Heritage Audit of the Northern River Nore

An action of the draft Kilkenny Heritage Plan

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Introduction

Our natural heritage can also be called, among other terms: biodiversity flora, fauna and habitats; nature; and ecosystems. Biodiversity means the variety of all living things. Flora means plants; fauna means animals; and habitats are the places where plants and animals live, such as rivers, woodlands or grasslands. Natural heritage includes the entire landscape that we live in, be it the swampy woodlands of the river's edge, the pasture and hedgerows along its banks, or the old stone walls and bridges in our towns and villages.

In Ireland, our natural heritage has often not been researched in as much depth as our built heritage, and so a study such as this relies to a greater extent on the information that is gathered by investigating primary sources such as maps and aerial photographs, and of course by surveying the land.

Methodology

Introduction

The natural heritage audit, especially the habitat mapping, broadly follow the Heritage Council's draft Habitat Survey Guidelines A Standard Methodology for Habitat Survey and Mapping in Ireland (2005). This document is currently under review. The habitats were classified and mapped according to the current de facto standard, A Guide to Habitats in Ireland (Fossitt, 2000). Plant species common names follow Scannell & Synott 1987, while scientific names follow Stace 1997.

Desk study and consultations

Before going into the field to map the habitats, the study area was reviewed using a variety of information sources. Aerial photo maps of the study area were printed and cross-referenced with these sources to compile a preliminary habitat map. This helped the fieldwork to be targeted to areas of interest. The data sources that helped with this included:

- National Parks & Wildlife Survey (NPWS) online database of protected areas and species
- 1st edition Ordnance Survey maps from the early 1800s
- 25" Ordnance Survey maps from the late 1800s-early 1900s
- Environmental Protection Agency (EPA) soils and rivers maps
- Geological Survey of Ireland bedrock and karst features maps

- Draft catchment management plan for the Nore freshwater pearl mussel
- Previous surveys carried out for Kilkenny local authorities along the Nore, particularly the linear walk and the Lacken walk, Ballyragget Local Area Plan, and Ballyragget wildlife study

In addition, consultations were held with the project steering group, in particular local NPWS conservation ranger Jimi Conroy; local botanical recorder Roger Goodwillie; mollusc and freshwater pearl mussel expert Evelyn Moorkens, local people who attended public consultation; and landowners within the study area.

Field survey

The field survey was carried out in early October 2009, using a combination of walking and cycling, and car. Using the preliminary field maps, the ecologist checked if the preliminary habitats were assigned correctly, and if not, changed them to the correct habitat type. Each area of interest was numbered, and notes and photographs of species and features of interest taken – these are called target notes. The target note areas are listed and described in the inventory at the end of this document.

Most parts of the survey area were either surveyed (S) by walking through them, or the habitats validated (V) by checking from a distance (i.e. looking through a gate or checking more distant fields with binoculars). A small number of areas were not surveyed in the field due to either dangerous conditions, or difficulty finding the landowner to ask permission. These areas are assigned a habitat code based on the desk study (D), sometimes with input from local people. The extent to which a habitat was surveyed is recorded in the database by use of the code S, V or D. Locations of invasive non-native species were also recorded.

The field survey was slightly limited by the lateness of the season, as some species had gone to seed or died back. Habitat mapping concentrated on semi-natural habitats. In general, these are connected to the wider landscape by the network of hedgerows that divide up the adjacent intensive pasture and arable land.

Map and database compilation

The field maps were taken back to the office and new clean maps marked up with the proper habitat boundaries and codes, so that they could be digitised. The habitat and species notes were inputted to the database and linked to the GIS.

The Natural Heritage Inventory

Landscape and ecology

The most striking element of much of the study area is the relatively narrow 'corridor' of semi-natural vegetation associated with the river, with some exceptions such as the low-lying ground between Lismaine and Threecastles bridges. Most of the semi-natural habitats recorded during the survey are found to coincide with the area mapped by the EPA as alluvial soil.

The River Nore falls approximately 40m between Ballynaslee and Ossory Bridge. The broader area of the river valley, as bounded by the Kilkenny-Durrow road to the east and the Kilkenny-Freshford-Ballyragget road to the west, is on level to gently rolling ground, with intensive agriculture of arable and pasture being the main land uses. This ground tends to fall sharply to the river, where the river has gradually eroded a steep-sided valley through the deep glacial gravel deposits. This is mainly used for grazing, and it is on these steep slopes and the level floodplain below them that we find most of the habitats described below. There are some places where the river valley is more level and gradually sloping, such as at Islands and Dunmore.

Protected habitats and species

The Nore is home to several habitats and species now threatened in Europe and protected under the EU Habitats Directive, including alluvial woodland, floating river vegetation, otter, crayfish, freshwater pearl mussel and three species of lamprey. For this reason, the river and some of its adjacent habitats are designated as a Special Area of Conservation (SAC), under this Directive.

Parts of the river corridor are also listed as Natural Heritage Areas (NHA). This is an Irish designation for sites of national interest. Currently, all NHAs in the study area are *proposed*; that is, they have not yet been formally designated. The pNHAs found in the study area, with their individual site codes in brackets, are:

- River Nore and Abbeyleix Woods complex (2076)
- Inchbeg (0836)
- Ardaloo Fen (0821)
- Dunmore complex (1859)
- Newpark Marsh (0845)

Most of these lie within the River Nore SAC and are therefore afforded the highest nature conservation protection.

Salmon

The Nore is also an important river for salmon and trout (salmonid fish). The salmon found in the Nore are Atlantic salmon (*Salmo salar*). They hatch from eggs laid in the gravel river bed and spend their juvenile phase (called parr) in the river feeding for 1-3 years on insects. They then become smolts and migrate to the north Atlantic, where they feed mainly on fish. After one or more years, they return to the river as adults to spawn. Some of them survive this and return to spawn again, but many do not. Because salmon have declined throughout Europe, they are protected under the EU Habitats Directive. Like the pearl mussel, they need good water quality and clean gravel beds to survive and breed in the river. The reasons for decline of salmon are not fully understood. Research and information can be found at www.nasco.int/.

Habitats

A general description of each of the habitat types found during the survey is given in Volume I. Target notes are used so that more detailed descriptions of areas of interest can be given. The following inventory describes individual areas that were either surveyed for this study, or had existing information which was reviewed. They are individually numbered by Target Note number (T01, T02, etc.). These numbers begin at Ballynaslee and continue down to Kilkenny city. The inventory is a print-out of some of the information contained in the database on the CD accompanying this report. This includes a description of the area, and a list of species found there. These lists are not exhaustive, but give a snapshot of the species found at each location, especially the main indicator species for that habitat type, and any notable species found during the survey. At total of 212 species are listed in the database, which is a combination of those recorded during fieldwork, and those mentioned in other sources.

The following habitats (with their *Guide to Habitats in Ireland* code) were recorded during the natural heritage audit:

Arable crops/Tilled land BC

Stone walls and other stonework BL1

Buildings and artificial surfaces BL3

Spoil and bare ground ED2

Recolonising bare ground ED3

Active quarries and mines ED4

Mesotrophic lakes FL4

Artificial lakes and ponds FL8

Springs (FP1)

Reed and large sedge swamp FS1

Improved agricultural grassland GA1

Improved wet grassland GA1 GS4

Improved amenity grassland GA2

Marsh GM1

Dry calcareous and neutral grassland GS1

Dry meadows and grassy verges GS2

Dry-humid acid grassland GS3

Wet grassland GS4

Rich flush (PF1)

Mixed broadleaved woodland WD1

Mixed broadleaved/conifer woodland WD2

Scattered trees and parkland WD5

Riparian woodland (WN5)

Wet willow-alder-ash woodland (WN6)

Oak-ash-hazel woodland (WN2)

Riparian woodland WN5

Scrub WS1

Immature woodland WS2

Ornamental/non-native shrubs WS3

Hedgerow (WL1)

Treeline (WL2)

Rivers (FW) and drainage ditches (FW4)

List of plant species described in the inventory

Scientific name	Common name	Scientific name	Common name
Acer pseudoplatanus	Sycamore	Medicago lupulina	Black medick
Achillea millefolium	Yarrow	Mentha aquatica	Water mint
Aegopodium podagraria	Ground-elder	Mentha arvensis	Field mint
Aesculus hippocastanum	Horse chestnut	Menyanthes trifoliata	Bogbean
Agrostis capillaris	Common bent	Molinia caerulea	Purple moor grass
Agrostis stolonifera	Creeping bent	Myosotis laxa	Tufted forget-me-not
Ajuga reptans	Bugle	Myosotis scorpioides	Water forget-me-not
Alisma plantago-aquatica	Common water-plantain	Mysotis sp	Forget-me-not species
Alnus glutinosa	Common alder	Nuphar lutea (cf)	Yellow water-lily
Alopecurus geniculatus	Water foxtail	Odontites vernus	Red bartsia
Angelica sylvestris	Wild angelica	Origanum vulgare	Water marjoram
Anisantha sterilis	Barren brome	Orobanche hederae	Ivy broomrape
Anthoxanthum odoratum	Sweet vernal grass	Parietaria judaica	Pellitory-of-the-wall
Anthriscus sylvestris	Cow parsley	Persicaria amphibia	Amphibious bistort
Anthyllis vulneraria	Kidney vetch	Petasites hybridus	Butterbur
Apium cf inundatum	Lesser marshwort	Phalaris arundinacea	Reed canary-grass
Apium nodiflorum	Fool's-water-cress	Phleum pratense	Timothy grass
Arrhenatherum elatius	False oat grass	Phragmites australis	Common reed
Asplenium adiantum-nigrum	Black spleenwort	Phyllitis scolopendrium	Hart's-tongue fern
Aubrieta deltoidea	Lilacbush	Picea sp.	Sitka species
Berula erecta	Water parsnip	Pilosella officinarum	Mouse-ear hawkweed
Brachypodium sylvaticum	False brome	Pimpinella saxifraga	Burnet saxifrage
Briza media	Quaking grass	Pinus nigra	European black pine
Buddleja davidii	Butterfly bush	Pinus radiata	Monterey pine
Caltha palustris	Marsh marigold	Pinus sp.	Pine species
Campanula trachelium	Nettle-leaved bellflower	Pinus sylvestris	Scots pine
Cardamine pratensis	Cuckoo flower	Plantago lanceolata	Ribwort plantain
Carex cf acutiformis	Lesser pond sedge	Poa trivialis	Rough meadow grass
Carex disticha	Brown sedge	Polypodium cambricum	Southern polypody
Carex elata	Tufted sedge	Polypodium vulgare	Common polypody
Carex flacca	Glaucous sedge	Polystichum setiferum	Soft shield fern
Carex hirta	Hairy sedge	Populus sp.	Poplar species
Carex panicea	Carnation sedge	Populus tremula	Aspen

Carex paniculata	Greater tussock sedge
Carex pendula	Pendulous sedge
Carex rostrata	Bottle sedge
Carex sp.	Sedge species
Carex sylvatica	Wood sedge
Carlina vulgaris	Carline thistle
Centaurea nigra	Common knapweed
Ceterach officinarum	Rustyback fern
Chamerion angustifolium	Rosebay willowherb
Chrysosplenium oppositifolium	Opposite-leaved golden saxifrage
Circaea lutetiana	Enchanter's nightshade
Cirsium arvense	Creeping thistle
Cirsium palustre	Marsh thistle
Clinopodium acinos	Basil thyme
Conopodium majus	Pignut
Corylus avellana	Common hazel
Cotoneaster sp.	Cotoneaster
Crassula helmsii	New Zealand Pigmyweed
Crataegus monogyna	Common hawthorn
Cymbalaria muralis	Ivy-leaved toadflax
Cynosurus cristatus	Crested dog's-tail
Dactylis glomerata	Cocksfoot
Daucus carota	Wild carrot
Eleocharis palustris	Marsh spike-rush
Epilobium hirsutum	Hairy willowherb
Equisetum arvense	Field horsetail
Equisetum fluviatile	Water horsetail
Erinus alpinus	Starflower
Euonymus europaeus	European spindle
Fagus asplenifolia	Fern leaved beech
Fagus purpurea	Purple beech
Fagus sylvatica	Common beech
Festuca rubra	Red fescue
Festuca arundinacea	Tall fescue
Filipendula ulmaria	Meadowsweet
Fraxinus excelsior	Ash
Galium palustre	Marsh bedstraw
Potentilla anglica	Trailing tormentil
Potentilla anserina	Silverweed
Potentilla palustris	Marsh cinquefoil
Potentilla reptans	Creeping tormentil
Potentilla sterilis	Barren strawberry
Primula vulgaris	Primrose
Prunella vulgaris	Selfheal
Prunus avium	Wild cherry
Prunus laurocerasus	English laurel
Prunus spinosa	Blackthorn
Pteridium aquilinum	Bracken
Pulicaria dysenterica	Fleabane
Quercus cerris	Turkey oak
Quercus ilex	Holly oak
Quercus petraea	Sessile oak
Quercus robur	Pedunculate oak
Quercus rubra	Red oak
Quercus sp.	Oak species
Ranunculus acris	Meadow buttercup
Ranunculus flammula	Lesser spearwort
Ranunculus lingua	Greater spearwort
Ranunculus repens	Creeping buttercup
Rhinanthus minor	Yellow rattle
Rhytidiadelphus squarrosus	Spring turf-moss
Rorippa nasturtium-aquaticum	Watercress
Rorippa palustris	Marsh yellow-cress
Rorippa sylvestris	Creeping yellow-cress
Rubus caesius	Dewberry
Rubus fruticosus	Blackberry
Rumex acetosa	Common sorrel
Rumex acetosella	Sheep's sorrel
Rumex crispus	Curled dock
Rumex hydrolapathum	Water dock
Rumex obtusifolius	Broad-leaved dock
Rumex sanguineus	Wood dock
Salix alba	White willow
Salix cinerea	Grey willow

Galium uliginosum	Fen bedstraw
Galium verum	Lady's bedstraw
Geranium robertianum	Herb robert
Geum urbanum	Wood avens
Glechoma hederacea	Ground ivy
Glyceria fluitans	Floating sweet-grass
Hedera helix	Common Ivy
Hippuris vulgaris	Mare's tail
Holcus lanatus	Yorkshire fog
Hyacinthoides sp	Bluebell species
Hydrocotyle vulgaris	Marsh pennywort
Hypericum sp.	St. John's wort
Hypochaeris radicata	Catsear
Ilex aquifolium	Holly
Iris pseudacorus	Yellow flag
Juncus acutiflorus	Sharp-flowered rush
Juncus articulatus	Jointed rush
Juncus effusus	Soft rush
Juncus inflexus	Hard rush
Knautia arvensis	Field scabious
Larix decidua	European larch
Larix sp.	Larch species
Lathyrus pratensis	Meadow vetchling
Lemna minor	Common duckweed
Leontodon autumnalis	Autumn hawkbit
Leucanthemum vulgare	Oxeye daisy
Linum bienne	Pale flax
Linum cf catharticum	Fairy flax
Lolium perenne	Perennial ryegrass
Lonicera periclymenum	Honeysuckle
Lotus corniculatus	Bird's-foot trefoil
Lychnis flos-cuculi	Ragged robin
Lysimachia nummularia	Creeping jenny
Lythrum salicaria	Purple loosestrife
Malus sylvestris	Crap apple
Malus domestica	Domestic apple
Salix fragilis	Crack willow
Salix spp.	Willow species
Salix triandra x S. viminalis	Almond Osier hybrid willow
Salix viminalis	Osier
Sambucus nigra	Elder
Saponaria officinalis	Common soapwort
Saxifraga tridactylites	Rue-leaved saxifrage
Schoenoplectus lacustris	Common clubrush
Scrophularia auriculata	Water figwort
Senecio aquaticus	Water ragwort
Senecio jacobaea	Ragwort
Solanum dulcamara	Bittersweet
Sorbus aucuparia	Rowan
Sparganium erectum	Branched Burweed
Stachys palustris	Marsh woundwort
Succisa pratensis	Devils-bit scabious
Symphoricarpos albus	Snowberry
Taraxacum agg.	Dandelion
Tilia cordata	Small-leaved lime
Tilia x europaea	Lime
Trifolium pratense	Red clover
Trifolium repens	White clover
Typha latifolia	Common bulrush
Ulex europaeus	Gorse
Ulmus sp.	Elm species
Umbilicus rupestris	Navelwort
Urtica dioica	Stinging nettle
Valeriana officinalis	Valerian
Verbascum thapsus	Great mullein
Veronica beccabunga	Brooklime
Veronica scutellata	Marsh speedwell
Viburnum opulus	Guelder-rose
Vicia cracca	Tufted vetch
Vicia sativa	Common vetch
Vicia sepium	Bush vetch
Viola odorata	Sweet violet
Viola sp	Violet species

NATURAL HERITAGE INVENTORY

Target area 1

242647 175680

Habitats: GS1

Description (Map 1)

This is a small area of dry grassland on exposed limestone outcrop, surrounded by improved pasture and too small to map individually.

The dry grassland on this slope is of low diversity due to management as intensive pasture. Low local value.

Species: Dactylis glomerata, Festuca rubra, Medicago lupulina, Rhytidiadelphus squarrosus, Agrostis capillaris

Source: Nore survey 2009

Target area 2

242874 175575

Habitats: FS1, WS1

Description (Map 1)

This long narrow seepage area at base of the slope is dominated by a eutrophic reed canary-grass community with more species-rich areas at the edges, and scattered scrub of willows. Dry scrub is found on the upper slope.

Though narrow, this habitat represents the type of swamp vegetation that would once have been more common along the Nore. It is of high local value.

Species: Sparganium erectum, Phalaris arundinacea, Senecio aquaticus, Urtica dioica, Veronica beccabunga, Mysotis sp., Filipendula ulmaria, Angelica sylvestris, Salix spp., Alnus glutinosa; Ulex europaeus, Crataegus monogyna, Prunus spinosa

Source: Nore survey 2009

Target area 3

243022 175462

Habitats: GS4

Description (Map 1)

Low-lying ground along the river here contains wet grassland which in places tends to be marshy. Snipe, dragonflies, red admiral.

This wet grassland ranges from moderate to high local value.

