Enniscorthy Flood Defence Scheme

Construction Environmental Management Plan (CEMP)

March 2019

Wexford County Council

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Issue and Revision Record

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Contents

1 Introduction

1.1 Overview of the Project

The Proposed Scheme involves works to improve flow conveyance, and containment measures to prevent flooding in Enniscorthy town. The scheme comprises a number of localised measures including the removal of Seamus Rafter Bridge and the construction of a replacement bridge downstream of the Riverside Park Hotel.

The proposed scheme works are divided between three primary work streams, which are described hereunder;

- The construction of the new road bridge downstream of the Riverside Park Hotel will be carried out in advance of the main flood defence scheme. The removal of the Seamus Rafter Bridge will only commence following the completion of the new road bridge and its approach roads;
- Flood Defence Civil Engineering works- construction of flood walls, underpinning of Railway Bridge and Enniscorthy Bridge, construction of the new pedestrian bridge and construction of new flood defence walls.
- River Slaney Instream Works- comprises dredging (deepening) and/or widening and filling along various sections of the river in and adjacent to Enniscorthy town and associated measures such as the depositional zone and compound channel and regrading and reprofiling of the Back Channel on the North Island. For the purpose of this stage of works, it is necessary to isolate and de-water the work area to create dry working conditions. Dry works areas reduce the risk of pollution and significant sedimentation in the river. Further details on the dry works areas is set out below. It is also envisaged that the proposed Back Channel restoration works will be constructed in advance of the main channel works.

Flood Defences will also have to been constructed at the Promenade and the Leisure Centre and the construction of the new road bridge before the instream work can take place

Detailed information on the proposed works are provided in Chapter 2.

1.2 Purpose of this Report

The purpose of this Construction Environmental Management Plan (CEMP) is to document and describe the main activities that will be undertaken to facilitate the project and to provide a framework of environmental protection measures that will be implemented prior to commencement of, and throughout the duration of, the construction phase.

The project will be undertaken by Contractors appointed by Wexford County Council (WCC) on behalf of the Office of Public Works (the OPW).

This CEMP will be provided to the appointed Contractor prior to the commencement of works and will form the basis of the Contractors detailed CEMP, which the appointed Contractor will be required to prepare for approval by Wexford Count Council prior to commencement of any works.

The Contractor(s) CEMP will set out the approach and methodology which they will follow in scheduling and undertaking the work and will incorporate the control (mitigation) measures detailed in this CEMP in addition to specified conditions that may be prescribed following confirmation applied by the Minister of Public Expenditure and Reform, the measures provided in

the Natura Impact Statement (NIS) and the Environmental Impact Assessment Report (EIAR) in relation to environmental protection associated with the activities outlined in this CEMP.

The preparation of any CEMP must by necessity occur post-Ministerial consent for two reasons: (a) it must have the ability to incorporate specific conditions of confirmation applied by the Minister; (b) it is prepared by the contractor appointed by WCC to undertake the work (such appointment only occurs when a project is confirmed) and to which the contractor can be bound.

It is the responsibility of Wexford County Council on behalf of the OPW to ensure that the requirements of the CEMP are implemented in full.

Due to environmental sensitivities associated with the project, an Environmental Clerk of Works (EnCoW) will be appointed by Wexford County Council on behalf of the OPW to ensure that the mitigation measures outlined in the Contractors CEMP are implemented in full.

In addition to the EnCoW, Wexford County Council will engage a team to monitor the construction phase of the project and ensure works are being carried out in accordance with the agreed Contractors Construction and Environmental Management Plan (CEMP), method statements, safety procedures etc. A Senior Resident Engineer/Access Officer will also be appointed by Wexford County Council to liaise with the landowners along the scheme works area to ensure that their requirements for entry are met so far as is possible, providing they do not conflict with the mitigation measures, including mitigation by avoidance, provided in this document.

People whose land it is proposed to interfere with as part of the proposed scheme will be notified in accordance with the Arterial Drainage Act 1945, as amended 1995. They will be invited to view the proposed scheme and make their observations on it during the Public Exhibition. The Minister will consider their observations before confirming the scheme. When the scheme is completed the landowners will be entitled to apply for compensation from the OPW for the interference to their land.

The preparation of this document has been informed by consultations undertaken with key stakeholders. Consultations with NPWS and IFI have also been ongoing throughout the project, including consultations with Ciara O'Mahony, Ciara Flynn of NPWS and Alan Cullagh, Donnachadh Byrne and Stephen Byrne of IFI.

1.3 Roles and Responsibilities

Confirmation for the Enniscorthy Flood Defence Scheme is sought from the Minister for Public Expenditure and Reform under the Arterial Drainage Act 1945 as amended. The Arterial Drainage Act 1945 established a national drainage authority (the Office of Public Works hereafter referred to as OPW) with the remit of implementing a national arterial drainage programme. The Arterial Drainage Act was amended in 1995 to include for the protection of urban areas suffering from flooding.

OPW are the lead agency for flood risk management in Ireland and will fund the Scheme. OPW will provide technical assistance to WCC through their participation in the Steering Group.

WCC are an agent of the OPW and as such will have powers to enter lands to carry out the works necessary for the construction of the Drainage Scheme.

WCC have appointed Mott MacDonald as the Employers Representative (ER). The ER will specify how the works will be carried out with due regard to the mitigation measures set out in the EIAR and the NIS. These are included in the Works Requirements. During the construction of the scheme the ER will administer the contract for the construction of the scheme. The ER

will delegate his powers to the Resident Engineer and the EnCOW. The Resident Engineer will monitor the works on site and notify the Contractor of defects where the contractor has not carried out the works in accordance with the Works Requirements. When the ER notifies the contractor of a defect he is contractually obliged to rectify it.

1.3.1 Environmental Clerk of Works (EnCoW)

The EnCoW will form part of the Employers Site Representative Team. The EnCoW shall have suitable environmental qualifications and the necessary experience and knowledge appropriate to the role. Wexford County Council will ensure that the EnCoW is delegated sufficient powers under the construction contract so that she/he will be able to instruct the Contractor to stop works and to direct the carrying out of emergency mitigation/clean-up operations. The EnCoW will also be review consultation with environmental bodies including the NPWS and IFI. The EnCoW shall be responsible for carrying out regular monitoring of the Contractors CEMP.

A copy of the scheme construction drawings are provided in Appendix A. A preliminary Invasive Species Management Plan is provided in Appendix B.

A copy of the current Wexford County Council (WCC) Flood Plan 2018 is appended in Appendix C of this CEMP. This Plan will be updated in advance of commencing the proposed works and the nominated Contractor will engage with WCC to ensure that the most recent version is available and appended to the CEMP. The Contractor is also obliged to ensure that the works are undertaken having regard to the current WCC. The Major Emergency Plan prepared in accordance with the Governments Major Emergency Management Framework, a copy of the 2016 version is appended to Appendix D of this Outline CEMP.

2 Project Context

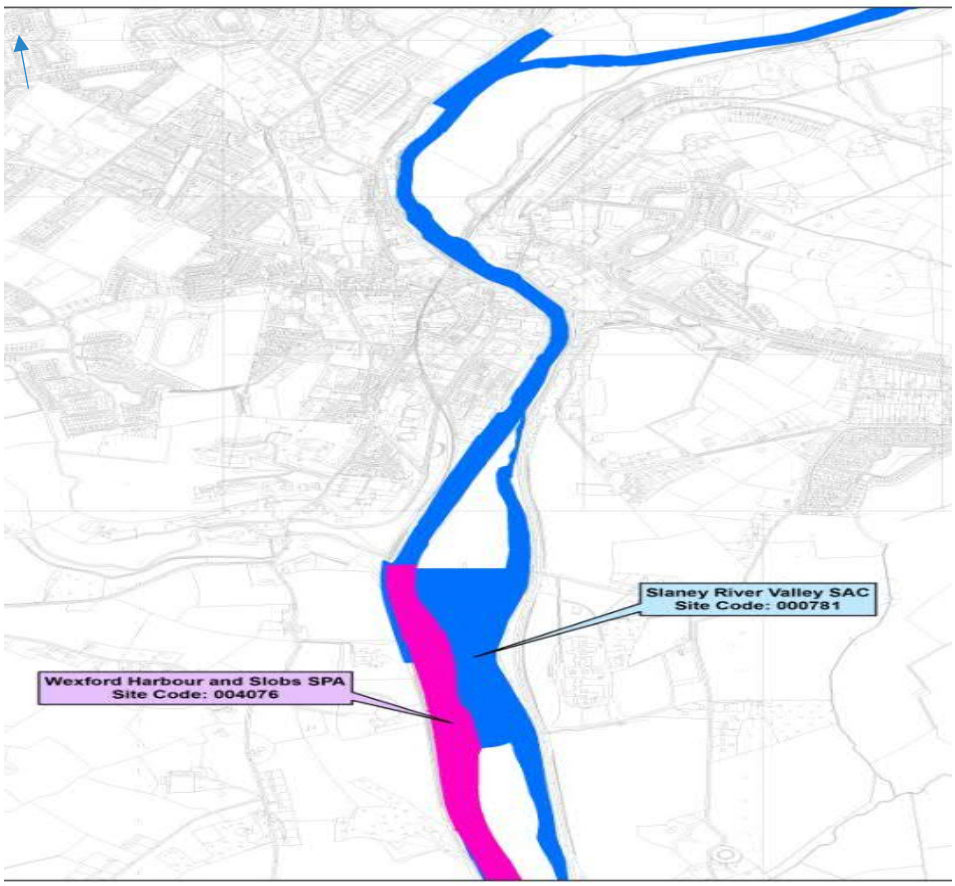
2.1 Need for the Scheme

Enniscorthy town is located on the banks of the River Slaney in Co. Wexford. The proposed scheme extends approximately one and half kilometres upstream of the Enniscorthy Bridge (known locally as the 'Old Bridge') and two kilometres downstream of the bridge. In the past Enniscorthy has experienced significant infrequent flooding, including at least five flood events in the last century which occurred in 1924, 1947, 1965, 2000 and most recently on 30th of December 2015. Wexford County Council on behalf of the OPW is now developing the scheme with a view to seeking confirmation for it by the Minister for Public Expenditure and Reform.

2.1.1 Ecological Sites

The River Slaney lies within the Slaney River Valley Special Area of Conservation (SAC) (Site Code 000781) and part of the study area lies within the northern edge of the Wexford Harbour and Slobs Special Protection Area (SPA) (Site Code 004076). The entire study area lies within the Slaney River Valley pNHA (Site Code 000781).

Figure 1: Natura 2000 sites directly associated to the survey area



Source: Mott MacDonald

The Proposed Scheme will result in habitat loss along the length of the works resulting from river widening and dredging works, and the construction of the flood defence scheme features. In addition, to permanent habitat loss from these elements there will be temporary habitat loss within the construction working area.

The proposed study area supports a variety of habitats including woodland (scrub, hedgerows, and treelines), grasslands and wetlands, as well as more urban habitats and amenity areas. Land uses include agricultural, recreational (including water-based activities), angling, forest, wildlife habitat, commercial, and recreational use. A detailed description of the ecological baseline environment is set out within the project ecological impact assessment within Chapter 6-Biodiversity of the EIAR. This document should be read in conjunction with the impact assessment provided in the Biodiversity Chapter and the project NIS.

2.1.1.1 Archaeological , Architectural and Cultural Heritage

A total of thirteen features of cultural heritage interest were identified as part the archaeological walkover, riverine and underwater surveys that lie within or directly beside locations of impact from the proposed works.

The work has highlighted the potential for the river channel generally to retain material of cultural heritage significance. A previously un-recorded building has been identified at the north end of the Island and has been surveyed in detail.

Substantial sections of bonded masonry relating to a previous bridge structure have been identified underneath and upstream of Enniscorthy Bridge and suggest the potential to recover the remains of early bridge features.

A boat wreck was observed downstream towards the southern extent of the Bare Meadows. It is thought to be the remains of a Slaney Cot and is not of great antiquity, but it will need to be removed archaeologically. A detailed description of the archaeological and cultural heritage environment is set out within the project impact assessment within Chapter 10. This document should be read in conjunction with the impact assessment provided in the Chapter 10 of the EIAR.

2.1.1.2 Traffic and Transport

For the purpose instream works it is necessary to isolate and de-water the work area to create dry working conditions. The Contractor will be permitted to haul this material within the dry works area i.e. along the river bed. Site construction traffic during this phase of work will be limited within dry works areas only. Whereas, material downstream of the dry works area on the downstream of the Seamus Rafter Bridge will be removed by truck to a licence facility via the Bare Meadows along the N11 Wexford Road.

The proposed bridge goes over the Dublin Rosslare Railway Line. The majority of construction activities can be carried out during the day behind temporary trackside safety fences. Works to enable the construction of the main span over the railway will need to be carried out during possessions of the railway, which may be carried out at night or at the weekend as agreed with Iarnród Éireann. Details on the proposed access arrangements during the construction phase are set out in Section 4.3.1. Details of the traffic and transportation control measures are set out in Section 3.7.11 of this Plan.

2.1.1.3 Invasive Plant Species

There were three non-native invasive plant species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011 as amended found to be present

throughout the survey area. All three species are listed as “High Risk” invasive species (Kelly et al., 2013). They are on the Red List of recorded invasive species in Ireland i.e. these species have damaging effects on native species and ecosystems but are species that can be managed.

Japanese Knotweed (*Fallopia japonica)* was recorded in discrete locations across the survey area (approximately 3,789m^2). Himalayan Balsam (*Impatiens glandulifera*) was noted across the survey areas, it was noted as seedlings and adult plants, particularly in damper habitats where grazing was less intensive (approximately 75,534m^2). Giant Hogweed (*Heracleum mantegazzianum)* was recorded within the riparian woodland to the south east of the Proposed Scheme (approximately 1911m^2). An invasive species plant survey was carried out by Envirico in September 2017 and a preliminary invasive species management plan was prepared for the study area. A copy of the report is provided in Appendix B.

First phase herbicide treatment of Japanese knotweed within the footprint of the Proposed Scheme has been carried out to reduce its regenerative capacity in advance of construction works. Future schedule of herbicide treatment for the treatment and control of invasive species during the construction phase is set out within the preliminary ISMP.

It is an offence under Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) (S.I. No. 477 of 2011) to plant, disperse, allow, or cause to disperse, spread or otherwise cause to grow any plant species specified in the Third Schedule of the Regulations.

3 Proposed Activities

3.1 Phasing of Works

The proposed works will be scheduled over a 3-year period. Each stage of works will be planned to minimise potential significant effects on the environmental sensitivities identified. Whilst the programming of individual elements of works is ultimately at the discretion of the appointed Contractor. The scheduling of works will be made in consultation with the EnCoW in advance of commencing on site.

The construction activities will be sequenced into three primary work streams, these are described hereunder:

- The construction of the new road bridge downstream of the Riverside Park Hotel will be carried out in advance of the main flood defence scheme. The removal of the Seamus Rafter Bridge will only commence following the completion of the new road bridge, junctions onto the N11 and N30 and approach roads;
- Flood Defence Civil Engineering works - construction of flood walls, underpinning of Railway Bridge and Enniscorthy Bridge, construction of the new pedestrian bridge and construction of new flood defence walls;
- River Slaney Instream Works - comprises dredging (deepening) and/or widening and filling along various sections of the river in and adjacent to Enniscorthy town and associated measures such as the depositional zone and compound channel and regrading and reprofiling of the Back Channel on the North Island. For the purpose of this stage of works it is necessary to isolate and de-water the work area to create dry working conditions. Dry works areas reduce the risk of pollution and significant sedimentation in the river. Further details on the dry works areas is set out below. It is also envisaged that the proposed Back Channel restoration works will be constructed in advance of the main channel works.

Flood Defences will also have to been constructed at the Promenade and the Leisure Centre and the construction of the new road bridge before the instream work can take place.

3.2 Timing of Works

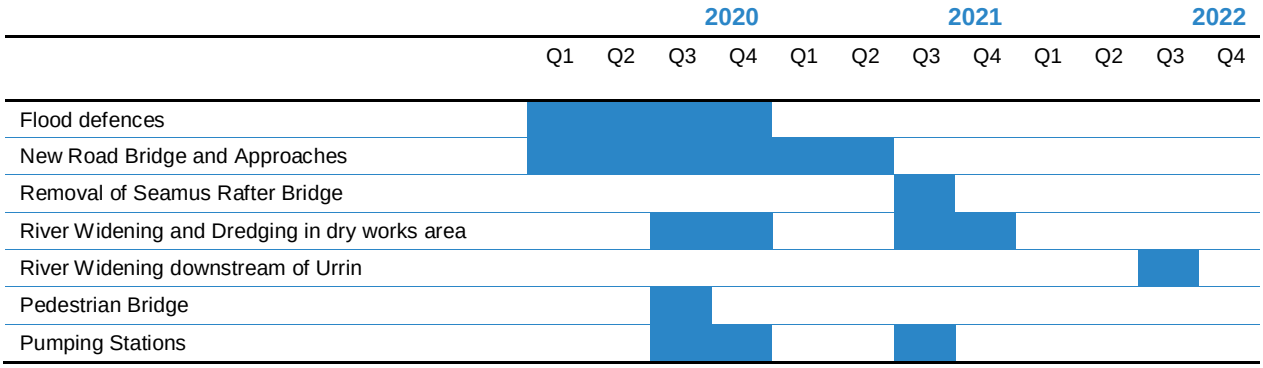
A Contractor will not be appointed until the scheme is confirmed by the Minister. In the interim a preliminary construction programme has been prepared by Mott MacDonald. The programme was used as a basis to provide an estimate of sequencing of the proposed works.

In the Gantt chart shown in Table 1 below a 36-month construction period is envisaged and the works have been broken into seven tasks:

1. **Flood Defences** – Construction of flood walls.
2. **Road Bridge** – To maintain traffic flows the proposed road bridge must be operational before Seamus Rafter Bridge is removed.
3. **Removal of Seamus Rafter Bridge** – While still in place the existing bridge is a barrier to haulage. Its removal provides the opportunity to haul material along the river.
4. **River bank widening/infilling and dredging** – For safety and environmental reasons these works should be carried out in the dry.
5. **Widening downstream of Urrin** – To ensure the integrity of the conveyance works.

6. **Pedestrian Bridge** – The pedestrian bridge must be built before Seamus Rafter Bridge is removed as there are services in the deck of Seamus Rafter Bridge which are planned to be diverted to the deck of the pedestrian bridge.
7. **Stormwater Pumping Stations** – Management of stormwater on the land side of the defence walls.

Table 1: Indicative Construction Programme



Detailed information regarding to key seasonal restrictions that need to be considered are set out in Section 3.7.2.

3.3 General Control Measures

All works will be carried out having regard to international and national legislation, and best practice guidance, including but not limited to guidance on construction site management and pollution prevention guidance;

- Wildlife Act, 1976 as amended;
- European Communities (Natural Habitats) Regulations, 2011;
- European Communities (Quality of Salmonid waters) Regulations, 2006;
- Inland Fisheries Board (IFI), Requirements for the Protection of fisheries habitats during construction and development works at River Sites;
- IFI, Maintenance and Protection of the Inland Fisheries Resources during Road Construction and Improvement works;
- British Standard 5228 Part 1 and Part 2 Code of Practice for Noise and Vibration Control on Construction and Open Sites (2009+A1:2014) (BS5228:2009+A1:2014);
- The Transport Infrastructure Ireland (TII) NRA Guidelines including but not limited to the following;
  - Best Practice Guidelines for the Conversation of Bats during the Construction of National Road Schemes;
  - Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
  - Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes;
  - Guidelines for the Treatment of Air Quality During the Planning and Construction of National Roads; and
  - NRA's guidance document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (2004).

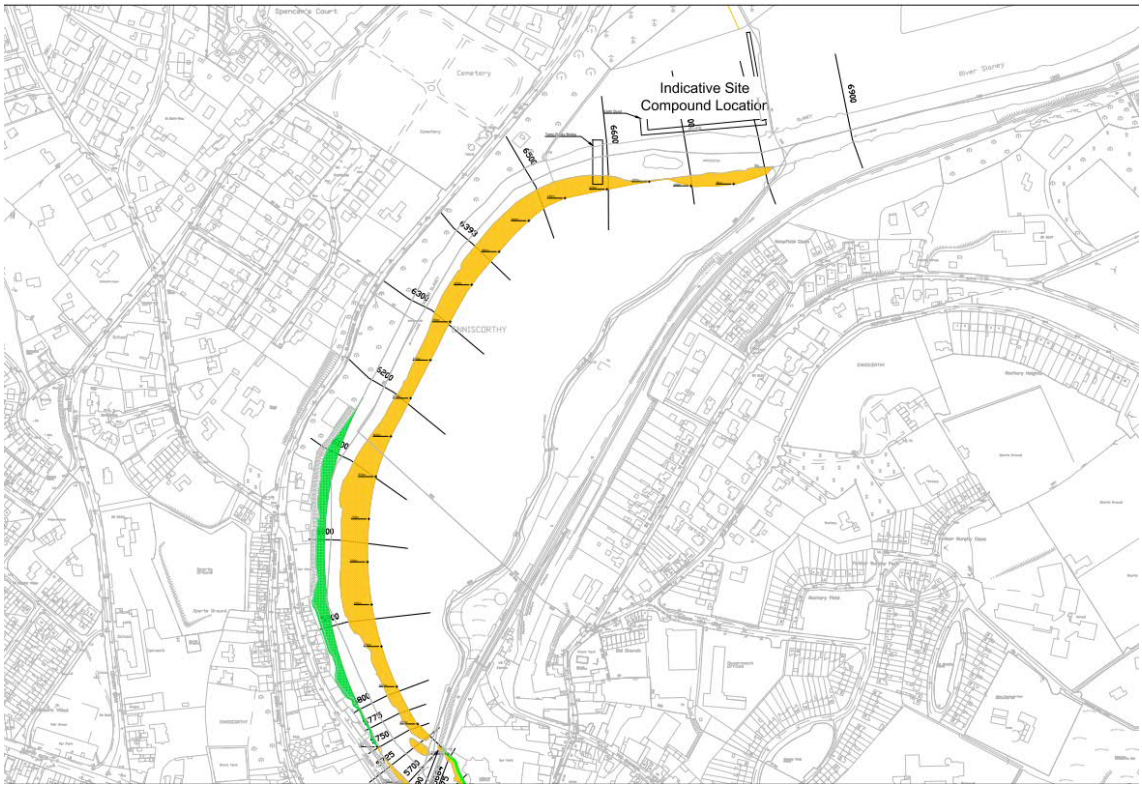
- Scottish Environment Protection Agency (SEPA), Engineering in the Water Environment Good Practice Guide- Temporary Construction Methods; and
- CIRIA publications including:
  - Control of Water Pollution on Construction Sites- Guide to Good Practice (SP156);
  - Control of Water Pollution from Construction sites- Guidance for Consultants and Contractors (C532);
  - Control of Water Pollution from Linear Construction Projects -Technical Guidance (C649);
  - Control of Water Pollution from Linear Construction Projects- Site Guide (C649); and
  - Environmental Good Practice – Site Guide (C650).
- OPW Environmental Management Protocols and Standard Operating Procedures which are currently being updated by the OPW.

