

# Proposed Dublin Mountains Visitor Centre

## Merlin Survey Report

August 2018



# PROPOSED DUBLIN MOUNTAINS VISITOR CENTRE

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# 1. INTRODUCTION

## 1.1 Background

Roughan & O'Donovan was appointed by South Dublin County Council to undertake a bird survey, particularly in relation to the features of interest of the Wicklow Mountains SPA, to enable An Bord Pleanála to fully assess the impacts of the proposed Dublin Mountains Visitor Centre on the Conservation Objectives of this European Site.

The Department of Culture, Heritage and the Gaeltacht (The National Parks and Wildlife Service) provided a submission to the Bord on the planning application. In the submission, the Department requested that a bird survey be undertaken, with a focus on Merlin and Peregrine Falcon, the two Qualifying Interests of the Wicklow Mountains SPA. The purpose of the survey was to inform the conclusion of the Appropriate Assessment Report.

The Bord determined that the surveys should be undertaken to prove, beyond reasonable scientific doubt, that the proposed development would not lead to likely significant effects on the Qualifying Interests of the Wicklow Mountains SPA.

A planning application for the development included an Environmental Impact Assessment Report and Screening for Appropriate Assessment Report which were submitted to An Bord Pleanála in July 2017.

The Wicklow Mountains SPA is designated for two species, namely Peregrine Falcon and Merlin. The purpose of the Survey was to confirm if Merlin and/or Peregrine Falcon are breeding within the site of the proposed development and to ascertain what impacts, if any, the development would have on these populations in the Wicklow Mountains Special Protection Area (SPA). A description of the Site, its Qualifying Interests and other species of interest is provided in the Site Synopsis (NPWS, 2014) (Appendix E). Conservation Objectives for the Wicklow Mountains Special Protection Area have not been developed, however they are considered to be favourable for Merlin when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

In Ireland, the vast majority of Peregrine Falcons nest on coastal and inland cliffs. These habitats do not occur within 500m of the site and therefore the chances of this species breeding within or close to the site were considered to be low. For this reason, the focus of the survey was on Merlin.

## 1.2 Site Description

The site of the proposed development is located partially in the Hell Fire Woods, on Montpelier Hill and in the Massy's Estate area of the Dublin Mountains in South County Dublin (Appendix D). Montpelier Hill rises to 388m and is the most north westerly outlying hill of the Dublin Mountains. The slopes around the hill are comprised of agricultural grasslands on the north side and either conifer plantation or recently felled conifer plantation on the remaining sides. The Hell Fire Woods are working, commercial forests and will remain so into the foreseeable future. The construction of a new visitor facility with an enhanced amenity function would result in some localised changes in land use and management to ensure the commercial forest and the planned amenity can coexist. It is proposed to increase the area of car-parking in the northern section of the site through the provision of new terraces on the upper slopes.

At present some mature conifer trees have been retained adjacent to the car-park for aesthetic reasons and screening of the car-park, however, the retention of these trees will not be feasible into the future due to the potential for them to become overly tall and prone to wind throw.

A number of middle aged broad-leaved trees are found at the Hell Fire Woods as well as some mature trees which pre-date the forest and clearly grew in open ground in the past.

Massy's Woods, in contrast to Hell Fire Woods, is predominantly a broadleaved woodland. There are some areas of coniferous plantation and specimen trees from the original Killakee demesne. Mature specimen trees are found throughout the woodland.

Whilst predominantly a recreational forest with a high biodiversity function, woodland management works are ongoing with the thinning of areas of beech. It is expected that the management of the woodland can be adapted to accommodate the amenity value that may be required. Stone Bridges and an area which consists of a walled garden which was originally part of the Killakee demesne are located to the eastern extremity of the site.

The Glendoo Brook flows in a south-north direction along the eastern extremity of the Massy's Woods section of the site, with one tributary flowing east through Massy's Woods into the Glendoo Brook. The river connects into the River Dodder approximately 6km downstream.

## 1.3 The Proposed Development

The 2015 South Dublin Tourism Strategy proposed, as its principal recommendation, the creation of a Dublin Mountains Flagship Project. This was in keeping with the 2007 report, Dublin Mountains Strategic Development Plan for Outdoor Recreation, which introduced the proposal to provide a flagship welcoming and orientation point in the Dublin Mountains. The Dublin Mountains Partnership (DMP) also has a key objective to develop a flagship facility that will act as a focal tourism attraction in the area. A key element of the Project is to retain the attractive characteristics of the location, the environment and the landscape.

In response, a Steering Group consisting of representatives of South Dublin County Council, Coillte and the DMP issued tender invitations for a multi-disciplinary approach to the preparation of a feasibility study and masterplan for a flagship tourism facility in the Dublin Mountains.

The Project will comprise the following elements:

- Conservation works to protected structures including the Hell Fire Club building;
- Visitors Centre and Events Building located downhill on eastern side of Montpelier Hill;
- Tree canopy bridge linking Hell Fire Woods and Massy's Woods;
- Redevelopment of walled garden (Massy's Garden) in Massy's Woods;
- Conversion of commercial conifer forest to permanent mixed woodland and development of parkland amenity areas within this woodland
- Landscape development including boundary treatment;
- Facilities for drainage, water provision, foul water treatment, electricity and gas provision;
- Upgrading of existing trails and forestry access routes where necessary; and
- Extension to existing car park to accommodate approximately 300 additional spaces. Parking surfaces could be of a range of materials from loose gravel to reinforced grass to blacktop, depending on design objectives.