Species: Glyceria fluitans, Agrostis stolonifera, Holcus lanatus, Alopecurus geniculatus, Juncus inflexus, Ranunculus repens, Carex sp., Cardamine pratensis, Apium cf inundatum, Veronica scutellata, Ranunculus flammula, Galium palustre, Juncus acutiflorus

Recommendation: A summer survey would expand the species list.

Source: Nore survey 2009

Target area 4

243128 175170

Habitats: WN6, PF1, GS4

Description (Map 1)

A small area of riparian willow woodland with standing water, fed by the river and by a flush from the drain/spring in the adjoining field. Wet grassland to south of field includes species-rich patches with ragged robin.

Wet woodland like this would once have covered most of the low-lying parts of the river corridor. It corresponds loosely to the EU Annex I priorty habitat type Alluvial woodlands, and is of high local importance.

Species: Rorippa nasturtium-aquaticum, Salix spp., Lychnis flos-cuculi

Recommendation: Detailed survey not possible for safety reasons. Survey during dry weather would expand species list.

Source: Nore survey 2009

Fig. 1: T1 outcropping limestone on sloping ground overlooking the Nore at Ballynaslee

Fig. 2: T4 Wet alluvial woodland on the riverbank at Ballynaslee

Target area 5

243084 174811

Habitats: GS1, WS1

Description (Map 1)

This gravelly slope forms the ridge-line overlooking the river. Its northern end is dominated by hazel scrub, where one plant of the Red Data Book species, nettle-leaved bell-flower was found. The base of slope is strip of willow along wet margin and a moorhen was heard here. Further south, the scrub gives way to dry calcareous grassland which is moderately species-rich.

The presence of the rare nettle-leaved bellflower, as well as the diversity of scrub and dry grassland species, makes this ridge of high local importance.

Species: Corylus avellana, Ulex europaeus, Geum urbanum, Glechoma hederacea, Carex sylvatica, Campanula trachelium, Lonicera periclymenum, Crataegus monogyna, Chrysosplenium oppositifolium, Primula vulgaris, Ajuga reptans; Conopodium majus, Leontodon autumnalis, Festuca rubra, Plantago lanceolata, Leucanthemum vulgare, Prunella vulgaris, Achillea millefolium, Crataegus monogyna, Prunus spinosa

Recommendation: None

Source: Nore survey 2009

Target area 6

243018 174716

Habitats: BL1

Description (Map 2)

The old church here is coverd with heavy ivy and was swarming with feeding honeybees at time of survey. Red admiral.

The ivy is of moderate local value as a food source for insects and birds, as well as nesting habitat.

Species: Hedera helix

Recommendation: Ivy can be cut back under supervision of an archaeologist, and during winter to avoid disturbing nesting birds.

Source: Nore survey 2009

Target area 7

243102 173778

Habitats: GS1, GS4

Description (Map 3)

This is slightly overgrown dry grassland on site of a former gravel pit, grazed by horses. Nutrient-indicating weeds such as thistle are abundant in parts of the field. It grades into damp grassland towards the river, indicated by the presence of silverweed.

This grassland contains yellow rattle, an indicator of old permanent pasture, and is of moderate local value.

Species: Agrostis capillaris, Trifolium pratense, Achillea millefolium, Centaurea nigra, Rhinanthus minor, Cirsium arvense, Senecio jacobaea, Urtica dioica, Odontites vernus; Potentilla anserina

Recommendation: The species diversity and structure of this grassland would benefit from rotating horses with other grazers, or with closing it and mowing as hay meadow.

Source: Nore survey 2009

Target area 8

243264 173653

Habitats: GS4, WS1

Description (Map 3)

Species-rich wet grassland with low-optimum grazing on peaty soil. Similar to degraded Molinia meadow. Devil's-bit scabious, the food plant of the rare and protected marsh fritillary butterfly, is found in the north of the field. Fox.

This moderately species-rich wet grassland contains a number of the indicator species for

the Annex I habitat, Molinia meadows. Though it does not appear to be of sufficient quality to be classified as such, it is of high local value.

Species: Juncus acutiflorus, Juncus effusus, Succisa pratensis, Lychnis, Carex sp., Filipendula, Cirsium palustre, Trifolium pratense, mosses

Recommendation: A summer survey would expand the plant species list; a list of mosses should also be taken, as well as a search for marsh fritillary larvae and butterflies. Grazing is around the right level, though a bit more grazing in dry conditions would probably help the species diversity.

Source: Nore survey 2009

Fig. 3: T6 Dense ivy on Ballynaslee church provides food for bees

Target area 9

243371 173525

Habitats: GS1, WS1, GS4

Description (Map 3)

Dry grassland of moderate species-richness, with exposed glacial till on steep slope. Towards the river it leads to low-lying wet woodland and river islands.

The grassland habitat is of moderate local value. The river islands and wet woodland are of high local value.

Species: Verbascum thapsus, Leucanthemum vulgare, Geranium robertianum, Hypericum sp., Pilosella officinarum, Ulex europaeus, Rubus fruticosus

Recommendation: A summer survey would probably expand the species list. The wet grassland and marsh below the slope could not be surveyed due to bull in field - further survey would expand species list.

Source: Nore survey 2009

Target area 10

244450 176695

Habitats: WN2, GS1

Description (Map 5)

Motte with ash-hazel scrub woodland extending south on slope. Dry grassland on steep slope has been semi-improved. All grazed by cattle.

This is one of a few pockets of semi-natural dry woodland along the river and is of moderate local value.

Species: Euonymus europaeus, Crataegus monogyna, Malus sylvestris, Corylus avellana, Fraxinus excelsior, Viola sp., Orobanche hederae; Knautia arvensis, Centaurea nigra, Achillea millefolium, Plantago lanceolata, Trifolium pratense, Leontodon autumnalis, Prunella vulgaris, Agrostis capillaris

Recommendation: A late spring survey might add some more woodland species to the list. Ideally this woodland would be fenced off and grazed at most for a week in autumn.

Source: Nore survey 2009

Target area 11

244176 171277

Habitats: GS2

Description (Map 6)

Dry grassland aftergrass, probably cut for hay.

Hay meadow is now a relatively rare habitat in Ireland. It tends to have more species than silage fields. This example is of moderate local value.

Species: Dactylis glomerata, Arrhenatherum elatius, Trifolium pratense, Plantago lanceolata, Agrostis capillaris, Hypochaeris radicata

Recommendation: None

Source: Nore survey 2009

Target area 12

244507 170778

Habitats: BL1

Description (Map 7)

Old Ballyragget bridge with stone walls.

Old stone walls, such as the bridge parapets here, support ferns and other species normally found only in rocky habitats. This bridge is potentially a bat roosting site, and if so is of high local value.

Species: Polypodium vulgare, Cymbalaria muralis, Ceterach officinarum, Asplenium ruta-muraris, Pilosella officinarum, Hedera helix, Erinum alpinus

Recommendation: Local schools could record and draw the different plants found on the bridge (some of which are not native). A bat survey in the river corridor area in Ballyragget would be of interest, and should include mature trees, the castle etc.

Source: Nore survey 2009, Flynn, Furney 2009, Ballyragget LAP

Fig. 4: T10 Ash-hazel woodland on Moatlands motte

Fig. 5: T11 hay meadow just upstream of Ballyragget Bridge

Target area 13

244471 171004

Habitats: GS4, FW4, WL1

Description (Map 7)

The floodplain upstream of the bridge supports wet grassland with wet ditches and bounded by hedgerows.

This grassland has a good diversity of species and is of moderate local value.

Species: Malus domestica,Glyceria fluitans, Phleum pratense, Phalaris arundinacea, Festuca arundinacea Carex disticha C.hirta, Juncus articulatus, Filipendula ulmaria, Caltha palustris, Galium palustre, Persicaria amphibia, Senecio aquaticus, Eleocharis palustris, Hydrocotyle vulgaris, Lychnis flos-cuculi, Lysimachia nummularia, Alisma-plantago-aquatica, Berula erecta, Lythrum salicari, Valeriana officinalis, Iris pseudacorus, Salix triandra x S. viminalis, Salix cinerea, Salix alba, Salix fragilis.

Recommendation: None

Source: Ballyragget LAP Ecological report

Target area 14

244571 170607

Habitats: GS4

Description (Map 7)

The floodplain between and below the bridge also supports wet grassland.

This grassland has a good diversity of species and is of moderate local value.

Species: Carex hirta, Mentha arvensis, Scrophularia auriculata, Rubus caesius, Festuca arundinaca, Juncus inflexus, Potentilla anserina, Veronica scutellata, Lysimachia nummularia, Myosotis scorpioides, Carex disticha, Alopecurus geniculatus, Rumex obtusifolius

Recommendation: None

Source: Ballyragget LAP Ecological report

Target area 15

244948 170785

Habitats: BL1

Description (Map 7)

The walls of Ballyragget castle support a rich wall flora.

The walls are of moderate local value for their plant interest.

Species: Verbascum thapsus, Saxifraga tridactylites, Aubrieta deltoidea, Parietaria judaica, Anisantha sterilis.

Recommendation: None

Source: Ballyragget LAP Ecological report

Target area 16

243996 168608

Habitats: WD1, WD5, GA2

Description (Map 9)

Grange demesne with mixed broadleaved woodland, parkland trees, amenity grassland and old walled garden, including apple trees. Grey squirrel.

These habitats, though fairly intenstively managed, help link the river corridor to the wider landscape and are of moderate local value.

Species: Fagus sylvatica, Quercus robur, Malus domestica, Aesculus hippocastanum, Tilia cordata.

Recommendation: None

Source: Nore survey 2009

Target area 17

244171 168627

Habitats: FS1, WN5

Description (Map 9)

Floodplain dominated by a eutrophic canary reed-grass vegetation difficult to classify but included as reed swamp. The stream flows through the estate from the road, with a wet woodland corridor at the confluence with the Nore. Treecreeper.

Nutrient-rich marshy vegetation of riverbanks is an Annex I habitat type. The example found here is not species-rich enough to qualify but is of moderate local value as a semi-natural riparian habitat.

Species: Phalaris arundinacea, Urtica dioica, Agrostis stolonifera, Holcus lanatus; Fraxinus excelsior, Crataegus monogyna, Hedera helix, Rumex sanguineus, Carex pendula, Geum urbanum.

Recommendation: None

Source: Nore survey 2009

Target area 18

244129 168102

Habitats: WN6

Description (Map 10)

A wet woodland, shown as 'Decoy' on 1st edition maps. Not accessed due to dangerous conditions - the species list was taken from outside.

This woodland would appear to be of high local value.

Species: Alnus glutinosa, Salix cinerea, Iris pseudacorus, Stachys palustris, Rubus fruticosus, Lonicera periclymenum, Fraxinus excelsior, Crataegus monogyna, Viburnum opulus, Quercus robur, Corylus avellana, Lemna minor.

Recommendation: Summer survey during relatively dry conditions and with landowner permission, would expand species list for this habitat.

Source: Nore survey 2009

Target area 19

244212 168000

Habitats: WS1

Description (Map 10)

A narrow strip of scrub on beside the track above wet ground, with the notable species ivy broomrape.

This small area of scrub is of moderate local value.

Species: Glechoma hederacea, Primula vulgaris, Viola sp., Orobanche hederae, Phyllitis scolopendrium, Polystichum setiferum.

Recommendation: Ideally this would be fenced off to restrict grazing by cattle to allow some recovery of the ground flora.

Source: Nore survey 2009

Target area 20

244471 167929

Habitats: WN2, WN5

Description (Map 10)

A strip of dry semi-natural woodland on upper slope grades into wet woodland along the river margin. This habitat was not accessed.

Full evaluation is not possible as this habitat was not accessed; it is of at least moderate, if not high, local value.

Species: Fraxinus excelsior, Quercus sp., Salix viminalis.

Recommendation: A late spring survey would add to the woodland species list.

Source: Nore survey 2009

Target area 21

244145 167687

Habitats: WN6

Description (Map 10)

A pocket of wet woodland in a small hollow beside the road.

Though not surveyed in detail, this represents a small area of semi-natural habitat in otherwise intensively-managed farmland and is of moderate local value.

Species: Salix cinerea, Lemna minor, Iris pseudacorus, Rubus fruticosus.

Recommendation: A late spring survey of this habitat would probably add to the species list.

Source: Nore survey 2009

Fig. 6: T17 Swampy floodplain vegetation beside Grange demesne

Fig. 7: T20 wooded slope on the east bank of the river opposite Grange

Target area 22

244257 167123

Habitats: GS4, WN5, FP1, FW4

Description (Map 11)

Wet grassland with drains with willow; St Catherine's well is visible as a small (5x5m) pond area. Residents of adjoining house have seen little egret, heron and red kite over the wetlands.

The complex of floodplain grassland, wet drains and willow treelines makes this a diverse and interesting area of the river corridor. It is of high local value.

Species: Sparganium erectum, Phalaris arundinacea, Senecio aquaticus, Urtica dioica, Holcus lanatus, Agrostis stolonifera, Ranunculus repens, Glyceria fluitans, Filipendula ulmaria, Angelica sylvestris, Salix spp., Alnus glutinosa.

Recommendation: None

Source: Nore survey 2009

Target area 23

244298 166988

Habitats: GS1, WS1

Description (Map 11)

Mound with moderately species-rich dry grassland and scrub, overlooking the river.

This mound represents an area of semi-natural dry grassland in an area otherwise dominated by wet and improved grassland. It is of moderate local importance.

Species: Cynosuros cristatus, Hypochaeris radicata, Achillea millefolium, Plantago lanceolata, Conopodium majus, Dactylis glomerata, Crataegus monogyna

Recommendation: A certain amount of grazing is required to control scrub and maintain the grassland species diversity; this should be controlled by fencing off the mound and allowing a few weeks' grazing each year.

Source: Nore survey 2009

Target area 24

244602 167668

Habitats: GM1, WN6

Description (Map 10)

Lough Fower - this site was not visited, and the species listed were mentioned by consultees. It is possibly marsh, or reed swamp.

This small wetland is of moderate to high local value, depending on what species it supports.

Species: Salix spp., Iris pseudacorus

Recommendation: A summer survey (with landowner permission) would give a full species list for this site.

Source: Nore survey 2009

Target area 25

244428 166420

Habitats: GS4, WD1, FW4, WN5, FS1, GM1, WS1

Description (Map 11)

The area north of Lismaine Bridge contains a variety of habitats, including riparian woodland along the river, mixed wet woodland north of the road along a wet channel, and reed swamp. The main habitat is wet grassland (not accessed); meadowsweet in the east field here indicates possible marsh. This area lies within Inchbeg pNHA.

As part of Inchbeg proposed Natural Heritage Area, Lismaine townland is of national importance for its habitats and wetland bird interest.

Species: Salix viminalis, Populus sp., Picea sp., Fraxinus excelsior, Crataegus monogyna, Acer pseudoplatanus, Hedera helix, Pinus sp.

Recommendation: None

Source: Nore survey 2009, Inchbeg pNHA site synopsis

Fig. 8: T22 reed swamp beside St. Catherine's well

Fig. 9: T26 Oak-ash woodland in Lismaine demesne.

Target area 26

244235 165687

Habitats: WN2, WN5, FS1, FW4, GS1

Description (Map 12)

The south west part of Lismaine estate includes a strip of ash-oak woodland on a steep slope with a wet drain at the bottom. This grades into a poplar thicket at northern part of Islands leading to small field of reed canary-grass swamp surrounded on all three sides by channels. The low-lying parts of the fields are wet grassland, while a small area of semi-improved dry grassland is found near Lismaine castle.

This is one of a few pockets of semi-natural dry woodland along the river. The combination of habitats found in this area make it of high local value. The woodland includes at least one large old oak of note, and a possible badger sett.

Species: Fraxinus excelsior, Corylus avellana, Crataegus monogyna, Acer pseudoplatanus, Prunus spinosa, Malus sylvestris, Quercus robur, Primula vulgaris, Viola sp., Brachypodium sylvaticum, Anthriscus sylvestris; Populus sp.,Phalaris arundinacea, Urtica dioica, Filipendula ulmaria

Recommendation: White/grey poplar is a non-native suckering tree which excludes other native species and leads to a reduction in local diversity. It is very difficult to eradicate but could be controlled by regularly cutting it out.

Source: Nore survey 2009, Inchbeg pNHA site synopsis

Target area 27

244563 164118

Habitats: WL1, FW4

Description (Map 14)

Species-rich double hedgerow along old Lismaine-Threecastles road, part of which follows a townland boundary.

The hedges along this old roadway contain a great variety of native tree and shrub species, including some visually striking ones such as guelder rose and spindle. It is of high local value.

Species: Fraxinus excelsior, Crataegus monogyna, Populus sp., Corylus avellana, Prunus spinosa, Malus sylvestris, Viburnum opulus, Euonymus europaeus, Salix cinerea, Phyllitis scolopendrium, Polystichum setiferum, Hedera helix

Recommendation: Local schools could record the hedgerow species, e.g. autumn for the berries and spring for understorey plants (NB guelder rose and spindle are not edible). Any future plans that might arise to make the whole lane accessible would need to consult with an ecologist; the hedges should be managed by sensitive cutting back to the minimum needed.

Source: Nore survey 2009

Target area 28

244517 164233

Habitats: FS1

Description (Map 14)

Reed canary-grass swampy field which has been mown and baled. Nuenna river flows along southern boundary.

This swampy field is part of the Inchmore/Islands complex of habitats which is of high local value.

Species: Phalaris arundinacea, Agrostis stolonifera, Filipendula ulmaria, Urtica dioica, Rumex crispus

Recommendation: None

Source: Nore survey 2009, Inchbeg pNHA site synopsis

Target area 29

244841 163693

Habitats: GS4, GA1(GS4), FS1

Description (Map 14)

Wet grassland fields either side of the lane are semi-improved to varying degrees. Despite some being intensively managed, they are mostly very wet and all contain wet grassland indicators to a greater or lesser extent. Heron, snipe.

The fields on either side of the old Lismaine road form part of one of the most extensive areas of semi-natural floodplain grassland within the study area. Though of varying diversity, this area is overall of high local value.

