Appropriate Assessment Stage 1 Screening for Giant hogweed Management in Co. Tipperary

April 2026

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1. INTRODUCTION

The Farming for Water (FFW) EIP_AGRI Project in County Tipperary, proposes to manage the invasive alien plant species (IAPS) Giant hogweed (*Heracleum mantegazzianum*) on four sub basins in County Tipperary. The works aim to manage the 'spread and dispersal' of Giant hogweed that has been recorded growing along the watercourses, in tandem with the Management Plan. INVAS Biosecurity Ltd. (INVAS) was commissioned to produce an Appropriate Assessment (AA) Screening report to assess the potential adverse effects of the project (alone and in combination with other plans or projects) on the Natura 2000 network. The AA Screening will determine whether the project, is likely to have significant effects on a Natura 2000 site in relation to the site's conservation objectives. Where the significant effects are likely, uncertain or unknown at the screening stage, a NIS is required.

1.1. INVAS Biosecurity Company Background

INVAS Biosecurity Ltd. is an Irish company that uses the most up-to-date applied research and science to inform its environmental consultancy and contracting services. The team includes experienced contractors and world-renowned scientists. The company specialises in the control and management of harmful invasive species on land and in water, and on developing materials and methods to conduct and promote best biosecurity practice by all. Clients include State and semi-State organisations, cross-border bodies, Local Authorities, Consultants, Contractors, among others. Staff are currently involved with a number of national and multi-national European projects, all with a primary focus on the judicious management of invasive species.

Dr. William Earle has a Ph.D. in invasive species management and is working full-time with INVAS since 2016. William has developed and implemented site-specific Management Plans for invasive terrestrial and aquatic plant species, including Knotweeds (Bohemian, Giant, Japanese and Himalayan), Giant hogweed, Himalayan balsam, Rhododendron, *Lagarosiphon* and Nuttall's pondweed at sites across Ireland. He was a cluster lead in an EU funded project "Invasive alien species (IAS): improvement of understanding and communication". He is responsible for IAS, macrophyte and ecological field surveys using drone and GPS technology. He oversees GIS mapping and map production in INVAS, as well as the preparation of site survey reports and Appropriate Assessments. He has recently completed several AA's for a range of clients, with some of those produced including;

- AA Screening & Natura Impact Statement for the Suileen River Enhancement Plan in the Corrib Catchment

- AA Screening & Natura Impact Statement for the Garracloon River Enhancement Plan in the Moy Catchment
- Appropriate Assessment Screening for the Management of *Lagarosiphon major* in Lough Corrib
- Appropriate Assessment Stage 1 Screening for Wild Salmon and Sea Trout Tagging Scheme (Amendment) Regulations 2020 & Appropriate Assessment Stage 1 Screening for Conservation of Salmon and Sea Trout (Draft Nets and Snap Nets) Bye-law, 2021
- Appropriate Assessment Stage 1 Screening for Invasive Alien Plant Species Management on the Owenea River.

1.2. Legislative context

The Habitats Directive (92/43/EEC) and the Birds Directive (2009/147/EC) provide a legal framework for Europe's nature conservation policies. In Ireland, both Directives have combined to established an ecological network of protected areas, known as Natura 2000 sites, which require special consideration when planning projects or developments. The network consists of Special Protection Areas (SPA), for the protection of Annex I birds, regular migratory birds and their habitats and Special Areas of Conservation (SAC) for the protection of Annex I habitats and Annex II flora and fauna, other than birds. Also included as part of the network are candidate Special Areas of Conservation (cSAC) and proposed Special Protection Areas (pSPA).

Article 6 (3) of The Habitats Directive sets out the requirement for Appropriate Assessment in relation to Natura 2000 sites for any plan or project that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. An Appropriate Assessment is an evaluation of the potential effects of the proposed plans, on their own or in combination with other projects, on the habitat types and species protected by the Natura 2000 network.

> *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan*

or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

Article 6 (4) of The Habitats Directive forms part of the procedure of assessment and possible authorisation, by the competent national authorities, of plans and projects likely to affect a Special Area of Conservation (SAC), a Special Protected Area (SPA) or a Site of Community Importance (SCI).

'If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest'.

Each stage of the appropriate assessment method is a source of origin for the next stage. Each decision made will influence the outcome of the assessment, so a careful approach to the documentation of the results at each stage is needed for sufficient traceability and transparency of each decision. The AA will provide a detailed investigation into the possible risks that a proposed plan or project may have on a Natura 2000 site, with respect to its objectives for conservation. The aim of an AA is not to prohibit a project, plan or activities. An AA is to address any concern for possible threats that a project or plan may have to Natura 2000 sites, with Article 6(3) at the forefront of each decision in each stage, this includes any decision relating to funding and other supports.

1.3. Stages

The European Commission's methodological guidance promotes a four-stage process, as set out below, to complete an Appropriate Assessment:

• Stage 1 – Screening for Appropriate Assessment

Stage 1 involves determining whether a project or plan, individually or combined with another, requires an AA screening. An AA screening is a thorough impact assessment that identifies whether a project or plan will have any effect on a Natura 2000 site, relating to the tests of Article 6 (3). If a project or plan is considered to have significant or possibly significant effects, or it is uncertain whether the Natura 2000 site will be affected, an AA screening will be necessary with the process proceeding to stage 2. Modification of the AA screening can only be done in the circumstances that the impact on the Natura 2000 site can be prevented by doing so. If the project or plan is deemed to have no risk of impact on the site, full evidence and justification must be provided.

• Stage 2 – Appropriate Assessment

The AA requires a description of the Natura 2000 site(s) that could be affected, with data, information, and analysis of the possible effects on the site, provided in a Natura Impact Statement (NIS). This AA must also include measures that can be taken to reduce or prevent any possible impacts on the site. There is no defined method for the AA, but it must be conducted based on scientific evidence and methods. The NIS must be prepared by ecological specialists and with input from other relevant experts such as hydrologists or engineers. The NIS must be prepared for advocate of the project or plan to submit to a capable authority for review. The capable authority proceeds with the AA after successful review of the NIS. The project or plan will have to be stopped or it will be required to proceed to stage 3 if it cannot avoid or mitigate the impacts on the Natura 2000 site.

• Stage 3 – Alternative Solutions and

Alternative solutions to the project or plan are reviewed in this stage. These alternatives may allow the project or plan to be carried out with no significant effects to the Natura 2000 site. If any alternative is considered, the proposal must revert to stage 2 of the appropriate assessment. The alternative must be reviewed before the test of Article 6(4) is carried out. The project or plan must be abandoned if no alternatives reduce or avoid the risk on the Natura 2000 site. If the negative impacts on the site can be completely avoided, the project or plan can be approved for progression.

• Stage 4 – The 'IROPI Test' (Imperative Reasons of Overriding Public Interest)

If the project or plan will have no harmful effects on the Natura 2000 site, it can now move on to be authorised by planning officials to decide on the approval or refusal of the project or plan.

Imperative reasons of overriding public interest, there are no alternatives that are less damaging and the identification of actions that will offset the possible damages are the only exceptions for the approval of a project or plan, if there is still a threat to the conservation of the Natura 2000 site. The proposal must then go through the steps of Article 6(4). These extra measures are taken for special protection of the habitats and species listed in Annex I. IROPI reasons include concerns about public health and safety, or importance for the environment. Reasons that are not included here must be decided by the commission, with any measures that will compensate the damage to be approved by the minister.

2. PROJECT DESCRIPTION

2.1. Background

The project is in partnership with Tipperary County Council, the local community, farmers and other stakeholders are working to develop a remedial action plan to control the spread Giant hogweed and work towards its eradication. EIP-Agri projects are locally led and collaborative, addressing issues related to natural resources, such as water, through innovative approaches. The FFW EIP will introduce a proposed IAPS management programme in west Tipperary, dealing with Giant Hogweed. Severe infestations occur along the Toem, Cappawhite and Cahernahallia tributaries of the upper Mulkear/Dead River catchment in the Cappawhite area of Tipperary. A drone survey of the focus area has been conducted in 2024 (Figure 2.1).

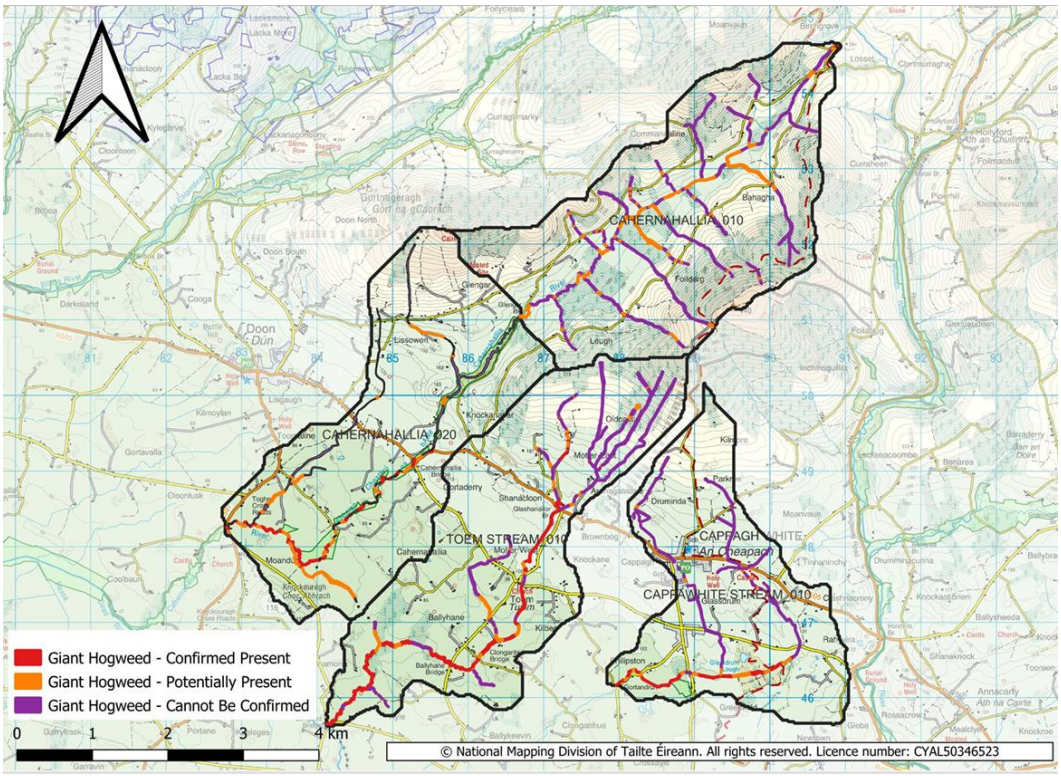


Figure 2.1: A map of the proposed works area provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary.

2.2. Description of the proposed project

The proposed project aims to manage Giant hogweed on all four sub-basins and their associated tributaries in County Tipperary. These include the (Cahernahallia_010 (23.81 km)(Figure 2.2), Cahernahallia_020 (15.23 km)(Figure 2.3), Cappawhite Stream_010 (10.63 km)(Figure 2.4) and Toem Stream_010 (18.96 km) (Figure 2.5).

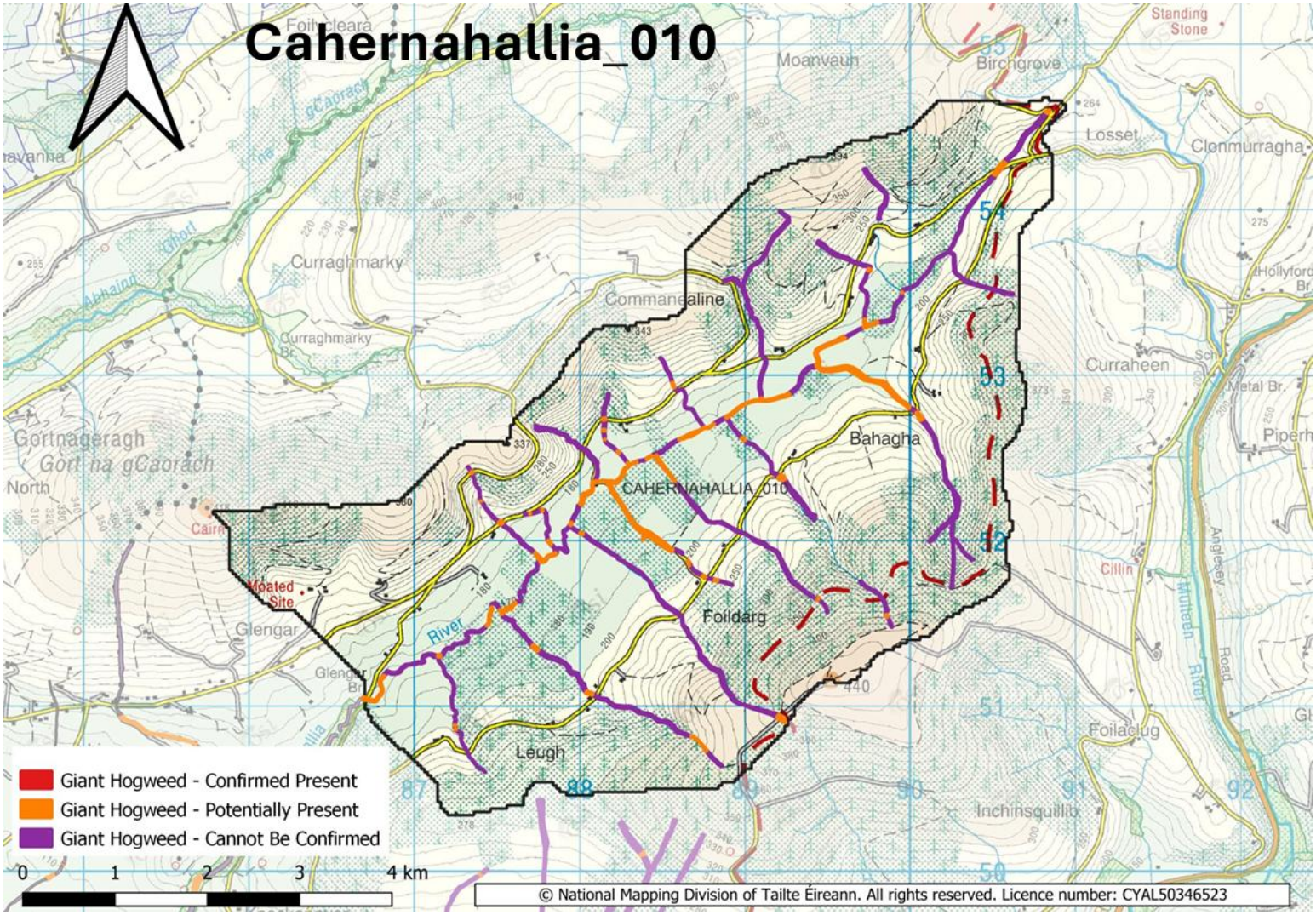


Figure 2.2: A map of the proposed works area on the Cahernahallia_010 provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary.

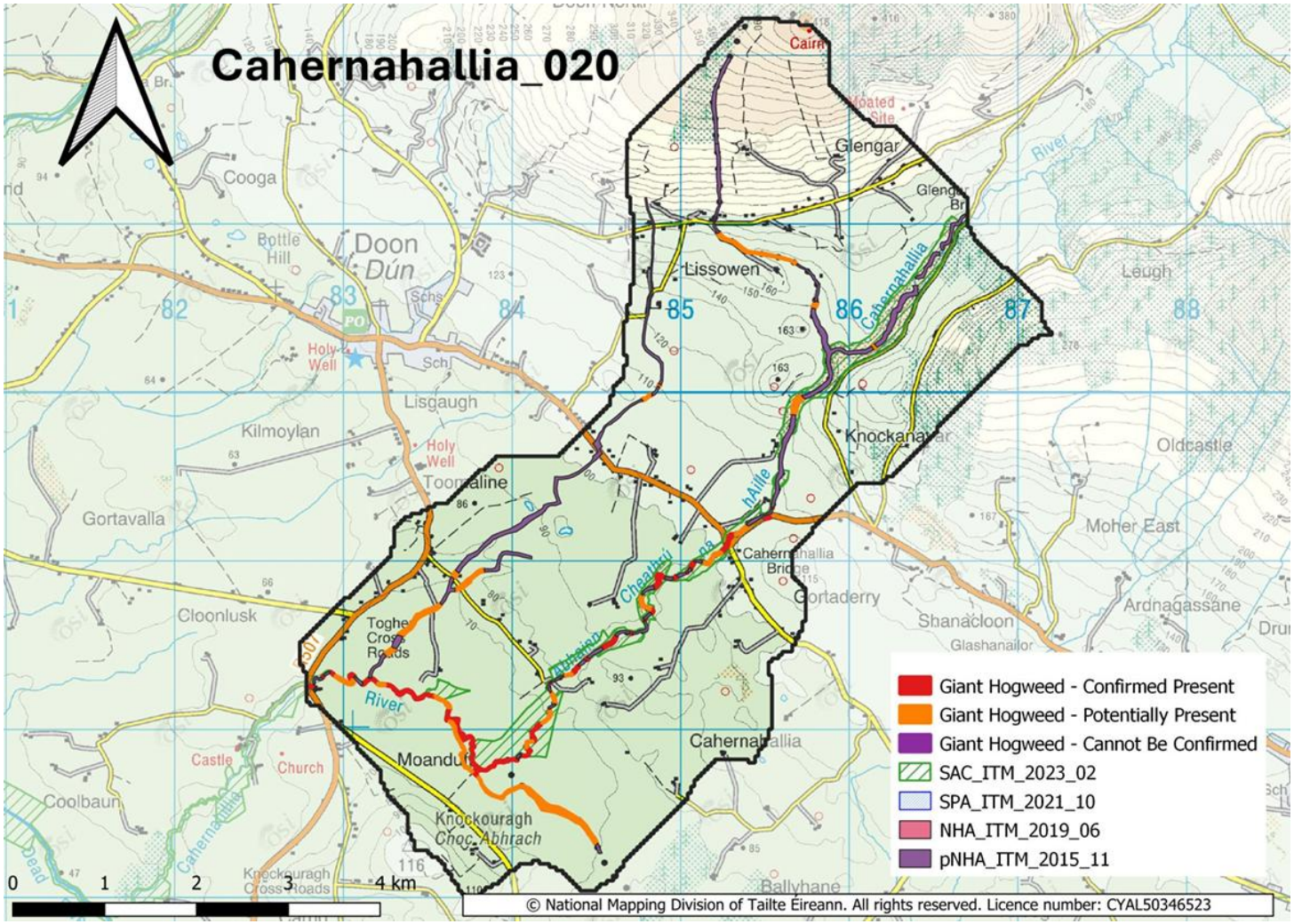


Figure 2.3: A map of the proposed works area on the Cahernahallia_020 provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary.

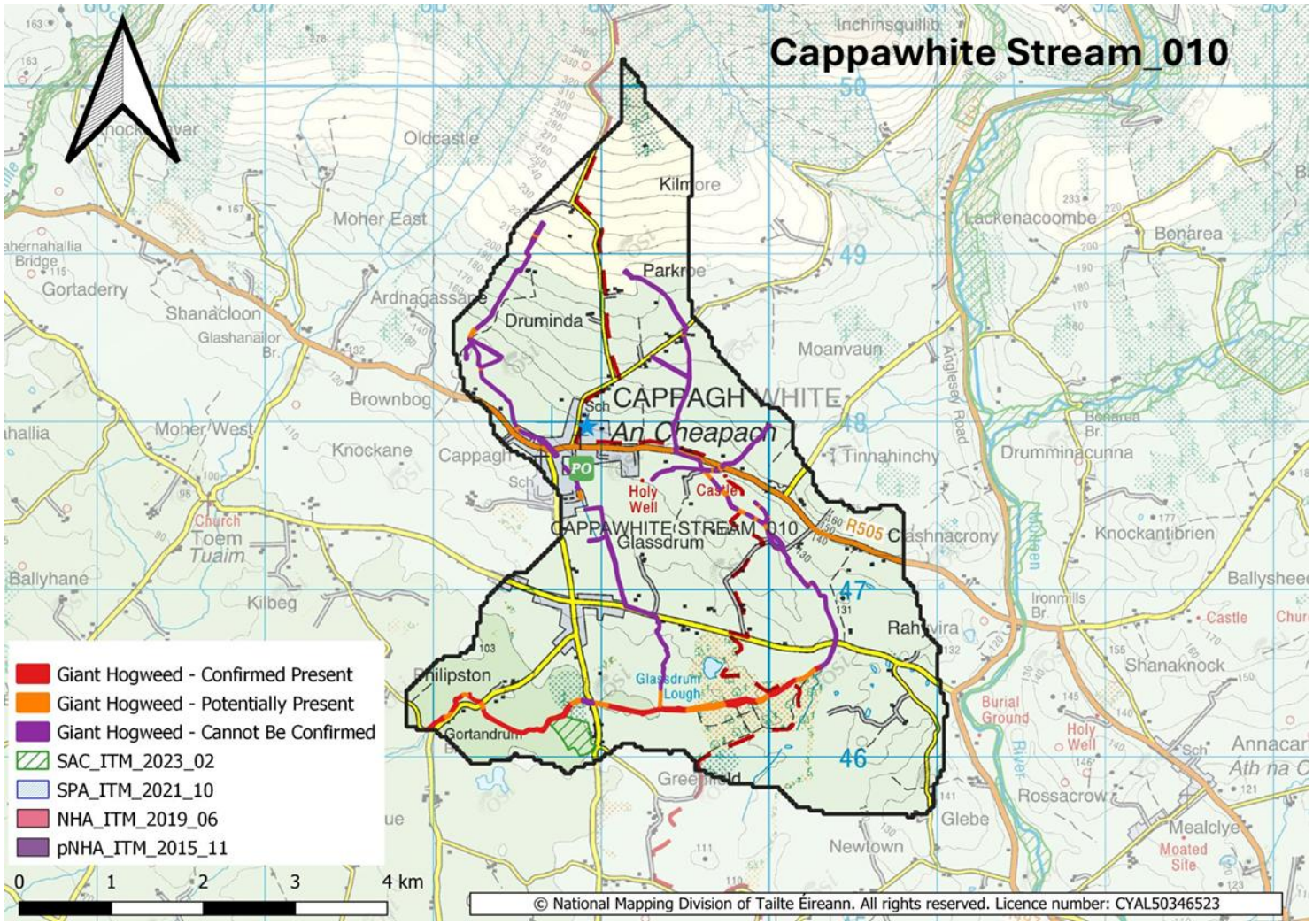


Figure 2.4: A map of the proposed works area on the Cappawhite Stream_010 provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary.

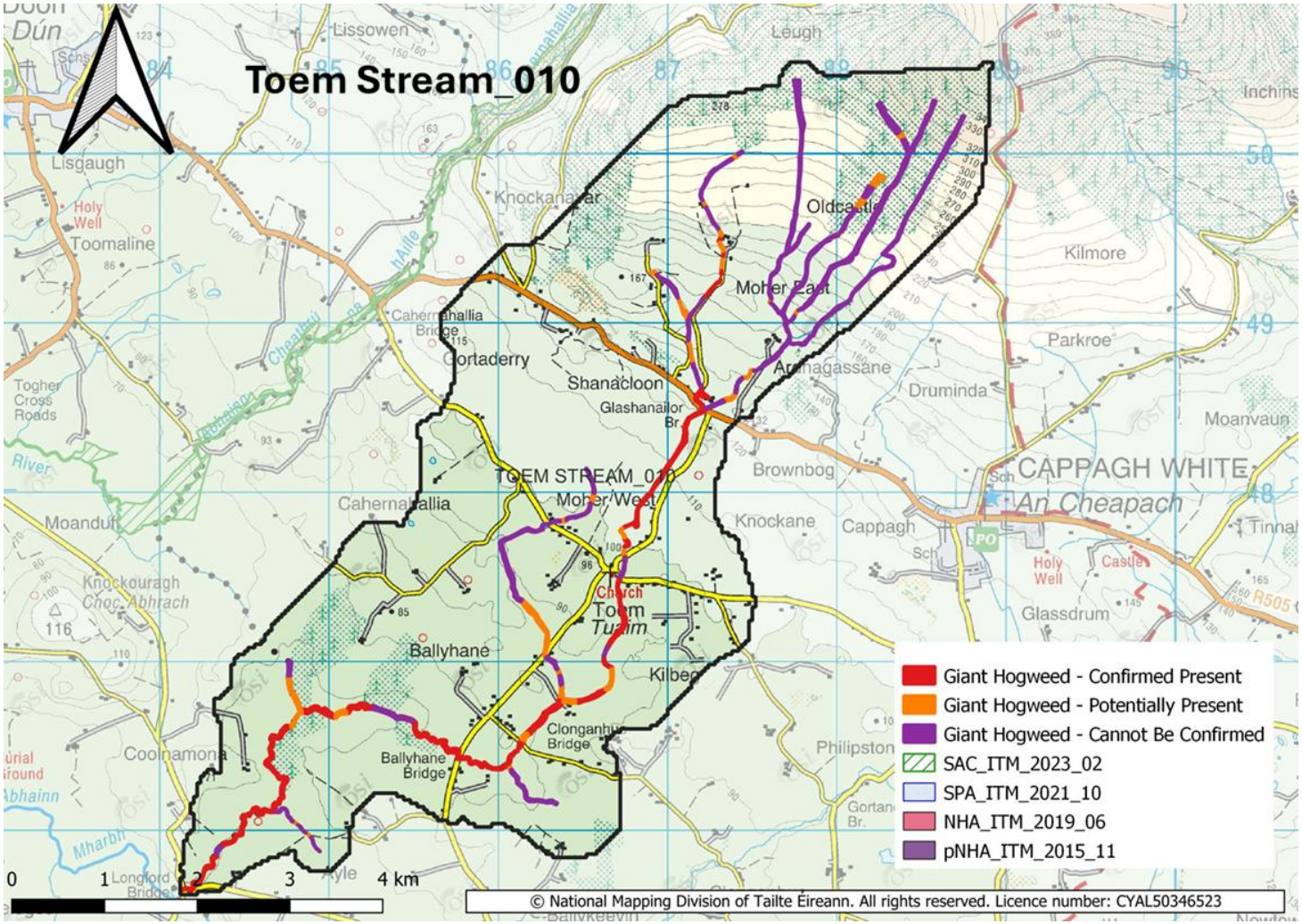


Figure 2.5: A map of the proposed works area on the Toem Stream_010 provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary.

The LAWPRO in partnership with the local community, Tipperary County Council and other partners are working to develop a remedial action plan to control the spread and dispersal of Giant hogweed with the long-term plan to work towards its eradication in these sub-basins. With sanctioning to be received from the department, this work will be done through the Farming for Water EIP programme and will be included as one of the measures to help improve water quality. Giant hogweed is subject to restrictions under EU (Birds and Natural Habitats) Regulations, 2011(S.I. No. 477/2011), EU (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024) and listed as an 'IAS of Union concern' under EU IAS Regulation (1143/2014).

The survey in 2024 generated distribution maps for Giant hogweed identified along the watercourses within the project area (Figure 2.2-2.5). The survey data collected will be used to provide indicative locations for the presence of Giant hogweed and inform management on the ground. The management process will follow the Management Plan provided and all recommended biosecurity measures that must be established to prevent the spread of IAPS beyond their current distributions as a result of the management works. These biosecurity measures are considered to be standard practice when managing this IAPS. The Management Plan has identified the measures necessary to control and prevent the spread of these species, and to make efforts to eradicate them from the areas identified. As there is the potential to cause the spread of IAPS during these management activities

The Mulkear River drains a catchment area of approximately 650 km² spanning counties Limerick and Tipperary. It is regarded as an important Atlantic Salmon (*Salmo salar*) river and produces a significant annual Salmon run. It also holds substantial populations of sea lamprey, with otter also widespread but believed to be in decline based on recent evidence. The project is directly and indirectly connected with a NATURA 2000 site, the Lower River Shannon SAC (IE002165). The project fundamentally aims to manage a Regulated IAPS on the watercourse for the long-term protection of water quality and Natura 2000 protected habitats and species in the area. This will aim to prevent bankside subsidence associated with the species recorded as well as by reducing the risks to human health posed by Giant hogweed. In addition, the project aims to improve bankside stability and enhance the habitat for Freshwater Pearl Mussel (*Margaretifera margaretifera*), White-clawed Crayfish (*Austropotamobius pallipes*), Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), Atlantic Salmon (*Salmo salar*) and Otter (*Lutra lutra*) (Table 2.2). The project fundamentally aims to enhance the quality of the local habitat and will help to achieve the Conservations Objectives of the SAC, for those species designated as a Feature of Interest. For example, a key target for Freshwater

Pearl Mussel is to provide sufficient habitat in favourable condition to allow the species to maintain itself on a long-term basis as a viable component of the Mulkear system (Table 2.2). Dense infestations of IAPS may impact on commuting routes for species such as Otter. Under the EU guidance in relation to the Natura 2000 network one of the key underlying principles is to maintain the most natural process as possible in relation to the Features of interest and the Conservation objectives. Although dense infestations of IAPS may provide some cover, the risks posed to the riparian habitat can have a detrimental impact on the features of interest and their conservation objectives. The management of IAPS infestations will create the conditions for more natural processes to occur within the Natura 2000 site. Due to the presence of the protected areas and the proposed use of herbicides, it has been deemed necessary to carry out an AA screening for this project.

2.3. Giant hogweed

Giant hogweed has been reported throughout each of the four sub-basins (Figures 2.2-2.5).

Table 2.1: Species description and legislation relating to Giant hogweed.

Distinguishing features	Giant hogweed (*Heracleum mantegazzianum*) is a tall perennial herb (living 3-5 years) with a thick branched taproot. The flowering stem grows up to 4m tall and 10cm in diameter. It is fleshy, hollow, ribbed, green with significant red blotches, circular in cross section, and covered with hairs or bristles. The leaves are deeply lobed with coarse and serrated edges, and up to 2m across. Flowers are white (rarely pinkish), in umbels up to 80cm across. It can produce up to 50,000 seeds per plant, each up to 1.5cm long, flat, with oil ducts showing as dark stripes - 2 on one side and 4 on the other side. When fully grown its 'giant' stature make it readily identifiable. Immature plants may be confused with the native Common hogweed (*Heracleum sphondylium)* but this species has a much thinner stem 1-2cm, leaves are not as sharply divided and it is rarely more than 2m tall.
Habitat	It is frequently encountered on waste ground, along rivers and streams, and in woodland fringes.
Ecology	After reaching maturity (normally 3 or 4 years old), it flowers, sets seed then dies. The majority of seeds germinate in their first year but some are capable of remaining dormant in the soil for up to 15 years.
Impact	It can result in significant biodiversity loss by shading or competitively excluding native riparian plants. It can cause erosion and subsidence of riverbanks when the plant dies back during winter exposing bare soil, and soil influx into rivers can render gravel substrates unsuitable for salmonid spawning. It impacts on human health as compounds in the sap can cause phytophotodermatitis within 24-48 hours

	of exposure, with symptoms including: mild to severe blistering of the skin and hyper-pigmentation of burned parts of the skin for months or years after contact.
Dispersal	This species is dispersed solely by seeds.
Legislation	Subject to restrictions under EU (Birds and Natural Habitats) Regulations, 2011(S.I. No. 477/2011), EU (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024) and listed as an 'IAS of Union concern' under EU IAS Regulation (1143/2014).

Table 2.2: A representation of the feasibility and prioritisation of management methods available for Giant hogweed detected within the project area.

Species name	Indication of distribution in the project area	Species specific risk factors	Management methods	Relative labour cost of each method	Level of ecological disruption caused by management	Feasibility for implementation of management method	Appraisal of each Management method
Giant hogweed *Heracleum mantegazzianum*	Widespread – Recorded throughout the project area with regular seed infestations arriving from the furthest upstream records	High risk of reinfestation from upstream if no catchment wide management plan implemented. Seeds may remain viable in the seed bank for up to 15 years. High probability of management success with sustained application. High risk to public health and safety. Do nothing scenario allows significant uncontrolled, dominance/dispersal of this IAS in the habitat and continued high risk to human health.	Prevention / Early Detection Rapid Response (EDRR) / Biosecurity	Low	Low	High	Prevention, EDRR and Biosecurity will provide a low-cost solution with low ecological impact for all IAS in the area. This will involve sustained monitoring, awareness raising, biosecurity facilities (boot brushes) and site-specific biosecurity plans during any planned works in areas close to any infestations. This will also involve the implementation of a catchment wide Management Plan to prevent reinfestation from upstream.
			Foliar herbicide application	Low	Low	High	Foliar herbicide application offers a low ecological disruption and most labour/cost effective solution to the short- and long-term management of Giant hogweed within the project area.
			Cut and fill	Medium	Low	Medium	Cut/fill herbicide offers a very low ecological impact but with higher labour/costs for ongoing management. This method also represents a significantly greater health and safety risk to management personnel.
			Tap root cutting	Medium	Low	Medium	Tap root cutting offers a very low ecological impact but with higher labour/costs for ongoing management. This method also represents a significantly greater health and safety risk to management personnel.
			Soil excavation	High	High	Low	High potential for reinfestation, excavation is a highly disruptive, high labour/cost, undesirable long-term management method.

2.4. Proposed project works for the management of Giant hogweed

It is proposed that a combination of foliar herbicide application using a Glyphosate based product and tap root cutting will be employed for the management of Giant hogweed in the project area (Figure 2.6). A full RAMS document outlining the works procedure and all risks assessment has been provided in Appendix 4.

5 Recommended Treatment

5.1 Summary

Giant hogweed reproduces solely by producing seeds with a single mature plant producing 50,000 wind dispersed seeds. These seeds can form a seed bank and remain viable in the soil for up to 5 years. These seeds can be transferred in the threads of boots, on clothing, equipment and the wheels of vehicles. In order to prevent its spread, it is important that any staff or vehicles entering an area infested with Giant Hogweed are aware of the biosecurity protocols (see Section 6). As this plant is also harmful to humans when its sap comes into contact with bare skin it is important that personnel wear appropriate PPE when working within the infested area.

Herbicide treatment is the most appropriate method of treatment for the extensive stands along inaccessible riverbanks. Treatment should be carried out both from boat and from land to ensure all plants in leaf at time of treatment are targeted. The tap root method will also be carried out on smaller stands, where access is possible.

This management plan refers specifically to the initial treatment.

5.2 Foliar Spray Methodology

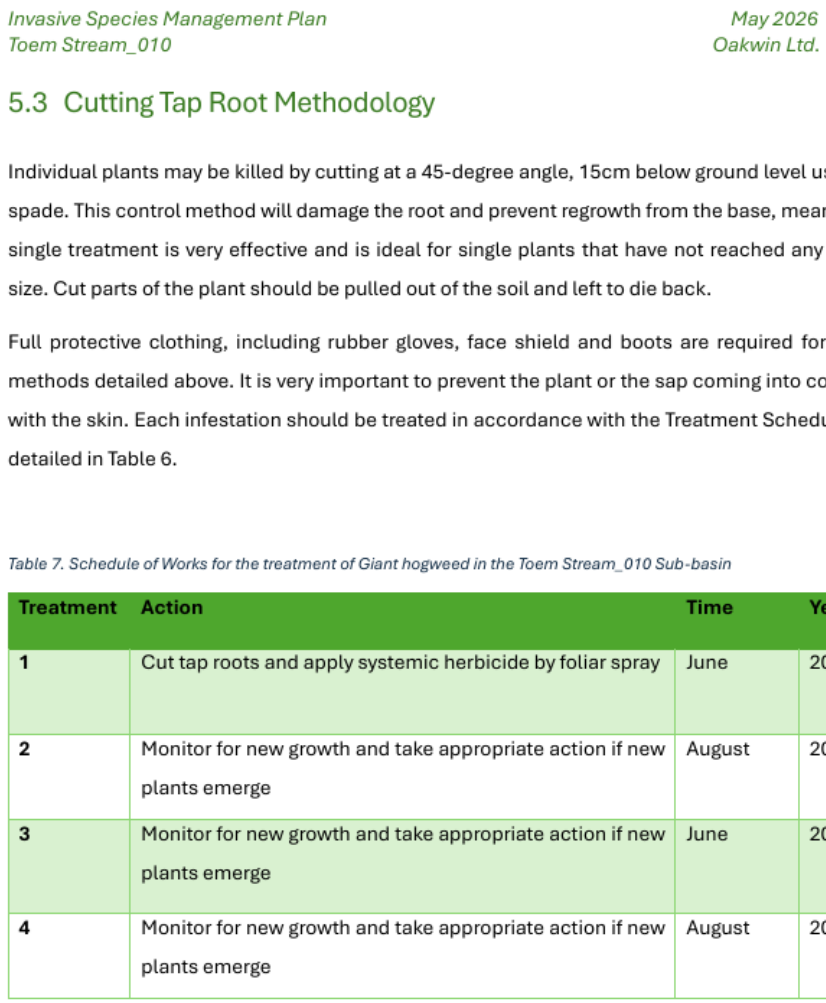
A glyphosate-based herbicide diluted with water to the appropriate concentration should be applied to the under and upper surface of the leaves using a knapsack sprayer with suitable telescopic lance to allow the entire plant to be treated. Treatment should take place from land and from water, if necessary, to allow all plants to be targeted.

Treatment by foliar spray has the advantage that it is very quick and easy to apply. It also allows the operative to maintain a distance from a safety perspective. However, non-target vegetation may be affected and the treatment is weather dependent.

The National Parks and Wildlife Service should be contacted prior to applying chemicals in a Special Area of Conservation (SAC) and Inland Fisheries Ireland should be consulted in advance of spraying adjacent to a watercourse. All treatments will be carried out with regard to wider ecological issues, particularly the aquatic ecology of the watercourse.

Figure 2.5: An extract from the 'Toem Stream_010 Sub-basin Giant Hogweed Management Plan - Preliminary Report' provided to INVAS as part of the FFW EIP_AGRI Project Giant

Hogweed Management Pilot Project in County Tipperary, outlining the proposed management methods to be employed by the Contractor.



Invasive Species Management Plan *May 2026*
Toem Stream_010 *Oakwin Ltd.*

5.3 Cutting Tap Root Methodology

Individual plants may be killed by cutting at a 45-degree angle, 15cm below ground level using a spade. This control method will damage the root and prevent regrowth from the base, meaning a single treatment is very effective and is ideal for single plants that have not reached any great size. Cut parts of the plant should be pulled out of the soil and left to die back.

Full protective clothing, including rubber gloves, face shield and boots are required for both methods detailed above. It is very important to prevent the plant or the sap coming into contact with the skin. Each infestation should be treated in accordance with the Treatment Schedule as detailed in Table 6.

Table 7. Schedule of Works for the treatment of Giant hogweed in the Toem Stream_010 Sub-basin

Treatment	Action	Time	Year
1	Cut tap roots and apply systemic herbicide by foliar spray	June	2026
2	Monitor for new growth and take appropriate action if new plants emerge	August	2026
3	Monitor for new growth and take appropriate action if new plants emerge	June	2027
4	Monitor for new growth and take appropriate action if new plants emerge	August	2027

Figure 2.6: An extract from the 'Toem Stream_010 Sub-basin Giant Hogweed Management Plan - Preliminary Report' provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary, outlining the proposed management methods to be employed by the Contractor and proposed works schedule.

2.5. Monitoring post treatment

For species such as Giant hogweed, annual monitoring in March/April is vital. Any Giant hogweed plants or stands that are observed at this time should be recorded, mapped and scheduled for retreatment throughout the year. A long-term Management Plan will focus on sustained management for up to 15 years from the year of first treatment to allow for the germination of all seeds within the seed bank.

2.6. Long-term Management Plan

A comprehensive long-term Management Plan for the four sub basins should consider prioritising the management of Giant hogweed in the furthest areas upstream. This will be started in Summer 2026. Best results for herbicide control on Giant hogweed are attained by treating the vegetation with herbicide in the spring and summer when plentiful above ground vegetation for this IAPS is present.

The placement of informative signage adjacent to these IAPS or at public locations or access points that outlines the risks posed by each species may help to raise awareness and disseminate knowledge to the users of the project area.

2.7. Site access

The management contractor will make all reasonable efforts to request permission from landowners, and to inform relevant authorities, in advance of any access to private lands. The management contractor will carry the required permission documents provided by the FFW project at all times during the management works. Some minor vegetation disturbance and trampling will be required to access the management area, and this will be minimised where possible. Where possible when an IAS infestation is identified, incursion into the infested area will be avoided and management will take place along the periphery of infestations. Access will be *via* existing roadways and access points to be determined by the management contractor.

2.8. Biosecurity

As a standard practice during all IAS surveys and management regardless of their location in relation to any Natura 2000 site, the Contractor and associates will follow rigorous biosecurity Standard Operating Procedure (SOP) before, during and after all site visits. The purpose of the biosecurity SOP's are to provide standardised practical methods for cleaning and disinfecting all equipment that comes into contact with IAS or potentially infested areas while carrying out works. The Biosecurity SOP will enhance the clients existing biosecurity activity to deliver an improved biosecurity system that will help stop the introduction and spread of IAS during operations conducted by the management contractor.

6 Biosecurity Controls

Persons/machinery entering or working within an area infested with an invasive alien species must take certain precautions to prevent the spread of that species. These guidelines must be strictly adhered to at all times.

- All PPE, other equipment and machinery that enter an infested zone must be cleaned before entering.
- Before leaving an infested area, personnel must thoroughly inspect their clothing, PPE, any equipment and their footwear for seeds, rhizomes, or other plant fragments that may be stuck on.
- All personnel should carry a hoof pick or similar implement to thoroughly clean the threads of their footwear with.
- All footwear must be thoroughly cleaned before leaving an infested zone.
- Each field vehicle should carry a cleaning and disinfection kit that staff can avail of as the need arises and to thoroughly clean/disinfect their PPE/Equipment/Footwear before leaving an infested zone.
- The cleaning and disinfection kits should contain:

  Stiff bristled brush

  Water for washing & diluting

  Biodegradable soap

  Cloths for cleaning

  Plastic tub

  Virkon Aquatic Powder/tablets

  Rubber/nitrile gloves
- As good practice all staff should follow Inland Fisheries Ireland Biosecurity Protocols when they have entered water or a riparian zone.
- If machinery/plant has entered or worked in an infested zone, it must be thoroughly washed down before leaving the area or working in an uninfested location
- A power washer must be provided for effective cleaning of machinery, along with stiff bristled brushes.

Figure 2.7: An extract from the 'Toem Stream_010 Sub-basin Giant Hogweed Management Plan - Preliminary Report' provided to INVAS as part of the FFW EIP_AGRI Project Giant Hogweed Management Pilot Project in County Tipperary, outlining the proposed biosecurity controls to be employed by the Contractor.

