



INVERGOWRIE BAY

DEFINITION

The term “businesses with land” is used to describe a wide variety of commercial interests. These range from large national/international employers to small family run businesses. The common denominator is that all these businesses have land attached to them ranging in area from a simple boundary fence line to large areas of landscaped or bare ground.

This land will include a variety of landscape types, for example:

- Woodland;
- Heath/Scrub;
- Designed Landscape;
- Grassland;
- Wetland.

Businesses with attached land provide a challenge to integrate industry with the environment in areas traditionally regarded as not being people or wildlife friendly. Individual businesses can greatly benefit from improving their surroundings and at the same time provide wildlife havens amidst an increasingly fragmented urban environment. The larger industrial areas will also benefit from enhanced surroundings, but they also have the opportunity to provide important wildlife corridors to link these fragmented habitats.

CURRENT STATUS AND EXTENT OF HABITAT

Currently there are approximately 105 industrial estates in Tayside: 49 in Perth and Kinross, 46 in the City of Dundee and 10 in Angus. These industrial areas are of varying size - the smallest, Balmossie Mill in Dundee, covers an area of 0.12 hectares, whilst the largest, Baldovie, also in Dundee, covers an area of 66.4 ha.

In addition to those businesses located within defined industrial areas, there are a large number of business parks and standalone business premises throughout the region with surrounding land which fits the criteria of this Action Plan.

NATURE CONSERVATION IMPORTANCE**Woodland and Copses**

Many trees on business land are non-native by virtue of being within a designed landscape. The Acer species and flowering cherry are among those most commonly encountered. Although not supporting the invertebrate biodiversity of native species these trees are still valuable habitats. They provide shelter and nest sites for birds, feeding and flyways for bats, shelter for buildings and landscape features for people to enjoy.

Hedges and Hedgerow Trees

Any new hedges planted in a commercial landscape tend to include quick-growing non-native species, but a mixed hedge using native species such as Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Dog Rose *Rosa canina*, Holly *Ilex aquifolium*, and Hazel *Corylus avellana* will add to the visual diversity and provide much needed shelter and food for birds and invertebrates. The bushy growth of hedges containing native species can provide an effective filter against air pollution if sited alongside busy roads and they make effective shelters and screens for buildings and industrial sites. In maturity they can also act as a barrier and in the case of using Hawthorn and Blackthorn, an aid to property security.

Where there are already hedges in the commercial landscape these should be retained wherever possible. A mature hedge will only need trimming once every two years and may already act as important flyways for bats and some bird species who use them as song-posts, feeding and nesting sites.

In either new hedge planting or in the retention of a mature hedge, native tree species should be allowed to grow up as standards within the hedge to provide a treeline in the landscape. This greatly enhances the visual benefits of the hedge and again provides nesting sites and flyways for a number of species.

Heath/Scrub land

Many industrial areas have adjacent or nearby areas of little-used or abandoned (brown field) land. Over time this often reverts to a wild state with initial colonising species frequently represented by Gorse *Ulex europaeus*, Broom *Sarothamnus scoparius*, and Elder *Sambucus nigra*. This scrub/heath land is a valuable habitat for songbirds providing food and nesting sites. Such open ground can also be high in invertebrate interest with some beetles relying on undisturbed rocky or sandy soil. Small mammals will also benefit from this habitat - as in turn will their predators.

In many cases it should be possible to retain elements of this important habitat even when commercial use resumes.

Designed Landscape

This is the most frequently encountered habitat found around business units, particularly within planned industrial estates. It invariably consists of short mown grass, non-native trees and shrubs set in a chipped mulch with gravel or tarmac paths. This type of landscape is of very little benefit for most wildlife.