Species: Agrostis stolonifera, Holcus lanatus, Phalaris arundinacea, Rumex crispus, Holcus lanatus, Juncus inflexus, Potentilla anserina, Ranunculus repens, Glyceria fluitans, Juncus articulatus

Recommendation: Some level of grazing/mowing is required to maintain grassland diversity here; however this should be as unintensive and low-key as possible.

Source: Nore survey 2009, Inchbeg pNHA site synopsis

Target area 30

244648 164433

Habitats: GA1(GS4), GS4, FS1, WN5

Description (Map 13)

Callows on Islands. The southern half of the island is unimproved with moderately species-rich wet grassland and large sedge swamp. The northern half was not visited. It has been improved in recent years and used for silage, therefore is expected to be of reduced diversity. Wet grassland continues east into Ballycarran, this was not surveyed.

As part of Inchbeg proposed Natural Heritage Area, this area is of national importance for its habitats and wetland bird interest.

Species: Juncus effusus, Galium palustre, Rorippa sylvestris, Rumex crispus, Agrostis stolonifera, Holcus lanatus, Juncus acutiflorus, Ranunculus repens, Phalaris arundinacea, Lysimachia nummularia, Glyceria fluitans, Mysotis laxa, Apium nodiflorum, Rorippa nasturtium-aquaticum, Filipendula ulmaria, Carex cf acutiformis, Iris pseudacorus, Phleum pratense, Carex disticha, Carex hirta, Caltha palustris, Cardamine pratensis, Equisetum fluviatile

Recommendation: Low-key unintensive grazing and/or management as hay meadow is the ideal way to maintain species diversity here. The wet grassland on the lower part of the island merits further survey during summer.

Source: Nore survey 2009, Inchbeg pNHA site synopsis

Target area 31

245280 163893

Habitats: GS1, ER2

Description (Map 14)

Dry grassland and exposed limestone outcrop beside limekiln. Ryegrass is abundant and indicator species are occasional.

This represents an area of semi-natural dry grassland in an area otherwise dominated by wet and improved grassland. It is of moderate local importance.

Species: Lolium perenne, Cynosuros cristatus, Anthoxanthum odoratum, Galium verum, Lotus corniculatus, Achillea millifolium, Trifolium repens, Carex flacca, Plantago lanceolata, Pilosella officinarum

Recommendation: Continuation of sheep grazing is the ideal way of maintaining species diversity here. Ideally the area of outcropping rock and limekiln would be fenced off and only grazed for a few weeks a year.

Source: Nore survey 2009

Target area 32

245817 162684

Habitats: FL4, GS4, WN5

Description (Map 15)

Small ponds east of Threecastles Bridge support some aquatic plant species. Hurley's pond, north of the bridge, was not visited. Local consultations suggest that this is an important location for wintering birds. The surrounding mixture of habitats is reported to support other birds including birds of prey. Daubenton's bats have been recorded at Threecastles Bridge and downstream.

The presence of wintering wetland birds in this area links it to Inchbeg NHA and makes it of national importance.

Species: Hippuris vulgaris, cf Nuphar lutea

Recommendation: The presence of wintering wetland birds in this area links it to Inchbeg NHA and makes it of national importance.

Source: Nore survey 2009; public consultation; All Ireland Daubenton's bat Waterway monitoring scheme

Fig. 10: T27 native viburnum, or guelder rose, in the hedge at Inchmore

Fig. 11: T29 wet grassland in Monafrica

Fig. 12: T30 reed and large sedge swamp on Islands

Fig. 13: T30 The Brackin stream, a back channel of the Nore east of Islands

Target area 33

245941 162507

Habitats: WD1, WD5, WN5, GS1, GS2, GA1

Description (Map 15)

One of the main features of Threecastles demesne is the mature planted mixed broadleaved woodland west of the house, on the motte and along the avenue. East of house is a line of parkland trees on a slope, which meets alluvial woodland including what may have been an osier bed. Some of the sloping ground is semi-improved dry grassland.

The broadleaved woodland is made up mostly of non-native species but is of moderate local value for birds and woodland plants. It also contains sweet violet, a species of restricted distribution. The relatively large area of wet woodland along the river a

Species: Fagus sylvatica, Tilia x europaea, Acer pseudoplatanus, Picea sp., Pinus sp., Quercus robur, Rubus fruticosus, Prunus laurocerasus, Prunus avium, Brachypodium sylvaticum, Hedera helix, Anthriscus sylvestris, Carex sylvatica, Glechoma hederacea; Salix fragilis, Salix viminalis, Alnus glutinosa, Fraxinus excelsior, Phalaris arundinacea; Achillea millefolium, Prunella vulgaris, Lolium perenne, Plantago lanceolata

Recommendation: Cherry laurel in the broadleaved woodland should not be allowed to spread towards the river, as it is an invasive species. Survey of the wet woodland would be of interest.

Source: Nore survey 2009

Target area 34

246580 162737

Habitats: GS4, FS1, FW4, WN6, GM1

Description (Map 16)

Ardaloo fen NHA is a large wetland area, some of which is inaccessible. It contains a mixture of reed swamp, wet woodland and wet grassland. It is used by wintering birds. It could not be accessed due to very wet conditions. In the northwest corner a pocket of marsh adjoins the farmyard, and is reportedly used by swans, waterhens and other wetland birds.

The presence of wintering wetland birds in this area links it to Inchbeg NHA and makes it of national importance; it is also one of the more natural wetland areas along the river.

Species: Phalaris arundincaea, Salix spp., Juncus effusus; Sparganium erectum, Iris pseudacorus.

Recommendation: None

Source: Ardaloo Fen NHA (0821) site synopsis

Target area 35

247117 161853

Habitats: GS3, GA1, WS1, WD2, WN2, ED3

Description (Map 16)

The Rock' overlooking the Nore is an outlier of acidic soils from the Slieveardagh and so stands out among the limestone soils along the rest of the study area. Most of the fields here are improved with a tiny pocket of acidic grassland just behind the woodland, indicated by the presence of sheep's sorrel. The woodland is mostly mixed with a small area of more semi-natural ash and hazel to the east.

The wooded habitat here is quite modified and with a high proportion of non-native species. It provides habitat for birds and is of moderate local value.

Species: Ulex europaeus, Crataegus monogyna, Achillea millefolium, Rumex acetosella, Lolium perenne; Picea sp., Fagus sylvatica, Fraxinus excelsior, Quercus robur, Corylus avellana, Rubus fruticosus, Polystichum setiferum

Recommendation: None

Source: Nore survey 2009

Target area 36

247254 162160

Habitats: WN5, GS4, WS1,

Description (Map 16)

The Shot - confluence with the Dinan. The Dinan changed course in the 1960s and the back channels have largely silted up and revegetated. The main habitat is riparian woodland with wet grassland and swamp. The gravel bars in the river can change in times of flood. The wet grassland on the south west corner is being colonised by alder and willow due to absence of grazing or mowing. Himalayan balsam, an invasive species, is occasional here.

Some of the habitats here are relatively recently formed. The nature of the Dinan as a spate river, as well as possible human influences on channel alignment, make this a particulary dynamic and ever-changing part of the river corridor. It is of high loca

Species: Acer pseudoplatanus, Hedera helix, Fraxinus excelsior, Crataegus monogyna, Salix fragilis, Salix viminalis, Salix spp.; Holcus lanatus, Dactylis glomerata, Epilobium hirsutum, Alnus glutinosa, Juncus effusus, Chamerion angustifolium, Taraxacum agg., Saponaria officinalis, Stachys palustris, Arrhenatherum elatius, Alnus glutinosa, Ilex aquifolium, Sambucus nigra

Recommendation: Further survey of the habitats here in late spring/early summer would add to the species list. The small amount of Himlayan balsam could be controlled by removal and monitoring.

Source: Nore survey 2009

Target area 37

247366 161715

Habitats: GS2, WN5, FW4

Description (Map 17)

Mount Eagle distillery remains - with adjacent hay meadow and wet woodland along former mill-race

The remnants of the distillery itself are of low-moderate ecological value - the holes in the old walls provide some habitat for nesting birds. The wet channel and woodland associated with the old mill race are of moderate local value.

Species: Dactylis glomerata, Arrhenatherum elatius, Carex hirta, Vicia sepium, Lathyrus pratensis

Recommendation: None

Source: Nore survey 2009

Target area 38

247526 161168

Habitats: GS1, WS1, WD1, GA1

Description (Map 17)

A field of semi-improved grassland with scrub and broadleaved woodland strip overlooking river. The woodland is close to semi-natural ash-hazel type.

The habitats here are of moderate local value.

Species: Centaurea nigra, Potentilla anglica, Plantago lanceolata, Lathyrus pratensis, Holcus lanatus, Cynosuros cristatus, Agrostis capillaris, mosses, Pteridium aquilinum, Rumex acetosa, Cirsium palustre, Filipendula ulmaria; Fraxinus excelsior, Fagus sylvatica, Corylus avellana, Crataegus monogyna

Recommendation: None

Source: Nore survey 2009

Target area 39

247939 160792

Habitats: GS1

Description (Map 18)

Semi-improved dry grassland on sloping ground, recently cut for hay.

Though not surveyed in detail, this represents a small area of traditionally-managed grassland in otherwise intensively-managed farmland and is of moderate local value.

Species: Dactylis glomerata, Taraxacum agg., mosses, Anthoxanthum odoratum, Holcus lanatus, Agrostis capillaris, Agrostis stolonifera, Trifolium repens, Trifolium pratense, Carex flacca

Recommendation: A summer survey before the hay cut is taken would add the species list here (with landowner permission).

Source: Nore survey 2009

Fig. 14: T36 gravel bar on the Dinan at The Shot

Fig. 15: T39 hay meadow overlooking the Nore

Target area 40

249265 159708

Habitats: GA1(GS4)

Description (Map 19)

The floodplain grassland between the water treatment plant and Aut Evan is improved, with occasional wet grassland indicator species. It is publicly accessible from the city via a series of stiles over the boundary fences.

The grassland habitat here is mostly of low local value due to intensive management.

Species: Lolium perenne, Poa trivialis, Taraxacum agg., Trifolium repens, Cardamine pratensis, Holcus lanatus

Recommendation: Kilkenny Co. Co. owns some land along here. These fields could be managed less intensively to help increase diversity along the river corridor, e.g. by reducing fertiliser input and managing as hay meadow.

Source: Nore survey 2009

Target area 41

249510 159839

Habitats: WD1

Description (Map 41)

A broadleaved woodland dominated by beech with little understorey, at least in the southern part. Not fully surveyed.

As part of Dunmore complex pNHA, nettle-leaved bellflower has been recorded from this woodland in the past. It is of national importance.

Species: Fagus sylvatica, Quercus robur, Fraxinus excelsior, Hyacinthoides sp., Rubus fruticosus, Hedera helix, Ajuga reptans, Viola sp.

Recommendation: None

Source: Nore survey 2009, Dunmore Complex NHA site synopsis

Target area 42

250038 159485

Habitats: PF1, FL4, FS1, WN6

Description (Map 19)

Dunmore complex NHA fen, ponds and willow woodland is a series of natural depressions in the gravels and boulder clays of the northern outskirts of Kilkenny city, supporting an interesting diversity of wetland and woodland and old meadow habitats.

Although each block is small, overall they form a highly diverse site, which supports an impressive array of rare plant species plus a rare liverwort species (Ricciocarpus fluitans). This site is of county importance.

Species: Alnus glutinosa, Salix cinerea, Carex paniculata, Phragmites australis, Molinia caerulea, Carex panicea, Filipendula ulmaria, Carex disticha, Typha latifolia, Carex rostrata, Equisetum fluviatile, Potentilla palustris, Menyanthes trifoliata; Anthyllis vulneraria, Carlina vulgaris, Linum catharticum, Clinopodium acinos; Fraxinus excelsior, Sorbus aucuparia, Acer pseudoplatanus, Quercus robur, Prunus spinosa, Crataegus monogyna, Ulex europaeus, Campanula trachelium; Ranunculus lingua, Galium uliginosum, Rumex hydrolapathum

Recommendation: None

Source: Nore survey 2009, Dunmore Complex NHA site synopsis

Target area 43

249756 158549

Habitats: WD1, WN2, WN5, FL8

Description (Map 20)

The woodland along the river walk below Aut Even is made up of wet woodland on the lower slope where exotic non-native bamboo has taken over some of the understorey. Further up the slope is a mixed broadleaved woodland with some more semi-natural areas. The woodland is

relatively recent in origin (not shown on the 1st edition maps) - it appears that the original planting is gradually becoming more natural, with a good number of native woodland plant species.

This woodland contains a fairly high proportion of non-native tree species, and bamboo which appears to be spreading. It represents a sizeable block of woodland habitat close to the city and is of high local value.

Species: Corylus avellana, Polystichum setiferum, Hedera helix, Fraxinus excelsior, Fagus sylvatica, Phyllitis scolopendrium, Circaea lutetiana, Geum urbanum, Potentilla sterilis, Viola sp., Salix cinerea, Prunus spinosa, Alnus glutinosa, Urtica dioica, Filipendula ulmaria, Glechoma hederacea, Aegopodium podagraria, bamboo, Anthriscus sylvestris, Carex pendula, Brachypodium sylvaticum, Populus sp.

Recommendation: Any possible future development of the walk through here will require some control of bamboo. This should be done in a way that doesn't cause this plant to be spread downstream, or anywhere else. Most of the woodland is a haven for woodland flora and fauna close to the city, and any improvement of the walk should be minimal and sensitive to the ecology of the area.

Source: Nore survey 2009

Target area 44

249972 157622

Habitats: WN2, WN6

Description (Map 21)

This wooded slope parallel to the river walk has some non-native species but is mainly a semi-natural woodland. The base of slope is wet.

This woodland enhances the ecological value of the river corridor and provides a buffer between it and the built land to the west. It is of high local value.

Species: Alnus glutinosa, Fraxinus excelsior, Corylus avellana, Acer pseudoplatanus, Salix cinerea, Larix sp., Pinus sp.

Recommendation: None

Source: Nore survey 2009, River Nore Linear Walk natural heritage survey

Target area 45

250381 157612

Habitats: GS1

Description (Map 21)

The dry grassland immediately below the Bleach Road has not been improved, probably because it is on fairly steeply sloping ground. It is moderately species rich.

This pocket of dry grassland is a reservoir of calcareous grassland plants and is likely to also support insects such as butterflies. It is of moderate local value.

Species: Daucus carota, Centaurea nigra, Festuca rubra, Trifolium pratense

Recommendation: None

Source: Nore survey 2009

Target area 46

250509 157311

Habitats: WD1, WN5, GS4

Description (Map 21)

On steep ground leading to the river below the Bleach Road, this woodland ranges from a scrubby dry type with ash and cherry, to a wet alluvial type dominated by willows. A pocket of wet grassland lies in between the two.

This is the last pocket of woodland before Green's Bridge and is of high local value.

Species: Alnus glutinosa, Salix alba, Fraxinus excelsior, Prunus avium, Prunus spinosa, Malus sylvestris, Rubus fruticosus

Recommendation: None

Source: Nore survey 2009

Target area 47

250424 157029

Habitats: GA2, GS4, GS1, GS2, GM1, FS1, WS3

Description (Map 22)

The habitats along Riverside Drive have been changed slightly during the flood relief works. There is a mixture of amenity grassland, wet and dry semi-natural grassland, and small pockets of marsh and swamp vegetation.

This habitat is recovering following disturbance and supports a reasonable range of species. It is of moderate local value.

Species: see source

Recommendation: None

Source: Nore survey 2009, River Nore Linear Walk natural heritage survey

Fig. 16: T43 wet woodland along the river walk below Aut Even

Fig. 17: T43 bamboo thicket in broadleaved woodland below Aut Even

Fig. 18: T45 dry calcareous grassland along the Bleach Road

Fig. 19: T41 broadleaved woodland included in Dunmore Complex NHA

Target area 48

250843 155765

Habitats: BL3, BL1, FS1, WL2

Description (Map 24)

Below John's Bridge, the riverbank is canalised with stone and concrete, which is being recolonised by grassy vegetation. The stone wall under the castle supports a moderately diverse wall flora, dominated by ivy. The habitats here range from very modified at John's bridge, to more semi-natural towards the weir.

The habitats here are generally of moderate local value.

Species: Holcus lanatus, mosses, Geranium robertianum, Arrhenatherum elatius; Hedera helix, Parietaria judaica, Cymbalaria muralis, Asplenium adiantum-nigrum, Erinus alpinus, Polypodium cf cambricum, Phyllitis scolopendrium, Umbilicus rupestris

Recommendation: Only trim back ivy on the wall as required - avoid cutting down completely unless necessary for conservation of the structure. Leave all small wall plants such as ferns - these do no structural damage and add to the biodiversity of the area.

Source: Nore survey 2009

Target area 49

251089 155805

Habitats: WN5, FS1

Description (Map 24)

Riverbank vegetation on both sides of the river is recovering following the flood alleviation works. Some willows and bulrushes appear to have been planted in.

Natural riverbank vegetation of willows, reeds, bulrush etc. are important for proper ecological functioning of the river system. They are of high local importance.

Species: Salix spp., Typha latifolia, Alnus glutinosa, Filipendula ulmaria, Phalaris arundinacea, Acer pseudoplatanus, Urtica dioica, Buddleja davidii, Symphoricarpos albus, Petasites hybridus

Recommendation: Sycamore and snowberry are non-native species which could be removed from the riverbank.

Source: Nore survey 2009

Target area 50

251495 155677

Habitats: WL2

Description (Map 24)

Lines of mature trees, mostly lime, lie along each side of the former canal and beside the former mill, with an open woodland ground flora below them.

Though non-native, the mature trees here provide wildlife habitat, particularly as the ground underneath them has mainly been left undisturbed. Together with the adjoining habitats, this is of high local importance.

Species: Tilia x europaeus, Hedera helix, Anthriscus sylvestris, Filipendula ulmaria, Brachypodium sylvaticum

Recommendation: Continue to use low-key maintenance under the trees.

Source: Nore survey 2009

Target area 51

251586 155543

Habitats: GA2, GS4, GM1, FP1

Description (Map 24)

The canal bed ranges from a semi-improved damp grassland managed as amenity grassland at its northern end, to wetter grassland in the centre and species-poor swamp towards Ossory Bridge. A spring enters the canal at the lane south of Dukesmeadows.

