APPENDIX III

INVASIVE SPECIES MANAGEMENT PLAN

Oifig na
nOibreacha Poiblí
Office of Public Works

Invasive Species Management Plan, River Newport

Mulkear Ballymackeogh Arterial Drainage Scheme

Contents

Introduction.

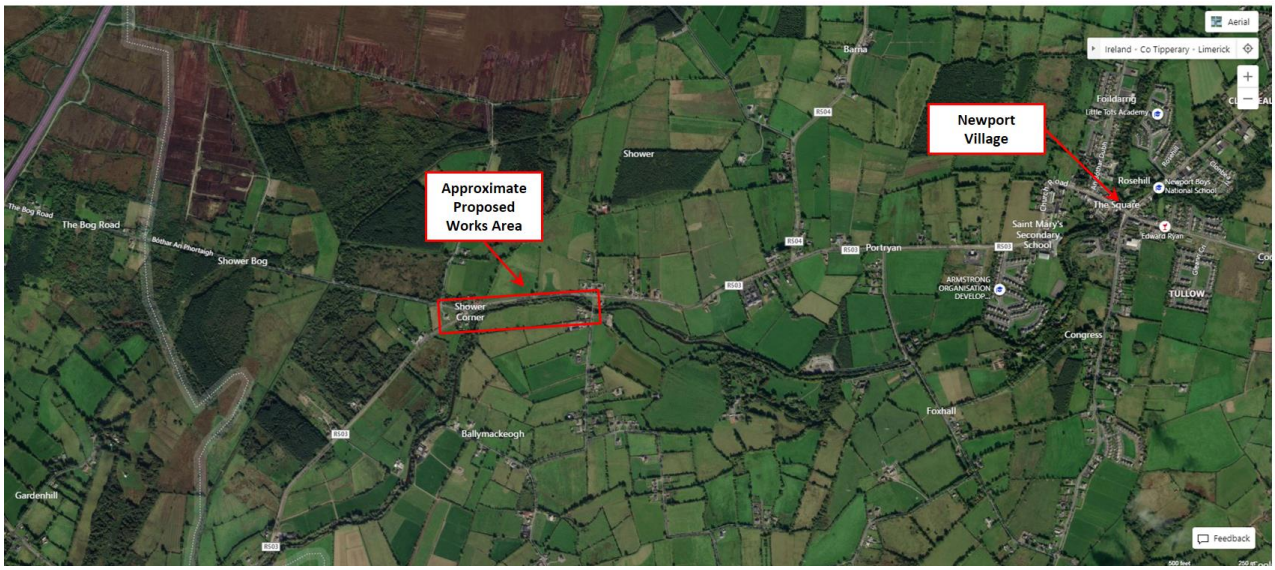


Fig. 1a proposed works location

Fig. 1b management plan location

The purpose of this Alien Invasives Species (AIS) Management Plan is to describe the invasive species related mitigation required to facilitate embankment maintenance works (embankment: E10) of Channel C1/1 on River Newport Arterial Drainage Scheme as shown in Fig. 1a proposed works location and Fig. 1b management plan location. The Newport River is an Arterially Drainaged Catchment, under the 1945 Arterial Drainage Act, the OPW is statutorially obliged to maintain the scheme in effective repair and condition.

The AIS Management Plan will be implemented by a competent contractor yet to be appointed or by OPW trained staff.

Embankment maintenance is required to be carried out as part of the ongoing maintenance of the Arterial Drainage Scheme. Giant Hogweed and Japanese Knotweed have been identified in the vicinity where the proposed embankment maintenance will be taking place. These plants are limiting the effectiveness of the scheme associated with the ability of the OPW to access, manage and maintain the river corridor. It is not the responsibility of the OPW to proactively manage invasive plants, however, this mangement plan is in response of mitigatation required to prevent the further dispersal of AIS due to maintenance activities in the catchment. Japanese Knotweed and Giant Hogweed have been indentified adjacent to where scheduled maintenance works are planned.

Japanese Knotweed and Giant Hogweed are listed in S.I. No. 477/2011 European Communities (Birds and Natural Habitats) Regulations 2011 - Third Schedule non-native species subject to restrictions under Regulations 49 and 50 Part 1: Plants.

PROTECTION OF FLORA AND FAUNA

Prohibition on introduction and dispersal of certain species

49. (1) Save in accordance with a licence granted under *paragraph (7)*, any person who breeds, reproduces or releases or allows or causes to disperse or escape

(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.

Protection of flora referred to in the First Schedule

52. (1) The Minister shall take the requisite measures to establish a system of strict protection for the flora consisting of the plant species referred to in *Part 1* of the *First Schedule*.

(2) Notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under *Regulation 54*, a person who in respect of the plant species referred to in *Part 1* of the *First Schedule*—

(*a*) deliberately picks, collects, cuts, uproots or destroys any specimen of these species in the wild, or

(*b*) keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 13(1)(b) of the Habitats Directive,

shall be guilty of an offence.

(3) The prohibitions referred to in *paragraph (2)* shall apply to all stages of the biological cycle of the flora to which this Regulation applies.

Measures to control the taking of fauna and flora referred to in Part 2 of the First Schedule

Table 1 SI 477 regulations 49 and 52

The drainage maintenance activities requiring iminient implementation within the extents of this management plan currently comprises of embankment maintenance between Chainage 10,500 and 10,650. This project will have a Natura Impact Statement (NIS) completed by MKO - Planning & Environmental Consultants prior to works commencing, the purpose of which is to determine the potential effects, if any, that the proposed project may have, alone or in combination with other plans or projects, on European (Natura 2000) sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) in view of their conservation objectives, within the potential zone of influence of the works.

The AIS management plan is intended to be a working documented and will updated as required.

The management of AIS is not covered by a 5Yr NIS produced by JBA for the Mulkear Ballymackeogh ADS 2018.

A project specific draft NIS was also produced by MKO - Planning & Environmental Consultants in May 2019 where surveys were carried out by ecologists to facilitate the delivery of the NIS. During the ecological surveys undertaken, Japanese knotweed and Giant Hogweed was found throughout the extents of the management plan area as shown in Fig. 3 mapping showing adjacent Key Environmental Data from pre-existing ecological surveys.