With imagination and a change in management designed landscape can, however, be both formal and wildlife-rich. Native trees and shrubs should be selected to give a mixture of berries and fruits, pollen-rich flowers and shelter for a diverse variety of species. Areas of lawn or grassland should be managed to encourage wildflowers and native grass species. These do not have to be unsightly if areas close to pathways and building entrances are close-mown with scalloped edges. Ponds can be incorporated which offer not only visual benefits with attractive pond-edge planting, but also a rich habitat for amphibians and invertebrates. Ideally they should be utilised as part of a water runoff management or Sustainable Urban Drainage Scheme.

Grassland

Grassland areas surrounding businesses are typically short mown amenity mixtures which lack diversity. Ideally grassland areas should be managed to maximise biodiversity with creation of wildflower meadows where appropriate achieved via a general reduction in mowing frequency. As more species colonise the grassland invertebrates, birds, small mammals and their predators will benefit. In addition to this, the quality of life of employees, clients and suppliers can be enhanced from the greater variety of flowers and insect life once the meadows are established. This will, in many cases, stimulate greater awareness of biodiversity which can lead to enthusiasm for individual projects.

Tayside Biodiversity Partnership

Businesses with Land

UBE2

Wetland

Existing streams flowing through or alongside industrial sites are all too frequently used as convenient dumping grounds or are forced to flow through culverts. When new commercial or industrial sites are being planned, the culverting of burns should be avoided where ever possible and existing culverts opened up and enhanced where feasible.

Creation of ponds should be encouraged, whether free standing or linked into the existing or planned drainage system. A series of rain water holding ponds around an industrial estate would not only provide an excellent habitat for a wide variety of species, but would offer a valuable contribution to the wider problem of water runoff from built up areas.

Management of waterways will be important to ensure that they are not polluted with either rubbish or industrial waste. This will require a management framework to be delivered and implemented by local authorities, SEPA and businesses.

KEY SPECIES

P = UK Priority species C = UK species of conservation concern

Mammals	Pipistrelle bat spp.	<i>Pipistrellus pipistrellus</i> and <i>Pipistrellus pygmeus</i>	P
	Brown long-eared bat	<i>Plecotus auritus</i>	C
	Daubenton's bat	<i>Myotis daubentoni</i>	C
	Hedgehog	<i>Erinaceus europaeus</i>	C
	Stoat	<i>Mustela erminea</i>	C
	Weasel	<i>Mustela nivalis</i>	C
Birds	House martin	<i>Delichon urbica</i>	C
	Sand martin	<i>Riparia riparia</i>	C
	Swallow	<i>Hirundo rustica</i>	C
	Swift	<i>Apus apus</i>	
	Kestrel	<i>Falco tinnunculus</i>	C
	Tawny owl	<i>Strix aluco</i>	C
	Barn owl	<i>Tyto alba</i>	C
	Yellowhammer	<i>Emberiza citrinella</i>	C
	Goldfinch	<i>Carduelis carduelis</i>	C
Amphibians and Reptiles	Common frog	<i>Rana temporaria</i>	C
	Common toad	<i>Bufo bufo</i>	C
	Slow worm	<i>Anguis fragilis</i>	C
Invertebrates	Peacock butterfly	<i>Inachis io</i>	
	Red admiral butterfly	<i>Vanessa atalanta</i>	
	Garden tiger moth	<i>Arctia caja</i>	
	Common blue damselfly	<i>Enallagma cyathigerum</i>	
	bumble bees		
	beetles		

Plants	Willow Oak Ash Hazel Hawthorn Blackthorn Nettle White clover Valerian Red campion	<i>Salix spp</i> <i>Quercus robur</i> <i>Fraxinus excelsior</i> <i>Corylus avellana</i> <i>Crataegus monogyna</i> <i>Prunus spinosa</i> <i>Urtica dioica</i> <i>Trifolium repens</i> <i>Valeriana officinalis</i> <i>Silene dioica</i>	
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ECOLOGY AND MANAGEMENT

