

# Biodiversity Plan for Manor Fields, Adare, Co Limerick



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## 1. Introduction

Biodiversity, by which is meant all the variety of organisms that constitute the living world, is being lost at an alarming rate globally. The main drivers of global biodiversity loss are habitat loss, over-exploitation of resources, invasive species and climate change. Ireland is not immune. In fact Ireland has historically sustained more habitat and biodiversity loss than most European countries. We have the lowest cover of native forest among EU countries (1%) due to historic destruction of our native forest, and much of upland areas are degraded landscapes due to over-exploitation. In recent decades intensification of agriculture and forestry practices, over-exploitation of peatlands and drainage of wetlands and pollution of rivers and lakes have compounded the historic damage.

The impact of this damage on Ireland's biodiversity has been well-documented. More than half of Ireland's bee species have undergone substantial declines in numbers since 1980, and 30% of species are considered threatened with extinction from Ireland (Fitzpatrick et al., 2007). BirdWatch Ireland estimates that 63% of bird species, including previously common birds such as house sparrows and starlings, are declining at alarming rates (Gilbert et al., 2021). Breeding and wintering birds in Ireland show population declines of 9% and 24% respectively, and species such as the curlew and corncrake are on the brink of extinction ([www.eea.europa.eu](http://www.eea.europa.eu)). The most recent assessment (2019) of the conservation status of our native habitats, reported that 46% of EU protected habitats and 15% of EU protected species declined over a 12-year period. Up to 30% of hay meadows and biodiversity-rich grasslands have been lost in the past 15 years (NPWS, 2019).

Hedgerows and treelines are also recognized as one of the main bastions of biodiversity in their own right and as wildlife corridors between habitats. These too are being lost through clearance and aggressive management. Most hedgerow loss is on farmland and current regulations allow up to 500m of hedgerow to be removed without environmental assessment.

The loss of global biodiversity spurred the UN Convention on Biological Diversity, (CBD) in 1993. In Ireland this global agreement is implemented through National Biodiversity Strategies and Action Plans (NBAPs). The current draft NBAP now open for public consultation will be Ireland's fourth, covering the five-year period from 2023 to 2027. A central objective of the Plan is a "Whole of Government, Whole of Society Approach to Biodiversity" whereby "biodiversity initiatives are inspired and supported across the whole of society" (p25, NBAP 2022). Support for such community initiatives is provided through the Community Foundation Ireland Environment and Nature Fund (funding this Plan), LEADER, Community Water Development Fund and other schemes.

Of particular relevance to Manor Fields Biodiversity Plan is the All-Ireland Biodiversity Plan (AIPP) (<https://pollinators.ie/aipp-2021-2025>) which is coordinated and implemented by the National Biodiversity Data Centre in Co. Waterford. AIPP aims to help pollinating insects and wider biodiversity across the whole island of Ireland. Through the Data Centre, the AIPP has developed a range of principles and practical guides (see References) to help community groups, landowners, local authorities, sports clubs and other groups to implement biodiversity-friendly measures. The AIPP recognizes that:

*"With approximately 15,000 sports clubs across the island, clubs can play a vital role in conservation of our biodiversity if managed in a pollinator-friendly way. Introducing pollinator-friendly*

*management across sports clubs would create an entire network of safe places for bees and other insects across the landscape. The positive impact this could have is enormous.”*

The AIPP aims to increase the number of sports clubs that are pollinator-friendly and has produced a guide-*Pollinator-Friendly Management of Sports Clubs* (See References) The principles outlined in the AIPP for conservation and enhancement of biodiversity underlie this plan (see Section 5). You can register what actions you have taken at your club on the AIPP online mapping system: [pollinators.biodiversityireland.ie](http://pollinators.biodiversityireland.ie).

## **2. Existing areas of semi-natural habitat on the Manor fields and their biodiversity value**

Plants are the most obvious component of grasslands and they are the main factor defining habitats for a range of other organisms particularly insects and other invertebrates. They have been widely used as indicators for the biodiversity of other groups such as invertebrates. Plant and habitat diversity of the Manor Fields were assessed in walkover surveys carried out on 12<sup>th</sup> August 2022 and 2<sup>nd</sup> September 2022. The assessment was confined to vascular plants; bryophytes, lower plants and lichens were not included. Latin names in this report follow *An Irish Flora* (Parnell and Curtis 2012), and common names follow *Collins Wild Flower Guide (2<sup>nd</sup> Ed.)* (Streeter *et al.* 2016). The names of habitats follow the classification of *A Guide to Habitats in Ireland* (Fossitt 2000). The presence of birds and invertebrates were noted during the course of the surveys. Approximate habitat areas were mapped using QGIS.

Hedgerows and treelines were assessed using the criteria of Foulkes *et al.* (2013). The system is based on ranking the significance of hedges on a scale of 0-4 (0 being lowest) in five categories: Historical Significance, Species Diversity Significance, Structure, Construction and Associated Features, Habitat Connectivity Significance and Landscape Significance. A score of 4 in any category indicates a hedge of high significance (Heritage Hedgerow). Hedges can also be considered of high significance (Heritage Hedgerows) if they record a cumulative score of 6 or greater in the Historical, Species Diversity or Structural Categories, or a cumulative score of 16 or greater over the five categories. These hedges should be considered as high priority in terms of retention, management action, etc. Hedges recording lower scores may still be of value depending on the context.

111 plant species were recorded in the Manor Fields. This comprises 11 tree species, 11 shrubs/climbers, 16 grasses, 3 sedges, 68 herbaceous plants, and 2 ferns (Appendix 1). Fifteen of the herbaceous plants could be considered weedy species typical of disturbed habitats.

### 3. Habitat Descriptions

Thirteen distinct areas (A to M) were distinguished in the Manor Fields (Map, Fig. 1) in which seven different habitats were recognised (Table 1).