The purpose of the management plan is to ensure that the OPW do not breach the requirements of Section 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 by causing the dispersal and further spread as a result of the embankment maintenace.

OPW staff are trained and audited on OPW Procedures contained within: Brew, T., Gilligan, N., 2019, Environmental Guidance: Drainage Maintenance and Construction. Series of Ecological Assessments on Arterial Drainage Maintenance N0 13. Environmental Section, Office of Public Works, Trim, Co Meath, Ireland and in particularly references Section 3, Invasive Species Procedures 18A, 18B, 18C and 18D.

These invasive species procedures relate to any site where works are required to enter within a 7m buffer from an invasive plant, there is no legal requirement for OPW to proactively manage invasive plants, it is however illegal to cause their dispersal.

The delivery of an effective AIS Management Plan is predicated on an multi-annual approach where all sources of plants are eradicated.

Description of the Proposed Works & Plan Extents.

As part of the project it is proposed to enhance the existng embankments. No proposed instream works are proposed within the River Newport SAC, only to remove existing spoil deposits. Areas where invasive plants are identified are to be avoided where possible.

Embankment maintenance proposed methodology:

- The embankment is to be profiled similar to Figure 1 Desired Profile below. The crest width of the existing embankment (approximately 1 metre wide) is to be retained. The embankment is to be raised to the design level (varies) on the landward side with a 1:1 (45 degree) side slope and a crest width of approximately 2 metres.
- Raise the embankment in layers to the required design level and compact as needed.
- Reseed embankment as work progresses.
- No excavation work is to be undertaken or material to be placed on the crest or water-side of the existing embankment except for erection of the silt curtain or where remediation to prior works is needed.

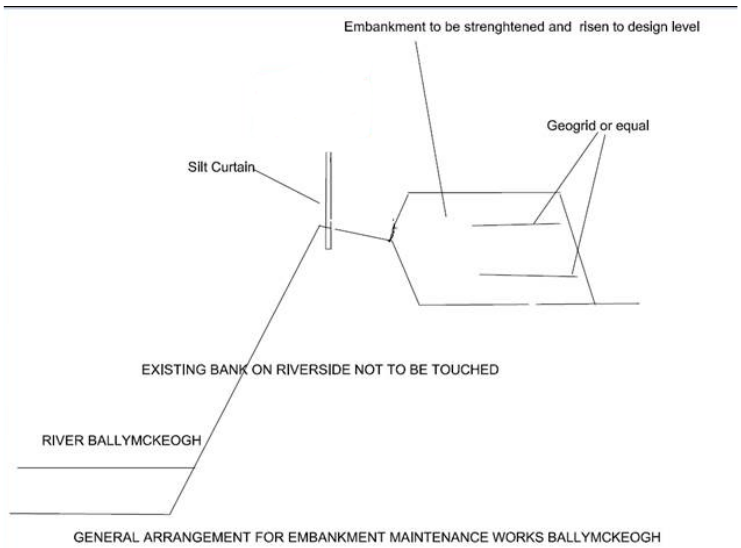


Figure 1 - Desired Profile

Works within 50 metres of any known badger setts along the embankment are to be avoided unless appropriate licences are in place..

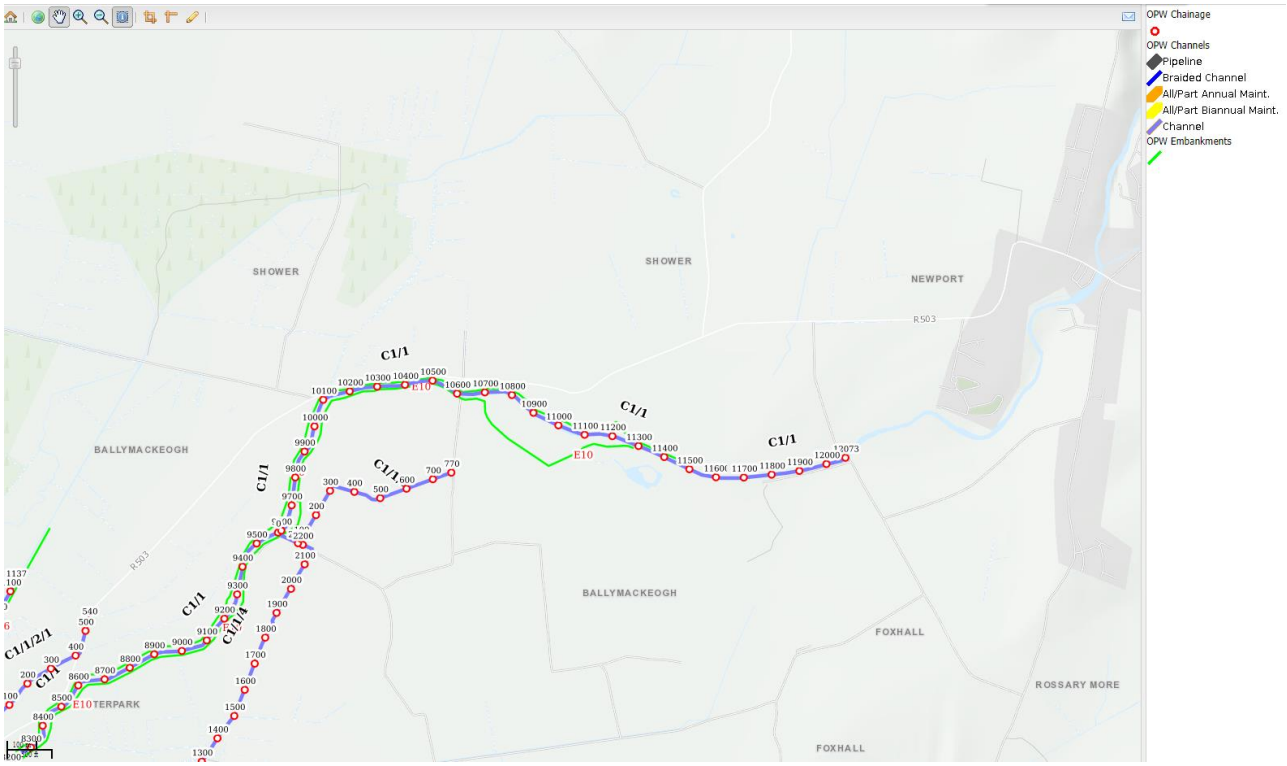
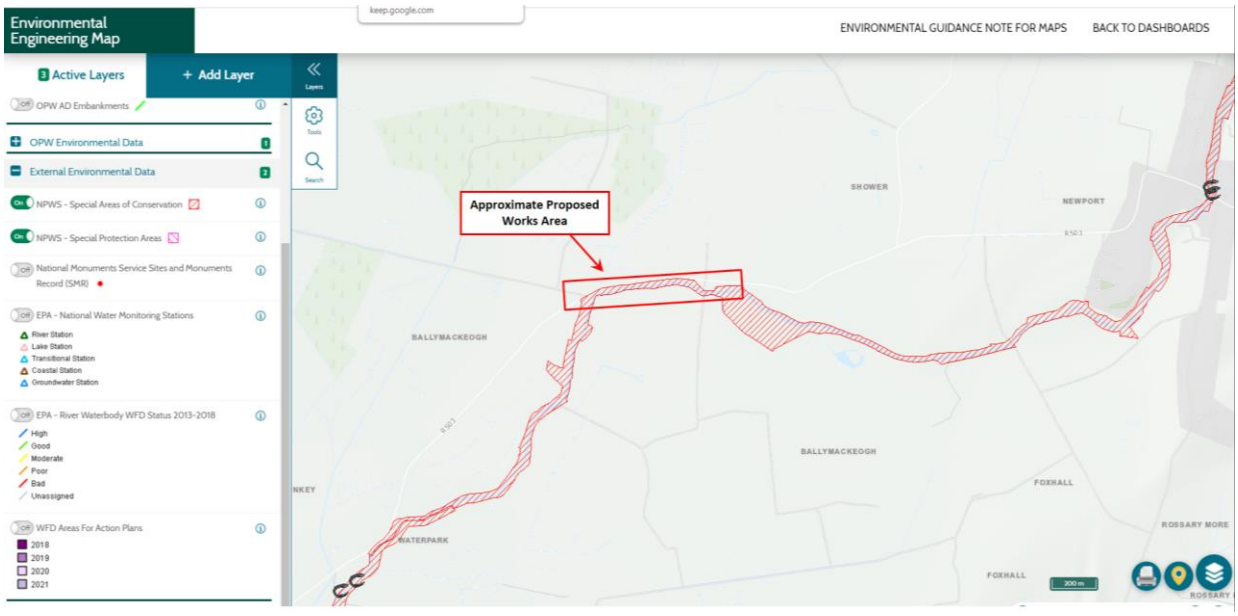