Though originally a man-made habitat and quite formal in layout, the habitats along the line of

the canal have become important as a green corridor buffering the river from the built part of the city, and provide flood plain capacity to mitigate risk up a

Species: Holcus lanatus, Ranunculus repens, Lolium perenne, Agrostis stolonifera, Filipendula ulmaria; Apium nodiflorum, Phalaris arundinacea, Glyceria fluitans, Urtica dioica, Epilobium hirsutum

Recommendation: Continue to maintain the amenity area as currently. Further development of hard surfaces or infill should be avoided in this area. The marshy part of the former canal should be kept as wildlife habitat. Restoration and improvement of the habitat under Ossory Bridge could be considered.

Source: Nore survey 2009

Fig. 20: T50 mature lime trees beside the old Ormonde Mill

Fig. 21: T51 marsh vegetation on the bed of the former Kilkenny canal

Target area 52

251753 155615

Habitats: WD1, WN5

Description (Map 24)

The Lacken walk is dominated by woodland with small pockets of other habitats.

This forms a good semi-natural riparian corridor and is of high local value.

Species: -

Recommendation: None

Source: Nore survey 2009, Lacken walk ecology survey

Target area 53

251387 155526

Habitats: GA2, WD1, FL8

Description (Map 24)

The mixed broadleaved woodland of the Castle Park contains native trees such as ash, willow and holly, with non-natives such as holm oak, sycamore, beech and lime. The pond is full of the invasive non-native species, New Zealand pigmyweed. The park is home to grey squirrel, fox, and many bird species including birds of prey.

This woodland is a valuable wildlife refuge in the heart of the city. It is of high local value.

Species: Acer pseudoplatanus, Hedera helix, Fraxinus excelsior, Crataegus monogyna, Salix spp., Fagus sylvatica, Tilia x europaea, Ulmus sp., Solanum dulcamara, Ilex aquifolium, Quercus ilex; Crassula helmsii, Aesculus hippocastanum, Tilia cordata, Pinus sylvestris, Larix decidua, Pinus nigra, Pinus radiata, Quercus rubra, Quercus robur, Quercus petraea, Quercus cerris, Fagus purpurea, Fagus asplenafolia

Recommendation: The main risk is that fragments of the plant will escape through the pond overflow and invade aquatic habitats downstream.

Source: Nore survey 2009; Colm Mangan OPW

Target area 54

251694 155163

Habitats: GS4, WS3

Description (Map 24)

Dukes Meadows presents an interesting mix of wet and dry grassland species, due to having been disturbed in recent years. The ground is predominantly wet. Areas of tree and shrub planting add interest. This is a useful habitat for insects and birds.

As a relatively large pocket of wet grassland within the city enviroment, this is of high local value.

Species: Juncus inflexus, Trifolium pratense, Vicia sepium, Daucus carota, Lathyrus pratensis, Agrostis stolonifera, Holcus lanatus, Centaurea nigra, Ranunculus acris, Ranunculus repens, Cynosuros cristatus, Lychnis flos-cuculi, Lotus corniculatus, Juncus acutiflorus, Achillea millefolium, Vicia sativa, Knautia arvensis, Pulicaria dysenterica, Agrostis stolonifera

Recommendation: Further interpretation of the particular wet grassland species found here would be of interest. This habitat will require mowing or grazing every few years to maintain the grassland diversity. Alternatively it presents possibilities for retaining some grassland and allowing other areas to recolonise with scrub, and eventually woodland.

Source: Nore survey 2009

Target area 55

251947 154826

Habitats: GS1, GS2, WN6, WS1

Description (Map 25)

Black Quarry (Archersgrove Quarry) is found on both sides of the Bennettsbridge road. Formerly quarried for Kilkenny Black Marble (a very dark grey limestone), it has revegetated with a

mixture of moderately species-rich calcareous grassland and scrub. The River Nore portion is grazed by horses. A certain amount of grazing is good as it helps keep a diversity of grassland species. At the time of surveying, the amount of grazing was about right or slightly more than the optimum. Both parts of the quarry are suffering from littering and dumping.

The quarry is a gem within the city, supporting a good range of calcareous grassland species. It is of high local importance.

Species: Achillea millefolium, Galium verum, Pimpinella saxifraga, Knautia arvensis, Centaurea nigra, Lathyrus pratensis, Linum cf catharticum, Linum bienne, Origanum vulgare, Carex flacca, Briza media, Juncus inflexus, Potentilla anserina, Potentilla reptans, Equisetum arvense, Agrostis stolonifera, Agrostis capillaris, Festuca rubra, Dactylis glomerata, Cynosuros cristatus, Vicia sepium, Vicia cracca, Pulicaria dysenterica, Salix cinerea, Acer pseudoplatanus, Fraxinus excelsior, Cotoneaster sp., Crataegus monogyna, Rubus fruticosus, Sambucus nigra

Recommendation: In co-operation with the landowner, both parts of the quarry could be cleaned up. Both provide opportunity for interpretation of natural and built heritage - any possible future access to the site should be done in an sensitive way that does not damage the natural heritage. The ungrazed portion beside the petrol station is becoming overgrown and invaded by scrub - its diversity will be lost in time unless a grazing or mowing regime in implemented, at least on part of the site, in the medium term.

Source: Nore survey 2009

Target area 56

251063 157229

Habitats: FS1, WL2, GS2, WS1, GA2, WD1

Description (Map 22)

Newpark Marsh NHA is not directly on the river but is an important wetland close to it. The main habitats are reed swamp, tall herb swamp, and wet woodland.

This wetland is of high local value.

Species: Carex elata, Veronica beccabunga, Rorippa palustris, Ranunculus repens, Juncus effusus, Iris pseudacorus, Scirpus lacustris, Rumex hydrolapathum, Phalaris arundinacea, Mentha aquatica, Ranunculus lingua, Typha latifolia, Salix viminalis, Salix atrocinerea, Salix fragilis, Populus tremula

Recommendation: As per Malone O'Regan report 2005

Source: Newpark Marsh report 2005

Fig. 22: T55 scrub and limestone grassland at Black Quarry

Fig. 23: T54 wet grassland at Dukes Meadows

Fig. 24: T54 ragged robin flowering in wet grassland at Dukes Meadows

Fig. 25: Crab apples on the old Threecastles-Lismaine road

Fig. 26: Spindle berries

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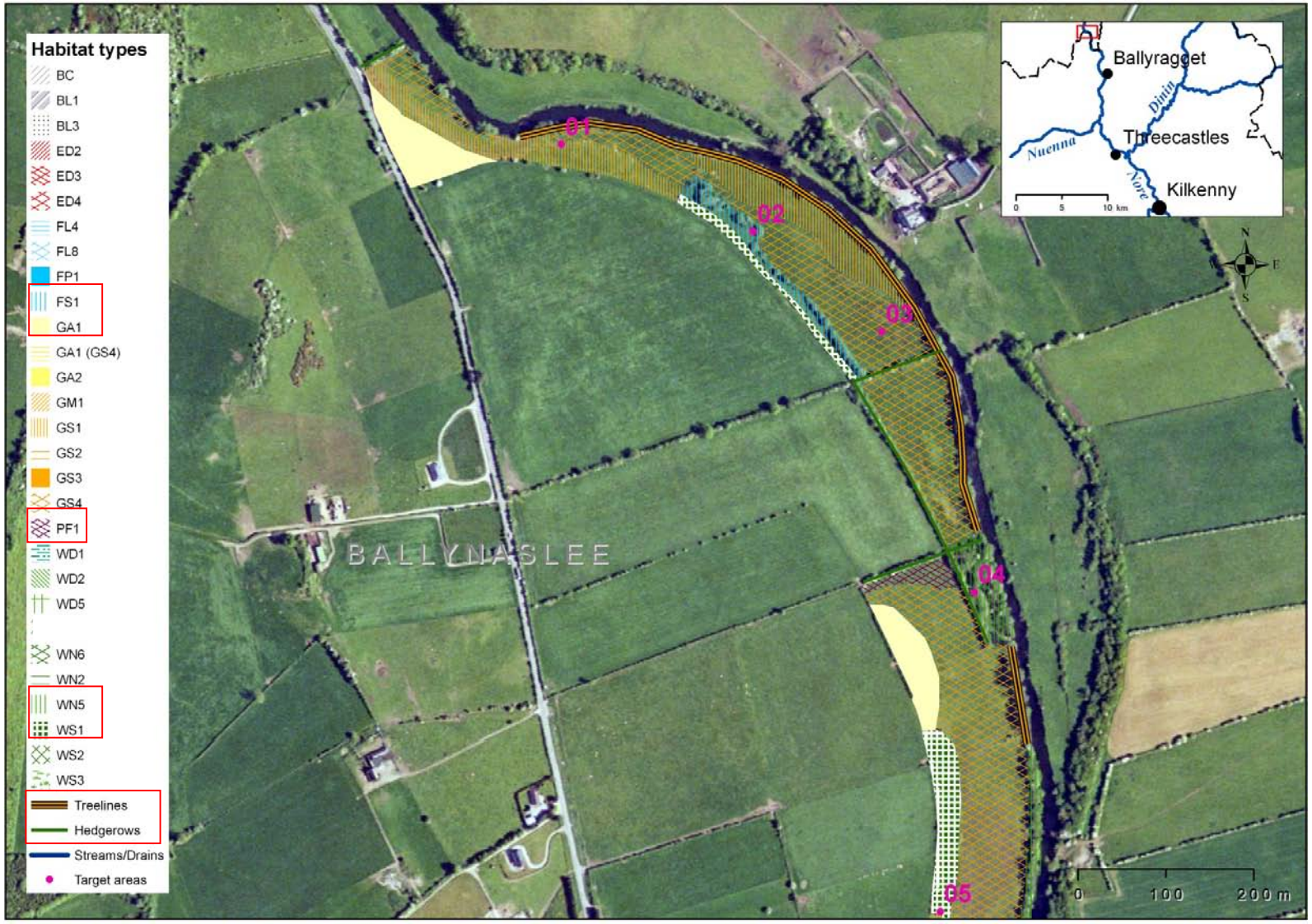
MAPPING

Abbreviations used in Maps 1-25 Ecology

HABITAT CODE	DESCRIPTION
FL4	Mesotrophic lakes
FL8	Artificial lakes and ponds
FW4	Drains
FP1	Calcareous spring
FS1	Reed and large sedge swamp
GA1	Improved agricultural grassland
GA1(GS4)	Improved wet grassland
GA2	Amenity grassland (improved)
GS1	Dry calcareous and neutral grassland
GS2	Dry meadows and grassy verges
GS3	Dry-humid acid grassland
GS4	Wet grassland
GM1	Marsh
PF1	Rich fen and flush
WN2	Oak-ash-hazel woodland
WN5	Riparian woodland
WN6	Wet willow-alder-ash woodland
WD1	Mixed broadleaved woodland
WD2	Mixed broadleaved /conifer woodland
WD5	Scattered trees and parkland
WS1	Scrub
WS2	Immature woodland
WL1	Hedgerow
WL2	Treeline
ED2	Spoil and bare ground
ED3	Recolonising bare ground
ED4	Active quarries and mines
BC	Arable land
BL1	Stone walls and other stonework
BL3	Buildings and artificial surfaces

MAP 1 Ecology



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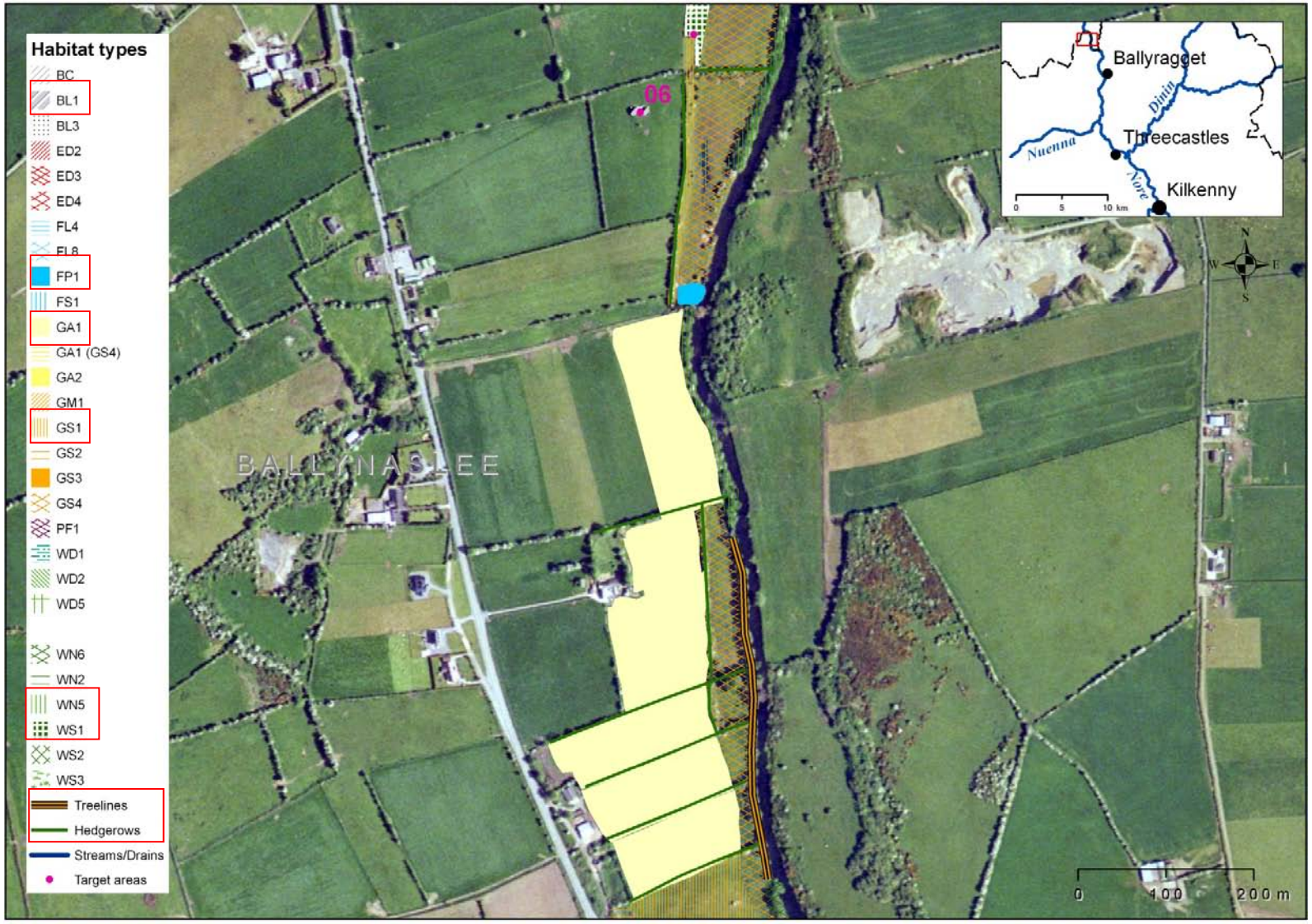

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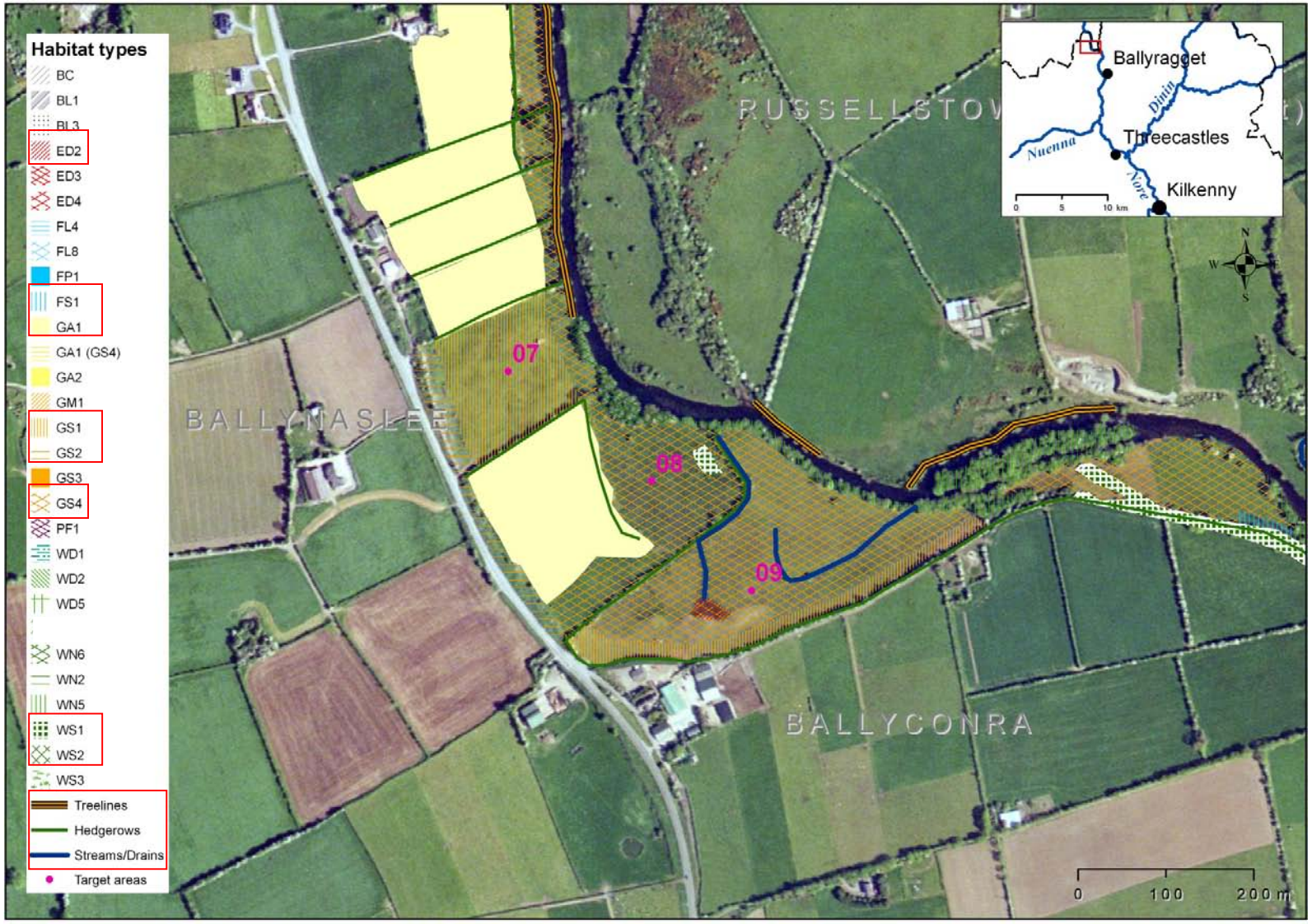