**Table 1.** Habitat types on the Manor Fields (after Fossitt 2000) and the areas in which they are represented (see Map Fig. 1).

Habitat Type	Code	Area (Map)	Extent (ha)
Hedgerow and treelines	WL1/WL2	A, B, C	952 (m)
Recolonizing bare ground	ED3	L, M	0.58
Dry meadows and grassy verges	GS2	A	0.07
Wet grassland	GS4	E, F, G, H,	0.91
Improved agricultural grassland	GA1	D	1.8
Amenity grassland	GA2	I, J, K	0.8
Pitches	GA2		3.9

#### 3.1 Hedgerows and treelines

Hedgerows and treelines are defined in Fossitt (2000) as

*Hedgerows WL1: Linear strips of shrubs, often with occasional trees, that typically form field or property boundaries. Dimensions of hedgerows are taken here as being mainly less than 5m high and 4m wide. When wider or taller than this, or dominated by trees, the habitat should be considered as a narrow strip of scrub or woodland, or as a treeline - WL2. Some hedgerows may be overgrown or fragmented if management has been neglected, but they should still be considered in this category unless they have changed beyond recognition. Linear strips of low scrub are included in this category if they occur as field boundaries.*

**Hedgerow A.** A treeline (WL2) demarcating the eastern perimeter of the manor Fields, approximately 320 m in length. It does not present a uniform composition or aspect. Partially encircling the playground, the northern section is approximately 90m in length and comprises semi-mature ash and tall hawthorn. This is followed by a 50-m section of lower hawthorn. To the south of this is a 80-m section of tall sycamore trees (12 in all) followed by a number of Lawson’s Cypress. The hedgerow then dog-leg’s to the east and the final section to the southern boundary of the Fields has a lower and more open aspect and is mainly composed of ash, willow, hawthorn and blackthorn.

This is the most biodiverse hedgerow from a plant aspect, containing 21 species. This is likely to be an underestimate in respect of woodland/hedgerow plants that emerge in early spring, which would not be evident at the time of surveying. The middle section of hedgerow A has an extensive grass margin that is rich in plant species. This treeline/hedgerow has historical continuity; it is present in the 1829-1841 first edition 6-inch OSI maps.





**Map 1. Existing habitat Areas in the Manor Fields, Adare**

Boundary — ; pitches — ; Hedgerows — ; improved agricultural grassland — ;  
 wet grassland — ; amenity grassland — ; disturbed ground — .





***Hedgerow A viewed from the West.***



***Hedgerow A with the Playground to the front.***



***Hedgerow A, facing south, hawthorn dominated to the left and taller sycamore to the south.  
Disturbed ground to the front.***





***Hedgerow A, a line of semi-mature sycamores at approximately half-way with a meadow margin.***



***Hedgerow A with wet grassland in the foreground (Area E).***



**Hedgerow B.** A long, tall for the most part and old, treeline/hedgerow on the western perimeter of the Manor Fields fronted by a newly-erected fence. This contains a good range of woody species (14) that are valuable to wildlife, notably hawthorn (whitethorn), blackthorn, crab apple, dog rose, bramble, and purging buckthorn (*Rhamnus cathartica*), a rare woodland and hedgerow shrub in Co. Limerick (Reynolds 2013) and the main food plant of the caterpillars of the brimstone butterfly (*Gonepteryx rhamni*). Purging buckthorn is particularly valuable to birds that consume the dark purplish berries in autumn, and do not seem to suffer the purgative effects which afflict any humans unwary enough to sample them! Isolated native trees such as pedunculate oak, and ash are present in the southern part of the hedgerow. Willows are regenerating densely in the northern part and these provide nectar for pollinators in spring. This hedgerow also provides a useful windbreak. The hedgerow does not have a natural margin because this has been disturbed by the construction of the boundary fence. Only the northern quarter, approximately, of this hedgerow has historical continuity; it is present in the 1829-1841 first edition 6-inch OSI maps as a field boundary, but the longer southern portion was not present in its current location.



***Hedgerow B, southern end with two semi-mature oaks***



***Hedgerow B, purging buckthorn (left) and spindle (right) in fruit.***

**Hedgerow C.** The hedgerow on the northern perimeter of the Manor Fields is in contrast, low and heavily clipped for the most of its length. There is a good range of woody plants present, including hawthorn, spindle and elder (the latter two not present in B). This hedgerow has historical continuity; it is present in the 1829-1841 first edition 6-inch OSI maps as a field boundary.

The hedgerows were assessed for their significance using the historical, ecological, structural, habitat connectivity and landscape criteria as defined by Foulks *et al.* (2013) (Table 2.)

***Table 2. Hedgerow significance. Scores in brackets.***

<b>Significance Criteria</b>	<b>H'row A</b>	<b>H'row B</b>	<b>H'row C</b>
Historical	Significant (3)	Partly (1)	Significant (3)
Species Diversity	Significant (6)	Moderately significant (4)	Moderately significant (4)
Structure	Moderately significant (2)	Moderately significant (2)	Significant (3)
Connectivity	Moderately significant (2)	Slightly significant (1)	Slightly significant (1)
Landscape	Significant (3)	Moderately significant (2)	Low Significance (0)
<b>Total score</b>	<b>16</b>	<b>8</b>	<b>9</b>

None of the hedgerows scored 4 (High Significance) in any criterion. However, hedgerow A recorded a cumulative score of 6 under the Species Diversity criterion, and a cumulative score of 16 over the five categories, indicating that it should be considered of high significance – a Heritage Hedgerow. It should therefore be considered as high priority in terms of retention and management.

The structural condition of the three hedgerows was also assessed using the criteria of Foulks *et al.* (2013) Table 3. Hedgerow B has the least favourable condition probably because of disturbance connected with the fence construction.