Fig. 2a management plan extents showing adjacent OPW channels & embankments



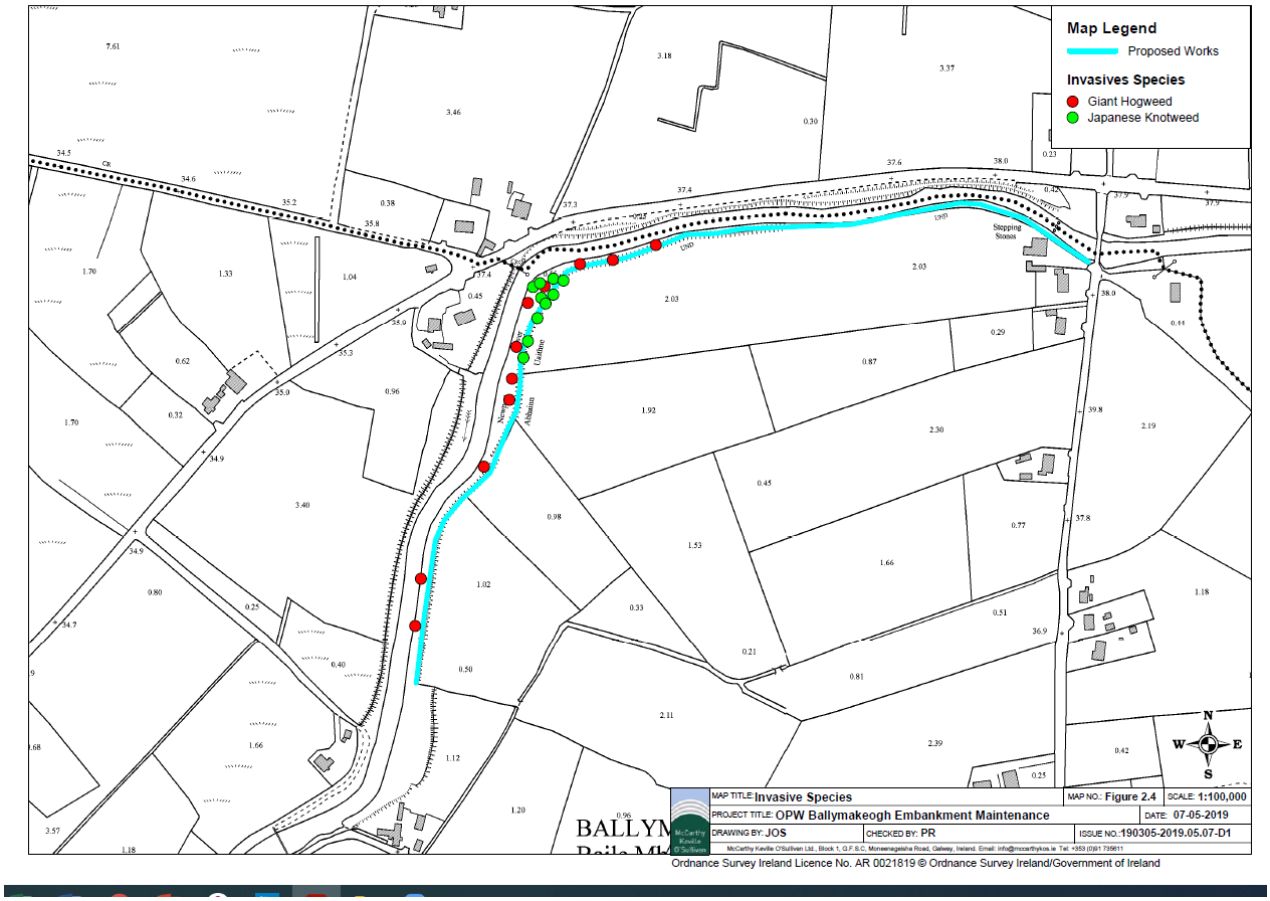


Fig. 3 mapping showing adjacent Key Environmental Data from pre-existing ecological surveys

Methodology

This report applies the most relevant and current guidance in relation to the treatment and management of non-native invasive plant species in construction projects. The following literature was referred to in preparation of this report.