3. IDENTIFICATION OF NATURA 2000 SITES POTENTIALLY AFFECTED

A portion of the proposed project area is located within the Lower River Shannon SAC (IE0002165) NATURA 2000 site. The Natura 2000 sites has a direct hydrological link to the proposed works sites. Slievefelim to Silvermines Mountains SPA (IE004165)(1.2km), Lower River Shannon SAC (works to take place within boundaries), Philipston Marsh SAC (IE001847)(within boundaries of sub basin), Lower River Suir SAC (IE002137)(100m), Anglesey Road SAC (IE002125)(2.3km), Glenstall Wood (IE001432)(12.1km), Clare Glen SAC (IE000930)(12.5km), Bolingbrook Hill SAC (IE002124)(12.6km), Keeper Hill SAC (IE001197)(12.8km) and Moanour Mountain SAC (IE002257)(14.5km) are all located within the 15km buffer zone. Following the guidance provided in DEHLG (2010) and taking into account the key variables outlined above, the likely zone of impact for the Project was defined as the area within the river sub-basin limits (source: Environmental Protection Agency Data) of all watercourses crossed by and within 1 km of the Project. Following the precautionary principle, NATURA 2000 sites within 15km and those with potential biological corridor links (watercourses beyond 3km) are included as part of the AA Screening (Table 3.1). The River Shannon and River Fergus Estuaries SPA (IE004077)(27km) is recorded downstream of the proposed project area. The following maps provide a visual representation of these sites, while Table 3.1 identifies the conservation objectives, features of interest and the potential impact of the proposed project works.

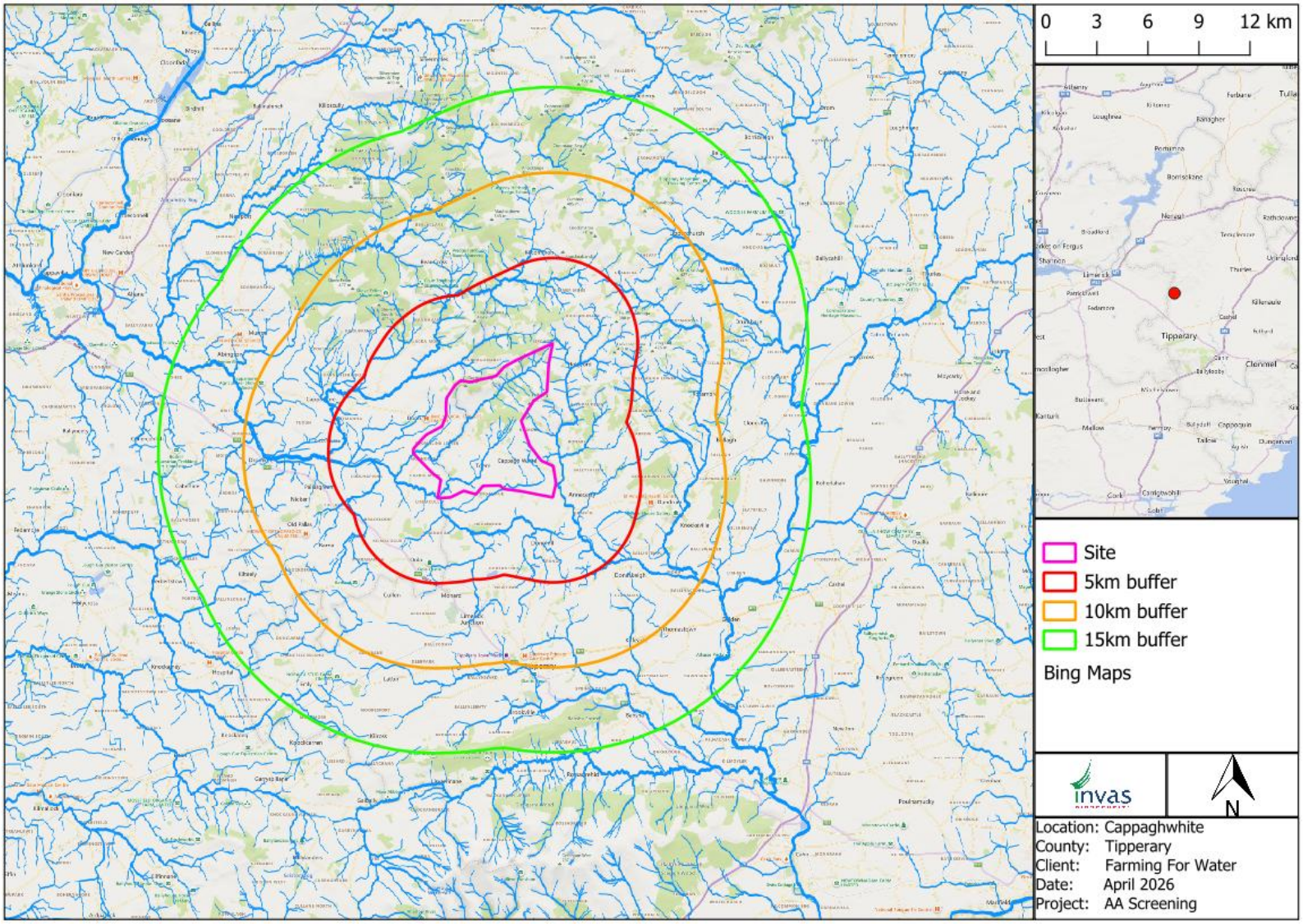


Figure 3.1: The river network within 15km of the proposed work site.

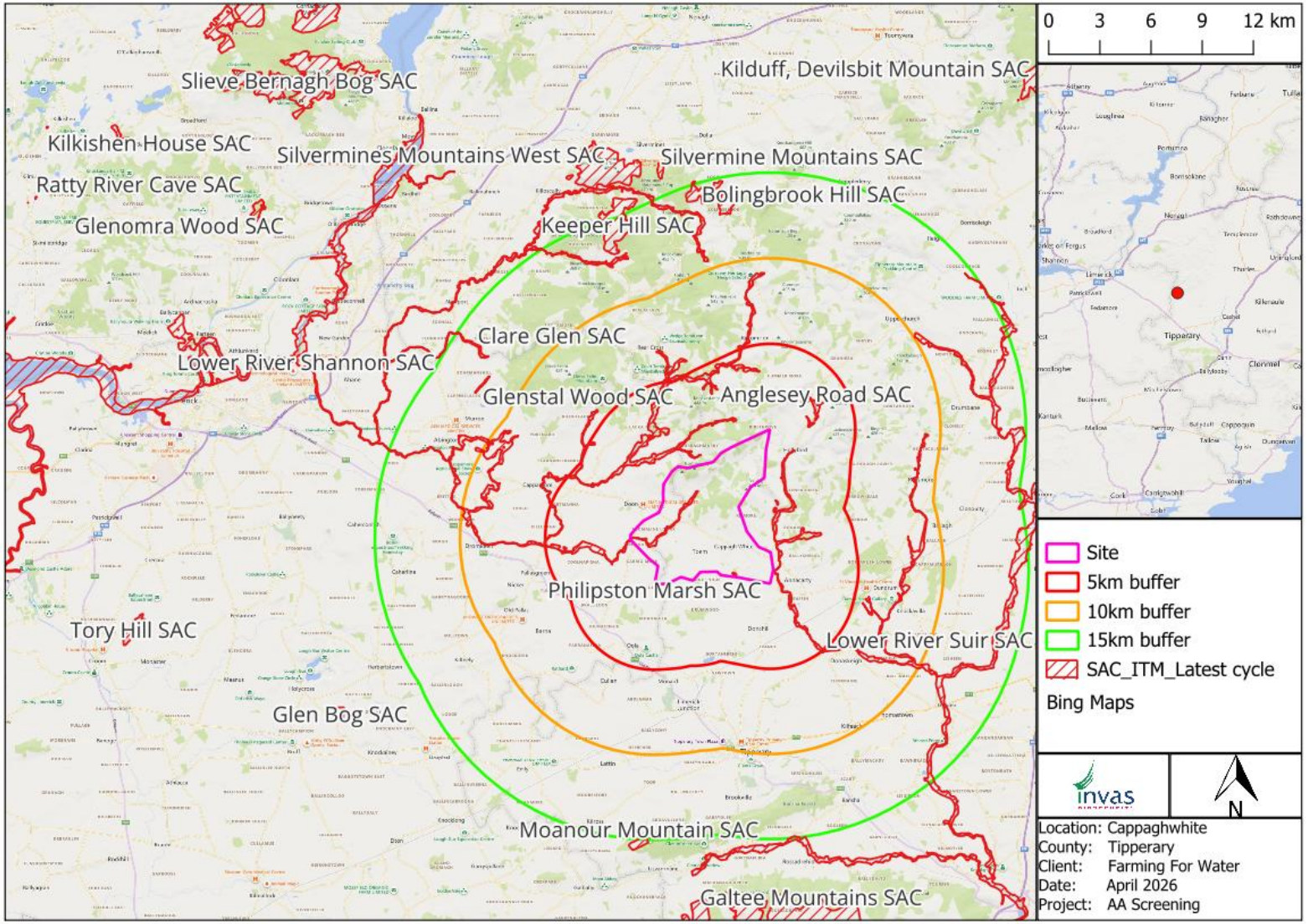


Figure 3.2: Special Areas of Conservation (SAC) within 15km of the proposed work site.

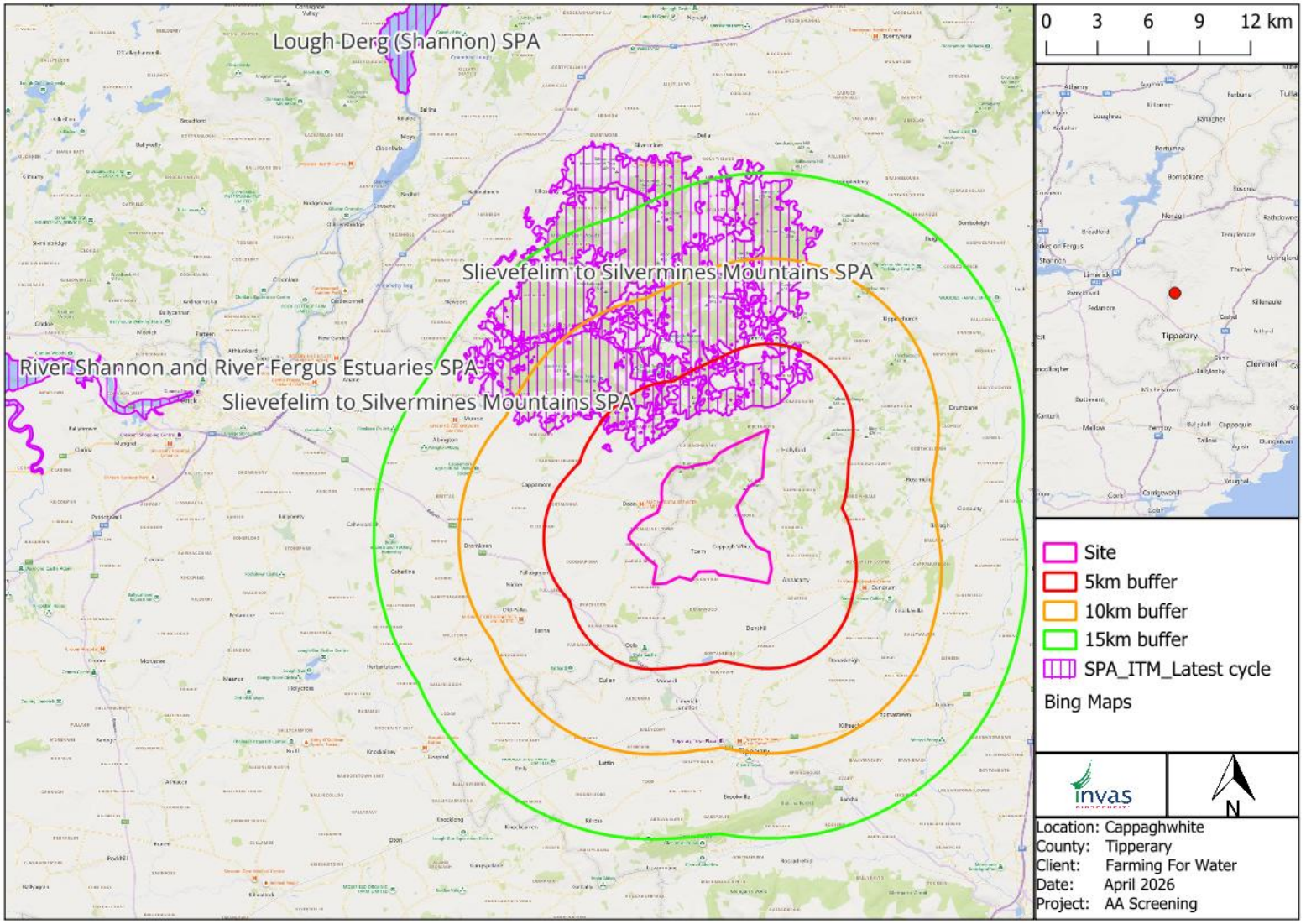


Figure 3.3: Special Protection Areas (SPA's) within 15km of the proposed work site.

Table 3.1: A list of NATURA 2000 sites within 15km of the proposed works. Also included are those sites with a direct hydrological link to the works site, both upstream and downstream.

Site Name/Code	Features of Interest	Potential impacts of works on Natura 2000 site	Further Assessment required due to potential impacts
Special Protection Areas within 15km			
Slievefelim to Silvermines Mountains SPA IE004165 1.2km https://www.npws.ie/protected-sites/spa/004165	Hen Harrier (*Circus cyaneus*) [A082]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Species - All species and the habitats that they depend on are unlikely to be disturbed or impacted by proposed works due to the nature of the works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.
Special Protection Areas beyond 15km			
River Shannon and River Fergus Estuaries SPA IE004077 27km https://www.npws.ie/protected-sites/spa/004077	Cormorant (*Phalacrocorax carbo*) [A017] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Scaup (*Aythya marila*) [A062] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Species - All species and the habitats that they depend on are unlikely to be disturbed or impacted by proposed works due to the nature of the works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.

	Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wigeon (*Mareca penelope*) [A855] Shoveler (*Spatula clypeata*) [A857] Wetland and Waterbirds [A999]		
Special Areas of Conservation within 15km			
Lower River Shannon SAC 002165	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130]	Conservation Objectives – To maintain the favourable conservation condition of habitats and species of community interest	No The proposed works are not likely to have an adverse effect on the Conservation Objectives or Features of

Works within boundaries https://www.npws.ie/protected-sites/sac/002165	Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	[1110], [1130], [1140], [1150], [1160], [1170], [1220], [1230], [1310], [1330] & [1410] – Estuarine, Coastal or Marine habitats. [3260] – Watercourses with floating river vegetation throughout the SAC. Impacted by sedimentation caused by IAPS. [6410] - The full extent of this habitat has not been mapped in detail in the SAC and thus the total area of the qualifying habitat is unknown. It is likely to be found in other locations also (NPWS internal files). [91E0] – NSNW: 1861 recorded within the works area at Cahernahallia_020. Giant hogweed is specifically mentioned as a negative indicator species in this habitat in the Conservation Objectives document. [1029] – Reported in a tributary beyond the 15km buffer zone and with no direct hydrological link to the proposed works site (Appendix 1). [1095], [1096] & [1099] - Impacted by sedimentation caused by IAPS. [1106] - Impacted by sedimentation caused by IAPS. [1349] - Estuarine, Coastal or Marine species. [1355] - Proposed works zone not identified as being within Otter commuter buffer.	interest for this SAC. The works aim to maintain the favourable conservation condition of Freshwater Pearl Mussel, Otter and Atlantic Salmon as well as several habitats within this SAC. The proposed works are necessary to the management of the SAC to improve the water quality impacts associated with IAPS. As outlined in the previous column, several of the protected habitats and species in the Conservation Objectives were not recorded and are not reported within the proposed works zone. There will be no heavy machinery activity as part of the proposed works. No instream works or associated silt generation proposed and biosecurity measures in place as part of standard IAPS Management Plan. The proposed works are likely to improve habitat throughout the catchment through the management of IAPS recorded and allowing the regrowth of native plant species. The works will reduce the risk of bankside destabilisation and siltation associated with the IAPS recorded. The improved bankside stability due to the management of IAPS will reduce siltation that can have a harmful impact on Freshwater Pearl Mussel habitat, Otter foraging/habitat, Lamprey and Atlantic Salmon spawning sites. Foliar

	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Lutra lutra* (Otter) [1355]	Hydrological link – Proposed works throughout riparian zone of the Cahernahallia_020 sub basin, Lower River Shannon SAC. Compliance - All works will comply with IFI and National Parks and Wildlife Service requirements outlined in this document. All works will be carried out in full compliance to ensure compliance with Water Pollution Acts. Noise and disturbance impacts – No proposed mechanical activity. Localised with no foreseeable impacts on the SAC	herbicide application to utilise Glyphosate based herbicide approved for use in and near water. Standard practice precautions, including the Sustainable Use of Pesticides Directive and biosecurity protocols, will be used in proximity to the main rivers and adjoining drains and watercourses where management works are to take place, including the use of low-drift Beta nozzles. Herbicide application must be carried out by fully trained and licenced staff and follow the manufacturers guidelines.
Philipston Marsh SAC 001847 Within the boundaries of the sub basin https://www.npws.ie/protected-sites/sac/001847	Transition mires and quaking bogs [7140]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works. Adjacent to the proposed works site.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.
Lower River Suir SAC 002137 100m	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Water courses of plain to montane levels with the *Ranunculion fluitantis and Callitricho-Batrachion* vegetation [3260]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Species and Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works. All within a different catchment to the proposed works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.

https://www.npws.ie/protected-sites/sac/002137	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Taxus baccata* woods of the British Isles [91J0] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Austropotamobius pallipes* (White-clawed Crayfish) [1092] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]		
Anglesey Road SAC 002125	Species-rich Nardus grasslands, on siliceous substrates in mountain areas	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest.	No The proposed works are not likely to have a significant direct or indirect

2.3km https://www.npws.ie/protected-sites/sac/002125	(and submountain areas, in Continental Europe) [6230]	Protected Species and Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works.	effect the Conservation Objectives or Features of interest for this SAC.
Glenstall Wood IE001432 12.1km https://www.npws.ie/protected-sites/sac/001432	*Vandenboschia speciosa* (Killarney Fern) [6985]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.
Clare Glen SAC IE000930 12.5km https://www.npws.ie/protected-sites/sac/000930	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] *Vandenboschia speciosa* (Killarney Fern) [6985]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.
Bolingbrook Hill SAC 002124 12.6km https://www.npws.ie/protected-sites/sac/002124	Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.

Keeper Hill SAC 001197 12.8km https://www.npws.ie/protected-sites/sac/001197	Northern Atlantic wet heaths with *Erica tetralix* [4010] Blanket bogs (* if active bog) [7130]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.
Moanour Mountain SAC IE002257 14.5km https://www.npws.ie/protected-sites/sac/002257	Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	Conservation Objectives - To maintain or restore the favourable conservation status of habitats and species of community interest. Protected Habitats - All species and the habitats that they depend on are unlikely to be disturbed or impacted by the proposed works.	No The proposed works are not likely to have a significant direct or indirect effect the Conservation Objectives or Features of interest for this SAC.

Table 3.2: A list of Qualifying Interests (QI) that may be impacted by the works in NATURA 2000 sites.

Qualifying Interest	**Conservation Objectives**	**Positive or negative impacts of the proposed works**	**Non-standard mitigation measures required for negative impacts**
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	To restore the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in Lower River Shannon SAC	Positive: • A greatly reduced risk of introduction and proliferation of IAPS within the protected habitat as a result of accidental or natural dispersal. • A reduction in the local dominance of IAPS already present in the protected habitat will result in the natural recolonisation of native plant species . • Targeted herbicide application for Giant hogweed. • Work will be carried out by expert personnel to minimise drift and any risk to non-target plant species. • Although this is a multiannual approach, following herbicide treatment in year one, it can be expected that the dominance of IAPS will be greatly reduced. Only spot treatment will be required and a significantly lower quantity of herbicide will be used in subsequent years. Negative: • Minor short-term disturbances due to pedestrian traffic related to herbicide application and shrub cutting.	None
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]	To restore the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) in Lower River Shannon SAC	Positive: • A greatly reduced risk of introduction and proliferation of IAPS within the protected habitat as a result of accidental or natural dispersal. • A reduction in the local dominance of IAPS already present in the protected habitat will result in the natural recolonisation of native plant species . • Targeted herbicide application for Giant hogweed.	None

		• Work will be carried out by expert personnel to minimise drift and any risk to non-target plant species. • Although this is a multiannual approach, following herbicide treatment in year one, it can be expected that the dominance of IAPS will be greatly reduced. Only spot treatment will be required and a significantly lower quantity of herbicide will be used in subsequent years. Negative: • Minor short-term disturbances due to pedestrian traffic related to herbicide application and shrub cutting.	
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) in Lower River Shannon SAC	Positive: • A greatly reduced risk of introduction and proliferation of IAPS within the protected habitat as a result of accidental or natural dispersal. • A reduction in the local dominance of IAPS already present in the protected habitat will result in the natural recolonisation of native plant species . • Targeted herbicide application for Giant hogweed. • Work will be carried out by expert personnel to minimise drift and any risk to non-target plant species. • Although this is a multiannual approach, following herbicide treatment in year one, it can be expected that the dominance of IAPS will be greatly reduced. Only spot treatment will be required and a significantly lower quantity of herbicide will be used in subsequent years. Negative: • Minor short-term disturbances due to pedestrian traffic related to herbicide application and shrub cutting.	None
Margaritifera margaritifera (Freshwater	To restore the favourable conservation condition of	Positive: • The proposed works are likely to improve habitat on the sub-basins through the management of IAPS.	None

Pearl Mussel) [1029]	Freshwater Pearl Mussel in Lower River Shannon SAC	• The works will reduce the risk of bank destabilisation and siltation associated with the IAPS recorded. The improved bankside stability due to the management of IAPS will reduce siltation that can have a harmful impact on Freshwater Pearl Mussel habitat. • No instream works. • Work will be carried out by expert personnel to minimise drift and any risk to non-target plant species. • Although this is a multiannual approach, following herbicide treatment in year one, it can be expected that the dominance of IAPS will be greatly reduced. Only spot treatment will be required, and a significantly lower quantity of herbicide will be used in subsequent years. • No Margaretifera sensitive habitats reported in the Dead River Catchment (Appendix 1).	
Salmo salar (Salmon) [1106] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099]	To maintain the favourable conservation condition of Atlantic Salmon in Lower River Shannon SAC	Positive: • The proposed works are likely to improve habitat on the sub-basins through the management of IAPS. • The works will reduce the risk of bank destabilisation and siltation associated with the IAPS recorded. The improved bankside stability due to the management of IAPS will reduce siltation that can have a harmful impact spawning sites for Salmon and Lamprey. • No instream works. • Work will be carried out by expert personnel to minimise drift and any risk to non-target plant species. • Although this is a multiannual approach, following herbicide treatment in year one, it can be expected that the dominance of IAPS will be greatly reduced. Only spot treatment will be required, and a significantly lower quantity of herbicide will be used in subsequent years. Negative: • Minor short-term disturbances due to herbicide application and tree cutting. Salmon and Lamprey will	None

		be able to temporarily migrate up or downstream to avoid these impacts. No instream works.	
Lutra lutra (Otter) [1355]	To maintain the favourable conservation condition of Otter in Lower River Shannon SAC	Positive: • The proposed works are likely to improve habitat on the sub-basins through the management of IAPS. • The works will reduce the risk of bank destabilisation and siltation associated with the IAPS recorded. The improved bankside stability due to the management of IAPS will reduce siltation that can have a harmful impact on Freshwater Pearl Mussel habitat. • No instream works. • Work will be carried out by expert personnel to minimise drift and any risk to non-target plant species. • Although this is a multiannual approach, following herbicide treatment in year one, it can be expected that the dominance of IAPS will be greatly reduced. Only spot treatment will be required, and a significantly lower quantity of herbicide will be used in subsequent years. Negative: • Minor short-term disturbances due to herbicide application and tree cutting. Otter will be able to temporarily migrate up or downstream to avoid these impacts. No instream works. Proposed works zone not identified as being within Otter commuter buffer.	None

4. PROPOSED PROJECT AND IN-COMBINATION ASSESSMENT

Through the use of standard practice biosecurity procedures, the risks of any potential negative impacts on any Natura 2000 site and their habitats and species are very low as a result of this survey. It is also unlikely that any in-combination effects will occur through agricultural/forestry practices, bridge/roads operation/maintenance, rural/urban development, other ongoing plans/projects or other anthropogenic activity.

4.1. Noise Assessment

The proposed survey sites are primarily located in forestry and agricultural land and urban areas in rural County Tipperary. The general daily anthropogenic activities have the potential to cause significantly greater noise pollution in the area than the proposed works. In assessing the potential impact of noise from construction sites, reference should be made to the National Roads Authority (NRA) guidelines, Guidelines for the Treatment of Noise and Vibration in National Road Schemes (2004). The noise pollution generated will not be likely to be excessive and will be limited to arrival on site in a vehicle. No significant effects are foreseen at any Natura 2000 sites. No impacts are foreseen on features of interest of conservation objectives of Natura 2000 sites from noise generated from the survey or the associated traffic.

4.2. Source/Pathway/Receptor Assessment

4.2.1. Source

The biosecurity measures outlined in Section 3 will provide protection against the spread of IAS. All works will comply with IFI, Tipperary County Council and National Parks and Wildlife Service recommendations outlined in this document. All works will comply with the Contractors Biosecurity Protocols (Appendix 3). All works will follow guidelines and protocols set out as part of standard operating procedures in and near watercourses, regardless of the protection status of the proposed works area or watercourse. These are all standard practice measures and are not necessary for the protection of Natura 2000 sites.

4.2.2. Pathway

There is a direct pathway to the Natura 2000 site as part of this survey. The employment of strict biosecurity protocols will reduce the risk of spread of any IAS as part of the proposed works. The employment of standard herbicide application protocols following the best practice guidelines will reduce the risk of any drift as part of the proposed works.

4.2.3. Receptor

The potential impacts are limited to the disturbance of protected species or the spread of IAS. The employment of strict biosecurity protocols will reduce the risk of spread of any IAS as part of these works. The employment of standard herbicide application protocols following the best practice guidelines will reduce the risk of any drift as part of the proposed works. It is concluded there is no likely impact above statutory thresholds on any Natura 2000 site.

4.3. In-Combination Effects

The catchment has been the focus of major conservation projects—such as the EU-funded MulkearLIFE project and the local farmer-led Mulkear EIP—to restore riparian habitats, improve water quality, and manage agricultural impact. This proposed IAPS management project will contribute to the long-term success of these European funded projects and will strive to improve water quality throughout the catchment by managing Giant hogweed.

Following a check of the Tipperary County Council Planning Application Maps, proposed projects in the area were primarily limited to domestic and agricultural developments. There are no likely significant in-combination effects envisaged that are likely to have a significant negative effect on a Natura 2000 site.

4.4. Appropriate Assessment Screening Conclusion

A screening to identify potential links between the proposed project and any potentially significant adverse effects on the Conservation Objectives and Features of Interest of Natura 2000 sites was carried out following the precautionary principle and Source/Pathway/Receptor model (Table 3.1). Based on objective information and assessment, all Natura 2000 sites considered in Table 3.1 have been excluded from the Stage 2 NIS. Works associated with the IAPS Management Plan will take place within the boundaries of the Lower River Shannon SAC and are directly connected with the management of this Natura 2000 site. The project aims to enhance the SAC primarily through the herbicide management of the IAPS recorded. The enhancement works are likely to have long-term positive effects on the SAC due to the improvement of bankside stability and integrity in the riparian habitat. If the IAPS were not to be targeted by a management program, it is certain that bankside erosion and dispersal of seeds and other propagules will occur. This will result in the spread of the IAPS into previously uninfested areas downstream and exacerbate their overall impacts on the Mulkear Catchment. The management programs will also create awareness of the impacts of invasive species among the local community and create a knowledge base among local landowners of

the problematic species that should be avoided during other land management practices. Giant hogweed is well established on the Mulkear River. There is huge potential for lateral expansion of these aggressive colonisers throughout the riparian zone and into agricultural, forestry and private properties. There is evidence that these species are expanding their ranges into these areas throughout the surveyed areas. This spread will continue through seed dispersal by the public or contractors, probably resulting in the widespread expansion of these populations beyond the catchment. This spread will have negative impacts on native floral biodiversity, will impact free movement of the farmers through farmland and public along tracks and trails. The potential zone of influence for this project will be restricted to the bankside habitat of the proposed project plus a 20-meter buffer zone. No effects are foreseen on any other Natura 2000 sites due to the nature of the project. There is no potential for significant effects on this SAC and protected species linked to the proposed management of the riparian habitat on any of the Conservation Objectives and Features of Interest for the Lower River Shannon SAC. The implementation of standard operational phase controls in compliance with the IAPS Management Plan, IFI Guidelines/ Protocols, Water Pollution Acts, Tipperary County Council and the National Parks and Wildlife Service requirements that have been outlined in this document will ensure protection of the riparian habitat and its associated fauna and flora on the Mulkear River. Mitigating measures may no longer be considered by competent authorities in the "screening stage" of the AA process when determining whether a proposed plan/project is likely to have a significant effect on a Natura 2000 site (Court of Justice of the European Union People Over Wind and Sweetman v Coillte Teoranta). The mitigating measures relating to biosecurity are considered standard practice when managing IAPS. The measures in place relating to foliar herbicide application are also considered to be standard practice when working in or near watercourse. On the basis of the content of this report, the competent authority is enabled to conduct a Stage 1 Screening for Appropriate Assessment and consider whether, in view of best scientific knowledge and in view of the conservation objectives of the relevant European sites, the Proposed Development, individually or in combination with other plans or projects, is likely to have a significant effect on any European site. There is no possibility of significant negative impacts on Natura 2000 sites, features of interest or site-specific conservation objectives. No significant effects on Natura 2000 sites are likely. Based on the above AA Screening, a Natura Impact Statement is not required. As a result, the AA process should not proceed to Stage 2, Natura Impact Statement.

5. CONCLUSIONS

The proposed works involve the management of IAS throughout the upper catchments of the outlined Rivers and their tributaries. These works are not likely to have any significant impact on other Features of Interest. To protect local biodiversity features the proposed survey will be carried out in full compliance with the Management Plan, Tipperary County Council and the National Parks and Wildlife Service recommendations set out in this document. As outlined in the AA screening the proposed works are not likely to have a significant impact on any features of interest or conservation objectives of Natura 2000 sites within 15km or the proposed works or Natura 2000 sites with a hydrological link to the proposed survey area. The proposed works will not impact on the Features of Interest of Natura 2000 sites downstream of the works due to the nature of the works. Water quality and potentially impacted Features of Interest will be adequately protected during the construction phase using standard biosecurity and herbicide application operating procedures.

A screening to identify potential links between the proposed project and any potential significant adverse effects on the Conservation Objectives and Features of Interest of Natura 2000 sites was carried out following the precautionary principle and Source/Pathway/Receptor model. Based on objective information and assessment, all Natura 2000 sites considered have been excluded from the stage 2 NIS. In the absence of any mitigation measure being implemented as part of the proposed survey a Stage 1 AA screening is deemed to be sufficient. Although hydrologically linked, the proposed survey will have no foreseeable impact on the Conservation Objectives or Features of Interest on this, or any other Natura 2000 site.

6. REFERENCE MATERIAL

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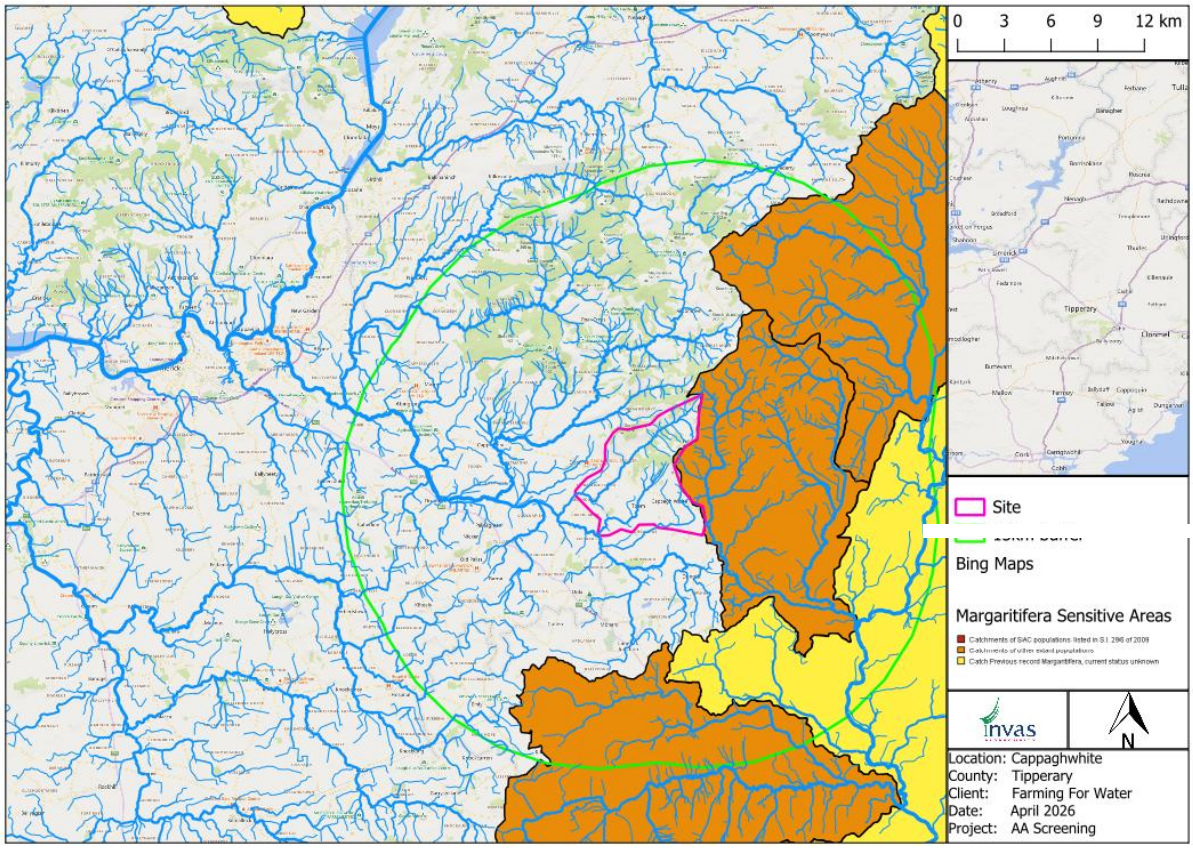
NPWS (2020) - NATURA 2000 Standard Data Form. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs. (https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000297.pdf)

Laois County Development Plan 2021-2027 - (https://consult.laois.ie/en/consultation/laois-county-development-plan-2021-2027)

Appendices

Appendix 1: EPA records of the closest *Margaritifera margaritifera* sensitive areas. All surveys will take place within the yellow areas. Yellow areas denote catchments where *Margaritifera margaritifera* were previously recorded, but the current status is unknown.



Appendix 2: Method Statement (Additions). Site specific – Tipperary IAS Management. Biosecurity Measures working in (or beside) Rivers

Care will be taken to ensure that no invasive species or fish pathogen are transferred from one watercourse to another. Such organisms can be very damaging to resident fish stock the aquatic habitat and the general environment.

In order to ensure that no invasive species are transferred between watercourses the following procedure will be carried out.

Items of equipment that might require attention would include clothing, boots, wellingtons and waders, ropes and straps, and any mechanical equipment. Care will be taken both before arrival at a watercourse and before leaving.

Before arrival on site

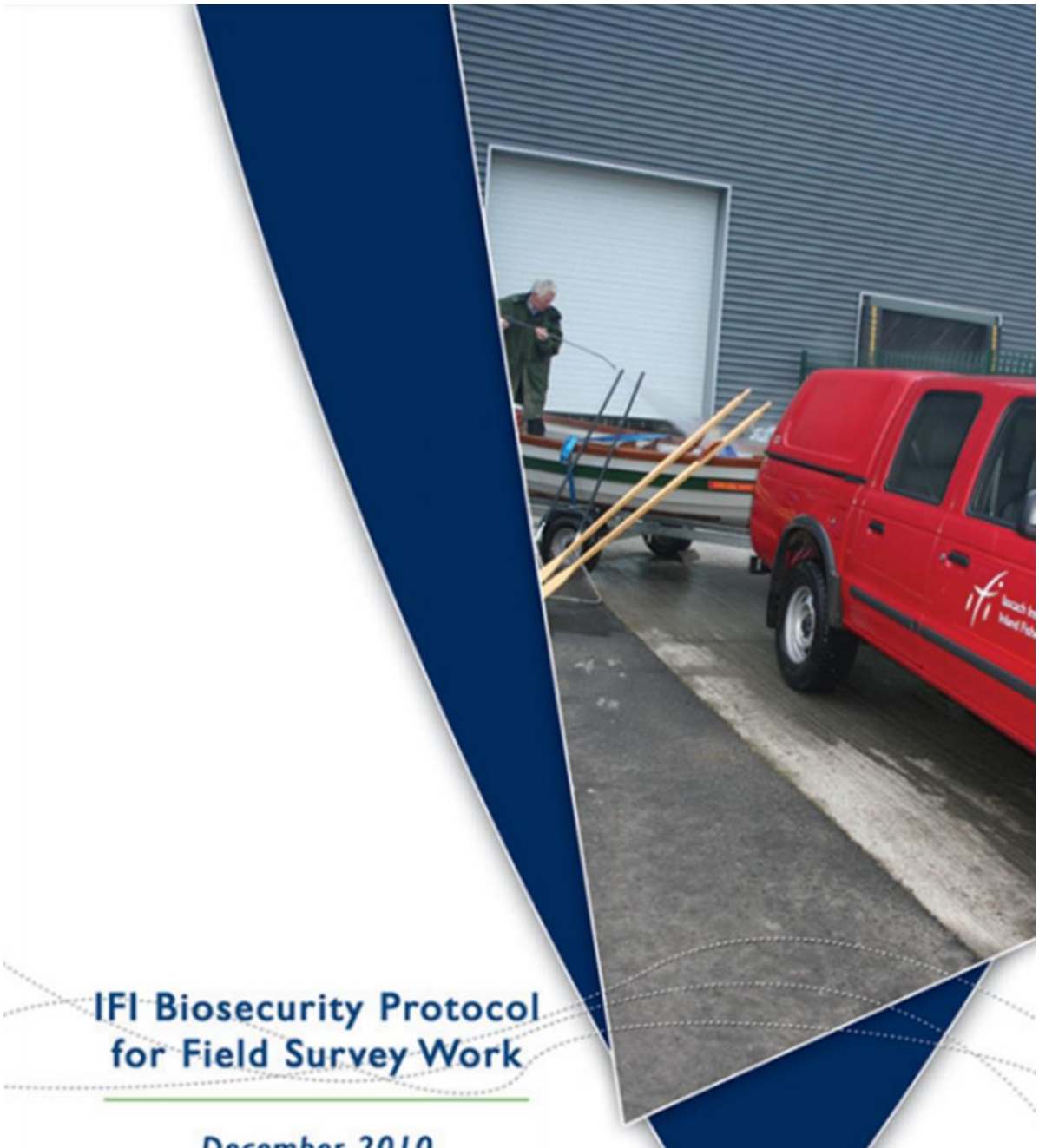
All equipment, clothing and footwear will be cleaned and disinfected as appropriate using a proprietary disinfectant product.

A foot bath disinfection point will be placed at the access point to the site of operation to be used by all visiting personal.

After work has concluded

All equipment will be inspected and any attached material will be removed and safely disposed of, and disinfected.

All clothing and footwear will be disinfected on leaving the site.



IFI Biosecurity Protocol for Field Survey Work

December 2010

Iascach Intíre Éireann
Inland Fisheries Ireland

Biosecurity Protocol for Field Survey Work

Invasive species are an ever present threat in our aquatic and riparian systems and it is imperative that none of our field operations exacerbate the risks to the environment and to the economy that are posed by these species. Fish parasites, pathogens and diseases also represent a significant threat to the health status of our watercourses. The introduction or transfer of such pathogens or diseases has the potential to wipe out large populations of fish in affected waters or catchments. Vigilance is required if we are to stop the spread of invasive species and fish diseases, and it is imperative that we in IFI lead by example in the ongoing struggle against these significant threats to our fishery watercourses.

The need for basic biosecurity in our fisheries operations must become ingrained in the psyche of our staff if we are to do our part to stop the spread of hazardous invasive species and fish pathogens. Much to do with biosecurity involves awareness, common sense and agreed procedures. Listed below are some basic procedures that must be implemented when conducting field survey work.

Each field vehicle must carry a 'disinfection box'. This should contain Virkon Aquatic or another proprietary disinfectant, a spray bottle, cloths or sponges, a scrubbing brush and protective gloves.

On completion of any field operation, all equipment used must be treated according to the procedures listed below. Equipment in this respect includes the following.
boats, trailers, outboard motors, anchors and rope, weights, tanks, buckets and bins, all PPE (including boots, wellingtons, waders, wetsuits, dry suits, waterproof clothing, life jackets, diving apparatus, etc.) and any technical or sampling apparatus used as part of the survey. Protective gloves must be worn when using any disinfectant solution in any of the procedures listed below.

- Visually inspect all equipment that has come into contact with the water for evidence of attached plant or animal material, or adherent mud or debris. This should be done before leaving the site.

- Remove any attached or adherent material (fish, fish scales, vegetation and debris) before leaving the site of operation.

- Ensure that all water is drained from boats, live wells and other water retaining compartments, outboard motors, tanks and other equipment before transportation elsewhere.

- High-pressure steam cleaning, with water > 40 degrees C, is recommended for boats (including oars, row locks, attachment ropes, anchors and buoys), trailers and outboard motors that are being moved from one watercourse to another. Many roadside garages provide these facilities. If it is not possible to steam clean the equipment, a normal power hose must be used. After cleaning visually inspect the equipment to ensure that all adherent material and debris has been removed.

- It is recommended to apply disinfectant, using the spray bottle from the 'disinfection box', to the undercarriage and wheels of the vehicle and trailer after steam cleaning or power hosing.

- Wet or live wells and other water retaining compartments in survey boats must be cleaned, rinsed or flushed with a 1% solution of Virkon Aquatic or another proprietary disinfection product. Alternatively, a 5% solution (100 ml / 20 litre solution) of chlorine bleach should be used. Rinse thoroughly with clean water.

- Tanks that are used to stock or transfer live fish should be thoroughly washed with a 1% solution of Virkon Aquatic or another proprietary disinfection product. Alternatively, a 5% solution (100 ml / 20 litre solution) of chlorine bleach should be used. All disinfected equipment must be thoroughly rinsed with clean water.

- Outboard motors should be flushed with a 1% solution of Virkon Aquatic or another proprietary disinfection product, or with water > 40 degrees C. Alternatively, a 5% solution (100 ml / 20 litre solution) of chlorine bleach should be used. Facilities will be provided at IFI stores countrywide to accommodate this operation.

