping of water from both pits and a base from which to remove the sediment collected in the pits.

2.6.13 13 = Open to closed silt pit

This is the larger of the two pits and has been designed to enable a floating dredger to enter the pit if the sediment extraction process fails.

The open pit has now become a habitat for freshwater fish of various kinds.

2.6.14 14 = tree area to house livestock

As part of the working farm the intention is to have some livestock (principally chicken, goat and sheep). The animals would be principally housed in this area under the tree canopy. When the farm fencing is approved and installed fenced run areas will be used to house the livestock.

3 PPS 9 – Fisheries and Biodiversity

Good practice summary

The planning system requires a strong environmental evidence base and planning authorities can help establish and maintain this by adopting the following good practice:

- making full use of GIS and other web-based information sources;
- identifying key information gaps and filling these with further survey work;
- using information to identify and map areas best suited for proactive enhancement measures;
- integrating information and priorities established in biodiversity/geodiversity action plans and partnerships;
- supporting the establishment of a Local Record Centre;
- ensuring access to in-house or shared ecological/geological expertise; and
- tapping the knowledge and experience held within the wider community.

3.1.1 Wildlife Site Designation

A non-statutory designation for sites of substantive nature conservation, geological or geo-morphological value. These sites are primarily those identified in the "Habitat Survey for Watford" carried out by the Herts and Middlesex Wildlife Trust and the Herts Biological Records Centre and published in 1998, but may also include any other sites which are subsequently identified during the life of the plan and may include for, example, sites identified during river habitat surveys undertaken by the Environment Agency.

4 Biological and Biodiversity survey

4.1 Tree survey

See document 6 section 5 of the planning application

4.1.1 Bat and Owl survey

At the site meeting of 2nd October 2008 it has been indicated that a bat survey would be required if there is to be removal of trees. The requirement for an owl survey was not requested but could be included in a bat survey if required at a later date.

4.1.2 Removal of trees

Within the tree survey there are a number of trees that have been proposed for removal. The reasons for removal are:

- 1- The trees are dead and present a health and safety issue
- 2- The trees are in an overly competitive environment and their trunk diameter is insufficient for their height and that managed thinning would encourage the surrounding population
- 3- Species dominance is too great and there should be more diverse planting
- 4- Poor management of tree canopy heights especially at the border of forested areas

There are various approaches for the tree management on the site that could be quite different but of equal environmental importance.

It is proposed that an on-going tree strategy for the site be adopted. Specific mention should be made that no trees of significant size should be felled without an understanding of the impact to any bat population.

It is proposed that a meeting to determine strategy be held with the Herts and Middlesex wildlife trust, environment agency and Hertfordshire county council following approval of the planning permission and this should be a criteria of the planning permission.

4.2 Badger survey

Distribution in Britain - Optimal badger habitat usually has the following characteristics:

1. Soil that is well-drained, easy to dig and firm enough to prevent collapse.
2. The presence of an adequate food supply throughout the year.
3. Sufficient cover to allow the animals to emerge and leave inconspicuously.
4. Relative freedom from disturbance by people and domestic animals.

An environment in which these requirements are met is hilly, with sandy soils, containing a mosaic of habitats including deciduous forest interspersed with grassland with a high abundance of earthworms. High badger densities occur in such areas in the South West of England.

Ref: <http://www.badgerecology.org/BEHabitat.htm>

At the site survey on 2nd October 2008 it was concluded that the site would be highly unlikely to contain Badgers. The wet, damp lowland conditions, the hardness of the substrate and the severe lack of food would make this a very unsuitable environment. On observation around the site there are no signs of any badger activity.

