ENNISCORTHY FLOOD DEFENCE SCHEME:
OAK WOODLAND SURVEY

July 2017

Report produced by Denyer Ecology for:
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1 INTRODUCTION

1.1 Background

Denyer Ecology was commissioned to undertake a botanical survey of an area of oak woodland for the proposed Enniscorthy Flood Defence Scheme (EFDS). The flood relief works will be undertaken on the River Slaney, which is located within a Special Area of Conservation. Old sessile oak woodland (91A0) is one of the qualifying interests of this protected site (NPWS, 2011).

1.2 Aims

The aims of the survey and assessment were to:

1. Determine whether the site has the potential to support the Annex I habitat 91A0 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' (referred to in this report as 91A0 or Old sessile oak woodland).
2. Assess the current condition of any Annex I habitat 91A0 woodland on the site.

1.3 Statement of authority

Dr Joanne Denyer is a highly experienced botanist and bryologist with over 15 years' experience of ecological survey and research. She holds a first class honours degree in Environmental Science from Leicester University. She completed a DPhil in Plant Ecology (grassland ecology) at the University of Sussex and subsequently worked on the impacts of land-use, climate change and grazing on upland plant communities at the Macaulay Institute in Aberdeen (now James Hutton Institute). She is a full member of the Chartered Institute of Ecology and Environmental Management. Skills from her academic and research background include a high standard in experimental design, report writing, data collation, literature review and data analysis. Dr Denyer has published in high-ranking international peer-reviewed journals and presented data at over ten international conferences. She is an Adjunct Lecturer at National University of Ireland, Galway (NUIG), Guest Lecturer at University College Dublin (UCD) and Visiting Research Fellow at Queen's University Belfast.

Dr Denyer is experienced in the identification of all plant groups, including difficult groups such as aquatic macrophytes, charophytes and bryophytes. She received the National Biodiversity Data Centre 'Distinguished Recorder Award' in 2014 in recognition of outstanding contribution to bryological recording in Ireland. She regularly provides botanical and bryological training courses for amateurs and professionals and leads training meetings for the British Bryological Society (Irish group), Dublin Naturalist Field Club and the Botanical Society of the British Isles. Training courses provided include grass, sedge and rush identification, bryophyte and Sphagnum identification and using bryophytes as habitat indicators. She also lectures on bryophyte ecology to undergraduates at NUIG and UCD and leads field trips.

Dr Denyer specialises in botanical, wetland and bryological survey in the Republic of Ireland and Northern Ireland. She is experienced in Habitat Survey (Ireland), Irish Vegetation Classification (IVC) survey, Phase 1 Habitat survey (UK), detailed botanical survey, National Vegetation Classification (NVC), rare plant survey and vegetation monitoring. She is highly experienced in woodland survey, including upland, lowland, calcareous, acidic, dry and wet woodland. She has undertaken woodland surveys in Ireland and the UK for a range of projects such as flood defence schemes, local development plans, road schemes, conservation monitoring, post-construction monitoring, and other developments. In addition she has designed and led field trips for undergraduate students (NUIG) to learn the latest survey and assessment techniques for upland acid oak woodland and lowland wet woodlands in south-west Ireland. She is frequently employed as a specialist botanist by other ecological consultancies to provide expertise and advice on habitat survey and assessment, in particular wetland and bryophyte dominant habitats.

2 METHODOLOGY

2.1 Study area

The site is located to the east of the N11, just south of Enniscorthy (Figure 2.1). The woodland is located on a steep, west facing rocky slope, which levels out to the east into fields and a minor road.

Figure 2.1. Location of oak woodland survey area

2.2 Field survey

The site was surveyed by an experienced botanist and bryologist in mid-July 2016. Accessible areas of the oak woodland were walked over and the following were recorded and mapped as relevant:

- Dominant/ abundant vascular plant and bryophyte species, indicator species and/or species of conservation interest
- Woodland vegetation type (see Section 2.3).
- Detailed relevé and condition assessment in representative areas (see Section 2.4)
- Annex I oak woodland (see Section 2.5)

The woodland was also classified according to the *Guide to Habitats in Ireland* (Fossitt, 2000).

2.3 Classification of Woodland vegetation types

The woodland vegetation was classified according to the National Survey of Native Woodlands (NSNW) scheme (Perrin et al., 2008). The affinity of the different woodland vegetation types in this classification to the Annex I habitats 91A0 is summarised in Table 2.1.