Table 3. Condition of the three hedgerows. Scores in brackets (3=Highly Favourable; 2=Favourable; 1=Adequate)

Criterion	H'row A	H'row B	H'row C
Height	>4m (3)	>4m (3)	1.5-2m (1)
Width	>3m (3)	2-3m (2)	1-2m (1)
Profile	Overgrown (3)	Derelict in places	Box-shaped (2)
Basal Density	Dense (3)	Semi- translucent (1)	Dense (3)
% Gaps	Continuous (3)	5-10% (1)	Continuous (3)
Specific Gaps	< 5m (1)	>5m (0)	<5% (2)
Bank Integrity	Not degraded (3)	<20% Degraded (1)	<20% Degraded (1)
% Ivy	>25%	<25%	<25%
Unfavourable species	>10%	<10%	<10%
Herbicide Use	None (3)	None (3)	None (3)
Noxious weeds	None	None	Some
IAPPS	None (3)	None (3)	None (3)
Intact Margin	>2m one side (2)	No	No
Total score	27	14	20

### 3.2 Grassland

Grassland habitats are dominated by grasses and herbaceous plants, mainly perennials, and may also include rushes and sedges. The largest area of grassland in the Manor Fields comprises approximately 3.9ha of amenity grassland (pitches) that are highly-managed. Other smaller areas of less managed grassland that have the potential in the future to be developed for biodiversity are described here.

**Improved agricultural grassland (GA1).** This is found in **Area D**. Sixteen plant species were recorded here. Management varies –the upper areas flanking both sides of the clubhouse and car park are mowed more frequently and have fewer plant species compared to the downslope area (in image below) which is mowed much less frequently and has a more diverse flora.

**Wet grassland (GS4).** This covers **Areas E, F, G and H**, the latter being the largest area. Wet grassland develops on heavy soils with impeded drainage and is typically dominated by rushes and moisture-loving grasses (creeping bent, Yorkshire fog, tufted hair grass) and herbaceous plants (meadowsweet, common fleabane, silverweed). While not having the colourful appeal of dry semi-native grassland, wet grassland can support a great diversity of plant life. **Area E** is a biodiverse area with 35 plant species. This area has not been routinely cut, and this has allowed the development of a tall dense sward. The area is being colonized by sally, ash and elm and is in transition to scrub. **Area F** on the southwest perimeter of the Fields is an area of disturbed ground transitioning to wet grassland. This area has a good range of plant species (32) including a number of pollinator friendly species such as purple loosestrife, meadowsweet, knapweed and great willowherb. **Area G** is a rectangular area of wet grassland with a somewhat weedy aspect. It however does contain oxeye daisy and fleabane which were not found elsewhere. The latter species is typical of alkaline wet grassland and fen. The sward is tall and has not been cut for some time. Spear thistle and creeping thistle were very common in the sward. Twenty-five species were found in **Area G**. **Area H** is an area comprising a mosaic of spoil and bare ground, and recolonizing wet grassland. The wet

grassland aspect is particularly marked towards the western boundary of the area where tall rushes and grasses dominate the sward. Thirty-four plant species were recorded in this area.



***Improved agricultural grassland, Area D.***



***Wet grassland, Area E.***





***Wet grassland strip, Area G.***

**Dry meadow/grassy verge grassland (GS2)** . A small margin adjoins **Hedgerow A** and is the most biodiverse grassland area containing nine grass species and a number of pollinator friendly herbaceous plants (knapweed, creeping and spear thistle, hogweed, St John's wort, red bartsia, creeping buttercup, ragwort, dandelion and red and white clovers). It is currently being invaded by briar, blackthorn and sally. Expansion and development of the pitch area and perimeter walkway will necessitate the removal of this area.

### **3.3. Amenity Grassland**

**Areas I, J and K** are areas of amenity grassland. These areas have been re-seeded and managed by frequent mowing for public access and amenity use. The low sward is poor in plant species (less than 8-10 species).



***Amenity Grassland Area J.***



*Disturbed ground, Area L.*

### **3.4 Disturbed Ground**

Areas of disturbed ground are common and occupy an area of up to 0.6ha within the boundaries of the Manor Fields. The southern perimeter of the Fields is bordered by disturbed ground habitat. **Area L** is a small area of recolonizing bare ground (ED3) ( ha) adjacent to the playground in which weedy plant species dominate; 26 plant species found here. This area currently is of low biodiversity value at the moment but has the potential to be recreated as dry meadow habitat. Disturbed ground also occurs in and around **Area M**, which is earmarked for future development, and at the foot of **Hedgerow C**.

In summary, treelines and hedgerows Areas A, B and C are the areas of most biodiversity value on the Manor Fields because they offer sanctuary, shelter and food to the greatest range of wildlife. Wet grassland areas also have biodiversity value, although the areas are limited in extent. Improved grassland areas have minimal biodiversity value as currently managed but have the potential to be managed as biodiversity friendly areas.

## **4. Animal Diversity**

Animal diversity was not assessed in the current survey but a survey of the Manor Fields carried out by Will Hayes in 2018 as part of a larger survey of biodiversity in Adare (Hayes 2018), has yielded important information particularly in relation to birds. Thirty-two bird species were recorded in four survey visits. Most are common species of field/hedgerow habitat; five are currently of medium conservation concern in Ireland (black-headed gull, common gull, goldcrest, greenfinch, and starling)



and two, grey wagtail and snipe, are red-listed species of high conservation concern. Two mammals were recorded, fox and Irish hare.

## 5. The Biodiversity Plan

A number of general principles for conserving biodiversity underlie this plan:

- Recognize existing areas that are valuable for biodiversity.
- Maintain, manage and improve those areas for biodiversity and expand them where possible.
- Create new habitats that offer food and shelter for animals (e.g. hedgerows copses, grassland) based on native plant species.
- Reduce the use of pesticides, especially herbicides.
- Where amenity planting of borders and flower beds are required, plant pollinator-friendly plants only.
- Provide information to users on why measures are necessary and worthwhile.