## **2. MERLIN (*FALCO COLUMBARIUS*)**

### **2.1 Introduction**

Merlin (*Falco columbarius*) is Ireland's smallest species of falcon and has a wingspan of 55-65cm, with females being larger than males. The species is similar in shape to Peregrine Falcon (*Falco peregrinus*) but much smaller. Males have blue-grey upperparts and an orange/ yellow breast; females are a brown/ grey colour overall. The diet of Merlin is small birds, primarily Meadow Pipits, and day flying moths. Merlin pursue prey in high speed chases over open ground.

Traditionally Merlin are ground nesting birds and nest in the heather uplands. However, recent studies in Ireland have shown that Merlin now have a strong preference for conifer plantations close to suitable hunting habitat such as blanket bog, heath and semi-natural grassland. Merlin usually nest in old nests of corvid species such as Hooded Crow and raise one brood per year consisting of 3-5 chicks.

### **2.2 Status**

Merlin is listed on Annex 1 of the Birds Directive 2009/147/EC and is amber listed in Ireland based on a moderate decline of its breeding range (Lynas et al., 2007) and the small breeding population in Ireland, estimated at 200-400 pairs.

Six Special Protection Areas (SPAs) have been designated for the species, namely the Connemara Bog Complex SPA; the Derryveagh and Glendowan Mountains SPA; Killarney National Park SPA; the Owenduff/ Nephin Complex SPA; the Slieve Aughty Mountains SPA; and, the Wicklow Mountains SPA. The species is found sporadically in these sites and other upland areas in Ireland during the breeding season. Outside the breeding season, Merlin leave the uplands and overwinter in coastal areas. The threats to Merlin are land use changes, particularly afforestation and overgrazing by livestock.

### 3. SURVEY METHODOLOGY

#### 3.1 Desk Study

The first step was to review aerial photography and to search published records for Merlin in the Wicklow Mountains SPA and the surrounding area including the Dublin Mountains. Studies of Merlin yielded useful information of the status of breeding Merlin in County Wicklow. A detailed account of Merlin in Wicklow contained in McElheron (2005), as cited by the Department in their submission, was particularly useful. The main sources of information in designing the survey methodology were the following:

- Fernandez-Bellon, D. & Lusby, J. 2011. *The feeding ecology of Merlin Falco columbarius during the breeding season in Ireland, and an assessment of current diet analysis methods*. Irish Birds 9: 159-164.
- Lusby, J., Corkery, I., McGuinness, S., Fernández-Bellon, D., Toal, L., Norriss, D., Breen, D., O'Donaill, A., Clarke, D., Irwin, S., Quinn, J.L., & O'Halloran, J. (2017) *Breeding ecology and habitat selection of Merlin Falco columbarius in forested landscapes*, Bird Study.
- Lusby, J., Fernandez-Bellon, D., Noriss, D. & Lauder, A (2011) *Assessing the effectiveness of monitoring methods for Merlin Falco columbarius in Ireland: the Pilot Merlin Survey 2010*. Irish Birds 9:143-154.
- McElheron, A. (2005). *Merlins of the Wicklow Mountains*. Currach Press, Dublin.

#### 3.2 Field Studies

The survey followed the methodologies described in Hardey et al. (2009), Lusby et al. (2010) and Lusby et al. (2011). The surveys were carried out by ecologists from Roughan & O'Donovan, Patrick O'Shea ACIEEM and Mike Bailey MCIEEM. Both surveyors had experience of surveying raptors.

Due to their low population densities, remote habitats, rough terrain and discrete breeding ecology, it is widely accepted that Merlin is difficult to survey (Ayers and Anderson, 1999). A pilot study was undertaken in 2010 (Lusby et al, 2011) in Ireland to test the effectiveness of monitoring, with a view to establishing a standard survey methodology for Ireland. The contrast in findings between two teams of surveyors highlighted the difficulties in accurately surveying for this species.

##### 3.2.1 Plucking Post Search

The entire area within 500m of suitable nesting habitat, where accessible, was searched for feeding signs. Following the habitat study undertaken by Lusby et al (2017), suitable habitat was considered to be mature coniferous plantation. The outer 10m of all of the mature plantation within the project site were searched for signs of 'plucking posts' and nests that could be used by Merlin. All prominent plucking post features, in this case fence posts, stone walls, tree stumps and boulders, were searched for signs of prey remains. Notes were recorded on the location, field signs, type of plucking post and whether the signs were recent or old. All plucking posts identified were recorded on a hand-held GPS unit. This search was undertaken once per month from April to July 2018. During the plucking post search, casual records of all raptors species were made including behaviour.

### 3.2.2 Vantage Point Surveys

Following the first plucking post search in April 2018, six vantage points (VPs) were selected based on their position for overlooking suitable nesting habitat and on the location of potential plucking posts. Suitable habitat included areas of mature conifer plantations and habitat mosaics containing scrub, heath and dense bracken. The position of each VP was reviewed each month and, where appropriate, changed in order to improve the chances of detecting Merlin.

Vantage point surveys were undertaken at each position once per month from April to July and lasted for three hours each. Surveys were undertaken in the morning or evening during the peak times of Merlin activity (Hardey et al., 2009). The surveys in the morning began before 7am and the surveys in the evening began after 4pm. Notes were made of all bird species that might induce a mobbing reaction from Merlin such as other raptors, corvids, gulls and herons. Mobbing events by Merlin could allude to a nest site and similarly, high concentrations of corvids could also allow for a specific area to be discounted as a Merlin nesting site. A list of all bird species was also compiled.