Table 2.1. Affinity of woodland vegetation types to 91A0

Woodland vegetation type	Affinity to 91A0
1a. *Quercus petraea – Luzula sylvatica* group*: Rubus fruticosus – Corylus avellana* vegetation type	**98%**
1b. *Quercus petraea – Luzula sylvatica* group*: Vaccinium myrtillus – Ilex aquifolium* vegetation type	**98%**
1c. *Quercus petraea – Luzula sylvatica* group*: Luzula sylvatica – Dryopteris dilatata* vegetation type	**100%**
2c. *Fraxinus excelsior – Hedera helix* group: *Quercus robur – Rubus fruticosus* vegetation type	26%
2c. *Fraxinus excelsior – Hedera helix* group: *Ilex aquifolium – Sorbus aucuparia* vegetation type	24%
4b. *Betula pubescens – Molinia caerulea* group: *Vaccinium myrtillus – Luzula sylvatica* vegetation type	11%

Data from National Survey of Native Woodlands Woodland Classification (Perrin et al., 2008b)

2.4 Condition assessment and relevé recording

The relevé survey followed the methodology of O'Neil & Barron (2013) and Perrin et al., (2008). This comprised recording all vascular plant species and bryophytes within a 20m x 20m relevé and a 91A0 condition assessment. The condition assessment followed the updated criteria in O'Neil & Barron (2013). Criteria such as positive and negative indicator species and woodland regeneration are recorded to assist in assessing whether: a) the vegetation is an example of the Annex I habitat 91A0, and b) the condition of the 91A0 vegetation. One relevé was recorded.

2.5 Definition of Annex I habitat 91A0 Old sessile oak woodland

Relevant information (from national and European reports and guidance documents) on the identification of 91A0 Old sessile oak woodland is summarised below. This information was used to assess whether the surveyed woodland areas correspond to 91A0.

2.5.1 Interpretation manual of European Union habitats (EC, 2013)

- Acidophilous *Quercus petraea* woods, with low, low-branched, trees, with many ferns, mosses, lichens and evergreen bushes.
- Plants: *Quercus petraea, Ilex aquifolium, Blechnum* ssp.

2.5.2 Article 17 report 2013 (NPWS, 2013)

- The habitat is highly fragmented in Ireland. There are many examples of small parcels of woodland which lack the structural diversity that a larger expanse of woodland would have.
- The Irish interpretation of this habitat also includes woods with *Quercus* x *rosacea* and locally *Quercus robur*. Exact specifications for the habitat definition used is given in Perrin & Martin (2007) and O'Neill & Barron (2013). Effectively, it includes all three sub-associations of the *Blechno- Quercetum petraeae* association.
- Invasive non-native species have a high incidence and impact a large area of 91A0 habitat nationwide. The most important species are the shrub *Rhododendron ponticum*, and the trees *Fagus sylvatica, Acer pseudoplatanus* and several conifer species, seedlings and saplings of which were frequently recorded.

2.5.3 2013 Oak woodland survey report (O'Neill, 2013)

- The acidophilous *Quercus petraea* woods that conform to Annex I habitat 91A0 correspond most strongly to three vegetation types within the *Quercus petraea – Luzula sylvatica* group described in the National Survey of Native Woodlands report (Perrin et al. 2008): *Rubus fruticosus – Corylus avellana* type; *Vaccinium myrtillus – Ilex aquifolium* type; *and Luzula sylvatica – Dryopteris dilatata* type.

- The soil is usually acidic, often a podzol, brown earth or grey-brown podzol, and generally well drained.
- The woodland itself is typically multi- layered, well-developed sessile oak wood having a canopy, understorey, shrub, dwarf shrub, field and ground layers. A good proportion of the canopy should be composed of *Quercus petraea* or the hybrid *Quercus x rosacea*, although other native species such as *Betula* spp., and *Sorbus aucuparia* also occur. The cover of non-native species should not be greater than 10%, and regeneration of non-native species should be absent.
- *Ilex aquifolium* and *Corylus avellana* are generally frequent in the shrub layer.
- A dwarf shrub layer of low woody species such as *Vaccinium myrtillus* and *Calluna vulgaris* often occurs.
- A field layer of ferns such as *Blechnum spicant, Polypodium* spp. and *Dryopteris* spp., and flowering plants such as *Luzula sylvatica* and *Oxalis acetosella* is typical. *Hyacinthoides non-scripta* may be present on more nutrient-rich soils.
- A ground (bryophyte) layer consisting of a diverse range of mosses, including *Rhytidiadelphus* spp., *Dicranum* spp., *Polytrichastrum formosum*, *Hylocomium brevirostre*, *Mnium hornum, Plagiothecium undulatum, Pseudotaxiphyllum elegans*, and liverworts such as *Diplophyllum albicans, Saccogyna viticulosa* and *Scapania* spp., is usually well developed.