3.4 Site Compound

The location of site compound facilities will be agreed between WCC and the appointed Contractor and will be subject to agreement with local landowners. For the purposes of this application, there is one suggested location for the compound. The location is shown below in Figure 2. The compound will include welfare facilities and office space as required. Any effluent generated from the welfare facilities will be discharged to the public sewer. Plant and machinery may also be stored at this location. The exact siting of the Contractor Compound is not defined and siting of the compound will ultimately be identified by the Contractor and will be specified in the Contractor CEMP in consultation with the EnCoW. However, for the purpose of this report the following text describes the control measures that will be put in place for the construction compound;

- The construction compound will not be located within 50m of the River Slaney. The compound will not be located in sensitive ecological habitat;
- The main construction compound must be located on dry land and set back from waterbodies, and outside of any floodplain;
- The impermeable area within the compound will be minimised to limit surface runoff;
- The EnCoW and the Contractor will ensure that appropriate set back distances are maintained from sensitive ecological and cultural heritage sites and watercourses. At a minimum any watercourse or drainage ditch that occur in the area of land that will be used for site compound/storage facilities will be fenced off at a minimum distance of 5m. in addition, measures will be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to the watercourse;
- Storage of fuels, other hydrocarbons and other chemicals within the construction compounds will be stored in bund areas. Bund specification will conform to the current best practice for oil storage such as ‘Best Practice Guide BPGCS005 Oil Storage Guidelines,’ Enterprise Ireland;
- All surface water runoff will be intercepted and directed to treatment systems for the removal of pollutants prior to discharge; and
- All compounds will have security to deter vandalism, theft and unauthorised access.

Figure 2: Indicative Location of proposed Site Compound in Enniscorthy



3.4.1 Access routes

The proposed contract works will utilise existing access routes (including farm access tracks within improved grassland areas) where possible. The proposed access routes were selected following an ecological survey to minimise potential disturbance. Ecological baseline surveys undertaken for the proposed Flood Defence Scheme were carried out and the surveys were used to inform the design of the scheme. The identified access routes will be clearly demarcated on site prior to construction and will be followed by any crew engaged by the appointed Contractor. An ecological check of demarcation for works area will be carried out by the EnCoW in advance of site mobilisation.

A drawing outlining the proposed routes is provided in accompanying drawings (Ref: MMD-355741-C-DR-N-XX-0013 and MMD-355741-C-DR-N-XX-0014) in Appendix A.

The public road network will be used to access the general area of the works as far as practicable. As noted above, with the exception of the instream haul routes, access points have been identified which will be used for site access and egress. These are noted below;

- Access to the northern flood plain on the east side of the river will be provided across the Irish Rail access point. Access will be restricted to the existing farm tracks and stream crossing currently in the floodplain. Access to the river between the railway bridge and the Enniscorthy bridge will be provided from Templeshannon, construction equipment and barge will be craned into the river from the bankside at the leisure centre;

- Downstream of the Enniscorthy Bridge (also known locally as the Old Bridge) access will be provided from Shannon Quay. Much of this area is built ground and amenity grassland. Access downstream of the Seamus Rafter Bridge will be from the Promenade and the Wexford Road;
- Access to the southern floodplain, Bare Meadows, will be provided from an existing gateway off the Wexford Road (N11) and will continue along the existing farm track down to the river. In order to minimise disturbance to the Bare Meadows, ingress and egress from the river channel will be limited to one point on the northern extent of the works areas directly adjacent to the temporary bridge works area. The lands adjacent the river may be provided for the location of the Contractors site compound and will be required for the construction of the bridge supports and bridge deck. No works will be allowed within the Bare Meadows downstream of river chainage 4700. Traffic on the N30 and N11 will be affected by regular site traffic, specialist large bridge component deliveries and the mobilisation and demobilisation of cranes required to install the bridge components;
- Access to the western abutment of the new road bridge work area will be provided via the N30 Abbey Road and the promenade. Traffic will be affected by regular site traffic, trucks removing material and concrete truck deliveries. The roundabout at the back of the western abutment will require local diversion and/or traffic management on the N30 during its construction; and
- On the eastern side, traffic will be required to access the lands adjacent to the N11 to form the cut for the roundabout and the new approach roads to the roundabout. This may require traffic management on the existing N11 during this phase to facilitate construction plant removing and importing material from site. To facilitate the construction of the bridge east abutment it is envisaged that the existing N11 traffic will be diverted onto the new approach roads and roundabout.

3.5 Site Works

3.5.1 Vegetation Clearance

Clearance of vegetation along the footprint of the works areas will be required to facilitate the construction of the proposed development. This clearance will be undertaken outside of the bird breeding season in accordance with the Wildlife Act 1976, as amended i.e. between 1st September and 1st March) and immediately prior to works be undertaken. Where the construction programme does not allow this restriction, these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeated surveys will be required.

Clearance of vegetation within particularly bird sensitive locations, i.e. bankside of the river channel and Bare Meadow floodplain will be undertaken under supervision of the EnCoW. Signage will be erected by the Contractor if necessary to notify of bird sensitive areas. Restriction of works in the southern floodplain between October-May to protect waterbirds using the wetland habitats during the winter and nesting Grey Heron from disturbance.

Section 22(4) of the Wildlife Act 1976 (as amended) states that any person who wilfully interferes with, disturbs or destroys protected wild birds or their nests will be guilty of an offence.

Clearance of individual trees along the promenade within Enniscorthy Town and on the east of the N11 will be required. Where bat surveys confirm potential bat hibernation roosts, this clearance will be undertaken outside of bat hibernation roost period between 1st September and 31st May.

To facilitate the construction of the new road bridge, tree topping is required within the Annex I habitat (Alluvial Woodland) on the Bare Meadows. Tree topping and associated works will be supervised by a wet woodland ecologist. Work will be carried out in winter period only.

3.5.2 Flood Defence Civil Engineering works

The Proposed Scheme includes the construction of flood defence walls and new pumping stations along the banks of the River Slaney SAC. The location of these works are shown on the accompanying design drawings and will be carried out in advance of the instream works.

3.5.2.1 Construction of Flood Walls

The proposed development includes the construction of flood defence walls. The location and extent of the walls are illustrated in the project drawings (Ref: 355741-MMD-01-XX-DR-N-0400 to 355741-MMD-01-XX-DR-N-0413). Foundations will be piled landside and access the works areas will be from defined access routes only.

Access to the works will be via public roads and the private car park at the Leisure Centre. Sheet piled foundations for flood walls will be driven to the required depths. When this is complete the excavations will take place for foundations. Following excavation reinforcement will be put in place and concrete will be poured to form the foundations. Following the construction of the foundations, finishes will be applied to the flood walls. Where reinforced concrete walls are required, reinforcement will be placed and these will be formed by the installation of shuttering. Concrete will then be poured into the shuttering.

Where river widening is required adjacent to flood walls this will take place after the walls are complete.

3.5.2.2 Removal of Seamus Rafter Bridge

The methodology for the removal of Seamus Rafter Bridge will be subject to a detailed structural demolition plan. In advance of the demolition works a dry works area will be formed under one portion of the bridge. This will be formed by the installation of an impermeable barrier and sump pumps. Subject to the details contained in the demolition plan the portion of the bridge over the dry works area will be demolished and removed from the dry works area and taken to a licensed facility for disposal. When the demolition works in the dry works area are complete, the impermeable barrier will be removed and another dry works area will be established to cover the remaining portion of the bridge structure. The remainder of the bridge structure will be demolished and removed to a licensed facility for disposal. On completion of the demolition and required river widening, the dry works area will be removed and flow in the full width Slaney will be re-established.

3.5.2.3 Measures for Concrete Works

The use and management of concrete in and adjacent to the River Slaney SAC will be carefully controlled to avoid spillage. In addition to the principal environmental control measures noted in Section 3.7 , the following measures will be employed to reduce the risks associated with concreting works near or within a watercourse;

- On-site concrete batching and mixing activities will not be permitted. Concrete will instead be brought to site by a concrete truck where works are within this zone. Quick-setting concrete mixes will be used in order to reduce the risk of escape to the River Slaney SAC. Residues and wastes generated by concrete works and runoff from concrete working areas will be prevented from entering watercourses using a barrier which might include, reinforced silt

fence, double bagged cleaned sand bags (note earth embankments will not be permitted for this purpose due to associated sedimentation risk);

- Waste concrete slurry will be allowed to dry before removal and will be taken to a licensed waste depot for onward disposal. Concrete works will be scheduled during dry weather conditions to reduce the risk of runoff;
- Pumped concrete will be monitored to ensure no accidental discharge into the watercourses NPWS and IFI will be notified immediately of any concrete spills to the River Slaney SAC;
- Concrete mix trucks, pumps and equipment will not be washed down within 50m of a watercourse and must be within a designated bunded area or at a suitably designed and operated depot washdown facility. Wash water will be disposed of in accordance with waste legislation; and
- Only precast concrete pipes/units will be used in the installation of the pumping stations and culverts.

3.5.3 Temporary works areas for the Proposed New Road Bridge

The River Slaney is the main surface water feature within Enniscorthy. The Proposed Scheme includes for the installation of a new road bridge over the River Slaney. In addition, there is a requirement to span over Priority I Alluvial Forest Habitat on the Bare Meadows. The principal control measure is the avoidance of direct impact on this habitat. No works will occur within this woodland, the area will be marked out under the supervision of a woodland ecologist and temporary fencing will be set out prior to construction. To facilitate the construction of the bridge, tree toping of the woodland will be undertaken, measures will be undertaken by the Contractor to ensure that there is minimal disturbance to the ground, field and shrub layers within the woodland.

Control measures described above will be applicable to the construction works, whilst it is noted that the final construction sequence will be up to the appointed Contractor, notwithstanding this the following control measures will be implemented during the bridge construction;

- Before works commence on site drainage, erosion control and sediment control measures must be place and functioning;
- No instream works will be required to facilitate the construct of the proposed bridge;
- No works will be allowed to occur with the Alluvial Forest Habitat;
- Woodland Ecologist will supervise demarcation of temporary fencing;
- Works under the proposed bridge adjacent to the Alluvial Forest Habitat (extent of works area shown in Figure 14) will be limited to operations from a mobile platform Manlift;
- An ecological check of demarcation for works area will be carried out by the EnCoW in advance of site mobilisation; and
- Tree topping and associated works will be supervised by a woodland ecologist. Work will be carried out in winter period only.

3.5.4 New Road Bridge

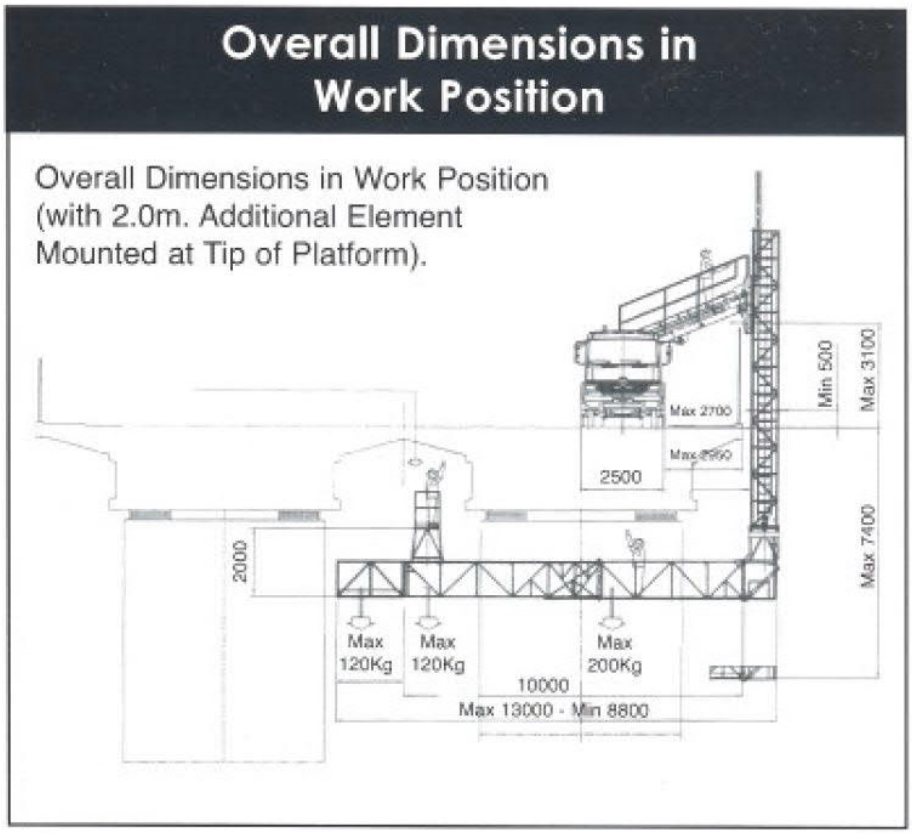
Construction of the new Road Bridge and approach roads will be carried out over an 18 month period. The construction activities will be sequenced into four primary work stages, these are summarised hereunder.

3.5.4.1 Stage1

Any vegetation will be removed, and the ground will be excavated to formation level for each of the piers/abutments.

Piles and pile caps will be installed at the location of each pier/abutment. Piers, abutments and wingwalls will be constructed and the pier/abutment excavations will be backfilled. Works under the bridge deck will be restricted to use of a mobile platform. Figure 4 below provides typical design of a mobile platform for works underneath the bridge deck.

Figure 3: Typical Design of a mobile Platform for works underneath the bridge deck



3.5.4.2 Stage 2

A works area is to be set up in the location of the playground, which is to be occupied temporarily, on the west bank. The western beams will be transported to this location. A crane will be set up in this works area to lift the western beams and bridge deck in to place. As these works are close to the railway line a possession will be required.

Similarly, a works area is to be set up on the eastern bank. The eastern and central beams are to be transported to this location. A crane will be set up in this works area to lift the eastern and central beams and the remaining bridge deck in to place.

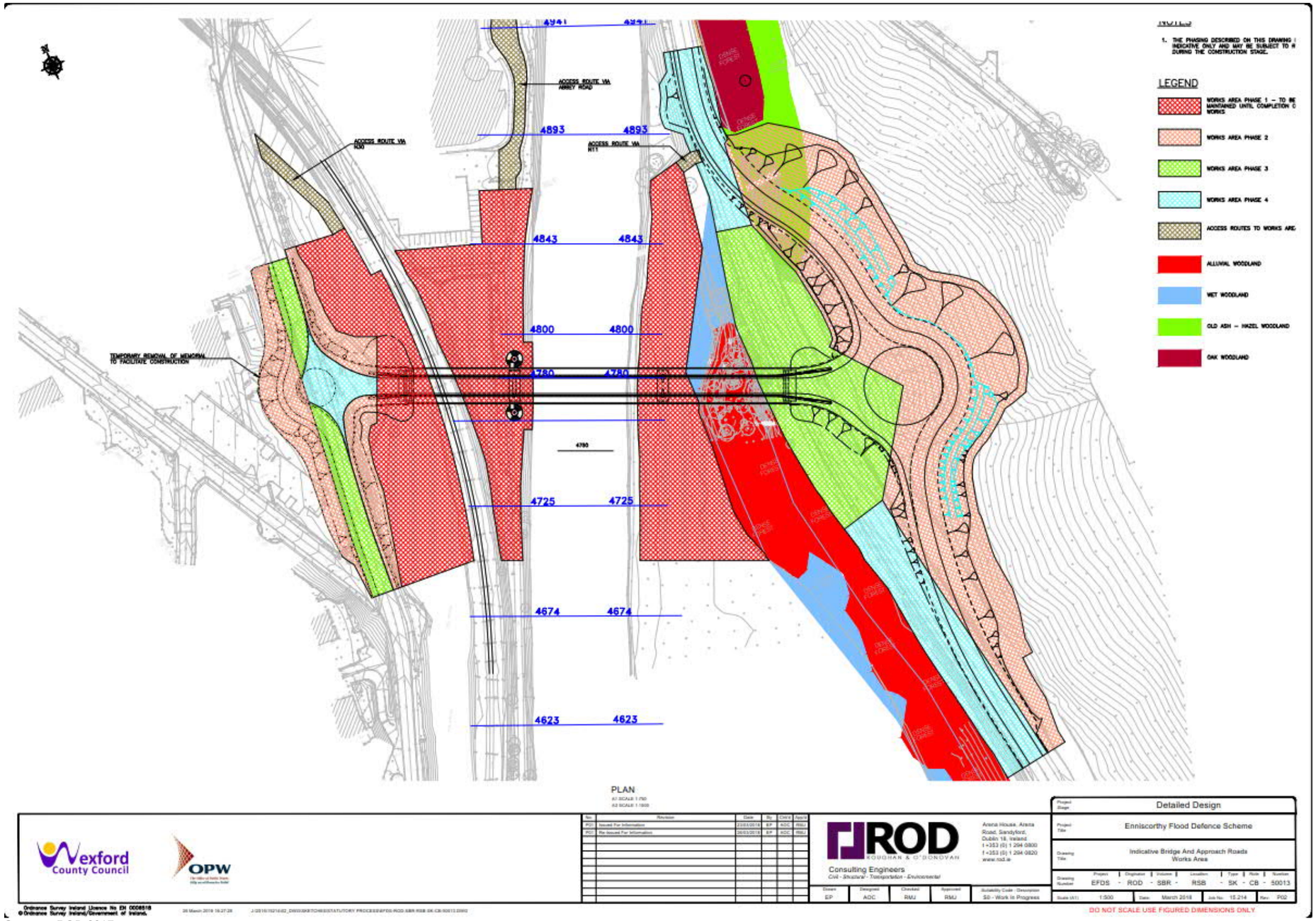
3.5.4.3 Stage 3

Parapets, lighting and safety barriers will be erected on the bridge deck. The bridge deck will be surfaced and the stairs to provide access to the river walk will be installed.

3.5.4.4 Stage 4

The playground and other works areas will be reinstated.

Figure 4: Extent of works areas will be limited to use of mobile platform (shown in cloud below)



Source: ROD 2017

3.5.5 Temporary works areas for River Slaney Instream Works

The river instream works will be required upstream of Enniscorthy Town, appropriately 0.9km upstream of the Railway Bridge, from river chainage 6600 to 5556, (upstream of Seamus Rafter Bridge and from river chainage 5125 to adjacent to the confluence with River Urrin), a total length of 2.1km. Additional information was provided from bathymetric survey of the channel. An area of the channel downstream of Seamus Rafter Bridge to river chainage 5556 to 5125 is no longer required to be dredged as shown below in magenta.

The proposed in stream works control measures have been designed to prevent environmental pollution and minimise sedimentation on the River Slaney SAC. The measures prescribed will be undertaken as best practice and are proven technologies/methods, and to this end the main works contract will utilise temporary dry works areas. The instream works will be carried out in a manner which will not impair the biological function of the waterbody and not impede more than half the width of the River Slaney. In setting the level of the barrier cognisance has to be given to the flood risk posed to the town by the creation of a dry working area. It is envisaged that a 2-3m high impermeable barrier (above bed level) will be used to divide the main channel and close off the works areas from the main channel river flow. Within each dry works area, the channel will be dredged to the required depth along one side only, thus maintaining half the river width for river flow at all times. This approach will ensure that flow will be maintained within the River Slaney at all times, and therefore should not impede upstream migration within the River Slaney. The dry works area shall be designed such that, when operational, all river flow is accommodated and that overspill into the isolated dry works area will not occur during normal flow conditions. Weather conditions will be monitored throughout the construction period by the Contractor. Works will not be carried out during extreme rainfall or high flow events.

The sheet pilling works will be carried out in the instream open season (between June-September only). The sequence of works is discussed in further below. It is expected that installation of piling for an area of approximately 1200m i.e. Area 1 will take approximately 1 week in duration.

Depending on the river levels within the river, the installation of the impermeable barrier will be carried out from a barge or the bank. The barge and the equipment used on them can be lifted into place in the river by a crane.

Once in the river, the barge is positioned with a boat. When the barge is in the required position, the position is held by slowly lowering three (or four) legs into position on the river bed. When the barge is standing in the river in this way the enabling works can commence. An image of a typical barge is provided in Figure 5.

