

Appendix 6-6

Ecological Surveys – Turbine Delivery Route



Ecological Surveys along Turbine Delivery Route Proposed Carrownagowan Wind Farm



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1 INTRODUCTION

Malachy Walsh and Partners (MWP) were commissioned by Coillte Cuideachta Ghníomhaíochta Ainmnithe, hereafter Coillte, to carry out ecological surveys at 4 No. sites; where construction works are required along the proposed Carrowmagowan turbine delivery route (including road widening, and installation of section of road).

The multi-disciplinary ecological walkover surveys included habitat mapping, aimed to detect the presence, or likely presence, of a range of protected species of flora and fauna. The presence (or signs) of protected fauna, including birds, mammals, was noted during the visits. The multi-disciplinary walkover survey provided baseline information regarding the existing ecology at each of the sites. The surveys were undertaken by MWP ecologists in early March, and October 2019.

1.1 SITE LOCATION (TURBINE DELIVERY ROUTE: WORKS REQUIRED ALONG LOCAL ROADS TO SITE ENTRANCE)

The locations of the proposed works to facilitate turbine delivery are illustrated in Figure 1 below.

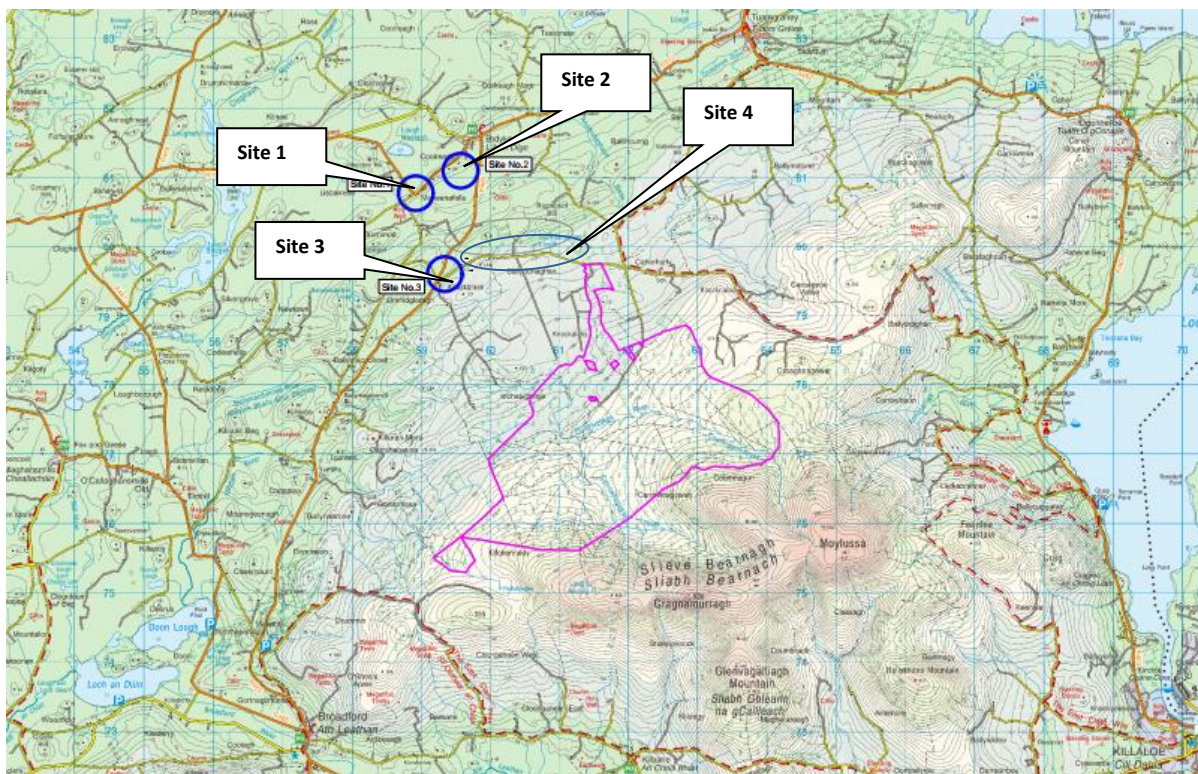


Figure 1: Locations of Road Works along turbine delivery route

2 FIELD SURVEYS/METHODOLOGY

A desk study was carried out to collate and review available information, datasets and documentation sources pertaining to the sites natural environment. Some of these sources included:

- OSI Aerial photography and 1:50,000 mapping
- National Parks and Wildlife Service (NPWS)
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- Environmental Protection Agency (EPA) water quality data

The following describes the field surveys completed at each of the sites;

- **Habitat Survey:** The field surveys were conducted on March 8th, and 17th October 2019. Habitats were categorised using the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000).
- **Mammal survey:** Carried out in conjunction with the habitat survey, this concentrated on protected species such as Badger (*Meles meles*), Otter (*Lutra lutra*), Red squirrel (*Sciurus vulgaris*) and Pine Marten (*Martes martes*). The footprint of the works and adjacent lands were searched for tracks and signs of protected mammals using Bang and Dahlstrom (2004).
- **Bat Survey:** A Bat suitability assessment was undertaken during the multidisciplinary walkover survey to identify built or natural features in the study area with potential to support a bat roost. Collins (Eds.), 2016) and Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (now TII, 2006), involved a visual assessment of any suitable features on trees, structures such as and buildings capable of supporting roosting Bats within the study area.
- **Bird Survey:** Bird species seen and heard were noted during surveys.
- **Invasive Species Survey:** During the walkover surveys, the presence of Invasive Alien Plant Species (IAS) was documented (if any). The focus was on identifying species subject to restrictions under Section 49 of the Birds and Natural Habitats Regulations. Target notes and GPS taken of any invasive species, and infestations identified.