- NRA Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (2008)

- Managing Japanese knotweed on development sites - The Knotweed Code of Practice produced by the Environmental Agency (2013)1

- OPW Environmental Guidance: Drainage Maintenance and Construction.

- Best Practice Management Guidelines Japanese knotweed Fallopia japonica, Invasive Species Ireland (2015).

Implementation of the Plan

OPW trained staff or a competent AIS management contractor will be appointed to deliver this management plan as per details herein and per Appendix 1. OPW engineering staff will monitor the ongoing progress of this AISMP to ensure its effectiveness and adjust treatment measures accordingly if required. All environmental data is to be considered prior to and during treatment phases similar to that shown in Fig. 3 mapping showing adjacent Key Environmental Data from pre-existing ecological surveys. A multi-annual approach to the AIS management will be required as Giant Hogweed requires management early in the spring and Japenses Knotweed requires treatment in Autumn when the plant is dying back enabling herbicide to penetrate the rhizome root systems. Further treatment details can be seen in Appendix 1.

Work Method.

The location is contained within an SAC. This project will have an Natura Impact Statement completed by MKO - Planning & Environmental Consultants prior to works commencing which will describe the ecosystem and will outline the location of European Sites on the Newport River in the proximity of the works. Any negative effects on the ecosystem of the Newport River and European Sites are to be avoided. All mapping information will be supplied to the contractor. Consultation with local landowners will be carried out by OPW with instructions to restrict cattle access for 3 hrs. The contractor will supply a safety statement, and will comply with all health and safety legislation. Specialist equipment including working from a boat may be required, this will be examined as part of the method statement from the contactor. Daily Inspection forms, herbicide record sheet, environmental risk assessment and COSHH – Control of Substances Hazardous to Health Assessment will be supplied by the contractor. Resource planning will be carried out by the contractor and they will issue a works programme detailing the schedule.

Primary treatment method

Glyphosate (broad spectrum herbicide), typically Round Up Gold in a concentration of 1:100 i.e.200ml for a 20 L knapsack sprayer. Roundup Bioactive or Goldare is approved for application within an aquatic environment, spraying is permitted up to the water's edge

without the requirement of buffer zones, the contractor will minimise contamination of watercourses, drains and water supplies.

- A selective approach avoiding non-target species and flowering plants will be used.
- Glyphostate will not be applied at wind speeds > 7km/hr, to prevent wind drift.
- Dye based admixture to indicate the extent of the area sprayed, may be used.
- Pesticide sticking agents when working in wet conditions, maybe used.
- A flat foam nozzle will be used for selective targeted spraying.
- Telescopic lances will be used to reach less accessible areas.

For **Japanese Knotweed** Management Strategy:

a. Do not cut or trespass unnecessarily (you can enter large stands and spray as you are exiting if required), the plant is spread by fragments of plant material being physically moved.
b. Underground root systems (rhizomes) can extend further from the visible plant (up to 7m) and cause further spreading if excavated or disturbed.
c. Continue spraying works area until eradicated.
d. Plant dies back in the winter, revealing desiccated tubes.
e. Spray when the planting is dying back in the late Autumn, is October-November, ensure the tubular stalks are filled with herbicide.
f. Continue process until no signs of the plant remain.

For **Giant Hogweed**. Management Strategy

a. Giant Hogweed produces (phytophototoxic) sap and contact with direct sunlight can cause severe burns. Do not strim this plant.
b. Ensure you wear protective equipment that includes Tyvek Suit Type 5 or 6, Chemical Resistant Gauntlet Gloves, Acetate Face Shield and Long Rubber boots.
c. Spraying of the plant saplings should occur early in the spring. Both sides of leaves sprayed liberally, with Roundup gold or Bioactive.
d. Dehead any remaining plants mid-summer and spray, plant should not be allowed to flower. Seeds remain in ground close to parent plant unless spread by the river. If flowers have not been present for 4 years the plant is generally eradicated from site. However, seeds can remain dormant and re-emerge for up to 15yrs.

e. If plant is flowering and gone to seed, treatment will not yield good results.
f. A multi-annual approach is required until plant eradicated from the site.

Monitoring of the Plan.

The Natura Impact Statement completed by MKO - Planning & Environmental Consultants and existing habitat mapping of the plan extents is to be used as a preliminary baseline. OPW engineering staff will check mapping against reality on site. Annual updates to GIS mapping prior to treatment plan being implemented will be required. This plan will be inputted in the OPW Invasive Species Register and will be monitored on a multi-annual basis until all invasives are removed from the management plan extents. Drainage maintenance activities after the management has been completed will highlight if any AIS remain, if this situation occurs further treatment will be carried out locally where required. Actions will be evaluated on completion of the management plan based on the ongoing elimination of AIS within the plan extents.

Biosecurity Requirements

OPW maintenace works and works carried out by contractors will striclty comply with OPW Procedures on biosecurity. No crayfish plague has been identified in the Newport River, OPW procedures will be implemented to ensure no crayfish plague is spread to this rivercatchment. Site audits will be carried to ensure compliance with procedures. All personel, personal equipment and machiney will comply high biosecurity requirements. As per OPW procedures, Virkon aquatic will be used to spray down on equipment leaving site, and all organic material will be removed from machinery with a Check>>Clean>>Dry approach. Careful biosecurity will be required to prevent contamination of the haulage trucks delivering the large quantities of rock on site to stabilise the eroding bank slippage at convent road.

Conclusions

The presence of non-native invasive species along the Newport River gives rise to this Management Plan. Japanese Knotweed is a particularly challenging plant to remove given it's large below ground rhizome structures, treatment should occur in the Autumn to insure herbicide is drawn into the root structure when the plant dies back.