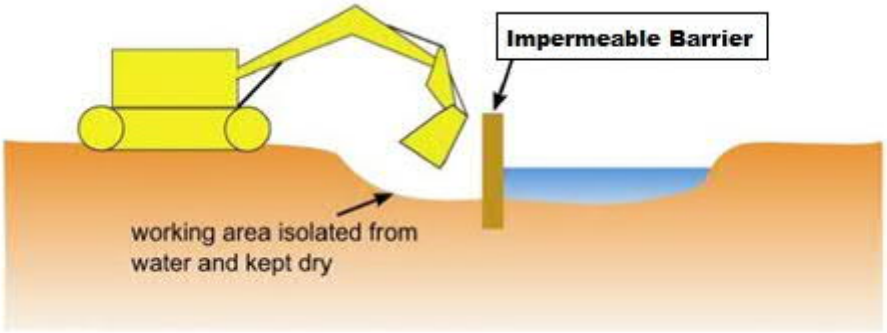
Figure 5: Image of typical Jack up barge

Figure 6: Typical image of dry works area along an extent of the river channel

3.5.5.1 Instream Dry works area;

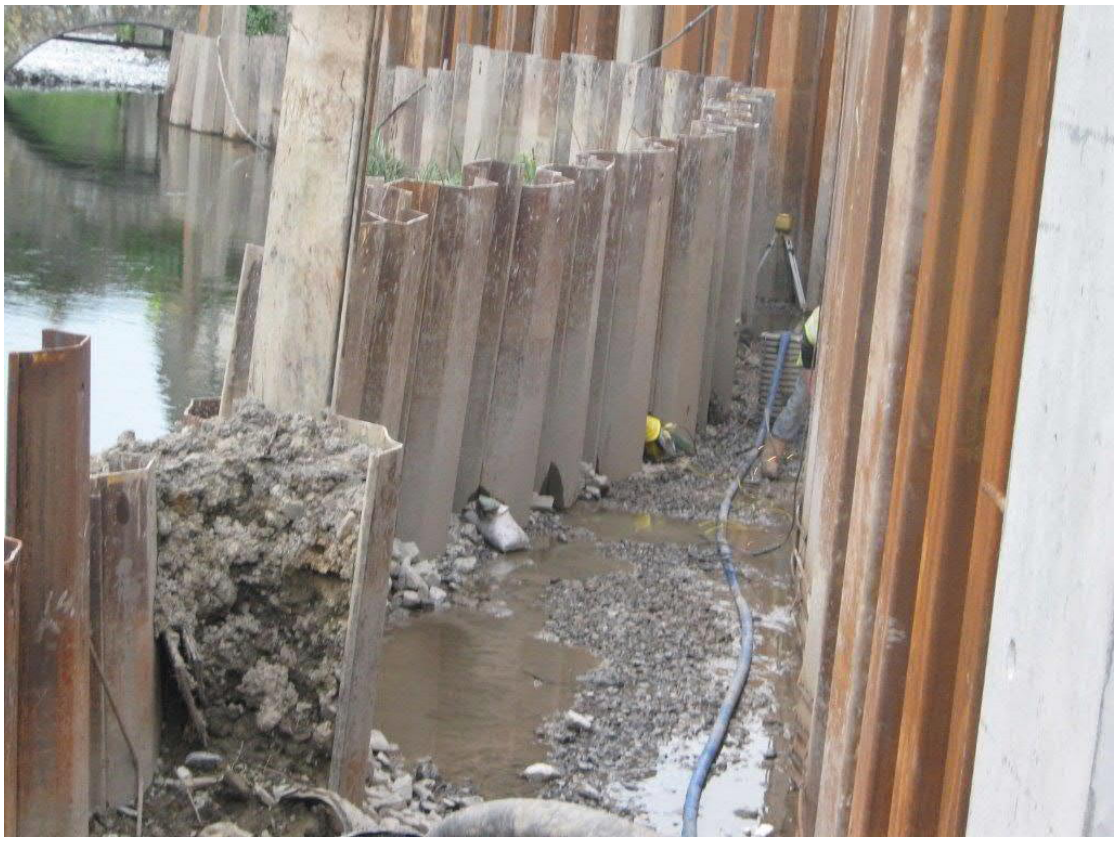
1. A 2-3m high (above bed level) impermeable barrier will be used to close off the works areas from the main channel river flow. The impermeable barrier will be constructed from upstream to downstream along the centreline of the river along the extent of the works area. In order to maintain flow in the River Slaney, work will be limited to one side of the channel at one time only. Figure 7 and Figure 8 below illustrates how partial area of the channel is isolated and kept dry with the use of an impermeable barrier. The possible sequence of works is illustrated in the accompanying drawings (Ref: MMD-355741-C-DR-N-XX-0013 and MMD-355741-C-DR-N-XX-0014 in Appendix A). The proposed piling sequence is noted alphabetically (A-J) on the drawings. The progression of instream works areas are noted numerically on the drawings.

Figure 7: Example of Partial isolation of the river channel (partial area of the channel is isolated and kept dry with the use of impermeable barriers and flow is allowed to continue in the remainder of the channel. Barriers used to isolate part of the channel can be made of a number of different materials. The type of barrier will be defined by the Contractor



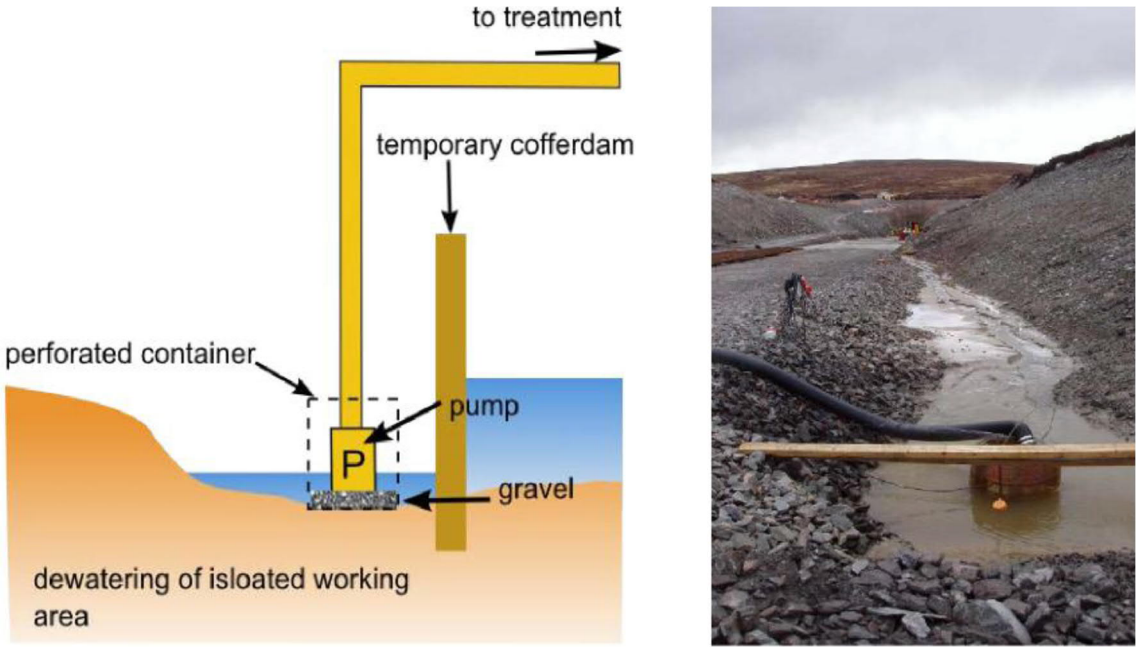
Source: http://www.sepa.org.uk/media/150997/wat_sg_29.pdf

Figure 8: Example of typical steel piling impermeable barrier used within a river channel



2. In the first instance the impermeable barrier A will be installed in Area 1 (from Seamus Rafter Bridge to the upper end of the river works).
3. The upper extent of the river channel in excavation Area 1 area closed off with the installation of an impermeable barrier from the river bank to the barrier at the centre line of the river (impermeable Barrier B). It is expected that the water downstream of the upstream barrier will be diverted and flow along the open side of the channel, therefore it is expected that the majority of the flow downstream of the upstream barrier will clear prior to completing the downstream tie in with the bank at the lower extent of the works area.
4. Following the completion of the downstream tie in with the bank (Impermeable barrier D), any fish, lamprey and other aquatic species will be carefully removed under supervision of a qualified ecologist and returned to the flowing section.
5. The remaining water is pumped out of Area 1 to allow excavation to take place. The work area must never be de-watered directly into the main channel. The removed water will receive on site treatment before discharge.
6. De-watering will be carried out by mechanical pumping. Dredging/widening and infilling works within each Area will be carried out simultaneously by mechanical plant.
7. Water levels are maintained in Area 1 and Area 3 by pumping from a sump in that area to the Slaney via two 8m^3 settlement tanks. The pump will be placed in a screened/filtered to ensure any species that were not manually removed are not sucked up into the pump.

Figure 9: Example of typical pump intakes, on the left is a submersible pump sump and the right is a pump located in a perforated barrel (suitable size filtered will be also attached to ensure any specimens (e.g. lamprey, ammocoetes) are not sucked through the pump



Source: http://www.sepa.org.uk/media/150997/wat_sg_29.pdf

8. The works will likely be carried out using a fixed arm articulated bucket excavator or similar. As mentioned above, works will be carried out from dry works area. Biosecurity measures and best practice control measures will be engaged at all times.
9. The dredged material from Area 1 and Area 3 will be loaded into dump trucks driving on the river bed in Area 1 and will be transported directly to the deposition area upstream in Area 1 (located on the North Island). No works or access will be allowed outside of these routes. The dump trucks shall return to the work area by the same route.
10. When the works are complete in Area 1 and 2 the excavation operation will move to area 4 located next to the left bank upstream of Seamus Rafter Bridge.
11. The piles from Impermeable barriers D and B will be removed in that order.
12. Piles will be placed at location C. When the water levels fall in Area 4 the impermeable barrier E will be installed upstream of Seamus Rafter Bridge.
13. Area 4 will be dewatered in a similar fashion to Area 1.
14. Material will then be excavated from Areas 4 and 5. Some of this material will be deposited on the right bank where infilling is required upstream of the Irish Rail Bridge. The remainder will be transported to the deposition area and deposited or treated as required. Access will be gained to this area over a temporary bridge over the flowing section of the Slaney.
15. When the excavation is complete in Areas 4 and 5 the impermeable barriers E, A and C will be removed in that order.
16. In the summer season following the completion of the excavation works upstream of Seamus Rafter Bridge the excavation will take place downstream of this bridge. Sheet piles will be installed along the river centreline from Seamus Rafter Bridge to the confluence of the Slaney and the Urrin to form Impermeable Barrier F. Dry Works Area 6 will be closed off to flow by the completion of impermeable barriers G and H upstream and downstream of the works area.

17. Material contaminated with Invasive Species will be excavated from Area 7 from the road in accordance with the methodologies set out in the invasive species management plan. This material will be taken by road to the deposition area on the North Island where it will be treated in accordance with the management plan.
18. When the contaminated material has been removed the remaining material from areas 6 and 7 will be excavated from the river bed, loaded into dump trucks and transported off site to a licensed facility via a temporary access bridge to the Bare Meadows and the N11.
19. When the excavation in Area 6 and 7 is complete, the impermeable barriers H and G will be removed in that order.
20. Impermeable barriers I and J will be installed to create dry works area 11.
21. Dry works area 11 will be dewatered as outlined above.
22. Excavated material potentially contaminated with invasive species will be excavated from Areas 8 and 11 and will be transported to the deposition area for treatment. The remainder of material excavated from these areas will be taken to a licensed facility via the bare meadows and the N11.
23. The bank material downstream of the dry works area on the Bare Meadow (Areas 9 and 10) will be loaded onto a barge and transported to the designated access point on the Bare Meadows prior to removal to a licence facility via the N11.
24. The identified access routes will be clearly demarcated prior to construction and will be followed by any crew engaged in the works.

3.5.6 Dewatering Works Areas

The proposed impermeable barrier will tie into the upstream bank positions in the first instance, thereafter the downstream bank tie positions. Water will flow out of the dry works areas at the downstream end of the areas with the falling tide. Therefore, it is expected the majority of the flow downstream of the upstream barrier will clear prior to completing the downstream tie ins with the banks. There is still likely to be some level of water ingress therefore any remaining or inflowing water will be pumped out of the dry area to allow works to take place, in a phased approach. Further details on the typical approach taken in provided below.

Any disturbed sediment within the closed area will settle in advance of dewatering. Dewatering will be carried out in a controlled manner to prevent environmental pollution and minimise sedimentation.

A fish salvage programme will also be undertaken prior to isolation and dewatering of the required sections of the river. The EnCoW will consult with Inland Fisheries Ireland on the implementation and timing of the fish salvage programme. Fish, lamprey and other aquatic species will be carefully removed under supervision of a qualified ecologist and where appropriate, returned to the flowing section of the River Slaney. Specific ecological measures in relation to each species and habitat are discussed in Chapter 6 Biodiversity within the project EIAR and are summarised in Section 3.7 of this Plan.

Dewatering will involve two distinct elements 1) removal and collection of water from the area, and 2) treatment and disposal of the collected water. The dewatering technique used will aim to reduce the amount of sediment extracted at source e.g. by dewatering through a filter. The water removed from the areas will be treated to remove sediment to an acceptable level (less than 25mg/l suspended solids), before being discharged. The works area will never be de-watered directly into the main channel. De-watering will be carried out by mechanical pumping. Water levels are maintained in dry areas by pumping from a sump in that area to the river, via an onsite water treatment system. The micro siting of the sump within each dry works area will be dependent on site conditions encountered, and the siting of the sump area will be carried out in consultation with the EnCoW.

Daily monitoring of all control measures will be required and will carried out by the EnCoW to assess the effectiveness of the measures including onsite water treatment system, to carry out maintenance, and to determine if there has been any damage /breach to the control measure. Daily inspections of the impermeable barrier will also be carried out the Contractor.

When the instream works are complete in an area the impermeable barrier will be removed from the river and flow will be reinstated. The following is an outline of the sequence ow works required to establish the dry works areas and to carry out the excavation activities. Please refer to the drawings in Appendix A for details of the areas described below.

3.5.7 Permanent Depositional Zone on the North Island

It will be necessary to transport excavated material from the areas upstream of Seamus Rafter bridge to the North Island where it will be placed in the North Island deposition area. To facilitate the construction of the permanent deposition of material on the North Island, topsoil from the designated area will be removed in a phased approach and placed in temporary stockpile. Depositional material will be placed on exposed subsoil and compacted with compaction plant (roller). 300m of the stored topsoil will be placed on the compacted dredged material and reseeded with an approved grass mix. The volume of material to be deposited on the North Island is approximately 124,300m^3. The depositional zone is expected to be engineered with a 1:2 slope approximately 1.5m above the existing ground levels. Approximately 95,700m^3 of material will also be disposed off site at a licenced facility.

The management of the depositional zone to prevent siltation through runoff will be required with the final measures to be determined by the Contractor in consultation with the EnCoW, the following text describes the control measures that will be put in place for the depositional zone;

- Deposition of material will only commence following the establishment of the dry work area along the eastern side of the River Slaney. The bank along the eastern section of the River Slaney will be prepared, topsoiled and seeded first to all, following this work will progress eastwards towards the centre of the island. This approach will ensure the establishment of material adjacent to the River Slaney in the first instance prior to removing the impermeable barrier and commencing works on the western side of the River Slaney;
- Stockpile topsoil material will be located at a minimum 5m from watercourses;
- Such material will be confirmed to be free of invasive plant material such as Japanese knotweed;
- All stockpiled topsoil will be covered in order to prevent surface water runoff;
- Stockpile topsoil will be surrounded with a cut off ditch to contain the water run off;
- Material excavated from the areas downstream of Seamus Rafter Bridge that are potentially contaminated by invasive plant species will be transported to the North Island for treatment in accordance with the Invasive Species Management Plan The other material excavated from the areas downstream of Seamus Rafter Bridge will be taken off site for disposal to a licensed facility via the Bare Meadows and the N11.

3.6 Consents and Licences

Should the scheme be confirmed by the Minister of Public Expenditure and Reform, a schedule of conditions will be appended to the Contractors CEMP.

Necessary derogation licences and consents will be sought from the appropriate statutory authorities and granted in advance of the works. Site vegetation clearance works will not be carried out during the period 1st March to 31st August, coinciding with the bird-nesting season.

Where appropriate, pre-construction monitoring baseline ecological and archaeological surveys as conditioned within the project confirmation will be carried out and reported. All works will be carried out in accordance with conditions as set out within the appropriate licences.

3.7 Environmental Control Measures

The following sub sections detail the minimum control (mitigation) measures that will be implemented prior to commencement and throughout the duration of the works. These controls are set out under the headings that correspond to the EIAR. The controls will be adhered to during the construction phase of the development, as applicable. it should be noted that this document should be read in conjunction with both the EIAR and NIS.

Works will not be carried out during extreme rainfall or high flow events. Met Éireann provides a 5-day weather forecast via its website (www.met.ie). The Contractor will monitor this and other appropriate weather forecasts on a regular basis, at least daily.

As detailed in Section 1.3, the detailed Method Statements to be prepared by the appointed Contractor will incorporate the control measures detailed in this CEMP in addition to specified conditions that may be prescribed in any grant of Ministerial consent for the project, measures outlined in the NIS and the EIAR and any other commitments given by OPW/Wexford County Council in relation to environmental protection associated with the activities set out in this document.

A table listing the complete suite of control measures together with the relative specification and evidence of how each commitment will be met will be set out in the contractors CEMP. An example of the layout of this table is provided below. Details will be populated by the appointed contractor.

Table 1: Example Environmental Controls

Environmental Control	Legislation/ Specific Ref	Action Owner	Evidence	Target Date	Close Date
Noise and Vibration	EIAR Chapter 12	EnCow/Noise Specialist/ Site Manager/	Method Statement/ construction noise /vibration management plan/ Public and Stakeholder Engagement Communication Plan	Ongoing	End of Contract
To be populated by the appointed Contractor	To be populated by the appointed Contractor	To be populated by the appointed Contractor	To be populated by the appointed Contractor	To be populated by the appointed Contractor	To be populated by the appointed Contractor

The following subsections address the environmental controls as set out in the EIAR/NIS.

3.7.1 Population and Human Health

As noted above, all works will be carried out having regard to international and national legislation, and best practice guidance, including but not limited to guidance on preventing pollution from construction sites and pollution prevention guidance.

Prior to any demolition, excavation or construction a Construction Environmental Management Plan (CEMP) will be set out by the appointed Contractor. The CEMP will set out the Contractor's

overall management and administration of the construction period. The CEMP will be prepared by the Contractor during the pre-construction phase to ensure commitments included in this EIAR in addition to specified conditions that may be prescribed in the confirmation for the project, and any commitments given by WCC in relation to environmental protection associated with the construction phase.

The Contractor will be obliged to provide the following information in the CEMP *inter alia* under the following headings:

- Details of working hours and days;
- Details of emergency and Incident Response (IRP) plans in place;
- Details of chemicals/fuel storage areas (including location and bunding to contain runoff of spillages and leakages);
- Details of construction plant storage;
- Construction Traffic Management Plan;
- Dust Management Plan;
- Landscape Planting Plan;
- Incident Response Plan (IRP);
- Ecological Management Plan to include but not limited to Water Quality Monitoring Plan, Floating River Vegetation (FRV) Mitigation Plan, Sediment Management Plan, and Instream rehabilitation / enhancement programme;
- Construction and Demolition Waste Management Plan;
- Construction Noise Management Plan; and
- Project Procedures and Method Statements for each phase of the works.

The Contractor will be required to develop and implement a Public and Stakeholder Management and Communication Plan and will be required to be agreed with WCC prior to construction phase. Specific measures to mitigate potential significant impacts on human health (i.e. noise, dust, air and traffic are dealt with separately in this CEMP and the project EIAR. The Plan will ensure that these are incorporated. Local residents and businesses within the surrounding area will be notified in advance of any disruptions to services in the area;

The Environmental Operating Plan (EOP) will be developed and updated by the Contractor during the project construction phase and will be limited to setting out the detailed procedures by which the mitigation measures proposed as part of the EIAR and NIS in addition to specified conditions prescribed in the confirmation. The EOP will set out the Contractors approach to managing environmental issues associated with the construction of the proposed scheme and provide a documented account to the implementation of the environmental commitments set out in the EIAR and NIS. The Plan will include the following information;

- Documentation of all commitments set out in the EIAR and NIS and conditions set out for the confirmation;
- List of all applicable environmental legislation requirements and a method of documenting compliance with these requirements; and
- Outline methods by which construction works will be managed to avoid, reduce or remedy potential adverse impacts on the environment.

3.7.2 Biodiversity

The following are the minimum ecological mitigation measures that will be implemented prior to commencement and throughout the duration of the works. Control measure which will need to be implemented during the construction phase to ensure that the works are completed in an

environmentally responsible manner. The ecological mitigation measures having regard to the proposed construction activities are detailed within Chapter 6 Biodiversity of the EIAR and the project Natura Impact Statement. Site specific mitigation measures are summarised below, it should be noted that this document should be read in conjunction with both the EIAR and NIS.

3.7.2.1 Habitats

The following measures will be implemented to protect habitats within the scheme extents. Additional measures are detailed for Annex 1 habitats in Sections 3.7.2.3 to 3.7.2.6 below.

- Demarcate the working area prior to the commencement of works to reduce disturbance and damage to adjacent habitats;
- Areas of temporary habitat loss will be reinstated. The deposition area in the northern floodplain will be re-seeded with a dry calcareous and neutral grassland seed mix and compound channel replanting will include Reed Canary grass *Phalaris arundinacea* and Branched Bur-reed *Sparganium erectum,* and planting along the back channel. A detailed Habitat Management Plan will be developed prior to commencement of works;
- The current grazing regime in the northern and southern floodplains will continue post works to maintain the existing grassland characteristics; and
- The provisional Invasive Species Management Plan will be updated by the Contractor to form the detailed Invasive Species Management Plan which will form part of the Contractors EOP for the proposed scheme.

3.7.2.2 Water Quality

Mitigation measures protecting the water quality of the scheme's hydrological environment are included in Chapter 7 of this EIAR. Mitigation measures below include standard mitigation measures will be employed during the construction phase of the proposed scheme. Chapter 7 may include additional measures that are not covered in this section.

- Pollution control measures will be designed, installed and maintained in accordance with CIRIA guidance for 'Environmental Good Practice on Site' (C741) and 'Control of Water Pollution for linear construction projects'. Technical guidance (C648) and under the supervision of an EnCoW. Measures include but are not limited to the following;
  - Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles /equipment will take place in designated bunded areas within the temporary storage yard, where possible, and not on-site. Bund specification will conform to the current best practice for oil storage such as 'Best Practice Guide BPGCS005 Oil Storage Guidelines,' Enterprise Ireland.
  - All waste oil, empty oil containers and other hazardous wastes will be disposed of in conjunction with the requirements of the Waste Management Acts 1996, as amended.
  - Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.
  - The risk of pollution of the watercourses from losses of mortar and concrete must be managed and controlled in accordance with IFI Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters and with CIRIA C532: Control of water pollution from construction sites Guidance for consultants and contractors.
  - A visual inspection of all watercourses, downstream of the works areas shall be conducted daily. Visual inspection should show no indication of increased sediment deposition on the watercourse bed and no visible hydrocarbon film.