The locations of the vantage points are present in Table 3.1 below and on the drawings in Appendix A.

**Table 3.1: Location of Vantage Point used during the Merlin surveys**

VP	Easting	Northing	Aspect	Description
1	53.251967	-6.324866	East	VP looking over Hell Fire Wood Car Park from Montpelier Hill.
2	53.253238	-6.333271	North-West	VP on north side of Montpelier Hill looking NW over clearfell.
3	53.249332	-6.327894	South	VP on south side of Montpelier Hill looking south over valley.
4	53.246174	-6.331246	North	VP in heath to the south of Montpelier Hill looking north towards conifer plantations.
5	53.250947	-6.3419427	West	VP at west side of Montpelier Hill looking west over clearfell.
6	53.247034	-6.3344021	North	VP in heath to the south-west of Montpelier Hill looking north and north-west.

## 4. RESULTS

### 4.1 Desk Study

McElheron (2005) identified 24 pairs of Merlin in Wicklow. This book provided the most useful narrative of breeding Merlin in the Wicklow Mountains, which adjoins the site of the proposed development. The nearest records of nesting Merlin to the Project site were on Corrig Mountain, 2km west, and in Glencree, 4km south-east.

### 4.2 Field Surveys

The site contains suitable habitat for breeding Merlin. Mature conifer plantations, particularly on the south side of Montpellier Hill are relatively undisturbed and have the potential to support nesting sites. The habitat in the valley immediately to the south of Montpellier Hill is made up of heather and low growing gorse. The Site in general had high number of Meadow Pipits, Swallows and other small birds.

#### 4.2.1 Plucking Post Search

The search for plucking posts from April to July yielded two potential plucking posts. Both had old feathers. One post was on the raised base of an upturned tree (Plates 4.1 & 4.2). The second was on a raised part of a wall of a ruined cottage south of Montpellier Hill. Table 4.1 below describes the locations and details of the plucking posts. No fresh remains were observed over the course of the breeding season.

**Table 4.1: Location of Plucking Posts**

Reference	Type	Easting	Northing	Prey Remains
P1	Tree Stump	53.249527	-6.3385481	Feathers
P2	Rock pile	53.247300	-6.3265172	Feathers



**Plate 4.1: Potential plucking post on a tree stump in an open area of woodland**



**Plate 4.2: Feathers on plucking post**

#### 4.2.2 Vantage Point Surveys

A total of 24 vantage point (VP) surveys were undertaken between April and July. Two surveys were abandoned because of poor visibility and were repeated at a later date. Four species of raptor were recorded during the VP surveys, namely Peregrine Falcon, Buzzard (*Buteo buteo*), Sparrowhawk (*Accipiter nisus*) and Kestrel (*Falco tinnunculus*). Merlin was not recorded during any of the surveys. Peregrine Falcon was recorded on one occasion (See Appendix B/ April/ VP5). This species was noted by the Department in their submission. As described in Section 1.1, the site contains no suitable breeding habitat for this species. Peregrine Falcon can have large breeding ranges and therefore it is expected that this species would be recorded within the site. Table 4.2 below illustrates the number of sightings of each species of raptor recorded in each month. Jays (*Garrulus glandarius*), Magpies (*Pica pica*) and Hooded Crows (*Corvus cornix*) were regularly recorded in the mature conifer plantations on Montpellier Hill during the VP surveys. Other raptors, gulls, heron (*Ardea cinerea*) and Ravens (*Corvus corax*) were also recorded flying across the site.

Appendices A and B provide the details and findings of each VP survey.

**Table 4.2: Summary of raptor sightings April-July 2018.**

Species	April	May	June	July	Total
Merlin	0	0	0	0	0
Peregrine Falcon	1	0	0	0	1
Buzzard	3	2	10	5	20
Kestrel	0	3	2	5	10
Sparrowhawk	0	1	0	0	1

### 4.3 Other Species

All bird species seen or heard were recorded during the surveys. In addition, Red Squirrel (*Scirius vulgaris*), Irish Hare (*Lepus timidus hibernicus*) and Sika Deer (*Cervus nippon*) were frequently seen during the surveys. Pine Marten (*Martes martes*) scat was also recorded along the paths on the east and west side of Montpelier Hill. Table 4.3 below lists the bird species recorded during the VP and plucking post surveys. The Site Synopsis for the Wicklow Mountains SPA notes two other species of interest at the Site, although not Qualifying Interests. These are Ring Ouzel (*Turdus torquatus*) and Red Grouse (*Lagopus lagopus scoticus*). Neither of these species were recorded and would not have been expected in the area due to their breeding habitats of scree slopes and extensive areas of heather such as blanket bog.