Case Studies

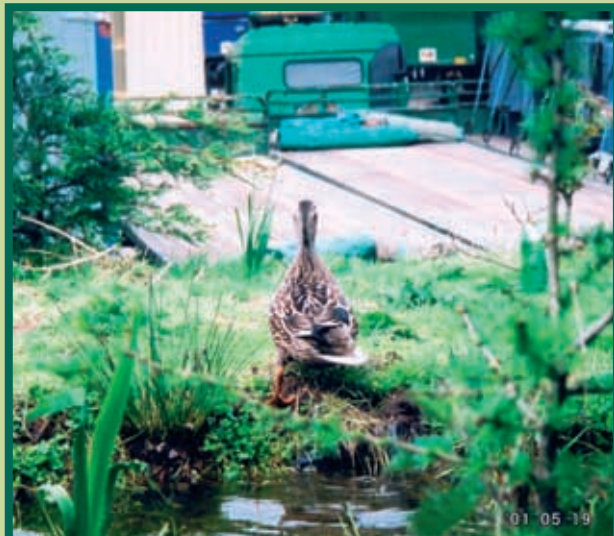
Orchardbank Industrial Estate Wildlife Corridor

A sand bank stretching from the edge of Forfar Loch Country Park into the heart of the Orchardbank Industrial Estate has been transformed into a wildlife corridor in collaboration between local residents, local business owners and Angus Council Ranger Service. Local businesses have allowed their land boundaries to be used and with volunteer input the area has become rich in wildlife.

As the area was initially very exposed, a variety of trees and shrubs were planted to provide cover and shelter. Local residents contributed food scraps and garden waste to make compost piles along the length of the corridor. Over time this has turned almost pure sand into a much richer soil and a variety of plants such as Elder, Nettle, Clover and Hop trefoil have colonised from the nearby Country Park.

The greater water-holding properties of the soil have increased the diversity of invertebrates and the area has become a popular Hedgehog feeding site. The creation of a pond has further increased invertebrate life and both Mallard and Common Frog have bred as a result. The increase in insect diversity has attracted bats to the area which use the corridor as a flyway.

Songbirds have benefited from the increased availability of nesting sites and food source and many species have bred within the corridor including Blackbird, Wren and Sedge warbler.



CRAIG BORLAND

The Mallard *Anas platyrhynchos* requires nearby water and sufficient ground cover to breed. Here a small pond about 1 metre wide located on the Orchardbank wildlife corridor is perfect for their needs.

Businesses with Land

UBE2

Car park Improvements at A. Sturrock and Son (Kirkbuddo) Ltd., Whigstreet, Angus

The site is a showcase for what can be achieved with an absolute minimal amount of land available - the existing car park boundary consists of gravel and chips no wider than 1 metre.

An initial survey showed virtually no usage of this site by wildlife. The narrow area by the boundary fence was planted with a variety of wildlife friendly plants - both native and non-native e.g. Elder and Buddleia. Within a few weeks insect life was noticeably more abundant, including the appearance of a Great green grasshopper.

A survey has shown Soprano Pipistrelle *Pipistrellus pygmaeus* in the area so it is hoped in future they will utilise the site for feeding as the planting scheme is already attracting a variety of moths and other night active insects.

The business owners have become increasingly interested in the project and further wildlife friendly features are to be included on their site, including the addition of bat and bird boxes on the actual building.



CRAIG BORLAND

The Peacock butterfly *Inachis io* has become more frequent in Tayside in recent years, but it is still an unusual sight. Nettles are the primary food plant for their caterpillars; other food plants benefit not only adult Peacocks, but numerous other butterfly and insect species as well.

Lidl Ltd., Forfar

Permission has recently been given from Lidl senior management to carry out major improvement work around the car park of this popular supermarket.

In association with the Store Manager, local volunteers and Angus Council Ranger Service the car park boundary will be enhanced with a variety of wildlife friendly plants, shrubs and trees. This will encourage butterflies such as Red admirals and Peacocks, birds such as Goldfinch and Greenfinch and a number of bat species to use this site.