3 RESULTS

3.1 SITE 1

Site No. 1 is located at a 90° bend on the R352 regional road at Coolready. The delivery of the turbine blades will require road widening into third party land on the north-northwest side of the junction.

The dominant habitat type is improved agricultural grassland (GA1). The lower lying field area was heavy on foot, and is best described as wet grassland (GS4), reverting from improvement. Hedgerows (WL1) bound the grassland habitats. Whitethorn, blackthorn, bramble, horsetail, and ivy are the main species occurring in the hedgerows. Hedgerow and treelines (WL2) form the field boundaries extending away from the site. A drainage ditch (FW4), drains to the north-northwest, on the field side of the western hedgerow. During time of survey, the drain had little to no flow, and was well vegetated. The local road networks, and the dwellings, and farm houses in the area are best described as buildings and artificial surfaces (BL3). The habitat map can be viewed in Figure 2 below.

No Invasive Species were observed during time of survey (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015)).

The desk study identified a number of documented badger records for the area extending away from the site. During time of survey the hedgerows were recently cut back. No mammal tracks or resting places, for species such as badger were observed. The habitats present within the footprint of the works, are not optimal for roosting bats, but can be used by foraging bat species. This habitat type is common in the area.

During time of survey bird breeding-nesting activity had ceased (breeding season had ended). Species observed-heard in the area included hooded crow, rook, blackbird, dunnock, and wren.

The site is situated within the Owenogarney sub catchment area (WFD_SC_010), ultimately forming the Shannon Estuary North (WFD Catchment Id: 27). No river or stream drains through the site. Meelagh Lough is situated approximately 520m to the north of the site. The field drainage network in the area generally drains to the northwest.



Figure 2: Site 1 Habitat Map

3.2 SITE 2

The junction of the R352 and R465 regional roads is in Bodyke village and it is not feasible to make the manoeuvre for turbine blade delivery at the junction or at the preceding bend. Site No.2 is located where a new section of is required through third party land to the south of Bodyke to access the R465 from the R352.

In summary, the new section of access sweeps through private broadleaf woodland towards the southern end of the site, and agricultural grassland occurs towards the north.

The southern part of the site is a mature mixed broadleaf woodland (WD1), planted for commercial purposes. Dominant species include ash, and sycamore. During the site visit clear fell/thinning of mature ash trees was being carried out, with the majority of the ash trees having been felled. Under growth was sparse, which included bramble, ash saplings, and ivy. Towards the east centre of the plantation, an unplanted area, at the time of the survey, was best described as a mix of dense bracken (HD1), and scrub (WS1). The section of route has avoided this area.

The northern section of access is situated on agricultural grassland (GA1), with wet grassland (GS4) in the lower lying areas. Dominant species include Yorkshire fog, rye grasses, creeping butter cup, and yellow iris, which occurred mainly on the boundary between the woodland and the grassland habitat. Tree-line and hedgerow mainly bound the field areas, and the local road network in the area. Dominant species include ash, sycamore, some oak trees, whitethorn, and blackthorn.

Stands of mixed conifer/broadleaf woodland (WD2 and WD3) extend off to the north east, with improved agricultural grassland dominating the landscape extending away from the site. A reservoir/water storage tanks (BL3) are situated on a gravel surface area, towards the north-eastern end of the site.

No Invasive Species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015), were observed during time of survey. Winter Heliotrope was observed underneath the tree-line bounding the eastern-northern part of the site (See Figure 3 below). This is an amber listed, non-native species, considered low risk of impact.

During time of survey bird breeding-nesting activity had ceased (breeding season had ended). Species observed-heard in the area included hooded crow, magpie, robin, and wren.

The desk study identified a number of documented badger records for the area extending away from the site. No mammal tracks or resting places, for species such as badger were observed. It is likely that species such as badger and pine marten are using the woodland habitats in the area, but no evidence of mammal species observed along the access route. The habitats present within the footprint of the works are not optimal for roosting bats, but can be used by foraging bat species. It is considered that the trees present were not old enough to harbour significant bat roost sites.

The site is situated within the Owenogarney sub catchment area (WFD_SC_010), forming the Shannon Estuary North (WFD Catchment Id: 27). The closest mapped watercourse-river is the Drummod Stream (EPA code: 27D04), approximately 500m to the south.

No river or stream drains through the site. A land drain occurs along the southern end of the grassland area, and drainage ditches within woodland, generally drain from north to south. The southern end of the site drains mainly to the south, and the very northern end of the site drains to the north-northeast.