Conclusion – a badger survey would not be required

4.3 Newts (specifically Great Crested)

At the site survey on 2nd October 2008 it was considered that the site would be unlikely to contain newts. The principal reasons being; habitat, existing frequency, and competitive environmental pressures

4.3.1 Habitat

Great crested newts need water bodies for breeding. Eggs are laid singly on pond vegetation in spring, and larvae develop over summer to emerge between August and October, normally taking 2–4 years to reach maturity. Juveniles spend most time on land and like adults may be found a considerable distance from breeding sites. Breeding sites are usually medium-sized ponds, although ditches and other water bodies may be used less frequently. Ponds with good amounts of both marginal and submerged aquatic vegetation (which is used for egg-laying) seem to be favoured. Great crested newts do not require very high water quality, but are normally found in ponds with a neutral pH. The linkages between habitats are important, since great crested newts often occur in metapopulations that include clusters of several or many ponds. Ideal great crested newt habitat should include a range of terrestrial features such as rough grassland, hedgerows, woodland and scrub within 500 metres of the breeding pond.

Ref: <http://www.wlct.org/eisure/biodiversity/greatcrestednewt.pdf>

The watercress beds at the site either have strong flowing water to enable the crop to grow, are empty with no water (reading for planting), or held stagnant in the period between clearing and re-planting when the pH of the water decreases as it becomes more acidic. The dynamic nature of the watercress beds makes it unlikely for a population to ever develop.

The white water seen in spring months, when the beds flood, making the habitat unsuitable for newts.



4.3.2 Existing frequency

Ref: Watford Annual Monitoring Report 2006

It has been ascertained that Watford has two populations of Great Crested Newt. The ponds inhabited (both approximately 25 square metres) are at Paddock Road allotment and Cassiobury Park. Great Crested Newt surveys were subsequently carried out at Paddock Road Allotment in May and June 2006 and the population there is significant with at least 100 individuals. A survey was carried out at Cassiobury Park in May 2006, where the population is less than 5.

There is no evidence that the park is supporting a viable population.

4.3.3 Competitive environmental pressures

There is a very large population of signal crayfish at all the water areas of the site. They are extremely competitive with newts for both food source and in addition display a carnivorous approach towards them. It is considered highly unlikely that the newts could survive and populate this area.

4.3.4 Proposed action

If a water body is located within the site, newts may breed there. In the latter case, the only certain way to discover whether Great Crested Newts are there is to survey for them. This must be undertaken during the spring and summer (mid-March to mid-June) when the adults are either in the water, entering it or leaving it.

It is proposed that planning permission be granted subject to a Great Crested Newt Survey and Impact Assessment being conducted only after the granting of the planning permission.

4.4 Wildlife and vegetation survey

The farm is adjacent to Cassiobury park.

4.4.1 Wildlife at neighbouring land

Cassiobury Park is a large park of great local heritage importance and rich in wildlife. It has a variety of habitats, including the River Gade and the Grand Union canal. Other wetland includes: streams, ditches, springs, ponds and watercress beds. There is also wet grassland and carr woodland (wet woodland). Elsewhere there is acid grassland and veteran trees that provide mature and dead wood niches.

The wet areas in the park are important because areas of open water, marsh and alder carr are uncommon in Hertfordshire. Only about 114 hectares of fen or marsh habitats now remain in Hertfordshire. Key habitats that are locally rare, or threatened, and require conservation action include: tall fen swamp, Alder carr, Chalk stream and acid grassland. Although watercress beds are artificial, they support a scarce associated fauna, similar to chalk streams, and this is one of only two left in the County.

Plant species include: water-crowfoot, common water starwort, water plantain and celery-leaved buttercup

Birds include: song thrush, all three species of woodpecker, grey heron, moorhen, swan, kingfisher, grey wagtail, teal, green sandpiper, water rail and mallard and in the spring/summer, blackcaps and chiffchaffe are heard. House martins, swallows and swifts can be seen feeding on insects over the park. In the winter snipe, redwings, fieldfares may be seen.

Mammals include: pipistrelle, water shrew. Water vole was present recently, but now appears to be extinct in the park.