**Table 4.3: Bird species recorded during VP surveys**

Common Name	Latin Name
Barn Swallow	<i>Hirundo rustica</i>
Blackbird	<i>Turdus merula</i>
Blackcap	<i>Sylvia atricapilla</i>
Blue Tit	<i>Cyanistes caeruleus</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Buzzard	<i>Buteo buteo</i>
Chaffinch	<i>Fringilla coelebs</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Coal Tit	<i>Periparus ater</i>
Collard Dove	<i>Streptopelia decaocto</i>
Common Crossbill	<i>Loxia curvirostra</i>
Cuckoo	<i>Cuculus canorus</i>
Dunnock	<i>Prunella modularis</i>
Eurasian Jay	<i>Garrulus glandarius</i>
Goldfinch	<i>Carduelis carduelis</i>
Great Spotted Woodpecker	<i>Dendrocopus major</i>
Great Tit	<i>Parus major</i>
Grey Heron	<i>Ardea cinerea</i>
Herring Gull	<i>Larus argentatus</i>
Hooded Crow	<i>Corvus cornix</i>
House Sparrow	<i>Passer domesticus</i>
Jackdaw	<i>Corvus monedula</i>
Kestrel	<i>Falco tinnunculus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>

<b>Common Name</b>	<b>Latin Name</b>
Linnet	<i>Linaria cannabina</i>
Magpie	<i>Pica pica</i>
Mallard	<i>Anas platyrhynchos</i>
Meadow Pipit	<i>Anthus pratensis</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Pheasant	<i>Phasianus colchicus</i>
Raven	<i>Corvus corax</i>
Rook	<i>Corvus frugilegus</i>
Robin	<i>Erithacus rubecula</i>
Skylark	<i>Alauda arvensis</i>
Snipe	<i>Gallinago gallinago</i>
Song Thrush	<i>Turdus philomelos</i>
Sparrowhawk	<i>Accipiter nisus</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Woodcock	<i>Scolopax rusticola</i>
Wood Pigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytes troglodytes</i>

## 5. CONCLUSION

No Merlin were recorded during the 2018 breeding season. Searches for plucking posts and vantage point surveys are recognised as the best method for surveying Merlin; however, this does not detract from the difficulties associated with surveying for this species. The efficacy of searches for plucking posts is made more difficult by the Irish Merlin's preference for tree nesting and using branches for plucking prey, as opposed to prominent features on the ground.

The surveys found no evidence of Merlin breeding on Montpellier Hill, the site of the proposed Dublin Mountains Visitor Centre. This conclusion has been reached on the basis that no confirmed Merlin plucking posts or suitable nests were identified during the walkover surveys and no Merlin were recorded during the vantage point surveys. In addition, a range of other species were present which could have triggered a mobbing response but did not. The proportion of mobbing responses by nesting Merlin, relative to potential responses was reported as 12% in Lusby et al. (2010). Although this figure is low, the high numbers of Jays, Buzzards and Hooded Crows on Montpellier Hill would have been expected to induce a mobbing response during the surveys.

Four other species of raptor were recorded during the surveys (Peregrine Falcon, Buzzard, Kestrel, and Sparrowhawk). These species are relatively widespread and common in Ireland, even in suburban and urban areas. There was no evidence of these species breeding within the site. Two other species mentioned in the Site Synopsis (although not Qualifying Interests) are Ring Ouzel and Red Grouse. These species were not recorded during the surveys and would not be expected to be present within the site due on account of the habitats present.

The surveys conclude that Merlin do not breed within the site of the proposed Dublin Mountains Visitor Centre.

## 6. REFERENCES

- Ayers, L.W. & Anderson, S.H. 1999. Reoccupancy and use of historic breeding sites by Richardson's Merlin (*Falco columbarius richardsonii*) in Wyoming. Final report to Wyoming Cooperative Fish and Wildlife Research Unit. University of Wyoming, Laramie.
  - Fernandez-Bellon, D. & Lusby, J. 2011. *The feeding ecology of Merlin Falco columbarius during the breeding season in Ireland, and an assessment of current diet analysis methods*. Irish Birds 9: 159-164.
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- McElheron, A. 2005. *Merlins of the Wicklow Mountains*. Currach Press, Dublin.

