- Eroding River (FW1)
- Depositing River (FW2)
- Drainage Ditches (FW4)
- Limestone Marl Lake (FL3)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)
- Riparian Woodland (WN5)
- Wet Willow Alder Ash Woodland (WN6)
- Mixed Broadleaved Woodland (WD1)
- Improved Agricultural Grassland (GA1)
- Dry Meadow & Grassy Verges (GS2)
- Marsh (GM1)
- Wet grassland (GS4)
- Buildings & Artificial Surfaces (BL3)
- Spoil and Bare Ground (ED2)

A detailed survey of woodlands within and in the vicinity of the study area was also completed. Detailed results of woodland surveys are provided in Appendix 5A. The results have informed the habitat descriptions as outlined below.

Intake Structure, Flow Control Structure and Diversion Channel

The western extent of the study area begins at the River Deel in the townland of Cartrongillbert. The river is classified as an Eroding river (FW1). The river is fast flowing with no significant growth of macrophyes and little sand or silt at this location. The substrate was dominated by cobbles with some areas of very coarse gravels. The river has regularly dried out for extended periods over at least the last three years of years. The river is shown at the location of the flow control structure in Plate 5.1 with water flowing in it in July 2019. It is then shown in Plate 5.2 in a dry state in May 2020. The river itself was fringed in this area with a line of mature broad-leaved trees with sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), beech (*Fagus sylvatica*), grey willow (*Salix cinerea*), alder (*Alnus glutinosa*) and hazel (*Corylus avellana*) found along the riparian fringe and classified as a Tree Line (WL2) on the left (western) bank and Mixed Broadleaved Woodland (WD1) on the right bank.

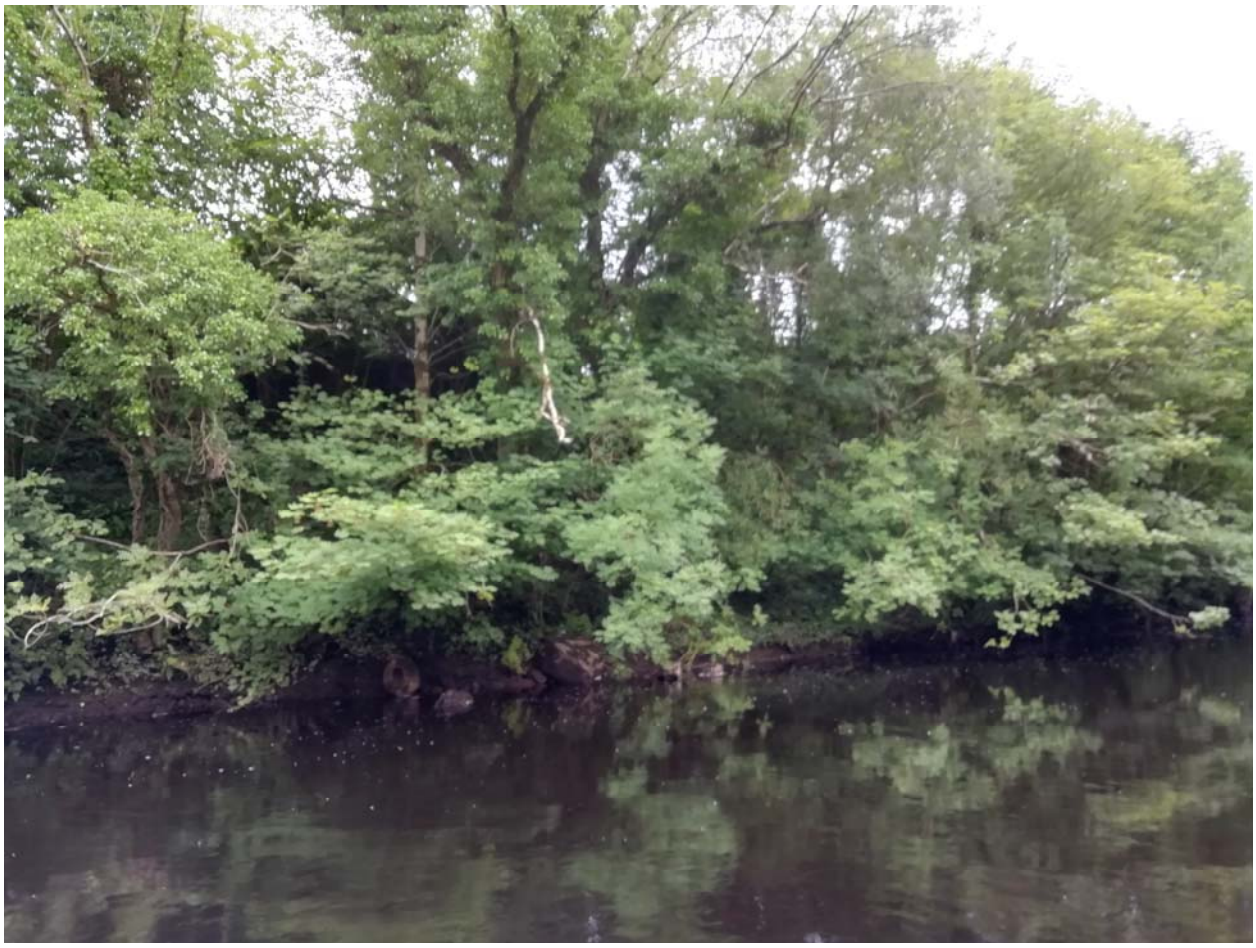


Plate 5.1 River Deel in flow at the location of the flow control structure.