Amphibians and reptiles include: frogs, toads, smooth newt and grass snakes

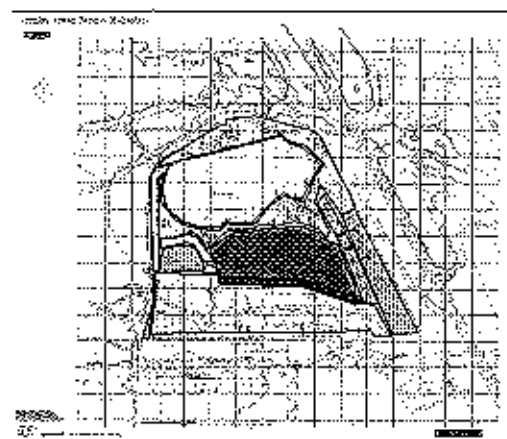
Fish and molluscs: swan mussel, perle, bullhead

Insects: Includes two red data species, both flies, *Parhelophilus consimilis* and *Vanoyia tenuicornis*. There is an abundance of dragonflies, including the banded damselfly and southern hawkler. Marbled white butterflies have appeared for the past two summers, since the grass cutting regime was changed between the river and Rickmansworth Road.

4.4.2 Action

A wildlife survey has only been performed in limited part (identification of fish present in the lake for completion of from RW1 – application to register fishery – from CEFAS), and the completion of the tree survey.

It is proposed that as a condition of planning permission being granted that a wildlife survey be performed for areas indicated and that an additional survey be completed for the regenerated areas at the end of the regeneration period:

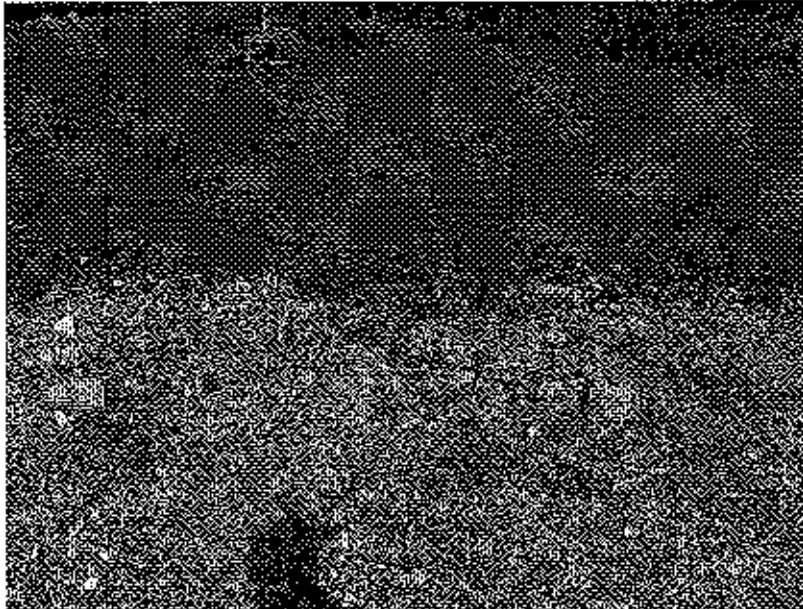


Key

- 1 = roadside border tree lined - see tree survey ~ survey to be performed subject to planning approval being granted
- 2 = watercress beds – with boat basin at end – survey to be performed after completed regeneration
- 3 = watercress beds – survey to be performed after completed regeneration
- 4 = lake – exception topographical assessment to be performed post planning approval
- 5 = trees and some wetland (to north) around lake – survey to be performed subject to planning approval being granted
- 6 = trees around car park – survey to be performed subject to planning approval being granted
- 7 = car park – not planned
- 8 = trees around car park – survey to be performed subject to planning approval being granted

- 9 = area to be converted to pasture, and then to agricultural land – *survey to be performed after completed regeneration*
- 10 = composting area between watercress beds and pasture – *survey to be performed after completed regeneration*
- 11 = closed silt pit – *survey to be performed after completed regeneration*
- 12 = silt pit operation area – *survey to be performed after completed regeneration*
- 13 = Open to closed silt pit – *survey to be performed after completed regeneration*
- 14 = free area to house livestock – *survey to be performed subject to planning approval being granted*

Note: No work is planned in the areas requiring "– survey to be performed subject to planning approval being granted" and this can be performed as a condition of planning approval. The main land areas are in such a barren state value would be gained after the land has been converted to pasture.