- In order to avoid the risk of pollution of the River Slaney SAC, fuelling and lubrication of plant and equipment will not be permitted within 50m of a watercourse.
- Exposed areas of soil within works areas which are located within 5m of a drainage ditch will be covered with a soil erosion protection (e.g. erosion control blanket/ mat), soil erosion must be installed in accordance with the manufacturers specification and must be installed immediately following the exposure of works areas to soil erosion and continued to be maintained in place until works are complete and the soil has been re-established.
- Silt control curtains/straw bales cannot be used in naturally-flowing permanent water courses as they are likely to be quickly overcome. In addition, the establishment of dry works areas as shown on the accompanying drawings in Appendix A of the EIAR and the phased approach to the deposition of material on the island will prevent siltation through runoff. It is also proposed that a silt fence will be required at the perimeter of the flood defence walls works areas and including around the perimeter of soil depositional zone located within 5m of the back channel. This fence will be installed in accordance with manufacturers specifications and must be installed prior to commencing the works. The silt fence will have the following design features;
  - The geotextile fabric must be entrenched at least 100mm into the ground with ends upturned;
  - The fence posts will have a maximum spacing of 2m to prevent sag on the fence; and
  - The geotextile fabric will be anchored to the fence posts as opposed to wrapped.
- The location of the fence will be set out in agreement with the suitably qualified/experienced EnCoW. Daily inspections of the silt fences will be carried out by the EnCoW to assess the effectiveness of the measure, to carry out maintenance, and to determine if there has been any damage/breach to the control measure. The silt fence will be also inspected immediately following heavy rainfall or strong winds. Where repair is necessary, this will be carried out immediately and may require replacement of any damaged/degraded material.
- Accumulated silt will be removed regularly from the base of the silt fences. Silt will not be permitted to build up such that it reaches half the height of the fence or exceeds 15cm in height (whichever is the lesser value). Commercially available fences will show a maximum height which should not be exceeded. Silt fences must remain in place until the disturbed areas within the sites have been reinstated and revegetated. Silt fences must only be removed during dry weather and following approval of the EnCoW. Any accumulated silt along the fence must be removed immediately in advance of removing the silt fence from the site. The removal of the silt fences will be carried out under the instruction and supervision of the EnCoW.
- Daily monitoring of all control measures will be required and will carried out by the EnCoW to assess the effectiveness of the measures including onsite water treatment system, to carry out maintenance, and to determine if there has been any damage /breach to the control measure. Daily inspections of the impermeable barrier will also be carried out the contractor.

- Installation of the impermeable barrier will be carried out in the instream open season between June-September only.
- A Water Quality Monitoring Plan will be developed prior to the commencement of works. Daily visual inspections and trigger thresholds will be set up, above these thresholds works will be directed to stop until parameters return to baseline conditions. Weather conditions will be monitored throughout the construction period by the contractor. Works will not be carried out during extreme rainfall or high flow events.

- When the instream works are complete in an area the impermeable barrier will be removed from the river and flow will be reinstated. Prior to removing the barrier, the new river beds will be scarified to minimise the de-compaction of the river bed, this will be carried out by a toothed bucket of an excavator. The removal of the barrier has the potential to increase the turbidity levels directly downstream of the works areas. This increase is considered to be temporary and flushing would occur. As noted previous the use of silt control measures in a permanent watercourse if not effective and as such the programme of removal will be carried out to minimise turbidity levels downstream and levels will be monitored and works will stop where exceedance are recorded and recommence only following consultation with the EnCoW.

3.7.2.3 Annex I habitat- Alluvial Woodland [91E0]

- The bridge will span an area of Annex I priority habitat - alluvial woodland. The construction area to be marked out prior to construction under supervision of a woodland ecologist. Any fencing installed should not cause damage (temporary fencing may be best). The fencing should include the wet ditch adjacent on the western side of the woodland.
- Other than the works specified in the project design, no construction work, storage or dumping of material to be undertaken in the 91E0 exclusion area.
- Tree pruning to be undertaken in late winter/ early spring (November to March) under supervision of a woodland ecologist. This includes the initial tree-pruning during construction and maintenance pruning works post construction.
- Measures to be taken during tree pruning (during construction and ongoing maintenance) to ensure that there is minimal disturbance to the ground, field and shrub layers in the 91E0 woodland by the contractor. Work to be supervised by woodland ecologist.
- During construction work, dead wood should not be removed from site. Branches and wood removed during pruning activity (during construction and ongoing maintenance) to be placed in various locations within the woodland (as advised by a woodland ecologist) to increase the dead wood present.
- No landscape planting within or adjacent to woodland.
- Area of woodland along the eastern bank will be removed here. This is adjacent to an area of Annex I priority habitat 91E0 alluvial woodland. The alluvial woodland will be protected during construction and may need temporary fencing which should be erected under supervision of woodland ecologist.
- No construction work, storage or dumping of material to be undertaken in the 91E0 exclusion area.
- Monitoring and condition assessment of 91E0 woodland and, if necessary, invasive species management. This should be undertaken for a minimum of five years as some impacts (e.g. spread of invasive species), may not be immediately apparent. The results of the 5 years of monitoring should be used to assess whether further monitoring or management action is required (e.g. if the monitoring relevé(s) fail or shows an unfavourable trend.

3.7.2.4 Annex 1 Habitat- Floating River Vegetation 3260]

- A final Floating River Vegetation (FRV) mitigation plan will be created by an experienced macrophyte ecologist once contractors are appointed (and construction plan finalised). The outline of what this plan must include as a minimum is as follows and in the points below: 1) identification of areas where macrophyte vegetation can be protected during construction works, e.g. 'buffer' zones' at edge of channel where no widening/ dredging is to be undertaken (to facilitate recolonisation post construction); 2) areas with low cover of Elodea species (less than 5% cover) where the top level of sediment can be removed and stored dry

for replacement post-dredging, 3) any other relevant measures. This will be undertaken by specialist macrophyte ecologist;

- The top 10cm sediment will be removed from selected areas pre-dredging. These areas will be identified during pre-construction surveys. Sediment will only be removed from areas with less than 5% cover of Elodea species (as identified by grapnel or other suitable survey method undertaken by an experienced macrophyte ecologist). Sediment will be stored dry, away from the riverbank. Post-dredging, this will be replaced in dry works areas which will be dredged to a depth of greater than 10cm. The 'source' sediment areas and 'recipient' areas will be clearly identified in the Floating River Vegetation mitigation plan;
- In-stream works will be undertaken from July to December each year. As the period of July to September is during the main growing season for FRV, some works will be undertaken in the growing season. However, as all aquatic plant material will be removed from each dry works areas and regeneration will be from the propagule bank and recolonisation from upstream/ adjacent areas (once the central barrier is removed), this will not impact vegetation recolonisation. Growth of aquatic macrophytes in the early growing season (May to June) will ensure that there is recent vegetative material in the sediment of each dry works area, prior to works. As only half the channel will be disturbed at any one time, there will always be some FRV regeneration during the construction period;
- The top layer of sediment and any macrophytes present in each dry works section to be removed and stored away from the river. Sediment from areas with low Elodea cover will be stored dry and replaced post-dredging as outlined above. All other sediment will be disposed of away from the river. This is to prevent sediment and fragments of invasive macrophyte species being transported downstream to *Callitriche truncata* sites; and
- Measures to restore sediment after compaction during use as dry works area. Monitoring of recovery of FRV vegetation within scheme area. This should be continued until the 2016 distribution FRV is achieved and the vegetation is typical of the 2016 species composition (species and relative abundance). This may require annual surveying for up to and beyond five years as FRV populations can fluctuate.

3.7.2.5 Downstream populations of *Callitriche truncate*

- Proven sediment control measures and instream monitoring during construction will be developed as part of a Sediment Management Plan included within the Construction Environmental Management Plan (CEMP) and implemented accordingly during the works to minimise and contain any silt plumes travelling downstream when dry works areas are re-flooded. This is to prevent silt travelling downstream and depositing on *Callitriche truncata* sites. This is likely to include monitoring at 500m, 1km and 1.5km downstream of the works, this threshold could be monitored hourly or as frequently as required and works suspended if thresholds are exceeded;
- Monitoring of the three *Callitriche truncata* sites closest to the proposed scheme extent (Bormount House (1,2) and Edermine Bridge (3)) and the closest site where *Callitriche truncata* has most recently been recorded (c. 6.3km downstream from the proposed scheme near Jamestown Nature Reserve). The aim is to monitor the condition of the habitat, with particular attention to the presence and abundance of non-native invasive macrophytes and any negative impacts of siltation. The results of the 3 years of monitoring should be used to assess whether further monitoring or management action is required (e.g. if the monitoring shows an unfavourable trend in habitat condition or population). This will only be undertaken if pre-construction surveys record the presence of *Callitriche truncata* populations in these sites; and

- Although *Callitriche truncata* was not recorded during 2016 surveys, pre-construction surveys up to 2km downstream of the scheme extent (e.g. historic sites at Bormount House and Edermine Bridge) will be carried out to identify any new records of this species within the scheme zone of influence.

3.7.2.6 Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]

- 91A0 Annex I habitat to be fenced prior to construction to protect remaining habitat (91A0 exclusion area). This must be undertaken under supervision by a woodland ecologist who can identify the 91A0 habitat area. The fence should remain in place during operation to prevent recreational disturbance within the 91A0 woodland.
- No construction work, storage or dumping of material to be undertaken in the 91A0 exclusion area.
- No landscape planting within or adjacent to woodland.

3.7.2.7 Otters

- Pre-construction surveys will be carried out to identify any new otter holts/resting places within the scheme extents and monitor existing holts/resting places to determine if active.
- Prior to the commencement of works, a 20m buffer will be demarcated around active holts to reduce disturbance.
- Prior to the commencement of works, signage will be erected if necessary along the haul route to raise awareness of otter.
- Limit hours of construction lighting and use of directional lighting with minimal lighting over riparian habitats.
- Include the provision of mammal ladders in dry works area in main river channel so any trapped otter or other mammal can escape.
- In line with the derogation licence, if required construct artificial otter holt along the new back channel in the northern floodplain during re-profiling and habitat enhancement works.

3.7.2.8 Bats

- Carry out pre-removal checks of trees and structures identified as Potential Roost Features (PRFs).
- If necessary pre-removal roost emergence/re-entry surveys at trees and structures identified as PRFs may be required to determine use of the feature by bats.
- If bats are recorded using these trees or structures and in line with a derogation licence, the provision of bat boxes along dark corridor of new road bridge, new pedestrian bridge and along the restored back channel will be included
- Ensure the provision of the back channel restoration works in the northern floodplain includes habitat features suitable for commuting, foraging, and potentially roosting bats.

3.7.2.9 Birds

- An artificial nesting wall will be provided for Sand Martins on the east bank of the Slaney at CH 6280 – 6300, at the approximate location of the colony recorded in 2003 (Goodwillie, 2003, Appendix 6 of River Slaney (Enniscorthy) Drainage Scheme Environmental Impact Statement, 2009) and is detailed in Drawing 355741-MMD-01-XX-DR-S-0050. The wall design is based on the UK Environment Agency Best Practice Guidelines for artificial bank creation for Sand Martins and Kingfishers (Hopkins, 2001). The wall will be built within the dry works area scheduled for year 1, using in-situ cast concrete. Nest holes 50mm diameter

will be drilled through the wall, with a slight slope of 1:60 downwards towards the river, to allow drainage of nest chambers. Sixty nest holes will be provided.

- The detail design of the nesting structure will be carried out in consultation with the EnCoW to ensure the successful occupancy by Sand Martins and longevity of use of the nesting structure. The detailed design will have regard to the installation of wing walls at the upstream and downstream ends of the wall, installation of measures to prevent tall vegetation becoming established at the base of the wall.
- Construction-phase monitoring of Sand Martin nesting at the northern floodplain will be developed as part of a construction monitoring plan. It is recommended that annual monitoring continues until the third year after the completion of construction, so that the effectiveness of the mitigation provided can be assessed and any future management requirements determined and implemented.

Mitigation measures for Kingfishers

- A detailed landscape planting plan will be set out in consultation with the suitably qualified/experienced EnCoW and the project landscape architect. The plan will seek out planting opportunities within the works area for planting willow and alder to facilitate perching habitat for Kingfisher. Wherever possible, it is recommended that existing river bank willow scrub and Alder trees are coppiced and retained or replaced along the river bank i.e. along the Back Channel, North Island and on the west bank of the River Slaney between CH 4350 and CH 4600. It is recommended that Alder whips are planted in any gaps, and that native genetic stock is used. This mitigation measure is also a mitigation measure for the retention of visual screening.

Mitigation measures to enhance bird habitat in the restoration of the North Island Back Channel

- A detailed landscape planting plan will be set out in consultation with the suitably qualified/experienced EnCoW and the project landscape architect. The plan will seek out planting opportunities along the existing back channel as detailed here to facilitate riparian habitat establishment and enhancement for birds. Reed Canary grass *Phalaris arundinacea* and Branched Bur-reed *Sparganium erectum*, which are dominant marginal plants along the existing back channel, are beneficial to Mallard and Teal providing a food resource in autumn and winter, cover for broods during the breeding season, and good invertebrate habitat. These plants are suitable to growing in submerged conditions and grow in water up to 1m deep. It is recommended that rooted plant material is transplanted on newly worked back channel margins into soft un-compacted soil along the waterline in late spring when plants are in active growth. Plants establish quickly in these circumstances and root growth will assist in stabilising the back channel and reducing potential downstream siltation impacts. Additionally, where possible Willow, Birch and Alder will be planted where tree cover is required along the riparian edge of the back channel.

Mitigation measures to enhance vegetation and waterbird habitat recovery rates in proposed compound channels

- A detailed landscape planting plan will be set out in consultation with the suitably qualified/experienced EnCoW and the project landscape architect. The plan will seek out planting opportunities along the existing back channel as detailed here to facilitate riparian habitat establishment and enhancement for birds. Reed Canary grass *Phalaris arundinacea* and Branched Bur-reed *Sparganium erectum*, which are dominant marginal plants along the existing back channel, are beneficial to Mallard and Teal providing a food resource in autumn and winter, cover for broods during the breeding season, and good invertebrate habitat. These plants are suitable to growing in submerged conditions and grow in water up

to 1m deep. It is recommended that rooted plant material is transplanted on newly worked back channel margins into soft un-compacted soil along the waterline in late spring when plants are in active growth. Plants establish quickly in these circumstances and root growth will assist in stabilising the back channel and reducing potential downstream siltation impacts. Additionally, where possible Willow, Birch and Alder will be planted where tree cover is required along the riparian edge of the back channel.

Mitigation measures to reduce siltation impacts arising from compound channel works downstream of the River Urrin

- Control measures will need to be implemented during the construction phase to ensure that the works are completed in an environmentally responsible manner. Silt control measures cannot be used in naturally flowing permanent water courses as they are likely to be quickly overcome. All instream works will be carried in a dry works area. The management of silt during the construction works will set out in the CEMP and agreed with the suitably qualified/experienced EnCoW.

Mitigation measures to identify and minimise hydrological impacts on wetland habitats important for waterbirds on the Bare Meadow

- The compound channel in the Bare Meadow has been designed so that the existing profile of the riparian edge level and existing soils profile is recreated. The design of the bankside will have regard to dimensions and vegetation cover of the existing riparian edge and will be replicated as part of the construction works following consultation with the suitably qualified/experienced EnCoW. This mitigation measure will also ensure the retention of existing visual screening of waterbirds from disturbance arising from recreational boating and canoeing on the River Slaney.

Mitigation measures to minimise disturbance to waterbirds in the southern floodplain

Bridge works area

- The bridge works area will be fenced off during set-up of this temporary works area, and no construction machinery will be permitted to enter the Bare Meadow.

River dredging and compound channel works

- Works will be restricted in the southern floodplain between October-May inclusive to protect waterbirds using the wetland habitats during the winter and nearby nesting Grey Heron from disturbance. Instream works in the western section of the river channel will be carried out in June and July and in the eastern side will be carried out in August and September, by which time any late brood Grey Herons are expected to have fledged and juveniles relatively mobile and independent.
- The proposed schedule of channel widening and dredging works in the southern floodplain is set out in Chapter 4 of this EIAR. Instream works adjacent to the southern floodplain will commence at the downstream end, in order to limit the duration of disturbance impacts to waterbirds on the Bare Meadow. following re-watering of the channel, all access to the impermeable barrier for monitoring and for the removal shall be required to be carried out from boats, barges and pontoons.
- No machinery tracking along the east river bank will be permitted in the southern floodplain, and all machinery will be excluded from the Bare Meadow on the southern floodplain to the south of CH4700. This exclusion area will be clearly indicated by temporary fencing prior to the commencement of works and will be notified to all contractors. All machinery and personnel will work and move within the dry works area provided in the river channel to the north of the River Urrin Inflow.

- Pegging out of compound channel construction areas near the river bank will be carried out by or advised by the EnCoW.
- The compound channel in the Bare Meadow has been designed so that the existing profile of the riparian edge and existing soils profile is recreated. The design of the bankside will have regard to dimensions and vegetation cover of the existing riparian edge and will be replicated as part of the construction works following consultation with the suitably qualified/experienced EnCoW. This will ensure the retention of existing visual screening of waterbirds from disturbance arising from recreational boating and canoeing on the River Slaney, during the construction and operational phases.
- Wherever possible, the existing Alder treeline screening on the west bank opposite Bare Meadow will be maintained by coppicing and replacement, rather than by tree removal, in order to ensure continuity of screening of waterbirds using the River Slaney channel and adjoining Bare Meadow from recreational use of the west bank promenade by walkers and dogs.

Mitigation measures to avoid land use changes on the Bare Meadow during and post construction

- Seasonal horse grazing at the current stocking densities will be facilitated on the Bare Meadow during construction, by the provision of gated access and provision of an agreed route through the new road bridge temporary construction area adjoining the east bank of the Slaney. The land owner will be contacted in this regard prior to construction.

Mitigation to minimise waterbird collision risk at proposed new road bridge over the Slaney

- During the construction phase, 2m high Harris fencing with visual screening will be provided at the temporary works areas boundaries of the bridge working area in the southern floodplain. Visual screening will be white or pale grey, and will incorporate reflective material to enhance its visibility to Grey Heron and other waterbird species flying in the vicinity in poor light conditions and during the hours of darkness. While some existing background lighting is provided by public lighting along the N11, it is recommended that additional lighting is provided on tall construction equipment and on bridge pier structures under construction to minimise collision risk. Additional construction lighting will be agreed in consultation with the suitably qualified/experienced EnCoW, and will be designed to avoid significant impacts on other mammals i.e. otters and bats.
- Painted steel handrails and pedestrian guardrails on the proposed new bridge are considered to be more visible to waterbirds in flight during poor light conditions and during the hours of darkness, in comparison to stainless steel. A bright cream colour is recommended to maximise visibility and will be agreed in consultation with NPWS. This mitigation measure refers to the construction phase and to the operational phase.

3.7.2.10 Aquatic Species

Water Quality Protection

- Works will be carried out in the dry and behind an impermeable barrier, which will minimise the potential for significant water quality impacts involving sedimentation. A silt fence will be required at the perimeter of the full length of the works areas and including around the perimeter of the soil depositional zone located on the North Island. The works will be carried out in dry sections on one side of the river behind an impermeable barrier, with the other side of the river being allowed to flow normally. The impermeable barrier will then be moved to the next section when appropriate and when works on one section of the river is completed.

- Daily inspections of the silt fences will be carried out by the EnCoW to assess the effectiveness of the measure and to determine if there has been any damage / breach to the silt fences. The silt fence will also be inspected immediately following heavy rainfall or strong winds. Accumulated silt will be removed regularly from the base of the silt fences.
- To minimise the risk of significant spill and/or leak, standard good practice will be followed with regard to pollution prevention as part of the appointed contractor's environmental management plan.
  - Any concrete pouring and filling works will be monitored, and spill prevention and remediation measures must be in place to minimise the risk and extent of spills and to rapidly deploy clean up equipment.
  - Re-fuelling of construction equipment and the addition of hydraulic oil or lubricants to vehicles / equipment will take place in designated bunded areas within the temporary storage yard, where possible, and not on-site.
  - All waste oil, empty oil containers and other hazardous wastes will be disposed of in conjunction with the requirements of the Waste Management Acts 1996, as amended.
  - All of the construction machinery operating near any watercourse will be systematically checked in order to avoid leaks of oils, hydraulic fluids and fuels.
  - Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment.
  - A visual inspection of all watercourses, downstream of the works areas will be conducted daily. The risk of pollution of the watercourses from losses of mortar and concrete must be managed and controlled in accordance with relevant guidelines.
  - Any stockpiling of material, top soil or spoil will be within the proposed site compound. All storage and stockpiling of material must be at a minimum of 10m from any surface water drainage on the site. Oil booms will be installed around the dredging area to avoid oil / fuel spillages to enter the aquatic environment. Waste management procedures will be employed to reduce the potential for construction waste to enter the aquatic environment.

Bio-security

- Any plant or equipment that may have worked in environments where invasive species are present shall be suitably cleaned by high pressure hose before being used on site to prevent the spread of invasive species. Water used for this washing process shall always be intercepted and prevented from draining back into watercourses.
- The provisional Invasive Species Management Plan (ISMP) will be updated by the Contractor to form the detailed Invasive Species Management Plan which will form part of the Contractors EOP for the proposed scheme.
- A pre-construction invasive species survey will be carried out by a suitably qualified Ecologist/Botanist prior to commencement of the works. Where invasive species are identified, a site-specific Construction Invasive Species Management Plan will be produced in advance of any works progressing. The plan will have regard to the ISMP prepared in advance of the construction works. The Plan will be completed by a suitably qualified and experienced person. Where recommendation for the use of pesticides is made, this will be by a Pesticide Advisor[1] registered with the Department of Agriculture, Food and the Marine (DAFM). Works will be progressed in accordance with the Management Plan.

[1] Note, as per the provisions of the Sustainable Use Directive (SUD), anybody who "advises on pest management and the safe use of pesticides, in the context of a professional capacity or commercial service, including private self-employed and public advisory services, commercial agents..." is deemed to be a Pesticide Advisor (PA). Since November 2013, it has been mandatory for all PAs to be registered with DAFM.

- The Construction Invasive Species Management Plan will be prepared with regard to the following:
  - The Office of Public Works Arterial Drainage Maintenance Service Environmental Management Protocols & Standard Operating Procedures;
  - Irish Water Invasive Species Guidelines; and
    - IW-AMT-SOP-009 Information and Guidance Document on Japanese knotweed;
    - IW-AMT-GL-001 Management of Giant Hogweed; and
    - IW-AMT-GL-002 Management of Himalayan Balsam.
  - IFI Biosecurity Protocols.
  - IFI Biosecurity Protocol for Field Survey Work (December 2010);
  - IFI Invasive Species Biosecurity Guidelines for Anglers – leaflet (2011);
  - IFI Invasive Species Biosecurity Guidelines for Boaters – leaflet (2011); and
  - IFI Invasive Species Biosecurity Guidelines for Scuba Diving (2012).

The use of pesticides will be in accordance with the European Communities (Sustainable Use) of Pesticides Regulations, 2012 (SI No. 155 of 2012). Pesticide users will be suitably trained and registered with DAFM.

All Contractors and their staff carrying out works will be appropriately trained (e.g. through toolbox talks) on the identification of invasive plant and animal species, which are known to occur within or adjacent to the proposed works areas, and actions to be taken if such species are observed on site.