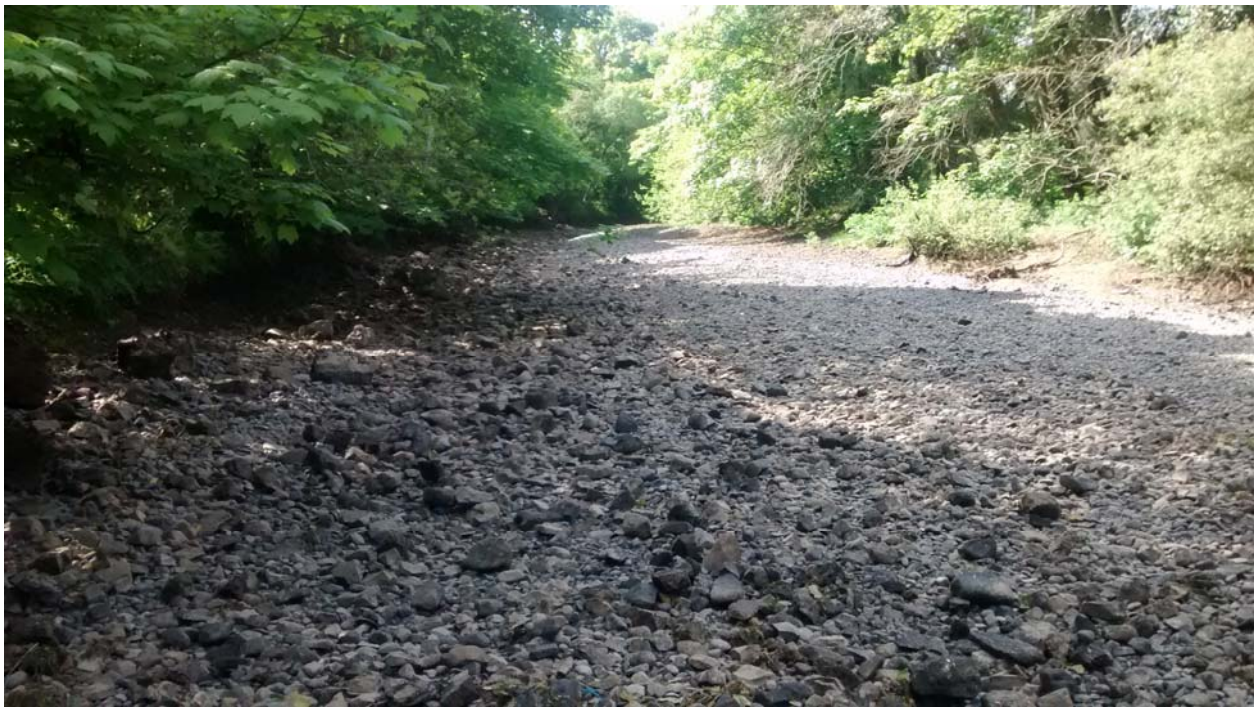


Plate 5.2. River Deel with no flow at the location of the flow control structure.

The flow control structure will be located within the River Deel approximately 100m downstream of the intake weir. In this area, the river is bordered by a Tree Line (WL2) on the western bank, which separates it from a field of Improved Agricultural Grassland (GA1). This tree line is dominated by sycamore, ash and willow species. Works associated with the flow control structure will be located in this field. The tree line is shown as viewed from the field in Plate 5.3. The eastern bank in this area is formed by a steep wooded bank that leads up to the public road. This area is dominated by species including ash, hazel and hawthorn (*Crataegus monogyna*) and with a ground flora of ivy (*Hedera helix*) with hart's tongue fern (*Asplenium scolopendrium*) and the occasional occurrence of species including wood avens (*Geum urbanum*), dandelion (*Taraxicum officinale agg.*) and seedlings of ash, sycamore and hawthorn. This woodland is shown in Plate 5.4 and is classified as Mixed Broadleaved Woodland (WD1) the subject of a detailed habitat assessment as provided in Appendix 5A.

Moving downstream on the River Deel, the river is outside the construction footprint but will be the subject of ongoing maintenance by the OPW as part of the River Moy drainage scheme following construction of the proposed flood relief project. The OPW are currently responsible for drainage maintenance on the River Deel as far up the catchment as the Jack Garrett Bridge in Crossmolina. Following completion of the currently proposed scheme, they will manage the section of the river between the intake weir and the Jack Garrett Bridge. The left (west) bank of the river is fringed with a tree line almost along the entire length between the intake weir and the urban centre of Crossmolina Town. The right bank comprises a steep bank of Mixed Broadleaved Woodland (WD1) at the location of the flow control structure. This continues approximately half way to Crossmolina Town and is regularly cut as part of roadside hedge trimming and to facilitate utility infrastructure. In areas along this section, a fringe of riparian trees has developed in a narrow band at the base of the bank, where silts have been deposited. These fringes are narrow strips that are classified as Wet Willow Alder Ash Woodland (WN6). Evidence of tree cutting and dumping of garden rubbish was evident in this area. The bank and associated riparian strip were the subject of detailed assessment as set out in Appendix 5A – the woodland Assessment. The northern section of the right bank, as it moves into Crossmolina, is closely bordered by the public road but has a tree line along most of its length until it reaches the riverside park in Crossmolina itself.