The clear difference between land being regenerated and land waiting to be regenerated is shown in the pictures. It is anticipated that it will take 6 to 7 years to generate and lay enough top soil (in the form of composted material) to create a sustainable area to support varied plant life.

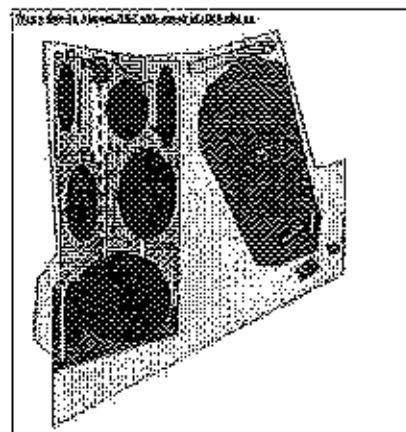
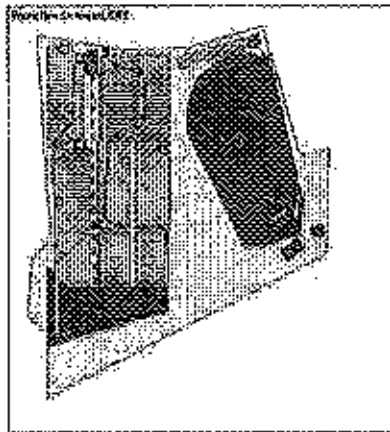


5 Appendix A - Site work plans

5.1 Watercress beds

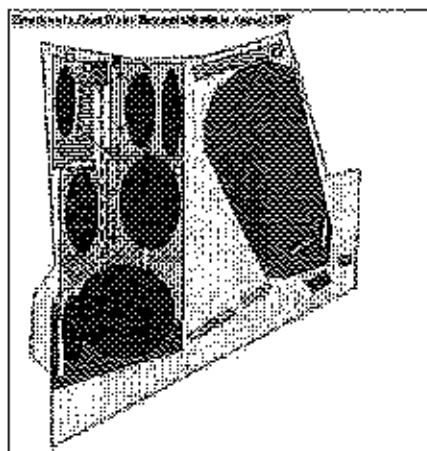
5.1.1.1 Stage 1 – Creating a clean water flow - August 2007

The water flow across the farm was determined.



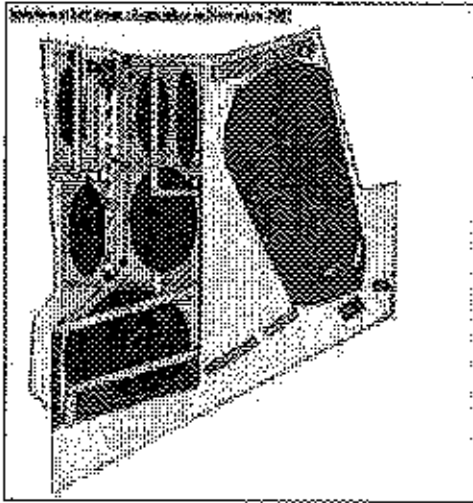
Channels were blocked enabling the supply from the Gade and the artesian well to combine, creating a single clean channel across the farm.

Silt pits were dug to initiate the draining of the lower sections.

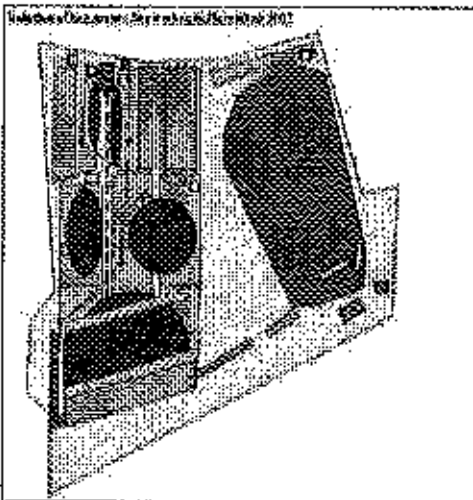


5.1.2 Stage 2 – Isolating key areas for harvesting - September 2007 to November 2007

Areas of the watercress beds were blocked up with soil banks and timber sides. The water in the beds was then pumped into the silt beds. When the beds were dry the vegetation was then harvested without any worries of releasing silt to the canal.