- Nets (to include monofilament and braided gill nets, fyke nets and seine nets) must be cleaned of all vegetation and debris before returning to base. The clean nets must then be placed in a freezer for a period of four days (3 days will suffice for monofilament nets). Following this treatment the nets must be soaked in a 1% solution of Virkon Aquatic or a proprietary disinfectant for a period of not less than 15 minutes and thoroughly rinsed thereafter. Where these proprietary disinfectants are not available the nets must be soaked in a 5% solution (100 ml / 20 litre solution) of chlorine bleach for 1 hour and thoroughly rinsed after.
  An SOP on 'Management and Disinfection of Survey Nets' is available on request from IFI Swords.

- Footwear should be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards.

- All PPE should be visually inspected and any attached vegetation or debris removed. Where appropriate, the gear should be wiped down with a cloth soaked in 1% solution of Virkon Aquatic or another proprietary disinfection product. Alternatively, a 5% solution (100 ml / 20 litre solution) of chlorine bleach should be used. Rubber gloves must be worn when undertaking this procedure.

- Sampling equipment (e.g. electrofishing electrodes and cable, grab samplers, meter sticks, buckets and bins, etc.) must be cleaned, rinsed or wiped down with or dipped in a suitable disinfectant solution.

- Landing nets and hand nets must be dipped in disinfectant solution and rinsed in clean water.

- All field equipment must be suitably disinfected before being returned to the IFI Swords warehouse for storage. Staff will be requested to sign a prepared form detailing the nature of the disinfection process carried out and the date on which this was conducted.

Note
Disinfectants must be used with care and in strict accordance with the manufacturer's instructions. They must be disposed of safely and never in close proximity to open waters,

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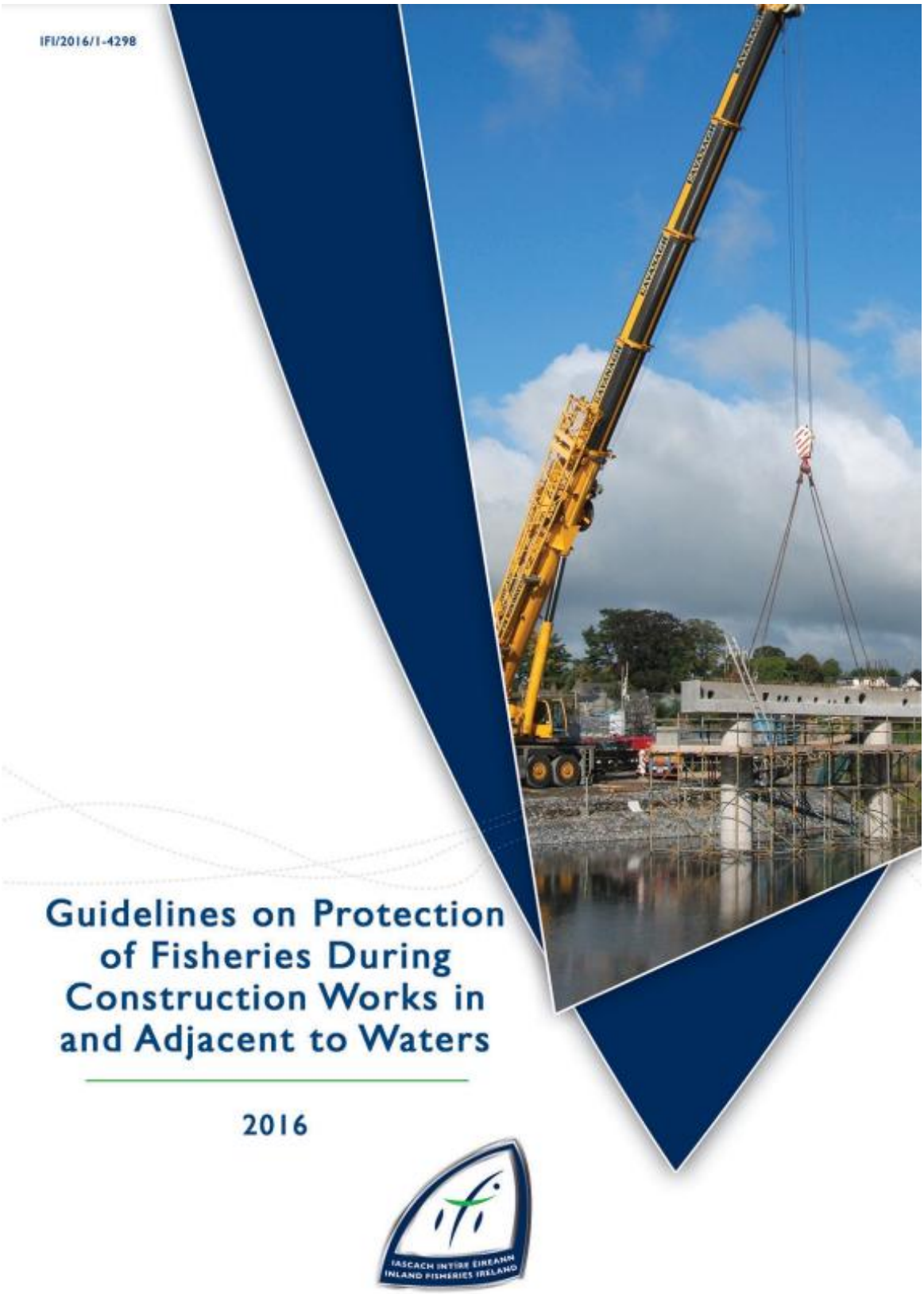
Appendix 3: Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).



GUIDELINES ON PROTECTION OF FISHERIES DURING CONSTRUCTION WORKS IN AND ADJACENT TO WATERS

INLAND FISHERIES IRELAND

2016

GUIDELINES ON PROTECTION OF FISHERIES DURING CONSTRUCTION WORKS IN AND ADJACENT TO WATERS.

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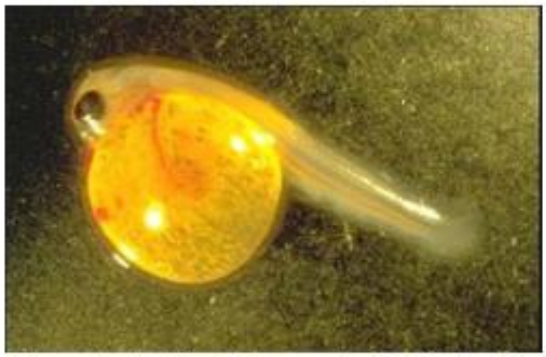
GUIDELINES ON PROTECTION OF FISHERIES DURING CONSTRUCTION WORKS IN AND ADJACENT TO WATERS

1. INTRODUCTION.

1.1 Inland Fisheries Ireland (IFI) is responsible for the protection, management and conservation of the inland fisheries resource in Ireland, which includes over 70,000 kilometres of rivers and streams and 144,000 hectares of lakes. The agency is also responsible for sea angling. The waters concerned contain a wide range of fish species, which are particularly sensitive in terms of threats to their physical habitat and to water quality such as arise during construction works in and adjacent to waters.

1.2 IFI policy is aimed at maintaining a sustainable fisheries resource through preserving the productive capacity of fish habitat by avoiding habitat loss, and harmful alteration to habitat. Construction works particularly those entailing the installation of new river and stream crossing structures and the realignment of river channels have the potential to significantly impact both in the short and long term on fisheries resources if they are not carried out in an environmentally sensitive manner.



A brown trout at the alevin stage shortly after hatching. This life stage is very sensitive to pollution and physical disturbance.

1.3 These guidelines identify the main issues of concern in terms of construction impacts and their prevention. They set out ***inter alia*** requirements in relation to bridges and culverts and the need for such structures to allow for unhindered upstream and downstream movement of fish and aquatic life.

2 OBLIGATIONS ON DEVELOPERS DESIGNERS AND CONTRACTORS TO CONSULT IFI.

2.1 Contact should be made with IFI at the earliest possible stage in the planning and design process where works such as road construction, installation of culverts and bridges, the crossing of rivers/streams with pipelines and works on and in the environs of waters are planned. Such consultation will enable those concerned to comply with the provisions of the Fisheries Acts and Habitats Regulations.

2.2 In addition to the general guidance and requirements detailed herein, there will be design and construction issues specific to individual projects and locations. In such cases IFI will issue detailed operational and construction requirements.

3. THE ISSUES OF CONCERN.

3.1 Damage to the Aquatic and Associated Riparian Habitat, e.g.

- Removal and loss of instream spawning gravels and larger stones.

- Loss of submerged and emergent aquatic vegetation.
- Loss or damage to bankside cover including removal of trees, shrubs and bankside root masses.
- Undesirable changes in watercourse morphology and hydrology.

Drip tray is undersized, dangerously positioned and leaking oil. Unacceptable practice.

3.2 Pollution of Waters.

Pollutant	Examples of Construction Source
Silts and solids.	Earthworks, new drainage networks and instream works.
Cementitious residues.	Bridge, culvert and drainage headwall construction, etc.
Oils and greases. Anti freeze.	Construction plant and equipment.
Wood preservative.	Treatment of new timber fencing.

3.3 Introduction of Non Native Species.

Invasive Species	Construction Source
Plants, algae, fish and shellfish.	Earthmoving equipment, pumps, boats, ropes etc, previously used perhaps unknowingly in waters containing invasive species.
Plants and algae.	Imported materials such as top soil.

Further information on invasive species their impact and control, and on bio-security is available at www.inlandfisheriesireland.ie

It is a serious offence to discharge deleterious matter such as oil contaminated residues to waters.

3.4 Interference with Upstream and Downstream Movement of Aquatic Life.

- Improperly designed or installed temporary and/or permanent watercourse crossing structures. For example, insufficient water depth in culverts, culverts with perched inlets, outfalls and excessive slope.

- Insufficient water depth over bridge aprons/scour slabs.
- Physical alteration of stream channels resulting in:
  - Altered hydraulic characteristics.
  - Changes in stream profile, particularly in width, depth, gradient and current speed.

Temporary crossing impassable to fish life.

4. TIMING OF INSTREAM WORKS.

4.1 There are significant variations in the timing and duration of salmonid (Salmon and Trout) spawning activity throughout the Republic of Ireland. To minimise adverse impacts on the fisheries resource works in rivers, streams, watercourses, lakes, reservoirs and ponds should normally (except in exceptional circumstances and with the agreement of IFI) be carried out during the period July-September.

4.2 The appropriate 'window' for instream works can vary depending on the nature of the fishery resource concerned and the existence of other factors such as catchment or sub catchment specific Bye Laws and Regulations.

5. TEMPORARY CROSSING STRUCTURES ON WATERS.

5.1 All watercourses which have to be traversed during construction projects should be effectively bridged prior to commencement of works. There is sometimes a serious misconception that in installing temporary crossing structures, the only issue is keeping water flowing from above a temporary crossing to below it. Design and choice of temporary crossing structures must provide for passage of fish and macroinvertebrates, the requirement to protect important fish habitats e.g. spawning and over wintering areas, as well as preventing erosion and sedimentation. In certain circumstances, access for angling or commercial fishing purposes may also be required.

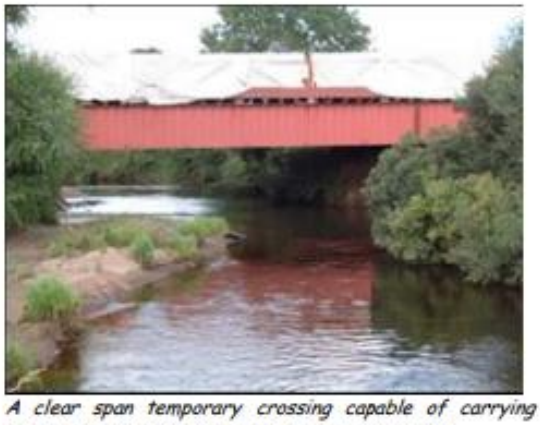
Temporary crossing structure. Impassable for aquatic life and emitting silt to waters as construction equipment traverses the crossing. Unacceptable practice.

5.2 No temporary crossing on any watercourse shall be installed without the approval of IFI as regards sizing, location, duration and timing.

The same temporary crossing location as shown on the previous page, but with a laden dumper dislodging and causing loss of cover material to waters.

Temporary clear span 'bailey bridge' ensuring free upstream and downstream movement of aquatic life. The streamside fencing should be 5 metres from the watercourse, not immediately alongside as in this photograph.

The inevitable result from the crossing shown above. Continuous silt discharges. Unacceptable practice.



A clear span temporary crossing capable of carrying heavy axle loadings and long wheel base vehicles.

5.3 The preferred option is for clear span 'bridge type' structures on fisheries waters.

5.4 The crossing of watercourses at natural fords is not permitted because of the amount of uncontrolled sedimentation that can be generated.

5.5 The creation of fords on streams and rivers through the introduction of stone is prohibited.

5.6 Where circumstances such as space or access difficulties preclude use of clear span structures, temporary crossings structures shall:

5.6.1 Comprise one or more metal or concrete pipes, prefabricated culverts or such other material as IFI may permit of minimum diameter 900 mm. Pipes or culverts may be vertically stacked.

5.6.2 Be laid in such manner as to maintain the existing stream profile.

5.6.3 Ensure no significant alteration in current speed or hydraulic characteristics, in particular not result in scouring, deposition or erosion upstream or downstream the temporary crossing location.

5.6.4 Have capacity to convey the full range of flows including flood flows likely to be encountered without the crossing being overtopped.

5.6.5 Be covered with clean inert material such as to allow for the safe crossing of the widest items of plant and equipment without cover material being dislodged and entering waters.

5.7 The approach and departure routes to temporary crossing structures should be designed and installed so that drainage will fall away from the watercourse being crossed. In the event that the fall of ground does not permit sufficient control on drainage, additional earthworks settlement areas shall be provided.

5.8 Temporary crossing structures should be fenced with terram or similar material to prevent wind blow carrying dusts and other potentially polluting matter to waters.

5.9 Side armour (e.g. reinforced concrete traffic barriers) should be provided on temporary crossing structures to ensure machinery cannot drive over its edge, or force the discharge of material from the bridge deck to waters.

5.10 IFI wish to emphasise that site selection for temporary crossings should have regard to all access and construction needs ranging from those of fencing contractors vehicles to the longest wheelbase of multi-axle cranes.

A crossing structure over a designated salmonid water. Note: terram covered fencing, reinforced concrete traffic barriers and fall back from the watercourse.

5.11 It is not permissible, except in exceptional circumstances, to reposition temporary crossing structures where these are not of a clear span type.

6. RIVER AND STREAM PERMANENT CROSSING STRUCTURES.

Is the culvert adequately sized?

6.1 Structures should not damage fish habitat or create blockages to fish and macroinvertebrate passage. Design and choice of structure should be based on its technical

and economic feasibility to pass fish and macroinvertebrates, the requirement to protect important fish habitats e.g. spawning and over-wintering areas, provision in certain areas of angling and commercial fishing access including boat access and prevention of erosion and sedimentation.

6.2 Culverts are the most frequently used river/stream crossing structures and are associated with some of the most common fish passage problems. The culverting of long stretches of fisheries water is extremely undesirable and can result in significant loss of valuable habitat. In the case of crossing structures over fishery waters, the preferred position is for clear span structures (bridges), so as not to interfere in any way with the bed or bank of the watercourses in question.

Excessively wide culverts can result in reduced current speed, ponding, and siltation of instream gravels.

6.3 Bridge foundations should be designed and positioned at least 2.5 metres from the river bank so as not to impact on the riparian habitat.

Excessively long culvert resulting in habitat loss and reduced productivity due to inadequate light penetration.

6.4 Generally, bridges and bottomless culverts are the best option for maintaining natural stream channel characteristics and have the least impact on habitat. However, because of design and load bearing considerations, bottomless culverts may not always be suitable for installation particularly on narrow river channels, as foundations may encroach on the channel itself and possibly result in future scouring or erosion.

6.5 Taking account of recent advances and investigations in the area of climate change and flood studies, designs should be such as to verifiably have carrying capacity for a 1 in 100 year fluvial flood flow whilst maintaining a minimum freeboard of 300 mm.

6.6 The Office of Public Works (OPW) is the lead agency for flood risk management in the Republic of Ireland. Design and capacity of structures must also be in accordance with their requirements. IFI strongly recommends that contact be made with OPW at the earliest stage in the planning and design process. (www.opw.ie)

An embedded box culvert sized to match existing stream profile.

6.7 Clear span designs maintain channel profile, do not alter gradients, readily pass sediment and debris and provide unrestricted passage for all size classes of fish by retaining the natural stream bed and gradient. Water velocity is not changed and they can be designed to maintain the normal stream width. Foundations should be positioned at least 2.5 metres from waters.

6.8 Embedded box and pipe culverts are less preferable to bridges and bottomless culverts. Embedded culverts must maintain the natural channel gradient, width and substrate configuration. They should be buried to a minimum of 500 mm. below the stream bed at the natural gradient. Box and pipe culverts must be sized to maintain the natural stream channel width. The gradient should not exceed 3%. The availability of suitably sized material (depending on hydraulic conditions) to initiate "simulation" of the stream bed is the most preferable approach to establish fish and faunal passage through culverts.

6.9 Culverts should be positioned where the watercourse is straightest and aligned with its bed.

Off-line culvert at construction stage back filled with gravel. The size range and depth of fill required will be site specific.

6.10 In the case of bridges and bottomless culverts, structures should be designed and installed so as to:

6.10.1 Allow for the maintenance of channel profile and existing gradient.

6.10.2 Be capable of passing such debris as might arise during flood flow conditions.

6.10.3 Ensure adequate light penetration to minimise loss in primary productivity.

6.10.4 Not result in damage to the riparian habitat or necessitate construction within 2.5 metres of waters.

6.10.5 Provide at locations specified by IFI, angling access and/or access for commercial fishing purposes.

Box culvert positioned at incorrect level. Upstream fish passage is made difficult. Culvert invert should be 500 mm. below existing bed level and back filled with clean gravel to match the existing stream profile.

6.11 While the preferred option is for bottomless culverts, IFI is prepared in certain circumstances to consider proposals for the installation of box or pipe culverts on fisheries waters. These may be installed subject to structures being sized so as to meet the requirements at 6.10 in terms of channel profile, gradient, flood debris capacity, light, access and:

6.11.1 Be positioned such that both the upstream and downstream invert shall be 500 mm. below the upstream and downstream river bed invert levels respectively.

6.11.2 Never exceed a slope of 5%, in which circumstances baffles generally are required, and preferably not exceed a slope of 3%. As baffles can reduce the hydraulic efficiency of culverts, appropriate capacity provision must be included in the overall design.

6.11.3 In the case of box culverts on angling waters, be 3 meters in height.

The smooth concrete finish is totally unsuitable for fish passage.

6.12 Pipe culverts are not generally considered acceptable on fisheries waters. They are normally only appropriate for use on minor watercourses and drainage ditches where these can be demonstrated as not being significant in terms of fisheries habitat.

Unacceptable culverting practice. These pipes are totally impassable to fish.

6.13 Bank protection works are often required upstream and downstream of new structures, to ensure no undercutting or destabilisation of either the structure or riparian bank areas occurs. In carrying out bank protection works, it is essential that large enough boulders are selected and strategically positioned, to ensure they cannot be undercut. Normally this entails part burying boulders up to one third of their depth below stream bed

level and securing them into their final position. In areas of high water energy, to ensure stability, boulders size should be a minimum of 0.5 ton.

The boulders in these bank protection works are not large enough, not sunken below stream bed level and likely to be undercut and dislodged in a storm event.

Suitably sized rock armour built to high water level at a location influenced by tidal back-up.

6.14 To facilitate revegetation, each course of boulders laid should be back filled with a layer of top soil. Selection of boulders in terms of shape to facilitate their placement and stability is a major consideration. Irregularly shaped boulders are very difficult to work with in terms of building multiple stable courses.

Revegetation of rock armour facilitated by the placing of locally sourced topsoil (to ensure no importation of non local grasses and shrubs) between each layer or course of boulders at installation time.

6.15 The height to which rock armour is built must take account not only of the riparian zone requiring protection, but also in certain circumstances of the need to protect e.g. kingfisher and sand martin habitat. In many instances, one or two layers of armour will be sufficient to protect and stabilise the toe of embankments while allowing nesting.

Visually unsightly stone filled gabion baskets.

6.16 Gabions are not a preferred option when it comes to bank protection. They can easily be vandalised and once the mesh is cut or broken, baskets can collapse. Gabion baskets can be unsightly and it is difficult to successfully

establish and maintain vegetation on side walls. Gabion baskets are normally only acceptable at locations where due to access constraints it is not possible to install rock armour.

7. CONSTRUCTION IMPACTS.

7.1 Uncured concrete can kill fish, plant life and macroinvertebrates by altering the pH of the water. Pre-cast concrete should be used whenever possible, to eliminate the risk to all forms of aquatic life.

7.2 Discharge of silt-laden waters to fisheries streams is of particular concern. Silt can clog fish spawning beds and juvenile fish species are particularly sensitive. Plant and macroinvertebrate communities can literally be blanketed over, and this can lead to loss or degradation of valuable habitat. It is important to incorporate best practices into construction methods to minimise discharges of silt/suspended solids to waters.

Construction sites require careful management. Is this the optimal haul route in terms of impact minimisation?

Silt discharge minimisation by providing retention areas to reduce discharge velocity and allow settlement during rainfall events.

7.3 Discharges of fuels and oils can be directly toxic to aquatic life and at sub lethal levels lead to tainting of fish tissues, rendering fish inedible. Oil films on water can seriously interfere with the diffusion of oxygen from the atmosphere into waters and in extreme cases result in oxygen depletion.

The practical impact of poor silt control.

7.4 IFI require that:

7.4.1 When cast-in-place concrete is required, all work must be done in the dry and effectively isolated from any flowing water (or water that may enter streams

and rivers) for a period sufficient to ensure no leachate from the concrete.

Silt control pond. The blue hose conveying pumped silt laden waters has its outlet securely anchored within the stone aggregate thereby dissipating energy, minimising disturbance, and preventing pond contents being disturbed and re-suspended.

Poor work practice. The drip tray is undersized, constructed of too light a material, and accordingly overly flexible, easily damaged, and unlikely to retain oil residues.

7.4.2 No direct discharges be made to waters where there is potential for cement or residues in discharges.

7.4.3 Designated impermeable cement washout areas must be provided.

7.4.4 The pH of any and all discharges made from and during construction works shall be in the range 6.0 - 9.0 units and not alter the pH of any receiving fisheries waters by more than +/- 0.5 pH units.

Silt control pond. Note hose conveying pumped silt laden waters with its outlet positioned within the gravel mound thus ensuring no disturbance of pond contents.

7.4.5 Silt traps/settlement ponds or other forms of containment and treatment shall be constructed at locations that will intercept run-off to streams. Traps shall not be constructed immediately adjacent to natural watercourses. A buffer zone should remain between the silt trap and the watercourse with natural vegetation left intact. Alternatively, imported materials such as terram, straw bales, coarse to fine gravel should be used either separately or in combination as appropriate to remove suspended matter from discharges.

7.4.6 The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.

7.4.7 All oils and fuels shall be stored in secure bunded areas and care and attention taken during refuelling and maintenance operations. Particular

attention shall be paid to gradient and ground conditions which could increase the risk of discharge to waters.

7.4.8 Temporary oil interceptor facilities shall be installed and maintained where site works involve the discharge of drainage water to receiving rivers and streams.

7.4.9 There shall be no visible oil film in any discharges from construction works to waters.

7.4.10 That all containment and treatment facilities are regularly inspected and maintained.

7.4.11 Waterproofing and other chemical treatment to structures in close proximity to waters shall be applied by hand.

7.4.12 Hydroseeding shall not be carried out in close proximity to water. These areas shall be seeded by hand.

Terram lined (to prevent erosion) silt control pond outlet channel showing gravel acting as filter medium for silt removal.

8. DUST SUPPRESSION AND WATER ABSTRACTION.

8.1 It is accepted in the interests of protection of terrestrial ecosystems and so as to avoid a wide range of impacts on persons and property, that dust control measures sometimes may be required. This is normally achieved by abstraction from watercourses adjacent to the site of earthworks. In such circumstances it is essential that the aquatic resource is protected and that over-abstraction does not take place especially in low flow summer conditions at locations supporting important fish populations.

Continuous abstraction using submersible pump. No screening in place to prevent the entry of e.g. juvenile fish species to the pump. Unacceptable practice.

8.2 IFI require that:

8.2.1 Water abstraction for dust suppression shall not take place from any water body containing or suspected to contain aquatic invasive species.

8.2.2 Abstraction is confined to only those larger waters identified and agreed as being of sufficient size and volume so as to allow abstraction without adverse impact.

8.2.3 Abstraction points shall be screened so as to ensure that fish and aquatic plants are not removed from waters in the abstraction process.

A screened abstraction point using terram fitted over a fabricated support frame.

9. PLANNING, DESIGN AND CONSTRUCTION ISSUES.

9.1 The preferred position from the fisheries perspective is for clear span river and stream crossing structures thereby allowing for installation/construction without the need to alter or move existing watercourses. In the case of bridges and bottomless culverts, designers should ensure proposals are such that foundations and abutments including wing walls can be constructed without entering on or damaging the riparian zone, or existing channel profile.

9.2 Where on-line construction is proposed or taking place, it may be necessary for IFI, following an assessment of on the ground conditions with the contractors involved, to temporarily remove using electro-fishing equipment, fish from the reaches involved.

9.3 Where on line box or pipe culvert construction is proposed, it will be necessary to install a temporary by-pass channel so as to allow for stream continuity and the normal upstream and downstream movement of fish and aquatic life depending on location and seasonality.

9.4 Temporary long term by-pass channels shall be excavated and sized such as to replicate existing upstream and downstream channel conditions as regards width, depth, gradient and instream materials. Where necessary, rock armouring will be provided. In terms of capacity, by-pass channels shall be sized so as to accommodate such flood event as might reasonably be expected based on examination of hydrometric data and catchment characteristics.

9.5 In newly constructed by-pass channels the process of diverting waters and associated movement of fish stocks may only take place under the direction and supervision of IFI or its agents. Adequate advance notice of all such proposed works shall be given to IFI.

Extreme meanders installed during excavation of a new channel to overcome excessive gradient between the original course of the stream (in the background at tree line) and the point of entry of the newly created channel to a culvert (in foreground under the timber fencing). In this instance there was inadequate provision at the planning and design stage for the necessary land take.

9.6 Where temporary short term by-pass channels are required for a number of days, these shall be excavated and sized such as to accommodate such flood event as might reasonably be expected over the period in question.

9.7 Where a structure installed on line is completed within the period during which instream works normally may be undertaken (July-September), flow may be re-established through the new structure, fish transferred from the temporary by-pass channel back to the original channel, and the by-pass decommissioned immediately on completion of the fish removal with the area levelled and landscaped as appropriate. Such works may only take place following the giving of advance notice to IFI and under its supervision.

9.8 Where a structure installed on line is not completed within the period during which instream works normally may be undertaken, flow may not except in exceptional circumstances be re-established through the new structure until the next approved 'window' for such instream works.

9.9 Where on-line construction is not feasible and a structure is constructed off-line (subject to IFI approval), the course of the existing stream can be altered and new approach/departure channels designed and installed to link into the original stream channel

9.10 IFI require where box and/or pipe culverts are installed off-line on fisheries waters that:

9.10.1 Particular attention shall be given by designers and contractors to survey pre-existing upstream and downstream stream bed levels at appropriate locations, taking account of the requirement to ensure newly installed box or pipe culverts are lain with their invert level 500 mm. below bed level, so that in overall terms the newly created section of stream shall replicate and where appropriate, improve on that which it replaces.

9.10.2 The approach and departure channels for newly installed culverts shall be excavated and sized such as to replicate and be compatible with existing upstream and downstream channel conditions as regards width, depth, gradient and instream materials. Bends and meanders shall be incorporated into the new channel.

9.10.3 The approach and departure channels for newly installed culverts are back filled to a depth of up to 500 mm with clean round gravel in such size range as required where IFI determine that the material in the newly formed channel is unsuitable in terms of fish habitat.

9.11 Where as an exceptional measure consequent on limited land availability or other space constraints a culvert having a gradient greater than 5% is permitted, IFI require as follows:

9.11.1 Water velocity through the culvert should not exceed 1.2m/sec. in the case of salmonid habitat and 0.8 m/sec. in the case of cyprinid habitat.

9.11.2 Baffles should be provided within the culvert structure to locally reduce flow velocity thus aiding fish swimming upstream without undue stress.

9.11.3 The entry and exit points of the structure must be drowned out to a minimum depth of 150 mm. in the case of salmon waters and 100 mm. for trout waters.

9.11.4 Where culvert gradient is too steep to achieve backwatering, the downstream water level should be raised by providing one or more ponding weirs below the culvert outfall. Ponding weirs should have fish notches to facilitate upstream movement and the pools formed by them should provide resting and take-off conditions for fish.

9.12 The fitting of mesh or screens to culverts, albeit with the intention of intercepting instream debris is prohibited.

9.13 Newly constructed river and stream channels shall have banks battered to a finished angle of not greater than 45° on one bank and not greater than 30° on the opposite bank, (to allow for maintenance of a low flow channel, an overflow and a flood flow channel). Banks shall be top soiled and seeded so as to ensure the growth and development of a broad range of local grasses and shrubs thereby facilitating development of stable bank root structures.

Well vegetated newly established river channel, with broadleaves planted to within 5 meters of the overflow channel. The root structures aid bankside stability.

Looking from upstream towards a culvert arrangement. Moderate and flood flows are conveyed in the right hand culvert. Entry to that culvert is dictated by the invert and contour of the right hand portion of the newly created river channel. The left hand bank finished batter angle is approx. 45° The first portion of the right hand bank to convey the moderate flow is battered to approx. 30° The extreme right bank area is battered to approx. 45° to convey flood flows.

9.14 Broadleaves shall, where prescribed by IFI, be planted along newly created channels so as to provide a mixture of dapple and shade conditions. Planting shall be a minimum of 5 meters from the watercourse channel.

9.15 In the case of culverts, low flows can be accommodated in an appropriately sized structure, thereby sustaining the fisheries resource. Moderate and flood flows should be directed through a culvert that becomes operable only at a pre-determined discharge level. Moderate and flood flow culverts should be installed such that the culvert empties in its entirety when the flood has passed.

9.16 To aid in the colonisation and development of newly created river channels, it is desirable to transfer established riparian plants, shrubs and trees together with living root structures as well as boulders, stones and gravels from decommissioned to new channels where they can be positioned, inserted and replanted as appropriate.

Newly created channel. The riparian grasses on the right bank have been transferred from the previous course of the now redundant original channel. The root structures stabilise the bank area while the grasses provide a degree of cover and shade and provide habitat for aquatic insects which form part of the food for fish.

9.17 In the case of newly created stream and river channels IFI require that:

9.17.1 Such transfer of riparian plants, trees and instream material(s) as necessary, is carried out under IFI's direct supervision.

9.17.2 Gravels and stones are removed from the dried out river channels and securely stored for re-use in the newly created river channels.

9.18 Stock proof and mammal proof fencing shall not cause an obstruction to fish passage or angling.

9.19 IFI shall be reimbursed the cost of fish removal and replacement operations associated with river and stream diversions and associated works.

10.0 REPAIRS TO EXISTING BRIDGES, CULVERTS AND SCOUR SLABS.

10.1 There are within Ireland very many old stone bridges in need of strengthening and repair works. The most commonly used methods for such works include pressure grouting, guniting and pointing of joints

Grout loss to waters is normally stopped by placing dry cement over the leak, with sand bags on top to restrict grout flow until the leak solidifies. (This photograph was taken after water flow was re-established following solidification of the grout.)

10.2 The concerns as regards sensitivity of aquatic life to pollutants and physical disturbance set out earlier in this document all apply, particularly as regards loss of grout and gunite rebound, both of which are highly alkaline.

Repairs to a single arch bridge and scour slab with stream flow piped from upstream to downstream (foreground) during both grouting and slab repair.

10.3 Grouting is a high risk process, as it is not always possible to pre-determine the route that grout will follow. It may travel through

fissures and appear upstream or downstream of the structures under repair, sometimes metres from the location of injection. Particular vigilance is required. During grout injection at least one member of a repair crew should be closely monitoring for grout losses both upstream and downstream of the structure. Portable pH monitoring facilities should always be available and staff trained in its use.

10.4 Where the structure to be grouted comprises a number of arches, water flow should be diverted away from the arch being repaired so as to allow working in the dry. Diversion of water by means of temporary damming should be undertaken. Sand bags in conjunction with e.g. plastic sheeting, marine plywood and other suitable materials may be used. A number of manufacturers provide heavy duty rubber type aqua dams which can readily be deployed, linked together and filled on site with river water thus forming a very effective seal to a bunded area. While such damming and diversion of water as is required will normally be only for a short period, the dam or berm must nonetheless be high enough not to be over topped in the event of a rainfall event and increased water levels.

10.5 Where a single arch structure is under repair, to achieve grouting in the dry, water may be diverted from upstream to downstream by means of a secure flume arrangement, or through piping, or in very limited circumstances, by means of over pumping. Screening to preclude entry of aquatic life to pumps must be carried out.

Gunite rebound on a stream bed where no precautions were taken to prevent its entry to waters. Rebound having a pH >11.5 would have entered the actively flowing stream with dire environmental consequences.

10.6 In all instances of guniting and repair works including repointing and masonry cleaning, the entirety of the area of water over which works are taking place should be protected from gunite rebound, mortar and vegetation loss by installation of a sealed and secure decking which shall extend upstream and downstream the structure concerned so as to ensure no losses to water.

Apron/scour slab inaccessible on its downstream end to fish life because of the extent of perching and impassable due to a combination of excessive water velocity and lack of water depth across its surface.

10.7 Approved forms of scaffolding are required to support decking. It is essential that

the decking completely captures all falling debris and rebound. All materials captured must be removed for safe disposal.

10.8 Repairs to bridge aprons/scour slabs must be undertaken so as to ensure upstream and downstream passage of fish is possible in all flow conditions. Particular care must be exercised to ensure perching does not result where new concrete slabs are poured.

Low level stone weirs installed on a salmonid nursery stream to back water the bridge apron /scour slab originally installed at too high a level.

10.9 Existing stream bed materials (stones and boulders depending on conditions) should be set into new concrete aprons/slabs thereby providing for non uniform baffled flow of varying depth across the structure which will allow for the weakest fish species to swim upstream through the deeper water area.

10.10 Scour slabs should be dished so as to provide a deeper zone and consequently deeper water to facilitate fish passage.

10.11 It is difficult and costly to retrospectively render a poorly installed apron/scour slab passable, especially where it has been installed at too high a level. In some instances the installation of one or more low level weir type structures in the river downstream may assist in back-flooding the apron thereby rendering it passable.

10.12 The installation of baffles can assist where excessive water velocity over an apron/scour slab prohibits free upstream fish movement. Baffles should be positioned so as to reduce velocity and provide temporary rest areas for weaker fish attempting to swim upstream.

Large stone baffles held in position on concrete apron with stainless steel dowel rods drilled into both the apron and stones. (Poor placement of the livestock fencing as shown in the photograph has the potential to cause blockage by catching debris.)

11.0 PIPELINE INSTALLATION.

11.1 In the case of pipeline crossings under fisheries waters, the preferred method is by way of trenchless crossings using techniques such as horizontal directional drilling, auger boring or micro-tunnelling. There are many advantages from use of such methods. Apart from the obvious avoidance of impacts on the fisheries resource, works do not have to be confined to the July-September 'window' period.

11.2 Where circumstances such as site size and contour or the existence of buildings

preclude trenchless methodologies, open cut or trench type crossings may be undertaken.

11.3 In the case of trenchless crossing of waters IFI require as follows:

11.3.1 Locations for drill rig positioning and pipeline pull areas shall be chosen or engineered such that the fall is away from the waters in question, thereby facilitating installation of pollution containment and control facilities.

11.3.2 Where drilling fluids are being returned for cleaning and re-use or recirculation through a temporary fluid return line, pneumatic leak testing shall be carried out to confirm the integrity of the return line.

11.3.3 Where circumstances necessitate the running of a return fluid line across the bed of the waters being under bored, the pipeline shall be sunken and weighted down by means of prefabricated concrete collars or by sand bags attached using web construction straps, or such other means as appropriate and securely anchored. Marker buoys and on-land marker posts will be required and all such fluid return pipelines and markers shall not interfere with or constitute a fouling risk to licensed and legally used fishing equipment.

11.3.4 Spent drilling fluids including separated drill materials shall be contained in secure bunded areas for off-site disposal at a licensed disposal facility.

11.4 In the case of open cut or trench type crossing of waters IFI require as follows:

11.4.1 Water shall be diverted from upstream to downstream the pipeline crossing location by means of a secure open flume arrangement, or through piping, or in limited circumstances, by means of over pumping.

11.4.2 Screening to preclude entry to pumps of aquatic life must be carried out.

11.4.3 The waters being crossed shall be effectively dammed both upstream and downstream of the trench location so as to ensure that works are undertaken in the dry.

11.4.4 Where concrete ballast is used to prevent pipelines rising as a result of buoyancy, it should be precast.

11.4.5 Following completion of backfilling, river bed and banks shall be reformed to match their original profile.

11.5 It will normally be necessary to temporarily remove, using electrofishing equipment, fish from the reaches involved.

12. ANGLING AND COMMERCIAL FISHING ACCESS.

12.1 In circumstances where crossings of important angling waters are concerned, it will often be necessary to provide for angling access to and from stretches of water during the construction phase of projects. It is important to note that fishing rights are property rights and that it is a legal right for anglers to access fisheries. Additionally, certain commercial fishing activities may have entry and access requirements. In such site specific circumstances, IFI will issue project and location specific requirements.

A tidal water with access for vehicles and on the opposite side, access for anglers.

12.2 IFI require:

12.2.1 In the case of permanent crossing structures on waters recognised as of angling importance, that a minimum walkway through or under the structure 1.5 meters in width and 2.5 meters in height be provided. The walkway shall be self draining and have a non slip finish.

12.2.2 In the case of a bridge spanning a specific salmon angling site, up to 7 meters clearance above water level and in the case of trout angling, up to 4 metres clearance to allow casting.

13.0 PROVISION OF DOCUMENTS.

13.1 In the case of structures and pipelines crossing waters, IFI shall be provided in Excel spreadsheet format with precise details of all watercourse crossings including seasonal streams. The spreadsheet shall in respect of each watercourse contain:

13.1.1 The number, code or other means of identification of the location.

13.1.2 Easting and northing coordinates (Irish Grid Ref).

13.1.3 Dimensions including width, height, length and gradient of proposed structures and the estimated discharge.

13.1.4 A description of the proposed structure including its shape.

13.2 Contractors/developers shall provide or have provided to IFI:

13.2.1 In the case of road construction, a copy of the Discovery 1:50,000 map(s) showing the proposed road scheme.

13.2.2 In the case of road construction, engineering drawings and OS maps in A3 size showing mainline and side road plans, chainage and profiles for all locations where watercourse crossings and drainage issues arise.

13.2.3 Engineering drawings and OS maps in A3 size of all crossing structures and pipelines in final proposal stage for construction. These shall include dimensions, setting out points, and where necessary gradient expressed as a percentage.

13.2.4 Such other details and method statements as may reasonably be required.

14.0 CONTACT BETWEEN DESIGNERS, DEVELOPERS, CONTRACTORS AND IFI.

14.1 IFI is committed in the national interest to working in a positive and cooperative manner with all relevant parties including

representatives of State and public authorities undertaking works in order to ensure that impacts on the fisheries resource are minimised. IFI is obliged to ensure that all structures are designed, installed and maintained so as to ensure the free upstream and downstream movement of aquatic life and the sustainable maintenance of the aquatic and associated riparian zone.

14.2 IFI require that contact be established and maintained between senior representatives of the developer, designer and contractor with responsibility for earthworks, structures and environmental management issues and relevant river basin district personnel in advance of commencement and for the duration of the specified construction project.

14.3 IFI has offices located within each of the River Basin Districts situated wholly or partly in the Republic of Ireland. Contact details and a map showing the locations of IFI's regional offices and areas covered are given in Appendix 1.

14.4 Responsibility for waters in the Republic of Ireland which form parts of the North Western, Neagh Bann and Shannon International River Basin Districts lies with IFI Ballyshannon, IFI Blackrock and IFI Limerick respectively.

APPENDIX 1

CONTACT DETAILS AND LOCATIONS OF IFI REGIONAL OFFICES

Director,
Inland Fisheries Ireland – Dublin,
Eastern River Basin District,
3044 Lake Drive,
Citywest Business Campus,
Co. Dublin.
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Ballina, Co Mayo,
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Director,
Inland Fisheries Ireland - Ballyshannon,
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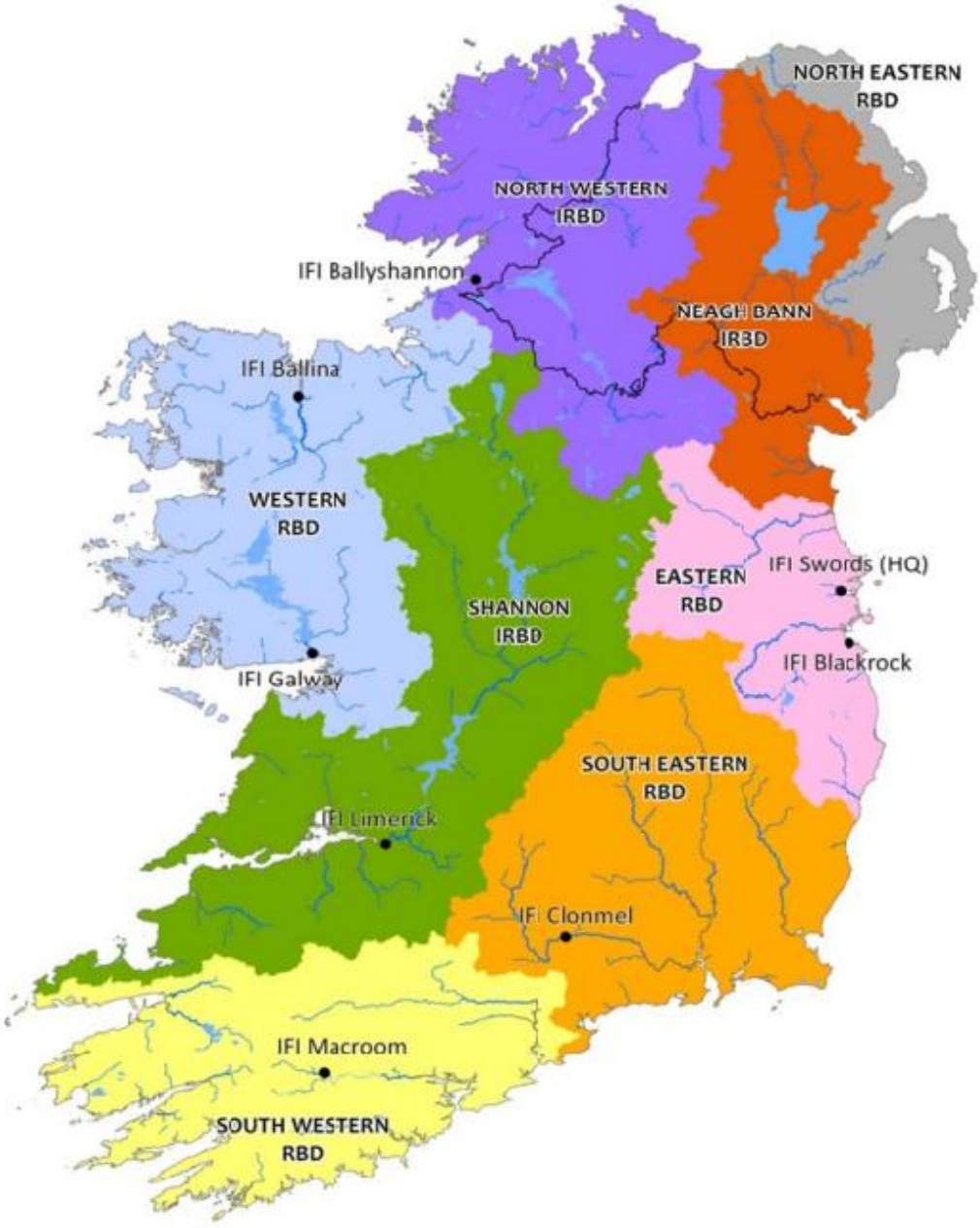
Co. Donegal,
Ireland.
Email: ballyshannon@fisheriesireland.ie
Tel: +353 71 9851435
Fax: +353 71 9851816


NORTH EASTERN
RBD
NORTH WESTERN
IRBD
IFI Ballyshannon
NEAGH BANN
IRBD
IFI Ballina
WESTERN
RBD
EASTERN
RBD
IFI Swords (HQ)
SHANNON
IRBD
IFI Galway
IFI Blackrock
SOUTH EASTERN
RBD
IFI Limerick
IFI Clonmel
IFI Macroom
SOUTH WESTERN
RBD

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APPENDIX 2

RELEVANT LEGISLATION

The Arterial Drainage Act 1945.