Giant Hogweed is a member of the Apiacaea family; also known as Cartwheel Flower because of the extremely large flower heads. Spraying of the Giant Hogweed should occur early in the spring. Both sides of leaves sprayed liberally, with Roundup gold or Bioactive. Biosecurity will be a significant risk in preventing further spread on and off site, vehicles, and equipment (including footwear worn by staff) will need to be cleaned and inspected before coming on and off site to prevent the further spread of the plant. The Plan will be clearly communicated to all OPW maintenance staff and all contractors through tool-box talks by OPW Environment Section and implementation of the AIS Management Plan will be assessed by OPW regional staff on an ongoing basis.

Appendix 1

Section 3 – Invasive Species Procedures

Relevant to all staff

EP 18A Standard Biosecurity

Scope

This procedures relates to where standard biosecurity is required, is the minimum requirement and refers to plant and animal based invasives.

Purpose

To ensure drainage maintenance is not a vector for the spread of alien invasive plants and animals

Responsibilities

The responsibility lies with the regional staff.

Related Documentation

OPW invasive species GIS layer IFI Best Practice Guidance.

Procedure

1. Check for invasives referring to GIS mapping, proceed with caution. Note on "Observed on Site" on weekly records card, if newly found.
1. Avoid ensuring a 7m machine buffer zone, skipping of infested area where feasible.
2. Control (standard biosecurity)
   a. Wash down all machinery and equipment using power washer ensuring removal of all organic plant and soil mater before leaving site.
   b. Ensure all organic material removed from personal equipment and clothing including footwear.
   c. Ensure water retaining compartments are drained on-site.
   d. Audits required to confirm that procedure is being executed.
   e. Hot wash low loader and machine when in the yard, especially when moving between regions.

Invasive Species

Pic. 18A-1 & Pic 18A-2 Zebra mussel characteristics for identification, they are thumbnail-sized black and orange striped shellfish. They grow in dense clusters.

Zebra Mussels recorded (IFI verified data)

Pic. 18A-3 Site locations where zebra mussels have been present, please take care when working in the vicinity of these areas.

Pic. 18A-4 & Pic 18A-5 is for identification of Asian clams they are yellow-green – brown clam with concentric thick ridges usually < 25mm but can grow to 50mm

Asian Clam recorded (IFI verified data)

Pic 18A-6 shows verified site where Asian Clam has been present, please take when working in vicinity of these areas.

EP 18B High Biosecurity

Scope

This procedure relates to High Biosecurity where a **known presence** of crayfish plague or a particular waterborne invasive risk **has been identified** and should be implemented on a catchment/sub catchment basis, in consultation with Environment Section.

Purpose

To ensure OPW drainage maintenance procedures are not a vector for the spread of crayfish plague or other waterborne pathogens or microorganisms.

Responsibilities

The responsibility lies with the regional staff.

Related Documentation

http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Crayfish_leaflet.pdf

http://www.fisheriesireland.ie/Biosecurity/biosecurity.html, Invasive Species GIS layer.

Procedure

On commencing work, where a known waterborne risk has been identified.

1. Demark a contaminated zone line with bunting this line should be approximately 50m away from any watercourse and should be on the access route.
2. Any equipment vehicles or personnel crossing this contamination zone line will be subject to High biosecurity.
3. The canteen, staff vehicles, fuel bowser or any non-construction related vehicles should not cross the contaminated zone line. These vehicles will require no biosecurity measures.
4. Use a site-specific fuel drum on a fuel bund to refuel excavator. Fill this drum, while not touching the drum with the bowser hose. Use the machine fuel pump to deliver fuel from drum as it is filling. The bowser, hose and personnel will not cross high biosecurity line and will have no physical contact with the excavator/contaminated zone.
5. Personnel leaving the contaminated zone will be subject to biosecurity protocols at all times, minimise personnel entering contaminated zone.
6. All staff sign off detailed method statement outlining this procedure.

Invasive Species

All personnel must comply with the following High biosecurity when leaving a contaminated zone.

Equipment High Biosecurity

1. **Check >> Clean >> Dry>> equipment/vehicles** when leaving a contaminated area zone.
2. Visually inspect all equipment/vehicles, disinfect and remove any attached material.
3. Clean excavator with power washer to remove all organic material, clean underside of tracks and park on clean surface.
4. Spray all surfaces liberally with Virkon Aquatic 1 sachet per 5L. Spray twice to ensure no surfaces missed.
5. Ensure no reservoirs of water retained within tracks, channels or crevices.
6. Leave within the contaminated zone for 48 hrs to dry.

Personal Biosecurity

1. **Disinfect All boots and footwear** when leaving a contaminated area zone.
2. Scrub footwear with a brush to remove any organic material.
3. Use a boot bath and sprayer to disinfect boots and footwear. Add 1 virkon sachet per 5L for boot bath container or sprayer.
4. Ensure adequate contact time within boot bath or spray liberally.
5. Dispose of solution weekly by spreading over soil, unless it is very soiled.
6. Visually inspect all PPE and remove attached material. Wipe down affected PPE with a cloth soaked in disinfectant solution.
7. Place disposable gloves bag in clean bag and dispose of correctly, if used.

Do not move machinery within the works area unless there is a requirement to do so, particularly where invasive species are present. This will conserve resources, limit disruption and minimise potential spread of invasives. Reduce sloshing of river water from the machine bucket onto the works area, as this will reduce the risk of water borne invasives contamination.

Pic 18B.1 Typical high biosecurity refuelling, at any stage the fuel bowser or hose should not make contact with the fuel filling drum or machine fuel delivery hose.

Pic 18B.2 Typical high biosecurity refuelling and disinfection point, this should be set up at a point of easy access away from the river channel, 50m if possible, and no unnecessary vehicles or personnel should cross this line.

Pic. 18B.3 High biosecurity signs.

Pic. 18B.4 Personal High Biosecurity kit, used for water-bourne invasives.

EP 18C Boat Cleaning

Scope

This procedure relates where boats are moved between catchments

Purpose

To ensure OPW drainage maintenance is not a vector for the spread of water-borne invasives.

Responsibilities

The responsibility lies with the regional staff.

Related Documentation

IFI Best Practice Guidance.