### 5.1 Action Plan for Existing Treelines and Hedgerows

**Action 1.** The treeline/hedgerow A on the eastern perimeter should be maintained as much as possible as it provides a valuable nesting habitat for woodland birds and food and shelter resource for birds and other animals. Consider removal of the large Lawson's cypress at the southern edge. Elm is regenerating in places along the treeline and is invading the adjoining grassland margin. These should be removed because they will inevitably become infected by Dutch elm disease when they reach sufficient girth and the dead trunks may pose a hazard. Tall treelines of this type traditionally would have a grass border of 1-2m width at its base and minimally managed, with consequent benefits for biodiversity. The grass margin still exists for almost half of this treeline and it should be maintained.

**Action 2. Hedgerow B** should be maintained in as intact a condition as possible. Most of the woody shrubs are mature and flower every year; the aim should be to maintain it so, and if topping needs to be done, it should be done on a 3-4 year cycle. The hedgerow is gapped in places probably as a result of disturbance connected with the fence construction, so some remediation work is necessary, for example planting with hawthorn in some of the wider gaps. Some of the larger ash trees are badly affected by ash die-back disease and have a lot of dead wood. Consider cutting back or removing these to avoid future hazards from falling branches. The hedgerow lacks a grassland margin at base typical of most old hedgerows, as a consequence of the fence building and management of the adjoining amenity grassland. It would be a good idea to establish a 1-2m wide grass border managed for biodiversity along the length of the hedgerow.



***Hedgerow B showing gaps resulting from disturbance***

**Action 3.** Hedgerow C on the northern perimeter is in contrast, low and heavily clipped. Although there is a good range of woody plants present, the current management regime prevents significant flowering and seed/fruit production. This reduces the biodiversity value of the hedgerow considerably. With the agreement of the adjoining landowner, the hedge should be allowed to grow higher-ideally 3.4-4m. The grassland margin at the foot of hedgerow should be allowed to develop naturally for 1-2m width and can be managed by once or twice annual mowing.

Essential information for management of hedgerows for pollinators and biodiversity is available in: *How-To-Guide-Hedgerows for Pollinators. National Biodiversity Data series No. 7.* <https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Hedgerows-2018-WEB.pdf>

## **5.2 Action Plan for Grassland Areas**

Three actions (**4**, **5** and **6**) for promoting biodiversity in grassland area in the Manor Fields are outlined here. These involve retention of two existing grassland areas and creation of a third. General principles for creating and managing grasslands for biodiversity are outlined in 5.3. Wet grassland **Areas E, F** and **H** are earmarked for development in the Manor Fields development Plan and are not included in these actions.

**Action 4.** The wet meadow **Area G** should be retained. Current management involves a single annual cutting in late summer autumn; this should continue and be augmented by an early spring cut. Removal of creeping thistle (manual removal) is recommended .

**Action 5.** Create new biodiversity meadows in existing improved grassland **Area D** and in **Area J** and manage for biodiversity. Area D currently supports only moderate levels of plant biodiversity and Area J is a newly reseeded area with very little plant biodiversity. Approximately half of this area can be retained as amenity grassland (See Map 2). Change the management regime to cut once a year to create a long-flowering meadow. Enhance biodiversity by introducing native plants that



are likely to thrive given the soil conditions and existing sward composition. These include yellow rattle, knapweed, ox-eye daisy, selfheal meadow vetchling and devil's-bit scabious (see details in 5.3). Delimiting the area with non-intrusive fencing may be required to reduce the risk of excess foot traffic and trampling, given the central location of the area. Erect signage to explain the Action.

**Action 6.** Establish new biodiversity meadow in the disturbed ground **Area L**. This area contains some aggressive weeds such as creeping thistle and couch grass. It will need to be prepared as follows: Application of topsoil to areas from which topsoil has been removed. This should be added in the spring before autumn reseeding. The area should be levelled and spoil removed at this time. In summer the area should be sprayed with herbicide to remove aggressive weeds that will compete with meadow plants. Reseeding should be carried out in autumn (end of October at the latest). A perennial meadow mix, although not as colourful in flower as an annual meadow mix, is more economic sustainable and a better source of pollen for pollinators. Perennial meadow seed mixes sourced in Ireland should be used rather than imported mixes. Native mixes are available from Irish Seed Savers, EcoSeeds (NI) and Design by Nature. To get an idea of cost: to seed area 5 (1000m<sup>2</sup>) at the recommended seeding rate of 2g per m<sup>2</sup>, using EcoSeeds All-Ireland Pollinator (EP2) mix would require 2kg of seed @ €224 per kg = €448.

### 5.3 Management of grassland areas for biodiversity-general guidelines

Management of these areas for biodiversity should follow the general principles outlined below. For more detail consult the NBDC's How-to-Guide: Creation and Management of a Wildflower Meadow. (<https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf>).

**1. Modify the cutting regime:** Reduced on non-pitch areas to produce meadow areas is an effective way of increasing biodiversity, especially of pollinating insects. Three regimes are possible:

**Areas cut once a year to create long-flowering meadows.** Cutting should be carried out in September. (If there is heavy winter growth, a cut in early March can be carried out). The cut sward should be allowed to lie for a 3-4 days to allow seeds to drop, and then removed. Removal of the cuttings is important because over time, it will reduce soil fertility, reducing grass growth and allowing pollinator-friendly wildflowers to establish. The aim is to allow for the establishment and flowering of pollinator-friendly wildflowers such as dandelion, daisy, clovers, lady's smock, selfheal, knapweed and others.

**Areas cut every 4-6 weeks to create short-flowering meadows.** Cutting should not start until after mid-April to allow dandelions to flower. Cuttings should be removed.

**Areas managed by routine cutting for human use.** These are grassed areas designated and kept short for amenity use and as pathways. They will have less plant biodiversity due to the management regime and will have very limited value to pollinators.