It is particularly hoped to attract the Peacock butterflies which although becoming more common, are still a fairly unusual sight in Tayside. All these species will be monitored and recorded by the supermarket's employees and its customers, together with local volunteers and the Angus Council Ranger Service. Bird feeding stations and boxes for both birds and bats will also be erected to encourage wildlife to breed within the car park area.

CURRENT FACTORS CAUSING LOSS OR DECLINE**Construction of new industrial sites on greenfield areas**

Many greenfield sites have been transferred from agricultural use. With current intensive farming practices greenfield areas may no longer be as species rich as they first appear. Sensitive planning consideration could enable the enhancement of both the immediate and surrounding areas to improve the habitat for wildlife.

Destruction of existing habitats owing to industrial development

Existing habitats may be destroyed when new industrial sites are built. To alleviate this potential impact extensive survey work should be carried out prior to any new development and, where possible, valuable wildlife areas should be incorporated into the design and construction of the industrial site.

Fragmentation of habitats

Intensive industrial development may result in habitat fragmentation with resultant interference to existing badger or otter routes or flyways for bats. In many cases, however, it is possible to retain or create wildlife corridors linking isolated habitats together. As has been shown at Orchardbank, Forfar, the width of such corridors need only be a few metres (for example, following a fence, wall or tree line) for them to be of use to wildlife.

Pollution from industrial sites contaminating air, land and water

Pollution should be kept to an absolute minimum. Regular monitoring of industrial areas should be carried out to identify any sources, or potential sources, of pollution and minimise any impact on the wider environment. The Scottish Environmental Protection Agency (SEPA), Scottish Water and local authority Environmental Health departments all have responsibilities for monitoring and limiting pollution. In partnership with such agencies, local planning authorities should consider carefully the potential impact on adjacent and nearby residential and countryside areas of any planned development or expansion of industry.

Dumping of rubbish

Providing litter bins for the resident workforce could alleviate indiscriminate littering. However, serious fly tipping creates eyesores and dangers in both countryside and urban areas. Such rubbish dumping should be discouraged by raising awareness about the illegality of fly tipping, together with the provision of alternative legitimate disposal sites. Members of the public and employers alike should be encouraged to report any witnessed incidents direct to the Scottish Environment Protection Agency.

MAIN THREATS TO KEY SPECIES

Bat species (Pipistrelle, Brown Long-eared, Daubenton's bat)	Loss of roost sites. Loss of feeding sites.	
	UK Importance of Tayside population:	high
Stoat and Weasel	Loss of habitat. Loss of habitat for prey species.	
	UK Importance of Tayside population:	unknown
Hedgehog	Use of slug pellets in landscaped areas. Loss of hibernation sites. Loss of feeding areas in designed landscape.	
	UK Importance of Tayside population:	unknown
House Martin, Sand Martin, Swallow	Loss of nesting sites. Loss of feeding sites.	
	UK Importance of Tayside population:	unknown
Kestrel	Loss of hunting ground/reduction in prey species.	
	UK Importance of Tayside population:	moderate
Tawny Owl	Felling of roost/nesting trees. Destruction of habitat that supports small mammals.	
	UK Importance of Tayside population:	small

Businesses with Land

UBE2

Song Bird species	Loss of nesting sites. Loss of feeding habitat. Loss of roosting areas. Planting of non-native species as part of designed landscape.	
	UK Importance of Tayside population:	small
Butterflies and Moth species	No available food plants for larvae/adults due to grass cutting regimes.	
	UK Importance of Tayside population:	moderate
Invertebrate species	Loss of food plants/cover. Use of insecticides. Planting of non-native species as part of designed landscape.	
	UK Importance of Tayside population:	unknown
Native tree species (including Ash, Oak, Alder, Elder, Hazel, Aspen, Willow, Hawthorn, Scots Pine, Bird Cherry, Gean (Wild Cherry), Holly, Wych Elm, Rowan, Juniper, Birch and Yew)	Felling of mature trees and destruction of existing hedgerows for development purposes. Replacement of native species with ornamental species. Planting of non-native species as part of designed landscape.	
	UK Importance of Tayside population:	moderate