The Fisheries Consolidation Act 1959 (as amended).

The Fisheries (Amendment) Act 1997.

The Inland Fisheries Act 2010.

Council Directive 78/659/EEC on the Quality of Freshwaters Needing Protection or Improvement in Order to Support Fish Life.

The European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. 293 of 1988).

European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. 268 of 2006).

European Communities (Quality of Shellfish Waters) (Amendment) Regulations 2009 (S.I. No. 55 of 2009).

The Wildlife Act 1976.

The Wildlife (Amendment) Act 2000.

The Local Government (Water Pollution) Act 1977.

The Local Government (Water Pollution) Amendment) Act 1990.

The Habitats Directive (92/43/EEC).

The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

The Water Framework Directive (2000/60/EC).

The European Communities (Water Policy Regulations 2003 (S.I. 722 of 2003).

The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272 of 2009).

The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. 296 of 2009).

GLOSSARY

Alevin Newly hatched salmon, trout or related fish usually with a yolk sac attached which acts as a primary nutrient source, before it emerges from the spawning gravel to begin swimming freely.

Armouring Lining of watercourse banks with rock or other material to protect from scour.

Apron Erosion protection placed below watercourse bed level in an area of high velocity such as downstream of a bridge or culvert.

Cyprinid Belonging to the largest European freshwater fish family. Common examples in Irish waters include roach, rudd, dace, minnow, gudgeon bream and carp.

Ecosystem Any combination of living and non living components that with a supply of matter and energy is self sustaining over a defined period of time

Electrofishing Fishing with electrical devices based on electro-taxis and electro-narcosis (state of immobility resulting from muscular slackening of fish due to electric current).

Gabions Baskets normally made of woven wire and filled with stone/rock or other hard material generally used to form erosion resistant structures.

Habitat The natural abode of a plant or animal, especially the particular location where it normally grows or lives.

Invasive species Species that have been introduced, generally by human intervention, outside their natural range and whose establishment and spread can threaten native ecosystems

Perched Set at an elevated level, or in a higher position, and in the context of culverts – and scour slabs, the tendency to develop a water fall or cascade due to erosion of a watercourse downstream of a structure.

Riparian The terrestrial aquatic interphase or area immediately alongside the bank of a watercourse.

Salmonids The only two indigenous fishes in the genus Salmo in Ireland - Atlantic salmon (Salmo salar L.) and brown trout (Salmo trutta L.).

Terram A geotextile cloth type permeable material normally made from polypropylene or polyester used in construction as a separation layer.

Toe The point at which the bottom of a bank and the bed of the alongside watercourse intersect.

REFERENCES

Anon. 1998. ***Fisheries Guidelines for Local Authority Works.*** Department of the Marine and Natural Resources, Dublin.

Anon. 2007. ***Maintenance and Protection of the Inland Fisheries Resource During Road Construction and Improvement Works. Requirements of the Southern Regional Fisheries Board.*** Southern Regional Fisheries Board, Clonmel.

Anon. 2009. ***Protection and Conservation of Fisheries Habitat with Particular Reference to Road Construction.*** Shannon Regional Fisheries Board, Limerick.

Anon. ***Construction, Replacement or Alteration of Bridges and Culverts. A Guide to Applying for Consent Under Section 50 of the Arterial Drainage Act, 1945.*** Office of Public Works, Dublin.

Baker, C. O. and Votapka, F. E., 1990. ***Fish Passage Through Culverts.*** U. S. Department of Transportation, Washington, DC 20590.

FAO, 2008. ***Rehabilitation of Inland Fisheries Waters for Fisheries.*** FAO Technical Guidelines for Responsible Fisheries. No. 6. FAO, Rome.

O'Grady, M. F., 2006. ***Channels & Challenges. Enhancing Salmonid Rivers.*** Irish Freshwater Fishes Ecology & Management Series: Number 4, Inland Fisheries Ireland, Dublin.

Murphy, D. F. 2004. ***Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites.*** Eastern Regional Fisheries Board, Dublin.

National Roads Authority, 2004. ***Guidelines for the Assessment of Ecological Impacts of National Road Schemes.*** National Roads Authority, Dublin.

National Roads Authority, 2008. ***Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes.*** National Roads Authority, Dublin.

Appendix 4: Site specific Method Statement provided by the Contractor to INVAS for the proposed works.

07/05/2025

OAKWIN Method Statement

GIANT HOGWEED TREATMENT

Cappawhite - LAWPRO

Reference No: OAKWIN/GH/CPW
Invasive Species Treatment

Prepared by: Maurice O Connor

Start date: May 2025

Revision: 0

MAURICE O CONNOR
Oakwin

Control Sheet

Report Title	OAKWIN Method Statement Giant Hogweed Treatment
Document ID	0495/RAMS/F & A O'Gorman/R0
Revision	0
Author	Maurice O Connor
Date of 1st issue	07/05/2026
Client	LAWPRO
Client contact	Aoife Egan

Revisions

Revision	Purpose Description	Originated	Reviewed	Approved	Date
0	Method Statement for works	Maurice O Connor	07/05/2026		

Works Details

Client:	LAWPRO – Aoife Egan	**Description of Works:**	Giant Hogweed Treatment
Start Date:	July 2026	**Start Time:**	09.00
		Finish Time:	17.00
Completion Date:	August 2026	Method Statement Completed By:	Maurice O Connor

It should be noted that the Method Statement is also subject to innovation.

Location of Activity On site:	Riverside	**Duration of Activity :**	12 days
No. of Crew Members	3		
Project Manager on Site	Treatment Leader		
Site Foreman	N/A		
Crew Members			
Treatment Leader	General Operative		

Resources and Equipment to be used:
Spades, Trowels, CDA, Hand-held Sprayer with Extendable Lance, Electric sprayer, Biosecurity Kit, Camera with Georeferencing Capability, Site Maps, Environmental Risk Assessments & Pesticide Record Sheets, Boat, Loppers, slash-hooks.

Preliminary Precautions	Service Scan	No	Trial Holes	No	Over Head Services	No	Other	No
Types of Permit required	Hot Works	No	Excavations	No	Confined Space Entry	No	Other	No
Isolation Requirements	Shut Down	No	Tag off	No	De-energize	No	Other	No

PPE Requirements

						
No	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Fall protection Requirements

					
No	**No**	**Yes**	**No**	**No**	**No**

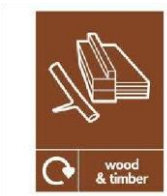
Access Requirements

					
No	**No**	**No**	**No**	**No**	**No**

Environmental

Chemicals						
Are any of the below hazards applicable to the task? If yes, state wher e:						
 Very Toxic	 Harmful/ Irritant	 Explosive	 Highly Flammable	 Corrosive	 Oxidi sing	 Dangerous to environment
No	No	No	Yes	No	Nc	No
Storage Arrangements for the above:						

				
Bunded area	Spill Tray	Drip Tray	Chemical Store	Other
No	No	**Yes**	**Yes**	**Yes**
Are MSDS Sheets available?	**Yes**			

Waste Management						
						
Timber	Metal	Mixed Recycling	General Waste	Hazardous	Gypsum	Other
No	No	No	No	No	No	No
Hazardous Waste Details	**N/A**. However, in the unforeseen event of this happening special arrangements will be made.					
Storage Arrangements for the above:	There will be no contaminated waste. However, in the unforeseen event of this happening special arrangements will be made.					

Dust Control				
Suppression – N/A	Extract – N/A	Filter- N/A	Enclose – N/A	**Monitor - Yes**

Noise Control				
Substitute – N/A	Enclose – N/A	Dampen – N/A	Barrier – N/A	**Monitor - Yes**

Vibration Control				
Substitute – N/A	Enclose – N/A	Dampen – N/A	Barrier – N/A	**Monitor - Yes**

Emergency Information

	First Aider on Site: **Yes**		**Fire Warden on Site:** No		**Emergency Warden on Site:** No
Location of First Aid Station **In works Van**		**Location of Fire Station** **Site works van**		**Location of Assembly Point** **Site works van**	

Site Description
Site Name:
General Site Description: The treatment area is located along the Cappawhite Stream. Giant hogweed stands are located along the riverbank and extend back into agricultural lands. The terrain is uneven in places along the riverbank and there may be steep drops at the river's edge and care will be needed working along these areas. A slash hook may be required to gain entry where bramble is growing between the site boundary.

Health & Safety Considerations

- Steep Drop: Particular care will be needed when working close to the river's edge as there is a steep drop down to the water.
- Uneven Terrain: Parts of the site have uneven terrain and difficult conditions due to the presence of bramble. Access should be cleared using loppers and slash hooks.
- Landowner Notification: Landowners should be given advance notice of treatment where requested.

Prior to Works

Prior to any works commencing:

- Method Statements will be approved and signed by landowners
- Permits sought from the relevant people
- Crew will assess task and site conditions
- Each crew member will be made aware of the method statements/risk assessments contents by reading and signing it
- A copy of the method statement shall be kept at the work area and all personnel will be required to sign the same. Supervision Staff will record personnel in site diaries.
- All PPE required by method statement will be worn where appropriate

Sequence of Works

Item	Description
1	**Introduction:** These works involve the mechanical and chemical treatment of Giant Hogweed within the works area. The works will take place on land, in the riparian habitat up to and including the river's edge and from the water where access is not possible from the land. Description of the Works (main elements): • Visit each stand of Giant Hogweed and determine the appropriate treatment method. This will be decided based on the size, accessibility and location of the stand. • Treatment methods include: mechanical – tap root cutting and Treatment with Handheld Sprayer using a foliar spray of aquatic-approved, glyphosate-based herbicide at the appropriate rate. • Treat each stand of Giant Hogweed using the selected method.

2	**Measures to be in place before works commence:** • This Method Statement will be approved by the landowner and LAWPRO. • All operatives will be fully trained and copies of training certificates will be available for inspection including: first aider, pesticide application training, etc… • All operatives will wear the following PPE when within 2m of Giant Hogweed: Long nitrile gloves, full overalls with hood, face shield, wellington boots. When within 10ft

	of the river or on the boat, a properly secured flotation device will be worn at all times. • Operatives will work in pairs. No lone working. • All equipment will be checked and verified to be in good working order • Weather conditions and other environmental hazards will be assessed on the day. If spraying is to take place, the weather conditions must be dry and not windy. • Vehicle routes will be carefully planned so that plant does not have to approach close to the edge of the river or interfere with areas unnecessarily. • Drip trays will be in place where necessary • All works will be overseen by the Project Manager, Maurice O Connor and IAS Treatment Supervisor, John Hennessy. They will oversee the initial set up and enforce all necessary procedures and protocols. • Inductions and toolbox talks. Further toolbox talks may be required in the case of new working constraints, new operatives or refresher talks. • Daily meetings are required with all members of staff in the form of a toolbox talk and progress reports. • During the course of the works Oakwin personnel will be mindful of wider ecological issues, in particular the aquatic ecology of the watercourse. • All herbicides will be stored in a locked chemical store with a bunded area for possible spills. • Everyone shall be made aware of the Environmental Screening. • All vehicles entering the site will be cleaned before arrival, so as not to bring invasive alien species to the area. • Everyone shall be aware of ground conditions. • All teams must carry an eyewash, clean water, cloth and portable first-aid kit at all times.
3	**Relevant Legislation** All operations will comply with Best-Practice Guidelines, as well as the following legislation (where applicable): • Irish Statutory Instrument 477/2011 - EC Birds and Natural Habitats Regulations • The Wildlife Act (as amended) 2000 • Irish Statutory Instrument 155/2012 – EC Sustainable Use of Pesticides Regulations • Irish Statutory Instrument 159/2012 – EC Plant Protection Products Regulations • Waste Management (as amended) Act 2001 • Safety, Health and Welfare at Work Act 2005 • Safety, Health and Welfare at Work (General Application) Regulations 2007

	• Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001 • Roads Act 1993 – 2007 and Road Traffic Acts 1961 – 2007 • Chapter 8 of the Traffic Signs Manual
4	**The works** **Mechanical Treatment** 1. Arrive on site 2. Carry out on-site risk assessment. 3. Assess suitability of plant/stand for mechanical treatment. 4. Where suitable, insert a spade into the ground directly under the plant at a 45° angle to a depth of 20cm to completely sever the taproot. 5. Where plants are extremely small, use a trowel to snap the root from the plant immediately under the ground. 6. Clean all equipment thoroughly to ensure no sap is brought off-site.

Herbicide Application

The herbicide used will be Roundup Biactive XL (PCS No. 04660). Roundup Biactive XL is an aquatic-approved, glyphosate-based herbicide that is highly effective against Giant Hogweed. Roundup Biactive XL is a glyphosate formulation which having no hazard classification, offers a high standard of operator safety.

Roundup Biactive XL will be applied by trained operatives by foliar spray at the rate of 5L/Ha, to all stands of Giant Hogweed within the appropriate section. Herbicide application will only be undertaken when weather conditions are suitable – after dew has dried, with no rain forecast for 6 hours, a windspeed of Beaufort force ≤3, and after an environmental risk assessment has been carried out.

Every effort will be made to ensure that herbicide is only applied to Giant Hogweed, and no spray drift occurs onto the surrounding environment. Spray will always be in the landward direction, away from the direction of the water. In cases where leaf area is not too extensive, Controlled Droplet Applicators will be used to apply herbicide to eliminate drift.

1. Arrive on site
2. Assess weather conditions
3. Carry out on-site environmental risk assessment.
4. 'Toolbox talk' to ensure all site personnel (as appropriate) understand specifics of works to be carried out.
5. Check sprayer, CDA and other equipment are in good working order
6. Mix herbicide to dilution rate as recommended on the product label. Fill sprayer/CDA pack.
7. Apply herbicide as agreed to avoid unnecessary spray drift. Spray to avoid drift onto adjacent plants, watercourses and to protect health of humans. Do not spray in strong wind. The application of herbicides in accordance with both the product label and the HSA's Code of Practice for the Chemical Agents Regulations 2016 should ensure the procedure will not pose a significant risk to the health of people or the environment outside the treatment area.
8. Herbicides to be applied by trained operatives only using equipment properly calibrated to apply chemicals at correct rate. Spray should be applied to the point of run-off to ensure that herbicide only comes into contact with the target vegetation. When spraying within 1m of a watercourse, the spray must be applied in the opposite direction to the flow of water.
9. Ensure there are no unauthorised personnel in the spraying area. If any unauthorised personnel or member of the public enters the spraying area, spraying is to cease immediately until such time as the area is clear. The spraying area will include a minimum of 10m in any direction around the operative and further in any direction where wind may cause spray drift.
10. Particular attention will be paid to the activities of the general public in high traffic areas such as where works are taking place adjacent to public areas. Signage will be carefully placed to ensure anyone entering the area is aware of the works taking place.
11. Any queries about the works from the general public will be dealt with in a courteous and thorough manner, and the importance of the works and the details of the herbicide being used will be explained.
12. Full PPE is to be worn during spraying operations in order to reduce risk of contact by the skin, eyes, throat, stomach or lungs from the herbicide being used. All guards, shields, etc. to be checked and in place.
13. Following completion of the spraying of a stand of Giant Hogweed, the warning signage is to remain in place until all spray has been completely absorbed or dried and so cannot be transferred onto a person or animal.

	14. On completion, wash out sprayer. Any leftover mix and washings can be added to treatment area provided this does not exceed the recommended dose and there is no risk of affecting any non-target plants.

	15. Before leaving the site, the operative will remove and clean equipment, PPE and footwear on-site to prevent spread of Giant Hogweed off-site and to remove any sap that may remain on equipment, PPE or footwear. 16. Leave site, removing all signage and empty containers as appropriate. * Any incident involving people and herbicides must be reported to the HSA in line with the Safety, Health and Welfare at Work (Reporting of Accidents and Dangerous Occurrences) Regulations 2016 (S.I. No. 370/2016).
5	**Environmental Controls:** When working near watercourses, the below measures will be implemented. ***Measures to be in place before works commence:*** • All site personnel involved will receive an induction relating to the works. Required prevention methods for materials and pollutants from entering the watercourse will also be explained. • Personnel working on site are to be informed that, should there be any incident or observation of anything that may be considered as causing or likely to cause disturbance to the local ecological systems, they shall be reported to the Supervisor On-site, John Hennessy, Oakwin, who will in turn report this to the Client Contact, Aoife Egan • Personnel will be informed at the induction that the Project Manager will take immediate action to prevent/limit the impact to all local ecological systems and will notify the Employers Representative with any causes for concern. Biosecurity Invasive species pose a significant threat to our freshwater and riparian habitats. The vectors for transfer of invasive species can include un-cleaned machinery, plant, and PPE. Measures will be undertaken to ensure all necessary biosecurity measures are applied. Virkon aquatic will be mixed and used as per our "Oakwin Biosecurity Protocol Open Water" if operatives, plant or equipment are to enter the riparian zone. Contaminants / clay on machinery / equipment will also be cleaned and sprayed with Virkon and left to dry. Treatment areas will include • The cleaning of all machinery in contact with the watercourse and/or riparian areas before entering the site, and before transferring to another site. • Spoil on machinery • The spraying of gear and equipment with a suitable disinfectant • Power-hosing of any boats • Draining of all bilge water from boats, if used, before entering the site. Boats will also be sprayed with Virkon and allowed to dry

In the case of an emergency please see the below contacts.	
First Aiders:	John Hennessy: 086-173 3507

Works Supervisor:	John Hennessy: 086-173 3507
An Garda Siochána and Fire Services	Emergency: Dial 999 or 112 Non-Emergency: Dial Local Station

Local Garda Station	Cappawhite Garda Station 062 75202
Nearest A&E Hospital	University Hospital Limerick Phone: 061 301 111

Risk Assessments

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Difficult Terrain	Slips, trips, falls, resultant injuries	Survey and assess terrain in which work is to be carried out, take note of hazardous areas and use caution accordingly Staff are to inform management when they are entering onto site and what time they are expected to return. Mobile phone contact is to maintained at all times. Should no mobile phone reception be available at the site location, this must be previously noted before work begins. Two staff members are then required to be present and constantly informed of each other's actions			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Injuries Caused when Working with Giant hogweed	Skin burns Burns to eyes	Ensure that only authorised personnel are in the vicinity of the operation and that correct protective clothing is worn. Use cones, fences and red/white tape to mark off the area when working in public areas and post warning signs of dangers. Ensure that the task is supervised and controlled by a competent person. Ensure that an eyewash kit and first ais kit is present on site at all times during operations. Operations should be organised to keep close contact with the plants to a minimum.			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H

Vehicle	Mechanical failure, breakdown. Falling / spilling objects. Road accident / serious personal injury.	Vehicle to be regularly serviced and maintained. Brakes, lighting, exhaust and tyres to be checked weekly and kept in good order. All items inside the vans to be to be secured during transport. Vehicle to be driven by trained and licensed drivers only. First aid box to be carried and the contents checked regularly.

	Injury / fatality to other road / site users.	The rules of the road to be strictly followed especially regarding speed and parking. Vehicle to be checked daily as per the manufacturer's handbook. Vehicle are never to be driven with dangerous defects or damage. Report any damage or defects found to your Supervisor at Oakwin Ltd.

Risk After Control Measures	S	L	S x L	Risk
	3	1	3	L

Risk Before Control Measures	S	L	S x L	Risk
	3	3	9	H

Unloading	Cuts to hands / arms. Amputation of fingers / limbs. Puncture wounds. Loss of eye/s.	Before unloading the vehicle/vessel, make sure that the route from the vehicle/vessel to the storage location is as clear as possible and that as far as reasonable practicable, the general public is warned of the potential hazard. Where it becomes necessary to carry large objects through public areas, guides should attempt to clear a safe route through. Ensure that sufficient personnel are available to carry the load safely and that they are properly trained and competent to do so. Wherever practicable and appropriate use mechanical handling equipment. Ensure that a full appreciation of the size, characteristics and weight of the load is made prior to starting operations. Wear protective gloves, safety boots with steel toecaps and eyeglasses. Ensure the task is supervised and controlled by a competent person. Ensure that the vehicle/vessel being loaded/unloaded cannot be inadvertently moved while the operation is taking place (by removing keys for example) Wear Appropriate PPE.

Risk After Control Measures	S	L	S x L	Risk
	3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		2	3	9	H
Location and Parking of vehicle	Obstruction of public. Routing public onto roadway, Accident, and bodily injury.	Vehicle to be parked so as not to cause obstruction to passing pedestrians or traffic and not to block any exits from buildings or property on Oakwin Ltd projects. Vehicle to be parked on level ground. Vehicle parking to comply with local parking requirements.			
	Obstructing vehicular traffic / collision. Obstruction of emergency exits.				
Risk After Control Measures		S	L	S x L	Risk
		2	1	2	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Using Herbicides	Spray contacting skin, being inspired, or ingested	Wear correct PPE and use chemicals as per instructions Be aware of spray drift during treatment, tailor usage around weather conditions Ensure any persons other than those carrying out spraying are away from working area, and that there are signs stating that spraying is in progress Ensure nobody enters the site All herbicide operators must be appropriately trained and certified			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures	S	L	S x L	Risk
	3	3	9	H

Effect of chemical on the surrounding area	Harm to non-target vegetation	Ensure chemicals selected for use are appropriate for working area Measures to be taken to ensure non-target vegetation affected e.g. use of weed wipers/stem injection in high-risk areas, covering grass where appropriate			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Mixing and Loading Spray Tanks	Chemical burns, splashes	All liquids and powers will only be handled by a trained operative wearing the appropriate PPE			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Storing chemicals	Spills, contamination, inhalation	All chemicals will be stored upright in an appropriate storage container, in a locked compartment Records will be kept of quantities of chemicals used and dates, and chemicals will be signed in and out MSDS will be available for all stored chemicals Chemicals will only be handled by a registered professional pesticides user under the sustainable use of pesticides act.			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures	S	L	S x L	Risk
	3	3	9	H

Herbicide Application Equipment: Knapsack Sprayer, Stem injection, leaf wiping	Spillage, puncture with needle	Ensure equipment is well maintained at all times and used only by fully trained and experienced operatives, in accordance with training received and safe working practices.			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Working close to site edge	Falls into water Hypothermia Drowning Swallowing polluted water	Top side always wear life jackets within 1 metre of open water Tenders should always be in pairs Sufficient lifebuoys should be available Edge protection or else safety harness to be in place Rescue facilities should be in place such as safety boat Dry suits to be worn			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
First Aid Equipment	Worsening of condition Onset of infection Fatality, permanent injury / illness	Adequate first aid kits to be provided and filled to HSA guidelines. They must be regularly checked and refilled by designated person			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Injuries Caused By Work Activities	Crushing. Head injury. Fractures. Cuts. Bruises.	Ensure adequate clearance is left around the working area for Oakwin Ltd staff & sub contractors. Fence off the area. Ensure that only authorised personnel are in the vicinity of the operation and that correct protective clothing is worn. Ensure that the task is supervised and controlled by a competent person. Use cones, fences and red/white tape to mark off the area when working in public areas and post warning signs of dangers.			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	2	6	H
Manual Handling	Back, Neck, Shoulder Injury. Prolapsed Disk. Permanent Injury. Trip / Fall. Hit Against. Dropped Object.	All staff /sub-contractors will have undergone approved manual handling courses and employ kinetic handling techniques where necessary. · Use other methods to life heavy/awkward objects. · Do not lift heavy/awkward objects. · All tools to be lowered into position by rope securely tied to items. · All items shall be lowered / recovered in a controlled manner. · Work gloves to be worn at all times when handing equipment when both in and out of the water. · Any large items of equipment such as compressors unit etc. are to be lifted by a minimum of 4 persons. Minimise all manual-handling tasks where possible. Provide suitable mechanical handling equipment such as lifts, hand trolleys etc. Ensure these are used.			

		Assess all weights being lifted per the Safety, Health and Welfare (General Applications) Regulations 2007 and where necessary reduce these to acceptable levels. Machine controls and instrumentation to be designed and arranged for best control and posture (1994 European Machinery Regulations). Work locations to be designed to eliminate over-reaching. Provide Manual Handling training to all staff whom have not received it. Personal Protective Equipment including gloves to be provided and used.			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	3	9	H
Eye Injury	Eye injury Permanent damage to eyes Loss of sight in one or both eyes	Training to be provided re sight care. Sign post locations where eye protection is mandatory. The Supervisor for Oakwin Ltd to enforce mandatory wearing of eye protection where required. Glasses, goggles and visors to be provided where necessary. Protection for chemical hazards to conform to BS2092:'67. Eye wash stations to be provided where necessary and regularly maintained			
Risk After Control Measures		S	L	S x L	Risk
		3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		3	2	6	M
Micro-biological and Biological Hazards	Moulds, Spores, Tetanus, Lockjaw, Rhinitis, Asthma, HIV / Aids.	Provide hot and cold running water with soap and towels or other means of drying where practicable. Familiarisation to be provided to all staff of the emergency procedure. Personal Protective Equipment to be provided and used. Best possible hygiene procedures to be in place and enforced by the Supervisor. Care to be taken to disinfect all cuts and cover them with waterproof plasters.			
Risk After Control Measures		S	L	S x L	Risk

	3	1	3	L

Risk Before Control Measures		S	L	S x L	Risk
		2	2	4	M
Outdoor Places of Work	Risk to Health Unsanitary Conditions Slips/Trips/Falls Chills/Colds/Ill Health	In Accordance with the General Applications Regulations 2007, employers must ensure that when employees are employed at outdoor workstations, the workstations are as arranged so that employees: • Are protected against weather conditions. • Are not exposed to harmful influences such as gases, vapours or dust, in compliance with relevant statutory provisions Ensure that employees cannot slip or fall.			
Risk After Control Measures		S	L	S x L	Risk
		2	1	2	L

Risk Before Control Measures		S	L	S x L	Risk
		2	2	4	M
Weather • Sun • Wind • Rain • Ice/snow	Sun burn. Sunstroke. Skin cancer. Fall from height. Slip / fall. Bodily injury. Hit by object. Hypothermia.	In sunny weather, cover the back of the neck and keep a shirt on at all times. Avoid sunburn and sun stroke where possible by keeping covered and wearing a high factor sun block. Be aware that strong winds or gusts can overbalance an operator. Don't work in heavy rain unless adequately protected. Be prepared for slippery conditions in icy weather. Salt or grit should be used where necessary.			
Risk After Control Measures		S	L	S x L	Risk
		2	1	2	L

Risk Before Control Measures	S	L	S x L	Risk
	2	3	6	M

Chemicals	Eye injury / loss. Skin infection. Burns. Inhalation. Ingestion with food. Worker chemical exposure levels exceeded. Injury to pregnant employees / unborn / new-born. Fire.	Safety Data Sheets to be obtained for all chemicals and strictly followed. Copies to be available in case of an emergency. Evaluation of chemicals at purchasing stage to take place. Proper chemical inventory / records to be kept. Containers to be properly labelled (hazard signs). Safe storage and dispensing of chemicals to be practiced. Follow manufacturer's requirements for handling, mixing, storage and first aid etc. Personal Protective Equipment to be provided and used. Training to be provided for staff working with chemicals. Familiarisation to be provided with the emergency procedure to all staff.
	Explosion. Serious personal injury. Fatalities.	Best possible hygiene procedures to be in place and enforced by Management. Eye wash and emergency showers to be provided where necessary. Sources of flame / ignition to be eliminated where flammable materials are used and / or stored. Spillages to be immediately dealt with.

Risk After Control Measures	S	L	S x L	Risk
	2	1	2	L

Risk Before Control Measures	S	L	S x L	Risk
	3	3	9	H

Petrol/ Diesel	Explosion. Skin and eye irritant. Dermatitis. Fire Slips	Store as per supplier's recommendations in an appropriate fireproof container. Personal Protective Equipment to be provided and used. Fire extinguisher to be fitted near re-fuelling area. To be used by properly trained operatives.

Risk After Control Measures	S	L	S x L	Risk
	3	1	3	L

Risk Before Control Measures	S	L	S x L	Risk
	2	2	4	M

Working in areas potentially infested by rats or birds	Leptospirosis Respiratory disease.	Assessment of area prior to work. Personal Protective Equipment to be provided and used. Good hygiene arrangements. Information provided to personnel. Nearest A&E hospital identified in Method Statement.			
Risk After Control Measures		S	L	S x L	Risk
		2	1	2	L

COVID 19 – Work Categories – Traffic Light System

WORK CATEGORY TRAFFIC LIGHT	WORK CATEGORY DETAIL	PPE REQUIRED	2 M SOCIAL DISTANCING	SAFETY INFORMATION
2 +	WORK CARRIED OUT FOLLOWING THE 2M SOCIAL DISTANCE GUIDLINE	STANDARD SITE PPE GLOVES & EYE PROTECTION		TASK SPECIFIC SPA
A	SCENARIO A WORKING INSIDE 2M NO PHYSICAL CONTACT REQUIRED FOR THE TASK	FULL FACE SHIELD & GLOVES OR SURGICAL MASK, EYE PROTECTION AND GLOVES		METHOD STATEMENT AND TASK SPECIFIC SPA
B	SCENARIO B WORKING INSIDE 2M PHYSICAL CONTACT REQUIRED (MANUAL HANDLING/PUSHING – PULLING SIDE BY SIDE, SHARED TOOLS AND EQUIPMENT)	FULL FACE SHIELD, GLOVES & TYVEK SUIT OR SURGICAL MASK, EYE PROTECTION, GLOVES & TYVEK SUIT.		METHOD STATEMENT AND TASK SPECIFIC SPA

Method Statement

Method Statement

Contract: **Giant Hogweed Survey & Treatment – Phase II**

Client: **LAWPRO – Aoife Egan**

Description: **Herbicide treatment of Giant hogweed**

Location: **Cappawhite Stream**

I certify that I have had the attached Method Statement communicated to me, I understand my Health & Safety Responsibilities with regard to the task outlined, I undertake to comply with all requirements of the Method Statement, and I acknowledge that I have been afforded the opportunity of asking questions on any point of which I was unsure.

Comment	

Name	**Signature**	**Company**	**Date**

Supervisor

Name	**Signature**	**Date**

Landowner

I certify that I have read and understand the attached Method Statement, which details the task and methods that will be used to carry out Giant hogweed treatment

on my property. I acknowledge that I have been afforded the opportunity of asking questions on any point of which I was unsure.

Name	**Signature**	**Date**

Witnessed: _____ Date: _____

Appendix 5: Site specific Management Plans provided by the Contractor to INVAS for the proposed works.

GIANT HOGWEED TREATMENT MANAGEMENT PLAN – PRELIMINARY REPORT

West Tipperary Catchments Management Plan for
Cahernahallia_010 Sub-basin

Prepared by;
James Whelan BSc

Reviewed by;
Maurice O'Connor MSc
on behalf of;
Farming for Water – Water European Innovation Partnership / Tipperary County Council

21st May 2026

Oakwin Ltd.

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Introduction

Oakwin Ltd. have been engaged by Farming for Water – Water European Innovation Partnership / Tipperary County Council to prepare an Invasive Species management plan for Tipperary Giant Hogweed Project 2026, along rivers and streams within the Cahernahallia_010 River Sub Basin Catchment.

Invasive species surveys took place from April 30th to May 15th 2026 to identify the extent of infestation of Giant Hogweed (*Heracleum mantegazzianum*).

This invasive alien species management plan (IASMP) has been prepared in accordance with current Irish best practice guidelines such as 'The Management of Noxious Weeds and NonNative Invasive Plant Species on National Roads' – NRA (2010); Best Practice for Control of Giant Hogweed *Heracleum mantegazzianum* - Inland Fisheries Ireland; Best Practice Management Guidelines Japanese Knotweed, Giant Hogweed *Heracleum mantegazzianum* - Invasive Species Ireland (2008 - 2010).

Site Description

The Cahernahallia (25C01) starts in the Losset Townland where it flows downhill, being joined by multiple other streams including the Temp_25E70, Temp_25E78, Temp_25E88, Foildarg 25, Temp_25E89, Temp_25A97, Temp_25O80, Temp_25M96, Temp_25E90, Foildarg 25 (25F62) Temp_25N77, Temp_25J77, Temp_25O47, Temp_25N41, Temp_25K11, Glengar_25U20 and Foildarg 25 (25F42). The Cahernahallia then runs into the Cahernahallia_020 sub-basin. While in the Cahernahallia_010 sub-basin the streams flow through conifer plantations, agricultural land and shrubland. The agricultural land was mainly used for silage. Much of the plantation was recently felled. The total length of the river system surveyed for invasive species was 23.8km and the total area of the river sub-basin was 11.65km^2.

Site Management Objectives and Threats to Objectives

Table 1 Site management objectives, threats and mitigation for these threats

Objective	Threat(s)	Mitigation
1. To prevent the spread of Third Schedule invasive species along the river and streams.	Movement of the public, equipment, personnel throughout areas contaminated with invasive species. Incorrect management of infestations	All personnel and equipment that enter an exclusion zone will be certified as clean before exiting. Strict biosecurity protocols will be implemented, as outlined in the detailed Biosecurity Document. An appropriate management plan will be implemented to treat the Giant hogweed on-site.
2. To reduce or eradicate where possible Third Schedule invasive species from the river and streams.	Lack of consistent application of correct management techniques. Missed infestations.	Experienced operatives will treat the infestations in a systematic manner, working upstream from the bottom of the catchment on foot to ensure that all plants are reached.

About the Invasive Species Identified

Giant Hogweed

Giant Hogweed *(Heracleum mantegazzianum)* is native to the Caucasus region and was originally introduced to the British Isles in the 1800's as an ornamental plant. In Ireland, it is almost exclusively found along watercourses as it thrives in rich, moist soil. As the name suggests, Giant Hogweed is an enormous herbaceous plant. It can grow up to 5m tall, with leaves up to 3 x 1.5m and a stem diameter of 5 - 10cm. It produces large umbels of white flowers up to 80cm across. The stem is green with purple blotches and is covered in fine hairs. Unlike our native hogweed *(Heracleum sphondylium),* these hairs are particularly dense at the leaf joints. The leaves also have fine hairs on the underside and are sharply divided.

Giant Hogweed is a perennial plant, living for 3-5 years, after which time it sets seed (around July/Aug) and dies. A single plant can produce up to 50,000 wind-dispersed seeds. It has no vegetative means of reproduction, meaning that it reproduces entirely by seed. The seeds can survive in the ground for up to 5 years. It is estimated that 95% of the seeds are contained within the top 5cm of soil; however, to be sure the entire seed bank is removed, excavation of 0.5m of soil and at least 4m away from the nearest plant is recommended. The seeds also float and are readily dispersed along watercourses allowing the plant to extend its range rapidly downstream.

Giant hogweed poses a serious hazard to human health. Its sap contains furanocoumarins which cause a phototoxic reaction in human skin. The furanocoumarins alter the genetic structure of skin they come into prolonged contact with, eliminating the skin's ability to protect itself from sunlight. The result is that when the affected skin is exposed to sunlight, massive blistering can occur. Extreme caution must be taken around this plant as just brushing into it can cause sap to be released. The sap is particularly dangerous for young children. If the sap is released onto bare skin, it should be washed off immediately with soapy water and the skin should remain covered away from sunlight for at least 48 hours. Medical advice should be sought. Personnel operating machinery in areas infested with Giant Hogweed must also be aware that the sap can get onto machinery and from there be transferred to the skin of anyone touching the machine. Therefore, full PPE must be worn when working in a Giant Hogweed infested area and all machinery should be washed down regularly.

In Ireland, Giant Hogweed is classified as a High-Impact Invasive Species with a Risk Assessment Score of 19. It is also listed as an Invasive Species of European Union Concern.

Invasive Alien Species Legislation

Strict legislation surrounding invasive species exists in Ireland – namely under Irish Statutory Instrument 477/2011 and the Wildlife Acts (1976-2000). We have also ratified a number of international conventions that oblige the Government to address the issue of non-native invasive species, including the Convention on Biological Diversity, the Bern Convention and the International Plant Protection Convention.

Irish Statutory Instrument 477/2011

The EC Birds and Natural Habitats Regulations introduced important legislation concerning invasive species in the Republic of Ireland. There is a total of thirty-four terrestrial and aquatic alien plant species currently listed in Part 1 of the Third Schedule (as amended by S.I. No. 355/2015), which is included in Table 2 below; *Table 2 Third Schedule of S.I. 477/2011 as amended*

Common Name	**Scientific Name**
American skunk-cabbage	*Lysichiton americanus*
A red alga	*Grateloupia doryphora*
Brazilian giant-rhubarb	*Gunnera manicata*
Broad-leaved rush	*Juncus planifolius*
Cape pondweed	*Aponogeton distachyos*
Cord-grasses	*Spartina* (all species and hybrids)
Curly waterweed	*Lagarosiphon major*
Dwarf eel-grass	*Zostera japonica*
Fanwort	*Cabomba caroliniana*
Floating pennywort	*Hydrocotyle ranunculoides*
Fringed water-lily	*Nymphoides peltata*
Giant hogweed	*Heracleum mantegazzianum*

Giant knotweed	*Fallopia sachalinensis*
Giant-rhubarb	*Gunnera tinctoria*
Giant salvinia	*Salvinia molesta*
Himalayan balsam	*Impatiens glandulifera*
Himalayan knotweed	*Persicaria wallichii*
Hottentot-fig	*Carpobrotus edulis*
Japanese knotweed	*Reynoutria japonica* / *Fallopia japonica*
Large-flowered waterweed	*Egeria densa*
Mile-a-minute weed	*Persicaria perfoliata*
New Zealand pigmyweed	*Crassula helmsii*
Parrot's feather	*Myriophyllum aquaticum*
Rhododendron	*Rhododendron ponticum*
Salmonberry	*Rubus spectabilis*
Sea-buckthorn	*Hippophae rhamnoides*
Spanish bluebell	*Hyacinthoides hispanica*
Three-cornered leek	*Allium triquetrum*
Wakame	*Undaria pinnatifida*
Water chestnut	*Trapa natans*
Water fern	*Azolla filiculoides*
Water-primrose	*Ludwigia* (all species)
Waterweeds	*Elodea* (all species except *E. canadensis*)
Wireweed	*Sargassum muticum*

Article 49 prohibits the introduction, breeding, release or dispersal of certain species; and Article 50 prohibits dealing in and keeping certain species.

> **Article 49 (2)** "Save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence."

Article 49 (3) states that you can defend against allegations that you committed an offence under Article 49 (1) or (2) by proving that you took all reasonable steps and exercised all due diligence to avoid committing the offence:

> **Article 49 (3)** "Subject to paragraph (4), it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

Article 50 (2) "Save in accordance with a licence granted under paragraph (7), a person shall be guilty of an offence if he or she imports or transports – (a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule

(b) anything from which an animal or plant referred to in Part 2 of the Third Schedule can be reproduced or propagated, or

(c) a vector material listed in Part 3 of the Third Schedule, into or in or to any place in the State specified in relation to such an animal or plant or vector material in relation to that animal or plant or vector material in the third column of the Third Schedule."

The Wildlife Amendment Act (2000)

The Wildlife Amendment Act (2000) of ***The Wildlife Act (1976)*** made it an offence to cause an exotic species of flora to grow in the wild anywhere in the state**:**

"Any person who plants or otherwise causes to grow in a wild state in any place in the State any (exotic) species of flora, or the flowers, roots, seeds or spores of flora, otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence."

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EU Regulation 1143/2014 on invasive alien species entered into force on 1 January 2015. It provides for a set of measures to be taken across the EU in relation to invasive alien species included on a list of Invasive Alien Species of Union concern. The list of invasive alien plant species can be seen below;

Table 3 Plants listed as Invasive Alien Species of Union Concern (EU Regulation 1143/2014)

Scientific name	English name	Entered into List
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Baccharis halimifolia	Eastern baccharis	2016
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Cardiospermum grandiflorum	Balloon vine	2019
Cortaderia jubata	Purple pampas grass	2019
Ehrharta calycina	Perennial veldtgrass	2019

Eichhornia crassipes	Water hyacinth	2016
Elodea nuttallii	Nuttall's waterweed	2017
Gunnera tinctoria	Chilean rhubarb	2017
Gymnocoronis spilanthoides	Spadeleaf plant	2019
Heracleum mantegazzianum	Giant hogweed	2017
Heracleum persicum	Persian hogweed	2016
Heracleum sosnowskyi	Sosnowski's hogweed	2016
Humulus scandens	Japanese hop	2019
Hydrocotyle ranunculoides	Floating pennywort	2016
Impatiens glandulifera	Himalayan balsam	2017
Lagarosiphon major	Curly waterweed	2016
Lespedeza cuneata	Chinese bushclover, sericea	2019
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Muntiacus reevesi	Muntjac deer	2016
Myocastor coypus	Coypu	2016
Nasua nasua	South American coati	2016
Nyctereutes procyonoides	Racoon dog	2017
Ondatra zibethicus	Muskrat	2017
Orconectes limosus	Spiny-cheek crayfish	2016
Orconectes virilis	Virile (northern) crayfish	2016
Oxyura jamaicensis	Ruddy duck	2016
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Plotosus lineatus	Striped eel catfish	2019
Procambarus clarkii	Red swamp crayfish	2016
Procambarus fallax f. *virginalis*	Marbled crayfish	2016
Procyon lotor	Racoon	2016
Pseudorasbora parva	Topmouth gudgeon	2016
Sciurus carolinensis	Grey squirrel	2016
Sciurus niger	Bryant’s fox squirrel	2016
Tamias sibiricus	Siberian chipmunk	2016
Threskiornis aethiopicus	Sacred Ibis	2016
Trachemys scripta	Red eared slider	2016

Vespa velutina nigrithorax	Asian hornet	2016

Survey Findings

Methodology

Walkover surveys conducted from April 30th to May 15th 2026. These surveys were purposed with the identification of Third Schedule S.I 477/2011 invasive alien species, Giant Hogweed (See Appendix II – Photographic Record).