It may take a number of years for the effects and benefits of flowering meadow management to become apparent, so patience is called for. Reseeding of existing (or new) meadow areas with commercial wildflower seed mixes is not needed and is in most cases ecologically undesirable because these mixes contain seeds of non-native or native plants that are generally not adapted to

local conditions. Indeed they contain seeds of aggressive non-native species that will displace native species.

**2. Introducing biodiversity.** Enhancement of biodiversity is possible however by introducing plants from local biodiverse grassland areas if they can be found and the permission of the landowner obtained. Seeds can be collected in the autumn and reseeded directly, or germinated in pots and sown into the grassland as 'plugs'. A noteworthy introduction is yellow rattle (*Rhinanthus minor*), a characteristic plant of old hay meadows. This plant is semiparasitic on grasses and will reduce grass growth, thus allowing other plant species to establish and increasing the biodiversity of the meadow. Seeds of yellow rattle can be spread on the meadow areas in autumn and will germinate the following spring. For more information, consult *How-To Guide: Collecting and Using Pollinator-friendly Wildflower Seed* published by the NBDC and available online. (<https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Seeds-2018-WEB.pdf>.)

**3. Reduce herbicide and fertilizer usage.** Herbicides must not be used on meadow areas and their use should be minimised in adjacent areas for example around nearby goal posts and at the base of fencing.

Fertilizers similarly must not be applied to these areas because they will promote grass growth at the expense of wildflowers. Care should be taken with application of fertilisers on pitch areas because of the risk of fertilizer run-off to adjacent meadow areas. This risk is greater for smaller meadow areas.

**4. Signage.** Erect signage to show that these grassland areas are being managed for biodiversity and are not a result of negligent management. Signage templates are available from: <https://pollinators.ie/resources/signs/>.







***Pollinator-friendly meadow plants: (A) knapweed; (B) meadow vetchling; (C) tufted vetch; (D) Yellow rattle.***



***A new pollinator-friendly meadow with a diverse range of plant species, Corbally, Limerick 2019.***





**Map 2. Proposed locations of new biodiversity meadows, native woodland and wet grassland (to be retained) and pond area in Manor Fields**

Boundary — ; reserved for pitches  ; new biodiversity meadow  ; retained wet grassland  ; native woodland  ; pond



## 5.4 Action Plan for New Woodland Areas

There is considerable scope for establishing new woodland areas in the Manor Fields. The guiding principle is to use native trees and shrubs of native provenance that are suited to the soil and environmental conditions of the area. A general list of native trees and shrubs is given in Table 2. Ash (*Fraxinus excelsior*) and elm (*Ulmus glabra*) are excluded because of their susceptibility to ash die-back and Dutch elm disease. Trees which grow to large such as oak and Scots pine may not be suitable and their locations should be carefully considered. All of these trees support invertebrates that live on the foliage, pollinators that exploit the flowers and fruit and seeds that sustain invertebrates, mammals and birds. Willows flower early in the spring and are important resources for early-season pollinators. Proposed areas of new native woodland are shown in **Map 2**.

**Action 7.** Currently an extensive area of waste ground and spoil, **Area F** has potential for conversion to native woodland. The site should be fully evaluated by an appropriate expert regarding its suitability for native woodland development. Issues that need to be considered are substrate quality and fertility, topsoil depth, drainage, and long term management, especially during the establishment phase. Addition of topsoil and levelling will be needed at a minimum. If these potential issues can be resolved, two possible planting schemes should be considered:

- Establishment of pedunculate oak canopy with hazel and holly in the understory, or
- Birch, mountain ash, whitebeam, hazel and holly mixture.
- Stock should be planted at a 2.0 x 2.0-metre spacing, equivalent to approximately 1,300 trees for this 0.56-ha area. Spacings and proportions in the tree mixtures must take account of relative growth rates of the species involved. Planting of woodland shrubs such as spindle, guelder rose, purging buckthorn crab apple and wild rose along the margins of the woodland area will enhance the biodiversity value.
- Establishment of woodland in this area may qualify for funding under the NeighbourWood Scheme (NBR), which funds attractive amenity woodland that will be “strategically located, easily accessible and well used by local people”. This scheme funds the establishment of new woodlands and user facilities for areas greater than 0.1ha. For more information see: <https://assets.gov.ie/69912/96d8d9de49e54c47ba5d14638d281910.pdf>.

**Action 8.** Establish a narrow semi-circular ‘wrap-around’ woodland planting (0.09ha) in **Area J** which will enhance the biodiversity and wildlife value of the new biodiversity meadow area in front. The planting will comprise smaller-growing trees i.e. mountain ash, whitebeam, and holly, interspersed with hazel and with woodland shrubs such as elder, spindle, purging buckthorn, broom and wild rose.

**Action 9.** Establish woodland copse (**0.03ha**) in **Area D**, of birch and holly with spindle and broom on the northern and southern margins respectively.

**Action 10.** **Area K** (Map1) has been planted with three oak trees; plant additional trees including with birch, hazel, holly, and elder. **0.05ha**

Depending on the growth rate of the trees, suppression of competition by competing plants such as grasses and bramble will be required in these woodland areas for a number of years until the canopy closes over. Trees are the keystone plant species in these woodland areas but natural woodlands

contain a lot more, mainly herbaceous plants that carpet the woodland floor and are adapted to shade. Bluebells, wood anemone, lords-and-ladies, wood sanicle, cow parsley, lesser celandine and wild garlic are all native woodland plants that would be expected to colonize these woodland areas over time, given the soil type. This process can be accelerated by introduction of seed from adjacent woodland areas. However this should wait until the canopy has closed over and is casting sufficient shade to render unnecessary the suppression of grasses and other competing plants.