The Plan will set out the treatment and disposal of invasive species contaminated soils in accordance with the Waste Legislation on behalf of Wexford County Council and subject to consultation with the Environment Protection Agency (EPA). On site disposal is subject to EPA grant of Certification of Registration. Disposal of material will be undertaken by a licenced operator only

Timing of Works

- Instream works will not be undertaken during the times when fish are spawning. The most sensitive period for River/Brook lampreys is the period October to March when they are migrating, and April to June when they are spawning / ova are developing. Lampreys have only been recorded spawning in the upper section of the scheme area (upstream of the existing railway bridge).
- It is possible that Sea Lampreys will not spawn until June/July so will not be fully protected by this window. However, Sea Lampreys were not recorded spawning in the study area during the 2016 survey. If at construction time any Sea Lampreys are spawning in the area, then instream works may have to be delayed. The role of the EnCoW is of importance here to ensure that any spawning activity is detected prior to commencing instream works.
- No salmonids spawned in the study area in 2015/16 as evidenced by the 2016 survey results. However, salmonids will be protected by the statutory close season for instream works to ensure that River Lampreys migrating through the area from October to March are fully protected.
- No instream works will take place after the 30th September each year (as per statutory close-season.
- The timing of works is fundamental in order to avoid impacts on migratory fish in the study area. Table below details the migrating and spawning seasons of each species to be avoided. Instream works are permitted from July to September only.

Table 3: Details of Migrating and Spawning Seasons to be avoided.

Common Name	Life cycle stage	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
River Lamprey	Upstream migration												
	Spawning and ova development												
	Downstream migration (juveniles)												
Brook Lamprey	Spawning and ova development												
Sea Lamprey	Upstream migration												
	Spawning and ova development												
	Downstream migration (juveniles)												
Atlantic Salmon	Upstream migration												
	Spawning and ova development												
	Downstream migration (juveniles)												
Sea/Brown Trout	Upstream migration												
	Spawning and ova development												
	Downstream migration (juveniles)												
Twaite/Allis Shad	Upstream migration												
	Spawning and ova development												
	Downstream migration (juveniles)												
European Eel	Upstream migration (juveniles)												
	Downstream migration (adults)												
European Flounder	Upstream migration												
	Downstream migration												

Species Specific Mitigation

- Instream rehabilitation / enhancement programme
- Instream works take place outside spawning seasons
- Fish / mussel translocation / salvage programme
- Juvenile lamprey translocation / salvage programme
- De-watering appropriate sections along the river while works are ongoing

- An outline method statement for the translocation of lampreys has been prepared a copy of this is provided in Appendix E. The Contractor shall engage a suitability qualified and experience ecologist to prepare a detailed translocation plan in consultation with the EnCoW and IFI

3.7.3 Freshwater Pearl Mussel

- As the proposed works are not compatible with FPM survival, mitigation for the living mussels currently living within the works area involves translocation to FPM permanent habitat upstream.
- Translocation is a last resort method of mitigation that has a high risk of failure but is the only option for the mussels in these locations. There is strong potential for failure to occur due to circumstances linked to the effects of chronic stress during translocation and establishment phase (Dickens et al. 2010, Teixerra et al. 2007). A protocol for translocation and monitoring is provided in Appendix C.13. An additional stage in the translocation process involves captive breeding a cohort of juvenile mussels from the translocation animals according to the technique of Moorkens (2017). Translocating a higher number of individuals, both juvenile and adult, ensures that the resulting receptor population is significantly higher than the group of donor mussels used. A survey of the potential receptor site has demonstrated its suitability for the translocation of adult and captive bred juvenile mussels. The study for the receptor site suitability is provided in Appendix C. Numerous young of the year salmon and trout were recorded at Scarawalsh during the surveys carried out in 2016 (Appendix I), which will provide a better salmonid host source than is currently present at Enniscorthy.

3.7.4 Duck Mussel

- The only mitigation for the few living duck mussels found living within the proposed scheme area is their translocation a very short distance upstream of the highest point of the proposed works. This is a means of maintaining the distribution of duck mussels in the river as the other known site for the species is downstream in the Oilgate area.

3.7.5 Hydrology and Water Quality Measures

Silt control measures cannot be used in naturally flowing permanent water courses as they are likely to be quickly overcome. All instream works will be carried in a dry works area. Refer to Section 3.5.7 for the approach to management of material on the North Island.

Exposed areas of soil within works areas which are located within 5m of a drainage ditch will be covered with a soil erosion protection (e.g. erosion control blanket/ mat). Soil erosion must be installed in accordance with the manufacturers specification and must be installed immediately following the exposure of works areas to soil erosion and continued to be maintained in place until works are complete and the soil has been re-established.

In addition, the establishment of dry works areas as shown on the accompanying drawings in Appendix A and the phased approach to the deposition of material on the island will prevent siltation through runoff. It is also proposed that a silt fence will be required at the perimeter of the flood defence walls works areas and including around the perimeter of soil depositional zone located within 5m of the back channel. This fence will be installed in accordance with manufacturers specifications and must be installed prior to commencing the works. The silt fence will have the following design features;

- The geotextile fabric must be entrenched at least 100mm into the ground with ends upturned;
- The fence posts will have a maximum spacing of 2m to prevent sag on the fence; and
- The geotextile fabric will be anchored to the fence posts as opposed to wrapped.

The location of the fence will be set out in agreement with the EnCoW. Daily inspections of the silt fences will be carried out by the EnCoW to assess the effectiveness of the measure, to carry out maintenance, and to determine if there has been any damage/breach to the control measure. The silt fence will be also inspected immediately following heavy rainfall or strong

winds. Where repair is necessary, this will be carried out immediately and may require replacement of any damaged/degraded material.

Accumulated silt will be removed regularly from the base of the silt fences. Silt will not be permitted to build up such that it reaches half the height of the fence or exceeds 15cm in height (whichever is the lesser value). Commercially available fences will show a maximum height which should not be exceeded. Silt fences must remain in place until the disturbed areas within the sites have been reinstated and revegetated. Silt fences must only be removed during dry weather and following approval of the EnCoW. Any accumulated silt along the fence must be removed immediately in advance of removing the silt fence from the site. The removal of the silt fences will be carried out under the instruction and supervision of the EnCoW.

3.7.5.1 North Island Back Channel -Watercourse Restoration Works

The North Island Back Channel will be designed to incorporate juvenile lamprey habitat restoration works. In addition to the principal control measures noted in Section 3.2, the following control measures will be implemented during this restoration works;

- The channel restoration works will be minimised as far as possible to reduce exposure of bare ground, to this end the channel will be undertaken in the dry and in isolation of the River Slaney Works;
- The design of the channel and construction method statements for the restoration works shall be set out as shown in the figure below;
- The back channel will be designed to have a river bed which will replicate, as far as practicable, the River Slaney main river conditions. The design of the channel is as set out in the accompanying EIAR drawings (Ref 355741-MMD-01-XX-DR-N-0400 to 355741-MMD-01-XX-DR-N-0413). Where gravels are to be used, these shall be clean and silt-free and of a size prescribed by Inland Fisheries Ireland in consultation with the specialist aquatic ecologist. Once the back channel restoration is complete, flow shall be introduced by opening the bottom end first to allow flow to back up into channel. The top end shall be subsequently opened to reduce sedimentation; and
- There is an existing watercourse crossing over the back channel, the redesign of the back channel will include for the construction of a new water crossing at this location. The location of this crossing will require verification by the EnCoW and the Contractor.

3.7.6 Geology and Soils

3.7.6.1 Waste Management Control Measures

All waste generated during the project will be managed in a way that ensures the relevant provisions of the Waste Management Act 1996 and associated amendments and regulations are met, particularly with regard to the use of appropriately permitted Waste Contractors and destinations for waste materials.

The Contractor will appoint a Waste Manager for the project. The Waste Manager will have overall responsibility to oversee, record and provide information to the relevant authorities on waste management for the project. Authority will be given to the Waste Manager to delegate responsibility to sub-contractors where necessary and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and salvage.

The Waste Manager will be trained in how to establish and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. He/she will

be also be trained in the best methods for segregation and storage of recyclable materials, reuse of materials on site and know how to implement a project specific waste management plan. All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Management Act 1996, as amended, and all associated regulations, as appropriate. This includes the requirement for all waste contractors to have a valid waste collection permit. A copy of the permit/licence associated with the destination waste management facility will be maintained by the Waste Manager. If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) document will be obtained from Dublin City Council (as the relevant authority on behalf of all local authorities in Ireland) and maintained by the Waste Manager along with details of the final destination (permits, licences etc.). A receipt from the final destination of the material will be kept by the Waste Manager as part of the waste management records.

Measures to be implemented for specific waste types include:

Metal Waste

- Metal is highly recyclable; there are numerous companies that will accept these materials. A segregated skip will be available in the site compound for storage of metals on site pending recycling.

Hazardous Waste

- Storage of any hazardous wastes will be minimised, with refuelling and oil changes carried out on a regular basis off site;
- All hazardous wastes, including paint tins and nominally empty paint tins, will be contained in enclosed impermeable receptacles with due regard to compatibility. Waste containers and lids will be compatible with the waste chemicals stored in them and incompatible wastes will not be stored together; and
- Hazardous waste receptacles will be clearly labelled in accordance with international standards. All materials will be stored on site will be stored in such a way as to minimise potential for environmental impacts.

Non-Recyclable Waste

- All non-recyclable wastes will be transferred to the site compound at the end of the working day. In the site compound there will be a general skip or other receptacle provided for non-hazardous waste not suitable for reuse or recycling. This skip will include general municipal waste (mixed food waste and food packaging), polystyrene, contaminated cardboard, contaminated plastic etc. Prior to removal, the receptacle will be examined by the Waste Manager to determine that recyclable materials have not been placed in the skip. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly.

3.7.7 Landscape and Visual

Mature amenity trees that will be removed from along the quays and riverside park to facilitate the works and will be replaced with new semi-mature specimen trees (*Pyrus Calleryana* ‘Chanticleer’). Although replacements, these new trees will provide renewed longevity to the riverside tree network and help to soften and assimilate the increased ’built’ tone and texture of the flood walls.

Although more of an ecological mitigation measure, the riparian habitat planting associated with the back-channel along the eastern side of the North Island will help to soften and naturalise the engineered appearance of the deposition area. The deposition works will also avoid flat

platforms and regimental uniform slopes insofar as possible (to ensure stability and facilitate runoff) in order to provide a more naturalistic appearance that is consistent with the winding course of the River Slaney.

3.7.8 Noise and Vibration

The Works requirements, which will be contained in the tender documents for the construction of the scheme, shall explicitly state that the Construction Contractor shall comply with the requirements of this EIAR in constructing the scheme. Where the Construction Contractor proposes to deviate, or deviates from, the requirements of this EIAR they shall be responsibility for achieving approval from the appropriate consenting authority.

The Contractor will also prepare a Construction Noise Management Plan as part of the CEMP. In this document the contractor will be obliged to give due regard to BS 5228:2009+A1:2014 and European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001, which offers detailed guidance on the control of noise and vibration from construction activities. The project will implement best practical means (BPM) as defined in the BS 5228 Standard to all on site activities. Noise and Vibration from construction activities will be limited to the values set out in the Tables discussed above and will be adhered to during the construction phase.

The Contractor will be obliged to manage the works to adhere to the limits as set out Section 12.2 of the EIAR. The Contactor shall have due regard to the BS2228 Part 4 to ensure the vibration limits are adhered to, particularly in proximity to sensitive receptors and in the vicinity of the works where retaining walls that may not be inter tied with other walls, which may require additional measures. For example, the selecting Continuous Flight Auger (CFA) will be used as they are virtually vibration free and suitable for urban areas.

Specific mitigation measures that are relevant for the construction activities include but are not limited to the following:

- Unnecessary revving of engines will be avoided, and equipment will be switched off when not in use;
- Internal haul routes will be kept well maintained;
- Use of effective exhaust silence systems or acoustic engine covers as appropriate;
- Plant will always be used in accordance with manufacturers' instructions. Care will be taken to keep site equipment away from noise-sensitive areas. Where possible, loading and unloading will also be carried out away from such areas;
- Regular and effective maintenance by trained personnel will be undertaken to keep plant and equipment working to manufacturers specifications;
- Noise barriers can provide some limited attenuation during particularly noisy activities;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with high noise and vibration activities, together with details of any remedial actions carried out;
- Procedures for handling noise and vibration complaints will be set out and the Contractor shall ensure procedures are implemented to rectify the problem. The procedures put in place will be strictly monitored and assessed;
- The name and contact details of a person to contact regarding noise and vibration issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details; and
- Advance notification of at least 24hrs to all sensitive receptors during critical phases of construction. This will ensure that residents are kept informed of ongoing and future operations.

It is also recommended that a comprehensive noise and vibration monitoring protocol will be set out within the Noise and Vibration Construction Management Plan. Construction noise and vibration levels shall be monitored and assessed:

- At continuous basis throughout construction, but not at pre-arranged times and the result will be frequently review (at least weekly) by the EnCoW;
- As and when required, during critical phases of construction, i.e. when possible exceedance of the project noise and vibration criteria is anticipated;
- In response to the receipt of reasonable complaints investigated by the Employer; and
- At locations representative of sensitive receptors in the vicinity of the works typically at the agreed locations closest to the works.

Monitoring locations will be identified in agreement with the EnCoW in a detailed CEMP, prepared by the contractor.

The CEMP should have cognisance of best practice given in BS 5228:2009: Part 1 and Part 2. In particular, the Plan will indicate how noise and vibration during construction will be monitored, including the method and equipment to be used. A Public and Stakeholder Engagement Communication Plan will be prepared by the Contractor in advance of the works. The Plan recognises the importance of informing members of the public and key stakeholders who will be affected by the noise, of the steps to be taken to minimise noise and devise a means of contacting relevant members of the public.

3.7.9 Archaeology, Architectural and Cultural Heritage

The table below details the proposed mitigation measures and monitoring to be carried out during the construction phase. A pre-construction archaeological and architectural survey will also be carried out to record the ruined building in the North Island, the Railway Bridge, Enniscorthy Bridge and Shannon and Abbey Quays to ensure a robust record of all cultural heritage assets within the development area.

Table 3: Summary of impacts and mitigation along the cultural heritage sites and features

Feature Number	Existing Cultural Heritage reference	Site	Mitigation
Feature 1	None	River Slaney	Archaeological monitoring during development Preservation by record
Feature 2	None	Ruined building	Archaeological survey in advance of development Archaeological investigation Preservation in situ Exclusion zone around the site Preservation by record if structure must be removed
Feature 3	NIAH 15603152	Railway Bridge	Archaeological and Architectural heritage survey in advance of development Monitor works
Feature 4	NIAH 15603153	Retaining Wall	Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 5	none	Collapsed bonded masonry	Archaeological investigation

Feature Number	Existing Cultural Heritage reference	Site	Mitigation
			Preservation by record Archaeological monitoring during development
Feature 6	NIAH 15603154	Enniscorthy Bridge	Archaeological and Architectural heritage survey in advance of development Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 7	none	Sections of bonded masonry	Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 8	none	Section of bonded masonry	Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 9	none	Section of bonded masonry	Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 10	NIAH 15603156	Shannon Quay	Archaeological and Architectural heritage survey in advance of development Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 11	NIAH 15603157	Abbey Quay	Archaeological and Architectural heritage survey in advance of development Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 12	none	River Walling	Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 13	NIAH 1560432	Two-storey monastery inside stone boundary wall	Archaeological investigation Preservation by record Archaeological monitoring during development
Feature 14	none	Boat wreck	Archaeological Excavation, removal, and recording
AP1	none	Section of riverbed beneath Enniscorthy Bridge (Arch No 6)	Archaeological monitoring during development Metal detection of spoil

Pre- construction archaeological investigation will be carried out in advance of the proposed works, to clarify the nature of the material observed and to assess its archaeological risk. Such work will be conducted at Features 3-13 as needed. The boat wreck disturbed by Grab Sample

GS14 will be archaeologically excavated and removed for analysis, storage and disposal in accordance with the requirements of the National Museum of Ireland.

Archaeological investigation requires a series of archaeological licenses, the principal of which is Excavation. Archaeological licenses take a minimum of four weeks to be processed by the Department.

3.7.9.1 Construction Phase Monitoring

The mitigation measures will be carried out by retaining an archaeologist/s. An archaeologist experienced in maritime archaeology will be retained by the Wexford County Council for the duration of the relevant works to advise on and resolve archaeological matters.

A heritage architect or engineer experienced in industrial and riverine architectural heritage will be retained by the Wexford County Council for the duration of the relevant works, to advise specifically in relation to works associated with Enniscorthy Bridge and the quays.

Archaeological licences will be required to conduct the on-site archaeological works. Licence applications require the inclusion of detailed method statements, which outline the rationale for the works, the means by which the works will be resolved, and the archaeological strategies proposed to recover, record and curate objects and materials recovered during site works. Licence applications take a minimum of four weeks to process through the Department, and advance planning is required to ensure that the necessary permits are in place before site works commence. One can anticipate that the following licence types will be required: Excavation, to cover monitoring and investigations works; Detection, to cover the use of metal-detectors; and Dive Survey, to cover the possibility of having to conduct underwater inspections.

Since 2017, excavation licence applications must be accompanied by a letter from the client confirming that the project will provide sufficient funds and other facilities to the applicant to complete the archaeological excavation, post-excavation, and preliminary and final reports (including specialist reports).

In the event of archaeologically significant features or material being uncovered during the construction phase, machine work will cease in the immediate area to allow the archaeologist/s to examine the area.

Once the presence of archaeologically significant material is established, full archaeological recording of such material will be recommended. If it is not possible for the construction works to avoid the material, full excavation will be recommended. The extent and duration of excavation will be a matter for discussion between the client and the licensing authorities.

A core of a suitable archaeological team will be on standby to deal with any such rescue excavation. This would be complimented in the event of a full excavation.

An archaeological dive team will be retained on standby for the duration of any in-water disturbance works on the basis of a twenty-four or forty-eight-hour call-out response schedule, to deal with any archaeologically significant/potential material that is identified in the course of the river bed disturbance activities.

Secure wet storage facilities will be provided on site by the client to facilitate the temporary storage of artefacts that may be recorded during the course of the site work.

- Buoying/fencing of any such areas of discovery will be necessary if discovered and during excavation;

- Construction traffic will be restricted to avoid any identified archaeological site/s and their environs; and
- Spoil will not be dumped on any of the selected sites or their environs.

It is a condition of archaeological licensing that a detailed project report is lodged with the DCHG within 12 months of completion of site works. The report should be to publication standard and should include a full account, suitably illustrated, of all archaeological features, finds and stratigraphy, along with a discussion and specialist reports. Artefacts recovered during the works need to meet the requirements of the National Museum of Ireland

3.7.10 Air Quality and Climate

The contractor will also prepare a Dust Management Plan as part of the CEMP Dust Management Plan. The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor.

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. The nominated contractor will prepare a dust control strategy as part of the CEMP. The following outline management plan has been formulated by drawing on best practice guidance from Ireland, the UK and the USA (IAQM (2014), The Scottish Office (1996), USEPA (1997), UK Office of Deputy Prime Minister (2002), BRE (2003).

3.7.10.1 Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 11.1 for the Windrose for Johnstown Castle). As the prevailing wind is predominantly south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (UK Office of Deputy Prime Minister (2002), BRE (2003)). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods were care will be needed to ensure that dust nuisance does not occur. The following measures should be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;

- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with earth-moving activities, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practise and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

3.7.10.2 Site Roads

Site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK Office of Deputy Prime Minister, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved haul roads;
- Access gates to the site shall be located at least 10m from sensitive receptors where possible;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

3.7.10.3 Demolition

- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed.
- Avoid explosive blasting where possible - use appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or moisten such material before demolition.

3.7.10.4 Land clearing/Earth moving enabling works

Land clearing/earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust; and
- During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.

3.7.10.5 Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles should be located downwind of sensitive receptors; and
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK Office of Deputy Prime Minister, 2002).

3.7.10.6 Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures.

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust; and
- At the main site traffic exits, a wheel wash facility shall be installed. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

3.7.10.7 Dust Monitoring

It is recommended that dust deposition monitoring be put in place to ensure dust mitigation measures are adequately controlling emissions. Dust monitoring, if deemed necessary, shall be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m^2/day) during the monitoring period which is between 28 - 32 days.

3.7.11 Traffic and Transport

A Construction Traffic Management Plan (CTMP) will be prepared by the appointed contractor which conforms fully to Article 9(1) (a) (ii) and (xi) of the Planning and Development Regulations, 2011-2013 and which will take into consideration the following guidelines, as appropriate;

- Department of Transport “Guidance for the Control and Management of Traffic at Road Work” (2010); and
- Department of Transport “Chapter 8: Temporary Traffic Measures and Signs for Roadworks” (November 2010).

The CTMP will be prepared in consultation with Wexford County Council and Transport Infrastructure Ireland and will identify the safety measures required to access and egress locations.

The CTMP will include details of the following;

- Identify to all staff and contractors the appropriate and safe routes to and from the proposed Project;
- Confirmation that routing of HGV construction traffic during the haulage of dredging material is not permitted via Enniscorthy during instream works upstream of Seamus Rafter Bridge, where all HGV traffic will be routed within the dry works areas only,
- Timing of HGV construction movements to take place outside of peak flow hours, where practicable, to minimise disruption to general traffic flows on the road network, including details of delivery windows confirming when traffic is predicted to arrive on-site
- Measures to ensure access to private properties are maintained throughout the duration of works;
- Measures to ensure pedestrian amenity access to the river is maintained where possible; and
- Appropriate warning signs to be erected to warn all road users of the presence of HGV's and general construction related traffic and operations.

Through the CTMP, regular engagement with the resident engineer and EnCoW shall be undertaken so that they can engage with the local residents and businesses on when each phase of works will commence, including;

- The schedule of works;
- Disseminate details of signage;
- The direction from where HGV loads will be travelling from;
- A dedicated telephone number which the residents and business owners can contact to report any issues;
- Provide details of the dates of the community liaison group meetings; and
- Obtain local resident's feedback on other issues that need to be addressed including details of any forthcoming public events etc. that need to be considered.

The CTMP shall provide for regular inspections to be carried out to ensure that agreed mitigation measures, as outlined above, are being undertaken.

The appointed contractor responsible for the works will be required to undertake a pre-condition survey of the existing road from the N11 and local roads within the town to the site with the scope and method of assessment to be agreed with WCC Transportation Department. Following completion of the works, a further survey will be undertaken to determine any deterioration and the requirement for any remedial works, for agreement with the WCC Transportation Department.