Giant Hogweed infestations were mapped using the tool QField on a Samsung Galaxy Tab Active, which has GPS capabilities. Each feature was mapped either as a point, linear, or polygon feature as per the '*Best Practice Guidance for Habitat Survey and Mapping*' published by the Heritage Council (2011). The vast majority of features as part of the three-catchment survey were recorded with accompanying geotagged photographs, but with some features such as in dense wooded areas, the camera was unable to depict the plants well enough to convey useful information. All linear and polygon features were also graded on their severity, and this was in terms of both how large and dense the stand was, but also how difficult it may be to access the stand in order to treat it. This might mean that in some circumstances such as a densely wooded or scrub area, a 'moderate' infestation according to size is upgraded to 'severe' due to lack of accessibility and assurance that all plants within the infestation can be treated in the first instance. Point features were not issued a severity level.

There were four levels of severity used during this project, set out in Table 5.

Table 5. Details of infestation severity levels

Severity Level	**Description**
Low	• All plants considerably less than 2m in height • Linear features are broken and discontinuous (could be up to 20m between plants) • Generally easy to access
Moderate	• Plants on average 1.5-2.5m in height • Linear features are continuous • Generally easy to access
Severe	• Plants on average considerably higher than 2.5m • Dense coverage of leaves and flowers Or • Plants on average 1.5-2.5m in height • Difficult but not impossible to access
Very Severe	• Plants 4-5m+ tall • Feature extremely dense and appears as a 'block' of hogweed • Access variable

Survey Results

Following an extensive walkover survey of the Cahernahallia_010 sub-basin, no evidence of Giant Hogweed was found. Given the findings that the species was only found well downstream in the adjacent Cahernahallia020 sub-basin, it is reasonable to assume that Giant Hogweed is not present in this sub-basin.

This sub-basin has a trellis-like drainage pattern with a number of streams joining the main stream at right angles. 16 streams join the Cahernahallia_Upper in this sub-basin. The majority are unnamed. The named streams include the Foildarg 25 which joins the river in the Bahagha Townland, and the Glengar, the last stream to join the Cahernahallia before it leaves the subbasin.

In this sub-basin no Giant Hogweed infestations were recorded. The only invasive recorded in the sub-basin was Japanese Knotweed (*Reynoutria japonica*). One stand was found right on the subbasin border where the stream flows into the Cahernahallia_020 sub-basin. Some more infestations were found in the Foildarg townland in one of the plantations and a small area in the Leugh townland just north of the Glengar Stream.

Biosecurity Controls

Persons/machinery entering or working within an area infested with an invasive alien species must take certain precautions to prevent the spread of that species. These guidelines must be strictly adhered to at all times.

- All PPE, other equipment and machinery that enter an infested zone must be cleaned before entering.
- Before leaving an infested area, personnel must thoroughly inspect their clothing, PPE, any equipment and their footwear for seeds, rhizomes, or other plant fragments that may be stuck on.
- All personnel should carry a hoof pick or similar implement to thoroughly clean the threads of their footwear with.
- All footwear must be thoroughly cleaned before leaving an infested zone.
- Each field vehicle should carry a cleaning and disinfection kit that staff can avail of as the need arises and to thoroughly clean/disinfect their PPE/Equipment/Footwear before leaving an infested zone.
- The cleaning and disinfection kits should contain:

Stiff bristled brush

Water for washing & diluting

Biodegradable soap

Cloths for cleaning

Plastic tub

Virkon Aquatic Powder/tablets

Rubber/nitrile gloves

- As good practice all staff should follow Inland Fisheries Ireland Biosecurity Protocols when they have entered water or a riparian zone.
- If machinery/plant has entered or worked in an infested zone, it must be thoroughly washed down before leaving the area or working in an uninfested location
- A power washer must be provided for effective cleaning of machinery, along with stiff bristled brushes.

Codes of Practice / Sources of Information for Invasive Species

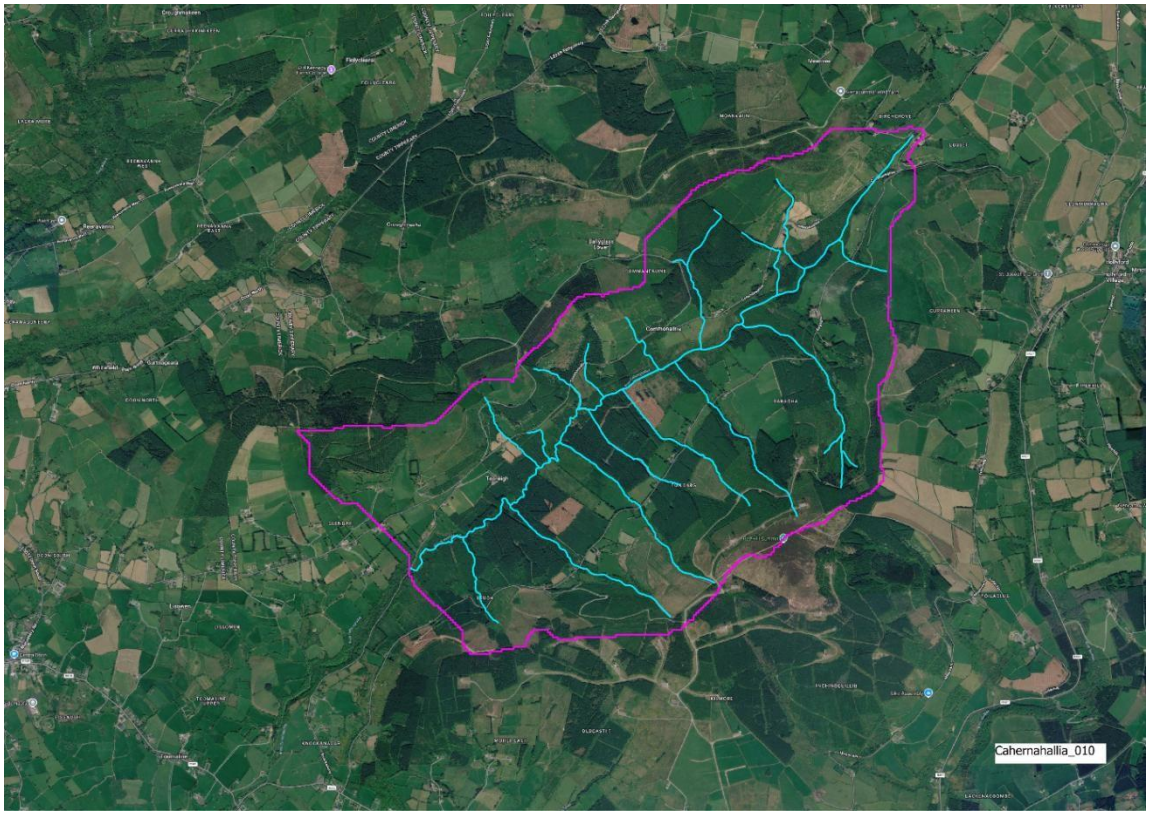
Ireland

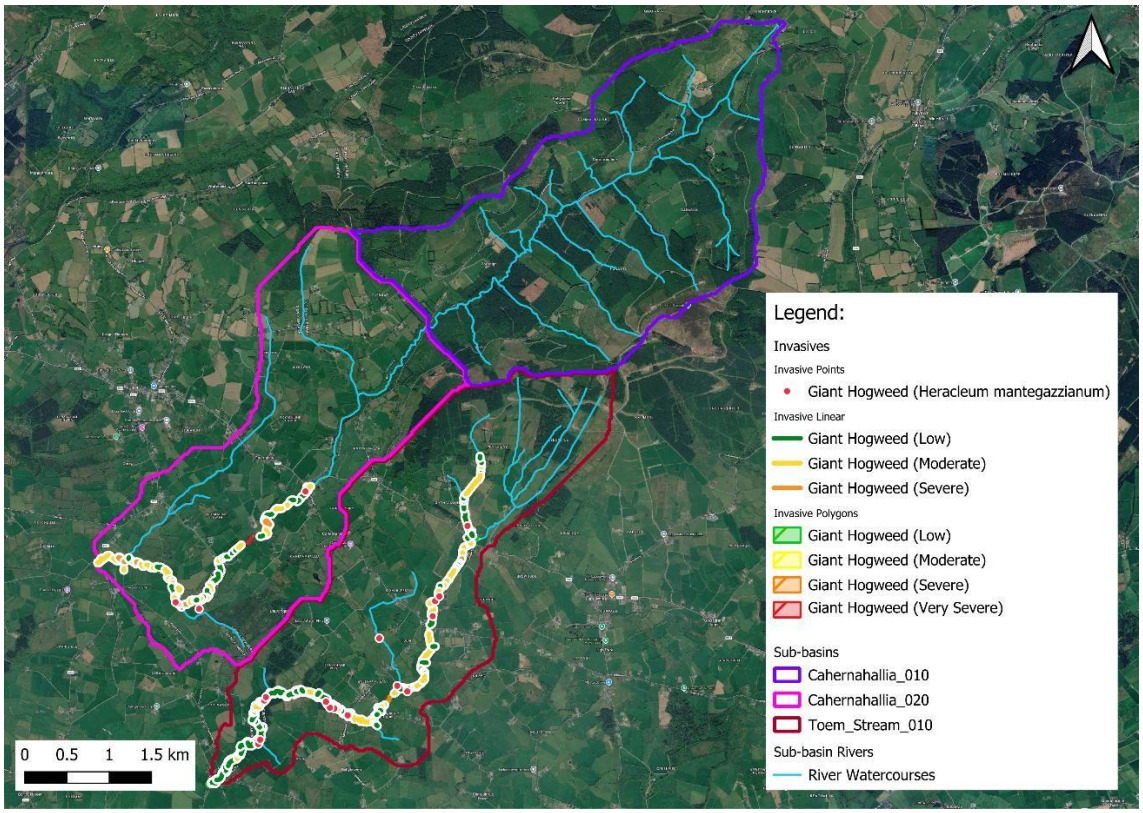
- Invasive Species Ireland Horticultural Code of Good Practice (http://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-CodeFinal.pdf)
- National Roads Authority – The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (http://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-NativeInvasive-Plant-Species-on-National-Road-Schemes.pdf)
- National Biodiversity Data Centre Invasive Species (http://www.biodiversityireland.ie/projects/invasive-species/)
- Invasive Species Ireland Website (http://invasives.ie)
- Sligo Institute of Technology Alien Species (http://staffweb.itsligo.ie/staff/dcotton/Alien_Species.html)
- Online Atlas of the British and Irish Flora (http://www.brc.ac.uk/plantatlas/) – *UK also*

UK

- Department for Environment, Food and Rural Affairs Horticultural Code of Practice (http://www.botanicgardens.ie/gspc/pdfs/defra%20code%20of%20practice.pdf)
- GB Non-Native Species Secretariat (http://www.nonnativespecies.org)

Appendix I – Maps





Other invasives will be included in the Final Report.

GIANT HOGWEED TREATMENT MANAGEMENT PLAN – PRELIMINARY REPORT

West Tipperary Catchments Management Plan for
Cahernahallia_020 Sub-basin

Prepared by;
James Whelan BSc

Reviewed by;
Maurice O'Connor MSc
on behalf of;
Farming for Water – Water European Innovation Partnership / Tipperary County Council

21st May 2026

Oakwin Ltd.

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List of Tables and Photographs

Introduction

Oakwin Ltd. have been engaged by Farming for Water – Water European Innovation Partnership /

Tipperary County Council to prepare an Invasive Species management plan for Tipperary Giant Hogweed Project 2026, along rivers and streams within the Cahernahallia_020 WFD River Subbasin Catchment.

Invasive species surveys took place from April 30th to May 15th 2026 to identify the extent of infestation of Giant Hogweed (*Heracleum mantegazzianum*). It is likely that this species was introduced to the site through landscaping and gardening efforts, with subsequent natural spread along the catchment.

This invasive alien species management plan (IASMP) has been prepared in accordance with current Irish best practice guidelines such as 'The Management of Noxious Weeds and NonNative Invasive Plant Species on National Roads' – NRA (2010); Best Practice for Control of Giant Hogweed *Heracleum mantegazzianum* - Inland Fisheries Ireland; Best Practice Management Guidelines Japanese Knotweed, Giant Hogweed *Heracleum mantegazzianum* - Invasive Species Ireland (2008 - 2010).

Site Description

The Cahernahallia_020 sub-basin begins at Glengar with the Cahernahallia (25C01) flowing downhill. It is then joined by the Knockanavar (25Q38) and further downstream by the Toomaline_Lower (25T09) and Lisgaugh (25Q70) and flows into the Mulkear (Limerick)_010 Subbasin a further 570m downstream. From there it eventually flows into the River Dead (25D01). The river and its adjoining streams flow through mainly agricultural fields. For much of its run in the Sub-basin the river flows through broadleaved woodland. The total length of the river system surveyed for invasive species was 25.9km and the total area of the river sub-basin was 10.42km2.

Site Management Objectives and Threats to Objectives

Table 1 Site management objectives, threats and mitigation for these threats

Objective	Threat(s)	Mitigation

1. To prevent the spread of Third Schedule invasive species along the river and streams.	Movement of the public, equipment, personnel throughout areas contaminated with invasive species. Incorrect management of infestations	All personnel and equipment that enter an exclusion zone will be certified as clean before exiting. Strict biosecurity protocols will be implemented, as outlined in the detailed Biosecurity Document. An appropriate management plan will be implemented to treat the Giant hogweed on-site.
2. To reduce or eradicate where possible Third Schedule invasive species from the river and streams.	Lack of consistent application of correct management techniques. Missed infestations.	Experienced operatives will treat the infestations in a systematic manner, working upstream from the bottom of the catchment on foot to ensure that all plants are reached.

About the Invasive Species Identified

Giant Hogweed

Giant Hogweed *(Heracleum mantegazzianum)* is native to the Caucasus region and was originally introduced to the British Isles in the 1800's as an ornamental plant. In Ireland, it is almost exclusively found along watercourses as it thrives in rich, moist soil. As the name suggests, Giant Hogweed is an enormous herbaceous plant. It can grow up to 5m tall, with leaves up to 3 x 1.5m and a stem diameter of 5 - 10cm. It produces large umbels of white flowers up to 80cm across. The stem is green with purple blotches and is covered in fine hairs. Unlike our native hogweed *(Heracleum sphondylium),* these hairs are particularly dense at the leaf joints. The leaves also have fine hairs on the underside and are sharply divided.

Giant Hogweed is a perennial plant, living for 3-5 years, after which time it sets seed (around July/Aug) and dies. A single plant can produce up to 50,000 wind-dispersed seeds. It has no vegetative means of reproduction, meaning that it reproduces entirely by seed. The seeds can survive in the ground for up to 5 years. It is estimated that 95% of the seeds are contained within the top 5cm of soil; however, to be sure the entire seed bank is removed, excavation of 0.5m of soil and at least 4m away from the nearest plant is recommended. The seeds also float and are readily dispersed along watercourses allowing the plant to extend its range rapidly downstream.

Giant hogweed poses a serious hazard to human health. Its sap contains furanocoumarins which cause a phototoxic reaction in human skin. The furanocoumarins alter the genetic structure of skin they come into prolonged contact with, eliminating the skin's ability to protect itself from sunlight. The result is that when the affected skin is exposed to sunlight, massive blistering can occur. Extreme

caution must be taken around this plant as just brushing into it can cause sap to be released. The sap is particularly dangerous for young children. If the sap is released onto bare skin, it should be washed off immediately with soapy water and the skin should remain covered away from sunlight for at least 48 hours. Medical advice should be sought. Personnel operating machinery in areas infested with Giant Hogweed must also be aware that the sap can get onto machinery and from there be transferred to the skin of anyone touching the machine. Therefore, full PPE must be worn when working in a Giant Hogweed infested area and all machinery should be washed down regularly.

In Ireland, Giant Hogweed is classified as a High-Impact Invasive Species with a Risk Assessment Score of 19. It is also listed as an Invasive Species of European Union Concern.

Invasive Alien Species Legislation

Strict legislation surrounding invasive species exists in Ireland – namely under Irish Statutory Instrument 477/2011 and the Wildlife Acts (1976-2000). We have also ratified a number of international conventions that oblige the Government to address the issue of non-native invasive species, including the Convention on Biological Diversity, the Bern Convention and the International Plant Protection Convention.

Irish Statutory Instrument 477/2011

The EC Birds and Natural Habitats Regulations introduced important legislation concerning invasive species in the Republic of Ireland. There is a total of thirty-four terrestrial and aquatic alien plant species currently listed in Part 1 of the Third Schedule (as amended by S.I. No. 355/2015), which is included in Table 2 below; *Table 2 Third Schedule of S.I. 477/2011 as amended*

Common Name	**Scientific Name**
American skunk-cabbage	*Lysichiton americanus*
A red alga	*Grateloupia doryphora*
Brazilian giant-rhubarb	*Gunnera manicata*
Broad-leaved rush	*Juncus planifolius*
Cape pondweed	*Aponogeton distachyos*
Cord-grasses	*Spartina* (all species and hybrids)
Curly waterweed	*Lagarosiphon major*
Dwarf eel-grass	*Zostera japonica*
Fanwort	*Cabomba caroliniana*
Floating pennywort	*Hydrocotyle ranunculoides*
Fringed water-lily	*Nymphoides peltata*
Giant hogweed	*Heracleum mantegazzianum*
Giant knotweed	*Fallopia sachalinensis*
Giant-rhubarb	*Gunnera tinctoria*

Giant salvinia	*Salvinia molesta*
Himalayan balsam	*Impatiens glandulifera*
Himalayan knotweed	*Persicaria wallichii*
Hottentot-fig	*Carpobrotus edulis*
Japanese knotweed	*Reynoutria japonica* / *Fallopia japonica*
Large-flowered waterweed	*Egeria densa*
Mile-a-minute weed	*Persicaria perfoliata*
New Zealand pigmyweed	*Crassula helmsii*
Parrot's feather	*Myriophyllum aquaticum*
Rhododendron	*Rhododendron ponticum*
Salmonberry	*Rubus spectabilis*
Sea-buckthorn	*Hippophae rhamnoides*
Spanish bluebell	*Hyacinthoides hispanica*
Three-cornered leek	*Allium triquetrum*
Wakame	*Undaria pinnatifida*
Water chestnut	*Trapa natans*
Water fern	*Azolla filiculoides*
Water-primrose	*Ludwigia* (all species)
Waterweeds	*Elodea* (all species except *E. canadensis*)
Wireweed	*Sargassum muticum*

Article 49 prohibits the introduction, breeding, release or dispersal of certain species; and Article 50 prohibits dealing in and keeping certain species.

> **Article 49 (2)** "Save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence."

Article 49 (3) states that you can defend against allegations that you committed an offence under Article 49 (1) or (2) by proving that you took all reasonable steps and exercised all due diligence to avoid committing the offence:

> **Article 49 (3)** "Subject to paragraph (4), it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

Article 50 (2) "Save in accordance with a licence granted under paragraph (7), a person shall be guilty of an offence if he or she imports or transports – (a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule

(b) anything from which an animal or plant referred to in Part 2 of the Third Schedule can be reproduced or propagated, or

(c) a vector material listed in Part 3 of the Third Schedule, into or in or to any place in the State specified in relation to such an animal or plant or vector material in relation to that animal or plant or vector material in the third column of the Third Schedule."

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Very Severe	• Plants 4-5m+ tall • Feature extremely dense and appears as a 'block' of hogweed
	• Access variable

Survey Results

Of the linear features recorded, 'Low' totalled (1,332m), 'Moderate' totalled (1,934m) and 'Severe' totalled (385m), totaling 3,651m (3.65km).

And of the polygon features recorded, Severe totalled 5,296 m^2 (0.53ha) and 'Very Severe' totalled 2,919m^2 (0.29ha) which leaves a total of 8,215m^2 (0.82ha) of Giant Hogweed.

Linear features describe length, and to convert into area, a 20m buffer was proscribed. However, linear infestations did not always spread 20m either side of the river.

Based on the data collected, a best-case scenario (10m either side of the river) estimates that 8.12ha of the Cahernahallia_020 sub-basin is infested, and a worst-case scenario (20m either side of the river) estimates that 15.43ha is infested with Giant Hogweed. *Table 6. Area calculations for Giant Hogweed in the Cahernahallia_020 sub-basin*

Polygons (m2)	Polygons (ha)		Linear (m)	20m (m2)	20m (ha)	10m (m2)	10m (ha)
	0		**1332**	53280	5.328	26640	2.664
	0		**1934**	77360	7.736	38680	3.868
5296	0.5296		**385**	15400	1.54	7700	0.77
2919	0.2919				0	0	0
					0	0	0
8215	**0.8215**		**3651**	146040	**14.604**	73020	**7.302**
			3.65km				
				Worst-case		**Best-case**	
				15.43		**8.12**	

The geography of the infestations as a whole with respect to the catchment was revealing. The stream has three main branches which commence at the north and south end of the catchment. Both flowing broadly to SSE, the Lisgaugh flows through a steep, often wooded gorge, through some agricultural land, through Lisowen and Toomaline. The northern stream, the Knockanavar, forms the county border, continuing to do so after joining the main stream. The Toomaline_Lower branch originates on the hill beside Churchquarter, flowing past a conifer plantation, then to open farmland, after which it meets the main branch. From the confluence downstream, the river flows west, mainly through woody gorges which are surrounded by open farmland, before exiting the sub-basin.

The most severe infestations were located within the south part of the stream, with many parts classified as 'Severe'. Giant Hogweed was found as a continuous infestation from the bridge on R505 downstream. No infestations were recorded upstream from this bridge.

Shortly downstream from the bridge infestations were found as low, moderate, severe and very severe at various points along this section of the river.

The distribution of the infestation strongly suggests that the infestation originates from the Gortaderry / R505 Crossroads, a bridging point on the river. As the river makes a horseshoe bend up to the northwest infestations were observed continuously, mostly as a moderate to severe infestation. At a couple of points on this stretch the infestation exceeds 20m from the river bank.

A map of the infestation within the catchment as well as a number of closer-view maps are presented in Appendix I.

One other invasive species was noted during the survey:

- Japanese Knotweed (*Reynoutria japonica*).

This species was found on two locations in close proximity to a farm at Toomaline Lower Road.

Maps are presented in Appendix I.

Recommended Treatment

Summary

Giant hogweed reproduces solely by producing seeds with a single mature plant producing 50,000 wind dispersed seeds. These seeds can form a seed bank and remain viable in the soil for up to 5 years. These seeds can be transferred in the threads of boots, on clothing, equipment and the wheels of vehicles. In order to prevent its spread, it is important that any staff or vehicles entering an area infested with Giant Hogweed are aware of the biosecurity protocols (see Section 6). As this plant is also harmful to humans when its sap comes into contact with bare skin it is important that personnel wear appropriate PPE when working within the infested area.

Herbicide treatment is the most appropriate method of treatment for the extensive stands along inaccessible riverbanks. Treatment should be carried out both from boat and from land to ensure all plants in leaf at time of treatment are targeted. The tap root method will also be carried out on smaller stands, where access is possible.

This management plan refers specifically to the initial treatment.

Foliar Spray Methodology

A glyphosate-based herbicide diluted with water to the appropriate concentration should be applied to the under and upper surface of the leaves using a knapsack sprayer with suitable telescopic lance to allow the entire plant to be treated. Treatment should take place from land and from water, if necessary, to allow all plants to be targeted.

Treatment by foliar spray has the advantage that it is very quick and easy to apply. It also allows the operative to maintain a distance from a safety perspective. However, non-target vegetation may be affected and the treatment is weather dependent.

The National Parks and Wildlife Service should be contacted prior to applying chemicals in a Special Area of Conservation (SAC) and Inland Fisheries Ireland should be consulted in advance of spraying adjacent to a watercourse. All treatments will be carried out with regard to wider ecological issues, particularly the aquatic ecology of the watercourse.

Cutting Tap Root Methodology

Individual plants may be killed by cutting at a 45-degree angle, 15cm below ground level using a spade. This control method will damage the root and prevent regrowth from the base, meaning a single treatment is very effective and is ideal for single plants that have not reached any great size. Cut parts of the plant should be pulled out of the soil and left to die back.

Full protective clothing, including rubber gloves, face shield and boots are required for both methods detailed above. It is very important to prevent the plant or the sap coming into contact with the skin. Each infestation should be treated in accordance with the Treatment Schedule as detailed in Table 6.

Table 7. Schedule of Works for the treatment of Giant hogweed in the Cahernahallia_020 Sub-basin

Treatment	Action	Time	Year
1	Cut tap roots and apply systemic herbicide by foliar spray	June	2026
2	Monitor for new growth and take appropriate action if new plants emerge	August	2026
3	Monitor for new growth and take appropriate action if new plants emerge	June	2027
4	Monitor for new growth and take appropriate action if new plants emerge	August	2027

Biosecurity Controls

Persons/machinery entering or working within an area infested with an invasive alien species must take certain precautions to prevent the spread of that species. These guidelines must be strictly adhered to at all times.

- All PPE, other equipment and machinery that enter an infested zone must be cleaned before entering.
- Before leaving an infested area, personnel must thoroughly inspect their clothing, PPE, any equipment and their footwear for seeds, rhizomes, or other plant fragments that may be stuck on.
- All personnel should carry a hoof pick or similar implement to thoroughly clean the threads of their footwear with.
- All footwear must be thoroughly cleaned before leaving an infested zone.

- Each field vehicle should carry a cleaning and disinfection kit that staff can avail of as the need arises and to thoroughly clean/disinfect their PPE/Equipment/Footwear before leaving an infested zone.
- The cleaning and disinfection kits should contain:

Stiff bristled brush

Water for washing & diluting

Biodegradable soap

Cloths for cleaning

Plastic tub

Virkon Aquatic Powder/tablets

Rubber/nitrile gloves

- As good practice all staff should follow Inland Fisheries Ireland Biosecurity Protocols when they have entered water or a riparian zone.
- If machinery/plant has entered or worked in an infested zone, it must be thoroughly washed down before leaving the area or working in an uninfested location
- A power washer must be provided for effective cleaning of machinery, along with stiff bristled brushes.

Codes of Practice / Sources of Information for Invasive Species

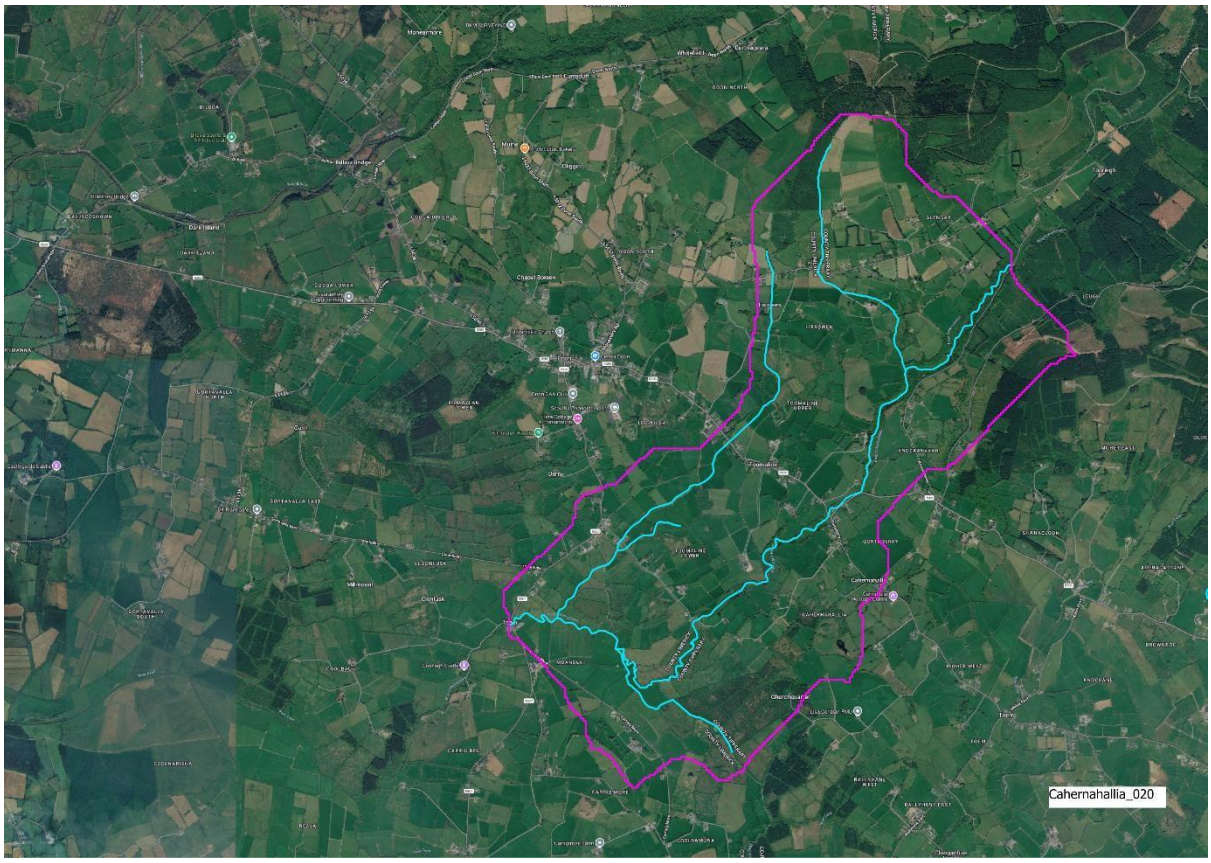
Ireland

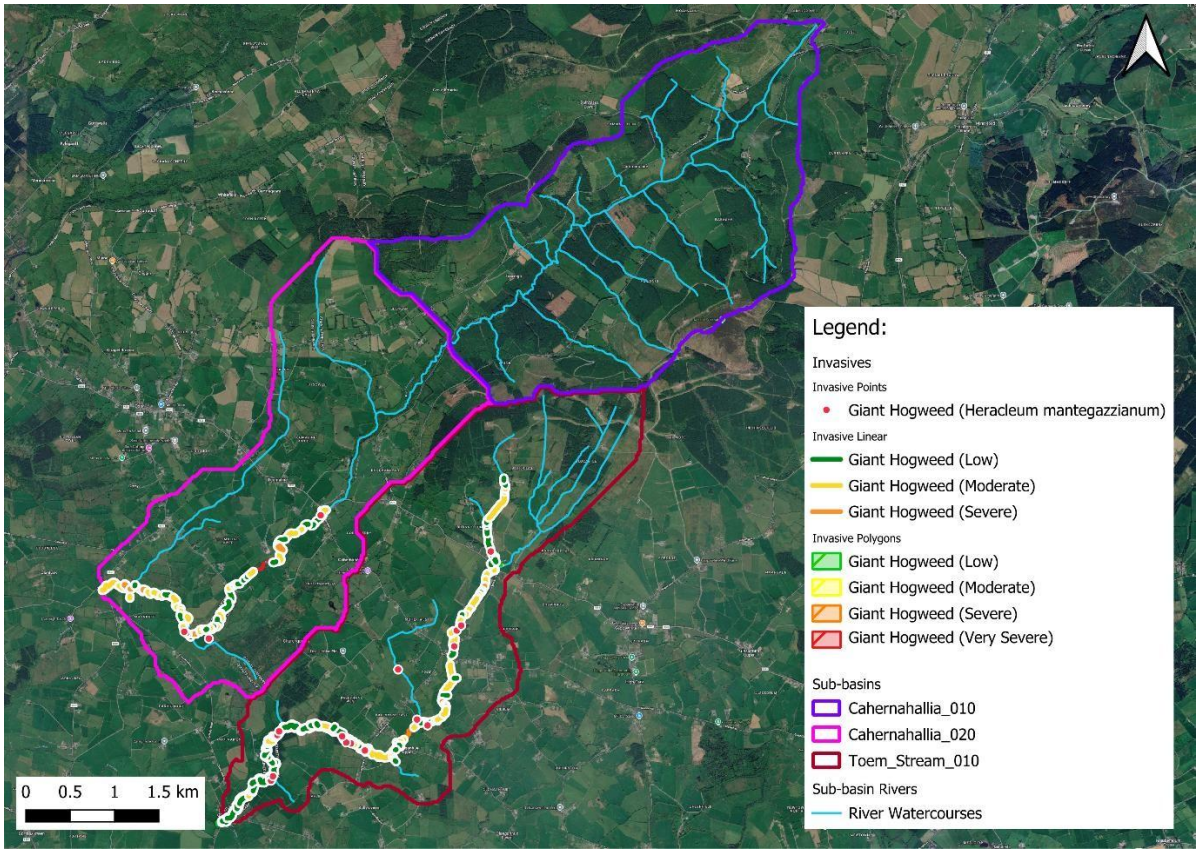
- Invasive Species Ireland Horticultural Code of Good Practice (http://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-CodeFinal.pdf)
- National Roads Authority – The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (http://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-NativeInvasive-Plant-Species-on-National-Road-Schemes.pdf)
- National Biodiversity Data Centre Invasive Species (http://www.biodiversityireland.ie/projects/invasive-species/)
- Invasive Species Ireland Website (http://invasives.ie)
- Sligo Institute of Technology Alien Species (http://staffweb.itsligo.ie/staff/dcotton/Alien_Species.html)
- Online Atlas of the British and Irish Flora (http://www.brc.ac.uk/plantatlas/) – *UK also*

UK

- Department for Environment, Food and Rural Affairs Horticultural Code of Practice (http://www.botanicgardens.ie/gspc/pdfs/defra%20code%20of%20practice.pdf)
- GB Non-Native Species Secretariat (http://www.nonnativespecies.org)

Appendix I – Maps

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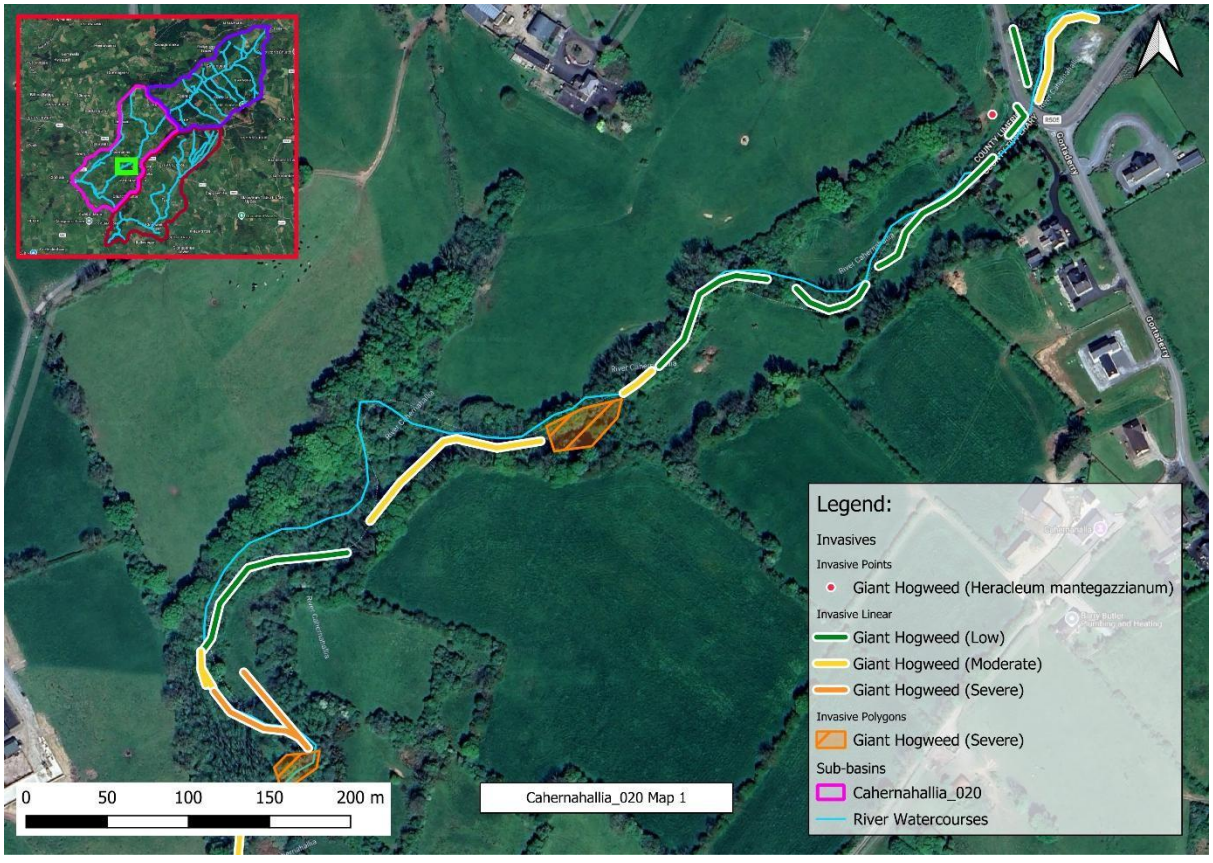
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Giant Hogweed (Very Severe)
Sub-basins
Cahernahallia_010
Cahernahallia_020
Toem_Stream_010
Sub-basin Rivers
River Watercourses
0 0.5 1 1.5 km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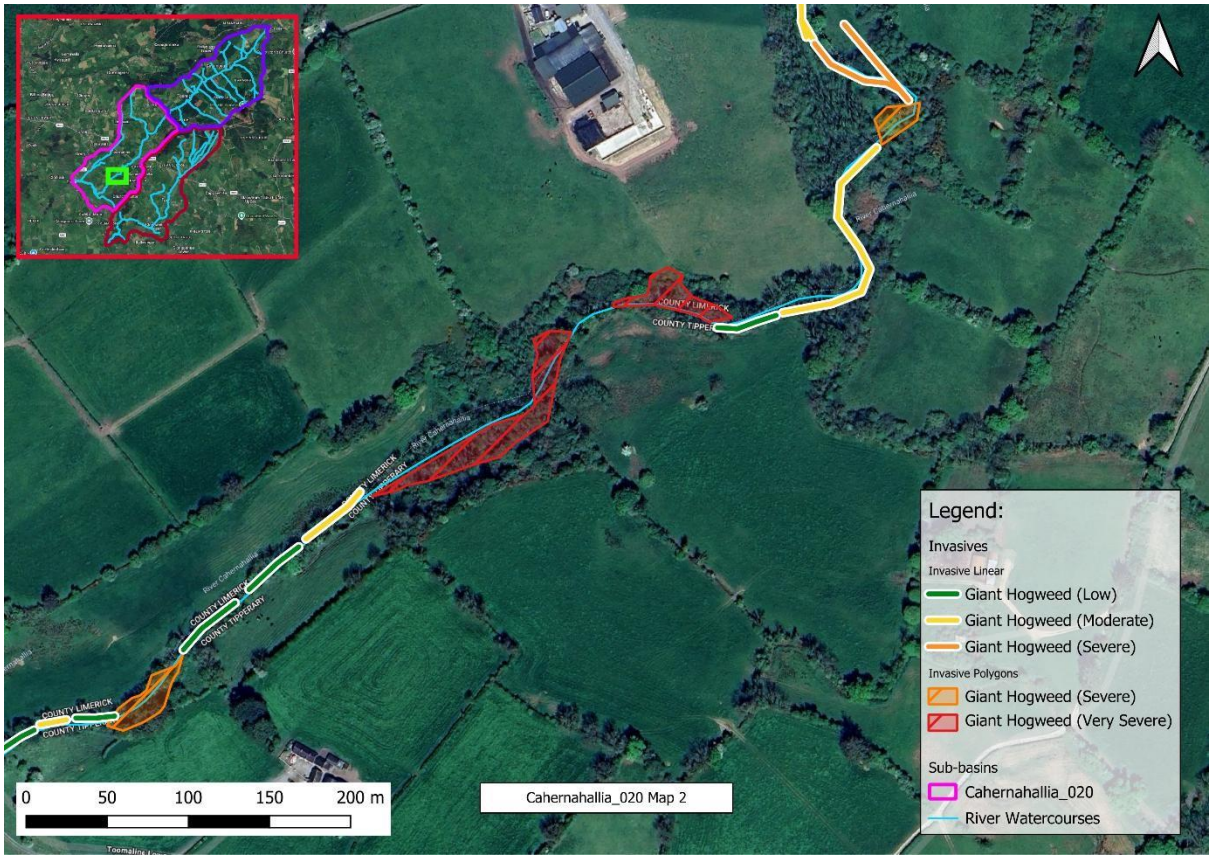
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Severe)
Sub-basins
Cahernahallia_020
River Watercourses
0 50 100 150 200 m
Cahernahallia_020 Map 1