**Table 2. Native tree and shrub species suitable for creation of woodland areas in the Manor Fields.**

<b>Trees</b>		<b>Suitable for Manor Fields?</b>
Pedunculate Oak <i>Quercus robur</i>		✓
Birch <i>Betula pubescens</i>	Catkins a food source for birds	✓✓
Aspen <i>Populus tremula</i>		✓
Scots Pine <i>Pinus sylvestris</i>		✓
Yew <i>Taxus baccata</i>		X Poisonous fruits
Wild Cherry <i>Prunus avium</i>	Late spring flowering; with autumn berries	✓✓
Mountain Ash (Rowan) <i>Sorbus aucuparia</i>	Late spring flowering; with autumn berries	✓✓
Holly <i>Ilex aquifolium</i>	Late spring flowering; with autumn berries	✓
Whitebeam <i>Sorbus aria</i>	Spring flowering	
Alder <i>Alnus glutinosa</i>	Good for wet areas	
Goat Willow <i>Salix caprea</i>	Good for early spring pollinators; good for wet areas	✓✓
Sally <i>Salix cinerea</i>	Good for early spring pollinators; good for wet areas	✓✓
Strawberry Tree <i>Arbutus unedo</i>	Autumn flowering; winter fruits	Not native to area
Hazel <i>Corylus avellana</i>	Good for early spring pollinators	✓
Crab Apple <i>Malus sylvestris</i>	Late spring flowering; autumn fruits	
<b>Shrubs</b>		
Hawthorn or Whitethorn <i>Crataegus monogyna</i>	Summer flowering and autumn berries	✓✓
Blackthorn <i>Prunus spinosa</i>	Spring flowering and autumn fruits	✓✓
Elder <i>Sambucus nigra</i>	Summer flowering and autumn berries	✓✓
Spindle <i>Euonymus europaeus</i>	Autumn berries	✓✓
Alder Buckthorn <i>Frangula alnus</i>	Autumn berries	
Purging Buckthorn <i>Rhamnus cathartica</i>	Autumn berries	✓



Guelder Rose <i>Viburnum opulus</i>	Autumn berries; good for damp areas	✓
Ivy <i>Hedera hibernica</i>	Autumn flowering and berries	✓
Bramble <i>Rubus fruticosus</i>	Autumn fruits	X Invasive
Wild Rose <i>Rosa canina</i>	Autumn fruits	✓
Broom, <i>Cytissus scoparius</i>	Summer flowers	✓

## 5.5. Action Plan for Other Biodiversity-Promoting measures.

**Action 11.** Creation of a pond. Ponds are great reservoirs of biodiversity out of all proportion to their relatively modest size compared to lakes or rivers. A suggested location is the north-west corner near the exit of the storm water swale (**Map 2**). This area should be able to accommodate a small circular or oval pond of 12m diameter with a 2-m margin at least on the publicly accessible side. Test holes should be dug to see if the soil holds water, in which case it may be possible to avoid the use of a liner. Otherwise a butyl rubber or plastic liner may be required. Depth should not exceed 1m at the centre of the pond. Ideally shading should be kept to a minimum—a disadvantage of this location is shading by trees on the south west and west, so management of shade will be needed. For planting, use only native marginal and emergent plants such as flag iris (*Iris pseudacorus*), water mint (*Mentha aquatica*), purple loosestrife (*Lythrum salicaria*), brooklime (*Veronica beccabunga*) and water forget-me-not (*Myosotis scorpioides*). Invertebrates such as damselflies and dragonflies will colonize the pond naturally. Do not introduce any fish species apart from native sticklebacks (which may colonize naturally along with newts and frogs).

The Freshwater Habitats Trust offers advice on pond creation in different settings including areas that have public access. <https://freshwaterhabitats.org.uk/pond-clinic/create-pond/>

**Action 12.** Plant pollinator-friendly flower beds and shrubberies. These can be made more pollinator friendly by careful selection of ornamental herbaceous plants and shrubs that are favoured by pollinators and are more beneficial to biodiversity; for example shrubs such as rosemary, broom *Berberis*, heathers, hebes, lavender, dwarf forms of butterfly bush (e.g. *Buddleja davidii* ‘Persephone’ or ‘Summer Beauty’) and herbaceous plants such as salvias, Michaelmas daisies, monk’s hood and oregano. See the Pollinator-Friendly Planting Code (<https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Planting-Code-2018-WEB.pdf>) for more details.

**Action 13.** Create specific pollinator habitats for wild bees, butterflies and moths.

- Wild bees are classed into three groups – ground-nesting bees (bumblebees), mining solitary bees, and cavity-nesting solitary bees. Ground-nesting bees nest in grassland areas particularly near hedgerows. Maintaining existing semi-natural grassland and the creation of new biodiverse grasslands will benefit these bees.
- Create ‘bee banks’. The majority of Ireland’s bees are mining solitary bees (62 species). They excavate underground gallery nests in areas of bare soil on flat ground and in sunny

south-facing sheltered earth banks. Nesting areas can be created by removing vegetation manually (with a spade-no herbicide) over small areas on well-drained sloping ground with a southerly aspect. The hedgerow bank in **Hedgerow C** along the northern perimeter of the Fields would be an ideal location for such habitat creation.

- Build a bee hotel. Cavity-nesting solitary bees are much less diverse (15 species) but tend to attract more conservation interest by creation of 'bee hotels'. Cavity-nesting solitary bees will make their nests in cavities in south-facing wood, in stone walls or masonry, or in pile of fallen logs and branches in woodland or hedgerows. They will also nest in commercially available bee nest boxes/hotels. For more details see How to Guide- Creating Wild Pollinator Nesting Habitat (<https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Nesting-2018-WEB.pdf>).
- Nettle beds for butterflies. Creation of biodiverse grassland/meadow areas will provide habitat for the feeding stages (caterpillars) of moths and butterflies. In addition a corner reserved (and fenced ) for nettles will provide a breeding habitat for butterflies. The common nettle is the food plant for caterpillars of the small tortoiseshell, red admiral, comma and peacock butterflies. If nettles are cut in late June they will re-grow and provide food for later breeding species. For nectar feeding adult butterflies and hawk moths, nectar-rich plants such as butterfly bush (dwarf forms-see above), lavender, verbena (*Verbena bonariensis*) hebes (*Hebe* species) and Michelmas daisies (*Aster novae-belgii*) planter in ornamental plantings, will attract large number of feeding butterflies.