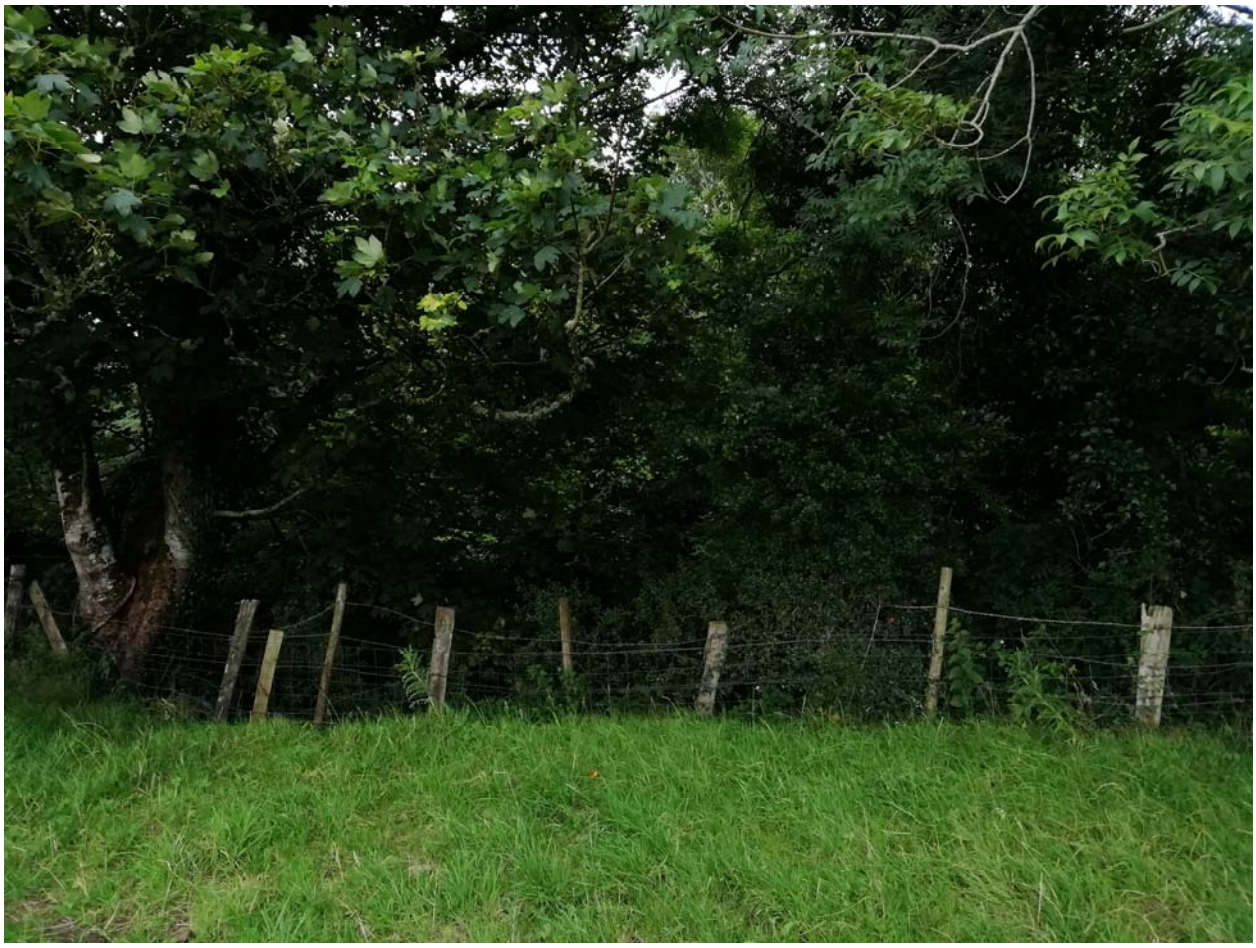


Plate 5.3. Tree Line in the vicinity of the flow control structure, as viewed from the field to the west.

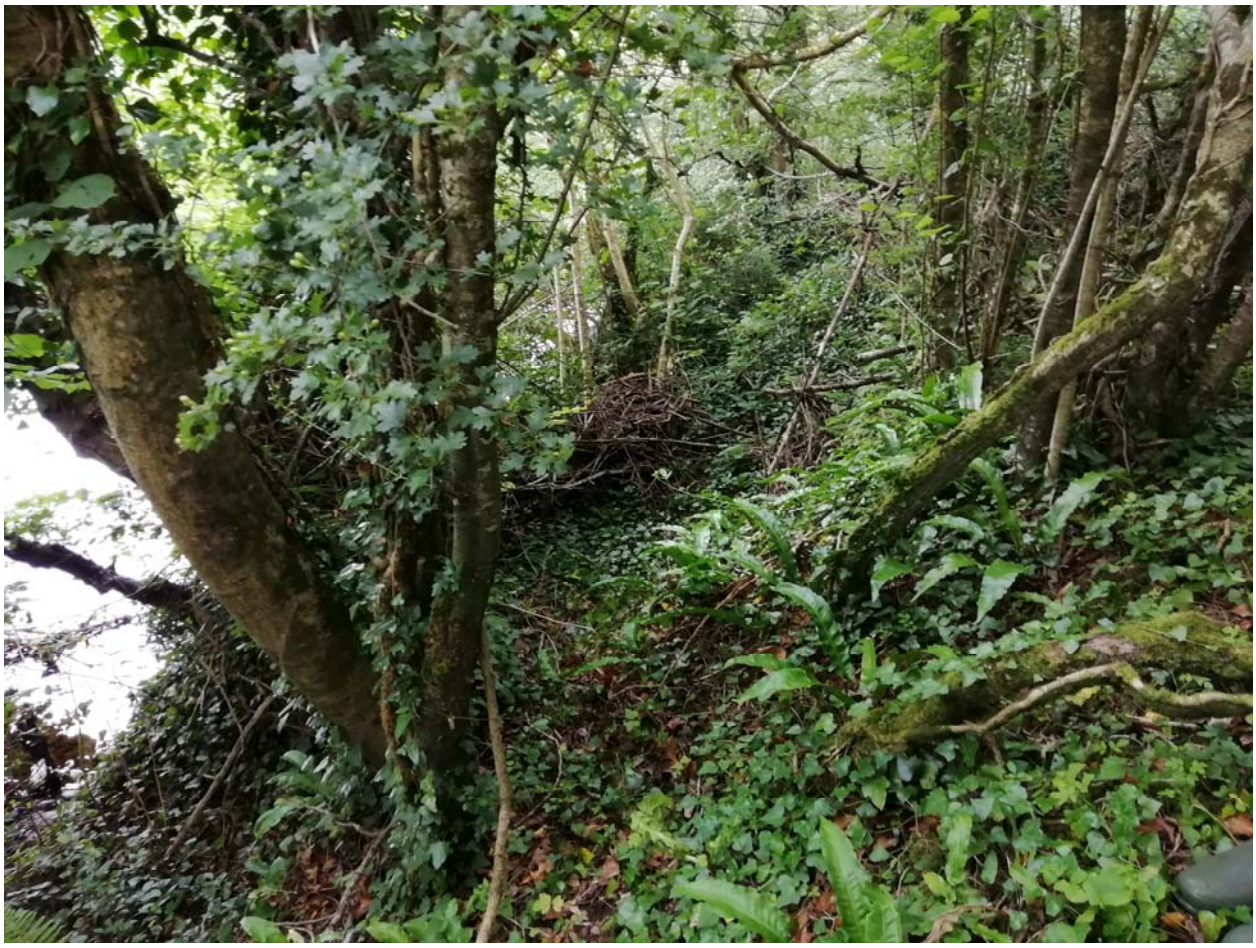


Plate 5.4. Mixed Broadleaved Woodland on the eastern bank of the river by the flow control structure

The proposed intake structure and associated works border the river for approximately 150 metres with the intake structure located outside the SAC and in the adjacent field. The section of bank within the study area supports a wide bank of deposited silty material with growth of plant species including marsh marigold (*Caltha palustris*), cow parsley (*Anthriscus sylvatica*), and Meadowsweet (*Filipendula ulmaria*) (Plate 5.5). This wide bank is separated from the adjoining lands by an old earthen bank, on top of which is a Tree Line (WL2), dominated by Sycamore and Ash and used to form the boundary with the adjacent agricultural field. This marks the boundary of the River Moy SAC. This field was in agricultural production until at least 2000 (aerial photography) but now forms part of the grounds of a dwelling house. There were no trees within the field in 2005 when the house was under construction (or recently constructed) but in the intervening years, scrubby woodland has grown up adjacent to the old field boundary. This is classified as Wet willow-alder-ash woodland (WN6) but is very scrubby and includes only immature trees with scrub encroaching into the field/garden and did not correspond to Annex I woodland as they represent the recent colonisation of a field of Agricultural Grassland (GA1) with willow scrub and immature woodland. The intake structure will be located in this area of recently established scrub and woodland (Plates 5.6 & 5.7). A narrow section of Mixed Broadleaved Woodland (WD1) is located between the local road and the River Deel at the northern end of the intake structure and continues to the flow control structure and beyond. A small stand of Japanese Knotweed (*Fallopia japonica*) is located

adjacent to the public road at this location. It is shown on Figure 5.3 and is currently under active management by the OPW through annual herbicide treatment.