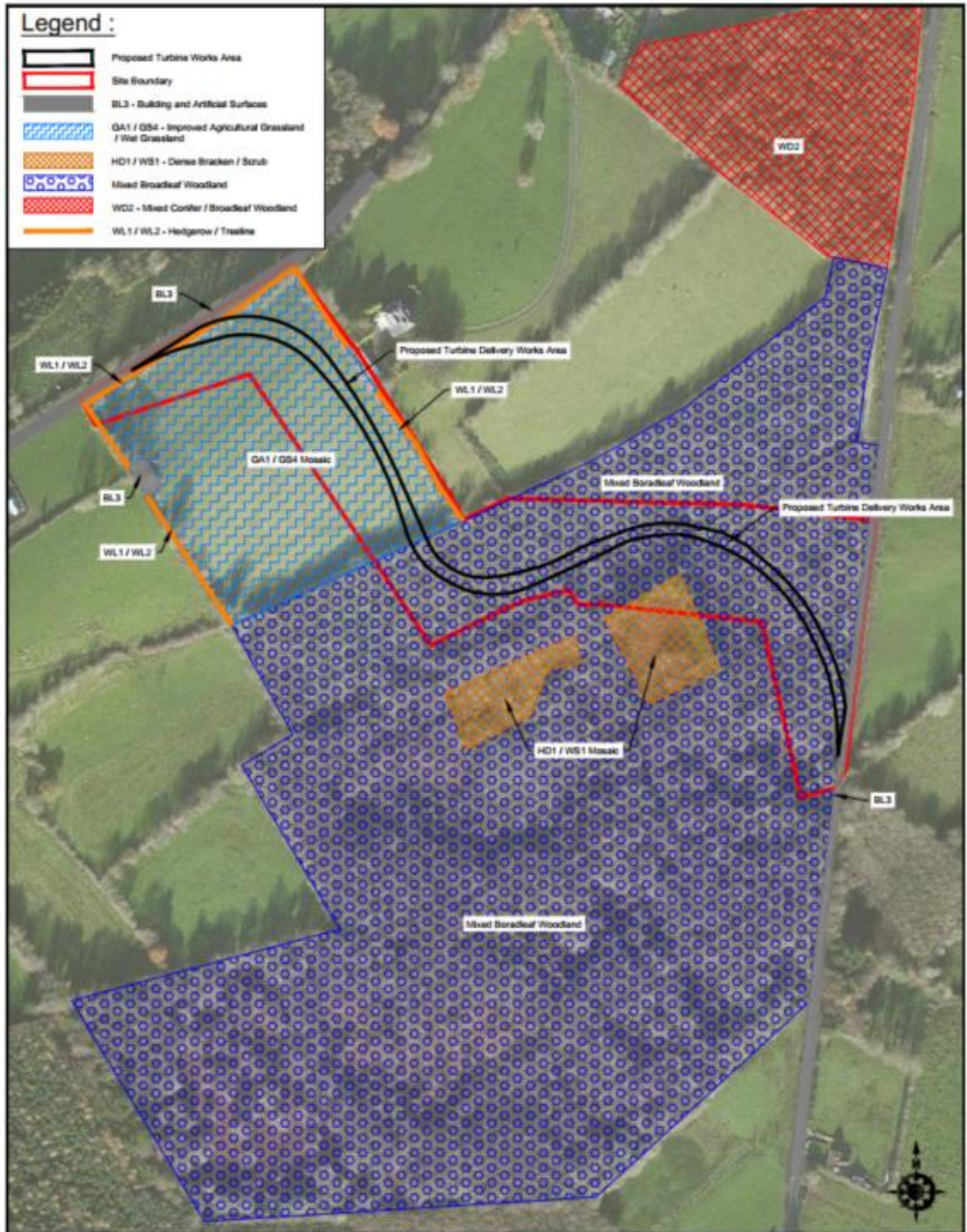


Figure 3: Site 2 Habitat Map

3.3 SITE 3

The existing junction of the R465 and the local road is bound on two sides by private houses. Access will be required to the east of the houses to allow the vehicles approaching from the north to turn onto the local road.

In summary, the access sweeps southerly from the R465 Road (BL3), through wet grassland (GS4), then turns south-easterly, traversing through a field area that is over grown with scrub (WS1). The dominant scrub species include grey willow, creeping willow and bramble. The hedgerow (WL1) along the R465 where the route goes off line, is little more than a vegetated berm, which was cut back prior to the site visit. Dominant species occurring in this habitat include meadow sweet, wild strawberry and bramble, with willows, whitethorn, and whitethorn dominating in better examples of this habitat type. On the field side of the road margin (R456), a deep drainage ditch, generally drains to the southwest, with slow flow during time of survey. Drainage ditches bound the margins of all the field areas, generally draining to the north, towards the regional road.

No Invasive Species were observed within the footprint of the section of access (listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2015). However, a number of stands of Rhododendron occur along the local road, leading to the windfarm site entrance (See Figure 6 below).

The desk study identified a number of documented badger records for the area extending away from the site (mainly to the north). No mammal tracks or resting places, for species such as badger were observed. The habitats present within the footprint of the works are not optimal for roosting bats, but can be used by foraging bat species. The habitats occurring are common in the area.

During time of survey bird breeding-nesting activity had ceased (breeding season had ended). Species observed-heard in the area included hooded crow, dunnock, and wren.

The site is situated within the Owenogarney sub catchment area (WFD_SC_010), ultimately forming the Shannon Estuary North (WFD Catchment Id: 27). No river or stream drains through the site 3. A first order stream (Newtown stream), generally drains to the southwest, approximately 350m to the north-upslope of site 3.