**Action 14.** Create and 'Ecology Trail' for schools. Implementation of the biodiversity measures in Actions 1-13 will provide a valuable resource for local schools to teach environmental awareness, ecology and the value of biodiversity. An ecology trail can be constructed around specific focal points or features which illustrate interesting biodiversity or ecological principles. The trail should include not just passive observation on the students' part but activities challenges and task as well. The input of teachers in the design of a trail is essential from the start.

Examples:

- Identifying native trees and shrubs
- Identify 3 grasses and 5 flowers in the biodiversity grassland
- Compare grassland areas that are mown frequently with areas managed for biodiversity; do the latter have more plants and insects?
- Map the habitats in the Manor Fields using Google Earth or Google maps
- Pond dipping –looking for aquatic invertebrates.
- Find the nests of solitary bees.
- Recognizing different bumble bees (<https://biodiversityireland.ie/identifying-irish-bumblebees/lesson.html>).
- Autumn fruits and seeds-what do animals eat?
- Constructing a phenological calendar or 'nature calendar' –a long-term project in which local schools could be involved. This could focus on date of first leaf emergence on native trees or flowering times of hedgerow plants native trees. Records spanning a number of years can give valuable insights into the effects of climate change.



- A winter bird table identify the birds.

## 6.0 Timescale for actions

A timescale for implementation of the Actions is presented below. Some Actions can be implemented quickly for example changing the mowing regime. These short-term Actions are denoted in green below. These are achievable within the next calendar year. Others will take longer and are medium term - one to two years, and denoted in amber, while other may be longer-term (denoted in red below.)

Action	Description	Timescale
1	Maintain and manage Hedgerow A	Green
2	Maintain and manage Hedgerow B	Green
3	Maintain and manage Hedgerow C	Green
4	Retain and manage wet meadow <b>Area G for biodiversity</b>	Green
5	Create new biodiversity meadow in <b>Area D and J</b> for biodiversity	Green
6	Create new biodiversity meadow in the disturbed ground <b>Area L</b>	Green
7	Plant area <b>Area F</b> as native woodland.	Amber
8	Establish 'wrap-around' woodland planting in <b>Area J</b>	Amber
9	Establish woodland copse in <b>Area D</b>	Amber
10	Establish oak tree border in <b>Area K</b>	Amber
11	Creation of a pond.	Red
12	Plant pollinator-friendly flower beds and shrubberies	Green
13	Create specific habitats for wild bees, butterflies and moths	Red
14	Action 13. Create and 'Ecology Trail' for schools	Red

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## Appendix 1

List of plants recorded in Areas A-L of the Manor fields. F=ferns; G=grasses; H=herbaceous biennials/perennials; s=shrubs; T= Trees; W=annual weeds.

Common Name	Species		A	B	C	D	E	F	G	H	I, J, K	L
Alder	<i>Alnus glutinosa</i>	T										
American Willowherb	<i>Epilobium ciliatum</i>	W	+									
Amphibious Bistort	<i>Persicaria amphibia</i>	H						+	+			
Ash	<i>Fraxinus excelsior</i>	T	+	+			+					
Autumn Hawkbit	<i>Scorzoneroides autumnalis</i>	H					+	+		+		
Bittersweet	<i>Solanum dulcamara</i>	H			+							
Black Medick	<i>Medicago lupulina</i>	H	+					+				+
Blackthorn	<i>Prunus spinosa</i>	S	+	+	+		+					
Bracken	<i>Pteridium aquilinum</i>	F			+							
Bramble	<i>Rubus fruticosus</i>	S	+	+	+		+					
Broad-leaved Dock	<i>Rumex obtusifolius</i>	H						+		+		
Broad-leaved Willowherb	<i>Epilobium montanum</i>	W						+		+		
Bush Vetch	<i>Vicia sepium</i>	H	+				+					+
Carrot	<i>Daucus carota</i>	H							+			
Cock's-foot	<i>Dactylis glomerata</i>	G	+				+	+	+			
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>	H										+
Common Centaury	<i>Centaureum erythraea</i>	H	+							+		
Common Couch	<i>Elytrigia repens</i>	G	+					+	+	+		+
Common Field-speedwell	<i>Veronica persica</i>	W						+				+
Common Fleabane	<i>Pulicaria dysenterica</i>	H							+			
Common Knapweed	<i>Centaurea nigra</i>	H	+				+	+	+	+		
Common Mouse-ear	<i>Cerastium fontanum</i>	H					+			+		