2.5.4 2008 National Survey of Native Woodlands Survey report (Perrin et al, 2008)

Main report (Volume 1):

- A subset of identified woodland sites were selected for field survey within each county. [Therefore not all areas of woodland were surveyed and so a sites absence from the survey does not imply that it does not support woodland and/ or Annex I woodland.]
- Relevés with cumulative cover for *Quercus petraea, Quercus robur* and *Q. petraea* x *Q. robur* of greater than 25% were examined. Stands dominated by *Q. robur* were included as they occasionally occur naturally over an acidophilous field layer in Ireland. Relevés were given Annex I status where they were allocated to an essentially acidophilous oakwood grouping by the cluster analysis or where they contained three or more of the following species deemed indicative of this habitat in Ireland: *Blechnum spicant, Luzula sylvatica, Lonicera periclymenum, Oxalis acetosella, Polypodium vulgare* and *Vaccinium myrtillus*.
- The highest proportions of relevés which were allocated to an Annex I habitat category occurred in Kerry, Wexford, Wicklow and Waterford. These are all areas in which habitat 91A0 (Old sessile oakwoods with *Blechnum* and *Ilex* in the British Isles) is common.
- 91A0 Old sessile oakwoods is one of the two most common Annex I woodland habitats in Ireland (the other being the priority habitat 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior.*

2.5.5 River Slaney SAC Conservation Objectives (NPWS, 2011)

- Old Oak woodland within the SAC occurs on brown earths or podzols, pH 3.8 – 4.9, mostly on the valley sides.
- The principal community is the bramble-hazel sub-type, which is associated with more fertile but still relatively nutrient poor, acidic soils. The woodrush (*Luzula sylvatica*) and bilberry (*Vaccinium myrtillus*) sub-types occur locally.
- 12 sites within the SAC are recorded as having been present in part or full on the 1st edition OS maps (1840s).
- Typical oak woodland within the SAC consists of high forest with a canopy dominated by oak (*Quercus petraea, Q. robur* and the hybrid) averaging c.20m tall but up to 30m, with a little *Fagus sylvatica*, a sub-canopy of oak and *Betula pubescens* and a shrub layer of *Ilex aquifolium* and locally *Corylus avellana* and *Crataegus monogyna*. On poorer sites the dwarf shrub *Vaccinium myrtillus* is present but more typically there is a field layer of *Hedera helix*,

Rubus fruticosus agg., *Luzula sylvatica,* ferns (e.g. *Blechnum spicant* and *Dryopteris dilatata*) and sometimes *Hyacinthoides non-scripta.*

- The trees display a wide range of size classes; some sites appear to have been coppiced relatively recently with most stems < 20cm but other sites contain stands of old, large trees (dbh >40cm).
- Regeneration is absent or poor and consists mostly of holly and birch: this is probably a function of age and structure.
- The average number of species per 20x20m relevé for oak woodland is 18 vascular plants and 11 bryophytes.

2.6 Ecological evaluation

The ecological importance of the wet woodland areas was assessed using the criteria listed in the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009) and the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2016). The assessment was based on the presence and quality of woodland and associated habitats and does not taken into account fauna species (which have been surveyed and assessed separately).

Ecological evaluation scheme:

- International ecological importance
- National ecological importance
- County ecological importance
- Local (higher value) ecological importance
- Local (lower value) ecological importance

2.7 Plant species nomenclature

Vascular plant nomenclature will follow that of the *New Flora of the British Isles*. 3rd Edition. (Stace, 2010). The bryophyte nomenclature adopted by Lockhart et al. (2012) will be used; this is based on the *Checklist of British and Irish bryophytes* (Hill et al., 2009) with minor modifications to reflect recent taxonomic changes. Ivy has been referred to as Common Ivy *Hedera helix*, but there are recent suggestions that most Ivy in Ireland is in fact Atlantic Ivy *Hedera hibernica*. This does not affect the ecological assessment.