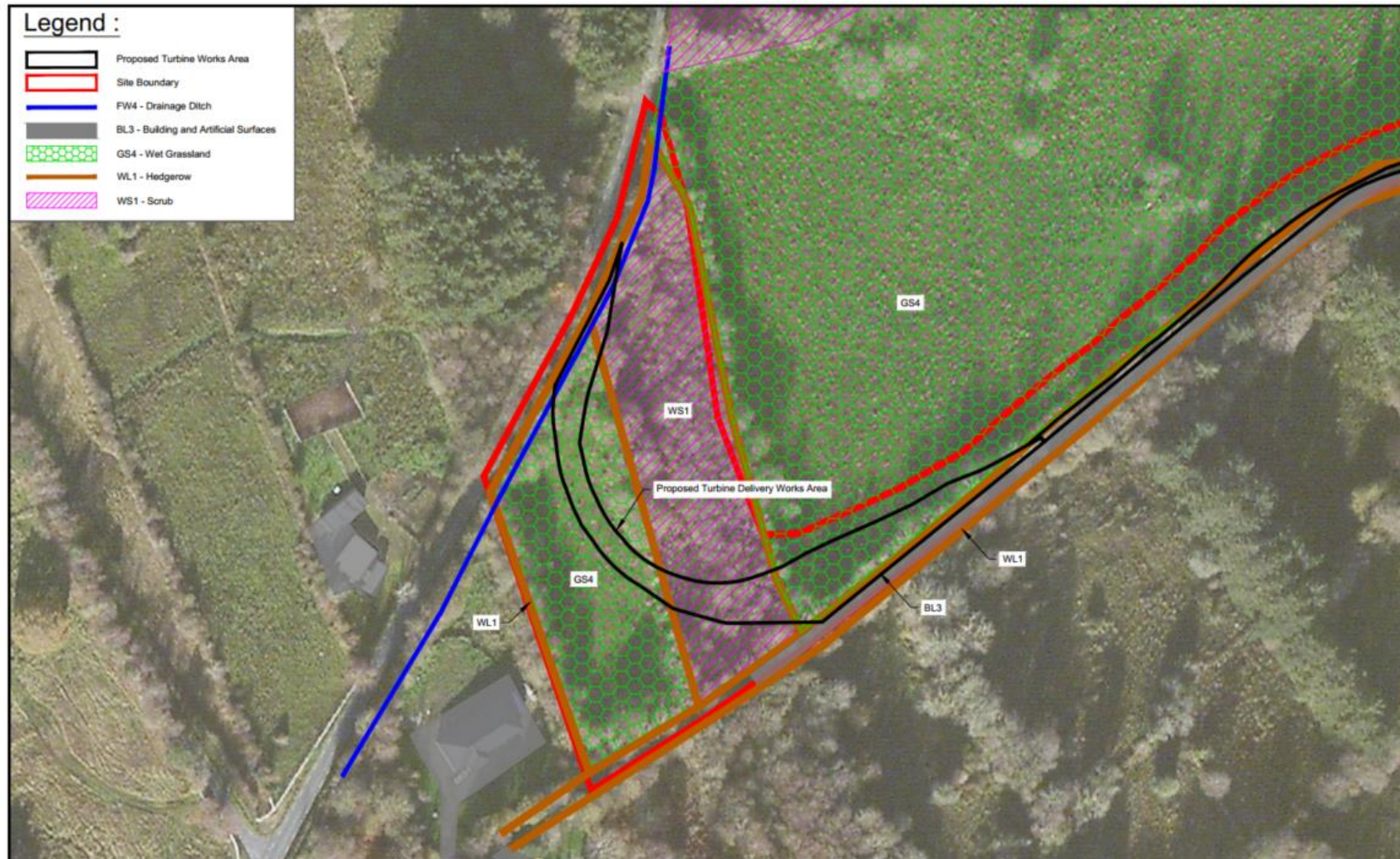


Figure 4: Site 3 Habitat Map

3.4 SITE 4

The road widening works at this location extend from site 3, to the site entrance c. 2km to the east.

Hedgerow and treeline mainly bound the local road leading up to the site. Dominant species include, blackthorn (*Prunus spinosa*), whitethorn (*Crataegus monogyna*), willows, (*Salix* spp.), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), bramble (*Rubus fruticosus*) and gorse (*Ulex europaeus*). Species extending to the hedgerow from the sometimes grassy verges (GS2) include Yorkshire fog (*Holcus lanatus*), Cock's-foot (*Dactylis glomerata*) false oatgrass (*Arrhenatherum elatius*) and annual meadow grass (*Poa annua*). Other species recorded included honey suckle (*Lonicera periclymenum*), cleavers (*Galium aparine*), bracken (*Pteridium aquilinum*), wild strawberry (*Fragaria vesca*), Tutsan (*Hypericum rosaemum*). Ornamental non native species recorded along the route include *Mountbretia*, Fuchsia (*Fuchsia magellanica*) (often bordering houses), and Rhododendron (*Rhododendron ponticum*). Cherry laurel (*Prunus laurocerasus*) bounds the dwelling to the east of the proposed works.

Taller mature trees were also recorded within the hedgerows along this section of route, including mature ash (*Fraxinus excelsior*), oak (*Quercus petraea*), sycamore (*Acer pseudoplatanus*), and more mature willow (*Salix* spp.), beech (*Fagus sylvatica*), and hazel (*Corylus avellana*). Rarely encountered trees include sessile oak, (*Quercus petraea*) and Hazel (*Corylus avellana*).

In some instances the hedgerow occurs in associated with linear stone walls (BL1), where the hedgerow has consumed this linear feature. Sometimes species such as bramble (*Rubus fruticosus*), and willow (*Salix* spp.) formed patches of scrub extending away from the hedgerows.

Sections of well established treeline occur along the turbine delivery route leading up the site. Dominant species include mature ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*). Beech trees (*Fagus sylvatica*) and Sitka spruce (*Picea sitchensis*), likely encroaching from commercial forestry, form this habitat bounding the local road leading up to the site. Drainage ditches (FW4), immediately drain inside the hedgerow-treeline. Extending beyond this on the northern side of the road, there is a mix of scrub emerging from the hedgerow/treeline, or sometimes emerging from the commercial forestry, and semi natural woodland (WN1) emerging from unmanaged field areas.