COUNTY LIMERICK
COUNTY TIPPERARY
River Cahernahallia
0
50
100
150
200 m
Cahernahallia_020 Map 2
Legend:
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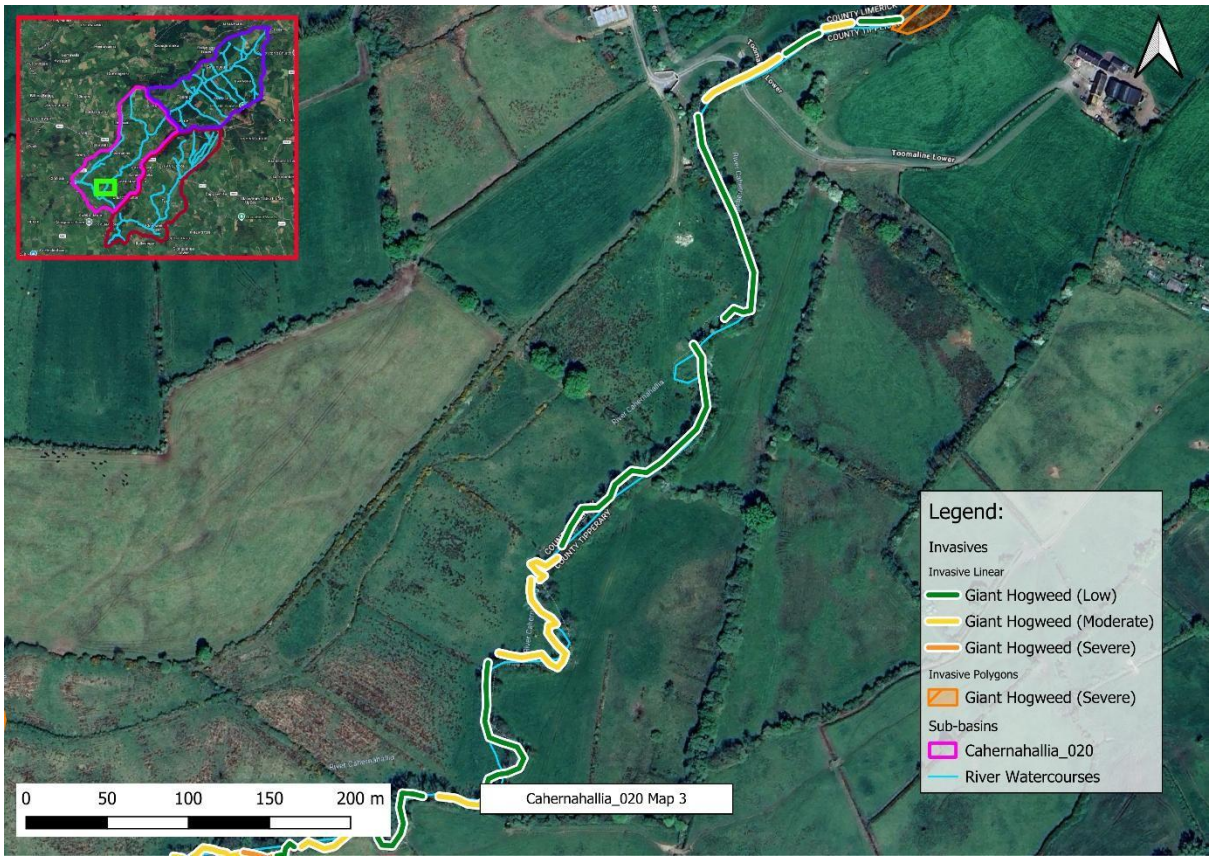
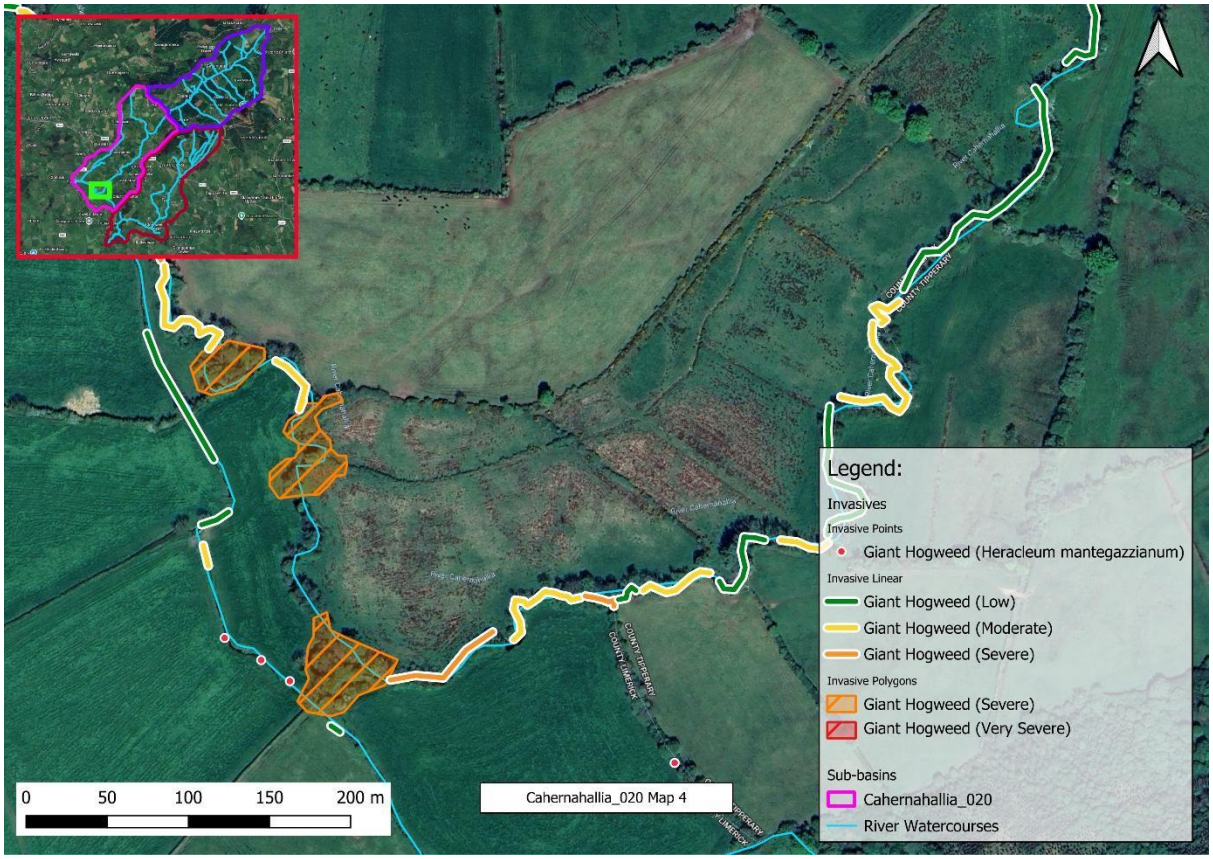
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Severe)
Giant Hogweed (Very Severe)
Sub-basins
Cahernahallia_020
River Watercourses


COUNTY LIMERICK
COUNTY TIPPERARY
Toomaline Lower
River Cahernahallia
0
50
100
150
200 m
Cahernahallia_020 Map 3
Legend:
Invasives
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Severe)
Sub-basins
Cahernahallia_020
River Watercourses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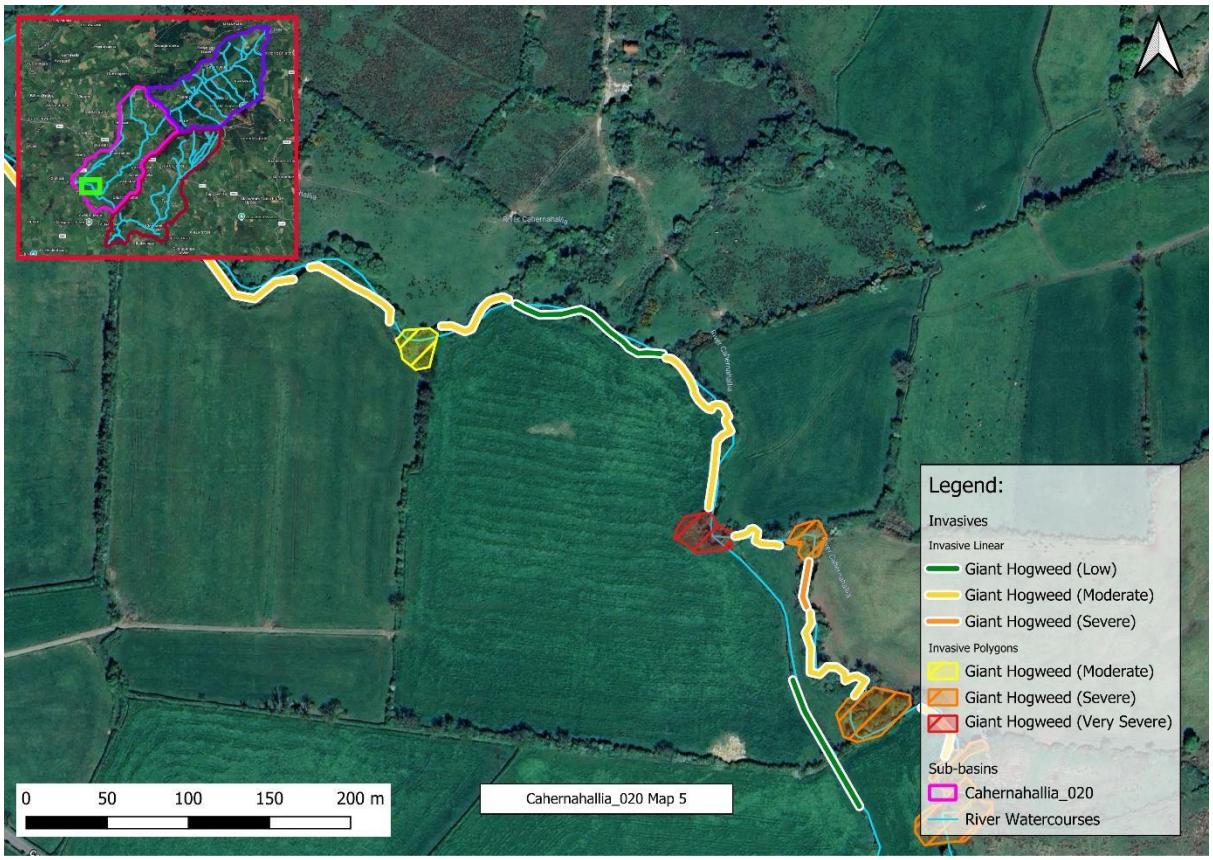
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Severe)
Giant Hogweed (Very Severe)
Sub-basins
Cahernahallia_020
River Watercourses
0 50 100 150 200 m
Cahernahallia_020 Map 4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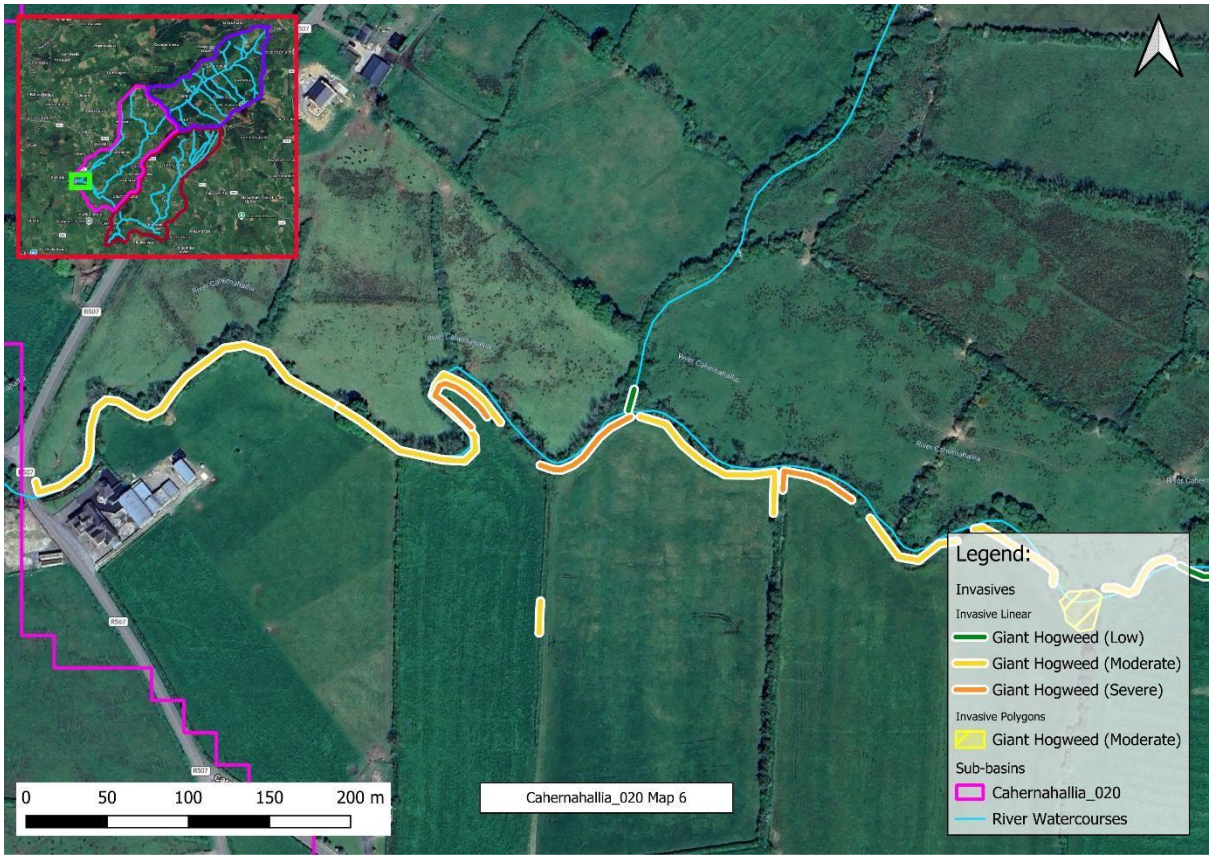
Invasives
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Giant Hogweed (Very Severe)
Sub-basins
Cahernahallia_020
River Watercourses
0 50 100 150 200 m
Cahernahallia_020 Map 5



Other invasives will be included in the Final Report.

Appendix II – Example Photographs

Photo 1. Example of a Low severity linear feature – small plants in a broken line along stream

Photo 2. Example of a Moderate severity linear feature - medium sized plants in a continuous line

Photo 3. In a Severe infestation, plants tower over 2.5m with extensive ground cover

Photo 4. Severe Infestations can grow up to 4m+ with almost total ground cover

GIANT HOGWEED TREATMENT MANAGEMENT PLAN

Cappawhite Stream_010 Catchment Management Plan

Prepared by;
James Whelan BSc

Reviewed by;
Maurice O'Connor MSc
on behalf of;

Local Authority Waters Programme

17 August 2025

Oakwin Ltd.

Contents

List of Tables and Photographs

Introduction

Oakwin Ltd. have been engaged by Local Authority Waters Programme to prepare an Invasive Species management plan for Tipperary Giant Hogweed Project 2025, along rivers and streams within the Cappawhite Stream_010 catchment.

Invasive species surveys took place on 5-8th August to identify the extent of infestation of Giant hogweed (*Heracleum mantegazzianum*). It is likely that this species was introduced to the site through landscaping and gardening efforts, with subsequent natural spread along the catchment.

This invasive alien species management plan (IASMP) has been prepared in accordance with current Irish best practice guidelines such as 'The Management of Noxious Weeds and NonNative Invasive Plant Species on National Roads' – NRA (2010); Best Practice for Control of Giant Hogweed *Heracleum mantegazzianum* - Inland Fisheries Ireland; Best Practice Management Guidelines Japanese Knotweed, Giant Hogweed *Heracleum mantegazzianum* - Invasive Species Ireland (2008 - 2010).

Site Description

A length of 10.64km of rivers and streams in the Cappawhite_010 stream sub-basin were targeted for invasive species surveys, extending along two main streams. The River Dead splits into two streams, one of which flows through a conifer plantation (Coillte Greenfield Woods), then through mostly agricultural land and along some public roads. The Cappawhite Stream_010 flows through agricultural land, public roads and through Cappawhite village. Both streams begin in agricultural fields north of the village. The majority of the agricultural fields appeared to be used for pasture and silage. The total length of river surveyed was 10.64km and the total area of the river sub-basin was 7.32km^2.

Site Management Objectives and Threats to Objectives

Table 1 Site management objectives, threats and mitigation for these threats

Objective	Threat(s)	Mitigation

1. To prevent the spread of Third Schedule invasive species along the river and streams.	Movement of the public, equipment, personnel throughout areas contaminated with invasive species. Incorrect management of infestations	All personnel and equipment that enter an exclusion zone will be certified as clean before exiting. Strict biosecurity protocols will be implemented, as outlined in the detailed Biosecurity Document. An appropriate management plan will be implemented to treat the Giant hogweed on-site.
2. To reduce or eradicate where possible Third Schedule invasive species from the river and streams.	Lack of consistent application of correct management techniques. Missed infestations.	Experienced operatives will treat the infestations in a systematic manner, working upstream from the bottom of the catchment on foot to ensure that all plants are reached.

About the Invasive Species Identified

Giant Hogweed

Giant Hogweed *(Heracleum mantegazzianum)* is native to the Caucasus region and was originally introduced to the British Isles in the 1800's as an ornamental plant. In Ireland, it is almost exclusively found along watercourses as it thrives in rich, moist soil. As the name suggests, Giant Hogweed is an enormous herbaceous plant. It can grow up to 5m tall, with leaves up to 3 x 1.5m and a stem diameter of 5 - 10cm. It produces large umbels of white flowers up to 80cm across. The stem is green with purple blotches and is covered in fine hairs. Unlike our native hogweed *(Heracleum sphondylium),* these hairs are particularly dense at the leaf joints. The leaves also have fine hairs on the underside and are sharply divided.

Giant Hogweed is a perennial plant, living for 3-5 years, after which time it sets seed (around July/Aug) and dies. A single plant can produce up to 50,000 wind-dispersed seeds. It has no vegetative means of reproduction, meaning that it reproduces entirely by seed. The seeds can survive in the ground for up to 5 years. It is estimated that 95% of the seeds are contained within the top 5cm of soil; however, to be sure the entire seed bank is removed, excavation of 0.5m of soil and at least 4m away from the nearest plant is recommended. The seeds also float and are readily dispersed along watercourses allowing the plant to extend its range rapidly downstream.

Giant hogweed poses a serious hazard to human health. Its sap contains furanocoumarins which cause a phototoxic reaction in human skin. The furanocoumarins alter the genetic structure of skin they come into prolonged contact with, eliminating the skin's ability to protect itself from sunlight. The result is that when the affected skin is exposed to sunlight, massive blistering can occur. Extreme caution must be taken around this plant as just brushing into it can cause sap to be

released. The sap is particularly dangerous for young children. If the sap is released onto bare skin, it should be washed off immediately with soapy water and the skin should remain covered away from sunlight for at least 48 hours. Medical advice should be sought. Personnel operating machinery in areas infested with Giant Hogweed must also be aware that the sap can get onto machinery and from there be transferred to the skin of anyone touching the machine. Therefore, full PPE must be worn when working in a Giant Hogweed infested area and all machinery should be washed down regularly.

In Ireland, Giant Hogweed is classified as a High-Impact Invasive Species with a Risk Assessment Score of 19. It is also listed as an Invasive Species of European Union Concern.

Invasive Alien Species Legislation

Strict legislation surrounding invasive species exists in Ireland – namely under Irish Statutory Instrument 477/2011 and the Wildlife Acts (1976-2000). We have also ratified a number of international conventions that oblige the Government to address the issue of non-native invasive species, including the Convention on Biological Diversity, the Bern Convention and the International Plant Protection Convention.

Irish Statutory Instrument 477/2011

The EC Birds and Natural Habitats Regulations introduced important legislation concerning invasive species in the Republic of Ireland. There is a total of thirty-four terrestrial and aquatic alien plant species currently listed in Part 1 of the Third Schedule (as amended by S.I. No. 355/2015), which is included in Table 2 below; *Table 2 Third Schedule of S.I. 477/2011 as amended*

Common Name	**Scientific Name**
American skunk-cabbage	*Lysichiton americanus*
A red alga	*Grateloupia doryphora*
Brazilian giant-rhubarb	*Gunnera manicata*
Broad-leaved rush	*Juncus planifolius*
Cape pondweed	*Aponogeton distachyos*
Cord-grasses	*Spartina* (all species and hybrids)
Curly waterweed	*Lagarosiphon major*
Dwarf eel-grass	*Zostera japonica*
Fanwort	*Cabomba caroliniana*
Floating pennywort	*Hydrocotyle ranunculoides*
Fringed water-lily	*Nymphoides peltata*
Giant hogweed	*Heracleum mantegazzianum*
Giant knotweed	*Fallopia sachalinensis*
Giant-rhubarb	*Gunnera tinctoria*

Giant salvinia	*Salvinia molesta*
Himalayan balsam	*Impatiens glandulifera*
Himalayan knotweed	*Persicaria wallichii*
Hottentot-fig	*Carpobrotus edulis*
Japanese knotweed	*Reynoutria japonica* / *Fallopia japonica*
Large-flowered waterweed	*Egeria densa*
Mile-a-minute weed	*Persicaria perfoliata*
New Zealand pigmyweed	*Crassula helmsii*
Parrot's feather	*Myriophyllum aquaticum*
Rhododendron	*Rhododendron ponticum*
Salmonberry	*Rubus spectabilis*
Sea-buckthorn	*Hippophae rhamnoides*
Spanish bluebell	*Hyacinthoides hispanica*
Three-cornered leek	*Allium triquetrum*
Wakame	*Undaria pinnatifida*
Water chestnut	*Trapa natans*
Water fern	*Azolla filiculoides*
Water-primrose	*Ludwigia* (all species)
Waterweeds	*Elodea* (all species except *E. canadensis*)
Wireweed	*Sargassum muticum*

Article 49 prohibits the introduction, breeding, release or dispersal of certain species; and Article 50 prohibits dealing in and keeping certain species.

> **Article 49 (2)** "Save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence."

Article 49 (3) states that you can defend against allegations that you committed an offence under Article 49 (1) or (2) by proving that you took all reasonable steps and exercised all due diligence to avoid committing the offence:

> **Article 49 (3)** "Subject to paragraph (4), it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

Article 50 (2) "Save in accordance with a licence granted under paragraph (7), a person shall be guilty of an offence if he or she imports or transports – (a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule

(b) anything from which an animal or plant referred to in Part 2 of the Third Schedule can be reproduced or propagated, or

(c) a vector material listed in Part 3 of the Third Schedule, into or in or to any place in the State specified in relation to such an animal or plant or vector material in relation to that animal or plant or vector material in the third column of the Third Schedule."

The Wildlife Amendment Act (2000)

The Wildlife Amendment Act (2000) of ***The Wildlife Act (1976)*** made it an offence to cause an exotic species of flora to grow in the wild anywhere in the state**:**

"Any person who plants or otherwise causes to grow in a wild state in any place in the State any (exotic) species of flora, or the flowers, roots, seeds or spores of flora, otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence."

EU Regulation 1143/2014

EU Regulation 1143/2014 on invasive alien species entered into force on 1 January 2015. It provides for a set of measures to be taken across the EU in relation to invasive alien species included on a list of Invasive Alien Species of Union concern. The list of invasive alien plant species can be seen below;

Table 3 Plants listed as Invasive Alien Species of Union Concern (EU Regulation 1143/2014)

Scientific name	English name	Entered into List
Acacia saligna	Golden wreath wattle	2019
Ailanthus altissima	Tree of heaven	2019
Alternanthera philoxeroides	Alligator weed	2017
Andropogon virginicus	Broomsedge bluestem	2019
Asclepias syriaca	Milkweed	2017
Baccharis halimifolia	Eastern baccharis	2016
Cabomba caroliniana	Green cabomba	2016
Cardiospermum grandiflorum	Balloon vine	2019
Cortaderia jubata	Purple pampas grass	2019
Ehrharta calycina	Perennial veldtgrass	2019

Eichhornia crassipes	Water hyacinth	2016
Elodea nuttallii	Nuttall's waterweed	2017
Gunnera tinctoria	Chilean rhubarb	2017
Gymnocoronis spilanthoides	Spadeleaf plant	2019
Heracleum mantegazzianum	Giant hogweed	2017
Heracleum persicum	Persian hogweed	2016
Heracleum sosnowskyi	Sosnowski's hogweed	2016
Humulus scandens	Japanese hop	2019
Hydrocotyle ranunculoides	Floating pennywort	2016
Impatiens glandulifera	Himalayan balsam	2017
Lagarosiphon major	Curly waterweed	2016
Lespedeza cuneata	Chinese bushclover, sericea	2019
Ludwigia grandiflora	Water primrose	2016
Ludwigia peploides	Floating primrose	2016
Lygodium japonicum	Vine-like fern	2019
Lysichiton americanus	American skunk cabbage	2016
Microstegium vimineum	Japanese stiltgrass	2017
Myriophyllum aquaticum	Parrot's feather	2016
Myriophyllum heterophyllum	Broadleaf watermilfoil	2017
Persicaria perfoliata	Asiatic tearthumb	2016
Parthenium hysterophorus	Whitetop weed	2016
Pennisetum setaceum	Crimson fountaingrass	2017
Prosopis juliflora	Mesquite	2019
Pueraria montana var. *lobata*	Kudzu vine	2016
Salvinia molesta	Giant salvinia, kariba weed	2019
Triadica sebifera	Chinese tallowtree	2019

Table 4 Animals listed as Invasive Alien Species of Union Concern (EU Regulation 1143/2014)

Scientific name	English name	Entered into List
Acridotheres tristis	Common or Indian myna	2019

Alopochen aegyptiaca	Egyptian goose	2017
Arthurdendyus triangulatus	New Zealand flatworm	2019
Callosciurus erythraeus	Pallas's squirrel	2016
Corvus splendens	Indian house crow	2016
Eriocheir sinensis	Chinese mitten crab	2016
Herpestes javanicus	Small Asian mongoose	2016
Lepomis gibbosus	Pumpkinseed	2019
Lithobates catesbeianus	American bullfrog	2016
Muntiacus reevesi	Muntjac deer	2016
Myocastor coypus	Coypu	2016
Nasua nasua	South American coati	2016
Nyctereutes procyonoides	Racoon dog	2017
Ondatra zibethicus	Muskrat	2017
Orconectes limosus	Spiny-cheek crayfish	2016
Orconectes virilis	Virile (northern) crayfish	2016
Oxyura jamaicensis	Ruddy duck	2016
Pacifastacus leniusculus	Signal crayfish	2016
Perccottus glenii	Amur sleeper	2016
Plotosus lineatus	Striped eel catfish	2019
Procambarus clarkii	Red swamp crayfish	2016
Procambarus fallax f. *virginalis*	Marbled crayfish	2016
Procyon lotor	Racoon	2016
Pseudorasbora parva	Topmouth gudgeon	2016
Sciurus carolinensis	Grey squirrel	2016
Sciurus niger	Bryant’s fox squirrel	2016
Tamias sibiricus	Siberian chipmunk	2016
Threskiornis aethiopicus	Sacred Ibis	2016
Trachemys scripta	Red eared slider	2016
Vespa velutina nigrithorax	Asian hornet	2016

Survey Findings

Methodology

Walkover surveys conducted on 5-8th August. These surveys identified the presence of Third Schedule S.I 477/2011 invasive alien species, Giant Hogweed (See Appendix II – Photographic Record). The Cappawhite Stream_010 and Cappawhite village were surveyed.

Giant Hogweed infestations were mapped using the tool QField on a Samsung Galaxy Tab Active, which has GPS capabilities. Each feature was mapped either as a point, linear, or polygon feature as per the '*Best Practice Guidance for Habitat Survey and Mapping*' published by the Heritage Council (2011). The vast majority of features were recorded with accompanying geotagged photographs, but with some features such as in dense wooded areas, the camera was unable to depict the plants well enough to convey useful information. All linear and polygon features were also graded on their severity, and this was in terms of both how large and dense the stand was, but also how difficult it may be to access the stand in order to treat it. This might mean that in some circumstances such as a densely wooded or scrub area, a 'moderate' infestation according to size is upgraded to 'severe' due to lack of accessibility and assurance that all plants within the infestation can be treated in the first instance. Point features were not issued a severity level.

There were four levels of severity used during this project, set out in Table 5.

Severity Level	Description
Low	• All plants considerably less than 2m in height • Linear features are broken and discontinuous (could be up to 20m between plants) • Generally easy to access
Moderate	• Plants on average 1.5-2.5m in height • Linear features are continuous • Generally easy to access
Severe	• Plants on average considerably higher than 2.5m • Dense coverage of leaves and flowers Or • Plants on average 1.5-2.5m in height • Difficult but not impossible to access
Very Severe	• Plants 4-5m+ tall • Feature extremely dense and appears as a 'block' of hogweed • Access variable

Survey Results

31 point features of Giant Hogweed were recorded. Assuming average area of 2x2m, this equates to 124m^2 of Giant Hogweed.

Of the 29 linear features recorded, four were classified as 'Low' (697m), 13 classified as 'Moderate' (2,260m) and 12 as 'Severe' (948m), totaling 3,898m or 7,796m^2 of Giant Hogweed.

And of the five polygon features recorded, two were classified as 'Low' (2,047m^2) and three as 'Severe' (4,669m^2) which leaves a total of 6,716m^2 of Giant Hogweed.

No infestations were classified as 'Very Severe'.

In total, 14,636m^2 (1.46ha) of Giant Hogweed was recorded within the Cappawhite Stream_010 sub-basin.

The geography of the infestations as a whole with respect to the catchment was revealing. The stream has two main branches which both commence at the northern end of the catchment. Both flowing broadly SSE, the western branch flows through a steep , often wooded gorge, through fome agricultural land, through Cappawhite village and crosses the Glassdrum road before meeting its eastern counterpart. The eastern branch originates in the lands of the Cappawhite Windfarm on the hills, flowing through agricultural land, then through a dense patch of scrub before emerging again into open farmland. It then crosses the Glassdrum road and shortly afterwards enters the Greenfield Woods, dissecting the forest, after which it meets the western branch. From the confluence downstream, the river flows west, mostly through open farmland but with a dense area of woodland and scrub in between, before exiting the sub-basin.

The most severe infestations were within both wooded areas mentioned, the majority of which was classified as 'Severe'. There was effectively a continuous infestation of the species from the point of egress along the entirety of the merged stream section, the western branch upstream until the Glassdrum road and the eastern branch through the entirety of the Greenfield Woods.

On the western branch, the only other hotspot was the village itself, but was not in close proximity to the river. Only a couple of point features of hogweed were encountered on the western branch of the river itself, and no hogweed occurred on this branch north of the village. The situation is even more striking on the eastern branch of the river, where no hogweed was found upstream of Greenfield Woods, despite the Woods exhibiting a severe infestation throughout.

The distribution of the infestation strongly suggests that the main sources are the Greenfields Woods, and to a lesser extent the village of Cappawhite.

A map of the infestation within the catchment as well as a number of closer-view maps are presented in Appendix I.

Three other invasive species were noted during the survey; Himalayan Balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*) and Japanese Knotweed (*Reynoutria japonica*). Himalayan Balsam was the most pervasive, spread along most of the southern section of the catchment, while Japanese Knotweed was dominant in parts of Greenfield Woods and the village, as well as along sections of the western branch of the river. Maps are presented in Appendix I.

Recommended Treatment

Summary

Giant hogweed reproduces solely by producing seeds with a single mature plant producing 50,000 wind dispersed seeds. These seeds can form a seed bank and remain viable in the soil for up to 5 years. These seeds can be transferred in the threads of boots, on clothing, equipment and the wheels of vehicles. In order to prevent its spread, it is important that any staff or vehicles entering an area infested with Giant Hogweed are aware of the biosecurity protocols (see Section 6). As this plant is also harmful to humans when its sap comes into contact with bare skin it is important that personnel wear appropriate PPE when working within the infested area.

Herbicide treatment is the most appropriate method of treatment for the extensive stands along inaccessible riverbanks. Treatment should be carried out both from boat and from land to ensure all plants in leaf at time of treatment are targeted. The tap root method will also be carried out on smaller stands, where access is possible.

This management plan refers specifically to the initial treatment.

Foliar Spray Methodology

A glyphosate-based herbicide diluted with water to the appropriate concentration should be applied to the under and upper surface of the leaves using a knapsack sprayer with suitable telescopic lance to allow the entire plant to be treated. Treatment should take place from land and from water, if necessary, to allow all plants to be targeted.

Treatment by foliar spray has the advantage that it is very quick and easy to apply. It also allows the operative to maintain a distance from a safety perspective. However, non-target vegetation may be affected and the treatment is weather dependent.

The National Parks and Wildlife Service should be contacted prior to applying chemicals in a Special Area of Conservation (SAC) and Inland Fisheries Ireland should be consulted in advance of spraying adjacent to a watercourse. All treatments will be carried out with regard to wider ecological issues, particularly the aquatic ecology of the watercourse.

Cutting Tap Root Methodology

Individual plants may be killed by cutting at a 45 degree angle, 15cm below ground level using a spade. This control method will damage the root and prevent regrowth from the base, meaning a single treatment is very effective and is ideal for single plants that have not reached any great size. Cut parts of the plant should be pulled out of the soil and left to die back.

Full protective clothing, including rubber gloves, face shield and boots are required for both methods detailed above. It is very important to prevent the plant or the sap coming into contact with the skin. Each infestation should be treated in accordance with the Treatment Schedule as detailed in Table 6.

Table 5 Schedule of Works for the Treatment of Giant hogweed in the Cappawhite Stream_010 Sub-basin

Treatment	Action	Time	Year
1	Cut tap roots and apply systemic herbicide by foliar spray	August	2025
2	Monitor for new growth and take appropriate action if new plants emerge	June	2026

Biosecurity Controls

Persons/machinery entering or working within an area infested with an invasive alien species must take certain precautions to prevent the spread of that species. These guidelines must be strictly adhered to at all times.

- All PPE, other equipment and machinery that enter an infested zone must be cleaned before entering.
- Before leaving an infested area, personnel must thoroughly inspect their clothing, PPE, any equipment and their footwear for seeds, rhizomes, or other plant fragments that may be stuck on.
- All personnel should carry a hoof pick or similar implement to thoroughly clean the threads of their footwear with.
- All footwear must be thoroughly cleaned before leaving an infested zone.
- Each field vehicle should carry a cleaning and disinfection kit that staff can avail of as the need arises and to thoroughly clean/disinfect their PPE/Equipment/Footwear before leaving an infested zone.
- The cleaning and disinfection kits should contain:

Stiff bristled brush

Water for washing & diluting

Biodegradable soap

Cloths for cleaning

Plastic tub

Virkon Aquatic Powder/tablets

Rubber/nitrile gloves

- As good practice all staff should follow Inland Fisheries Ireland Biosecurity Protocols when they have entered water or a riparian zone.

- If machinery/plant has entered or worked in an infested zone, it must be thoroughly washed down before leaving the area or working in an uninfested location
- A power washer must be provided for effective cleaning of machinery, along with stiff bristled brushes.

Codes of Practice / Sources of Information for Invasive Species

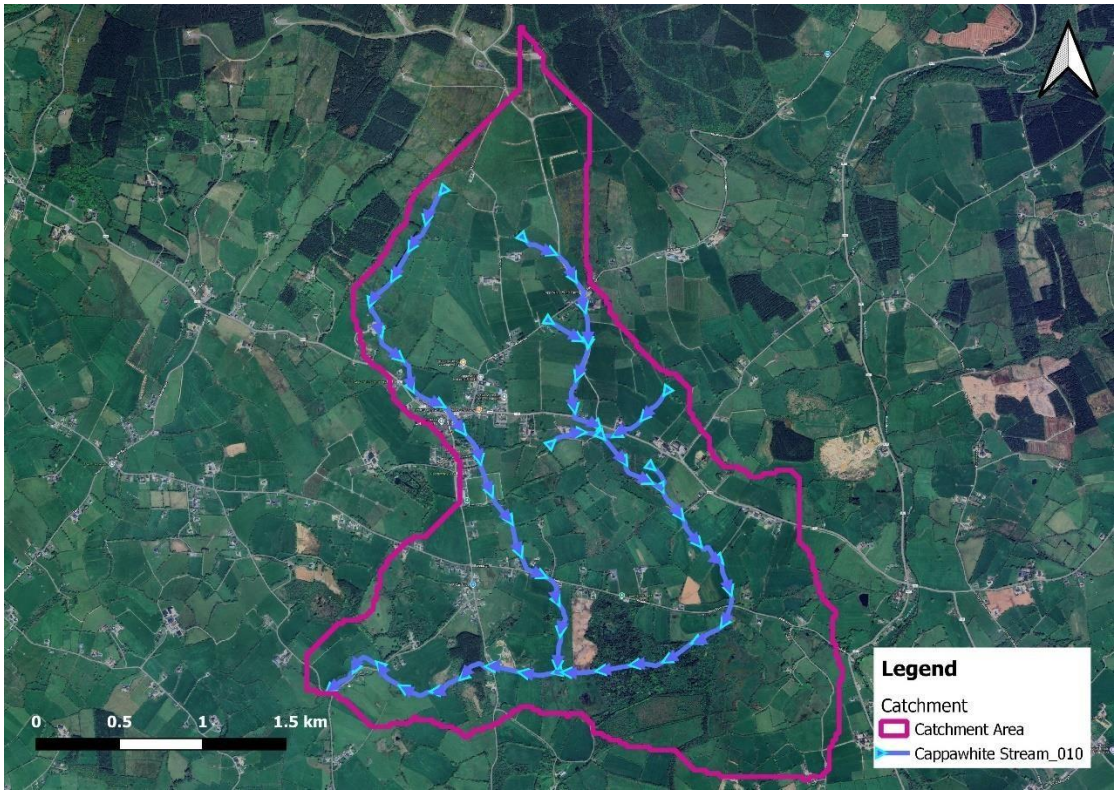
Ireland

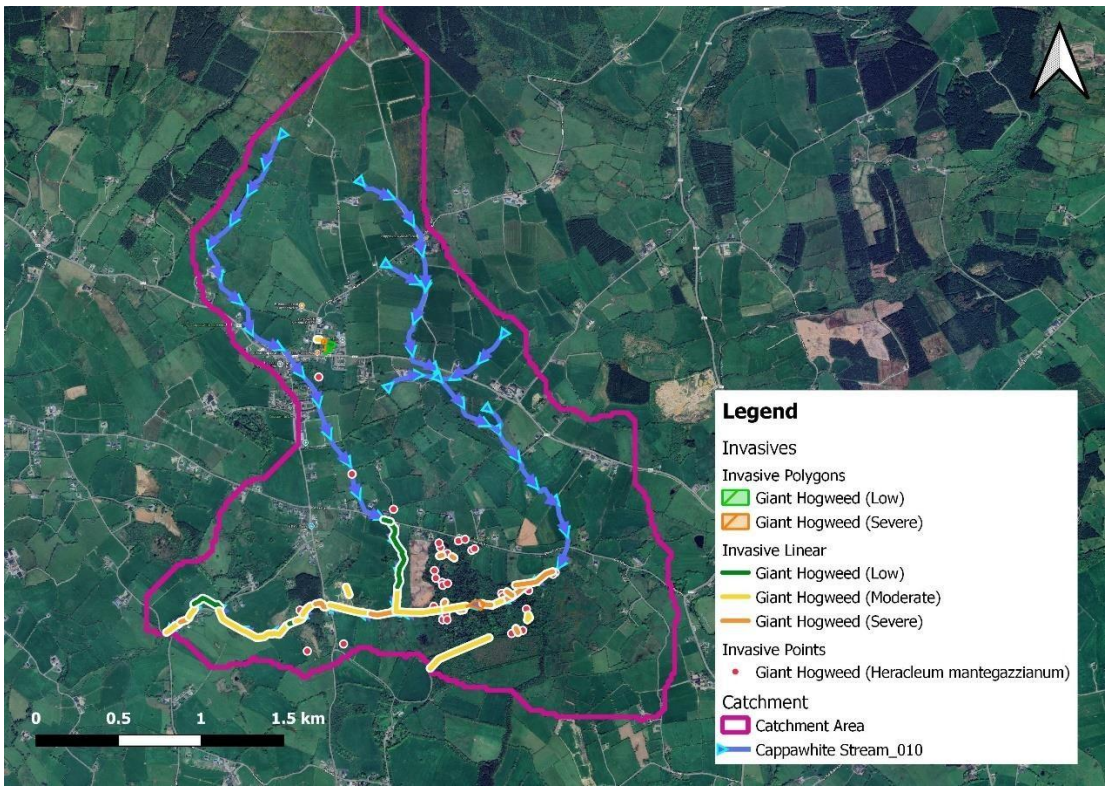
- Invasive Species Ireland Horticultural Code of Good Practice (http://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-CodeFinal.pdf)
- National Roads Authority – The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (http://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-NativeInvasive-Plant-Species-on-National-Road-Schemes.pdf)
- National Biodiversity Data Centre Invasive Species (http://www.biodiversityireland.ie/projects/invasive-species/)
- Invasive Species Ireland Website (http://invasives.ie)
- Sligo Institute of Technology Alien Species (http://staffweb.itsligo.ie/staff/dcotton/Alien_Species.html)
- Online Atlas of the British and Irish Flora (http://www.brc.ac.uk/plantatlas/) – *UK also*

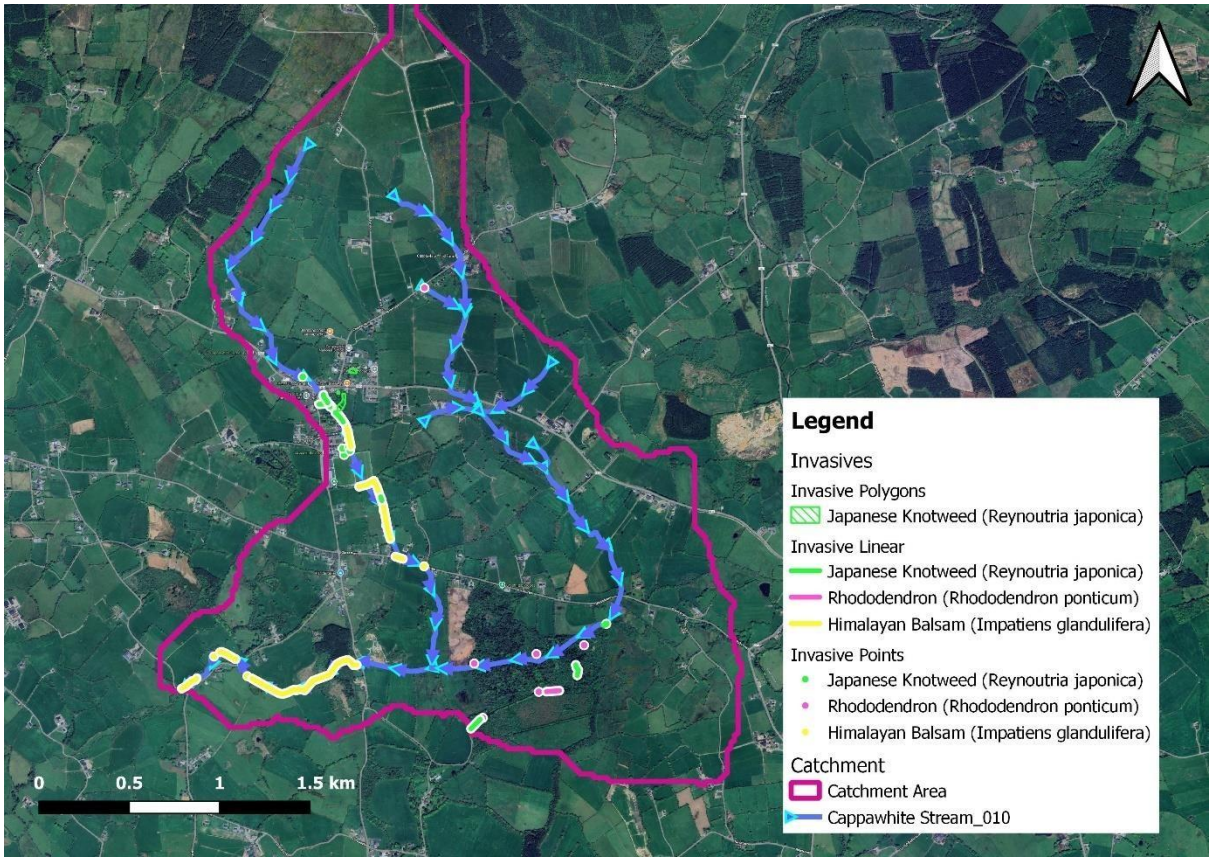
UK

- Department for Environment, Food and Rural Affairs Horticultural Code of Practice (http://www.botanicgardens.ie/gspc/pdfs/defra%20code%20of%20practice.pdf)
- GB Non-Native Species Secretariat (http://www.nonnativespecies.org)