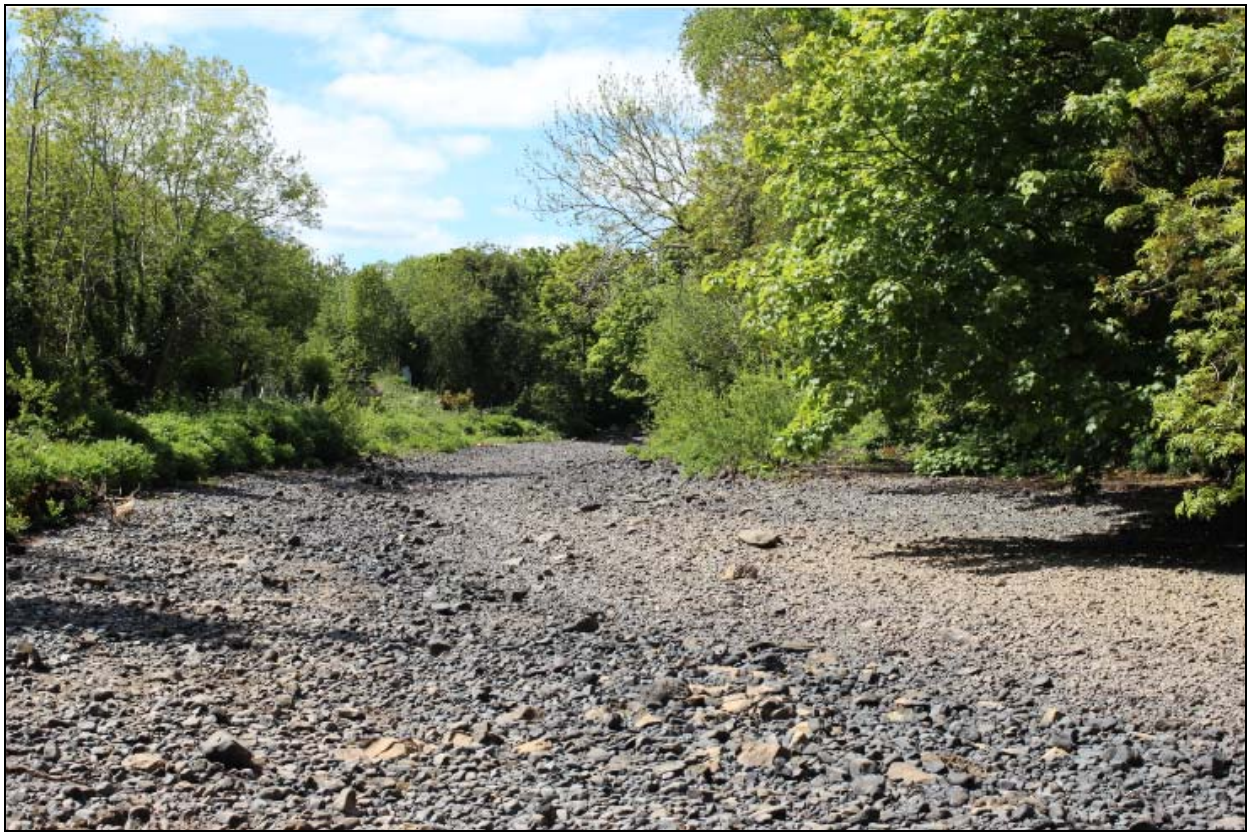
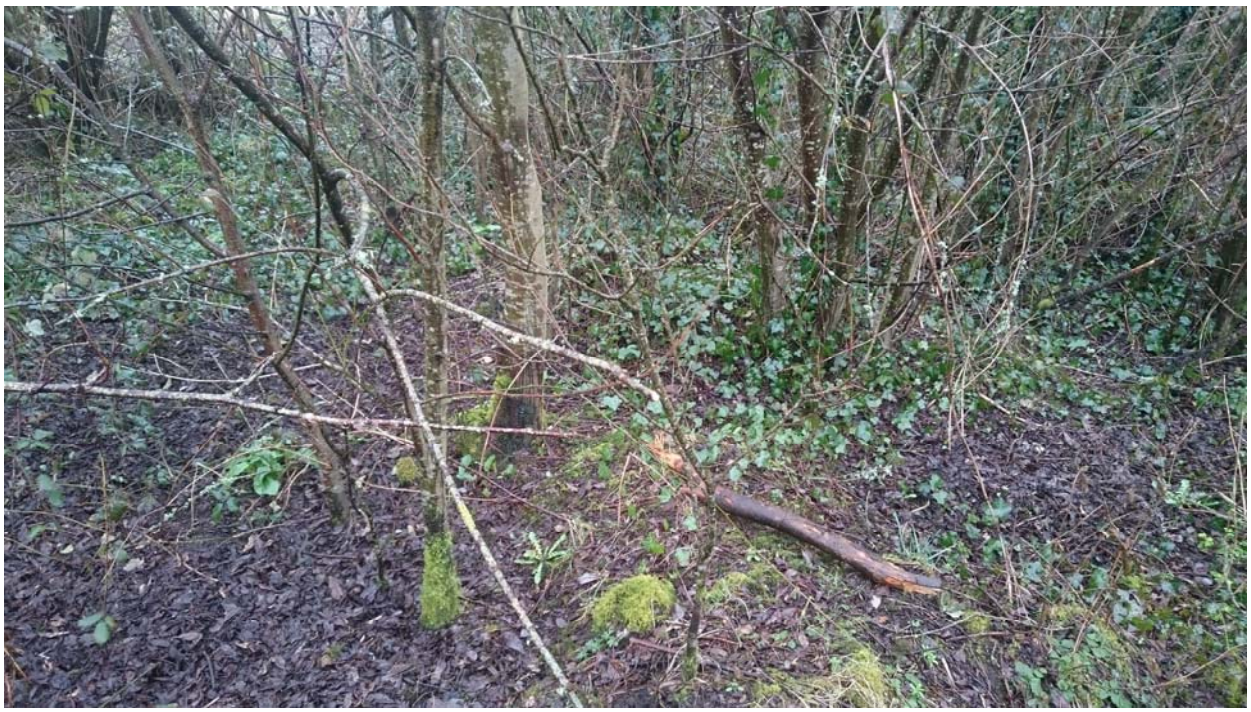