On the southern side of the road, a deep drain has been installed inside the hedgerow and treeline, beyond this heathland (HH3) dominates sections, with evidence of cattle grazing on the land areas closer to the road. Sections of conifer plantation (WD4) and wet grassland (GS4) also occur.

The western end of this section of turbine delivery route occurs within the Slieve Bernagh Bog SAC (002312). At this location the local road (BL3) is c.3m wide, with a grassy verge (GS2) of approx 0.6m on either side of the road. Inside the drainage ditch (FW4) on northern side of the road, a small strip of scrub (WS1) occurs, dominated by willow and bramble. During the time of survey this area was water logged. Further to the north, a mature broadleaf plantation occurs (WD1), dominated by beech, and is approximately 20m deep. A small field area of wet grassland (GS4), with scrub encroaching occurs towards the eastern end of the SAC.

The southern end of the local road at this location (within the SAC site) is bounded with hedgerow, and some individual trees, with wet grassland further to the south (reverting from improvement).

An unmapped stream (FW1) (not mapped in EPA mapping) generally drains to the north-northeast, with the culvert (to allow for local road) towards the eastern end of the SAC.

No Qualifying Interests (habitats) of SAC occur where the road works are required.

The desk study identified a number of documented badger records for the area extending away from the site (mainly to the north). No resting places, for species such as badger were observed. A large number of deer tracks were observed within, and along the margins of the conifer plantation occurring. The habitats present within the footprint of the works are not optimal for roosting bats, but can be used by foraging bat species. The culvert present is mass concrete structure, with no voids, or crevices for roosting bats.

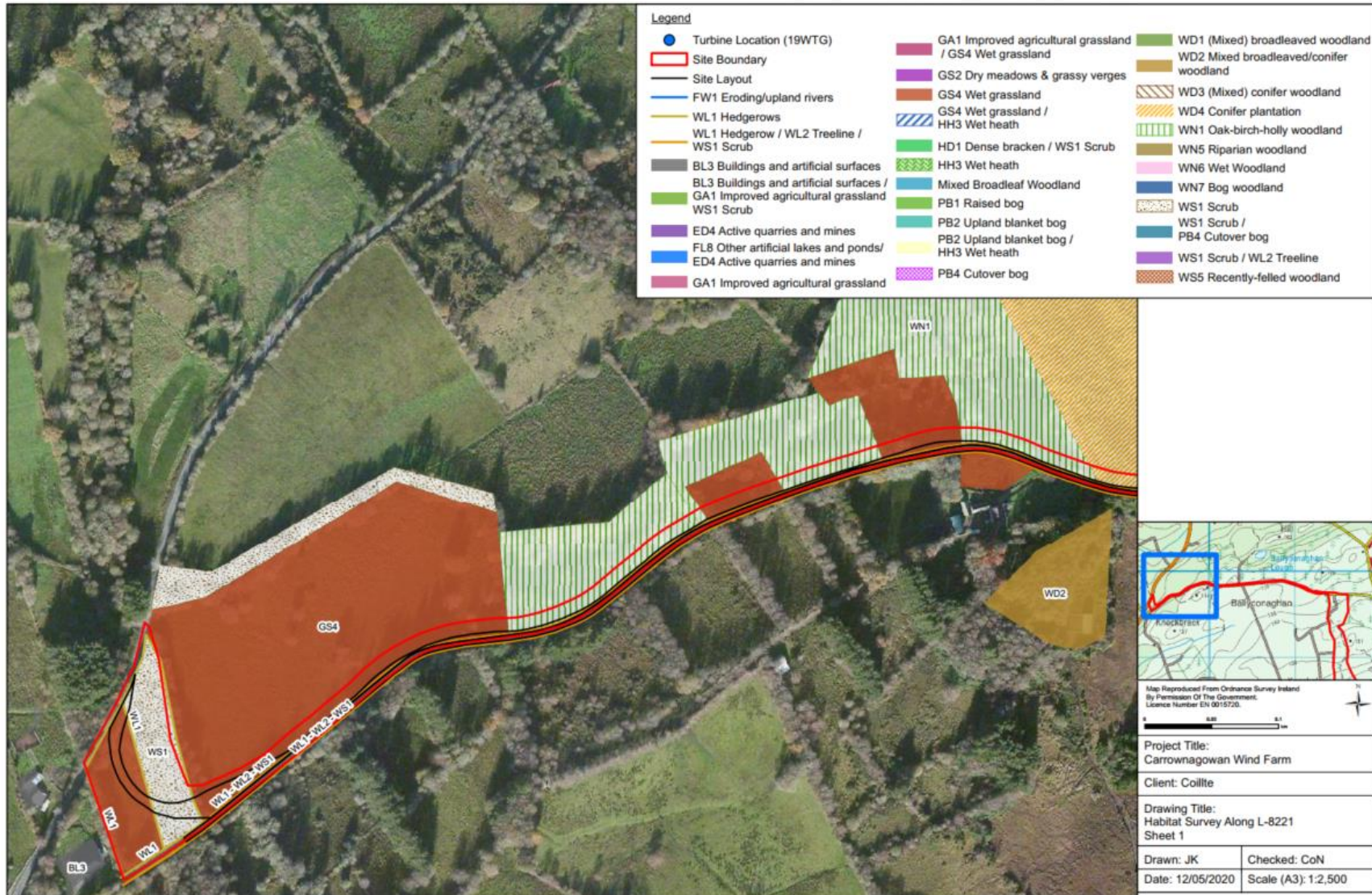


Figure 5: Site 4 Habitat Map (Turbine delivery route leading up to site) (Figure 1 of 4)