## **APPENDIX A Survey Details**

Month	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	Survey 6
<b>April</b>	17 <sup>th</sup>	17 <sup>th</sup>	18 <sup>th</sup>	18 <sup>th</sup>	2 <sup>th</sup>	25 <sup>th</sup>
Time	07.00 - 10.00	16.00 - 19.00	07.00 - 10.00	16.00 - 19.00	16.10- 19.10	07.00-10.00
Weather	Cloudy, scattered showers with sunny intervals, windy (SSE), 10 -11°C	Blistering conditions with stiff breeze and scattered clouds and occasional shower	Windy, scattered clouds and v occasional shower. Drying but constant wind 11°C	Sunny with light clouds. Strong wind from SE but sheltered in valley below VP	Light rain for first 30 mins and last 30 mins. Generally, overcast with sunny spells. Westerly breeze.	Strong breeze overcast and dry throughout. Cloud on top of hills to the south and west.
Surveyor	M Bailey	M Bailey	M Bailey	M Bailey	P O'Shea	P O'Shea
<b>May</b>	18 <sup>th</sup>	16 <sup>th</sup>	16 <sup>th</sup>	21 <sup>st</sup>	21 <sup>st</sup>	5 <sup>th</sup> (June)
Time	06:50-09:50	16:10-19:10	07:00-10:00	16:00-19:00	07:00-10:00	16:00-19:00
Weather	5-12°C, occasional slight breeze, cloudy with sunny spells.	12°C, clear and sunny, light breeze.	10°C, no wind, sunny and clear.	12°C, overcast.	12 degrees, overcast, southerly breeze throughout survey	17-20°C, clear skies, gentle breeze
Surveyor	P O'Shea	P O'Shea	P O'Shea	P O'Shea	P O'Shea	M Bailey
<b>June</b>	27 <sup>th</sup>	4 <sup>th</sup> (July)	10 <sup>th</sup> (July)	3 <sup>rd</sup> (July)	28 <sup>th</sup>	4 <sup>th</sup> (July)
Time	17.00-20.00	06:45-09:45	17:00-20:00	17.15-20.15	05.30-08.30	05.45-08.45
Weather	Clear skies, very little breeze, 23°C	Clear, Sunny, no wind, 18 degrees.	Clear, sunny, 20 degrees, no wind.	Clear, sunny, 20 degrees, no wind.	Completely clear skies. No wind. 17 °C	Completely clear skies. Gentle breeze. 15 -18 °C
Surveyor	M Bailey	P O'Shea	P O'Shea	M Bailey	M Bailey	M Bailey
<b>July</b>	18 <sup>th</sup>	24 <sup>th</sup>	26 <sup>th</sup>	25 <sup>th</sup>	23 <sup>rd</sup>	18 <sup>th</sup>
Time	05:45-08:45	16:00-19:00	07:00-10:00	16:00-19:00	17:30-20:10	16:10-19:10
Weather	15 degrees, no wind, mostly sunny with odd cloud	23 degrees, sunny in general with odd cloud, light westerly breeze.	15-20 degrees, clear with strong breeze from south west.	25 degrees, very sunny with very light westerly breeze.	Breezy, 20 degrees, cloudy with odd sunny spell. Rain from 20:00. Survey abandoned.	20 degrees, cloudy with sunny spells. Breezy.
Surveyor	P O'Shea	P O'Shea	P O'Shea	P O'Shea	P O'Shea	P O'Shea

## **APPENDIX B SURVEY RESULTS**

	VP1	VP2	VP3	VP4	VP5	VP6
<b>April</b>	No raptors seen. Magpie nest in immature woodland. Hooded Crow building nest in northern end of the conifer plantation near Car Park.	No raptors seen. Numerous crows and gulls in field 400m downhill from site but none were seen flying near conifer plantations on site. Blackbird nesting in gorse in edge of cleared plantation.	No raptors seen. Two Hooded Crows flew past plantation to right of VP and down valley but did not enter trees. No corvid nests seen or suspected. One cuckoo seen flying into plantation from opposite side of valley.	No raptors seen. One raven mobbed by Hooded Crow above plantation on opposite side of valley but neither birds entered trees. Swallows constantly flying up valley and cuckoo seen twice also following valley first going east and second pass west. Four Mallards (3 males and 1 female) in pond on valley bottom to left of VP.	One Peregrine and two Buzzard seen during survey. Lots of corvid activity including mobbing of raptors. General raptor flight lines east to west along valley south of Hill. 16:30: Hooded Crow mobbing Buzzard in field to the south (710462, 723237) Buzzard flew west. 16:40: Hooded Crow flew across VP West to East. Lots of Hooded Crow activity in stand of conifers directly to the west c400m from VP. 17:20: Two rooks fly past east to west near hooded crows and land briefly. Magpies 400m west. 17:30 Male peregrine flying east to west down valley. Mobbed by hooded crows for c.10 mins before flying east. Hooded Crow activity much less after this. 17:50: single calling raven flies south to north directly over VP. Single magpies in general area of VP. 18:25: Hooded Crow flies down valley east to west. 18:35: c.10 Hooded Crows in treeline calling south of VP. 18:36: Buzzard mobbed flying down valley east to west.	07:05 Hooded Crow and Mallard fly down valley east to west. 07:34: Magpies in valley for first 30 mins. Buzzard flies down valley east to west landing briefly in a field close to the VP. 07:38: Raven flies past east to west over/behind VP.
<b>May</b>	No raptors seen. Magpies leaving and entering one area of the plantation by the car park throughout survey from start to finish approx. 25 times. Jackdaws flying along woodland occasionally during survey. Ravens seen twice at northern end of wood flying over. Jay emerged from woodland and was seen foraging on broadleaf trees standing in clear-fell.	Approx. 20 hooded crows at base of hill around Carthy's Castle. 16:20: Buzzard flies west to east in front of VP (half way down hill) and was seen hunting over fields to the east between Montpellier Hill and the housing estates. 18:15: Hooded crow flies south to north over VP (from behind). Other Hooded Crow heard calling from woodlands behind VP. 18:20: Female Sparrowhawk flies from young plantation c. 50m west of VP. Sparrowhawk seen landing on fallen tree next to tall trees and is observed for 2-3 mins preening. Sparrowhawk then flies out of sight.	07:30: Two Jackdaw flew west to east along valley. 07:36: Two Jackdaw fly east to west along valley. 07:56: Two mallard fly east to west down valley. 07:57: Lesser Black-backed gull flies east to west along valley. 08:10: Kestrel flew from west to east and landing in small area of tall conifers in the corner of the young conifer plantation on the south side of the valley across from VP. Kestrel perched for 1-2mins then flew south and was seen hovering near mature conifers to the south. 08:15: Two Lesser black-backed gulls fly east west along immature conifers approx. 20m high. 08:26: Kestrel seen flying from immature conifers across from VP and landing in a hawthorn tree in the heather covered area briefly before flying straight down the valley at speed. three minutes later the bird was seen perched on a fencepost on the valley floor. It then flew east out of view along the bottom of the valley. 08:35: Hooded Crow perches on dead tree in young conifer plantation across from VP. Three Jackdaws fly east to west on south side of VP. 08:55: Magpie flies along valley west to east. 09:02: Kestrel seen briefly flying west to east about half way up the north side of the valley. 09:10: Buzzard heard calling behind VP- not seen. 09:30: Raven flew over immature conifers west to east.	No raptors seen. Hooded crows calling from trees behind VP. First hour was quiet with occasional wood pigeons flying up and down valley. Two Lesser Black-backed gulls fly west to east at 17:00. 18:30: three Mallard fly east west along valley. 18:45 four Mallard land in ponds along conifer edge behind VP. Heron flies west to east along valley.	No raptors seen. 2 deer seen on path on Montpellier Hill. Red squirrel seen at beginning of survey in treeline to the east of VP. Occasional Hooded Crows and Jackdaws flying over clear-fell and recently planted woodland in front of VP as well as up and down the valley to the south. Up to three magpies seen in clear-fell. Cuckoo flew past VP to south at 09:05 and could be heard calling from the south from 10am.	No raptors seen. Numerous Jackdaws seen flying over trees around farms to the SW of Montpellier Hill and Hood Crows were seen flying from south and into conifers on the south of Montpellier Hill. One buzzard seen in valley approx. 2km from Montpellier Hill but no raptor observed close to survey site.