2.8 Limitations

The northern section of the woodland is overgrown and on a steep slope down to the N11 and was therefore not accessible due to health and safety reasons. However, this area is outside of the EFDS survey area. The survey was undertaken in July 2016 and therefore some early flowering woodland species may have been missed. This is highly unlikely to influence the classification and assessment of the woodland against Annex I criteria.

3 RESULTS AND EVALUATION

There are two different woodland types within the survey area. These are described separately below and shown on Figure 3.1.

3.1 Oak-ash-hazel woodland

3.1.1 Woodland description

In the south of the survey (Figure 3.1) the woodland appears to be relatively young secondary woodland, dominated by *Fraxinus excelsior*, with *Ilex aquifolium, Crataegus monogyna, Rosa canina* and *Ligustrum vulgare* in the shrub layer. Additional trees include occasional *Acer pseudoplatanus, Fagus sylvatica* and occasional *Quercus petraea* and *Quercus* x *rosacea.* This woodland has affinity with Oak-ash-hazel woodland WN2, although *Quercus robur* and *Corylus avellana* were not recorded. This area of woodland does not appear to be on highly acid soils and this is reflected in the typical WN2 field layer: *Lonicera periclymenum, Rubus fruticosus* agg., *Polystichum setiferum, Asplenium scolopendrium, Hedera helix* (locally abundant)*, Hyacinthoides non-scripta, Arum*

maculatum, Geranium robertianum and *Brachypodium sylvaticum* (Photograph 3.1). Bryophytes include *Kindbergia praelonga, Isothecium myosuroides, Fissidens taxifolius, Frullania dilatata* and *Hypnum cupressiforme.* The woodland grades into *Ulex europaeus* scrub at the top of the slope, between the woodland and the fields to the east. There is a wall within the woodland which may mark an old field boundary. To the east of the wall there are grassland species such as *Ranunculus acris* and *Senecio vulgaris* within the woodland.

Photographs 3.1

Photograph 3.1. Oak-ash-hazel woodland showing typical ground flora dominated by ferns and *Hedera helix*	

3.1.2 Woodland vegetation type

The vegetation corresponds to the National Survey of Native Woodlands (NSNW) vegetation type **2b. *Fraxinus excelsior – Hedera helix* group: *Acer pseudoplatanus – Crataegus monogyna* vegetation type**.

Description of 2b vegetation type (Perrin et al., 2008) with relevant species highlighted:

'These are stands of **well-drained**, deep, fertile and base-rich soils in the lowlands. The canopy is dominated by ***Fraxinus excelsior*** and ***Acer pseudoplatanus***. *Fagus sylvatica* and *Quercus robur* are only occasional. The understorey is typically well developed and comprises *Crataegus monogyna*, *Corylus avellana* and *Sambucus nigra*, sometimes with ***Ilex aquifolium*** or *Ulmus glabra*. The field layer is dominated by ***Hedera helix***, which **can carpet large areas**. ***Rubus fruticosus*** is frequent but tends not to be abundant. **Ferns are a characteristic component** of the shaded field layer with *Dryopteris dilatata*, ***Polystichum setiferum*** and ***Phyllitis scolopendrium*** all being frequent. The other main species are *Geum urbanum, Circaea lutetiana,* ***Lonicera periclymenum***, and *Viola riviniana / V. reichenbachiana*. *Heracleum sphondylium* is locally frequent on fertile soils. **Bryophyte diversity is rather poor** with the chief species being *Thamnobryum alopecurum, Kindbergia praelonga* and *Eurhynchium striatum*. *Thuidium tamariscinum* is unusually scarce. '

3.1.3 Relevé and condition assessment

No relevé or condition assessment was undertaken in this area, as it is not considered to be an example of Annex I woodland habitat (see Section 3.1.4).

3.1.4 Annex I habitat (91A0) evaluation

The oak-ash-hazel woodland in the southern section of the site is **not considered** to be an example of the **Annex I habitat 91A0** for the following reasons:

- The woodland is dominated by *Fraxinus excelsior* and *Quercus petraea* and *Quercus* x *rosacea* are only very occasional.
- The woodland vegetation type 2b has no major correspondence' with any Annex I woodland habitat (Perrin et al., 2008).