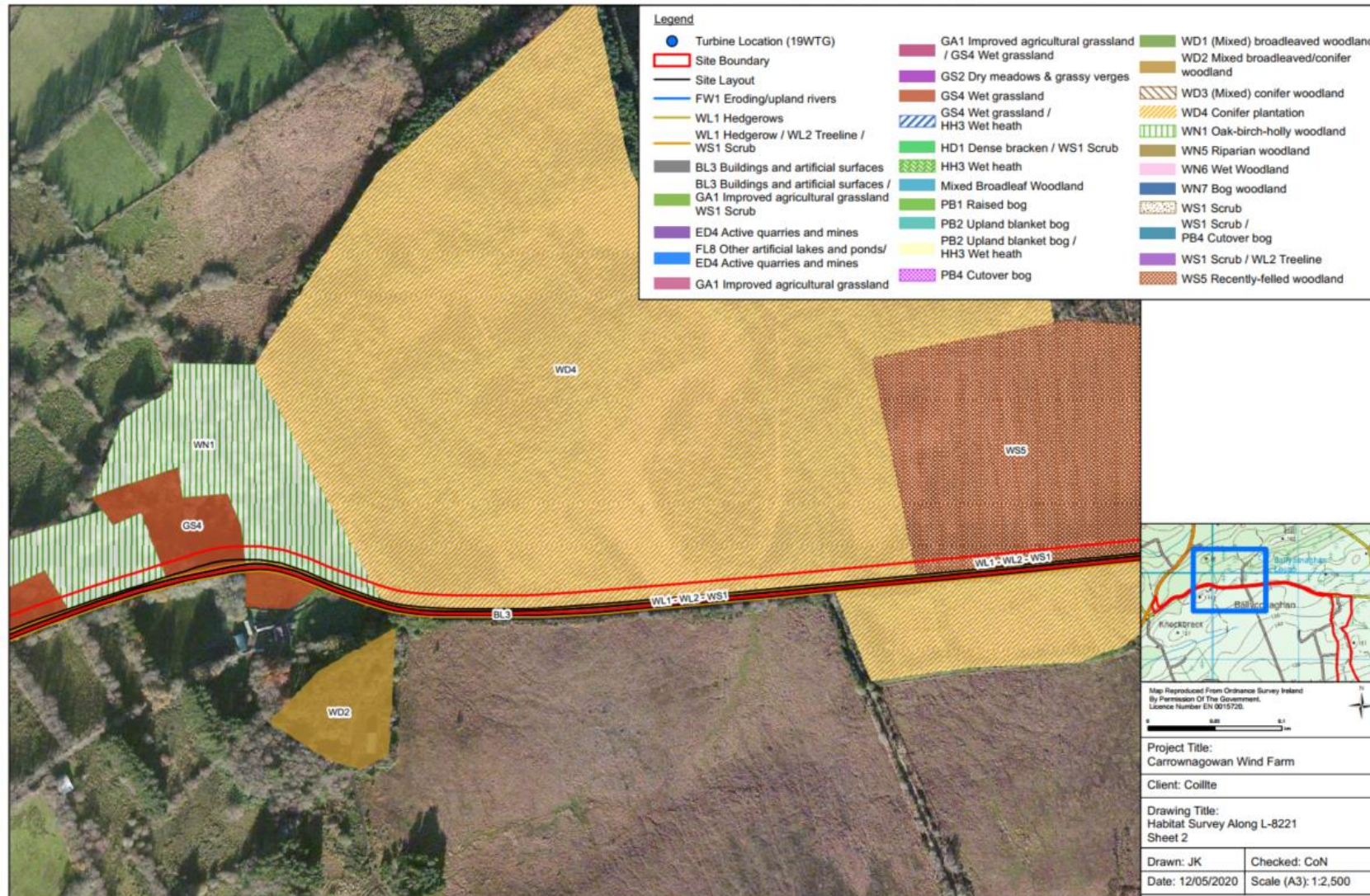


Figure 6. Site 4 Habitat Map (Turbine delivery route leading up to site) (Figure 2 of 4)