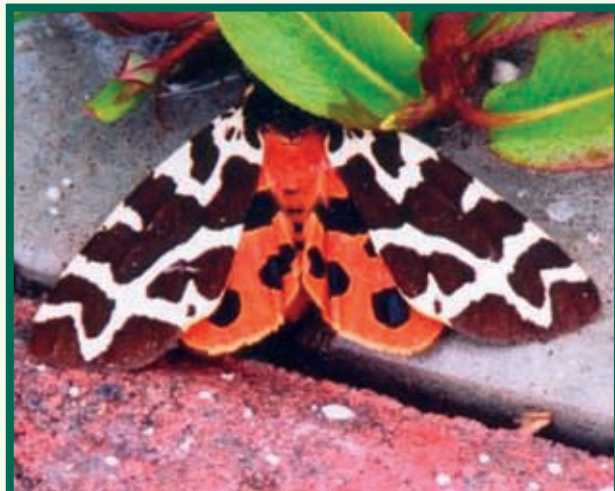
OPPORTUNITIES AND CURRENT ACTION

Current Action

Orchardbank Industrial Estate Wildlife Corridor - work is continuing within the wildlife corridor with the aim of extending the corridor throughout the industrial estate. Approaches will be made to other businesses within the estate to assess their views on habitat improvements and to show the advantages of using the wildlife corridor as a best practice site.

A. Sturrock and Son, Whigstreet, By Forfar - monitoring of species using the car park will continue. Bat surveying, coupled with the location of bat boxes in the area, will assist in estimating the local bat population. A 'display book' will be prepared to show what work has been carried out on the car park, together with species information. This will be situated within the company's reception area so that staff, clients and other companies can see what has been achieved.

Lidl, Queenswell Road, Forfar - car park improvements will be planned and implemented. A display area within the store will show customers, staff and other visitors what improvements are being made to the area and to highlight the importance of biodiversity.



CRAIG BORLAND

Garden Tiger at Whigstreet

The striking Garden tiger moth *Arctia caja* is a widespread species throughout the British Isles. Its appearance in the previously wildlife-poor car park of Sturrock's at Whigstreet a few weeks after improvements had been carried out was a source of inspiration and comment amongst the workforce and a spur to include further wildlife features around the site.

Tayside Biodiversity Partnership



Opportunities

- i) Demonstration, by using case study sites as best practice, to existing businesses with land to show the benefits of biodiversity
- ii) Involvement of local planning authorities and community councils to show the benefits of biodiversity by highlighting existing case study sites as sites of best practice.
- iii) Ensuring through co-operation with local authorities that any new industrial estates and business planning applications include provision for wildlife friendly surroundings.
- iv) Set up local biodiversity monitoring within industrial estates, perhaps by way of an annual competition, to see who attracts the most species onto their patch. This has the potential to link in with the award scheme postulated in (viii).
- v) Encourage environmental education opportunities for schools who can compare before and after scenarios with regard to enhancing biodiversity. For instance, Forfar Academy pupils have already contributed to the creation, maintenance and monitoring of the Orchardbank Wildlife corridor
- vi) Encourage environmental or community groups to work in association with local industrial estates and businesses with land to enhance their surroundings.
- vii) Encourage businesses to incorporate appropriate biodiversity information into their company literature and web sites.
- viii) Develop a 'Tayside Business of Biodiversity Award' to show appreciation to the commercial community for environmental enhancement works. This will generate positive publicity for companies within Tayside and provide additional Partnership opportunities.
- ix) Within industrial estates and single businesses with land there are a wide variety of improvements which can be carried out, namely:

- **Involvement by staff (and their families) in enhancing their immediate work area**

Wherever possible staff should be encouraged to take an interest in their work environment. This could initially come in the form of talks, presentations and in-house newsletter articles and possibly lead to active participation in local environmental improvements.