Procedure

1. Visually inspect all equipment for attached material and remove, before leaving the site.
2. Ensure all water is drained from boats or machinery, live wells and other water retaining compartments, outboard motors, tanks and other equipment before transportation.
3. When moving from one water course to another clean using cold water washer (including oars, rowlocks, attachment ropes, anchors, buoys, trailers and outboard motors) when moving from one watercourse to another. After cleaning visually inspect to ensure all material removed.
4. Spray disinfectant, to the undercarriage and wheels of the vehicle and trailer after power hosing. Wet or live wells and other water retaining compartments in boats cleaned, rinsed or flushed with a one sachet per 5L Virkon Aquatic concentration. Rinse thoroughly with clean water.
5. Outboard motors flushed with same concentration of Virkon Aquatic.

Minimising movement of plant and machinery between sites reduces the risk of spreading invasives. Reducing any unnecessary plant and machinery movements also leads to reductions in carbon output, energy usage and emissions.

Invasive Species

EP 18D Invasive Plants Treatment

Scope

This procedure relates to any site where works are required to enter within a 7m buffer from an invasive plant or where invasive plants colonise after tree and vegetation maintenance. There is no legal requirement to proactively manage invasive plants, it is however illegal to cause their dispersal. Avoid invasive plants and avoid the requirement for treatment plans.

Purpose

To ensure the correct undertaking of invasive species treatment plans for Japanese Knotweed, Himalayan Balsam and Giant Hogweed.

Responsibilities

The responsibility lies with the relevant staff and Environment Section.

Related Documentation

Invasive Species GIS Layer.

Site specific Invasive species Management Plans.

Pic. 18D.1 PPE used when spraying.

- Light Tyvek suit not suitable when working in scrub. Wear oilskins or Tyvek 5 or 6 suit.
- Wear Tyvek 5 or 6 suit when working with Giant Hogweed

Where a river berm that contains invasive plants requires removal, stockpile material adjacent or within the river corridor in a spoil heap demark this area, map if possible, inform Environment Section to include on Invasive register of treatment sites and manage the spoil heap on a multi-annual basis until plant is eradicated.

Procedure

What to do before implementing a treatment plan.

1. Confirm if location within a SAC/SPA, has an AA screening been carried out? Consult Environment Section.
2. Consider licences under Section 49 of SI 477 and Waste Management legislation where required.
3. Inform Environment Section, to record treatment plan on Invasives register.
4. Estimate area of invasives supply map if possible. Use this as a baseline to assess progress of treatment plan.
5. Consult with local landowners and relevant stakeholders.

Who Should Spray.

Personnel who have completed the required Pesticide Training

How to implement a treatment plan

1. Select appropriate strategy for the appropriate plant.
2. Strictly comply with EP18A Standard Biosecurity.
3. Mix herbicide off site, to 1:100 concentration.
4. Refer to the Fig 18D.1 showing the minimal required P.P.E.
5. Record amount of herbicide applied on site per hectare.
6. Ensure adequate warning signs are in place. Especially when applying herbicide beside public areas.
7. Restrict livestock access for 3 hrs after spraying.

Roundup Bioactive or Gold are approved for application within an aquatic environment, spraying is permitted up to the water's edge without the requirement of buffer zones, however minimise contamination of watercourses, drains and water supplies.

What to Spray With.

Use Glyphosate (broad spectrum herbicide), typically Round Up Gold or Roundup Biactive in a concentration of 1:100 i.e.200ml for a 20 L knapsack sprayer.

How to Spray.

1. Only mix what you require and if necessary under estimate the amount needed.
2. Use a selective approach avoid non-target species and protect flowering plants.
3. Spray liberally, or fill desiccated tubes until over flowing.
4. Ensure the wind drift is not significant < 7km/hr. Glyphosate will kill most plants.
5. Double back, wilted areas will highlight areas missed. Dye based highlighting admixture have proved ineffectual.
6. Use a pesticide-sticking agent when working in wet conditions; insert this agent directly into the herbicide mix.
7. Use a flat fan nozzle recommended for selective targeted spraying.
8. Use telescopic lances to reach less accessible areas, especially when spraying Giant Hogweed.
9. Dispose of unused glyphosate by emptying contents on bare soil that is not near to a drain, water point or pond.

Do not leave diluted glyphosate herbicide in sprayer tanks for extended periods (over a weekend without being covered) as it breaks down with exposure to light, making it ineffectual. Under-mix rather than over-mix.

Invasive Species

1. For **Japanese Knotweed**. Management Strategy
   a. Do not cut or trespass unnecessarily (you can enter into large stands and spray as you are exiting if required), Japanese Knotweed spreads by fragments of plant material being physically moved.
   b. Underground root systems (rhizomes) can extend further from the visible plant (up to 7m) and cause further spreading if excavated or disturbed.
   c. When excavating contaminant soil, manage spoil heap on a multi-annual basis until eradicated. Consider burying in a lined pit or disposal to licensed landfill (licences required) if appropriate.
   d. Plant dies back in the winter, revealing desiccated tubes. If removing dead tubes manage within a spoil heap on a multi-annual basis until eradicated, or bury in a lined pit.
   e. Spray when the planting is dying back in the late Autumn, in October-November will yield good results, ensure the broken desiccated tubular stalks are sprayed with herbicide until overflowing.
   f. Avoid spraying when the plant is flowering, it will achieve little and will limit foraging for bees.
   g. If there is a requirement to enter onto a contaminated site, when the knotweed is in it's growing season, avoid dense areas if possible and treat in Autumn when the best results will be achieved.
   h. A multi annual approach is required until plant eradicated from site.

Treating Japanese Knotweed in late Autumn when plant in dying back yields the best results.

Japanese Knotweed Identification


Pic 18D.2

- Flowers are small creamy-white and may be seen from August to October
- Spraying when flowering will achieve limited results
- In Ireland, plants are female and propagate from dispersal of plant material only not by seed.

- Leaves are heart shaped
- Leaves grow up to 15cm long
- Stems are bamboo-like
- Stems can purple or with purple specks
- Dies back in late Autumn
- Several variants including bohemian knotweed, giant knotweed and Himalayan knotweed


Pic 18D.3

2. For **Himalayan Balsam.** Management Strategy.

a. A shallow rooted plant that spreads from seed that explode on contact in late summer July-Aug (wear safety glasses as the seed can shoot up to 7m).

b. In order of preference pull, strim, or spray with roundup from March-May, prior to when the seed are mobile.

c. Place all pulled or strimmed plant material from the works area in a 1.5 m deep pit lined and enclosed with heavy gauge polythene. Backfill pits to ground level ensuring 1 meter of soil covers the enclosed material.