Common Nettle	<i>Urtica dioica</i>	H	+										
Common Orache	<i>Atriplex patula</i>	W											+
Common Ragwort	<i>Senecio jacobaea</i>	H	+			+		+	+	+			+
Corn Mint	<i>Mentha arvensis</i>	H											+
Cow parsley	<i>Anthriscus sylvestris</i>	H		+									
Crab Apple	<i>Malus sylvestris</i>	T		+									
Crack-willow	<i>Salix fragilis</i>	T		+									
Creeping Bent	<i>Agrostis stolonifera</i>	G	+			+	+	+	+	+			
Creeping Buttercup	<i>Ranunculus repens</i>	H	+			+	+	+	+	+	+		
Creeping Thistle	<i>Cirsium arvense</i>	H	+					+	+	+			
Crested Dog's-tail	<i>Cynosurus cristatus</i>	G	+				+			+			
Curled Dock	<i>Rumex crispus</i>	H	+			+	+	+	+	+			+
Cut-leaved Crane's-bill	<i>Geranium dissectum</i>	W											+
Daisy	<i>Bellis perennis</i>	H				+		+				+	
Dandelion	<i>Taraxacum vulgare agg.</i>	H	+			+	+					+	+
Dog-rose	<i>Rosa canina</i>	S	+	+									
Eared Willow	<i>Salix aurita</i>	S						+					
Elder	<i>Sambucus nigra</i>	S				+							
Elm	<i>Ulmus glabra</i>	T	+			+		+					
Equal-leaved Knotgrass	<i>Polygonum arenastrum</i>	W						+			+		
False Brome	<i>Brachypodium sylvaticum</i>	G	+					+					
False Oat-grass	<i>Arrhenatherum elatius</i>	G	+			+	+	+	+	+			+
Fat-hen	<i>Chenopodium album</i>	W											+
Field Maple	<i>Acer campestre</i>	T						+					
Fool's Parsley	<i>Aethusa cynapium</i>	W							+		+		+
Glaucous Sedge	<i>Carex flacca</i>	C						+					
Goat Willow	<i>Salix caprea</i>	T						+					
Great Willowherb	<i>Epilobium hirsutum</i>	H				+		+	+	+	+		
Greater Bird's-foot-trefoil	<i>Lotus pedunculatus</i>	H									+		



Greater Plantain	<i>Plantago major</i>	W										+	+	+
Ground-elder	<i>Aegopodium podagraria</i>	H	+											
Groundsel	<i>Senecio vulgaris</i>	W							+					
Hairy Sedge	<i>Carex hirta</i>	C							+					
HaRD rUSH	<i>Juncus inflexus</i>	H	+					+	+			+		
Hart's Tongue Fern	<i>Asplenium scolopendrium</i>	F		+										
Hawthorn	<i>Crataegus monogyna</i>	S	+	+	+									
Hoary Willowherb	<i>Epilobium parviflorum</i>	H						+	+	+	+			
Hogweed	<i>Haracleum sphondylium</i>	H	+											
Honeysuckle	<i>Lonicera periclymenum</i>	S		+										
Ivy	<i>Hedera hibernica</i>	S	+	+	+									
Jointed Rush	<i>Juncus articulatus</i>	H										+		
Lawson's Cypress	<i>Chamaecyparis lawsoniana</i>	T	+											
Lesser Stitchwort	<i>Stellaria graminea</i>	H							+					
Lords-and-Ladies	<i>Arum maculatum</i>	H	+											
Marsh Woundwort	<i>Stacys palustris</i>	H							+					+
Meadow Buttercup	<i>Ranunculus acris</i>	H					+	+						
Meadow Fescue	<i>Schedonurus pratensis</i>	G					+		+					
Meadow Vetchling	<i>Lathyrus pratensis</i>	H						+	+	+	+			+
Meadowsweet	<i>Filipendula ulmaria</i>	H						+						
Nipplewort	<i>Lapsana communis</i>	W							+					+
Oat	<i>Avena sativa</i>	G						+						
Oxeye Daisy	<i>Leucanthemum vulgare</i>	H								+				
Pedunculate Oak	<i>Quercus robur</i>	T						+						
Perennial Rye-grass	<i>Lolium perenne</i>	G	+				+	+	+			+	+	
Perennial Sow-thistle	<i>Sonchus arvensis</i>	W												+
Prickly Sow-thistle	<i>Sonchus asper</i>	W										+		+
Privet	<i>Ligustrum vulgare</i>	S		+	+									
Purging Buckthorn	<i>Rhamnus cathartica</i>	S		+										

Purple-loosestrife	<i>Lythrum salicaria</i>	H						+				
Red Bartsia	<i>Odontites vernus</i>	H	+			+	+	+		+		+
Red Clover	<i>Trifolium pratense</i>	H	+				+	+	+	+		+
Red Fescue	<i>Festuca rubra</i>	G	+			+	+				+	
Redshank	<i>Persicaria maculosa</i>	H							+			
Ribwort Plantain	<i>Plantago lanceolata</i>	H	+			+	+	+	+	+		+
Rough Meadow-grass	<i>Poa trivialis</i>	G	+			+						
Sally	<i>Salix cinerea</i>	T		+	+		+	+				+
Scarlet Pimpernel	<i>Anagallis arvensis subsp. arvensis</i>	W						+				
Selfheal	<i>Prunella vulgaris</i>	H					+	+	+			
Silverweed	<i>Potentilla anserina</i>	H	+				+	+		+		+
Smooth Sow-thistle	<i>Sonchus oleraceus</i>	W			+							
Soft-rush	<i>Juncus effusus</i>	H						+				
Spear Thistle	<i>Cirsium vulgare</i>	W	+					+		+		+
Sorrel	<i>Rumex acetosa</i>	H				+						
Spindle	<i>Euonymus europeaus</i>	S	+		+							
Square-stalked St John's-wort	<i>Hypericum tetrapterum</i>	H	+				+					
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	G	+				+					
Sycamore	<i>Acer pseudoplatanus</i>	T	+									
Tall Fescue	<i>Schedonurus arundinacea</i>	G							+	+		
Timothy	<i>Phleum pratense</i>	G					+	+				
Tufted Hair-Grass	<i>Deschampsia cespitosa</i>	G	+					+		+		
Tufted Vetch	<i>Vicia cracca</i>	H						+	+			
Turnip	<i>Brassica rapa</i>	W						+		+		+
Upright Hedge-parsley	<i>Torilis japonica</i>	H			+			+				
White Clover	<i>Trifolium repens</i>	H	+			+	+	+		+		
Wood Dock	<i>Rumex sanguineus</i>	H	+									
Wood Sedge	<i>Carex sylvatica</i>	C						+				
Yarrow	<i>Achillea millefolium</i>	H							+			

Yellow-Wort	<i>Blackstonia perfoliata</i>	H											
Yorkshire-fog	<i>Holcus lanatus</i>	G	+				+	+	+	+			