The following text describes the control measures that will be put in place for the construction compound;

- The construction compound will not be located within 20m of the River Slaney. The compound will not be located in sensitive ecological habitat;
- The main construction compound must be located on dry land and set back from waterbodies, and outside of any floodplain;

- The impermeable area within the compound will be minimised to limit surface runoff;
- The EnCoW and the Contractor will ensure that appropriate set back distances are maintained from sensitive ecological and cultural heritage sites and watercourses. At a minimum any watercourse or drainage ditch that occur in the area of land that will be used for site compound/storage facilities will be fenced off at a minimum distance of 5m. in addition, measures will be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to the watercourse;
- Storage of fuels, other hydrocarbons and other chemicals within the construction compounds will be stored in bund areas. Bund specification will conform to the current best practice for oil storage such as 'Best Practice Guide BPGCS005 Oil Storage Guidelines,' Enterprise Ireland; and
- All surface water runoff will be intercepted and directed to treatment systems for the removal of pollutants prior to discharge.

All compounds will have security to deter vandalism, theft and unauthorised access

3.7.12 Material Assets and Land

All possible precautions will be taken to avoid unplanned disruptions to any services during the proposed works. This will include thorough investigations to identify and reconfirm the location of all utility infrastructure within the works areas, and the implementation of robust procedures when undertaking works in the around known infrastructure services.

Service disruptions impacting the surrounding residential, social and commercial properties shall be kept to a minimum, only occurring where unavoidable. Prior notification of disruptions shall be given to all impacted properties. This shall include information on when disruptions are scheduled to occur and the duration of the disruption. Consultation with relevant neighbouring parties shall be undertaken prior to any proposed disruptions.

As noted in the previous chapters of this EIAR, a CEMP, CTMP and CWMP will be prepared by the nominated contractor in consultation with WCC and their EnCoW. The Plans will be implemented and adhered to minimise the impacts on environmental and sensitive receptors.

It is the responsibility of WCC to ensure that the requirements of this CEMP and any associated Method Statements are implemented in full.

The CWMP will be prepared and maintained by the main contractor and agreed in advance by the EnCoW. The CWMP will address the following aspects of the project;

- Analysis of the waste arisings/material surpluses;
- Specific waste management objectives for the project;
- Methods proposed for the prevention, reuse and recycling of waste;
- Proof of disposal to a licensed waste site;
- Material handling procedures; and
- Proposals for education of workforce and planned dissemination programme.

If any potential contaminated material is encountered during the works, it will be segregated from all other material, tested to confirm the classification of the material for disposal purposes (in accordance with Waste Acceptance Criteria) and will be collected and disposed of by a permitted waste contractor to a suitably licenced waste facility.

The construction materials required for the civil engineering works such as crushed rock, concrete, and asphalt will be sourced locally where practicable

3.8 Emergency Planning and Incident Response

In the event of an environmental emergency, a procedure for Environmental Emergency Preparedness and Response will be implemented by the Contractor in order to contain environmental impacts. An environmental emergency at the site may include;

- Discovery of a fire within the site boundary;
- Flooding;
- Uncontained spillage/leakage/loss of containment; and
- Discharge concentration of potential pollutants in excess of an environmental trigger level.

The general required emergency response actions will be posted at strategic locations, such as the site entrance and near the entrances to buildings.

An example of emergency response actions required, in the event of a spillage, is for the following procedure to be followed:

- If safe, stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers;
- If safe, contain the spill using the absorbent spills material provided. Do not spread or flush away the spill;
- Cover or bund off any vulnerable areas where appropriate;
- If possible, clean up as much as possible using the absorbent spills materials;
- Do not hose the spillage down or use any detergents;
- Contain any used absorbent material so that further contamination is limited;
- Notify the Contractor's EHS Officer so that used absorbent material can be disposed of using a licensed waste contractor; and
- An accident investigation should be performed in accordance with procedures and the report sent to the Construction Manager.

The following local emergency contact details will be used by the Contractor:

Table 4: Emergency Services and Contact Details

Emergency Services	Contact Telephone Number
Ambulance	999 or 112
Wexford County Council Fire Services	999 or 112
Wexford County Council Environment Department	TBC
Wexford County Council Roads Department	TBC
Inland Fisheries Ireland	052 6180 055
National Parks and Wildlife Services	1890 383 000
Environmental Protection Agency	1890 33 55 99
National Monuments Services	01 888 2178
ESB Emergency	1850 372 999
Bord Gais Emergency	1850 20 50 50
Irish Water Emergency	1850 278 278
Irish Rail	01 8555454

Emergency Services	Contact Telephone Number
Health and Safety Authority	1890 289 389

The Incident Response Plan (IRP) will be developed and prepared by the nominated Contractor in consultation with Wexford County Council and their EnvCoW. The IRP will describe the procedures, lines of authority and processes that will be followed to ensure that all incident response efforts are prompt, efficient and appropriate to the particular incident. The plan will set out the water monitoring protocols in place upstream of the works areas to ensure the contractor and all employees have all the information and data to respond to an emergency and to handle it effectively. The IRP will set out procedures to be followed in the event of an incident (e.g. high-water levels, or spillages). It will also set out procedures for notifying appropriate emergency services or statutory bodies. The IRP will be prepared in regard to the Wexford County Council Flood Plan. A copy of the current WCC Flood Plan is appended in Appendix C of this document. A copy of the Wexford County Council (WCC) Major Emergency Plan will be appended to the IRP and made available to the Contractor during the construction phase. The Major Emergency Plan is prepared in accordance with the Governments Major Emergency Management Framework. A copy of the current WCC Major Emergency Plan in found in Appendix D of this Report.

Appendices

A. Construction Drawings

Impermeable Barrier A, 2m above riverbed level, placed in river to prevent transportation of silt.

Impermeable Barrier C

Impermeable Barrier B

Deposition Area

Temporary Bridge

Railway Bridge

Enniscorthy Bridge

Location Plan

Notes

1. This drawing is to be read in conjunction with all relevant Engineers drawings and specifications.
2. Do not scale from this drawing.
3. All levels are in metres and relate to Ordnance Datum Malin Head.
4. No work shall be carried out on existing services and utilities without proper approval from the Local Authority or service provider.
5. All existing services to be located prior to commencement of works, and suitably protected for the duration of the works.
6. The Contractor is to check the accuracy of all tie-in levels. The Engineer is to be informed of any discrepancy immediately .
7. The design of any temporary works shall be the responsibility of the Contractor.

- Proposed Flood Wall
- Proposed River Widening Area (Cut)
- Proposed Infilling
- River Dredging
- Back Channel
- Access Route
- Impermeable Barrier

Rev	Date	Drawn	Description	Ch'k'd	App'd
P01	13/09/17	DG	Minor Revisions	PG	
P02	13/09/17	DG	Minor Revisions	PG	BW
P03	10/01/18	PG	Minor Revisions	PG	---

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Client

Wexford County Council

Status Stamp
NOT FOR CONSTRUCTION

Title
Enniscorthy Flood Defence Scheme
Construction Methodology
Riverworks
Sheet 1 of 2

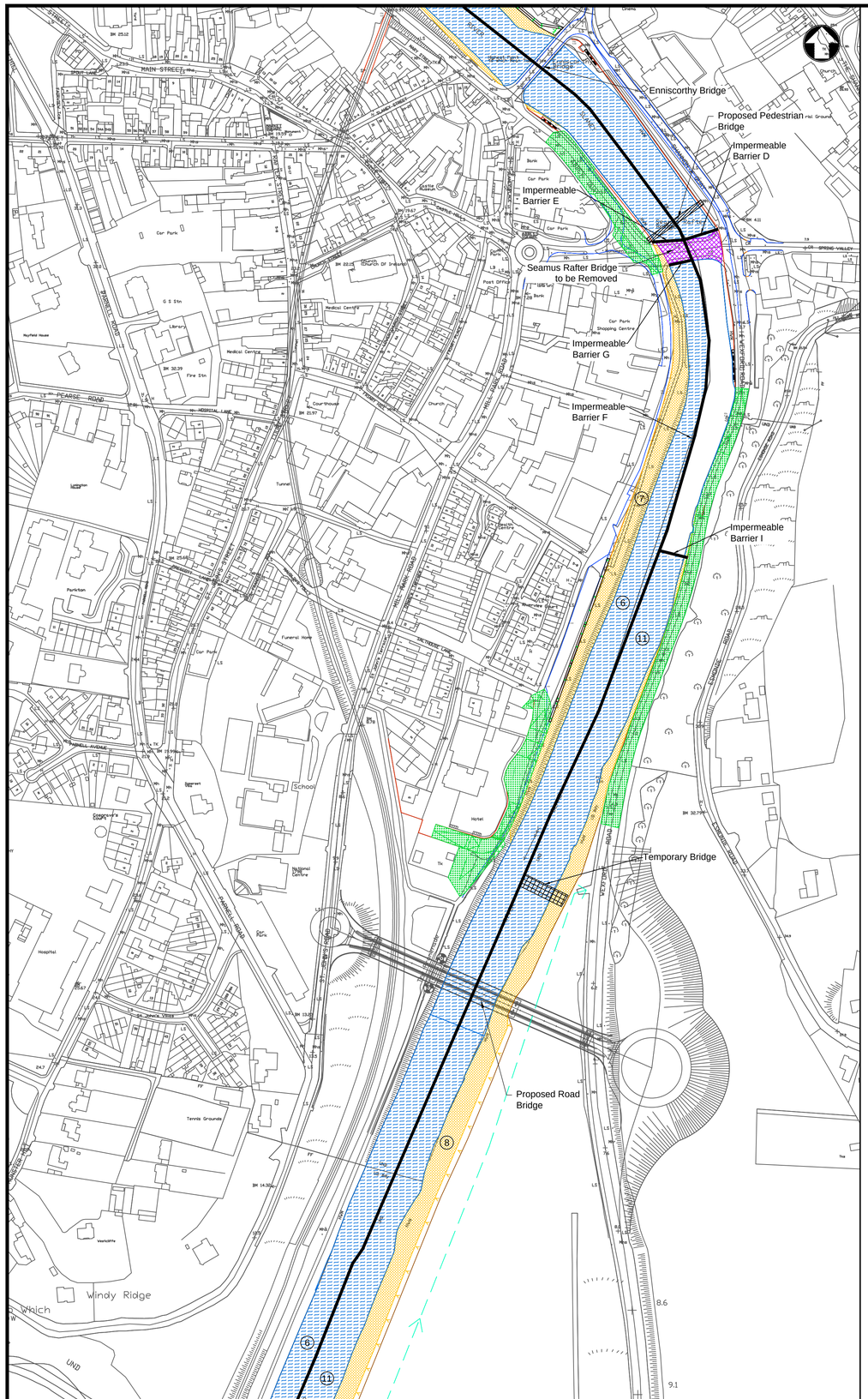
Designed	D Gallagher	---	Eng check	P.GRIFFIN	PG
Drawn	P.GRIFFIN	PG	Coordination	B.O`CONNOR	BO
Dwg check	P.GRIFFIN	PG	Approved	---	---

Scale at A1	Suitability Code	Rev	Security
1:2000	S1	P03	STD

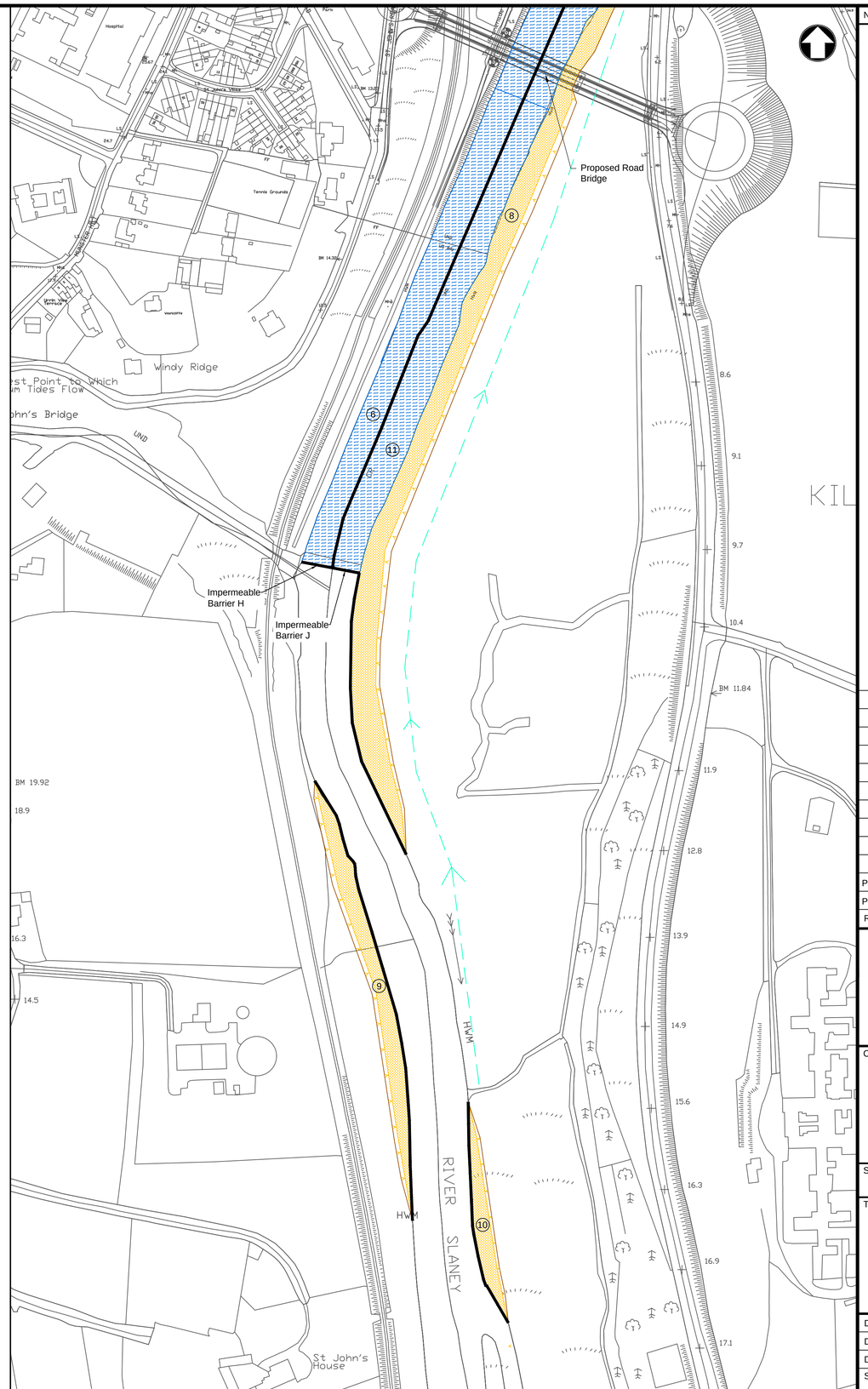
Suitability Description
Suitable for Co-ordination

Drawing Number
355741-MMD-00-XX-DR-N-0013

Location Plan



Location Plan 1



Location Plan 2

Notes

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2. Do not scale from this drawing.
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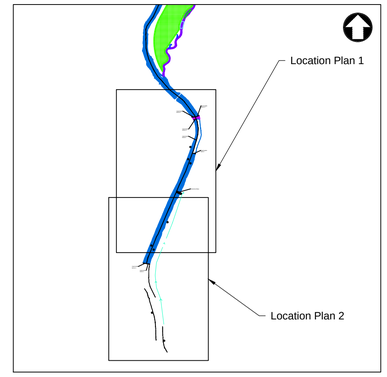

- Proposed Flood Wall
- Proposed River Widening Area (Cut)
- Proposed Infilling
- River Dredging
- Proposed Pedestrian Bridge
- Access Route
- Impermeable Barrier

Rev	Date	Drawn	Description	Ch'k'd	App'd
P01	13/09/17	DG	Minor Revisions	PG	BW
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Status Stamp: NOT FOR CONSTRUCTION

Title: Enniscorthy Flood Defence Scheme
Construction Methodology
Riverworks
Sheet 2 of 2

Designed	D. Gallagher	---	Eng check	P.GRIFFIN	PG
Drawn	P.GRIFFIN	PG	Coordination	B.O'CONNOR	BO
Dwg check	P.GRIFFIN	PG	Approved	---	---

Scale at A1	Suitability Code	Rev	Security
1:2000	S1	P02	STD

Suitability Description: Suitable for Co-ordination

Drawing Number: 355741-MMD-00-XX-DR-N-0014

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B. Provisional Invasive Species Management Plan

Invasive Alien Species Management Plan

River Slaney, Enniscorthy, Co. Wexford

[Sep, 2017]

Prepared by Envirico for Mott MacDonald on behalf of Wexford County Council

www.envirico.com

Action	Personnel	Company	Date
Revision: 2			
Report Prepared By:	Dr. Amanda Greer	Envirico	May, 2018
Reviewed By:			

TABLE OF CONTENTS

1. INTRODUCTION

Envirico have been engaged by Mott MacDonald on behalf of Wexford County Council to carry out an invasive alien species survey and prepare an invasive species management plan for the footprint of the proposed Enniscorthy Flood Defence Scheme (hereafter the proposed scheme). The survey was conducted as a walkover by land (2 days) and by boat on the River Slaney (1 day) in September, 2017. Three invasive alien species were recorded during the course of the survey – **Himalayan Balsam** (*Impatiens glandulifera*; 75,534m^2), **Japanese Knotweed** (*Fallopia japonica*; 3,789m^2), and **Giant Hogweed** (*Heracleum mantegazzianum*; 1,911m^2).

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 Non-Native Invasive Plant Species on National Roads' – NRA (2010); Best Practice for Control of Himalayan Balsam *Impatiens glandulifera* / Japanese Knotweed *Fallopia japonia* / Giant Hogweed *Heracleum mantegazzianum* – Inland Fisheries Ireland; Best Practice Management Guidelines Himalayan Balsam *Impatiens glandulifera* / Japanese Knotweed *Fallopia japonia* / Giant Hogweed *Heracleum mantegazzianum* – Invasive Species Ireland (2008).

1.1 Site Manager/Owner: Wexford County Council

1.2 Site Address: Enniscorthy

Co. Wexford

1.3 Site Description:

The survey area covered the River Slaney as it runs through the town of Enniscorthy, its banks and a narrow strip of land on either side, the North Island and the Bear Meadows. The extent of the survey is detailed in the Survey Area Site Map given in Figure 1. GPS co-ordinates are NW: 52°30'36.2"N 6°33'41.7"W; SE: 52°29'04.4"N 6°34'00.8"W. The River Slaney itself is part of the Slaney River Valley Special Area of Conservation (SAC) and the Bear Meadows is known to be important for birds. The site contains urban areas, as well as woodlands, grasslands, wetlands, amenity areas, agricultural land and hedgerows.

1.4 Site Management Objectives and Threats to Objectives:

The site management objectives, threats to achieving those objectives and the planned strategies for minimising these threats are outlined in Table 1.

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

Objective	Threat(s)	Mitigation
1. To prevent the spread of invasive species as a result of the construction works.	Movement of equipment and personnel throughout areas contaminated with invasive species Digging amongst invasive species or areas containing propagules Movement of contaminated clay	Before works begin, Japanese knotweed will be treated with herbicides to the reduce its regenerative capacity. Strict biosecurity protocols will be implemented, as outlined in the IASMP. All machinery that is working in infested areas must be thoroughly washed down and certified as clean before leaving a designated zone. Japanese knotweed will be left in-situ wherever possible and subjected to ongoing treatment with herbicides. All contaminated clay will be treated according to the procedures outlined in the IASMP.
2. To enable further construction to go ahead in a timely fashion without compromising objective 1.	Works may be delayed due to the implementation of biosecurity protocols, licence applications, waste classification, on-site treatment of or removal of contaminated spoil offsite.	Delays will be minimised by following the protocols laid out in this management plan.
3. To reduce the amount of Japanese knotweed within the footprint of the works by arranging ongoing treatment.	The remaining Japanese knotweed on-site will be treated with an appropriate herbicide over a period of 3 - 4 years to ensure eradication. Threats to this treatment include if unlawful entry is gained to the fenced off area containing the knotweed and the plants are damaged/cut/dug.	All stakeholders will be engaged with and the merits of a comprehensive treatment programme to all involved will be stressed. If agreement cannot be obtained the site will be monitored on an annual basis and chemical treatment applied as necessary.
4. To minimise the risk to human health from working around Giant Hogweed	If personnel are not aware of how to recognise Giant Hogweed, the risks associated and action to take if sap contacts skin. If the location of some Giant Hogweed stands are not properly mapped.	All personnel will be instructed in how to recognise Giant Hogweed, what the risks associated with the plant are, and the correct procedures if sap contacts skin. All personnel will be required to wear appropriate PPE when working in a Giant Hogweed contaminated area. A survey of Giant Hogweed will be repeated at a more appropriate time of year e.g. June.