- Seven positive indicator species for 91A0 were recorded from the whole woodland section (*Quercus petraea, Q.* x *rosacea, Ilex aquifolium, Lonicera periclymenum, Hyacinthoides non-scripta, Hypnum cupressiforme, Isothecium myosuroides*). However, a single 20m x 20m condition assessment relevé would not support 6 positive indicator species (required to pass the species composition target).

This area of woodland does have some affinity to 91A0 and it transitions to this Annex I habitat to the north. However, this southern area is likely to be a younger woodland stand, on slightly less acid soil, which does not support sufficient characteristic species to qualify as 91A0.

3.2 Oak-birch-holly woodland

3.2.1 Woodland description

The Oak-ash-hazel woodland transitions to more mature Oak-birch-holly woodland WN1 on acid soil to the north (Figure 3.1). The woodland is mainly on a steep west-facing slope (Photograph 3.2), although it does level out slightly to the east. This area is generally dominated by *Quercus petraea* and *Quercus* x *rosacea*, although *Fagus sylvatica* (Photograph 3.2) and non-native conifers are locally frequent. A key indicator in the ground flora is the presence of *Luzula sylvatica,* which locally dominates with *Rubus fruticosus* (Photographs 3.2 and 3.3). Additional species not recorded in the Oak-ash-hazel woodland, include *Sorbus aucuparia, Teucrium scorodonia, Polypody vulgare, P. interjectum, Melica uniflora, Dryopteris dilatata, D. filix-mas, Pteridium aquilinum, Melampyrum pratense, Umbilicus rupestris* (on rock), *Viola riviniana/ V. reichenbachiana* (not flowering) and the bryophytes *Polytrichastrum formosum, Thuidium tamariscinum, Pseudotaxiphyllum elegans* and *Mnium hornum.*

There are outcrops of rock which become more frequent (and steep) to the north.

Photographs 3.2-3.3

Photograph 3.2. Oak-birch-holly woodland with locally frequent *Fagus sylvatica,* on steep slope with field layer dominated by *Luzula sylvatica* and *Rubus fruticosus* agg.	

Photograph 3.3. Oak-birch-holly woodland with mature *Quercus petraea* trees and a field layer dominated by *Luzula sylvatica* and *Rubus fruticosus* agg.	

3.2.1 Woodland vegetation type

The vegetation corresponds to the National Survey of Native Woodlands (NSNW) vegetation type **1a. *Quercus petraea – Luzula sylvatica group: Rubus fruticosus – Corylus avellana* vegetation type.**

Description of 1a vegetation type (Perrin et al., 2008) with relevant species highlighted:
'These high oak forest stands occur on acidic well-drained mineral soils and podzols often on hillsides and valleysides. These sites are rather more fertile and base-rich than those of the other vegetation types in this group. Hence, the flora also contains several species characteristic of woodland on calcareous soils. The canopy is dominated by ***Quercus petraea*** with *Fraxinus excelsior* and ***Fagus sylvatica*** **being frequent** components. *Acer pseudoplatanus*, *Betula pubescens* and ***Sorbus aucuparia*** are **occasional**. The understorey is typically quite dense, being dominated by *Corylus avellana* with ***Ilex aquifolium*** **often plentiful**; *Crataegus monogyna* is occasional. In the field layer ***Rubus fruticosus*** **is abundant** and may form extensive, tangled patches. ***Hedera helix*** is also typically abundant and ***Dryopteris dilatata*****,** *Oxalis acetosella* and ***Lonicera periclymenum*** are very frequent. The presence of several broadleaf herbs distinguishes this vegetation type from the other acidophilous oak stands. They include ***Hyacinthoides non-scripta, Viola riviniana / V. reichenbachiana****, Circaea lutetiana,* ***Geranium robertianum,*** *Potentilla sterilis* and *Geum urbanum.* ***Luzula sylvatica*** is frequent but typically not plentiful, whilst *Vaccinium myrtillus* is significantly rare. ***Polypodium vulgare*** **is a frequent epiphyte**. Amongst the bryophytes the principal species are ***Thuidium tamariscinum, Hypnum cupressiforme, Isothecium myosuroides, Kindbergia praelonga, Mnium hornum*** and *Eurhynchium striatum*. *Thamnobryum alopecurum* and *Hookeria lucens* are occasional.'