Plate 5.5 River Deel in dry conditions at the location of the intake structure



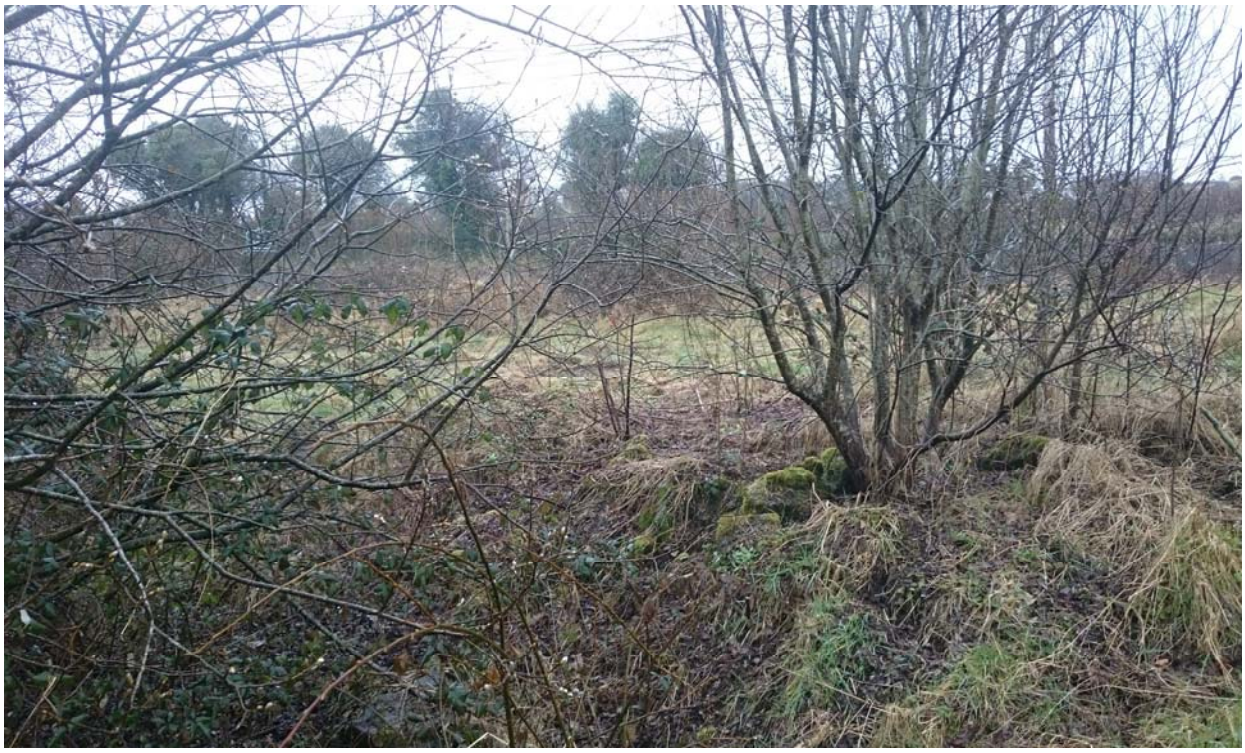


Plate 5.6 Wet-willow-alder-ash (WN6) woodland which has recently encroached on to Dry-meadows and grassy verges grassland (GS2) field .

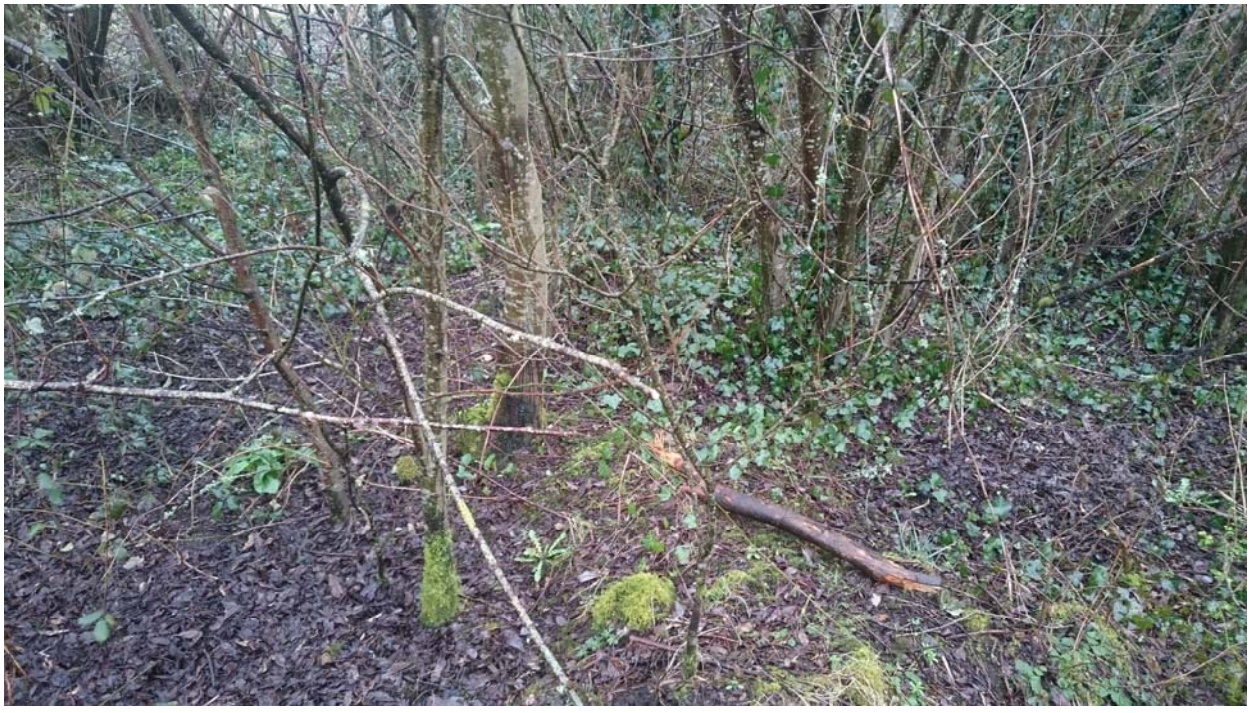


Plate 5.7 .Immature woodland where the intake structure is proposed

Moving south-east, the proposed scheme footprint will consist of the channel and access road for the rest of its length. The study area encompasses both Cartrongillbert and Mullenmore North townlands in this

location and is dominated by species-poor Wet grassland (GS4) and Improved agricultural grassland (GA1) (Plates 5.8 & 5.9). Hawthorn (*Crataegus monogyna*) Hedgerows (WL1) demarcate the field boundaries and a small area of hawthorn dominated Scrub (WS1) with gorse (*Ulex europeaus*), elder (*Sambucus nigra*) and bramble (*Rubus fruticosus* agg.) was found along one of the field boundaries. Other small patches of bramble Scrub (WS1) were recorded in scattered locations adjacent to field boundaries. Moving to the east, small man made drainage ditches were recorded running parallel to hedgerows. Stands of the non-native invasive species Japanese Knotweed (*Fallopia japonica*) were recorded on the approach to and adjacent to the R315 (Plate5.10).