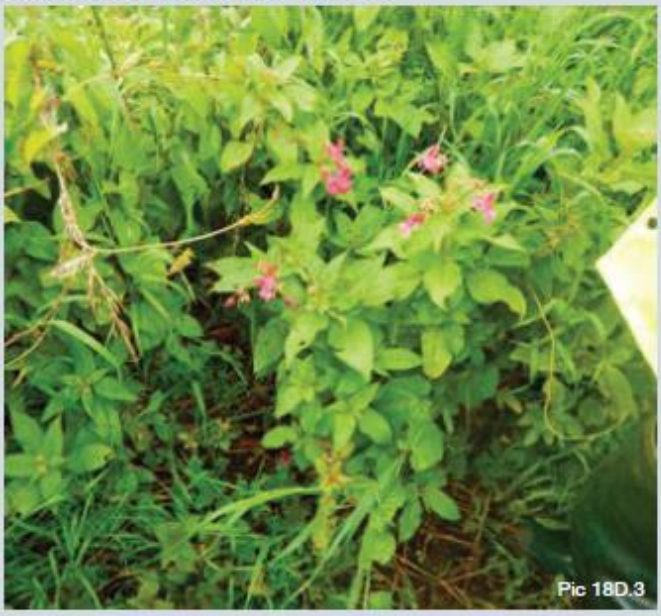
d. Continue to manage the works area by pulling, strimming all vegetation to 4 inches or spraying from March – May before seeds are mobile.

e. A multi annual approach is required until plant eradicated from site.

f. Removal to licensed landfill considered where appropriate.

Invasive plants limit natural biodiversity, restrain approach to drainage and construction work and cause erosion of riverbanks in the winter. Ensure work practices do not disperse and implement Standard Biosecurity Procedure 18A.

Himalayan Balsam Identification


Pic 18D.3

- Grows up to 3m tall.
- Flowers are pink/purple 3cm long and are visible from late May to October
- Leaves are 6-15cm long
- With sharply tooted edges.
- Seeds explode on contact in late summer and management at this time will not yield good results

Invasive Species

3. For **Giant Hogweed**. Management Strategy

a. Giant Hogweed produces (phytophototoxic) sap and contact with direct sunlight can cause severe burns. Do not strim this plant.

b. Ensure you wear protective equipment that includes Tyvek Suit Type 5 or 6, Chemical Resistant Gauntlet Gloves, Acetate Face Shield and Long Rubber boots.

c. Spraying of the plant saplings should occur early in the spring. Both sides of leaves sprayed liberally, with Roundup gold or Bioactive.

d. Dehead any remaining plants mid-summer and spray, plant should not be allowed to flower. Seeds remain in ground close to parent plant unless spread by the river. If flowers have not been present for 4 years the plant is generally eradicated from site. However, seeds can remain dormant and re-emerge for up to 15yrs.

e. If plant is flowering and gone to seed, treatment will not yield good results.

f. A multi-annual approach is required until plant eradicated from the site.

Encourage natural colonisation and avoid invasive colonisation. Where riverbanks are cleared of scrub or heavy tree cover. Invasive plants can thrive in the newly cleared ground; implement a treatment plan if this occurs.

Giant Hogweed Identification

- Grows up to to 2-5m. Leaves are often 1m across.
- Stems are large with reddish/purple speckles, covered in bristles
- Flowers are small, white and grouped together in an umbrella shape
- Dies back in Autumn
- Not to be confused with the smaller native hogweed or angelica.

Invasive Species

Easy to confuse some Plants

- Butterbur smaller leaves less than 1m, not an invasive
- Gunnera giant rhubarb invasive plant leaves up to 3m wide.

Good Practice

- Consider different tools for different jobs this Gator has a 250l tank with two 40m reels of hose.
- This is an example of a lined spoil pit used to bury material contaminated by Japanese Knotweed.

Other invasive plants will be encountered please contact Environment Section for advice.

Invasive Plants, How to Proceed.

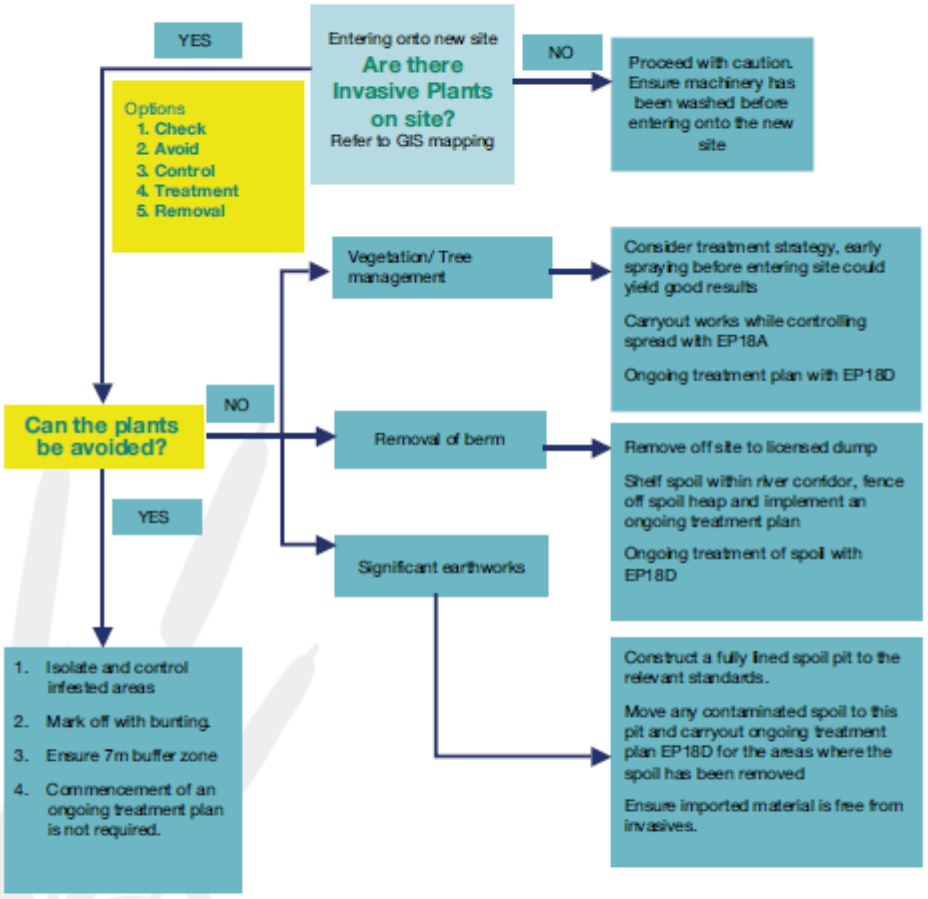


Fig 18D.1

Implement inconjunction with ecological assistance or a mangement plan where scale is significant or appropriate.When carrying out a Flood Relief Scheme ensure Invasive Species Management Plan included as part of the tender documents.