3.2.1 Relevé and condition assessment

The relevé location (R1) is shown on Figure 3.2. The full species list, photos, relevé details and condition assessment are given in Appendix A. Thirty-two species were recorded (21 vascular plants and 112 bryophytes); this includes 12 indicator species for 91A0.
This area of woodland would pass the condition assessment on species composition, but fail on cover of non-native species as *Fagus sylvatica* was locally high. The shrub layer cover was also lower than the criteria threshold. However other areas of the woodland would pass these criteria as cover of shrubs and non-native species is patchy.

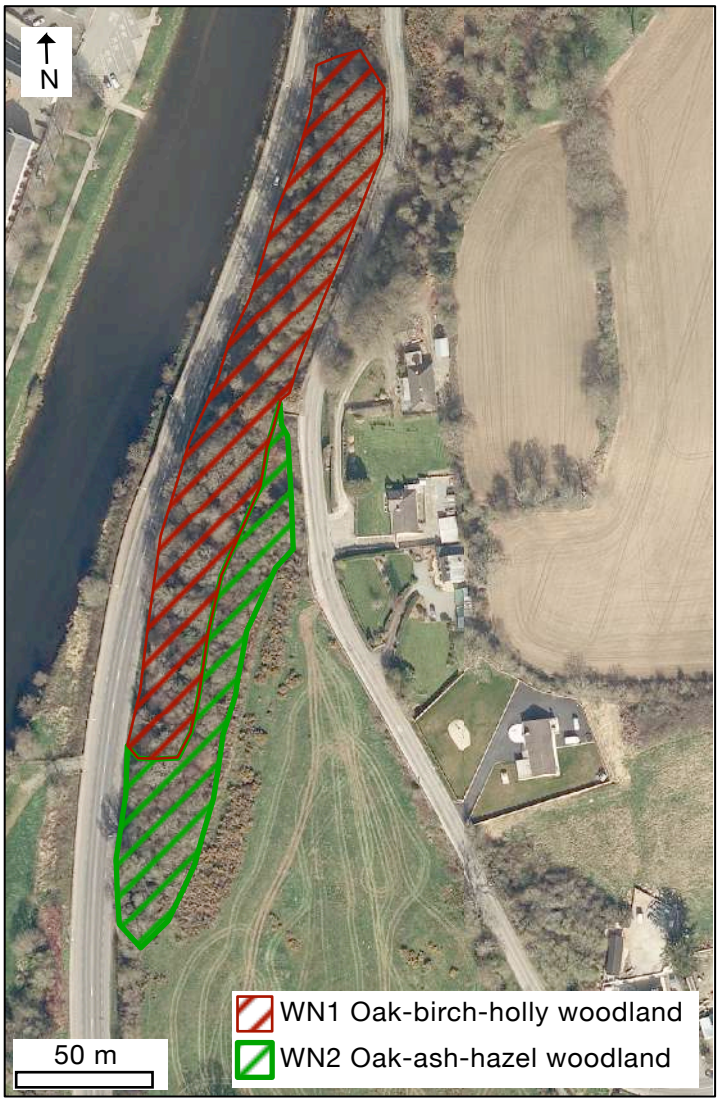
3.2.2 Annex I habitat (91A0) evaluation

The oak-birch-holly woodland in the northern section of the site is **considered to be an example of the Annex I habitat 91A0** for the following reasons:

- The woodland is dominated overall by *Quercus petraea* and *Quercus* x *rosacea*, although planted non-native trees are locally abundant.
- The woodland vegetation type 1a has 98% affinity to Annex I Old oak woodland 91A0 (Perrin et al., 2008).
- The woodland vegetation type 1a (bramble-hazel) is the most common 91A0 vegetation type within the River Slaney SAC (NPWS, 2011).
- The relevé contained 12 positive indicator species for 91A0.
- This area of woodland is shown on historic 6" maps (1837-1842) (viewed on the OSI online map viewer).
- The notable species *Melica uniflora* was recorded from the woodland ('notable species' are rare species typically found in woodland, or species that are indicative of long-established woodland (Perrin et al., 2008).

The area of 91A0 habitat is shown on Figure 3.2.

Figure 3.1. Woodland types within survey area



Codes refer to *Guide to Habitats in Ireland* (Fossitt, 2000)

Figure 3.2. Location of Annex I Old oak woodland 91A0

3.3 Ecological evaluation

This woodland site is considered to be of **County ecological importance** (NRA, 2009). Although it contains an Annex I habitat, it is a very small site located outside of the River Slaney SAC and contains frequent non-native conifer and broadleaved trees. Therefore it is not certain that site integrity (species composition, ecological processes and function) would be maintained under future stochastic change (NRA, 2009).