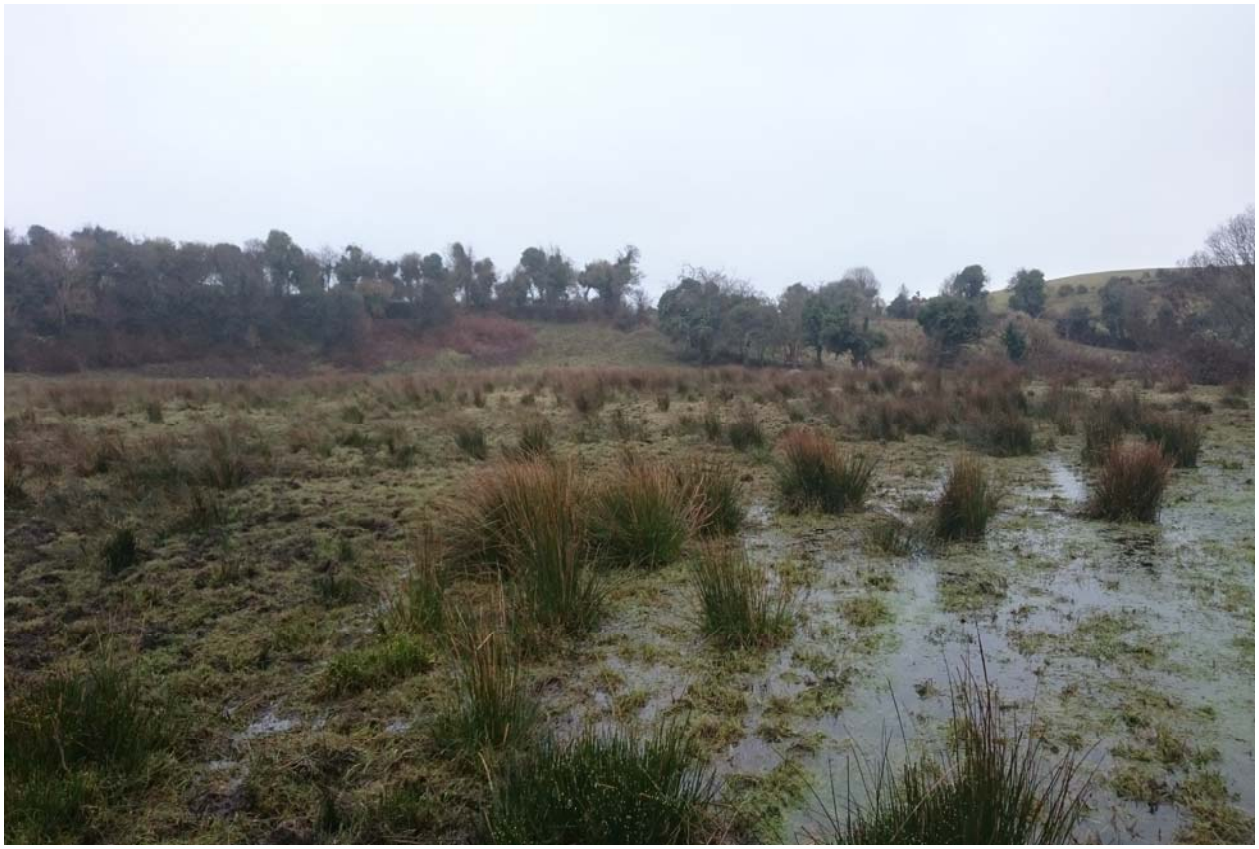


Plate 5.8 Wet grassland (GS4) demarcated with hedgerows (WL1) and scrub (WS1) where proposed diversion channel will be constructed.

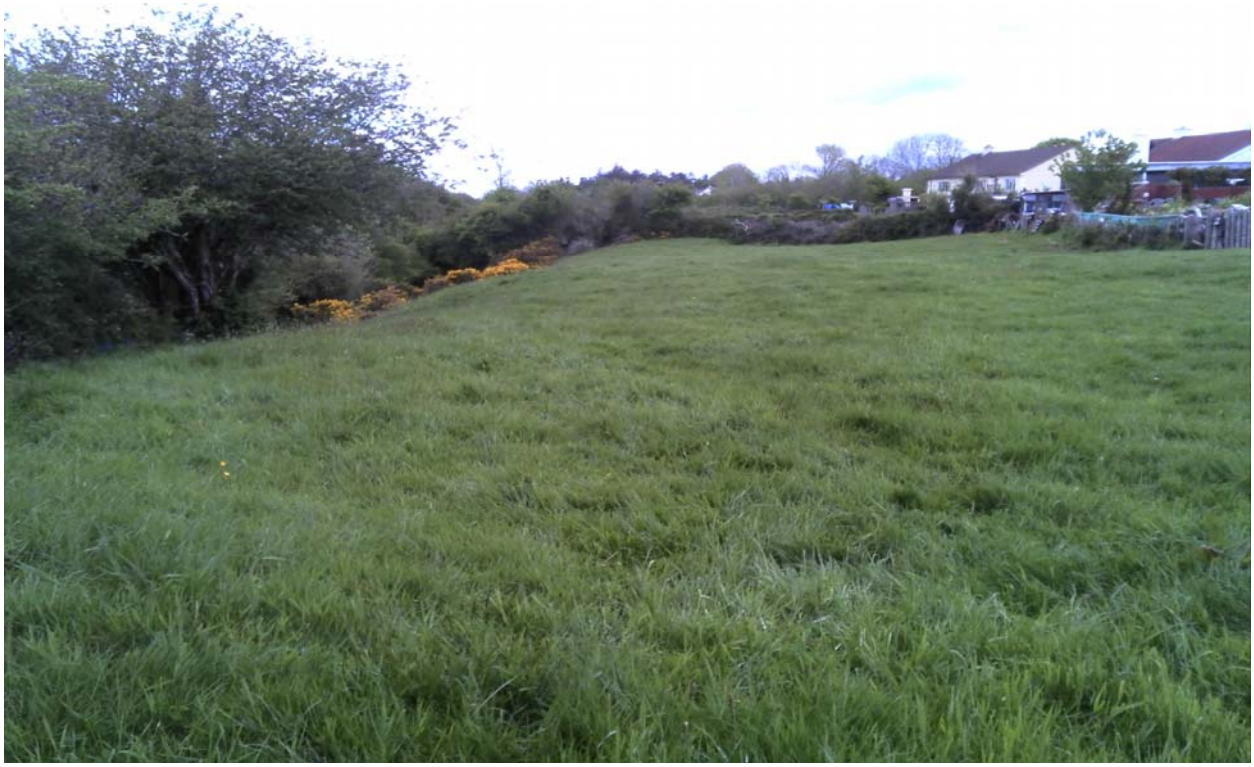


Plate 5.9 Improved agricultural grassland (GA1) within the final section of the diversion channel footprint

Plate 5.10. Japanese Knotweed adjacent to the R315

Continuing eastward the proposed channel crosses the R315 in the townland of Mullenmore North and turns south-east traversing a local access road (BL3), and fields of Improved agricultural grassland (GA1) and semi-improved Wet grassland (GS4). The proposed channel ends at this location, but a small dry drain, connects this location into a large spring that is described below.