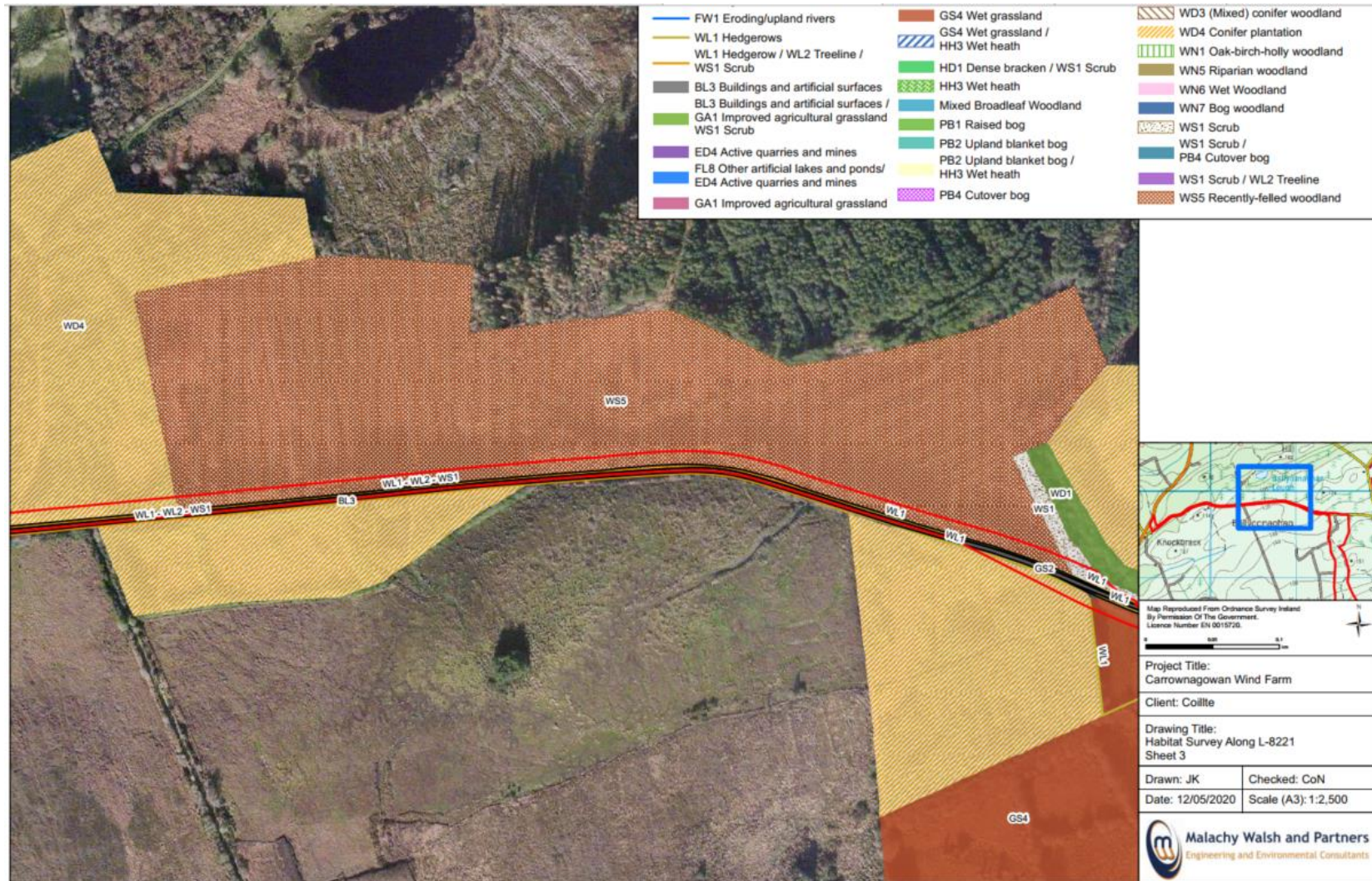


Figure 7. Site 4 Habitat Map (Turbine delivery route leading up to site) (Figure 3 of 4)