- **Planting a wide variety of berry-bearing and native trees and hedgerows**

By encouraging the planting of native trees and shrubs, businesses with land will immediately play a more active part in attracting a variety of wildlife to their area.

- **A change in grassland management to save on maintenance costs and improve biodiversity**

By restricting cutting of certain areas of land to once or twice a year, the habitat in the immediate vicinity can be dramatically improved to give a show of wild flowers that in turn will attract butterflies, moths, bats and birds. Interpretation, by way of attractive information boards, leaflets, newsletters or a photographic record kept in the company's reception area can alert staff, suppliers and clients to the improvements being made. In some cases, companies use the savings made in the reduced mowing costs to invest in bird and bat boxes for the building.

- **Creation of wildflower areas on grassland and road verges**

As well as modulating the grass cutting regime outlined above, specific areas can be set aside for creation of wildflower meadows or road verge areas. This could be accomplished in a variety of forms and scales depending on individual sites from large wildflower areas to a patch of nettles located where intruders are likely.

- **Creation of ponds and wetland areas**

A pond or wetland area should be encouraged where land area permits. In some circumstances existing damp areas and burns can be enhanced. Care should be taken with the siting of ponds as water is invariably a magnet for local children. Potential dangers can be partially alleviated by attractive fencing around the site or the provision of life belts.

● **Provision of bat boxes and nest boxes**

Where there are existing mature trees a variety of bird and bat boxes could be sited. If no trees are present, industrial or company buildings should be considered for box location. In the case of new developments the inclusion of appropriate barn owl ledges, swift bricks and bat bricks should be considered before construction takes place.

● **Siting of bird tables/ feeding stations**

Bird tables/feeding stations should be set up where possible, particularly where they can be viewed by the workforce, for example outside canteen windows, or in an area specifically set aside as an outdoor staff rest area. Providing the birdtables with food is a potential cost and although it could be met by the business itself in many instances the staff will be willing to set up a “nut and seed roster”.

● **Provision of recycling sites**

The recycling of aluminium cans should be encouraged to minimise litter around industrial areas. Drinks cans are still one of the commonest litter items found in urban and country areas and they can have a detrimental affect on wildlife. Collection points should be encouraged within industrial estates or individual businesses.

● **Repair of existing dry stone walls**

Industrial sites situated on the edge of settlements are likely to border farmland and incorporate ex-farmland into their environment. Any existing dry stone dykes should be preserved where feasible, but if demolition is the only option, the stone could be used elsewhere to create a new dyke or a cairn feature.

● **Siting of benches and litterbins for workforce/public use**

All too often industrial areas have no benches or litter bins for the workforce to use. By encouraging such items the workforce will be able to take their breaks outside and enjoy the environmental improvements around them.

OBJECTIVES AND TARGETS

Objectives		Targets
1.	Raise awareness to business owners of the benefits of biodiversity	<ul style="list-style-type: none"> ● Work with local planning authorities to set minimum guidelines for design landscaping around new industrial units. ● Database of costs involved with existing/ ongoing projects over costs and savings involved in habitat enhancement. ● Devise training programmes / seminars in partnership specifically for business leaders.
2.	Raise public awareness among workforce/ public of the benefits of biodiversity.	<ul style="list-style-type: none"> ● Provide a database of existing/ ongoing projects to highlight benefits to other businesses with land. ● Provide a database of native tree, plant and shrub species available for consultation to all planning environmental improvements. ● Produce a database of voluntary organisations who may be interested in carrying out work on sites. ● Produce a database of local suppliers of plants and materials.