Washlands

The proposed washlands area comprise a complex of habitats incorporating wet woodland, springs and the associated Mullenmore Stream, Wet Grassland and Marsh habitats. No physical works are proposed in this area but water will be diverted from the bypass channel over these lands to Lough Conn during flood events. Much of the washland area is already flooded regularly by Lough Conn for long periods.

Spring fed ponds (FP1), as evident from upwelling water, provide the sources of the river and are surrounded by wet woodlands. Aquatic vegetation recorded within the springs included duckweed (*Lemna* sp.), broad-leaved pondweed (*Potamogeton natans*). yellow iris (*Iris pseudacorus*) and branched bur-reed (*Sparganium erectum*), horsetails (*Equisetum* spp.), bog bean (*Menyanthes trifoliata*) marsh marigold (*Caltha palustris*), water mint (*Mentha aquatica*) and sedges (*Carex* spp.) were recorded from the emergent vegetation (Plate 5.11). No tufa formations were observed at these springs.

The upper branches of the river are partially eroding for short sections (Plate 5.12) but they quickly merge to form a watercourse that has been classified as a Lowland depositing river (FW2) with flat gradient, sluggish flow and silty substrate. This channel spends much of its time submerged under flood waters from Lough Conn.

The short eroding sections of the river were devoid of aquatic plants and emergent vegetation with only the aquatic moss *Fontanilis* sp. recorded. The following species were recorded from the lower depositing section of the river: yellow iris, branched bur-reed, horsetails, bog bean, marsh marigold, water mint. Floating bur-reed (*Sparganium emersum*) was recorded in-stream (Plate 5.13).

Plate 5.11. Lower Mullenmore Spring surrounded by emergent vegetation and woodlands

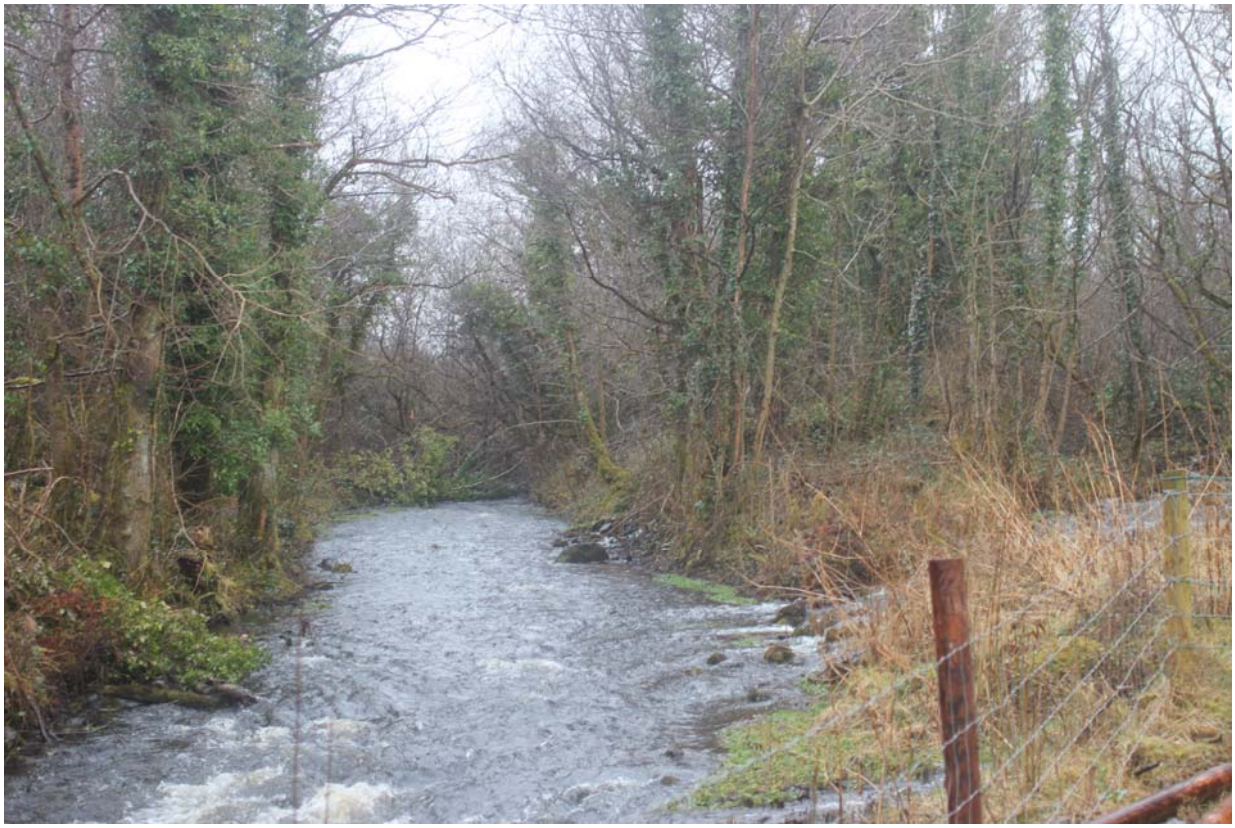


Plate 5.12. Short Section of Eroding River close to Mullenmore Springs

Plate 5.13 Lower Reaches of the Mullenmore Stream

The woodland within the wash-lands was classified as Wet willow-alder-ash (WN6). The woodland was dominated by grey willow, alder, ash with occasional sycamore. Ground vegetation included meadowsweet (*Filipendula ulmaria*), nettle (*Urtica dioica*) and yellow iris. These areas of wet woodland were found to correspond to the Annex I Priority Habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)* [91E0] (Plate 5.14).

The Wet grassland (GS4) located to the east of the R315 is heavily grazed by sheep. Wet grassland recorded to the east of this point and located to the south of the river are dominated by dense swards of soft rush (*Juncus effusus*). To the north of the river, fields are improved and subject agricultural activity.