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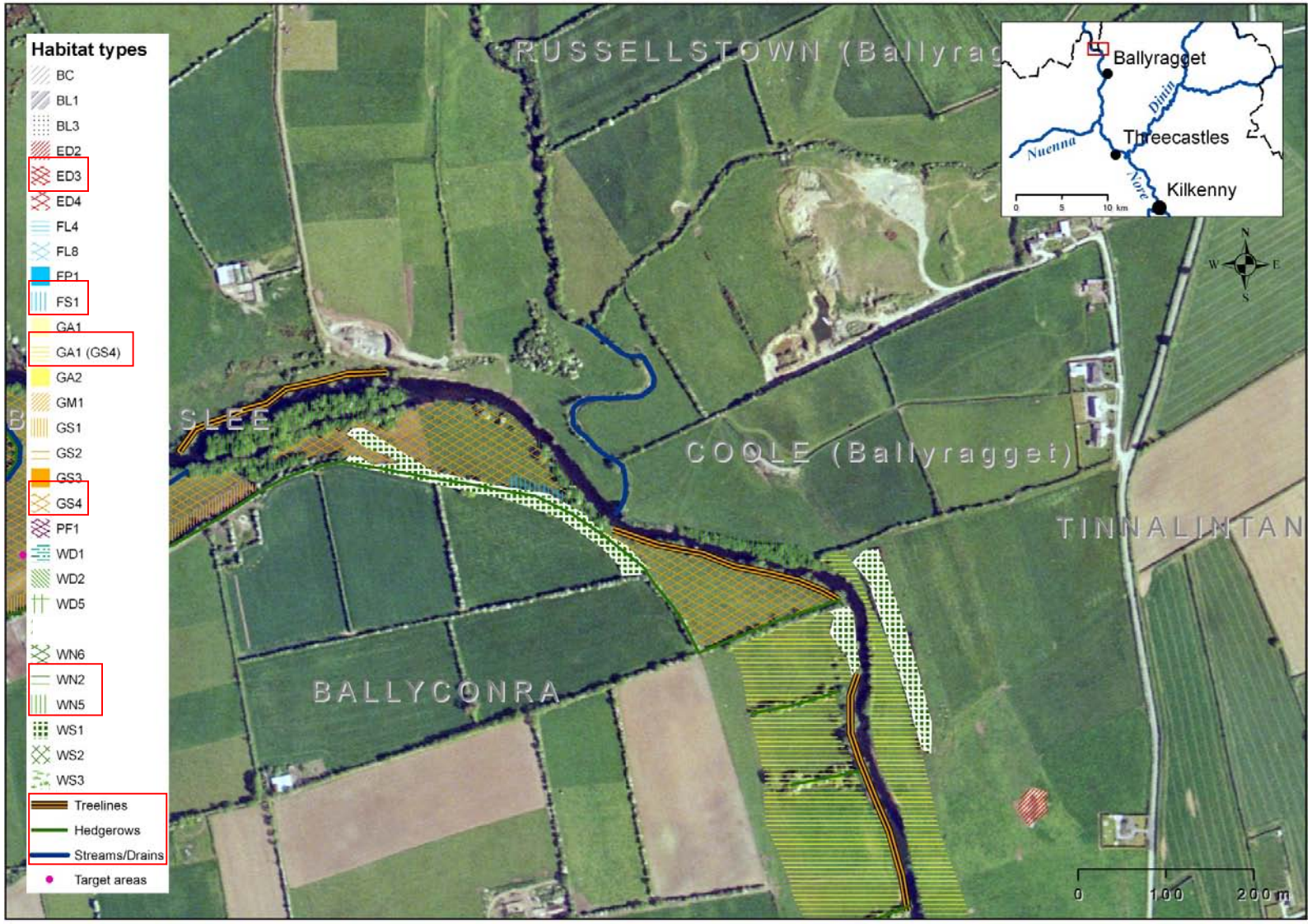

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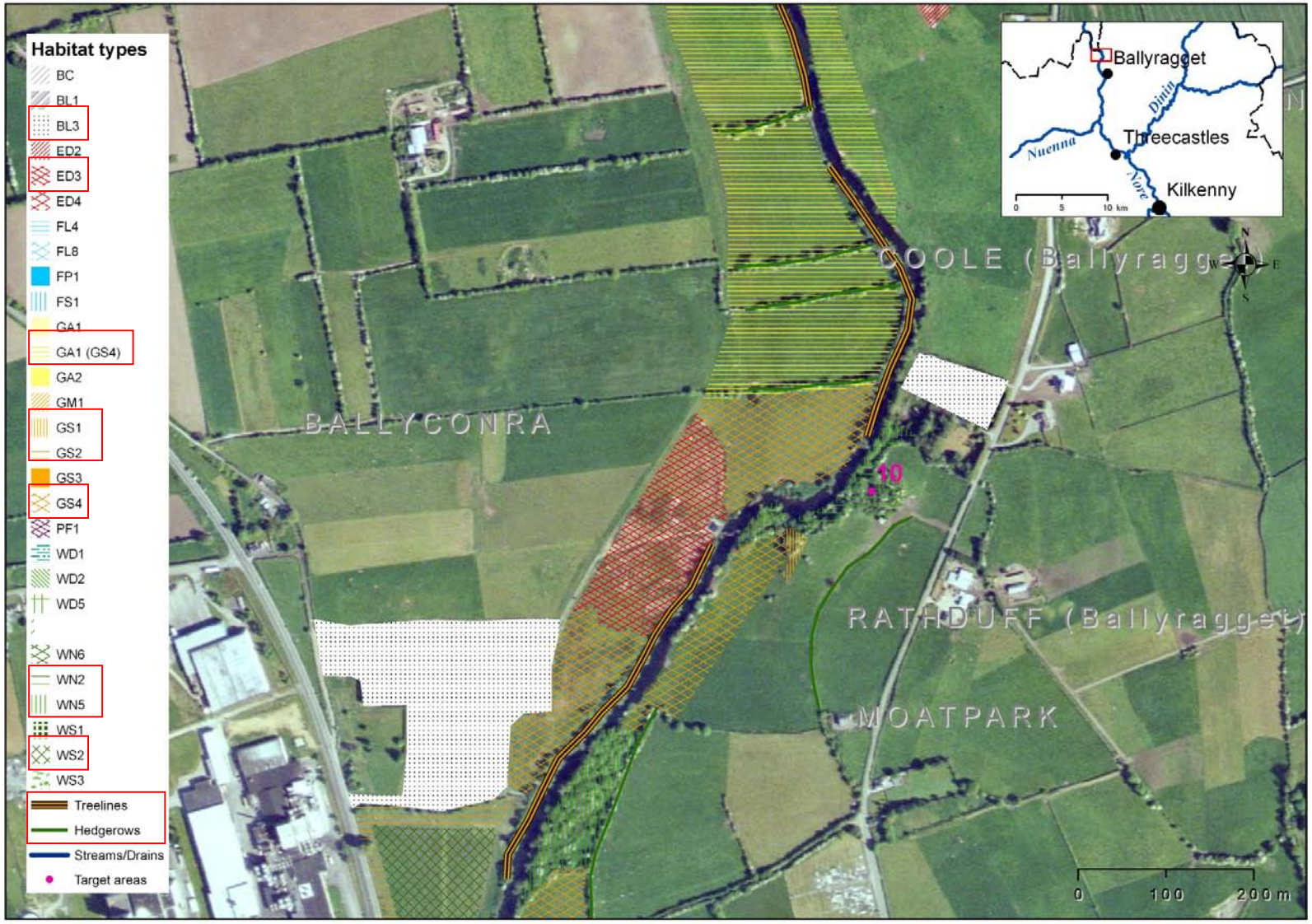

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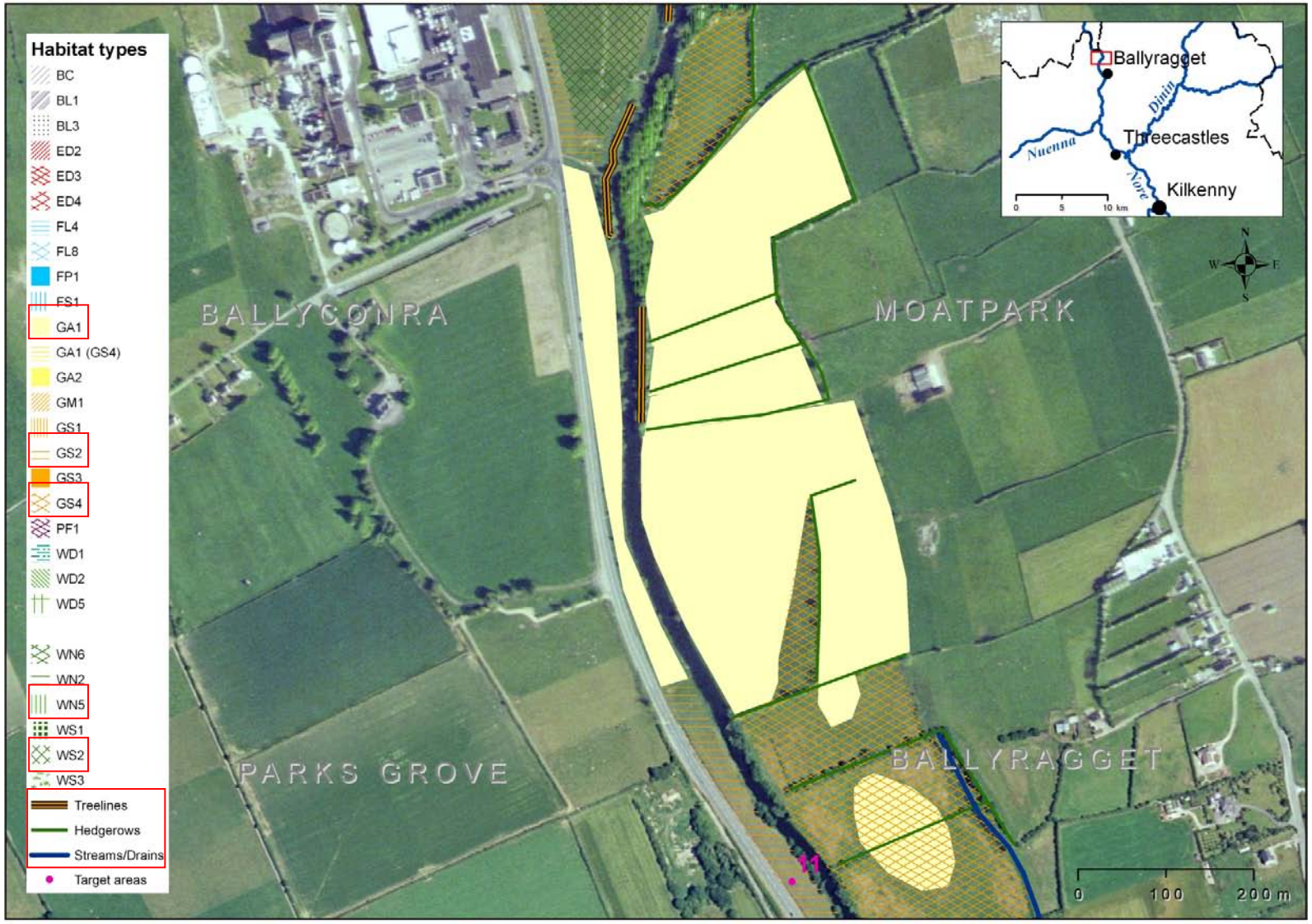

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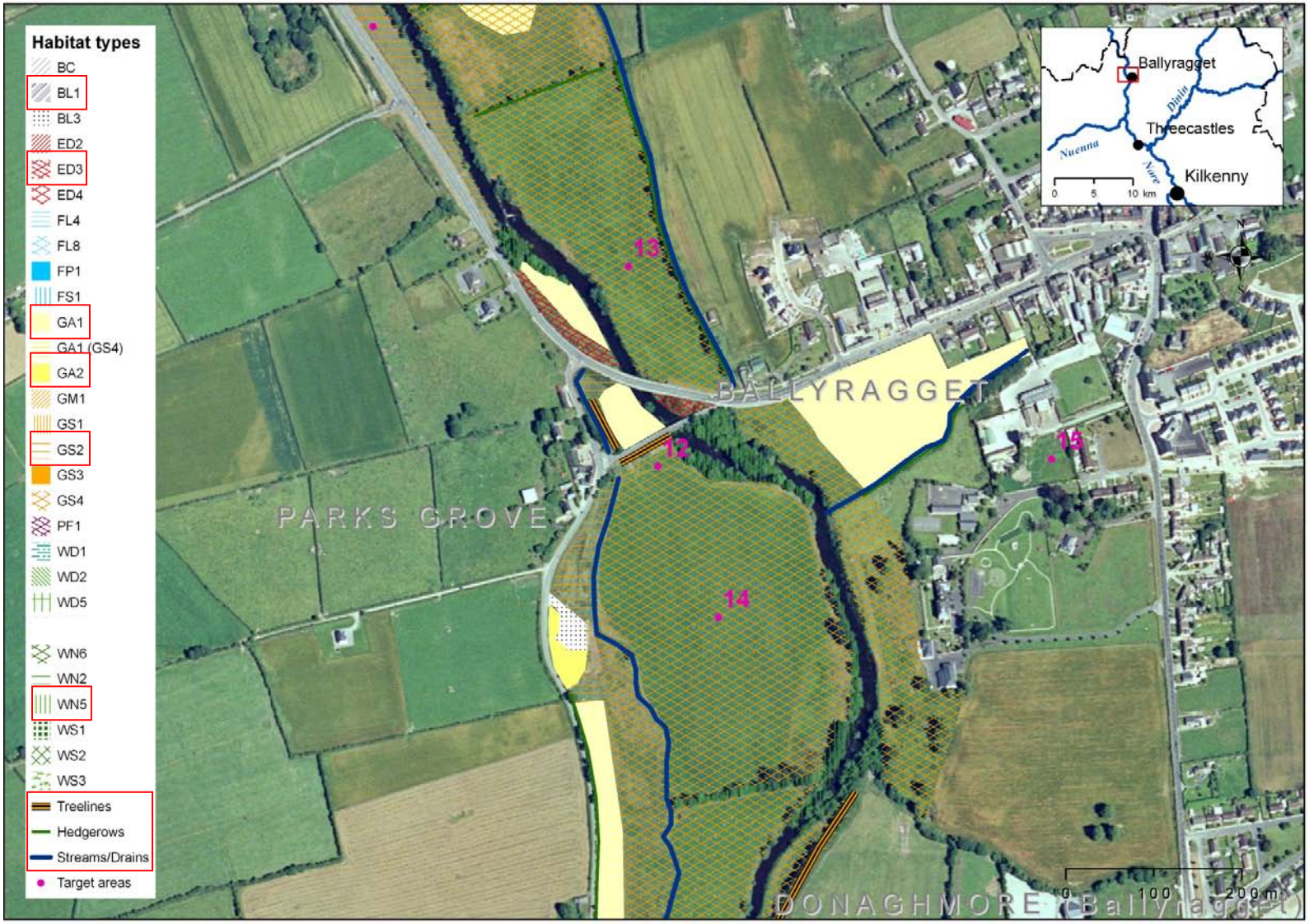

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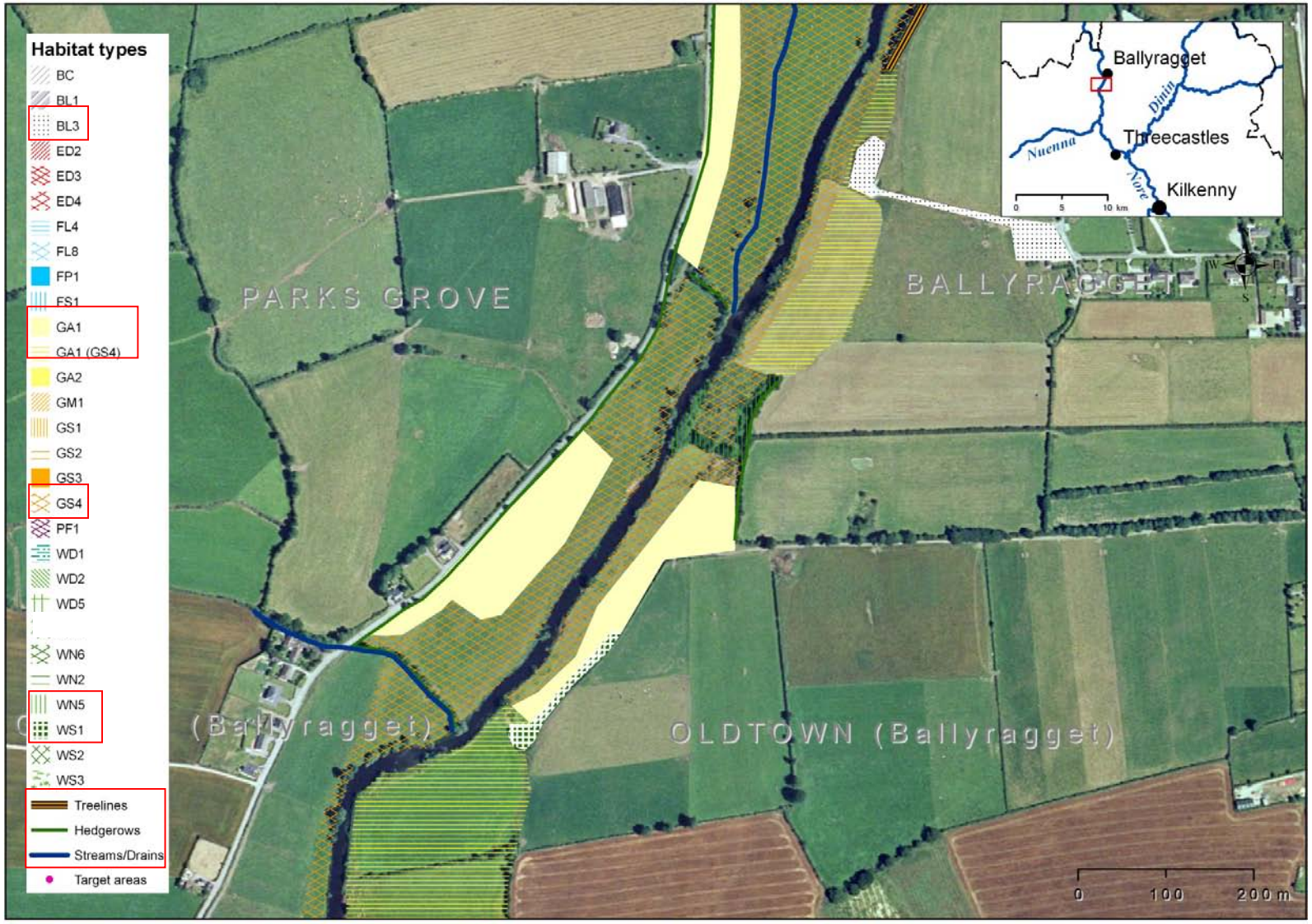