	VP1	VP2	VP3	VP4	VP5	VP6
<b>June</b>	Jay and several magpies in trees above car park. Two Jackdaws and one Hooded Crow flew past. One cuckoo flew past left to right. Two Buzzards seen on four occasions flying to the left of VP on the northern side of Montpellier Hill.	Two Buzzards seen on walk up Montpellier Hill. Two Jays also seen near VP1 on walk up and down. 07:15: Occasional Lesser Black-backed gulls flying down valley across VP. Two Hooded Crows on Carthy's Castle below and approximately 50 in recently cut meadow next to it. 08:25: Hooded Crow perched on dead tree 50m below VP calling for 10 mins before flying 200m west of VP and calling again for 10 mins.	17:20 Buzzard seen flying over immature woodland across valley at c. 500m and flying left to right. 17:35 Lesser Black-backed gull flew across VP right to left. 17:35 Buzzard heard calling- not seen. 19:00: Jay calling from woodland on right of VP. 19:09 Raven flies up valley right to left. 19:40 Raven flies over VP from behind (north to south) and lands in taller trees at corner of immature plantation and calls for 10 mins.	Three Magpies in field with sheep feeding on rabbit carcass. 19:25: Buzzard seen flying over valley >300m west of site but did not approach Montpellier Hill. 19:35: Two Jackdaws emerged from woodland at western end of Montpellier Hill and followed edge of woodland before entering conifer plantation on southern boundary.	Lesser Black-backed gulls and hooded crows in valley below VP. One Hooded Crow perched on fence-pole at the edge of the cleared area and did not move when a Kestrel landed in the next post. Kestrel remained for 15mins before flying down into the valley.	Jays calling from conifer plantation on southern boundary of site but only one seen, briefly. 7:12: Buzzard seen flying high over eastern end of Montpellier Hill. After 07:15 decrease in number of active birds. 3-4 Hooded Crows and 6-7 Jackdaws seen flying to the west in valley below site but did not approach Montpellier Hill. 07:46: Kestrel seen briefly to east of VP, flew swiftly from Montpellier Hill and disappeared south behind VP.
<b>July</b>	05:47 and 05:50 Jay flies into wood from behind VP. 06:20 Jay foraging in clear-fell in front of VP. 06:45 Buzzard heard not seen from the south. 07:00 Four Raven fly right to left in front of VP behind woodland and turn following the hill towards Carthy's Castle. 07:13: Jay flies from ash treeline behind VP to woodland. 07:23 Juvenile cuckoo in clearfell area for 5 minutes. 07:55. Buzzard flies in from south and lands on telegraph pole to south of VP along forest track. 08:10 Jay begins mobbing Buzzard for 3-4 minutes. 08:14 Buzzard flies to pole south of previous pole. 08:35 Buzzard flies south out of sight. Jays and Magpies present throughout survey in woodland and clearfell areas.	Approximately 50 Rooks in the field by Carthy's Castle. 18:20 kestrel seen flying out of wood behind VP to the left, then flying south along trees before making sharp left out of sight. Very little activity.	07:20: Juvenile Kestrel flies left to right over VP and over larch trees disappearing briefly before reappearing in the valley after <10 seconds and hovering. It then drops and flies along the far side of the valley across the heath landing in a small isolated conifer tree half way up the south side of the valley. It sits there for 15 mins. It then flies east behind the sycamore tree at the ruined cottage and disappears. 07:37: Kestrel reappears and lands on a 1.5m dead hawthorn tree stump 30m west of ruined cottage. 07:59 Juvenile Kestrel still sitting on tree and a Buzzard flies down the valley east to west and over the wood to the right. 08:07 Kestrel leaves perch and flies east behind sycamore. 08:10 Kestrel flies fast and low over the heath from the ruined cottage along the south side of the valley. It lands briefly then continues west as before landing in small conifers and is eventually lost from sight approx. across from the VP. 09:48 Buzzard flies up valley west to east (opposite flight path to first Buzzard seen on the survey).	16:20 Jays heard calling in western end of wood. 17:00 Two raven fly from near VP5 and fly south turning to fly behind VP4 and over the clearfell behind and then south out of sight. 17:15 Jays calling in wood at the western side. 17:50 Jays seen at woodland edge. Four jays seen together over next 20 mins. 18:05 BZ heard from direction of VP5.	17:30-18:30 Very little activity. About 6 Magpies seen near small conifer stand at west end of site 200m from VP. 18:35 Kestrel flies in from the west and flies up valley landing on top of a conifer tree that forms part of the treeline at the site boundary and preens for 10 minutes. Kestrel flies off perch and hunts, hovering, along treeline/ site boundary, first further west and then back east up the valley and almost out of site. It hovers about 5 more times and then flies east up the valley and out of sight at 18:50. 19:00 Kestrel seen flying in from the west. First spotted just west of farm south of VP. It hovers three times and flies east up the valley. 19:29: Buzzard hunting (also having) behind VP over cleared area. Buzzard flies over VP and continues to hunt over the clearfell to the west of the VP. It gains altitudes and disappears west over Glenasmole at 19:36.	Two Kestrel seen on route to VP. The first was seen hunting along military road and the second was seen over the valley south of Montpellier Hill. 16:10 Buzzard flies from SW quadrant of larch wood west disappearing over hill top. 16:40 Jays calling from east end of larch wood. Summary: very little activity during survey. Jays heard in wood occasionally and magpies calling from valley floor, mostly west of wood in more open area.