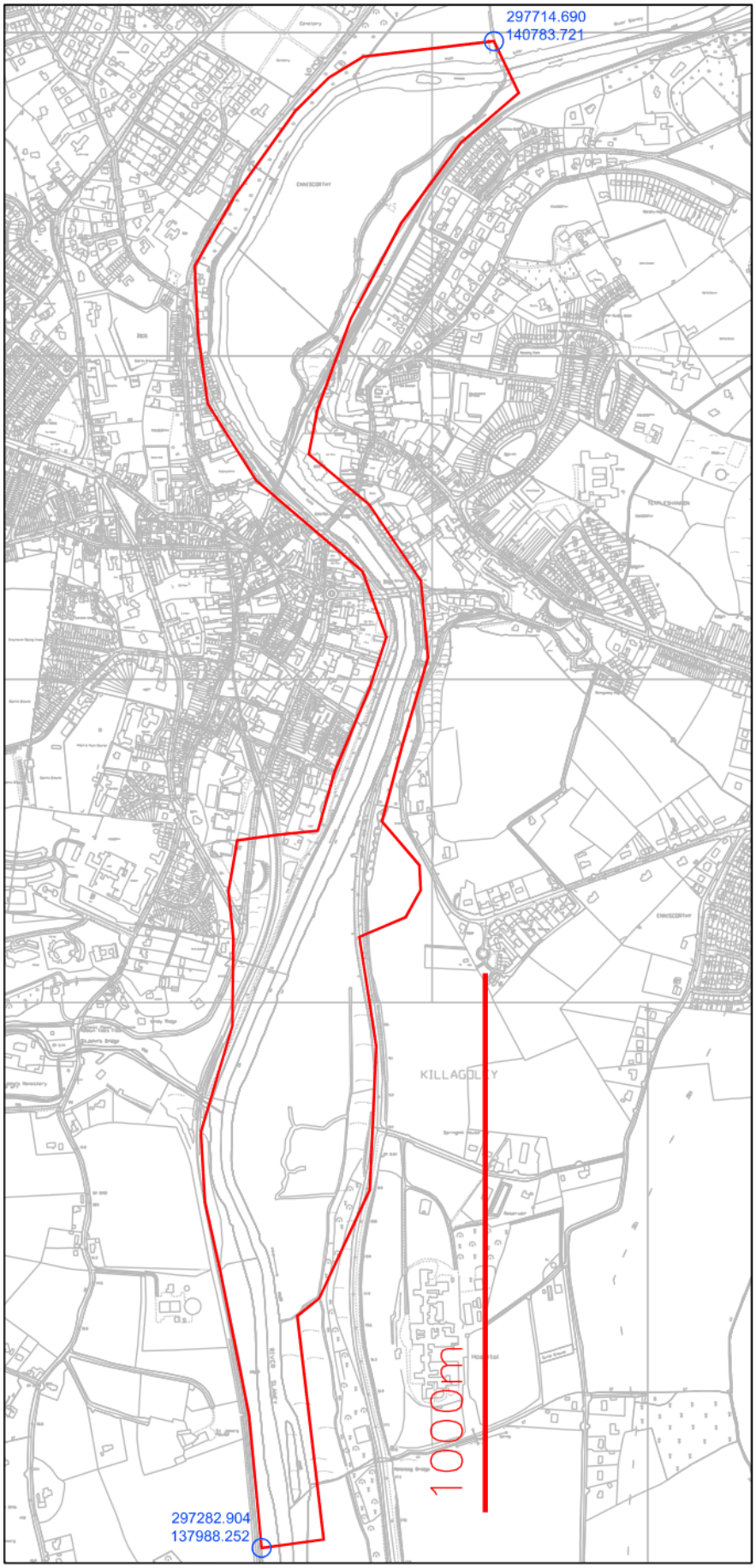


Fig 1. Map depicting the extent of the invasive alien species survey carried out in Sep, 2017

2.1 Himalayan Balsam

Himalayan Balsam (AKA Policeman's Helmet) was first introduced to the British Isles as an ornamental plant in 1839. It has since spread at an average rate of 645km^2 per year. It is a tall (up to 2m), shallow-rooted, annual plant that flourishes in the riparian habitat (e.g. along river banks). It has lance shaped leaves with heavily serrated edges, arranged opposite each other. From around June onwards it produces many pinkish/purple, bonnet shaped flowers. These flowers are very distinctive, making identification easy once they are evident. The stem is jointed, hollow and easily broken.

Reproduction is by seed only. From July onwards, the plant may produce many seed-pods/capsules. These are up to 3.5cm long and each may contain 4 – 16 seeds that are expelled from the pod through an explosive action when the pod is moved. A single plant can produce up to 4,000 seeds, which can be launched up to 7m away from the parent plant. Seeds also float in water, making dispersal down-stream a simple matter, with upstream colonisation of up to 7m in a growing season possible. Seeds can survive in the soil for up to 18 months.

Himalayan Balsam thrives in moist, nutrient rich soil and is a frequent invader of river banks and disturbed soils. In many parts of Ireland, a near monoculture of Himalayan balsam exists along riverbanks. This leads to significant problems, as the shallow roots of this species do not hold the banks together as well as the roots of native species. In winter, when the plant has died, the banks are particularly vulnerable to erosion, leading to increased siltation in the water; reduced water quality; and reduced carrying capacity of the stream so an increased likelihood of flooding. Himalayan Balsam outcompetes native species by growing more quickly early in the season and so out-shading them. It is also known as a 'pollinator robber'. Himalayan Balsam produces copious quantities of nectar, attracting bees and other pollinators away from native species that require their services to reproduce.

Control of Himalayan Balsam can be effectively achieved by cutting or pulling it before it sets seed. Every plant must be cleared as even small plants up to 0.5m are capable of seeding. This process must be repeated later in the year as once the initial plants are removed, dormant seeds in the seed bank will begin to grow, and these will manage to set seed within the same season if they are not cut or removed. Once the plant has set seeds, extreme care must be taken not to disturb the seed pods in anyway, and physical control must involve carefully bagging the seed heads first in order to avoid spread.

In Ireland, Himalayan Balsam is classified as a High-Impact Invasive Species with a Risk Assessment Score of 18. It is also listed as an Invasive Species of European Union Concern.

2.2 Japanese Knotweed

Japanese Knotweed (*Fallopia japonica*) was introduced to Europe by the horticultural activities of Philippe von Siebold, who plucked the plant from the side of a Japanese volcano in the 1840s. It is a fast growing, perennial, herbaceous plant, native to East Asia (Japan, northern China, Taiwan and Korea). In its home range, the plant is not a threat because a host of native predators, fungi and herbivorous insects keep it in check. However, outside Japan it is classified as one of the World's Worst Invasive Species (World Conservation Union). The date of its first introduction to Ireland is not known, but is believed to be in the mid to late 19th century.

Japanese Knotweed can grow >3m high, with young shoots in spring growing up to 10 - 30cm per day, quickly resulting in dense stands that shade out other species. The leaves are a distinctive shape with a tapered tip and a flat base (up to 18cm long) and the mature hollow stems have nodes and look somewhat like bamboo canes. The underground rhizome system can be vast, extending up to 3m deep and 7m horizontally from the nearest visible growth. Japanese Knotweed produces small cream or white flowers in late summer or early autumn. There are only female plants in the UK and Ireland so sexual reproduction is negligible; however, hybrids with related plants can be produced (e.g. Giant knotweed; Russian Vine) and are found occasionally.

Even without sexual reproduction, the plant spreads at a rapid rate by rhizome extension. New plants can also grow from tiny fragments of rhizome (as little as 0.7 grams) or stems, which means that traditional control methods such as cutting or strimming will actually further spread a knotweed infestation. Some of the most likely routes for knotweed spread are via our roads, rivers and railway lines as tiny fragments are dragged along these routes enabling them to quickly colonise new areas. Knotweed is also often spread by the movement of contaminated soils offsite and the improper disposal of the weed in garden clearings. It can grow on a wide range of soil types, pH and salinity; has the ability to withstand droughts, heat, cold, sulphurous soil; and is tolerant towards heavy metals. This hardiness ensures a wide distribution across habitat types.

Japanese Knotweed's massive rhizome system and vigorous growth can seriously damage walls, foundations, roads and buildings, including historic sites. The plant can also disrupt the integrity of man-made flood defense structures, increasing costs in repair and maintenance. Railway tracks, roads, pavements, and other constructions are also frequently affected.

Other highly invasive knotweeds that occur in Ireland are Giant Knotweed, *Fallopia sachalinensis*, Himalayan Knotweed *Persicaria wallichii* and Bohemian Knotweed *Fallopia x bohemica*, which is a hybrid between Japanese and Giant Knotweed. These other knotweeds are increasingly found in Ireland, though still to a much lesser extent than the Japanese Knotweed.

In Ireland, Japanese Knotweed is classified as a High-Impact Invasive Species with a Risk Assessment Score of 20.

2.3 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 skins 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.

3. INVASIVE ALIEN SPECIES LEGISLATION

The Invasive Species Ireland project identified Himalayan Balsam, Japanese Knotweed and Giant Hogweed as some of the highest risk (most un-wanted) non-native invasive species in Ireland, and Himalayan Balsam and Giant Hogweed have been listed as an Invasive Species of European Concern. There is strict legislation surrounding these species in both Ireland and the EU. Ireland has 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. Himalayan Balsam, Japanese Knotweed and Giant Hogweed are all listed in Part 1 of the Third Schedule.

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)* 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 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. Himalayan Balsam and Giant Hogweed were added to this list in July, 2017. Three distinct types of measures are envisaged, which follow an internationally agreed hierarchical approach to combatting IAS:

- Prevention: a number of robust measures aimed at preventing IAS of Union concern from entering the EU, either intentionally or unintentionally.

- Early detection and rapid eradication: Member States must put in place a surveillance system to detect the presence of IAS of Union concern as early as possible and take rapid eradication measures to prevent them from establishing.

- Management: some IAS of Union concern are already well-established in certain Member States and concerted management action is needed so that they do not spread any further and to minimize the harm they cause

Chapter II Preventions - Article 7 Restrictions

1. Invasive alien species of Union concern shall not be intentionally: (a) brought into the territory of the Union, including transit under customs supervision; (b) kept, including in contained holding; (c) bred, including in contained holding; (d) transported to, from or within the Union, except for the transportation of species to facilities in the context of eradication; (e) placed on the market; (f) used or exchanged; (g) permitted to reproduce, grown or cultivated, including in contained holding; or (h) released into the environment.

2. Member States shall take all necessary steps to prevent the unintentional introduction or spread, including, where applicable, by gross negligence, of invasive alien species of Union concern.

4. SURVEY FINDINGS

A walkover survey was conducted over 2 days in September, 2017 and an additional day in September was spent surveying by boat on the river. These surveys confirmed the presence of three invasive alien species – Himalayan Balsam, Japanese Knotweed and Giant Hogweed.

4.1 Himalayan Balsam

Himalayan Balsam (HB) was the most extensive IAS present within the survey area. In total HB covered an area of 75,534m^2. It was almost ubiquitous along the banks of the River Slaney and was also present along some of the channel behind the North Island (Appendix I – Drawings). On the North Island, a patch of HB measured over 50m wide and 100m long; while on Bear Meadows a patch of 30m width was recorded. Along the banks of the Slaney, HB stretches from most of the survey length, broken only by bridges or patches of Japanese Knotweed. Although the HB was very dense in some areas, and present only as a smattering of plants in others, its ability to expel seeds to a distance of 7m away from the parent plant means that soil within 7m of any plant is potentially contaminated with HB seed. Given the pervasive presence of HB within the footprint of the proposed scheme, all clay removed down to a depth of 0.5m as part of the works must be treated as potentially contaminated with HB seed (DEFRA, 2013).

4.2 Japanese Knotweed

In total, 21 distinct stands of Japanese Knotweed (JK) were recorded during the survey. Each knotweed stand was given a unique identifier or JK number and the actions that are appropriate for each stand are outlined in section 5.2. The details of each stand recorded are outlined in Table 2, including length, width, the average height of the canes, the maximum cane diameter, and any other notable features.

The total above ground area covered by Japanese Knotweed was 3,789m^2. Most of the JK surveyed appeared to have been growing at the same location for a number of years. Along the western bank of the Slaney, opposite the North Island, there were three long stretches of JK growing along the slope of the bank that residents reported have been in-situ for 15 or more years. These three patches of JK (JK05, JK06 & JK07) have a combined length of 249m and a breadth of between 5 and 10m. Further south along the western bank, along The Promenade, JK09 runs a length of 126.5m. This great length appears to have been the result of recent strimming of the grass without due consideration for the likelihood of causing the spread of JK. JK17 is within the footprint of the proposed new bridge and road that will cross over the northern part of the Bear Meadows to the N30. This stand is close to, but not within a patch of alluvial woodland as recorded on the Baseline Habitat Survey for the proposed works (Scott Cawley, 2017; >10m separation). JK14 runs alongside the railway tracks within the station and has been severely cut back and there is a lot of exposed crown material on-

site. JK15 and JK11 are close to the channel on the east of the North Island that will be widened as part of the proposed works.

Japanese knotweed rhizomes can extend up to 7m from the nearest visible growth above ground (EA, 2013). A buffer distance of 7m away from the nearest visible JK is therefore recommended for biosecurity purposes and has been mapped (Appendix I – Drawings). It is important that machinery or personnel are aware of when they enter within 7m of JK and they take appropriate biosecurity precautions as detailed in Section 5.2. Including a 7m buffer gives a potentially JK contaminated area of 17,825m^2. Although a rhizome distance of 7m from the nearest growth is possible, a distance of up to 3m is more typical and has also been mapped (Appendix I – Drawings). This gives a likely total contaminated area of 9,198m^2.

4.3 Giant Hogweed

There were 4 occurrences of individual or small stands of suspected Giant Hogweed plants within the survey area. In addition, there was one 90m long stretch along the eastern bank of the Slaney just south of the N11 bridge - GH01; two patches in the eastern portion of Bear Meadows – GH02 and GH03 and a small patch 10m^2 on the eastern bank of the Slaney by the North Island – GH04 (see Appendix I – Drawings). GH02 is situated within some alluvial woodland habitat as recorded on the Baseline Habitat Survey (Scott Cawley, 2017) and is within the footprint of the proposed new bridge and road that will cross over the northern part of the Bear Meadows to the N30. The N11 bridge, where GH01 is situated, is scheduled for removal as part of the proposed scheme.

It must be noted that the time of year at which this survey took place (September) is not an ideal time to survey for Giant Hogweed as the plant has already died back for the winter in most locations, leaving only dead stems behind for identification. Therefore, **we recommend repeating the GH survey at a more appropriate time of year e.g. June, 2018**, in order to ensure that no stands have been missed. This is particularly important due to the health hazard posed to personnel by GH.

Table 2. Details of each stand of Japanese Knotweed within the survey area, including dates herbicide treatment was applied, the works that will take place in the immediate vicinity of each stand as part of the proposed scheme, and the proposed actions to take with each stand – treat in situ, or excavate.

ID	Length m	Width m	Area* m^2	Height of Stems	Cane Diameter	Location	Sprayed on Land	Sprayed by Boat	Comments	Planned Works	In-Situ /Excavate
JK01	9.4	12.1	123	>2.5m	>2.5cm	Alongside path	04/09/2017	N/A	In amongst wide section of HB. JK very tall, up to 4m high	No works	In-situ
JK02	4.1	4.4	16	1 - 2.5m	1 - 2.5cm	Alongside path	04/09/2017	N/A	Tangled together with HB and nettles.	No works	In-situ
JK03	5	5	25	>2.5m	1 - 2.5cm	Alongside path	04/09/2017	N/A	Growing alongside tree, very high >3m	No works	In-situ
JK04	7.6	4.5	35	>2.5m	>2.5cm	Directly beside riverbank	04/09/2017	28/09/2017	Directly beside riverbank	No works	In-situ
JK05	80.2	10	830	>2.5m	>2.5cm	Alongside garage	04/09/2017	28/09/2017	Patch beside amenity grassland extremely thick, 10m wide. Smattering running along garage building	Sheet piling	In-situ
JK06	73.4	8	361	>2.5m	>2.5cm	Along back of florists	04/09/2017	28/09/2017	Inaccessible from the land, width assumed 8m - to confirm from boat	Sheet piling	In-situ
JK07	94.9	7	539	>2.5m	>2.5cm	From Mott MacDonald along behind houses	06/09/2017	28/09/2017	At end of stand there is a cut section but there is JK growing in the middle - it is infested	Sheet piling	In-situ
JK08	6.1	3	18	<1m	<1cm	Along riverside walk, north of slip	06/09/2017	N/A	Appears to be new growth	Sheet piling, Flood wall	Excavate
JK09	126.5	4m	405	<1m	<1cm	Along riverside walk, south of slip	06/09/2017	N/A	Looks like this growth results from a stand being cut/strimmed and has spread all along the bank	Sheet piling, Flood wall	Excavate
JK10	3.6	2	6	1 - 2.5m	1 - 2.5cm	Along riverside walk	06/09/2017	N/A	Growing amongst tree	Sheet piling, Flood wall	Excavate

JK11	60	8m	473	>2.5m	>2.5cm	In behind fence at railway station	06/09/2017	N/A	JK scattered in clumps throughout triangle. *Previously treated (approx. July) by railway	Channel reprofiling	In-situ
JK12	7.2	7.7	34	>2.5m	>2.5cm	On the island, track side of channel	06/09/2017	N/A	With HB	Channel reprofiling	In-situ
JK13	7	7	35	>2.5m	>2.5cm	On the island, track side of channel	06/09/2017	N/A	With HB. Difficult access but managed to spray	Channel reprofiling	In-situ
JK14	86.5	4.5	217	>2.5m	>2.5cm	Eastside of railway track	06/09/2017	N/A	Bonsai growth, has been severely cut back. Exposed crown in many locations	Sheet piling	In-situ
JK15	4	3	12	>2.5m	>2.5cm	Along railway fence	06/09/2017	N/A	Clump	Channel reprofiling	In-situ
JK16	20.4	8.3m	170	>2.5m	>2.5cm	Behind swimming pool	06/09/2017	Partial spray 22/09/2017 28/09/2017	Large, kidney shaped section. Well-established stand	Widening river	Excavate
JK17	24.2	10m	246	>2.5m	>2.5cm	Bear Meadows	06/09/2017	N/A	Alongside N11. Very thick section	New bridge	Excavate
JK18	16.2	5	86	>2.5m	>2.5cm	Bear Meadows	NOT SPRAYED	N/A	No access for spraying - field too swampy	No works	In-situ
JK19	17.8	6	102	>2.5m	>2.5cm	Above playground	06/09/2017	N/A	V. steep access	No works	In-situ
JK20	6	4	28	>2.5m	>2.5cm	After playground by railway track	NOT SPRAYED	N/A	Only accessible from railway track so not sprayed	No works	In-situ
JK21	7	5	28	>2.5m	>2.5cm	Western bank opp. North Island	N/A	28/09/2017	Not observed during land survey, found during boat survey	No works	In-situ

*Areas may differ from length x width due to irregular polygon shapes

Ensuring Personnel Awareness

All personnel that will be working on the proposed scheme will be educated through tailored tool-box talks to recognize each of the invasive alien species present within the footprint of the works. They will also be educated on the health and safety and biosecurity procedures that should be followed around each species. Personnel must be familiar with the location of all exclusion zones, and emergency procedures should they come into contact with Giant Hogweed material.

5.1 Management Plan for Himalayan Balsam

5.1.1 Summary

Any clay removed from an area within 7m of Himalayan Balsam(HB) to a depth of 0.5m may contain HB seed. This clay should be buried under other substrate to a minimum depth of 1m. In so far as is possible, work should be avoided within HB contaminated areas during the time when the plant is seeding (late July – Oct). Where this is not possible, these areas should be cleared of HB in advance of works taking place (May/June) by herbicide application, strimming or hand-pulling plants.

5.1.2 Excavation

Himalayan Balsam can eject its seeds up to a distance of 7m from the parent plant. The vast majority of these seeds remain in the top 5cm of soil; however, the recommended excavation depth to ensure complete removal of the seed bank is 0.5m (PCA, 2015). Therefore, any material to a depth of 0.5m within a buffer distance of 7m from HB should be treated as contaminated and buried under other substrate at a minimum depth of 1m. HB seeds are too small and contain insufficient resources to grow when buried to such a depth. As the excavated material as part of the proposed scheme is already intended to be transported to the North Island, careful planning will ensure that the top 0.5m of soil is placed at a depth of >1m.

5.1.3 Management for Works to Take Place Between late July-Oct

Works carried out among Himalayan Balsam plants during the time when the plant is seeding will cause the explosion of many seed pods and may result in the spread of this invasive species. The seed pods react to the slightest movement and so triggering them is unavoidable when personnel or equipment enter an infested area that is seeding.

Planning works in advance can mitigate this problem. In areas that are due to have works carried out during HB seeding time, the HB should be destroyed before it has the chance to set seed. This will clear the area for the works to take place without causing spread.

The HB can be destroyed through the application of a herbicide (glyphosate is very effective), through strimming, or in sensitive areas, through hand-pulling plants. Any plants that are hand-pulled will be piled and covered with jute to ensure they rot, rather than re-rooting. Destruction of HB can take place during May/June. However, for works that are to take place in HB infested areas from Sep/Oct, HB destruction may need to be repeated in order to ensure that new plants do not have sufficient time to set seed before dying back for the winter. This repetition should be scheduled for early Sep.

5.1.4 Biosecurity

Machines that have been used to dig out the first 0.5m of clay in HB contaminated areas must be washed clean before they are used for a different task, including digging at a deeper depth. Material removed will be added to HB contaminated clay.

Personnel, equipment and machinery will avoid any contact with HB during July-Oct, unless they form part of pre-planned works within an area that has been cleared of HB earlier in the year to allow the works to go ahead without the risk of spread as per Section 5.1.3.

5.2 Management Plan for Japanese Knotweed

5.2.1 Summary

In order to reduce the regenerative capacity of the Japanese Knotweed present on-site, all stands will be subject to an on-going herbicide treatment program. At least one treatment has already been applied to all stands. Wherever possible, JK is to be in-situ with a herbicide programme for a minimum of 5 years by a professional contractor.

Where excavation of JK is necessary due to the proposed works, strict biosecurity protocols must be adhered to. Haulage routes must be clearly defined and lined with an appropriate geo-textile to avoid ground contamination; and wash-down areas and procedures must be in place.

Different options for the disposal of JK contaminated clay are outlined (subject to licenses/approval): 1. Off-Site Disposal; 2. Removal to North Island and Subjected to Ongoing Herbicide Treatment; 3. Removal to North Island where Clay is Sifted and Rhizomes Incinerated, Clay is Subject to Ongoing Treatment/Monitoring.

5.2.2 Herbicide Treatment

In order to reduce the regenerative capability of the JK present within the footprint of the works, a herbicide treatment programme has been initiated and will be continued where appropriate, for at least 5 years. All works are to be carried out by a professional contractor with specialist knowledge of invasive species.

The Environment Agency (UK, 2013) recommends that wherever possible JK is treated in-situ using herbicides. In-situ treatment is the most environmentally-friendly option, and does

not pose the same biosecurity risk as mechanical removal. A herbicide treatment programme is also the most cost-effective option; however, it can take 5 or more years to be completely effective and even after such time, the rhizomes cannot be assumed dead without undertaking viability testing. Therefore, not all JK stands recorded here will be suitable for treatment with herbicides alone.

Legislative Framework

All professional formulation plant protection products must only be applied by a Professional Pesticide User that is registered with the Department of Agriculture, Food and the Marine (as required by the Sustainable Use of Pesticides Directive, 2012). All herbicides will be applied in accordance with current legislation (Sustainable Use of Pesticides Directive, 2012), in compliance with the label, in appropriate weather conditions and following an environmental risk assessment. Application of pesticides near water must have prior approval from Inland Fisheries Ireland, be applied by appropriately trained personnel (PA6AW) and use only aquatic approved products.

Herbicides Effective Against Japanese Knotweed

Currently, the following active ingredients are considered to be the most effective treatment for Japanese knotweed available in the EU. Table 3 outlines some key features of these products.