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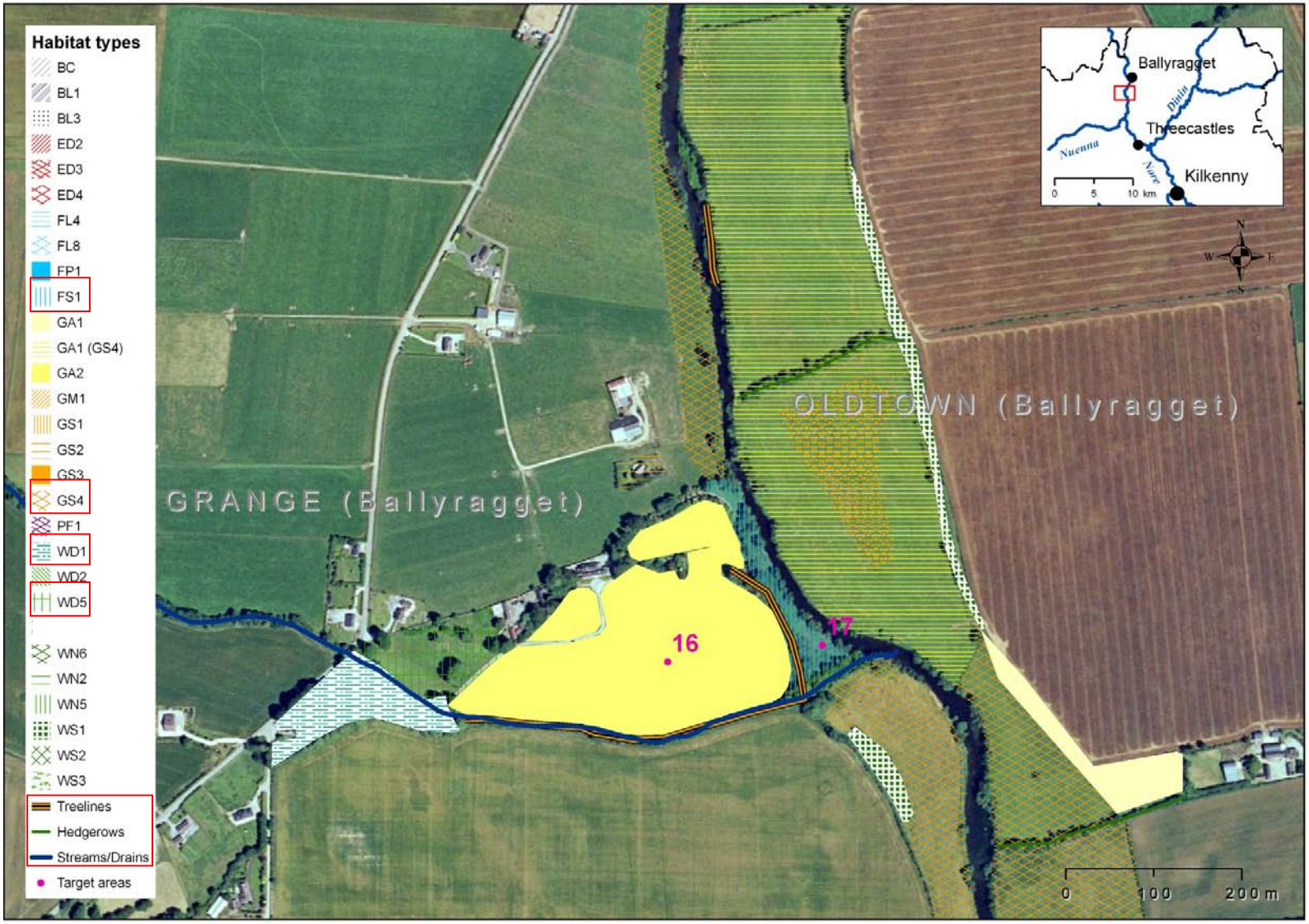
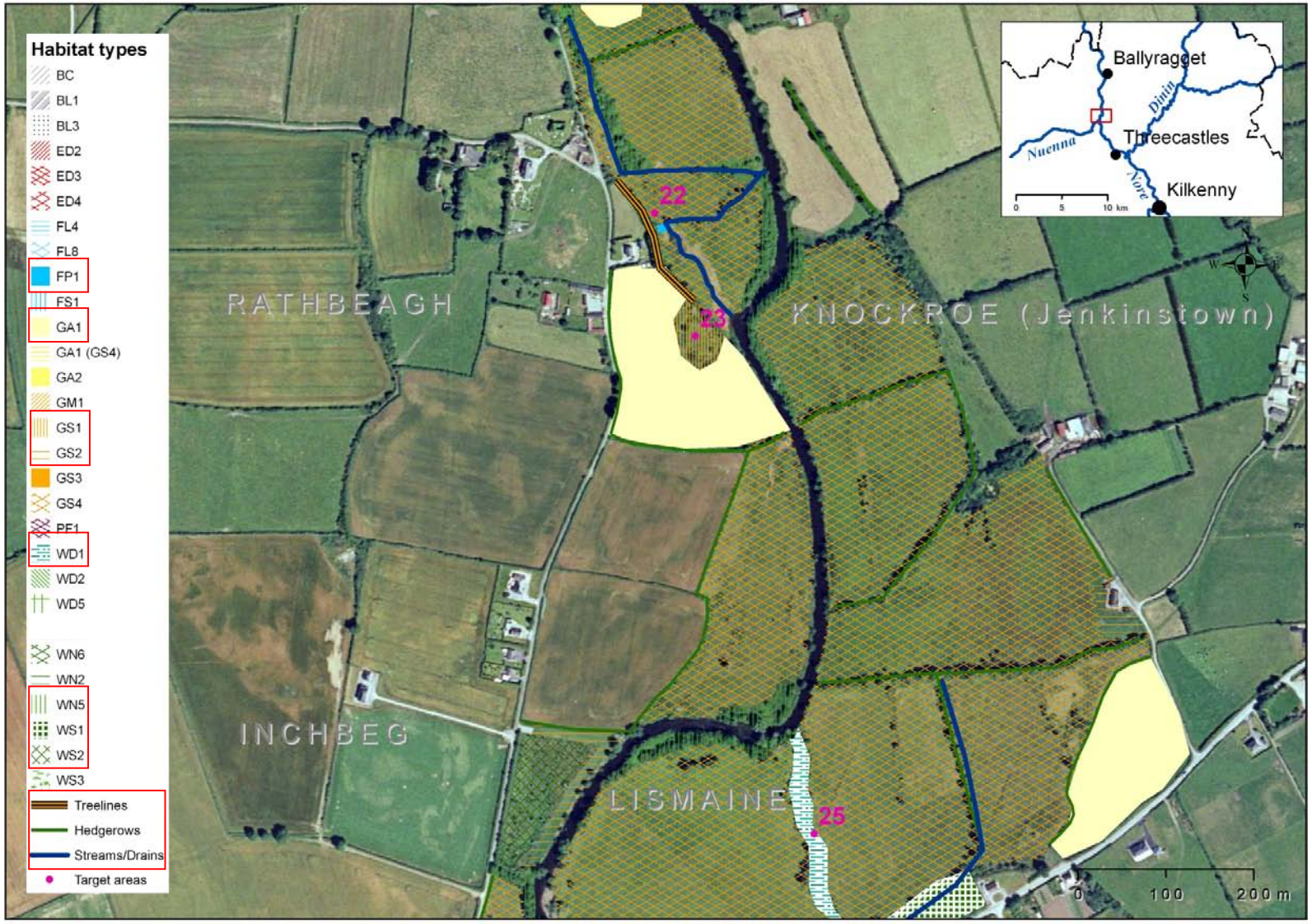


MAP 10 Ecology

MAP 11 Ecology



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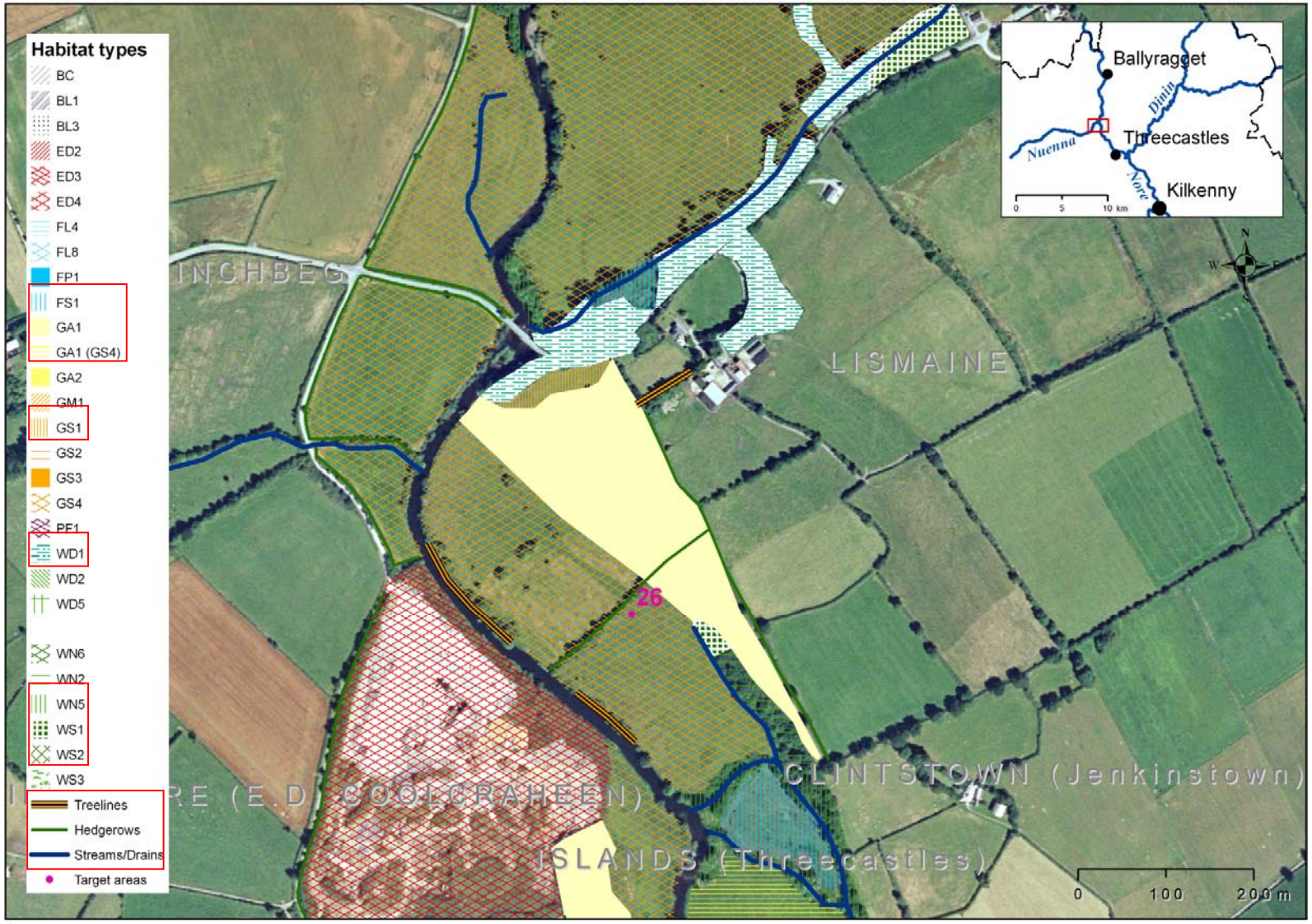

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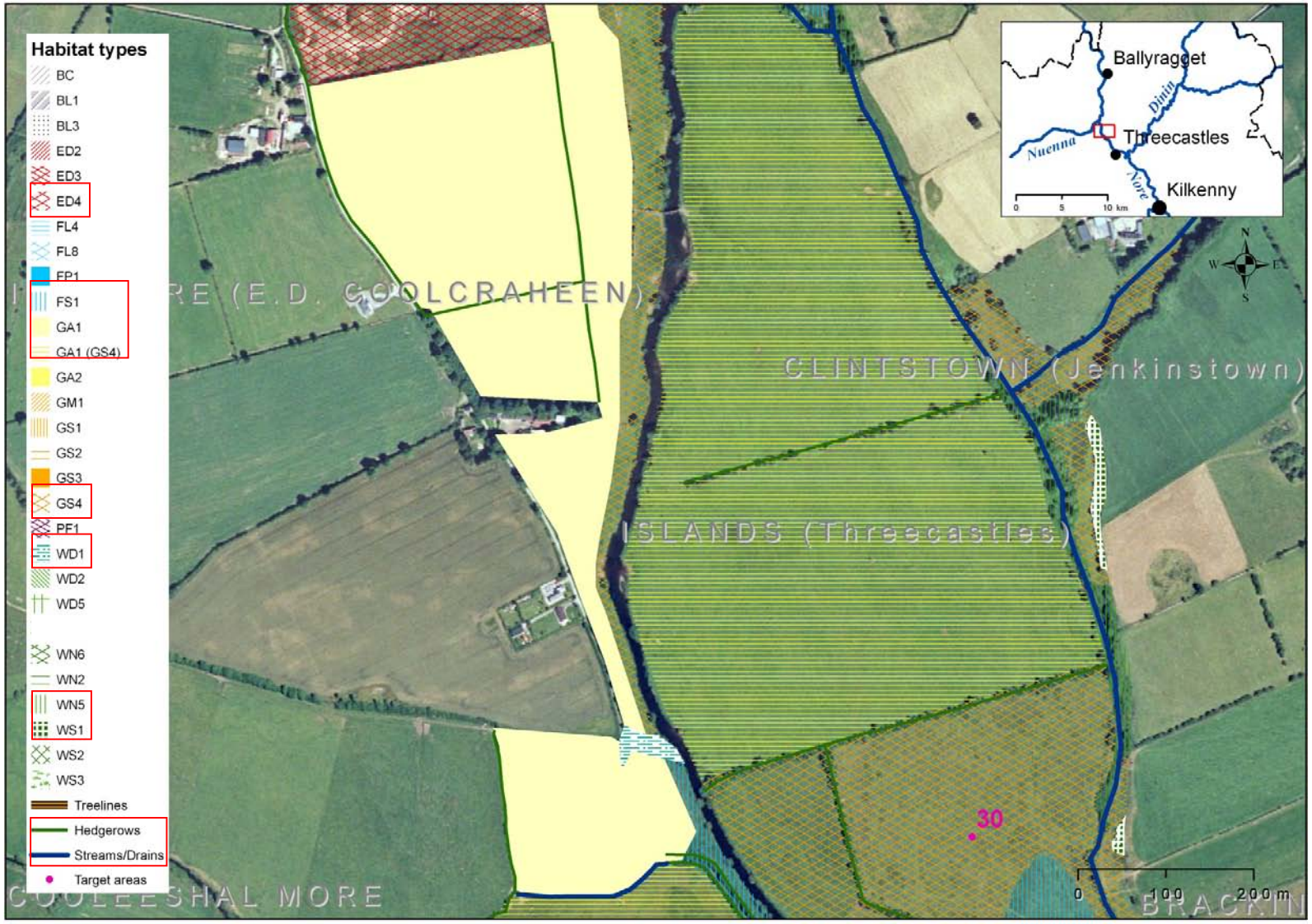