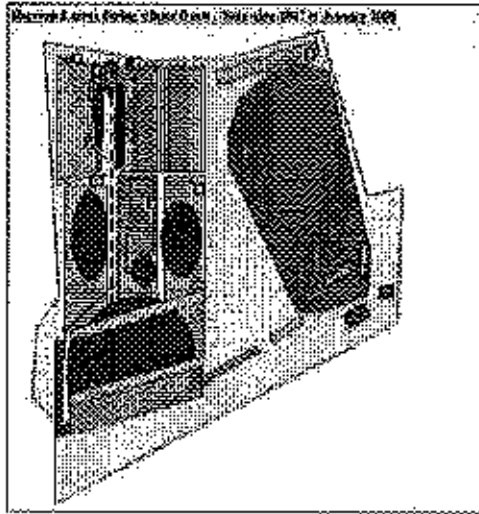


Initial areas were harvested to expose the original watercress concrete borders and base. The barriers in the cleared section were removed in anticipation of the first frosts. Heavy frosts would allow for harvesting without the worry of sediment release into the canal.

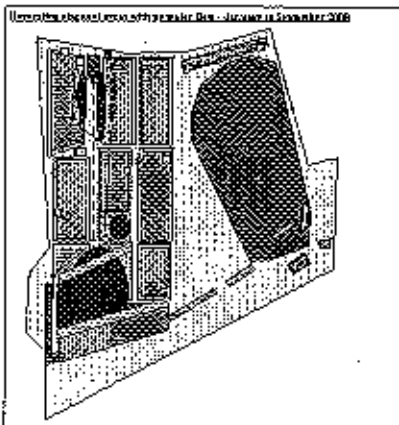


5.1.3 Stage 3 – Harvesting during first winter frosts - November 2007 to January 2008

There were a limited number of days when there was a heavy frost and no chance of sediment discharge when harvesting was in progress.

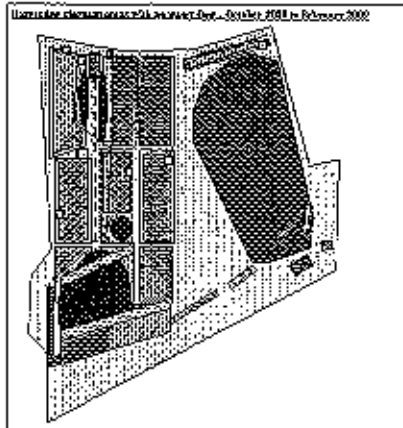


5.1.4 Stage 4 – Harvesting of isolated areas with stagnant water - January to September 2008

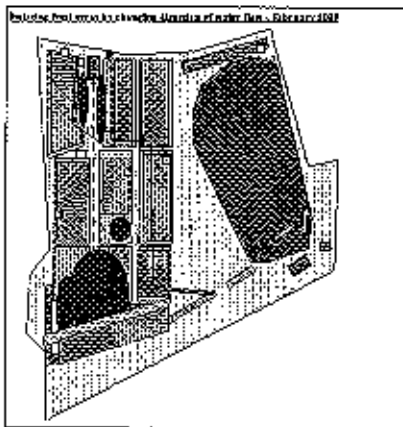


5.1.5 Stage 5 – Isolating final areas for harvesting - October 2008 to February 2009

By changing the direction of the water flow across the farm the final areas will be isolated. The closed watercross beds can then be pumped dry using the remaining silt pit.



When the beds have been drained then the final harvesting can be completed.



5.1.6 Stage 6 – Removal of silt and increasing water flow – February 2009 to December 2010

The regulation of the water level in the beds, and the rate of silt removal will require a degree of caution to determine. Aquifers will be opened in turn and a reserve silt trap system will be employed. In the event of any overflow then the silt trap can be used in combination with any pumps. Initial calculations suggest we could capture up to 30 kg of silt per day, with this level falling as the quality of the beds improves.