3.4 Summary and conclusions

- An area of oak woodland to the south-east of Enniscorthy was surveyed in July 2016 (Figure 2.1)
- Two areas of woodland were mapped: WN1 Oak-birch-holly woodland and WN2 Oak-ash-hazel woodland (Figure 3.1).

The WN1 woodland area corresponds to the woodland vegetation type 1a and is an example of the Annex I habitat 91A0 (Figure 3.2).

- The WN2 woodland corresponds to the woodland vegetation type 2b and is not an example of the Annex I habitat 91A0.
- The area of WN1/ Annex I habitat 91A0 is considered to be of **County ecological importance**.

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APPENDIX A – RELEVÉ RESULTS

Site No. Enniscorthy oak woodland	**Date:** 17/07/16
Relevé no. R1	**Grid Ref.** S 97494 39295
Recorder: Joanne Denyer	**Relevé type**: Detailed relevé and condition assessment
Woodland vegetation type: 1a	**Annex I habitat:** 91A0

Photos

Photo 1.1. View to east (down slope)

Photo 1.2. Ground flora

Detailed relevé

Species	**% Cover**	**Species**	**% Cover**
Fagus sylvatica	50	*Hypnum cupressiforme*	<1
Ilex aquifolium	10	*Pseudotaxiphyllum elegans*	<1
Quercus petraea	20	*Isothecium myosuroides*	1
Sorbus aucuparia	1	*Kindbergia praelonga*	5
Hedera helix	8	*Mnium hornum*	<1
Lonicera periclymenum	5	*Oxyrrhynchium hians*	<1
Rubus fruticosus	20	*Polytrichastrum formosum*	<1
Galium aparine	<1	*Thuidium tamariscinum*	<1
Hyacinthoides non-scripta	1	*Frullania dilatata*	<1
Melampyrum pratense	3	*Lophocolea bidentata*	<1
Teucrium scorodonia	1	*Metzgeria furcata*	<1
Umbilicus rupestris	<1		
*Viola riviniana/ V. reichenbachiana**	<1		
Luzula sylvatica	20		
Brachypodium sylvaticum	<1	Vascular plant species richness	21 species
Holcus lanatus	<1	Bryophyte species richness	11 species
Melica uniflora	1	Total species richness	32 species
Dryopteris dilatata	1	Ground layer	8%
Dryopteris filix-mas	<1	Field layer	50%
Polypodium vulgare	1	Shrub layer	10%
Pteridium aquilinum	<1	Canopy	80%

*not flowering

APPENDIX A – RELEVÉ RESULTS

Condition assessment

Criteria	Result	Target value	Result and pass/ Fail
Positive indicator species	12 species recorded: *Quercus petraea, Ilex aquifolium, Lonicera pericylemenum, Sorbus aucuparia, Luzula sylvatica, Hyacinthoides non-scripta, Polypodium vulgare, Hypnum cupressiflorme, Isothecium myosuroides, Mnium hornum, Polytrichastrum formosum* and *Pseudotaxiphyllum elegans*	6 species plus at least 1 target species.	Result = 1 target species plus 11 additional positive indicator species. **PASS**
Negative indicator species	2 species recorded: *Fagus sylcatica*	≤10% cover	Result = total cover 50% in this area **FAIL**
Negative species regeneration	Regeneration of *Fagus sylcatica*	Absent	**FAIL**
Median canopy height (m)	c15m	≥11m	**PASS**
Total canopy cover	80%	≥30% of plot	**PASS**
Proportion of *Quercus* in canopy	30%	≥50% of canopy	**FAIL**
Native shrub layer cover	10%	20-50%	**FAIL**
Native dwarf shrub/ field layer cover	50%	>20%	**PASS**
Native dwarf shrub/ field layer height (cm)	c40cm	≥20cm	**PASS**
Bryophyte cover	8%	≥4%	**PASS**
Grazing pressure	No evidence of grazing at time of survey	No overgrazing	**PASS**
Regeneration and structure	Assessed at 4 plot level and therefore not relevant here. There was regeneration of *Quercus* in this area but the amount of dead wood was low.	Refer to full condition assessment	(Likely to pass on regernation but fail on amount of dead wood)