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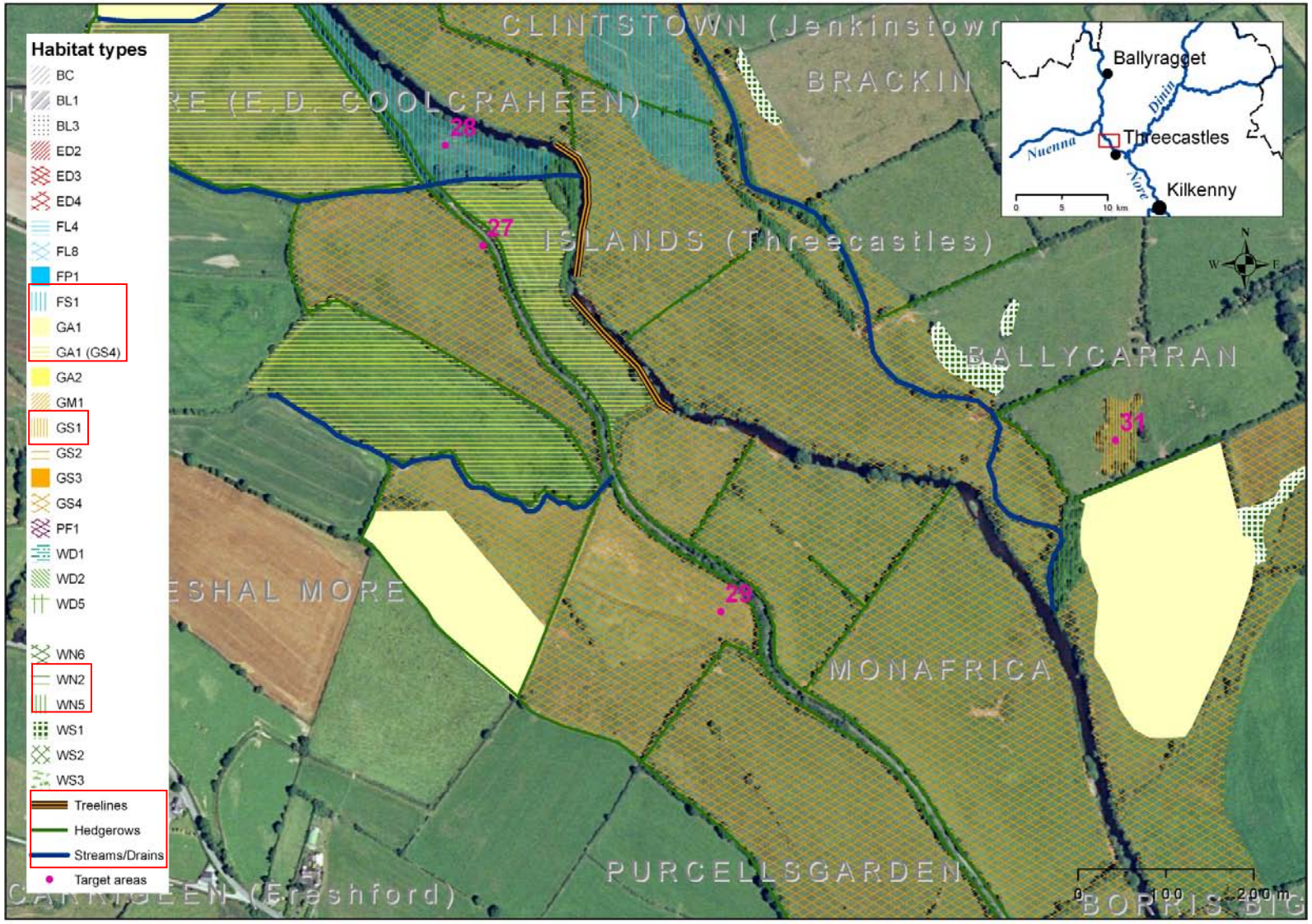

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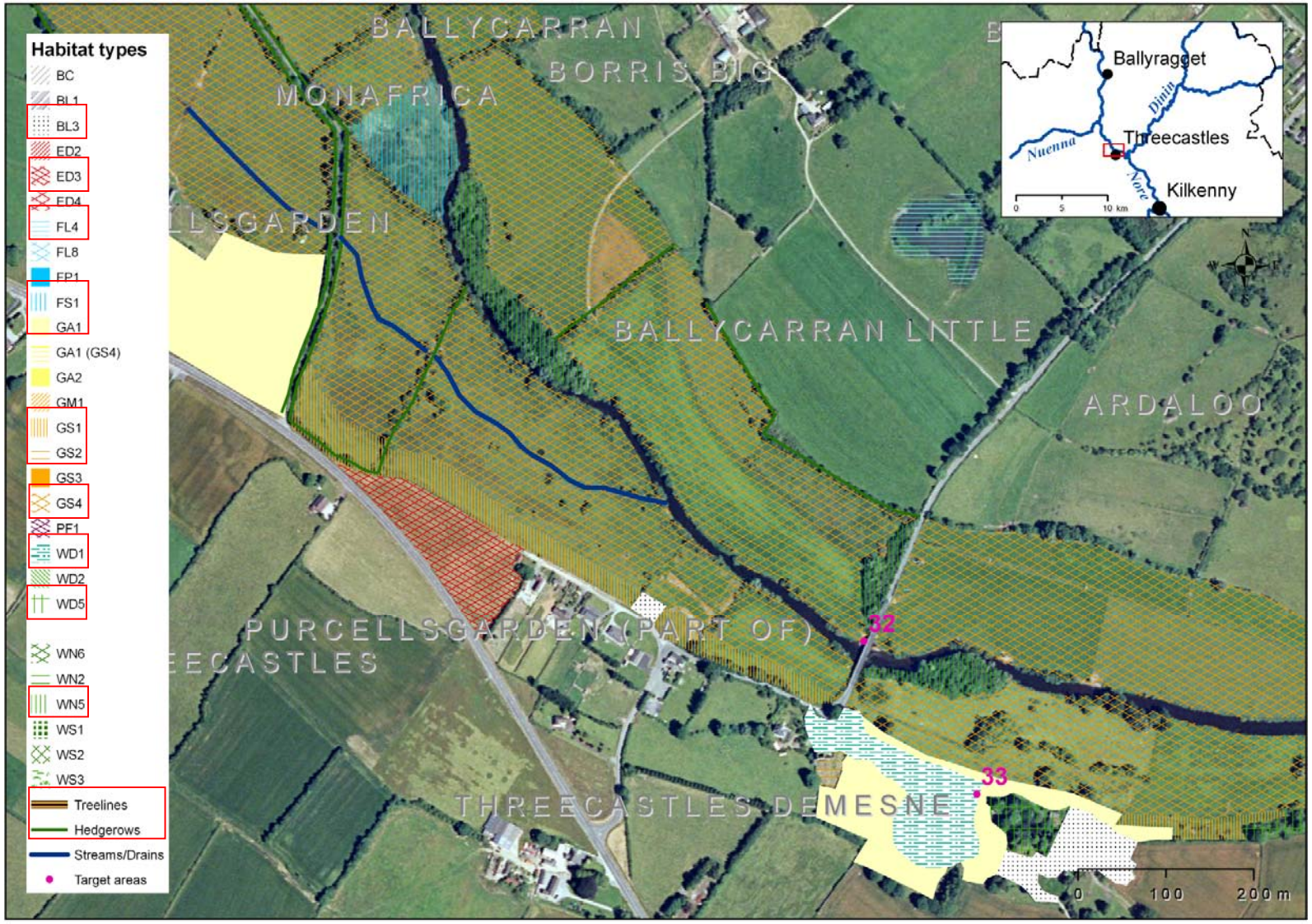

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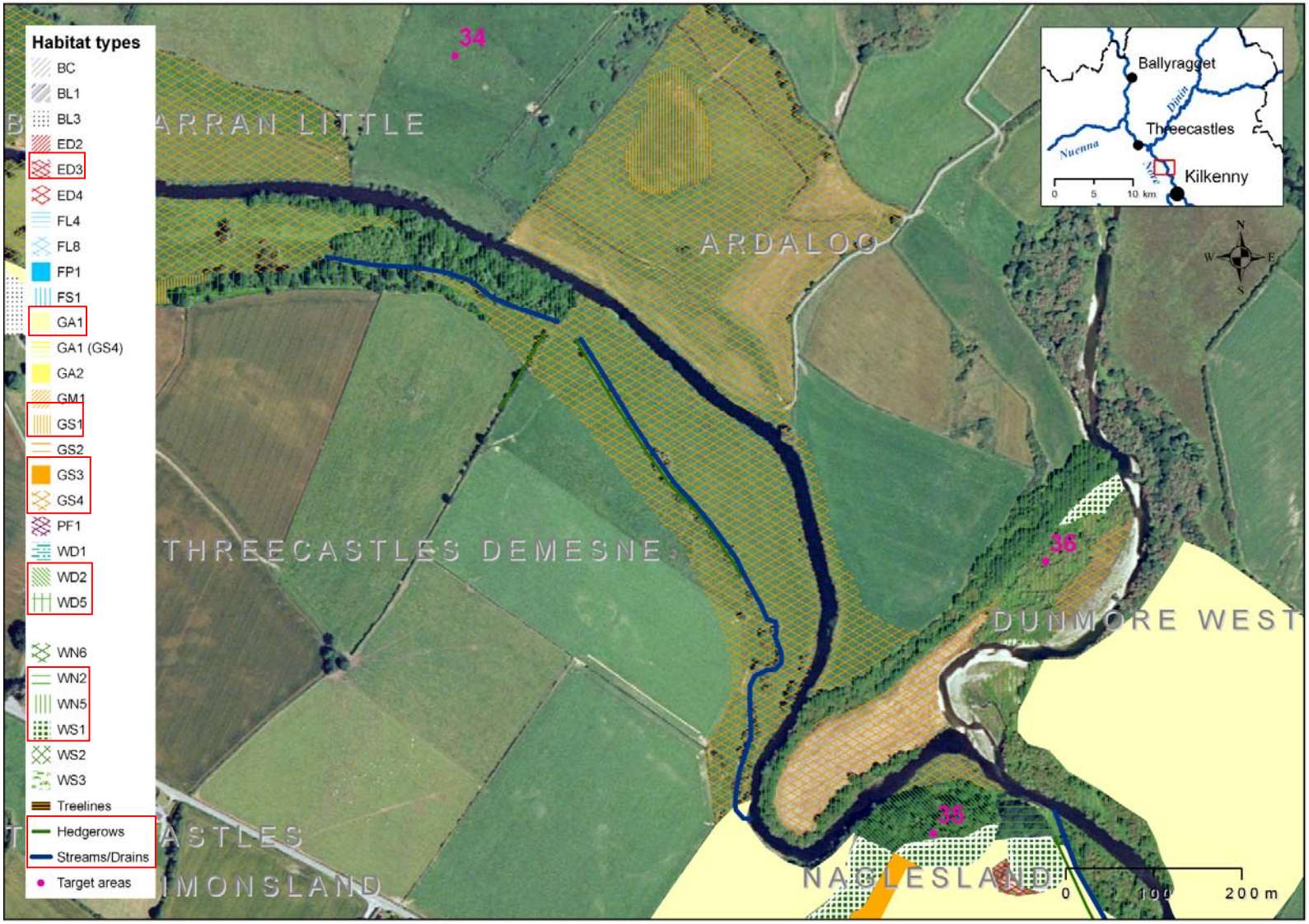

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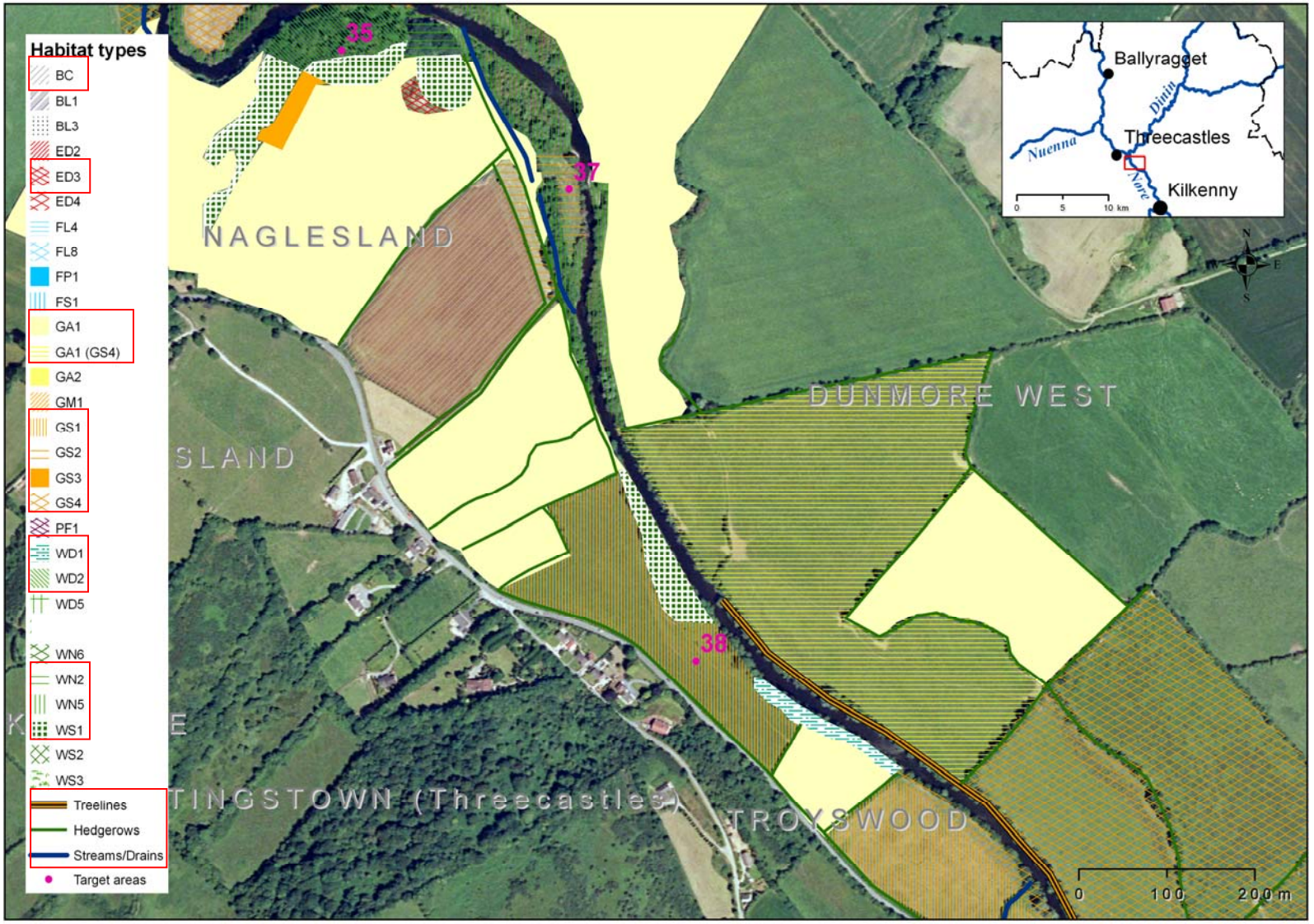

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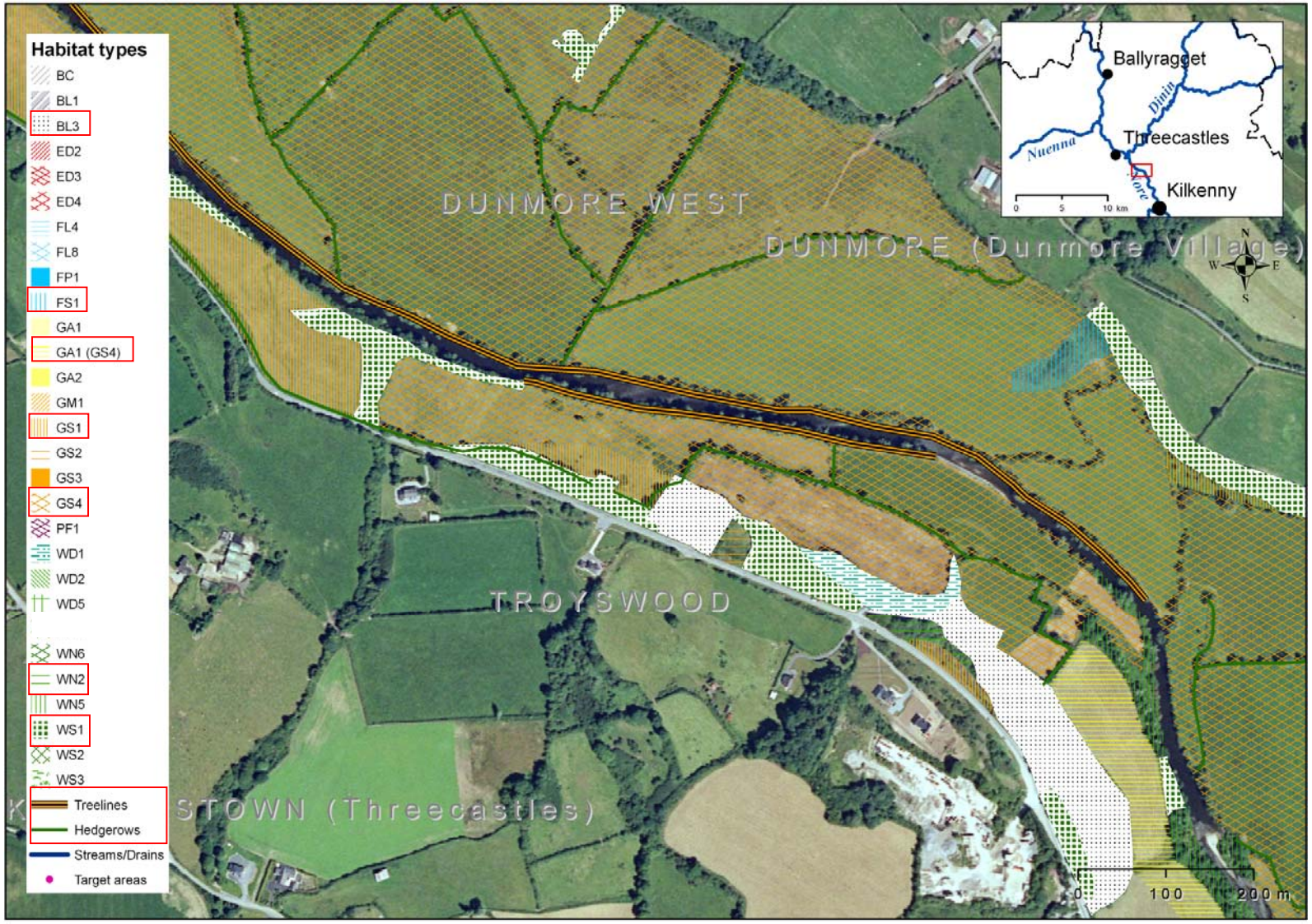