3.	Protect existing wildlife areas associated with businesses and create new areas.	In partnership with local planning authorities, SEPA and Scottish Natural Heritage raise awareness of the legal responsibilities attached to businesses with regard to existing wildlife sites.
4.	Showcase businesses that have improved their environment to include wildlife areas as examples of best practise.	<ul style="list-style-type: none"> ● Develop sites of best practice to highlight to businesses a variety of environmental improvements. ● Hold open days at best practise sites to demonstrate good practice.
5.	Promote adoption of Sustainable Urban Drainage Systems principles such as swales, infiltration basins, detention/ retention ponds, wetlands, reedbeds, etc. in new developments	Work with the Scottish Environment Protection Agency (SEPA), Scottish Water and local planning authorities to develop policies regarding drainage/culverts.
6.	Promote a better understanding of recording and survey systems so that habitat and species information is readily accessible to a wide audience.	<ul style="list-style-type: none"> ● Identify existing recording systems and adjust specifically for business use. ● Trial recording systems on specific businesses with land and assess results. ● Provide feedback on the recorded information in a practical accessible manner.

Stakeholders

- Employers;
- Employees and their families;
- Suppliers and clients;
- Local/National Press;
- Regulatory Bodies;
- Voluntary Sector Organisations;
- Members of the public;
- Local communities living near industrial sites;
- Enterprise companies;
- Universities and Colleges;
- Local Authorities;
- Tourist Boards.

Businesses with Land

UBE2

ACTION FOR BIODIVERSITY

Action - Businesses with Land		Deliverers		To take place by	Meets Objective No.
		Lead Partners	Partners	02 03 04 05 06 07 11 16	
LBAP Ref.	A Policy and legislation				
UBE2	1 Produce a Planning Advice Note for use by Planning Authorities to encourage incorporation of biodiversity measures in new business developments.	AC DCC PKC SNH	TBP	#	
UBE2	2 Issue Biodiversity Planning Advice note to businesses applying for planning permission to encourage the incorporation of biodiversity measures into developments.	AC DCC PKC SNH		# # # # # #	
	B Site safeguard and management				
UBE2	1 i. Visit all existing sites on an annual basis and carry out survey. ii. Discuss project with site managers.	AC DCC PKC Ranger Services	Voluntary Groups	# # # # # # # #	
UBE2	2 i. Annually, target 6 new businesses in Tayside and carry out surveys. ii. Discuss potential projects with site managers.	AC DCC PKC Ranger Services	Voluntary groups	# # # # # # #	
UBE2	3 By 2009 target 12 new businesses in Tayside per annum.	AC PKC DCC Ranger Services	Voluntary groups	# # #	
	C Species management and protection				
UBE2					
	D Advisory				
UBE2	1 i. Produce and regularly update a database of local and countrywide industrial case studies and make available to planners and local businesses. ii. Produce and regularly update database of local personnel who can advise and liaise with volunteer groups.	TBP	AC PKC DCC Voluntary groups	# # # # # # # #	
	E Research and monitoring				
UBE2	1 Use "Local Patch Survey" type recording so employers/employees can have direct input. i. 2002 - Pilot Local Patch Project with Lidl (Forfar) staff. ii. 2003 - Extend Local Patch technique to 6 other sites. iii. 2004 - Extend Local Patch technique to 12 other sites. iv. By 2009 - Extend Local Patch technique to 20+ other sites per annum.	AC PKC DCC Ranger Services	Voluntary Groups	# # # # # # # #	
	F Promotion and awareness-raising				
UBE2	1 Raise awareness of current and new projects through the local press and the Tayside Biodiversity Action Plan.	AC PKC DCC	TBP Voluntary groups	# # # # # # # #	
UBE2	2 Raise industry awareness through industry press and encourage businesses to highlight their environmental credentials.	TBP SET	AC PKC DCC Voluntary groups	# # # # # # # #	
UBE2	3 Plan Monitoring – monitor the delivery of the Action Plan yearly and review it in detail every 5 years, starting in 2003.	TBP		# # # # # # # #	

Businesses with Land

This illustrative map shows some of the areas of industrial land in Tayside. It cannot, however, illustrate locations of all 'businesses with Land'. Please note that many such sites are privately owned and owners' permission should be sought for any access.