## **APPENDIX C**

### **VP Location Photographs**



**VP1 (A)**



**VP1 (B)**



**VP2 (A)**



**VP2 (B)**



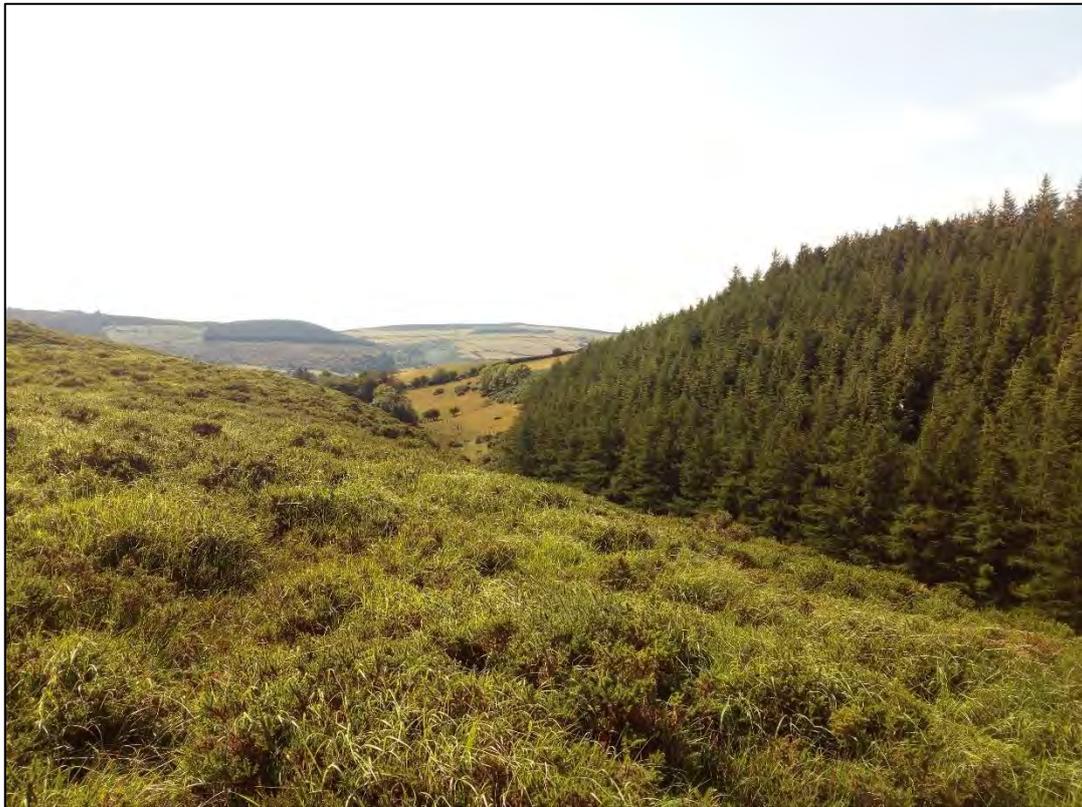
**VP3 (A)**



**VP3 (B)**



**VP4 (A)**



**VP4 (B)**



**VP5 (A)**



**VP5 (B)**

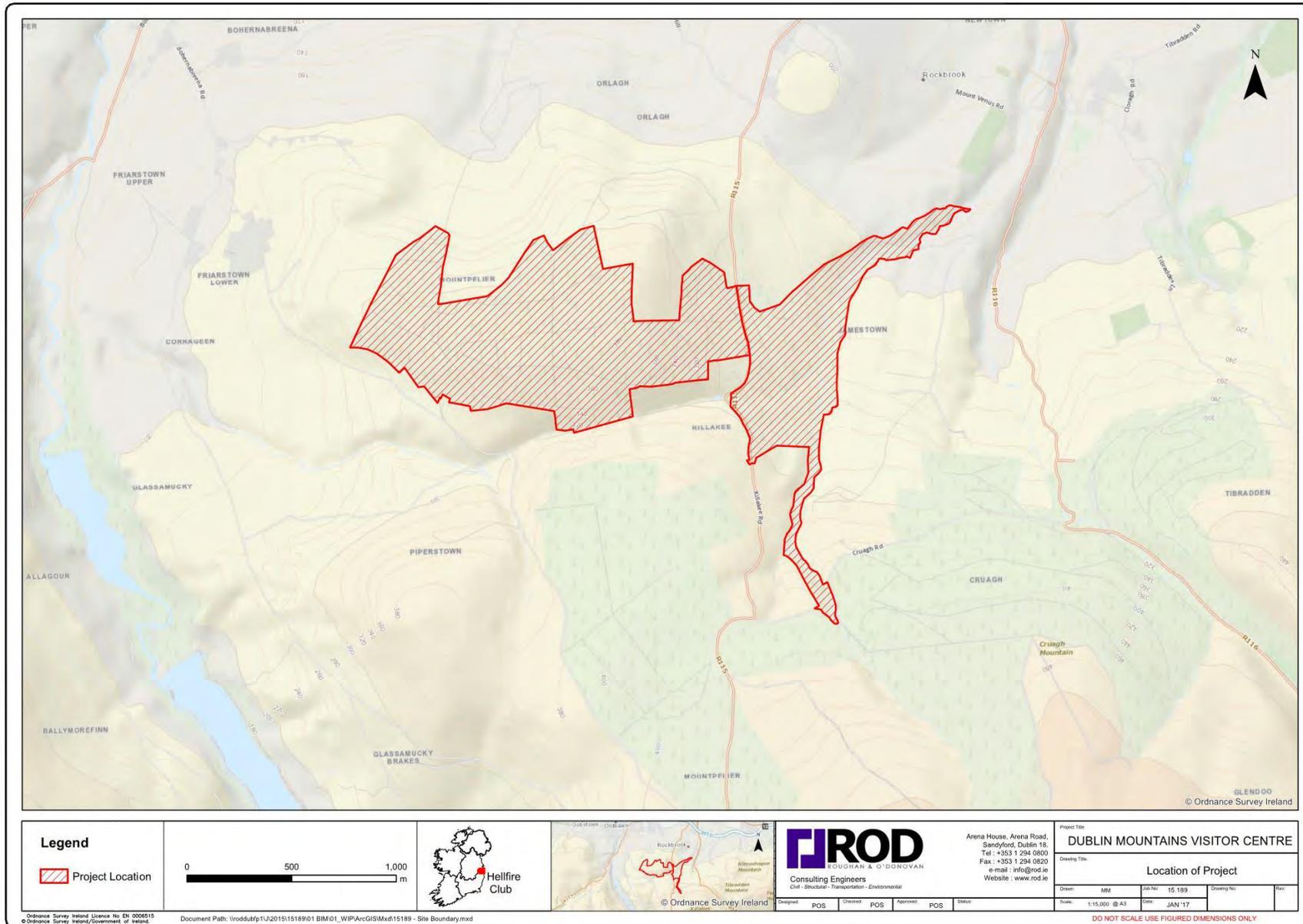


**VP6 (A)**



**VP6 (B)**

## **APPENDIX D SITE LOCATION**



**Legend**

Project Location

0 500 1,000  
m

Hellfire Club

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Project Title:		DUBLIN MOUNTAINS VISITOR CENTRE	
Drawing Title:		Location of Project	
Drawn:	MB	Job No.:	15.189
Scale:	1:15,000 @ A3	Date:	JAN '17
Checked:	POS	Drawing No.:	
Approved:	POS	Rev.:	

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Document Path: \\vrodulbf1\J2015\15189\01 BIM\01\_WIP\ArcGIS\Mxd\15189 - Site Boundary.mxd

Designed: POS  
Checked: POS  
Approved: POS  
Status:

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

**APPENDIX E  
WICKLOW MOUNTAINS SPA  
SITE SYNOPSIS**

## **SITE SYNOPSIS**

**SITE NAME: WICKLOW MOUNTAINS SPA**

**SITE CODE: 004040**

This is an extensive upland site, comprising a substantial part of the Wicklow Mountains. Most of the site is in Co. Wicklow, but a small area lies in Co. Dublin. The underlying geology of the site is mainly of Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area was subject to glaciation and features fine examples of glacial lakes, deep valleys and moraines. Most of site is over 300 m, with much ground being over 600 m; the highest peak is Lugnaquilla (925 m). The substrate over much of site is peat, with poor mineral soil occurring on the slopes and lower ground. Exposed rock and scree are features of the site. The predominant habitats present are blanket bog, heaths and upland grassland.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Merlin and Peregrine.

A series of surveys of the Wicklow Mountains SPA indicates that up to 9 pairs of Merlin breed within the site in any one year. Traditionally a ground-nesting species, Merlin in the Wicklow Mountains are usually found nesting in old crows nests in conifer plantations. The open peatlands provide excellent foraging habitat for Merlin with small birds such as Meadow Pipit being their main prey. The cliffs and crags within the site also provide ideal breeding locations for Peregrine (20 pairs in 2002). Other birds of the open peatlands and scree slopes that have been recorded within the site include Ring Ouzel and Red Grouse.

The Wicklow Mountains SPA is of high ornithological importance as it supports nationally important populations of Merlin and Peregrine, both species that are listed on Annex I of the E.U. Birds Directive. Part of Wicklow Mountains SPA is a Statutory Nature Reserve.