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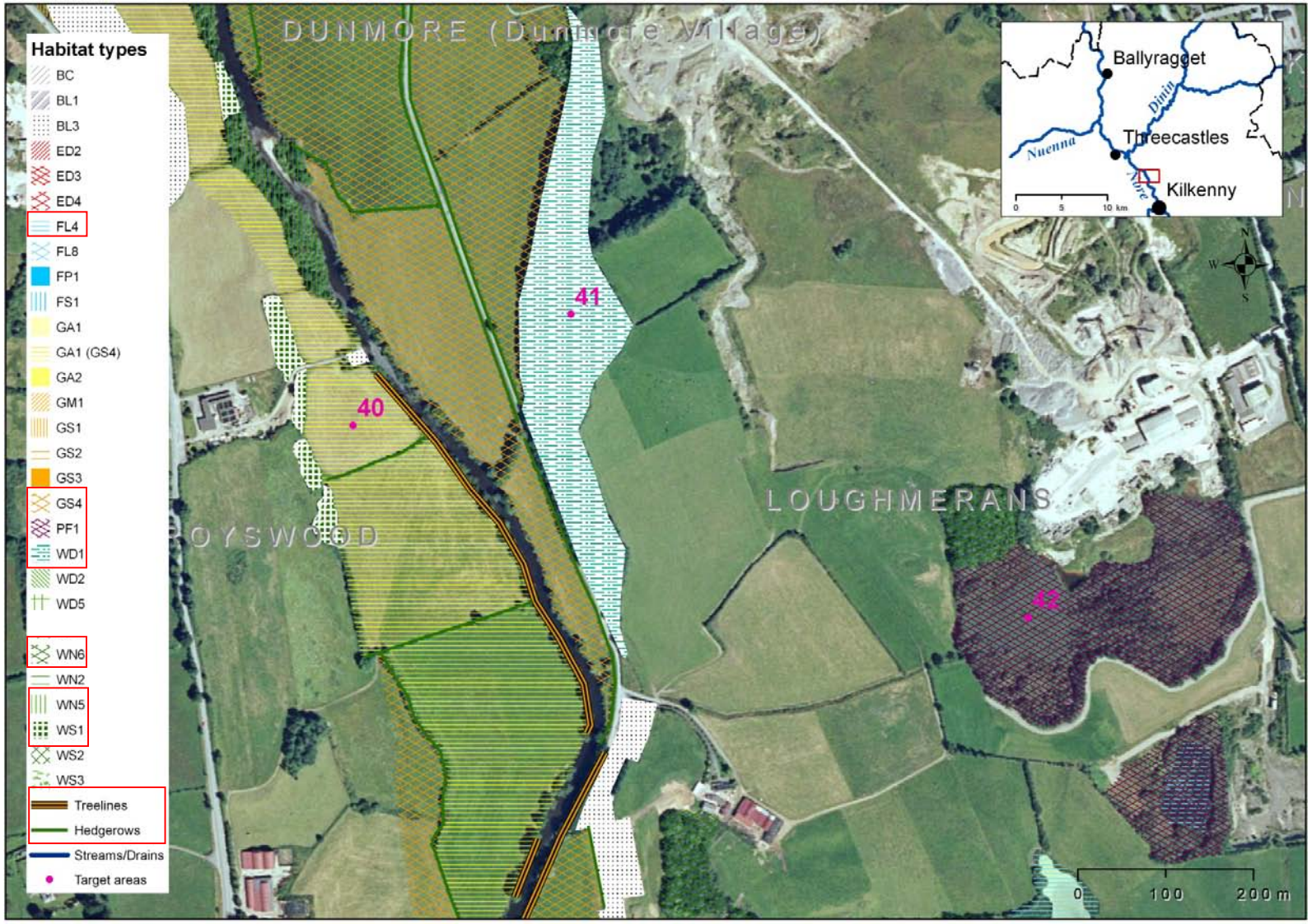

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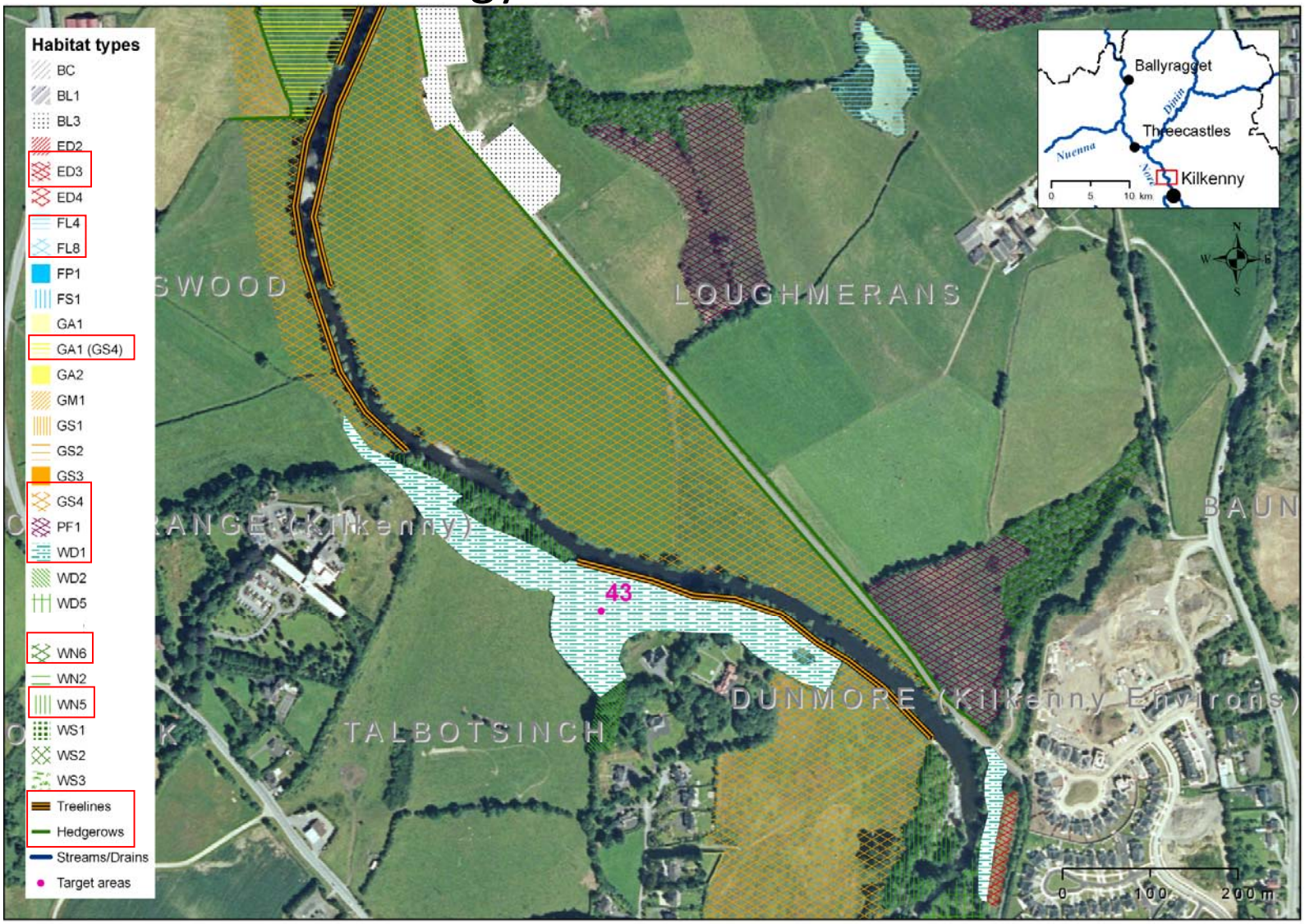

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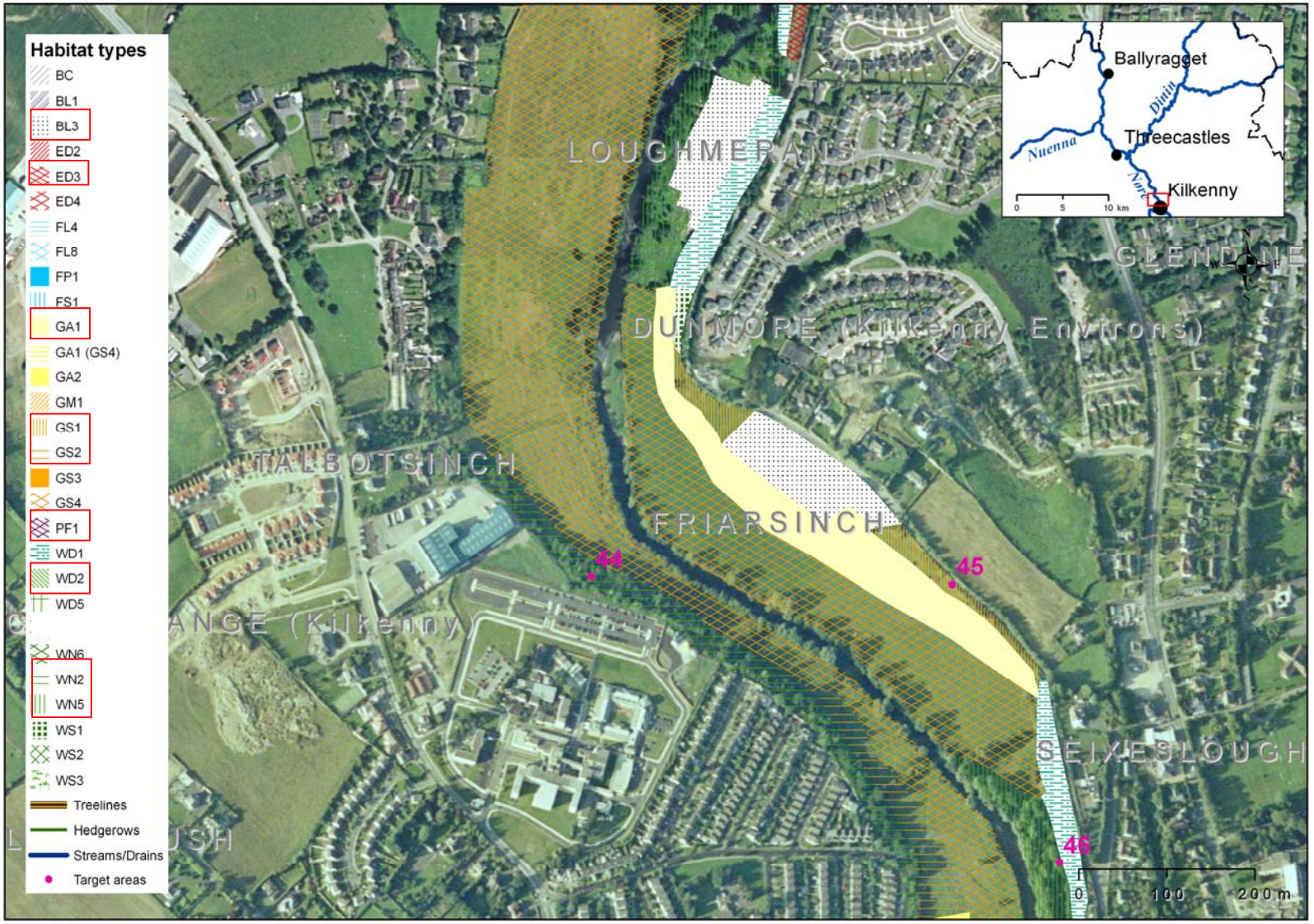

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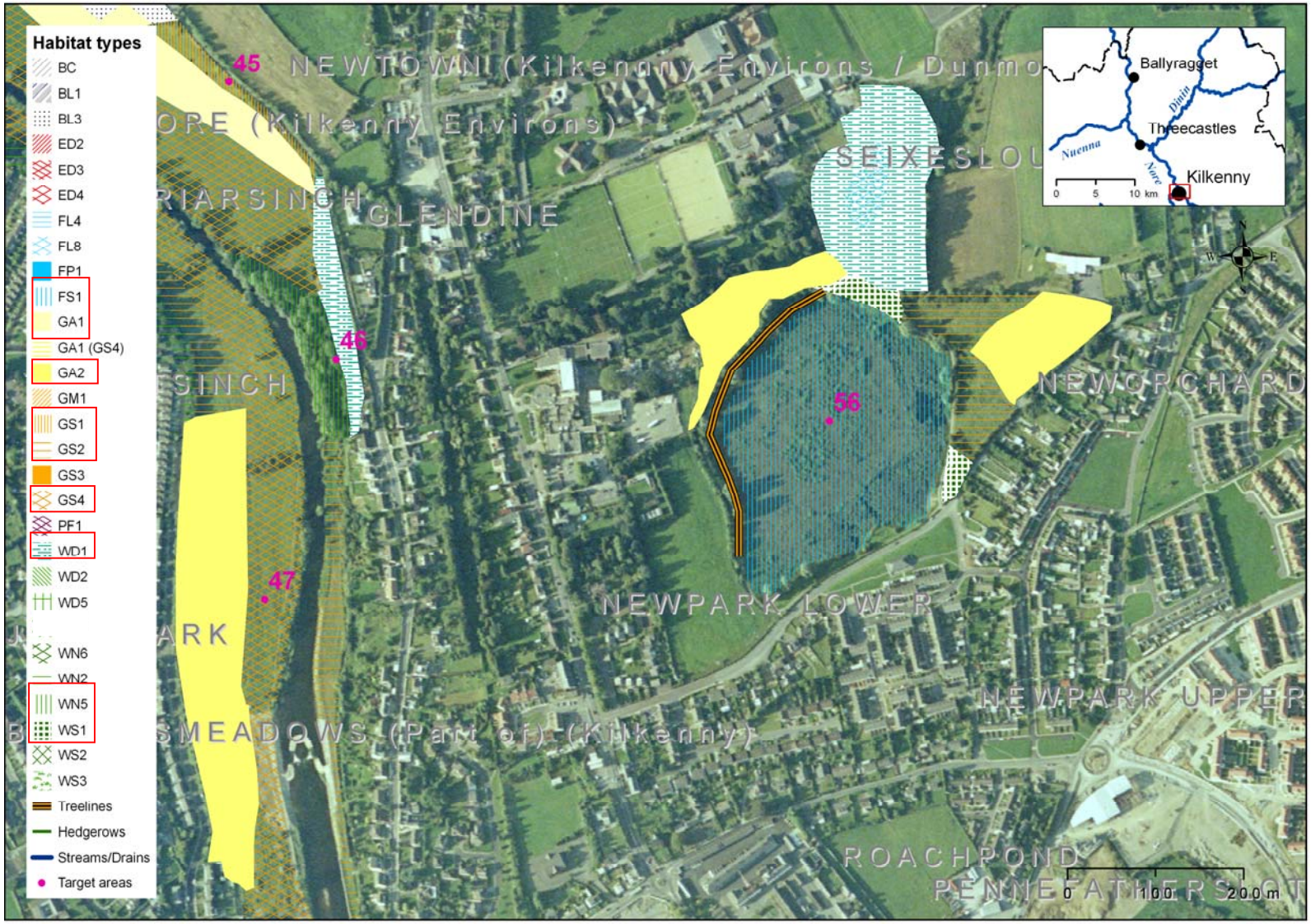

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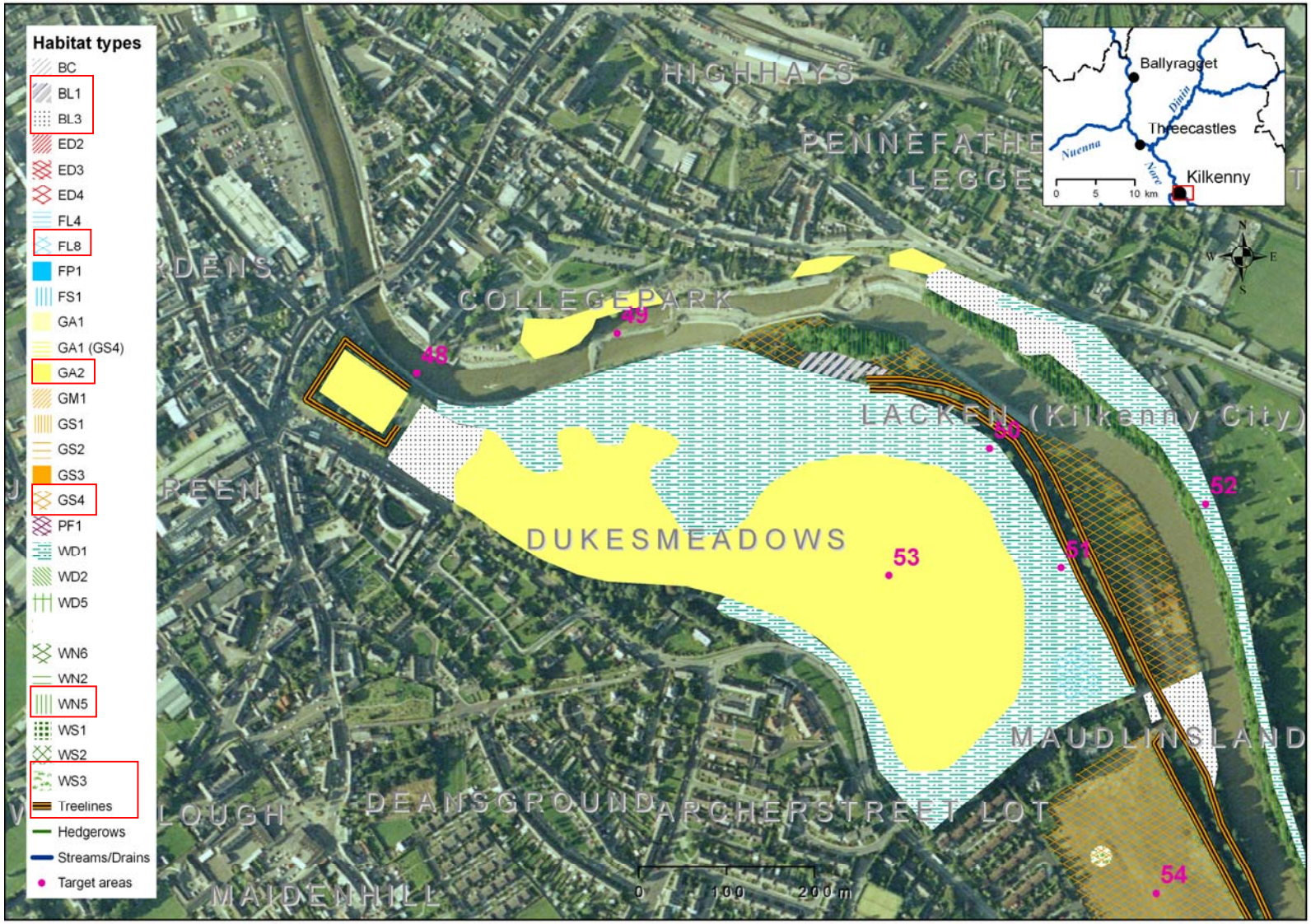
MAP 24 Ecology



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