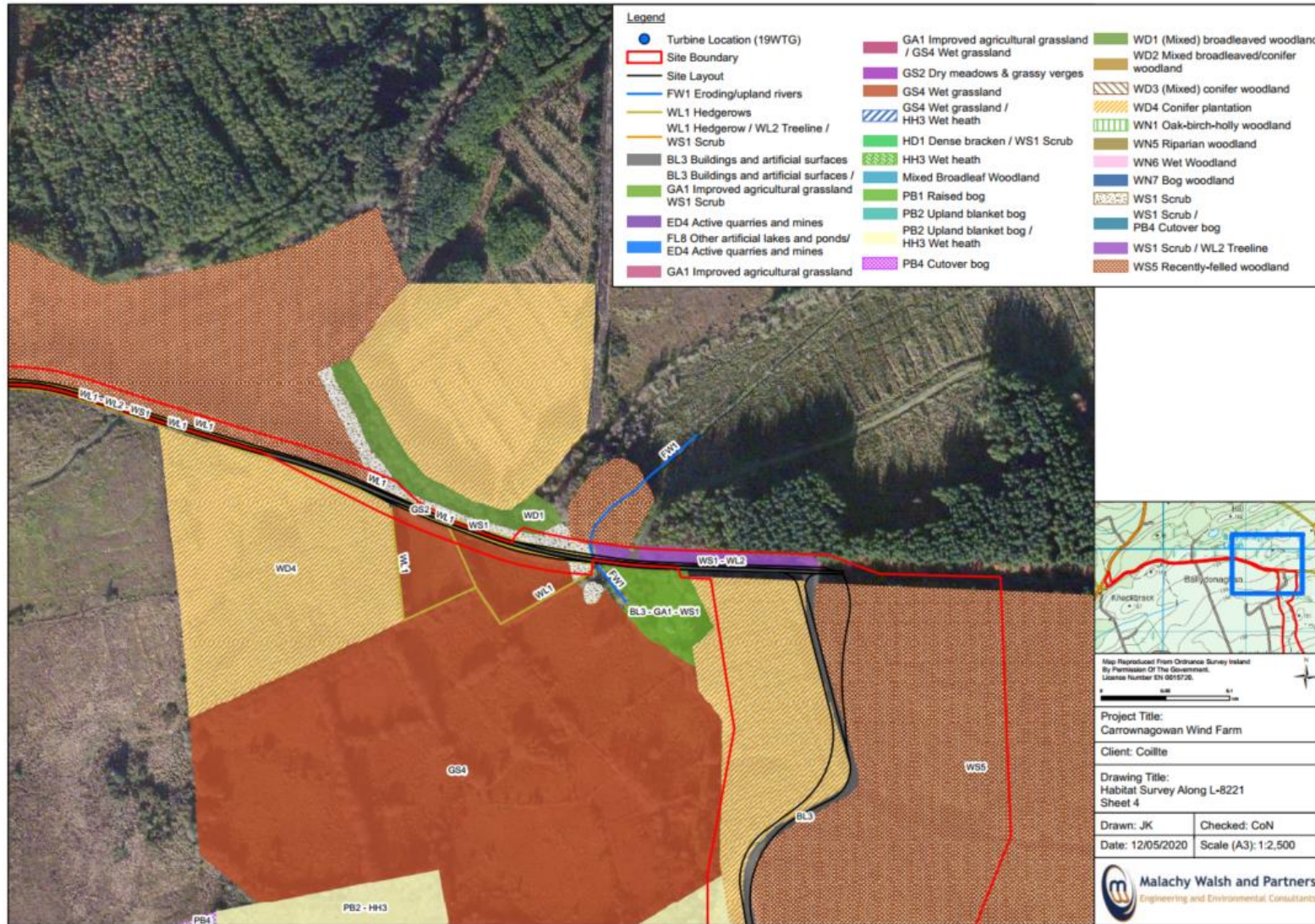


Figure 8. Site 4 Habitat Map (Turbine delivery route leading up to site) (Figure 4 of 4)

3.5 LOCAL ROAD LEADING UP TO SITE FROM R465

A number of stands of rhododendron occur in the hedgerow bounding the local road leading up to the Carrownagowan site, from R465 Regional Road.

The following figure illustrates the infestations;

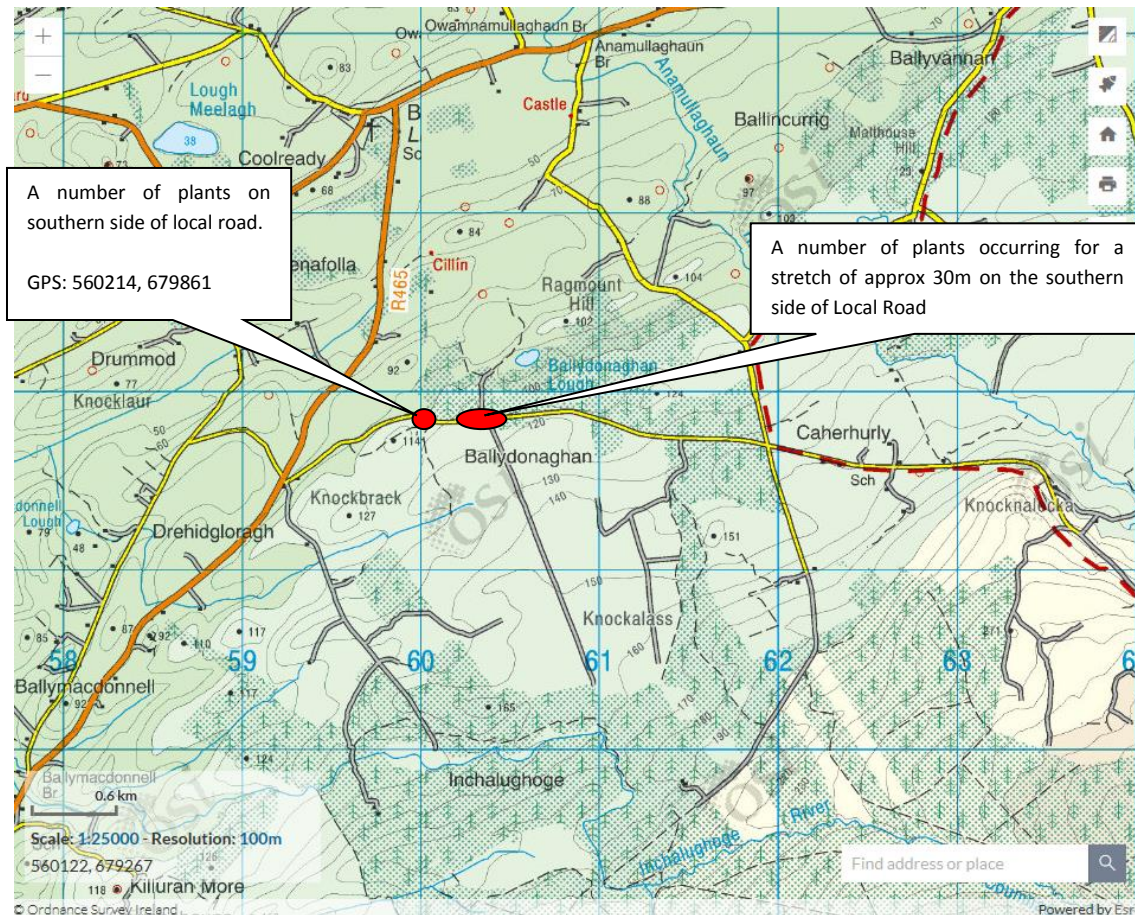


Figure 9: Rhododendron Infestation

4 CONCLUSION

This report described the results of the ecological walkover surveys completed at the delivery route works areas and included habitat mapping, aimed to detect the presence, or likely presence, of a range of protected species of flora and fauna. The report provided baseline information regarding the existing ecology at each of the sites in support of the Biodiversity Chapter.

5 REFERENCES

Fossitt, J. A. (2000)., A Guide to Habitats in Ireland. Kilkenny, The Heritage Council.

Muir et al. (2013). The Mammal Society publication 'How to find and Identify Mammals'

NRA, (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes)

NPWS, (2013). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessment, Volume 2. Version 1.1. Unpublished Report, National Parks and Wildlife Service, Department of Arts, Heritage and Gealtacht, Dublin, Ireland

Smith et al. (2011). Best Practice Guidance for Habitat Survey and Mapping

Scottish Natural Heritage, (2003). Surveying for Badgers followed standard methodology as outlined in Scottish Natural Heritage 'Best Practice Badger Survey Guidance Note'