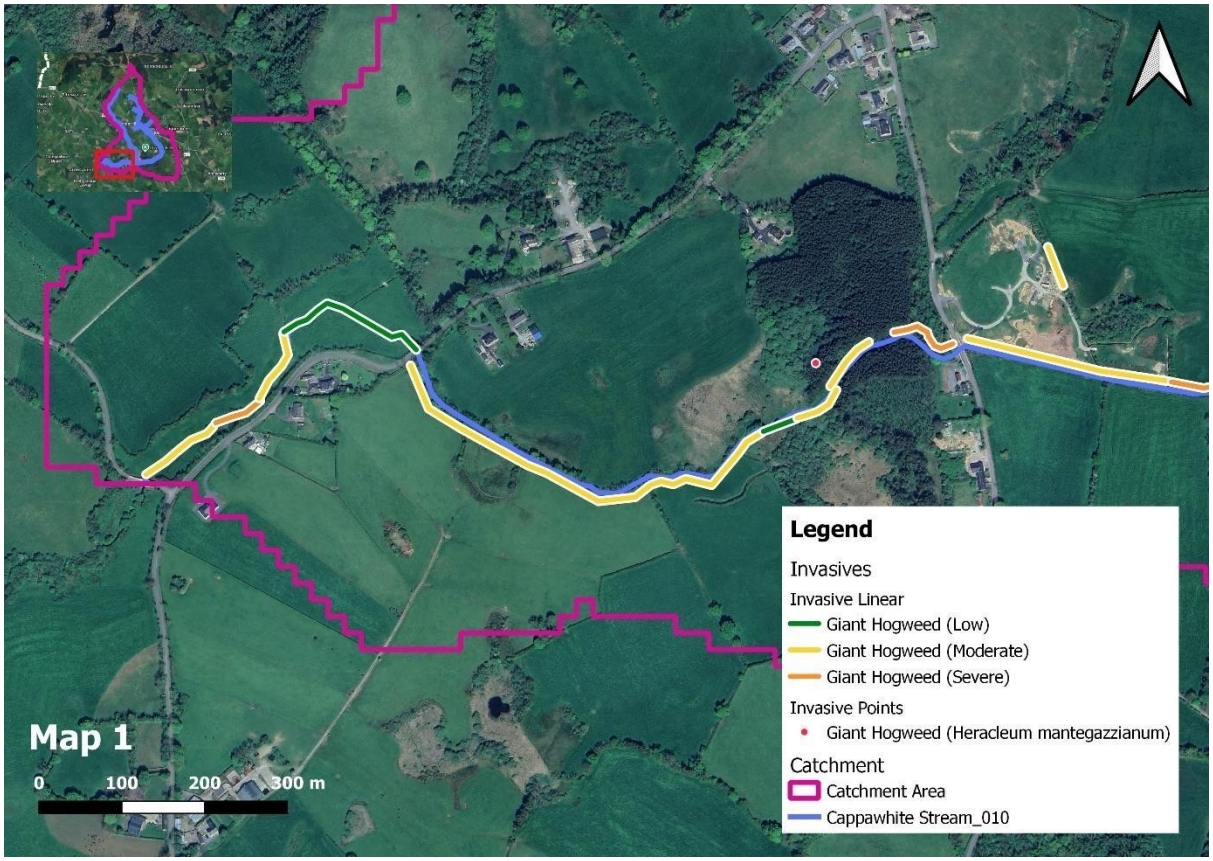
Appendix I – Maps

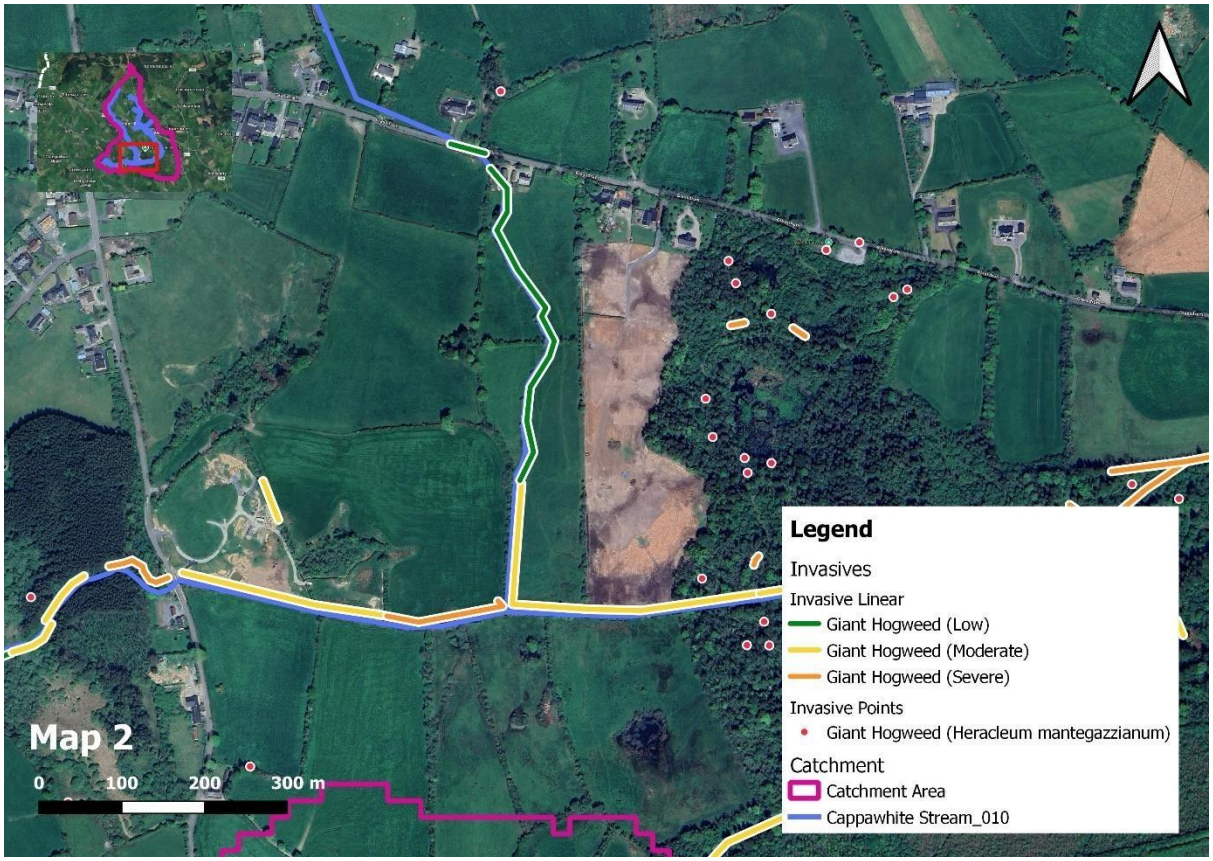


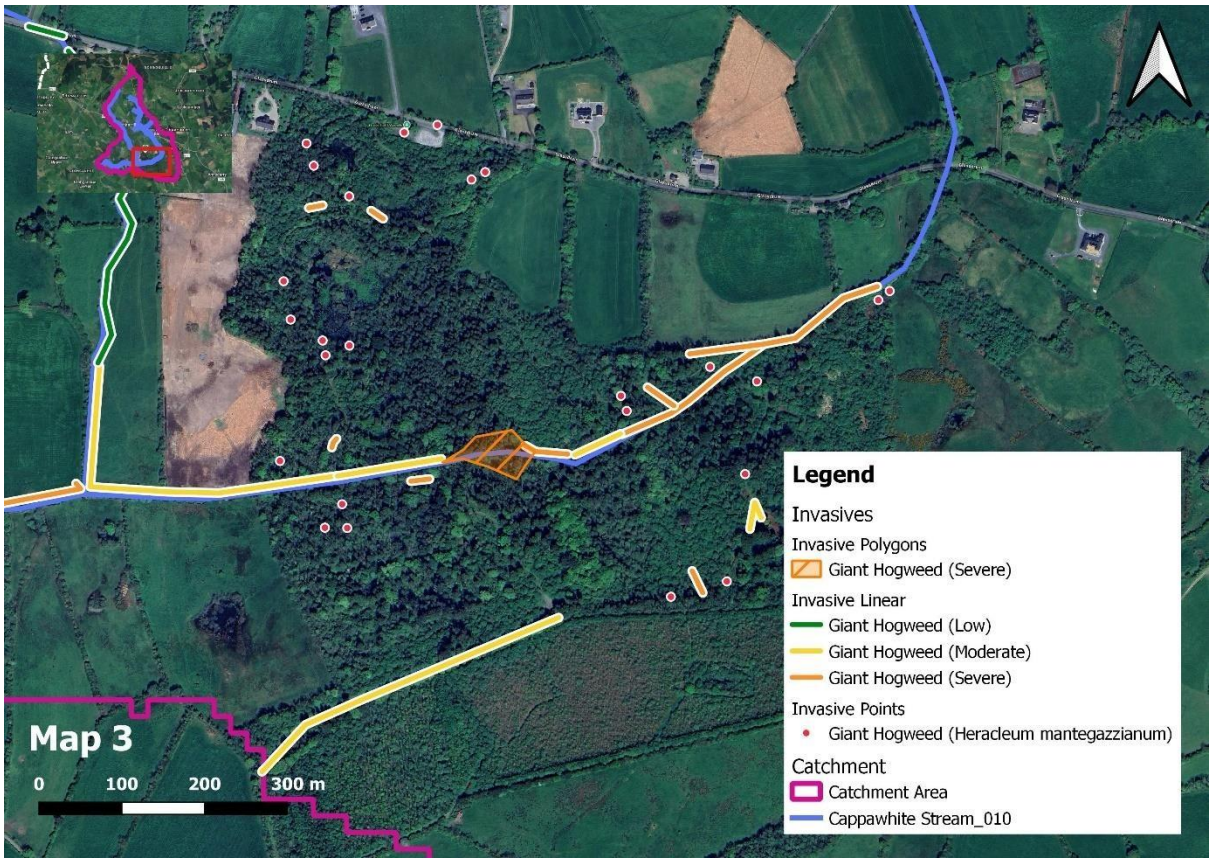


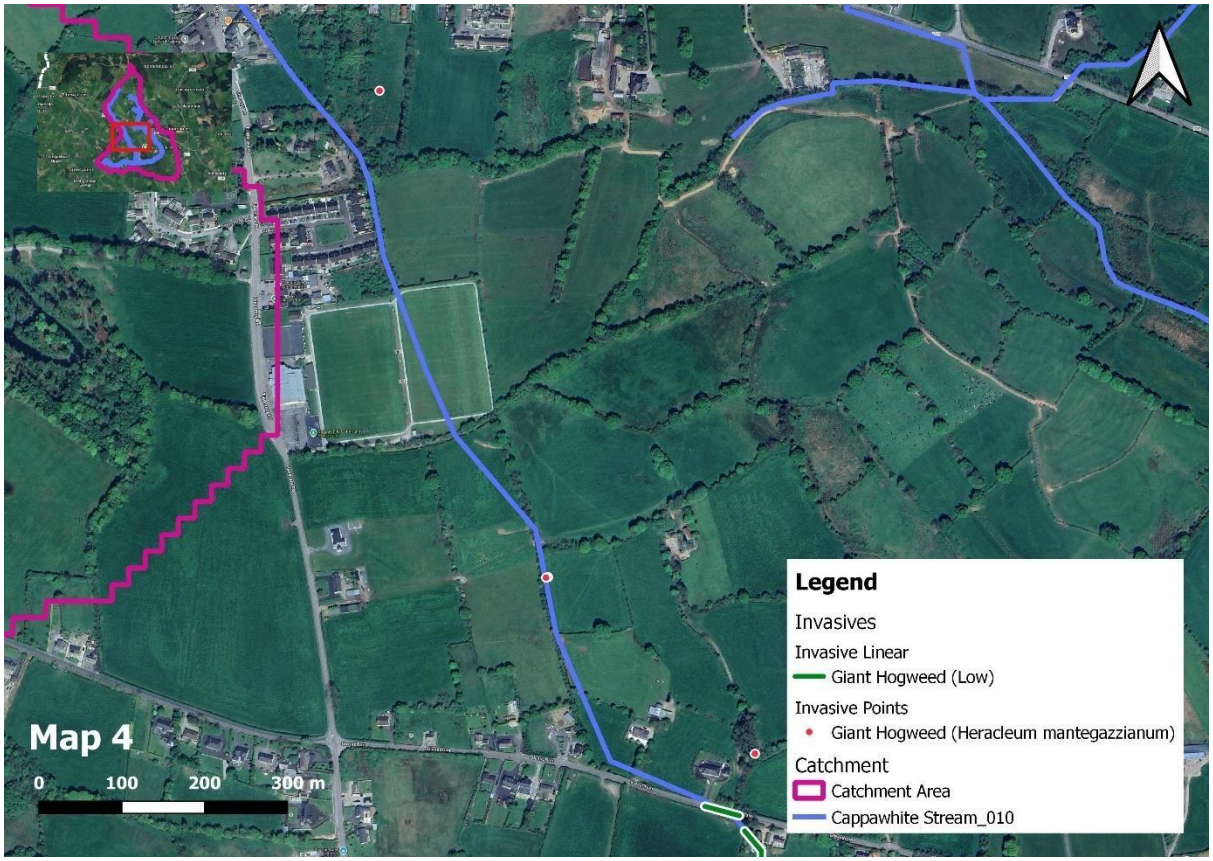


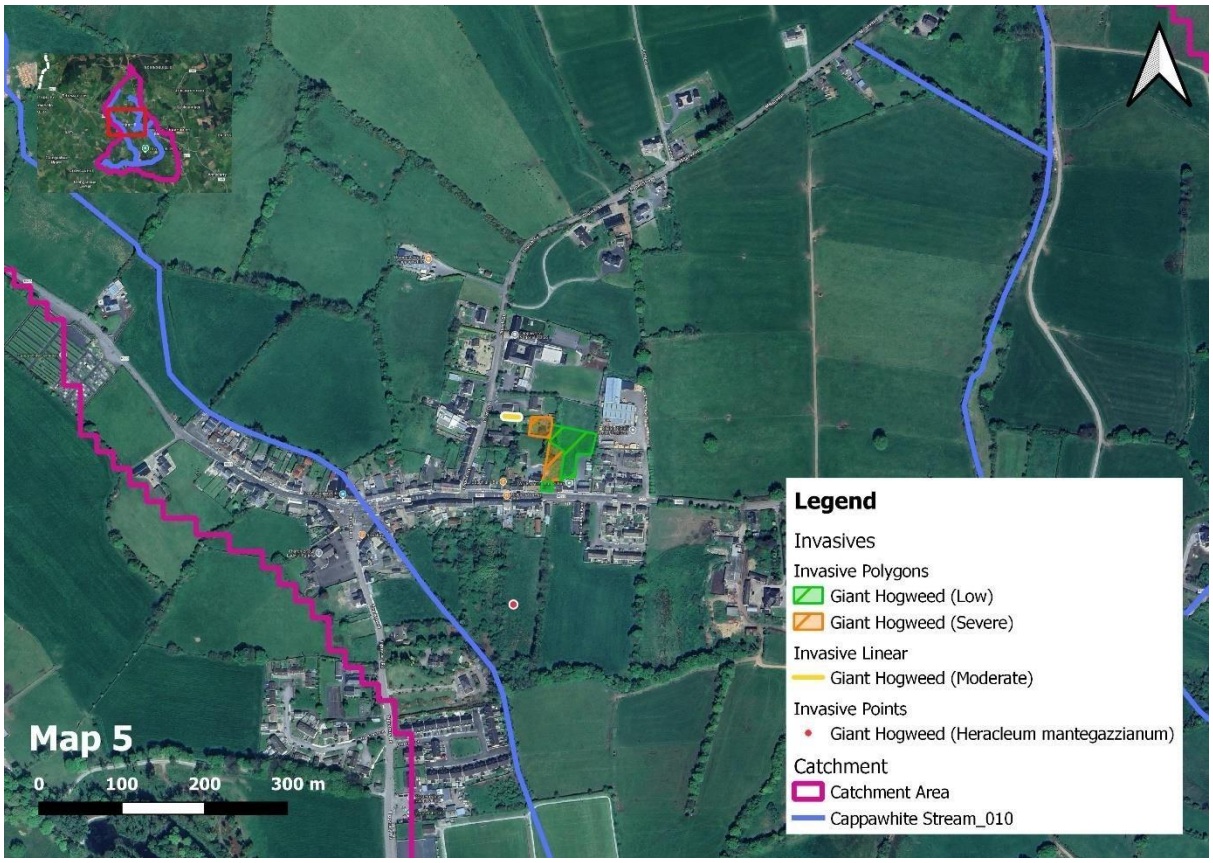
Map above shows other Third Schedule Invasive Species found within the catchment.




Legend
Invasives
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Catchment
Catchment Area
Cappawhite Stream_010
Map 2
0
100
200
300 m


Legend
Invasives
Invasive Polygons
Giant Hogweed (Severe)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Catchment
Catchment Area
Cappawhite Stream_010
Map 3
0
100
200
300 m


Legend
Invasives
Invasive Linear
Giant Hogweed (Low)
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Catchment
Catchment Area
Cappawhite Stream_010
Map 4
0
100
200
300 m


Legend
Invasives
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Severe)
Invasive Linear
Giant Hogweed (Moderate)
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Catchment
Catchment Area
Cappawhite Stream_010
Map 5
0
100
200
300 m

Appendix II – Site Photographs

Photo 1. Example of a Low severity linear feature – small plants in a broken line along stream

Photo 2. Example of a Moderate severity linear feature - medium sized plants in a continuous line

Photo 3. In a Severe infestation, plants tower over 2.5m with extensive ground cover

Photo 4. Severe infestation in forest with difficulties in access due to other vegetation

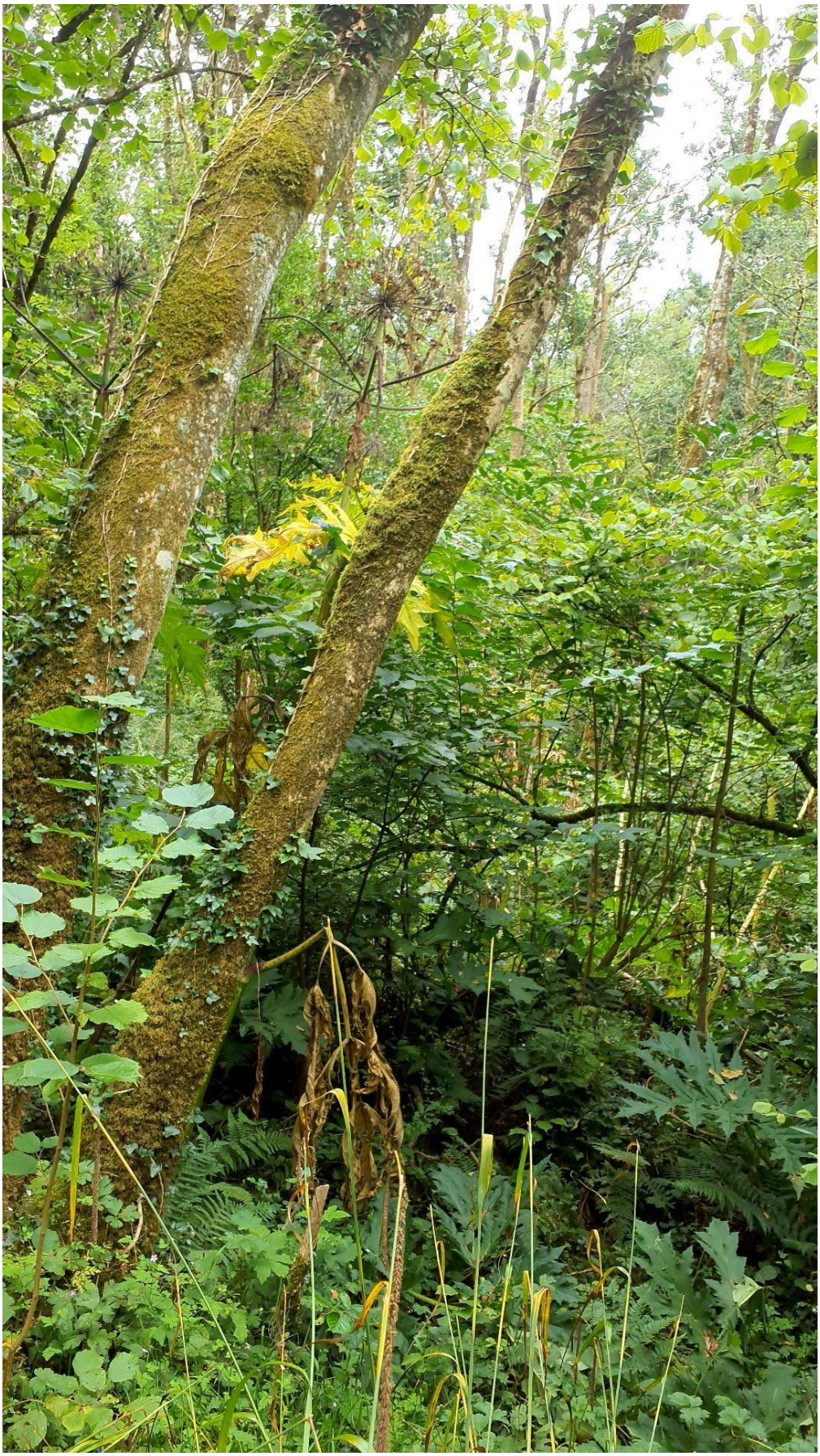


Photo 5. Likely the tallest plant found, 4m+ in Greenfield Woods

Photo 6. Severe infestation in Cappawhite village, not associated with stream

Photo 7. Japanese Knotweed extensive in Cappawhite (shown) and in Greenfield Woods

Photo 8. Large Rhododendron stands found mainly in Greenfield Woods

Photo 9. Himalayan Balsam found extensively wherever hogweed was present, and beyond - constricted to rivers

GIANT HOGWEED TREATMENT MANAGEMENT PLAN – PRELIMINARY REPORT

West Tipperary Catchments Management Plan for
Toem Stream_010 Sub-basin

Prepared by;
James Whelan BSc

Reviewed by;
Maurice O'Connor MSc
on behalf of;
Farming for Water – Water European Innovation Partnership / Tipperary County Council

21st May 2026

Oakwin Ltd.

Contents

List of Tables and Photographs

Introduction

Oakwin Ltd. have been engaged by Farming for Water – Water European Innovation Partnership / Tipperary County Council to prepare an Invasive Species management plan for the Tipperary Giant Hogweed Project 2026, along rivers and streams within the Toem Stream_010 WFD River Sub Basin Catchment.

Invasive species surveys took place from April 30th to May 15th 2026 to identify the extent of infestation of Giant Hogweed (*Heracleum mantegazzianum*). It is likely that this species was introduced to the site through landscaping and gardening efforts, with subsequent natural spread along the catchment.

This invasive alien species management plan (IASMP) has been prepared in accordance with current Irish best practice guidelines such as 'The Management of Noxious Weeds and NonNative Invasive Plant Species on National Roads' – NRA (2010); Best Practice for Control of Giant Hogweed *Heracleum mantegazzianum* - Inland Fisheries Ireland; Best Practice Management Guidelines Japanese Knotweed, Giant Hogweed *Heracleum mantegazzianum* - Invasive Species Ireland (2008 - 2010).

Site Description

The Toem Stream_010 Sub-basin begins with four main streams: Leugh (25L96), Ardnagassane (25A54), Toem (Stream) (25T05) and Oldcastle Brownbog (25O20) on Red Hill and then flows down to the Oldcastle Townland. These streams then join together to form the Toem (Stream) (25T05). The Moher 25 (25M59) also joins the Toem (25T05) along with the Moher_West25 (25M61), Toem 25T52, Ballyhane_West (25B39) and Ayle 25 (25A16) before it flows into the Dead_020 River Sub-basin and eventually into the River Dead (25D01). The Toem (25T05) and its feeding streams flow through conifer plantation on the mountains, and then through agricultural fields further down the mountain. The total length of the river system surveyed for invasive species was 19.0km and the total area of the river sub-basin was 10.42km2.

Site Management Objectives and Threats to Objectives

Table 1 Site management objectives, threats and mitigation for these threats

Objective	Threat(s)	Mitigation

1. To prevent the spread of Third Schedule invasive species along the river and streams.	Movement of the public, equipment, personnel throughout areas contaminated with invasive species. Incorrect management of infestations	All personnel and equipment that enter an exclusion zone will be certified as clean before exiting. Strict biosecurity protocols will be implemented, as outlined in the detailed Biosecurity Document. An appropriate management plan will be implemented to treat the Giant hogweed on-site.
2. To reduce or eradicate where possible Third Schedule invasive species from the river and streams.	Lack of consistent application of correct management techniques. Missed infestations.	Experienced operatives will treat the infestations in a systematic manner, working upstream from the bottom of the catchment on foot to ensure that all plants are reached.

About the Invasive Species Identified

Giant Hogweed

Giant Hogweed *(Heracleum mantegazzianum)* is native to the Caucasus region and was originally introduced to the British Isles in the 1800's as an ornamental plant. In Ireland, it is almost exclusively found along watercourses as it thrives in rich, moist soil. As the name suggests, Giant Hogweed is an enormous herbaceous plant. It can grow up to 5m tall, with leaves up to 3 x 1.5m and a stem diameter of 5 - 10cm. It produces large umbels of white flowers up to 80cm across. The stem is green with purple blotches and is covered in fine hairs. Unlike our native hogweed *(Heracleum sphondylium),* these hairs are particularly dense at the leaf joints. The leaves also have fine hairs on the underside and are sharply divided.

Giant Hogweed is a perennial plant, living for 3-5 years, after which time it sets seed (around July/Aug) and dies. A single plant can produce up to 50,000 wind-dispersed seeds. It has no vegetative means of reproduction, meaning that it reproduces entirely by seed. The seeds can survive in the ground for up to 5 years. It is estimated that 95% of the seeds are contained within the top 5cm of soil; however, to be sure the entire seed bank is removed, excavation of 0.5m of soil and at least 4m away from the nearest plant is recommended. The seeds also float and are readily dispersed along watercourses allowing the plant to extend its range rapidly downstream.

Giant hogweed poses a serious hazard to human health. Its sap contains furanocoumarins which cause a phototoxic reaction in human skin. The furanocoumarins alter the genetic structure of skin they come into prolonged contact with, eliminating the skin's ability to protect itself from sunlight. The result is that when the affected skin is exposed to sunlight, massive blistering can occur.

Extreme caution must be taken around this plant as just brushing into it can cause sap to be released. The sap is particularly dangerous for young children. If the sap is released onto bare skin, it should be washed off immediately with soapy water and the skin should remain covered away from sunlight for at least 48 hours. Medical advice should be sought. Personnel operating machinery in areas infested with Giant Hogweed must also be aware that the sap can get onto machinery and from there be transferred to the skin of anyone touching the machine. Therefore, full PPE must be worn when working in a Giant Hogweed infested area and all machinery should be washed down regularly.

In Ireland, Giant Hogweed is classified as a High-Impact Invasive Species with a Risk Assessment Score of 19. It is also listed as an Invasive Species of European Union Concern.

Invasive Alien Species Legislation

Strict legislation surrounding invasive species exists in Ireland – namely under Irish Statutory Instrument 477/2011 and the Wildlife Acts (1976-2000). We have also ratified a number of international conventions that oblige the Government to address the issue of non-native invasive species, including the Convention on Biological Diversity, the Bern Convention and the International Plant Protection Convention.

Irish Statutory Instrument 477/2011

The EC Birds and Natural Habitats Regulations introduced important legislation concerning invasive species in the Republic of Ireland. There is a total of thirty-four terrestrial and aquatic alien plant species currently listed in Part 1 of the Third Schedule (as amended by S.I. No. 355/2015), which is included in Table 2 below; *Table 2 Third Schedule of S.I. 477/2011 as amended*

Common Name	**Scientific Name**
American skunk-cabbage	*Lysichiton americanus*
A red alga	*Grateloupia doryphora*
Brazilian giant-rhubarb	*Gunnera manicata*
Broad-leaved rush	*Juncus planifolius*
Cape pondweed	*Aponogeton distachyos*
Cord-grasses	*Spartina* (all species and hybrids)
Curly waterweed	*Lagarosiphon major*
Dwarf eel-grass	*Zostera japonica*
Fanwort	*Cabomba caroliniana*
Floating pennywort	*Hydrocotyle ranunculoides*
Fringed water-lily	*Nymphoides peltata*
Giant hogweed	*Heracleum mantegazzianum*
Giant knotweed	*Fallopia sachalinensis*
Giant-rhubarb	*Gunnera tinctoria*

Giant salvinia	*Salvinia molesta*
Himalayan balsam	*Impatiens glandulifera*
Himalayan knotweed	*Persicaria wallichii*
Hottentot-fig	*Carpobrotus edulis*
Japanese knotweed	*Reynoutria japonica* / *Fallopia japonica*
Large-flowered waterweed	*Egeria densa*
Mile-a-minute weed	*Persicaria perfoliata*
New Zealand pigmyweed	*Crassula helmsii*
Parrot's feather	*Myriophyllum aquaticum*
Rhododendron	*Rhododendron ponticum*
Salmonberry	*Rubus spectabilis*
Sea-buckthorn	*Hippophae rhamnoides*
Spanish bluebell	*Hyacinthoides hispanica*
Three-cornered leek	*Allium triquetrum*
Wakame	*Undaria pinnatifida*
Water chestnut	*Trapa natans*
Water fern	*Azolla filiculoides*
Water-primrose	*Ludwigia* (all species)
Waterweeds	*Elodea* (all species except *E. canadensis*)
Wireweed	*Sargassum muticum*

Article 49 prohibits the introduction, breeding, release or dispersal of certain species; and Article 50 prohibits dealing in and keeping certain species.

> **Article 49 (2)** "Save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to such plant in the third column of Part 1 of the Third Schedule, any plant which is included in Part 1 of the Third Schedule, shall be guilty of an offence."

Article 49 (3) states that you can defend against allegations that you committed an offence under Article 49 (1) or (2) by proving that you took all reasonable steps and exercised all due diligence to avoid committing the offence:

> **Article 49 (3)** "Subject to paragraph (4), it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

Article 50 (2) "Save in accordance with a licence granted under paragraph (7), a person shall be guilty of an offence if he or she imports or transports – (a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule

(b) anything from which an animal or plant referred to in Part 2 of the Third Schedule can be reproduced or propagated, or

(c) a vector material listed in Part 3 of the Third Schedule, into or in or to any place in the State specified in relation to such an animal or plant or vector material in relation to that animal or plant or vector material in the third column of the Third Schedule."

The Wildlife Amendment Act (2000)

The Wildlife Amendment Act (2000) of ***The Wildlife Act (1976)*** made it an offence to cause an exotic species of flora to grow in the wild anywhere in the state**:**

"Any person who plants or otherwise causes to grow in a wild state in any place in the State any (exotic) species of flora, or the flowers, roots, seeds or spores of flora, otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence."

EU Regulation 1143/2014

EU Regulation 1143/2014 on invasive alien species entered into force on 1 January 2015. It provides for a set of measures to be taken across the EU in relation to invasive alien species included on a list of Invasive Alien Species of Union concern. The list of invasive alien plant species can be seen below;

Table 3 Plants listed as Invasive Alien Species of Union Concern (EU Regulation 1143/2014)

Scientific name	English name	Entered into List
Acacia saligna	Golden wreath wattle	2019
Ailanthus altissima	Tree of heaven	2019
Alternanthera philoxeroides	Alligator weed	2017
Andropogon virginicus	Broomsedge bluestem	2019
Asclepias syriaca	Milkweed	2017
Baccharis halimifolia	Eastern baccharis	2016
Cabomba caroliniana	Green cabomba	2016
Cardiospermum grandiflorum	Balloon vine	2019
Cortaderia jubata	Purple pampas grass	2019
Ehrharta calycina	Perennial veldtgrass	2019

Eichhornia crassipes	Water hyacinth	2016
Elodea nuttallii	Nuttall's waterweed	2017
Gunnera tinctoria	Chilean rhubarb	2017
Gymnocoronis spilanthoides	Spadeleaf plant	2019
Heracleum mantegazzianum	Giant hogweed	2017
Heracleum persicum	Persian hogweed	2016
Heracleum sosnowskyi	Sosnowski's hogweed	2016
Humulus scandens	Japanese hop	2019
Hydrocotyle ranunculoides	Floating pennywort	2016
Impatiens glandulifera	Himalayan balsam	2017
Lagarosiphon major	Curly waterweed	2016
Lespedeza cuneata	Chinese bushclover, sericea	2019
Ludwigia grandiflora	Water primrose	2016
Ludwigia peploides	Floating primrose	2016
Lygodium japonicum	Vine-like fern	2019
Lysichiton americanus	American skunk cabbage	2016
Microstegium vimineum	Japanese stiltgrass	2017
Myriophyllum aquaticum	Parrot's feather	2016
Myriophyllum heterophyllum	Broadleaf watermilfoil	2017
Persicaria perfoliata	Asiatic tearthumb	2016
Parthenium hysterophorus	Whitetop weed	2016
Pennisetum setaceum	Crimson fountaingrass	2017
Prosopis juliflora	Mesquite	2019
Pueraria montana var. *lobata*	Kudzu vine	2016
Salvinia molesta	Giant salvinia, kariba weed	2019
Triadica sebifera	Chinese tallowtree	2019

Table 4 Animals listed as Invasive Alien Species of Union Concern (EU Regulation 1143/2014)

Scientific name	English name	Entered into List
Acridotheres tristis	Common or Indian myna	2019

Alopochen aegyptiaca	Egyptian goose	2017
Arthurdendyus triangulatus	New Zealand flatworm	2019
Callosciurus erythraeus	Pallas's squirrel	2016
Corvus splendens	Indian house crow	2016
Eriocheir sinensis	Chinese mitten crab	2016
Herpestes javanicus	Small Asian mongoose	2016
Lepomis gibbosus	Pumpkinseed	2019
Lithobates catesbeianus	American bullfrog	2016
Muntiacus reevesi	Muntjac deer	2016
Myocastor coypus	Coypu	2016
Nasua nasua	South American coati	2016
Nyctereutes procyonoides	Racoon dog	2017
Ondatra zibethicus	Muskrat	2017
Orconectes limosus	Spiny-cheek crayfish	2016
Orconectes virilis	Virile (northern) crayfish	2016
Oxyura jamaicensis	Ruddy duck	2016
Pacifastacus leniusculus	Signal crayfish	2016
Perccottus glenii	Amur sleeper	2016
Plotosus lineatus	Striped eel catfish	2019
Procambarus clarkii	Red swamp crayfish	2016
Procambarus fallax f. *virginalis*	Marbled crayfish	2016
Procyon lotor	Racoon	2016
Pseudorasbora parva	Topmouth gudgeon	2016
Sciurus carolinensis	Grey squirrel	2016
Sciurus niger	Bryant’s fox squirrel	2016
Tamias sibiricus	Siberian chipmunk	2016
Threskiornis aethiopicus	Sacred Ibis	2016
Trachemys scripta	Red eared slider	2016

Vespa velutina nigrithorax	Asian hornet	2016

Survey Findings

Methodology

Walkover surveys were conducted from April 30th to May 15th 2026. These surveys identified the presence of Third Schedule S.I 477/2011 invasive alien species, Giant Hogweed (See Appendix II – Photographic Record).

Giant Hogweed infestations were mapped using the tool QField on a Samsung Galaxy Tab Active, which has GPS capabilities. Each feature was mapped either as a point, linear, or polygon feature as per the '*Best Practice Guidance for Habitat Survey and Mapping*' published by the Heritage Council (2011). The vast majority of features were recorded with accompanying geotagged photographs, but with some features such as in dense wooded areas, the camera was unable to depict the plants well enough to convey useful information. All linear and polygon features were also graded on their severity, and this was in terms of both how large and dense the stand was, but also how difficult it may be to access the stand in order to treat it. This might mean that in some circumstances such as a densely wooded or scrub area, a 'moderate' infestation according to size is upgraded to 'severe' due to lack of accessibility and assurance that all plants within the infestation can be treated in the first instance. Point features were not issued a severity level.

There were four levels of severity used during this project, set out in Table 5.

Table 5. Details of infestation severity levels

Severity Level	**Description**
Low	• All plants considerably less than 2m in height • Linear features are broken and discontinuous (could be up to 20m between plants) • Generally easy to access
Moderate	• Plants on average 1.5-2.5m in height • Linear features are continuous • Generally easy to access
Severe	• Plants on average considerably higher than 2.5m • Dense coverage of leaves and flowers Or • Plants on average 1.5-2.5m in height • Difficult but not impossible to access
Very Severe	• Plants 4-5m+ tall • Feature extremely dense and appears as a 'block' of hogweed
	• Access variable

Survey Results

Of the linear features recorded, 'Low' totalled (3,635m), 'Moderate' totalled (3,544m) and 'Severe' totalled (130m), totaling 7,309m (7.31km).

And of the polygon features recorded, 'Low' totalled 11,993m^2 (1.19ha), Moderate totalled 3,308 m^2 (0.33ha) and 'Severe' totalled 5,521m^2 (0.55ha) which leaves a total of 20,822m^2 (2.08ha) of Giant Hogweed.

Linear features describe length, and to convert into area, a 20m buffer was proscribed. However, linear infestations did not always spread 20m either side of the river.

Based on the data collected, a best-case scenario (10m either side of the river) estimates that 16.70ha of the Toem Stream_010 sub-basin is infested, and a worst-case scenario (20m either side of the river) estimates that 31.32ha is infested with Giant Hogweed.

No infestations were classified as 'Very Severe'.

Table 6. Area calculations for Giant Hogweed in the Toem Stream_010 sub-basin

Polygons (m2)	Polygons (ha)		Linear (m)	20m (m2)	20m (ha)	10m (m2)	10m (ha)
11993	1.1993		3635	145400	14.54	72700	7.27
3308	0.3308		3544	141760	14.176	70880	7.088
5521	0.5521		130	5200	0.52	2600	0.26
20822	**2.0822**		**7309**	292360	**29.236**	146180	**14.618**
			7.31km				
				Worst-case		**Best-case**	
				31.32		**16.70**	

The Toem stream starts in the townland of Oldcastle and is fed by a number of streams including the Old_Castle, Leugh, Oldcastle Brownbog, Ardnagassane and later the Moher 25, Moher_West 25 and Shanacloon 25.

Within the sub-basin of ToemStream_010, Giant Hogweed infestations ranging from Low to Very Severe were noted. The infestations start in the Moher 25 stream with mainly low to moderate levels of infestation. At the confluence of Moher 25 and Toem Stream, a stand of very severe Giant Hogweed infestations were noted. Infestations continue along the Toem Stream ranging from Low to Severe, with large areas of infestation along the river just south of the Toem Graveyard. The severity of infestations increases downstream from the confluence of Moher_West 25 with large areas of severe infestations present. The lower parts of the Toem Stream are continuously infested

with low to moderate stands of Giant Hogweed. Apart from the main Toem Stream the only tributary downstream of the Toem Graveyard with Giant Hogweed present was the Toem (25T52).

Two other invasives were recorded in the ToemStream_010 sub-basin including:

- Japanese Knotweed (*Reynoutria japonica*)
- Rhododendron *(Rhododendron ponticum)*

The main areas where these species were observed, were located in the vicinity of the Moher 25. A single stand of Japanese Knotweed was found just upstream of the Toem / Moher West 25 confluence.

A map of the infestation within the catchment as well as a number of closer-view maps are presented in Appendix I.

Recommended Treatment

Summary

Giant hogweed reproduces solely by producing seeds with a single mature plant producing 50,000 wind dispersed seeds. These seeds can form a seed bank and remain viable in the soil for up to 5 years. These seeds can be transferred in the threads of boots, on clothing, equipment and the wheels of vehicles. In order to prevent its spread, it is important that any staff or vehicles entering an area infested with Giant Hogweed are aware of the biosecurity protocols (see Section 6). As this plant is also harmful to humans when its sap comes into contact with bare skin it is important that personnel wear appropriate PPE when working within the infested area.

Herbicide treatment is the most appropriate method of treatment for the extensive stands along inaccessible riverbanks. Treatment should be carried out both from boat and from land to ensure all plants in leaf at time of treatment are targeted. The tap root method will also be carried out on smaller stands, where access is possible.

This management plan refers specifically to the initial treatment.

Foliar Spray Methodology

A glyphosate-based herbicide diluted with water to the appropriate concentration should be applied to the under and upper surface of the leaves using a knapsack sprayer with suitable telescopic lance to allow the entire plant to be treated. Treatment should take place from land and from water, if necessary, to allow all plants to be targeted.

Treatment by foliar spray has the advantage that it is very quick and easy to apply. It also allows the operative to maintain a distance from a safety perspective. However, non-target vegetation may be affected and the treatment is weather dependent.

The National Parks and Wildlife Service should be contacted prior to applying chemicals in a Special Area of Conservation (SAC) and Inland Fisheries Ireland should be consulted in advance of spraying adjacent to a watercourse. All treatments will be carried out with regard to wider ecological issues, particularly the aquatic ecology of the watercourse.

Cutting Tap Root Methodology

Individual plants may be killed by cutting at a 45-degree angle, 15cm below ground level using a spade. This control method will damage the root and prevent regrowth from the base, meaning a single treatment is very effective and is ideal for single plants that have not reached any great size. Cut parts of the plant should be pulled out of the soil and left to die back.

Full protective clothing, including rubber gloves, face shield and boots are required for both methods detailed above. It is very important to prevent the plant or the sap coming into contact with the skin. Each infestation should be treated in accordance with the Treatment Schedule as detailed in Table 6.

Table 7. Schedule of Works for the treatment of Giant hogweed in the Toem Stream_010 Sub-basin

Treatment	Action	Time	Year
1	Cut tap roots and apply systemic herbicide by foliar spray	June	2026
2	Monitor for new growth and take appropriate action if new plants emerge	August	2026
3	Monitor for new growth and take appropriate action if new plants emerge	June	2027
4	Monitor for new growth and take appropriate action if new plants emerge	August	2027

Biosecurity Controls

Persons/machinery entering or working within an area infested with an invasive alien species must take certain precautions to prevent the spread of that species. These guidelines must be strictly adhered to at all times.