Appendix 2

Pesticide Application **No: RA49**

Other documents to refer to:
Safety Statement
PRA
Training Records
Guidance for the Office of Public Works (OPW) workers who use Plant Protection Products

Activity Job Assessed: Pesticide Application[1]

Refer to other risk assessments as required

Who might be harmed?				
OPW Employees, Members of the Public, visitors, landowners				
Hazards	**Controls**	**Severity**	**Probability**	**Risk Category**
Risk of injury to operator through personal contamination and exposure to pesticide through ingestion, inhalation, absorption	Only trained, authorised and competent persons permitted to with work with pesticides A risk assessment must be completed for the task, specific to the task and available to the worker The SDS sheet must be reviewed for the pesticide Wear appropriate PPE for the product being used. If skin contamination occurs; • Stop work immediately, call for help if necessary. • Ensure the SDS for the pesticide (and chemical) is available. • Cordon off works area and prevent any further exposure • Move affected employee away from the contaminated area and remove all clothing carefully. • Wash contaminated skin If pesticide contamination to the eyes has occurred, • use allocated eye wash facility, • flush with sterilised water from First Aid box or flush with clean running water and cover the eye with a sterile eye pad If an employee has ingested pesticides • Do not induce vomiting • Call the emergency services and read	4	2	8=Medium

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	the SDS sheet following the First Aid instructions. • Ensure the employee is warm and comfortable • Call the qualified First Aider while waiting for emergency services • Give the Emergency services a copy of the product labels and material SDS			
Risk of injury (inhalation, ingestion) to other personnel including members of the public, other OPW workers	Reduce pesticide spray drift to a minimum Risk assess every situation – use the safest technique that will achieve the desired result Minimise the use of chemical pesticide where possible Where possible try to spray areas when they are not in use (closing an area for spraying at the end of the working day or spraying outside of working hours etc.) Use the safest products available When spraying in a public area where the public have access, ensure there is warning signage erected to warn the public of the activity such as SRAYING IN PROGRESS Restrict access to areas when spraying is being conducted.	4	2	8=Medium
Risk of accidental release or spillage of the pesticide product into drains, watercourses, ditches	To prevent contamination of water supplies including drains, watercourses, ditches etc. ensure all pesticide application tasks are completed by trained and qualified staff The operator must be aware of the location of drains, watercourses and vulnerable groundwater before spraying Ensure that all pesticide tasks are done with care. DO NOT spray near water courses Prepare pesticide solutions carefully, in an area that is away from water sources and drains for mixing, loading and cleaning of equipment and containers Always try to use targeted treatments Do not apply pesticides when it is raining or windy (greater than 7km/h) or when rain is forecast within 24 hours to prevent run off Ensure all equipment is properly maintained, in good working order and calibrated Prevent drift spray by using low drift nozzles whenever possible Have an emergency plan and kit available for any spillages Check aquatic buffer zones that maybe required. Further information is available from the DAFM.	4	2	8=Medium
Risk of accidental release, spillages or fires due to incorrect storage of chemical pesticides	Pesticides must be stored safely within a chemical cabinet allocated for pesticides products only or stored appropriately onsite. Refer to storage instructions on the SDS for the	4	2	8=Medium

	particular pesticide Access must be limited to pesticide users Users must always wear appropriate PPE when handling pesticides Always wash hands after handling pesticides Personnel must not smoke in the designated chemical storage area			

[1]*Refer to the document **Guidance for the Office of Public Works (OPW) workers who use Plant Protection Products***

Categories of Pesticides

Types of Pesticides	***Intended target of Pesticide***
Herbicides	*Plants eg weeds and daisies*
Insecticides	*Insects eg Arthropods eg cockroaches*
Fungicides	*Fungi eg mould and mildew*
Fumigants	*Pests eg inside buildings and soil*
Molluscicides	*Molluscs eg snails and slugs*
Miticides	*Mites eg spider mite and board mite*
Nematicides	*Nematodes eg microscopic roundworms*
Repellants	*Pests eg Mosquitoes and animals*

Appendix 3

Embankment maintenace

All construction machinery operating instream should be mechanically sound to avoid leaks of oils, hydraulic fluid, etc.

Machinery to be steam-cleaned and checked prior to commencement of any instream works. See attached drawing for proposed disinfection area.

Works will only be undertaken when conditions are suitable and water levels are sufficiently low enough.

In accordance with environmental requirements, where possible, all vegetation management and tree removal works will be scheduled to coincide outside of the bird breeding season and take place within permitted windows.

Refer to OPW Environmental Guidance: Drainage Maintenance & Construction Procedures, EP 11 Bank Protection, EP 15 Construction Silt Management, and EP 17 Water Pollution for best practice.

Methodology:

1. A site compound and disinfection station with no flow path to the river, has been demarked on the attached drawing.
2. Mechanical plant to access the area via the left river bank.
3. Prior to commencing works, wash down all machinery and equipment using power washer ensuring to removal of all organic plant and soil mater.
4. Hot wash low loader and machine on arrival and disinfect prior to commencing works, designated disinfection area is outlined in red on the attached drawing.
5. All biosecurity will comply EP18A from “Environmental Guidance: Drainage Maintenance and Construction”. Virkon aquatic will be used.
6. All works to be undertaken in suitable low flow river conditions. No works permitted during times of flood.
7. All invasives will be eradicated through a multi annual treatment plan ensuring that no invasives will spread from one area to another.
8. Prior to leaving site, wash down all machinery and equipment using power washer

ensuring to removal of all organic plant and soil mater.