To the north of the river on the approach to the shores of Lough Conn, an area of Marsh (GM1) was recorded (Plate 5.15). A detailed botanical assessment of this habitat was carried out in July 2019 and is provided in Appendix 5E. A drain forms western boundary of the marsh habitat and common reed (*Phragmites australis*) is dominant in this area. Species recorded from the marsh included water mint (*Mentha aquatica*), bog bean (*Menyanthes trifoliata*), marsh pennywort (*Hydrocotyle vulgaris*), lesser spearwort (*Ranunculus flammula*), marsh marigold (*Caltha palustris*), bird's-foot-trefoil (*Lotus corniculatus*), (Lychnis flos-cuculi), silverweed (Potentilla anserina), common spike-rush (*Eleocharis palustris*) and marsh ragwort (*Senecio aquaticus*), self-heal (*Prunella vulgaris*), marsh cinquefoil (*Comarum palustre*), lesser spearwort (*Ranunculus flammula*) and water horsetail (*Equisetum fluviatile*). Sedges and grasses including common cottongrass (*Eriophorum angustifolium*), common sedge (*Carex nigra*), bottle sedge (*Carex*

rostrata), star sedge (*Carex echinata*), common yellow sedge (*Carex viridula ssp. oedocarpa*), tufted sedge (*Carex elata*) were present but did not dominate the habitat. This habitat lacked a well-developed, diverse bryophyte layer and Calliergonella cuspidata was the dominant bryophyte species *Calliergonella cuspidata*, with occasional *Climacium dendroides, Plagiomnium* spp. also present.

Moving to the north, the marsh grades into a relatively species rich Wet grassland (GS4). Lough Conn is classified as a Limestone Marl Lake (FL3) and is located at the eastern end of the washlands. The Mullenmore Stream discharges into this lake.

Plate 5.14. Annex I Alluvial Woodland adjacent to the Mullenmore Stream and Lough Conn

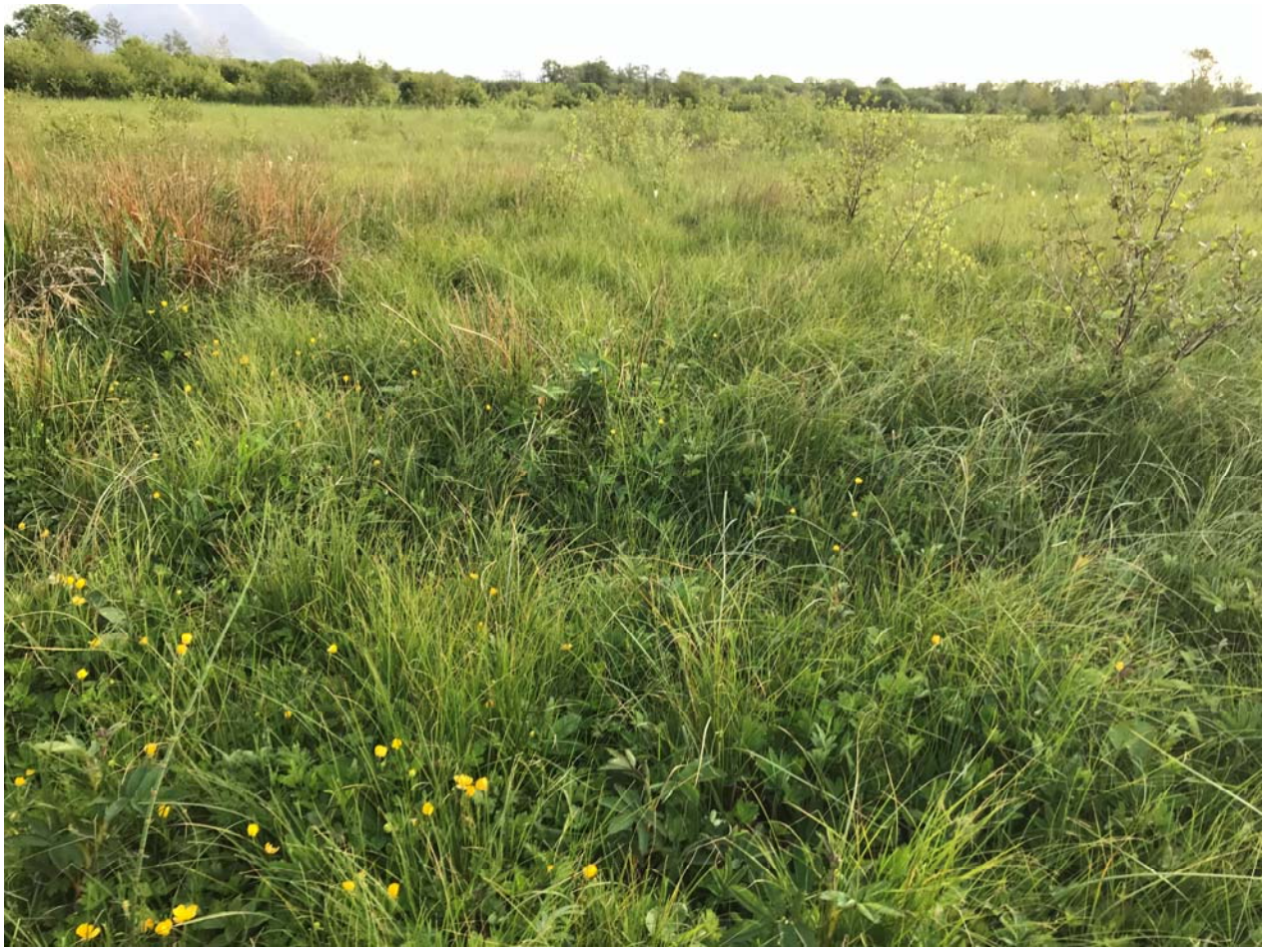


Plate 5.15. Marsh (GM1) grading into wet grassland (GS4) adjacent to Lough Conn

In addition to the above, the entire River Deel channel between Crossmolina and Lough Conn was the focus for an ecological walkover survey. This section of the river, whilst not directly affected by the proposed works, forms part of the benefitting lands and areas that previously flooded could potentially now no longer flood. The main aim of the study was to identify areas of woodland along the river and to identify if these conformed to Annex I Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]. These surveys were undertaken in advance of some scheduled maintenance works by the OPW on the channel. This work is currently ongoing and has been assessed in combination with this flood relief scheme. The woodlands that were identified during the walkover surveys were further assessed in a dedicated woodland survey that is provided in Appendix 5A. A map of the habitats located between the Jack Garrett Bridge in Crossmolina and Lough Conn as mapped from the OPW habitat database is provided in Figures 5.4a and 5.4b. The Wet Willow Alder Ash Woodland (WN6) that was recorded in this section of the River was classified as Annex 1 Alluvial Forests. The location of this habitat is provided in Figure 5.5.

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