- All PPE, other equipment and machinery that enter an infested zone must be cleaned before entering.
- Before leaving an infested area, personnel must thoroughly inspect their clothing, PPE, any equipment and their footwear for seeds, rhizomes, or other plant fragments that may be stuck on.
- All personnel should carry a hoof pick or similar implement to thoroughly clean the threads of their footwear with.
- All footwear must be thoroughly cleaned before leaving an infested zone.
- Each field vehicle should carry a cleaning and disinfection kit that staff can avail of as the need arises and to thoroughly clean/disinfect their PPE/Equipment/Footwear before leaving an infested zone.
- The cleaning and disinfection kits should contain:

Stiff bristled brush

Water for washing & diluting

Biodegradable soap

Cloths for cleaning

Plastic tub

Virkon Aquatic Powder/tablets

Rubber/nitrile gloves

- As good practice all staff should follow Inland Fisheries Ireland Biosecurity Protocols when they have entered water or a riparian zone.
- If machinery/plant has entered or worked in an infested zone, it must be thoroughly washed down before leaving the area or working in an uninfested location
- A power washer must be provided for effective cleaning of machinery, along with stiff bristled brushes.

Codes of Practice / Sources of Information for Invasive Species

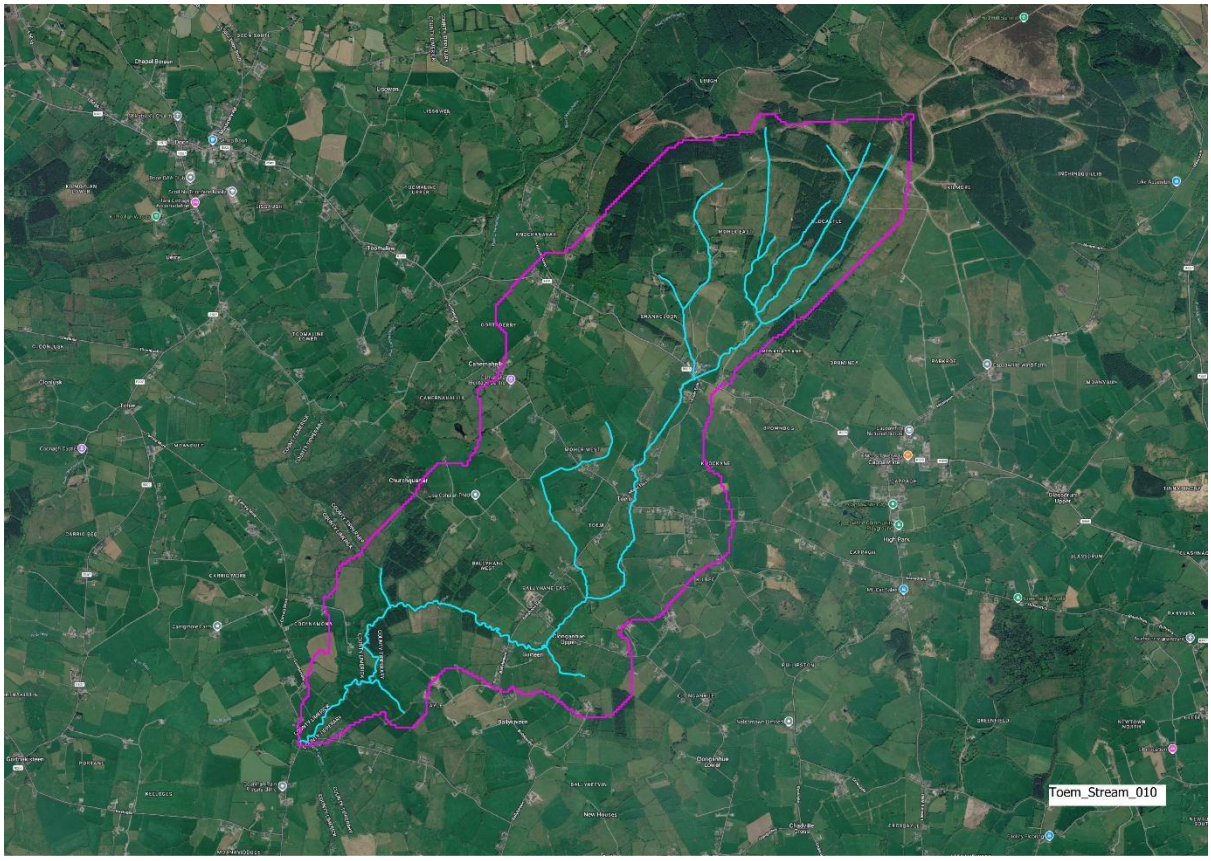
Ireland

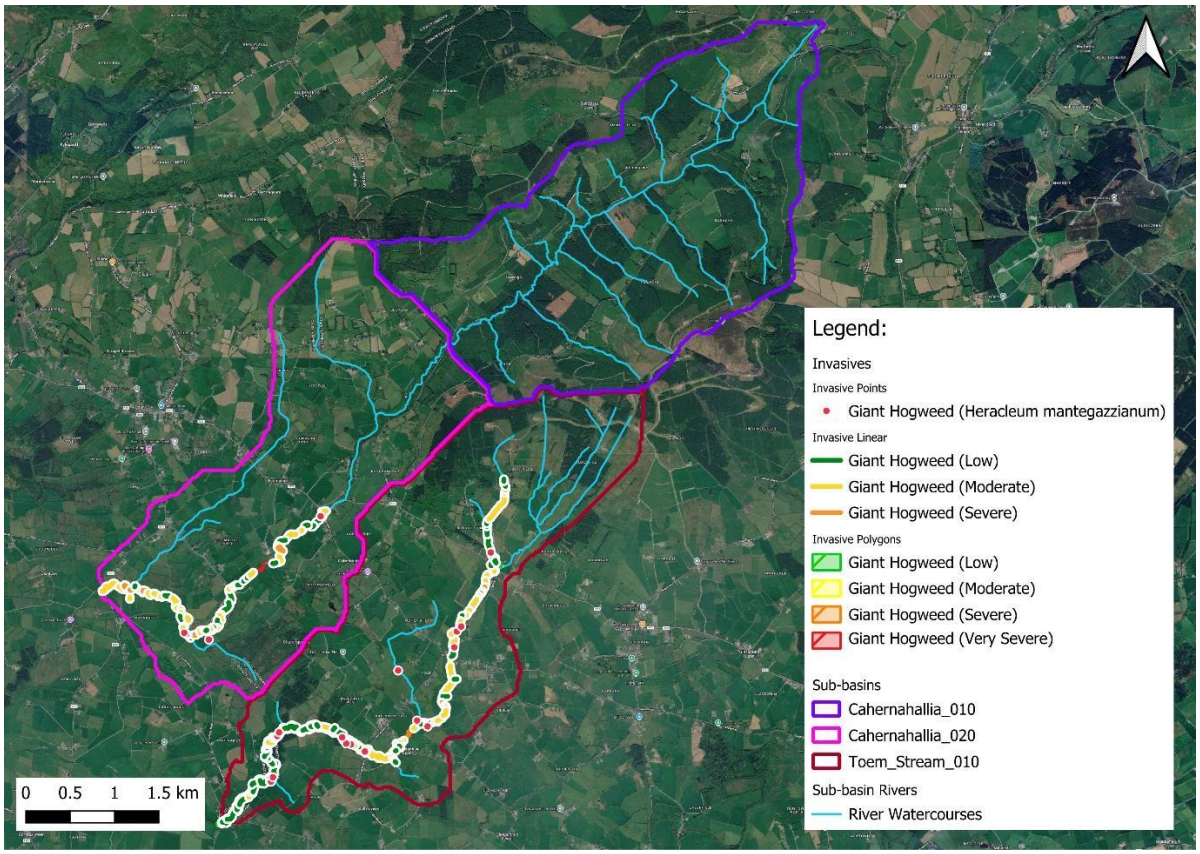
- Invasive Species Ireland Horticultural Code of Good Practice (http://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-CodeFinal.pdf)
- National Roads Authority – The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (http://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-NativeInvasive-Plant-Species-on-National-Road-Schemes.pdf)
- National Biodiversity Data Centre Invasive Species (http://www.biodiversityireland.ie/projects/invasive-species/)
- Invasive Species Ireland Website (http://invasives.ie)
- Sligo Institute of Technology Alien Species (http://staffweb.itsligo.ie/staff/dcotton/Alien_Species.html)
- Online Atlas of the British and Irish Flora (http://www.brc.ac.uk/plantatlas/) – *UK also*

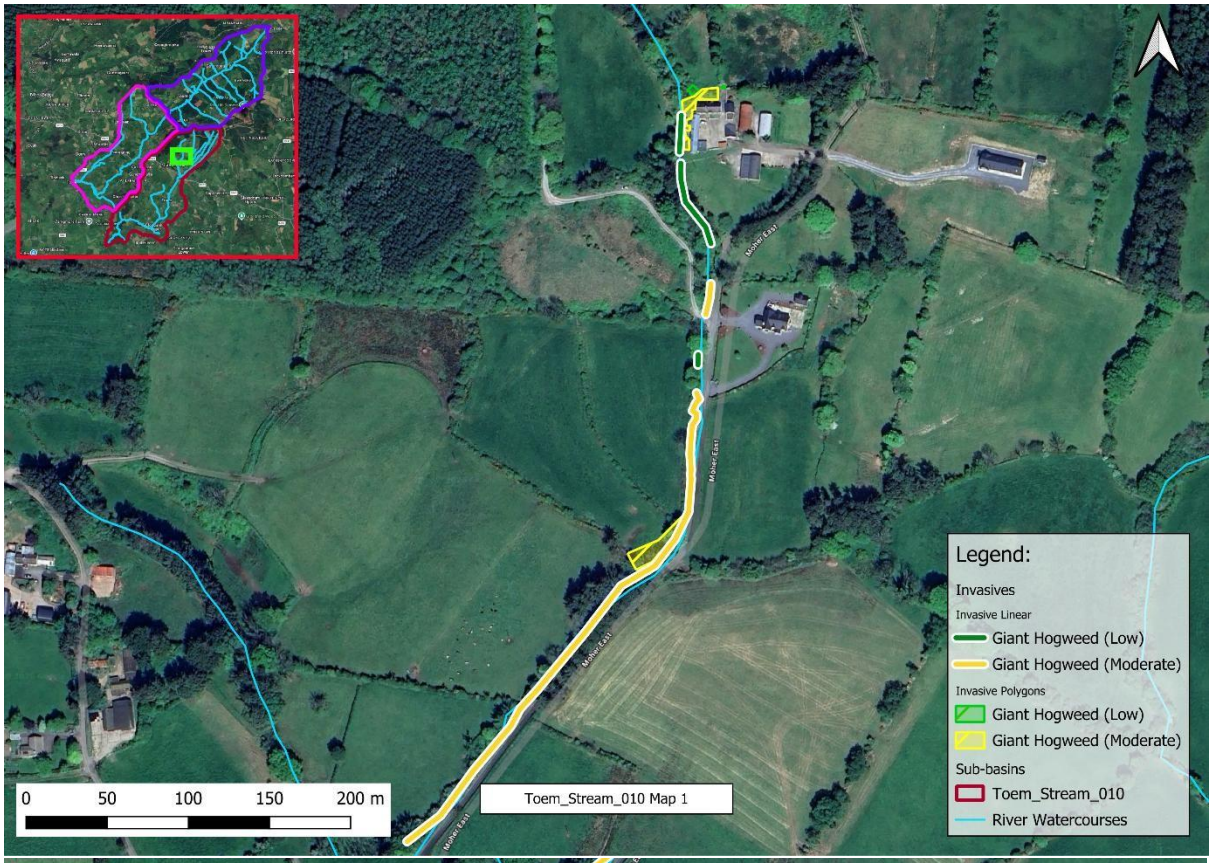
UK

- Department for Environment, Food and Rural Affairs Horticultural Code of Practice (http://www.botanicgardens.ie/gspc/pdfs/defra%20code%20of%20practice.pdf)
- GB Non-Native Species Secretariat (http://www.nonnativespecies.org)

Appendix I – Maps



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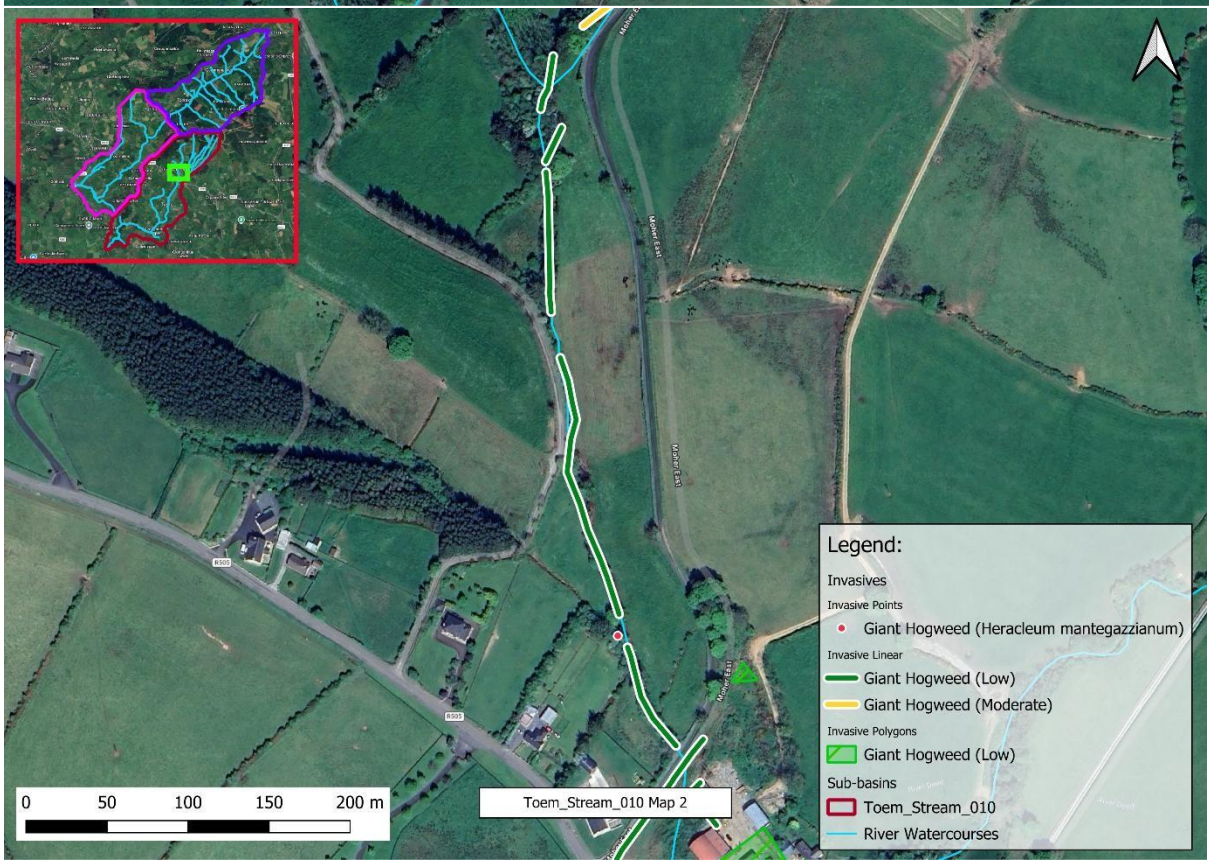
Invasives
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 1
Moher East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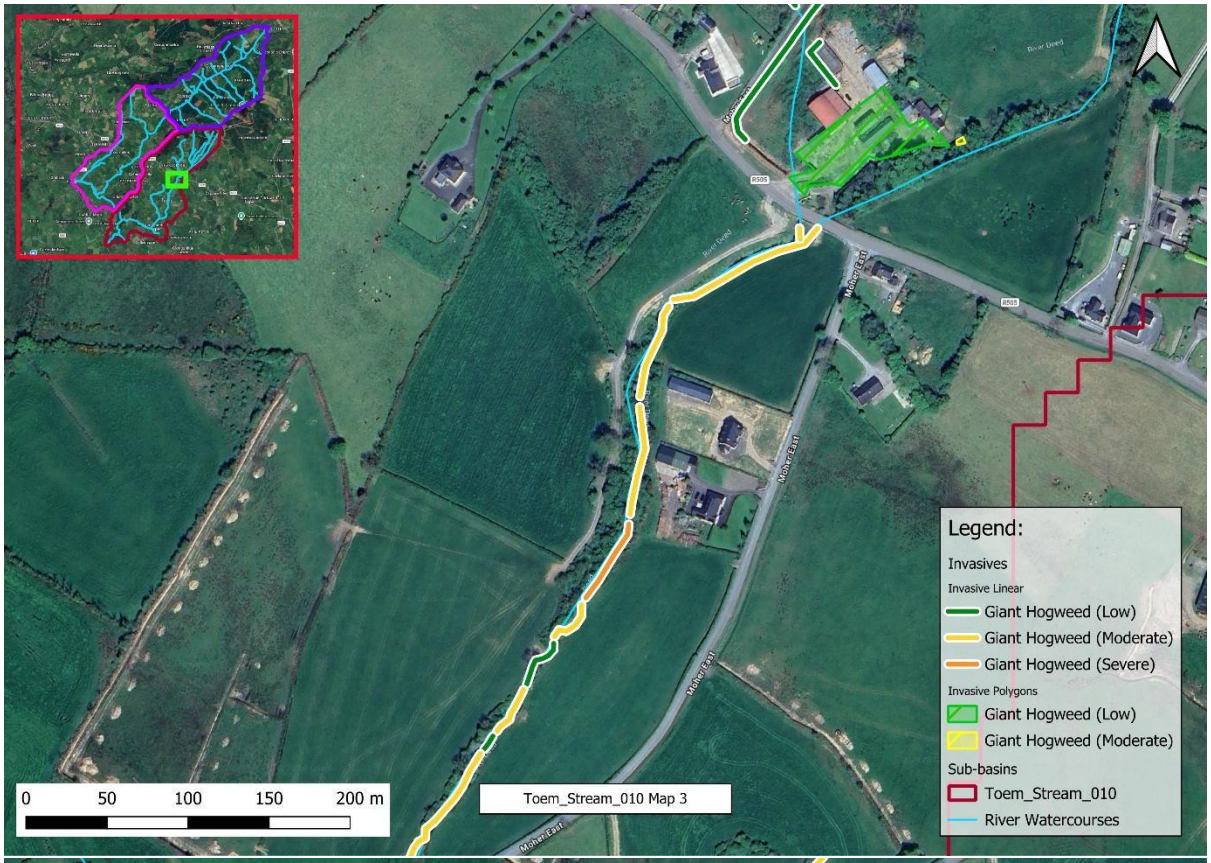
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Low)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 2
Moher East
R505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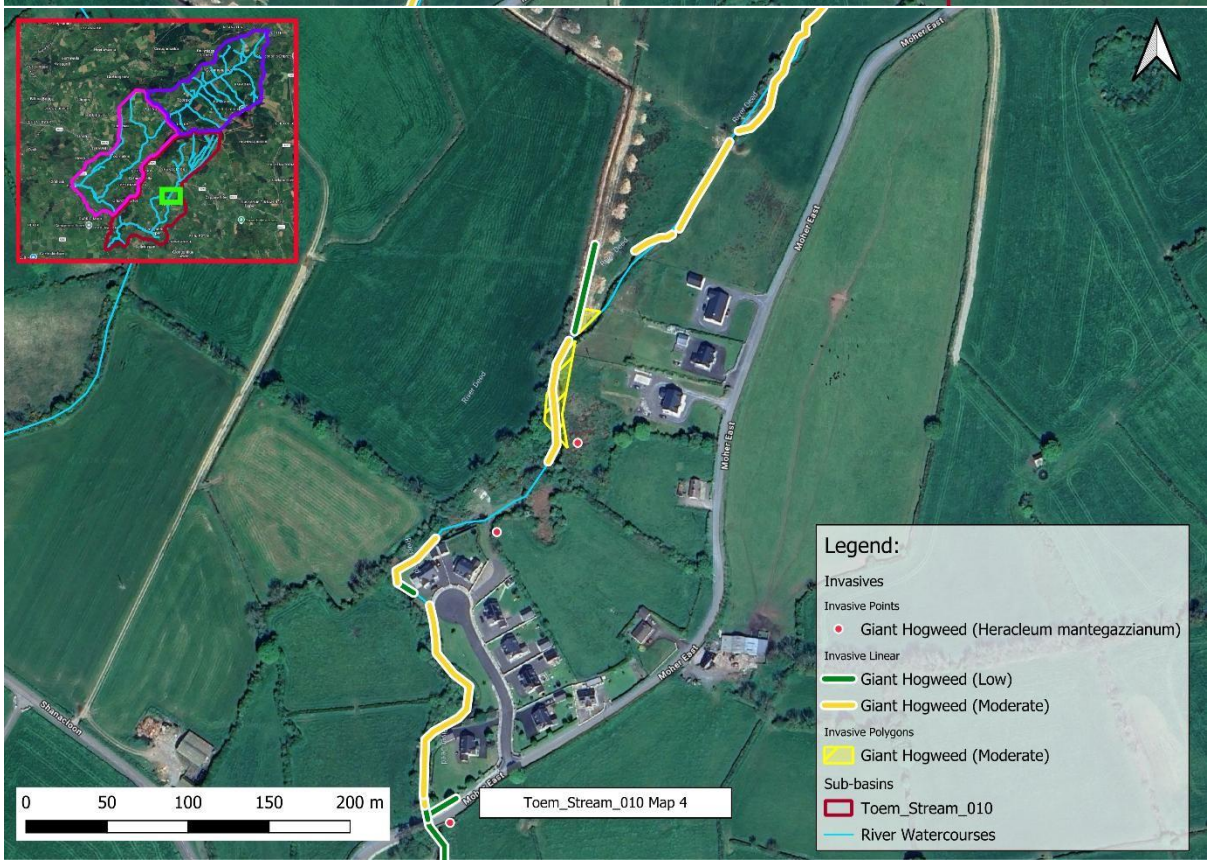
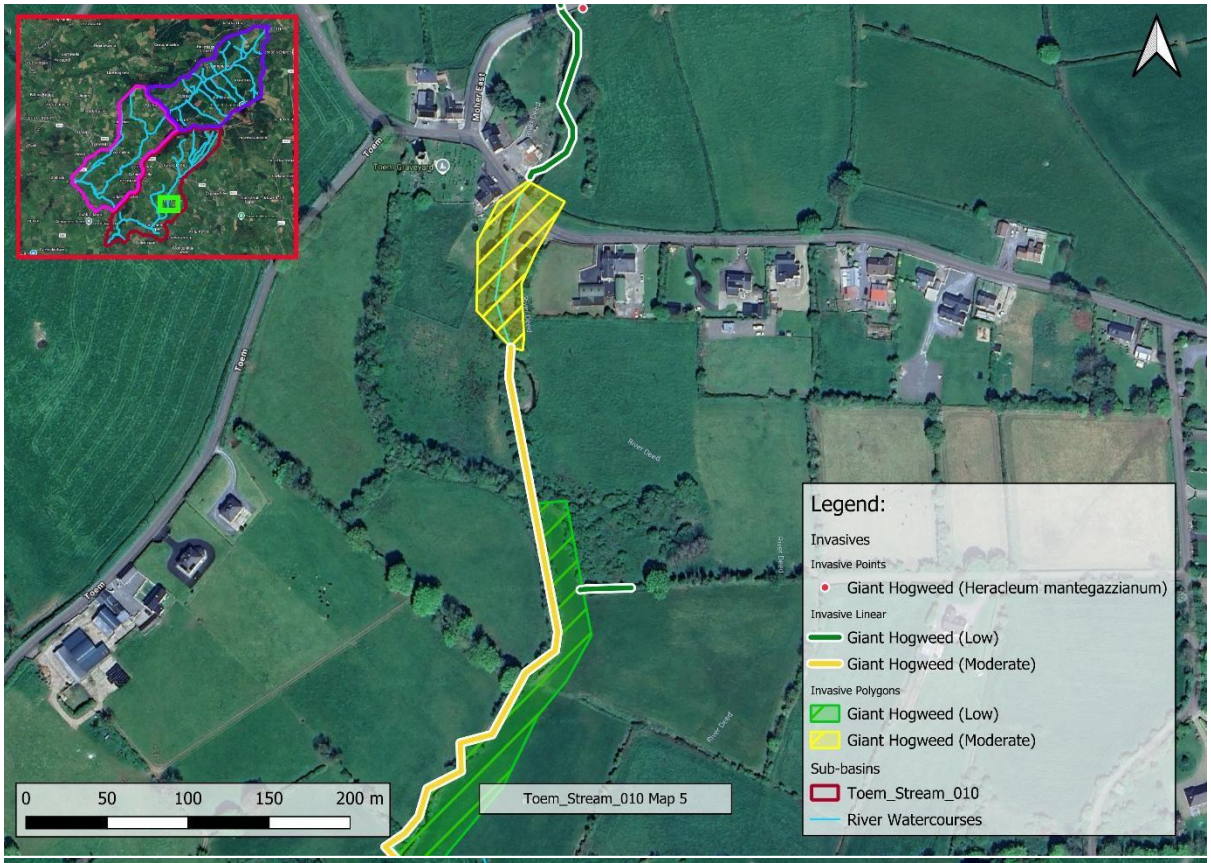
Invasives
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 3
Mohers East
River Deel
R505
R515


Legend:
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Moderate)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 4
Mohers East
River Deel
Shanaclon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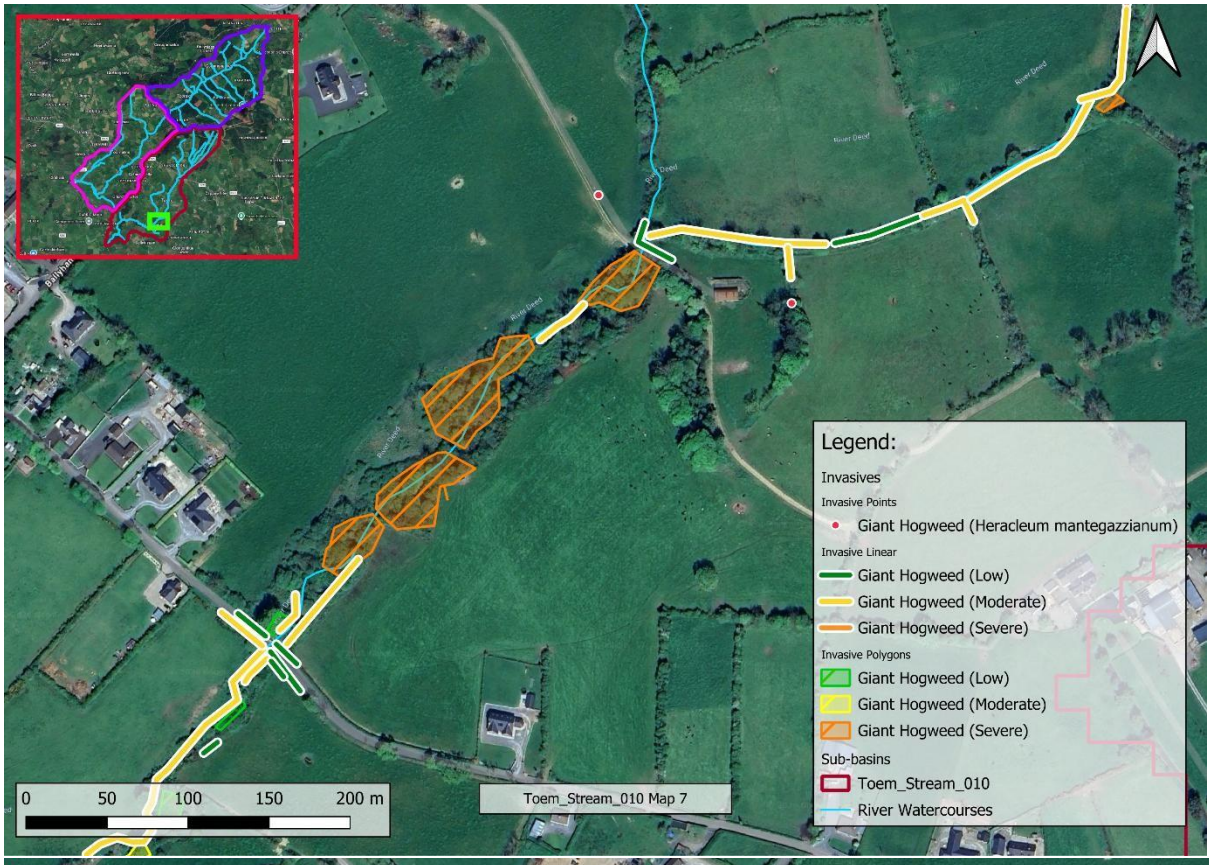
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 5


Legend:
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 6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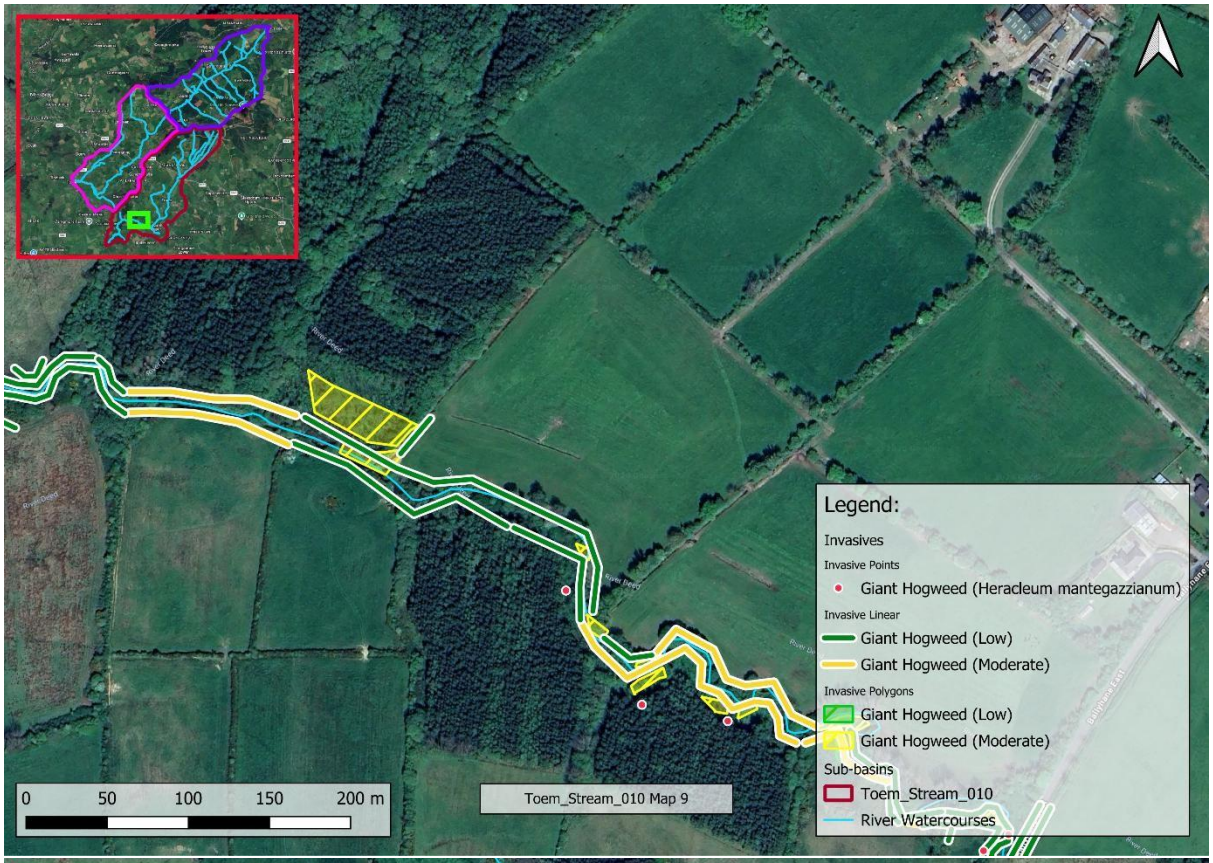
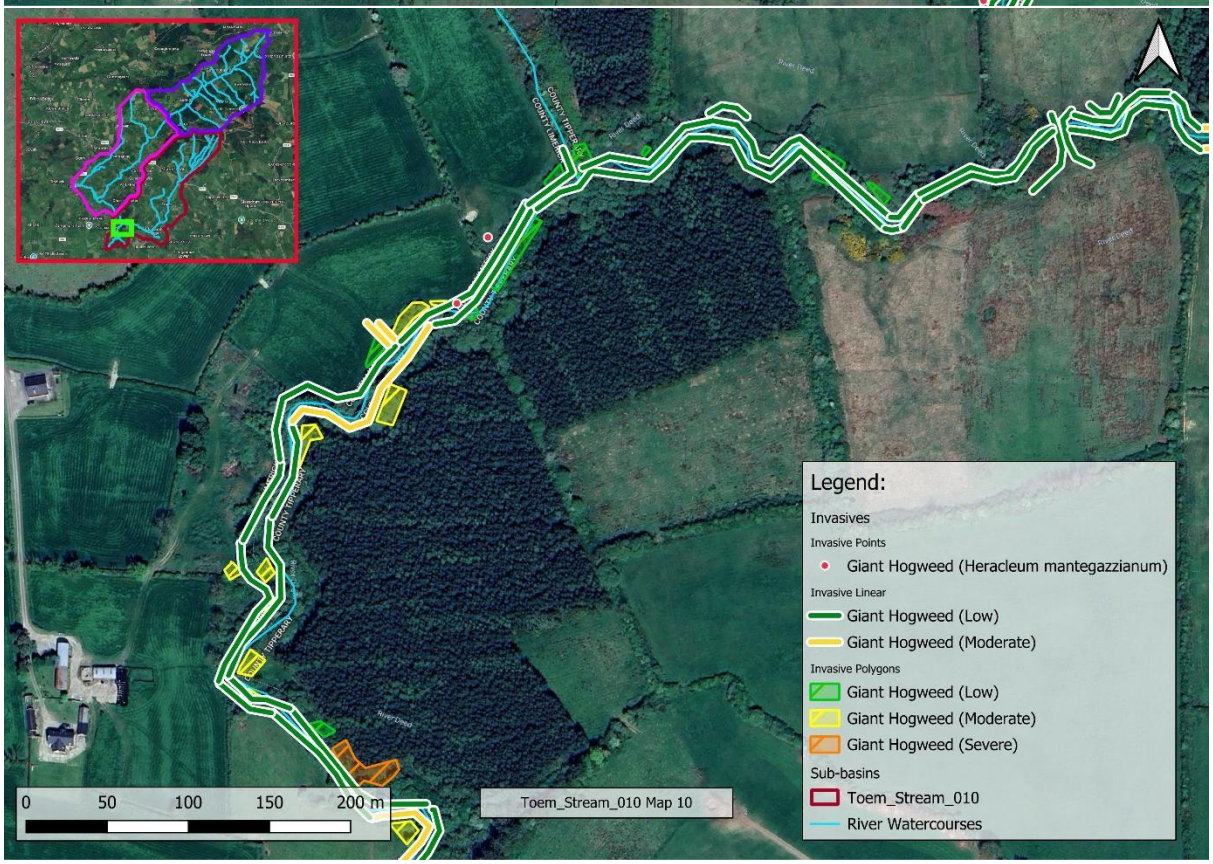
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 7


Legend:
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Sub-basins
Toem_Stream_010
River Watercourses
0 50 100 150 200 m
Toem_Stream_010 Map 8


Legend:
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Sub-basins
Toem_Stream_010
River Watercourses
0
50
100
150
200 m
Toem_Stream_010 Map 9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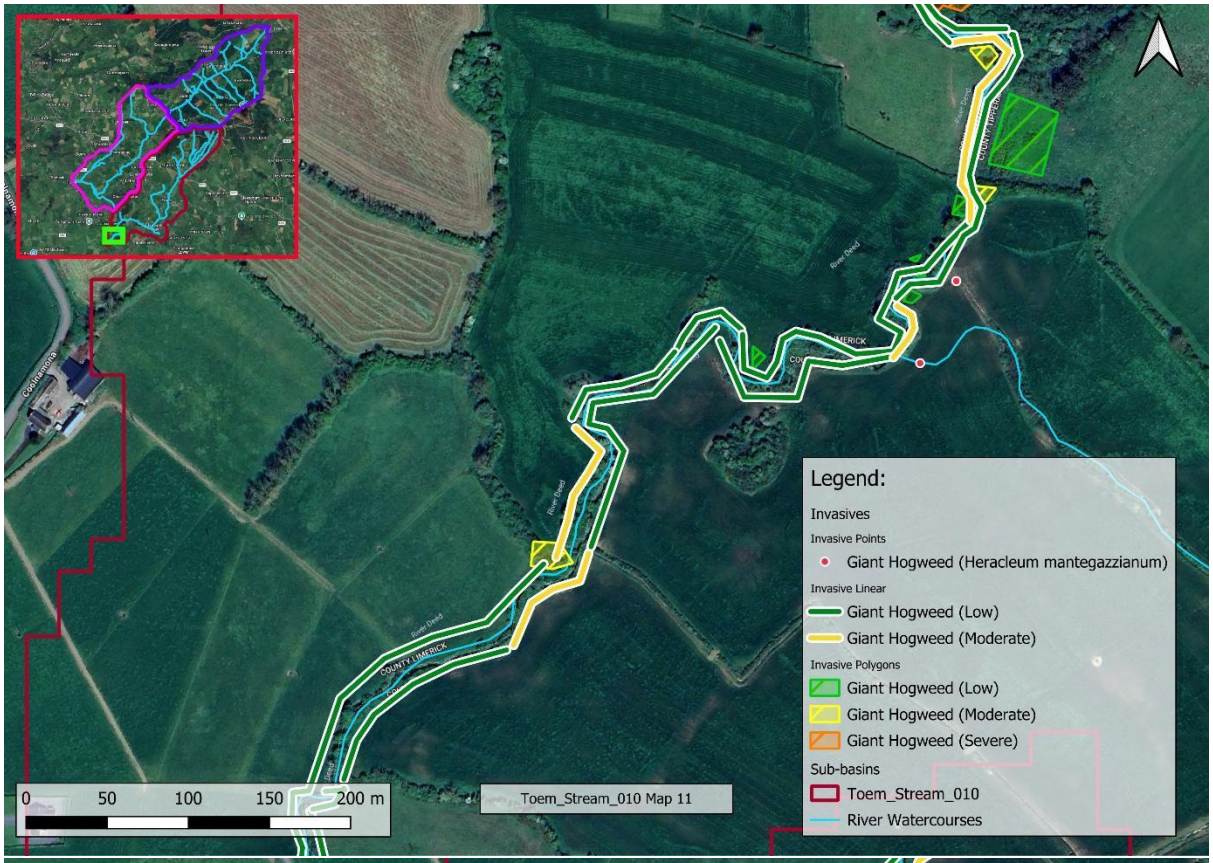
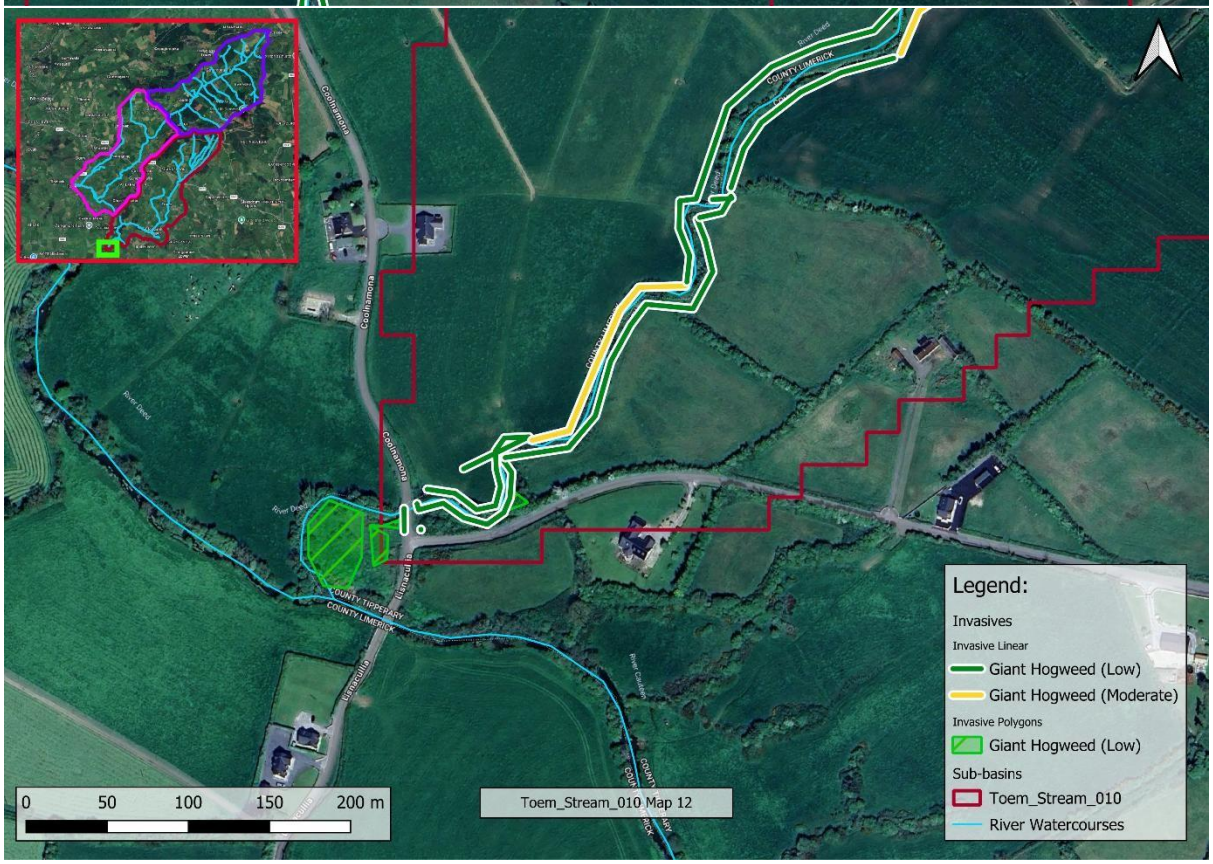
Invasives
Invasive Points
Giant Hogweed (Heracleum mantegazzianum)
Invasive Linear
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Invasive Polygons
Giant Hogweed (Low)
Giant Hogweed (Moderate)
Giant Hogweed (Severe)
Sub-basins
Toem_Stream_010
River Watercourses
0
50
100
150
200 m
Toem_Stream_010 Map 10





Other invasives will be included in the Final Report.

Appendix II – Example Photographs

Photo 1. Example of a Low severity linear feature – small plants in a broken line along stream

Photo 2. Example of a Moderate severity linear feature - medium sized plants in a continuous line

Photo 3. In a Severe infestation, plants tower over 2.5m with extensive ground cover

Photo 4. Severe Infestations can grow up to 4m+ with almost total ground cover

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