Table 3. Herbicides currently licenced in Ireland that are effective against Japanese Knotweed. All herbicides are systemic (translocated).

Herbicide	*Licensed Product	PCS No.	Selectivity	Persistence	Timing of 1st Application	Aquatic Approved Product
Glyphosate	Roundup Biactive XL	04660	Non-selective	Non-persistent	Aug-Oct	Yes
Aminopyralid + Triclopyr	Icade Grazon Pro	04249 05182	Selective	Not assessed (not for use on animal feed for 1 year)	Apr-May	No
2-4D Amine	Depitox	02365	Selective	1 month	May	No

***** Only example licence products are displayed, others may be available.

Given the current time of year and the need to use an aquatic approved herbicide, **chemical treatment has been carried out using an appropriate glyphosate-based product**. Further

chemical treatments should also use an aquatic-approved glyphosate-based product for any infestations close to water.

In order for a chemical treatment programme to be successful, it is important that the initial leaves and stalks, and any regrowth remain as healthy as possible until the product is applied. A translocated herbicide is drawn into the plant from where it is applied, and moved to other plant organs incl. roots/rhizomes. Because of this mode of action, a translocated herbicide applied via a foliar spray will be most effective if it has a larger leaf area to cover, and the translocation of the product from the leaves down to the rhizomes will be most efficient if the plant is not damaged or water-stressed.

Herbicide Treatment Record

Table 4 details the herbicide treatments that have been applied to each stand to date. Herbicide was applied to some stands from the land in Oct, 2016 by a contractor using the glyphosate-based product Vesuvius (concentration 20ml/lt). Some stands along the railway tracks were treated by Irish Rail using an unknown product in July, 2017. Envirico applied Roundup Biactive XL in Sep, 2017 to all recorded stands by land and by boat (concentration 14 – 20ml/lt). Although JK18 and JK20 have not been treated with herbicide to date, these do not lie within the footprint of any proposed works and so they do not constitute a biosecurity risk as part of the proposed scheme.

Future Treatment Schedule

The ideal time of year for an initial application of glyphosate to Japanese knotweed is after flowering and before senescence, typically Aug-Oct. At this time, the plant is drawing nutrients down into its rhizomes in preparation for winter. Following this initial Autumn treatment, JK can be treated twice annually (*c*. May & *c*. Sep) until no further regrowth occurs. The infestation should then be monitored for at least two years. This future treatment schedule is detailed in Table 5.

Table 4. Spraying Record for Each Japanese Knotweed Stand.

ID	Area (m^2)	Sprayed on Land 2016	Other Treatments	Sprayed on Land 2017	Sprayed by Boat 2017	Plant Condition
JK01	123	Y	N	Y	N/A	Healthy
JK02	16	Y	N	Y	N/A	Healthy
JK03	25	Y	N	Y	N/A	Healthy
JK04	35	Unknown	N	Y	Y	Healthy
JK05	830	Y	Unknown*	Y	Y	Healthy
JK06	361	Y	Unknown*	Y	Y	Healthy
JK07	539	Y	Unknown*	Y	Y	10m section that has been repeatedly mowed
JK08	18	Y	Unknown*	Y	N/A	Appears strimmed
JK09	405	Y	Unknown*	Y	N/A	Appears strimmed
JK10	6	Y	Unknown*	Y	N/A	Appears strimmed
JK11	473	Y	Irish Rail – July, 2017	Y	N/A	Healthy
JK12	34	N	N	Y	N/A	Healthy
JK13	35	N	N	Y	N/A	Healthy
JK14	217	Y	Irish Rail – July, 2017	Y	N/A	Bonsai growth, has been severely cut back.
JK15	12	Y	Irish Rail – July, 2017	Y	N/A	Healthy
JK16	170	Y	N	Y	Y	Healthy
JK17	246	Y	N	Y	N/A	Healthy
JK18	86	N	N	NOT SPRAYED	N/A	Healthy
JK19	102	N	N	Y	N/A	Healthy
JK20	28	N	N	NOT SPRAYED	N/A	Healthy
JK21	28	Unknown	N	N/A	Y	Healthy

*Previous treatments may have been applied by Wexford County Council but the details of these are currently unknown.

Japanese Knotweed Stands for In-Situ Herbicide Treatment

See Table 2 for the list of JK Stands that are scheduled for in-situ herbicide treatment only.

Some JK stands have no significant works taking place within 7m and so will not be directly affected by the proposed scheme (JK01-JK04; JK17-21). These will be treated in-situ where access can be obtained.

Other stands such as JK05, JK06, JK07 & JK14 will have sheet piling placed in front of them, and so may have machinery operating within 7m of the stands. Any works taking place within the 7m buffer zones depicted in the site maps (Appendix I – Drawings) will be subject to the biosecurity protocols outlined in Section 5.2.4. These stands will be treated with herbicides in-situ for 5+ years.

In order to retain JK in-situ wherever possible Mott MacDonald are currently investigating if it is possible to reprofile the proposed new path for the channel on the east of the North Island so that works will not need to take place within 7m of JK11, JK12, JK13 & JK15. This innovative solution will eliminate the need for the excavation of further JK contaminated material.

Table 5. Future Treatment Schedule

Site Visit	Action	Time	Year
1	Apply systemic herbicide as necessary	*Jul - Oct*	*2017*
2	Monitor for growth and apply systemic herbicide as necessary	*Apr - Jun*	*2018*
3	Monitor for growth and apply systemic herbicide as necessary	*Jul - Oct*	*2018*
4	Monitor for growth and apply systemic herbicide as necessary	*Apr - Jun*	*2019*
5	Monitor for growth and apply systemic herbicide as necessary	*Jul - Oct*	*2019*
6	Monitor for growth and apply systemic herbicide as necessary	*Apr - Jun*	*2020*
7	Monitor for growth and apply systemic herbicide as necessary	*Jul - Oct*	*2020*
8	Monitor for growth and apply systemic herbicide as necessary	*Apr - Jun*	*2021*
9	Monitor for growth and apply systemic herbicide as necessary	*Jul - Oct*	*2021*

This schedule of works is an estimate only, as it may take fewer or additional site visits to ensure that eradication (no regrowth for 2 years) is achieved. Site Visit 1 has already been completed.

5.2.3 Excavation

In total there are 5 JK stands that must be excavated as part of the proposed scheme due to the realignment of the river channel (JK16), the construction of the flood wall (JK08, JK09, JK10), or the building of the new road (JK17). The above ground area covered by these stands totals 845m^2. When a 7m buffer is placed around these stands, there is a total area of 4,517m^2 that must be treated as potentially contaminated.

Volume of Material

It is not possible to accurately estimate the volume of material that will have to be excavated as part of these works without conducting an investigation of the extent and depth of the rhizome network. However, the maximum lateral extent of rhizomes is typically considered 7m with a maximum depth of 3m. Therefore, the maximum volume of JK contaminated material to be excavated is 13,551m^3.

This figure is likely to be a gross over-estimation of the amount of clay containing JK material. A Certified Surveyor of Japanese Knotweed (CSJK) will be in place to supervise excavations within contaminated areas and restrict the material classified as contaminated to that actually containing JK material. Under typical conditions, the JK rhizome network does not expand to its maximum possible extent. It is more usual to find the rhizome network contained within 3m lateral spread and 1.5m depth. Therefore, it is more likely that the amount of contaminated clay to be removed will be in the region of 3,500m^3 (calculated from typical rhizome extent of 3m, depth of 1.5m) if done under the supervision of a CSJK.

Should it be necessary to obtain an accurate estimation of the amount of material to be removed, this can be provided by scraping back the top 25cm of top soil and digging a series of test pits within the buffer zone.

5.2.4 Biosecurity

Exclusion Zones

Any personnel or machinery entering within 7m of a Japanese Knotweed stand is entering a potentially contaminated area and as such must be subject to strict biosecurity protocols. This 7m is designated because the maximum lateral extent of the JK rhizome network is 7m from the nearest visible growth. Exclusion zones must be set up a minimum of 7m away from the nearest visible JK growth. Maps depicting the 7m buffer zones are provided in Appendix I – Drawings.

Exclusion zones should be clearly marked or fenced off in order to prevent accidental incursion.

All PPE, equipment, plant or machinery to enter an exclusion zone must be thoroughly clean before entering.

Routes within the exclusion zone should be overlaid with a geotextile that has a layer of sand on-top to protect it from being damaged by heavy machinery. The geotextile will prevent potentially contaminated clay from being transferred onto tracks, tyres or boots.

A designated wash-down area(s) lined with appropriate geo-textile will be set-up within each exclusion zone. At this/these locations all PPE, plant and equipment must be thoroughly cleaned before leaving the exclusion zone. They should be certified as clean by personnel competent at recognizing JK material incl. rhizome. Any material that has been washed off PPE, plant and equipment will be treated as contaminated and added to material to be

removed for disposal or further treatment. Equipment such as a power-washer, buckets with clean soapy water, stiff brushes, hoof-picks, cloths will be available at all times at all wash-down areas.

The amount of traffic in and out of exclusion zones will be kept to a minimum at all times. Machinery will remain outside the zone where possible. For example, long-reach excavators may be utilized to dig material out of an exclusion zone and load it into a truck without having to track inside the exclusion zone at any time. The bucket and arm of the excavator that operated within the exclusion zone must be subject to the wash-down protocols out-lined above.

Loading Contaminated Material

All trucks to collect JK contaminated material will be lined with appropriate geotextile. Material will be loaded to within no more than 50cm of the top and then covered with geotextile for transport.

Banksmen will be in place during loading of contaminated material to watch for and immediately clean-up any material that is dropped during loading. This material will be added to the load to be transported.

Haulage routes will be lined with geotextile protected with a layer of sand on top and trucks will not deviate from these routes.

Trucks that have been used to transport contaminated material must be thoroughly washed down and certified as clean by a competent person before being put to an alternate use.

After Excavation

Following excavation of JK contaminated material, it must be disposed of appropriately. Currently Irish Waste legislation (Waste Management (Facility, Permit and Registration) Regulations 2007) only allows for disposal at a licensed landfill unless an exemption is granted by the EPA. However, this legislation is currently under review and may be altered in advanced of the proposed scheme commencing (EPA, *Pers. Comm*., 2017).

5.2.5 Option 1 – Disposal Off-Site

Disposal off-site is a quick and easy method to get rid of JK contaminated material. Currently, it is also the only way to remediate JK material without either obtaining a Waste license or an exemption from the EPA. However, it is very expensive, and the most environmentally damaging method of treating JK.

JK material that is removed off-site in Ireland is either taken to landfill and deep-buried – an unsustainable solution that uses valuable landfill space; or shipped to the Netherlands for incineration – another solution with a heavy carbon footprint.

Legislative Framework

Japanese Knotweed contaminated material can only be removed off-site by a licenced waste haulier and brought to a licenced waste facility. Under Statutory Instrument 477/2011 (Article 50(2)) it is an offence to transport Japanese knotweed contaminated material without first obtaining a licence from National Parks and Wildlife.

Documents Required for Removal of Japanese Knotweed Contaminated Waste

For disposal of Japanese knotweed material off-site two documents are required: a **licence from National Parks and Wildlife (NPWS)**; and a **Waste Classification document**.

Licence from National Parks and Wildlife Service

A licence application must include:

- As much information as possible on the removal, transportation and treatment of the species in question
- A detailed description of the biosecurity measures that will be in place
- A copy of the Knotweed Management plan
- Details of the timeframe for carrying out the work

Waste Classification Document

Japanese knotweed waste may only be transported offsite by a licenced haulier who will require a waste classification document. A soil test is required in advance. The soil can only be transported to a licenced waste facility that has been notified in advance of the nature of the waste and has agreed to accept the waste material.

5.2.6 Option 2 – Removal to North Island for On-Going Herbicide Treatment

*This option is subject to EPA approval.

Following excavation, trucks loaded with JK contaminated material will haul this along pre-determined haulage routes to the North Island. Other material, such as that dredged from the river during the works will already have been placed on-top of the island, increasing its height an estimated 2m. The JK contaminated material will then be placed at the top of the material, to a depth of no more than 0.5m. This positioning at the top ensures that the excavated rhizomes are provided with the optimum conditions for growth. All growth that results from this will be subjected to an on-going herbicide treatment programme twice annually until no further regrowth has been observed for two years. This is likely to take a total of five or more years (three years growth, two years monitoring).

Trucks will empty the contaminated material in an exclusion zone that is fenced off from the rest of the site and lined with geotextile. They will then move to a geo-textile lined wash-down area that has been set up adjacent to the unloading area for cleaning before they leave

the exclusion zone. Machinery used to collect and spread the JK contaminated material should remain in the exclusion zone until the works are completely and then be thoroughly washed and cleaned before leaving. Once an area has had Japanese Knotweed contaminated material unloaded onto it, it must be added into the exclusion zone and fenced off to prevent spread.

5.2.7 Option 3 – Removal to North Island for Soil Screening

*This option is subject to EPA approval.

Following excavation, trucks loaded with JK contaminated material will haul this along pre-determined haulage routes to the North Island. Other material, such as that dredged from the river during the works will already have been placed on-top of the island, increasing its height an estimated 2m. Trucks will empty the contaminated material in an exclusion zone that is fenced off from the rest of the site and lined with geotextile. They will then move to a geo-textile lined wash-down area that has been set up adjacent to the unloading area for cleaning before they leave the exclusion zone.

The JK contaminated material will then be screened in a geo-textile lined designated area using a series of differently sized metal screens and conveyors that separate the plant material from the clay. Finally, a handpicking station will remove any remaining plant material. The screened clay will be added to the top of the material on the island to a depth of no more than 0.5m. The plant material will be either removed off-site for incineration (license from NPWS required) by a licensed waste haulier; or incinerated on-site using a mobile incinerator (subject to EPA approval).

Any machinery leaving the exclusion zone must be thoroughly washed and certified as clean by a competent person.

5.3 Management Plan for Giant Hogweed

5.1.1. Summary

Giant Hogweed sap poses a major hazard to human health and appropriate PPE must be worn by personnel at all times when working in a GH contaminated area. Machinery must be washed down each evening, or before leaving a GH contaminated area as the machine may be contaminated with GH sap. Excavation of GH should take place outside of the seeding season (typically Aug). Excavation of material down to a depth of 0.5m will destroy the seed bank and the plant itself. All material will be buried on the North Island at a depth of no less than 1m.

5.1.2 Avoiding Danger to Personnel

Giant Hogweed Sap is highly phototoxic and can cause blistering and 1st degree burns when affected skin is exposed to sunlight. Contact with GH must be avoided completely in order to

ensure the safety of personnel operating within contaminated areas. Full PPE by all personnel within a contaminated area including drivers must be worn at all times. This includes:

Chemical Suit Type 5/6 with hood up; Face Mask; Eye Goggles; Long 3mm Nitrile Gloves; Wellington Boots.

Eyewash must be also carried by personnel working in GH contaminated zones as contact of the sap with eyes can cause blindness.

Should sap come into contact with skin, the skin must be covered immediately and the sap washed off with soap and water as soon as possible. There must be a bucket and clean cloth available at all times for this purpose and all personnel operating within an infested area must be made aware of and regularly reminded of its location. Any skin that was touched by GH sap must be kept away from sunlight for a minimum of 48 hours. Following an incident, medical advice should be sought.

A record must be kept of all incidents involving GH sap and any near misses.

5.1.2 Excavation

Giant Hogweed seeds are usually found in the soil within 3m of the parent plant. Over 95%of these seeds remain in the top 5cm of soil; however, the recommended excavation depth to ensure complete removal of the seed bank is 0.5m (PCA, 2015). Therefore, any material to a depth of 0.5m within a buffer distance of 3m from GH should be treated as contaminated and buried under other substrate at a minimum depth of 1m. GH seeds are too small and contain insufficient resources to grow when buried to such a depth. As the excavated material as part of the proposed scheme is already intended to be transported to the North Island, careful planning will ensure that the top 0.5m of soil is placed at a depth of >1m.

5.1.4 Biosecurity

Machines that have been used in GH contaminated areas must be washed clean before the end of the day or before they leave the contaminated area or are used for a different task, including digging at a deeper depth. Material removed will be added to GH contaminated clay. **Regular washing of machinery used in GH contaminated areas is especially critical as the sap can be carried on machines and come off onto the skin of anyone touching the machine at a later time**.

7. CODES OF PRACTICE/SOURCES OF INFORMATION FOR INVASIVE KNOTWEED SPECIES

Ireland

- Invasive Species Ireland Horticultural Code of Good Practice (http://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-Code-Final.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-Native-Invasive-Plant-Species-on-National-Road-Schemes.pdf)
- Invasive Species Ireland Japanese Knotweed Best Practice Management Guidelines (withdrawn since 1st Nov, 2016).
- Inland Fisheries Ireland – Best Practice Guidelines for the Control of Japanese Knotweed (http://invasivespeciesireland.com/wp-content/uploads/2012/01/Best-practice-control-measures-for-Japanese-knotweed.pdf)
- National Biodiversity Data Centre Invasive Species (http://www.biodiversityireland.ie/projects/invasive-species/)
- Invasive Species Ireland Website (http://invasivespeciesireland.com/)
- 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

- Property Care Association Code of Practice for the Management of Japanese Knotweed (http://www.property-care.org/wp-content/uploads/2015/04/Code-of-Practice-for-the-Management-of-Japanese-knotweed_v2.7.pdf)
- Environment Agency – The Knotweed Code of Practice Version 3 (withdrawn since 11th Jul, 2016).
- Royal Institute of Chartered Surveyors – Japanese Knotweed and Residential Property (http://www.rics.org/uk/knowledge/professional-guidance/information-papers/japanese-knotweed-and-residential-property-1st-edition/)
- 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)

8. ABOUT ENVIRICO

Envirico are an Irish ecological company that specialise in invasive species monitoring and control. We tackle invasive alien species found in domestic, commercial and amenity sites in terrestrial, riparian and freshwater habitats.

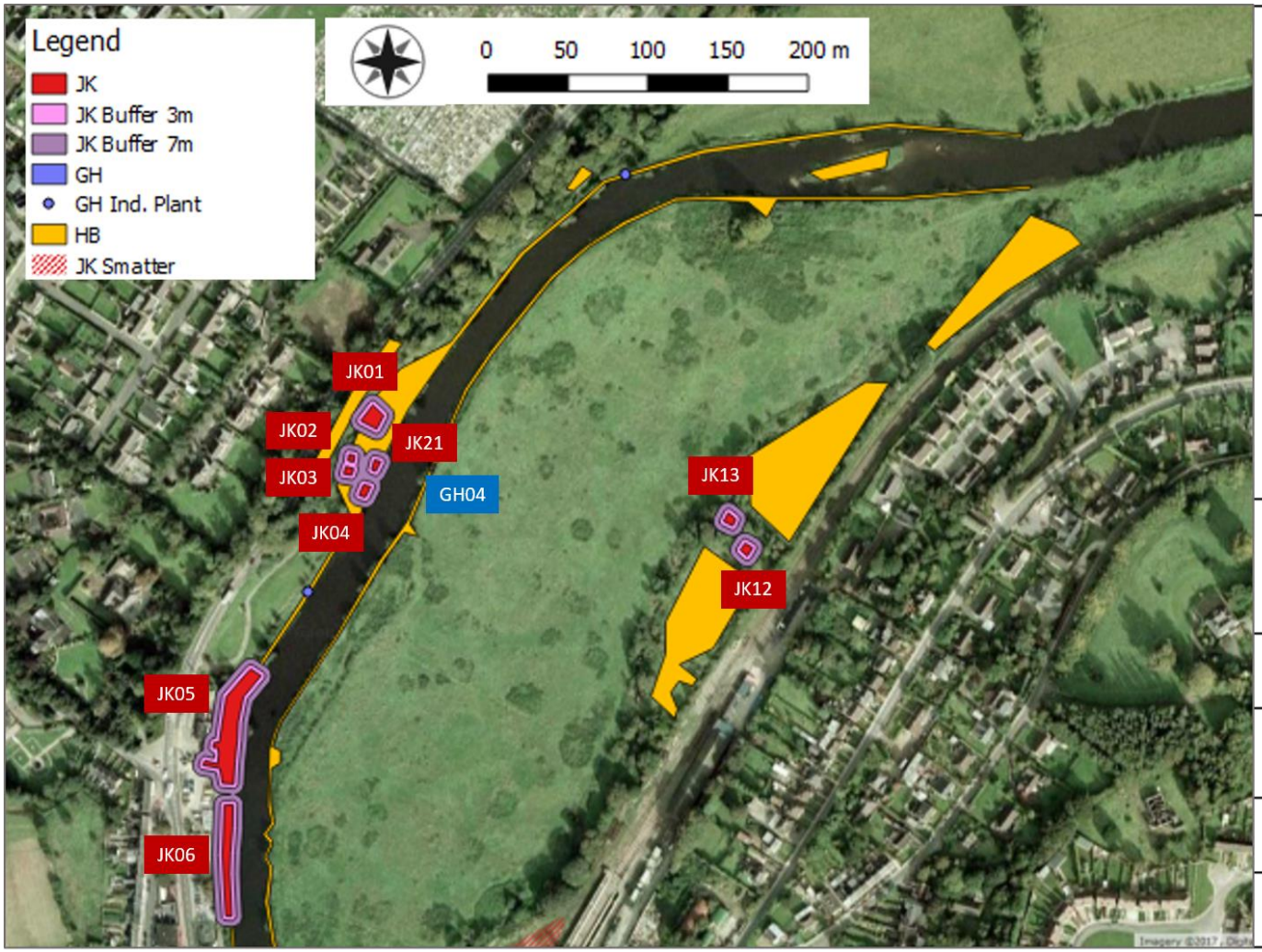
Our qualifications include:

- Ph.D. Ecology/Microbiology
- MSc Aquatic Ecology
- PCA Certified Surveyor of Japanese Knotweed
- PA1 – Safe use of chemicals
- PA6A – Operating hand-held pesticide equipment
- PA6AW – Operating hand-held applicators to apply pesticides near water
- PA6INJ – Operating hand-held pesticide injection equipment
- PA6MC – Operating other hand-held applicators
- Registered Professional Pesticide User of Pesticides
- SOLAS Safe Pass Certified
- CSCS Personnel
- PTS Certified
- Traffic Management
- HSE Commercial Divers
- National Powerboat Certificate (Level 2)

Our services include:

- Site-Specific, Best-Practice Management Plans
- Site Excavation and Management
- Chemical Control
- Post-Treatment Monitoring
- Completion Certificate
- Habitat Restoration
- Training in Biosecurity and Identification

APPENDIX I – Drawings



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Consultant:

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Drawing Title:

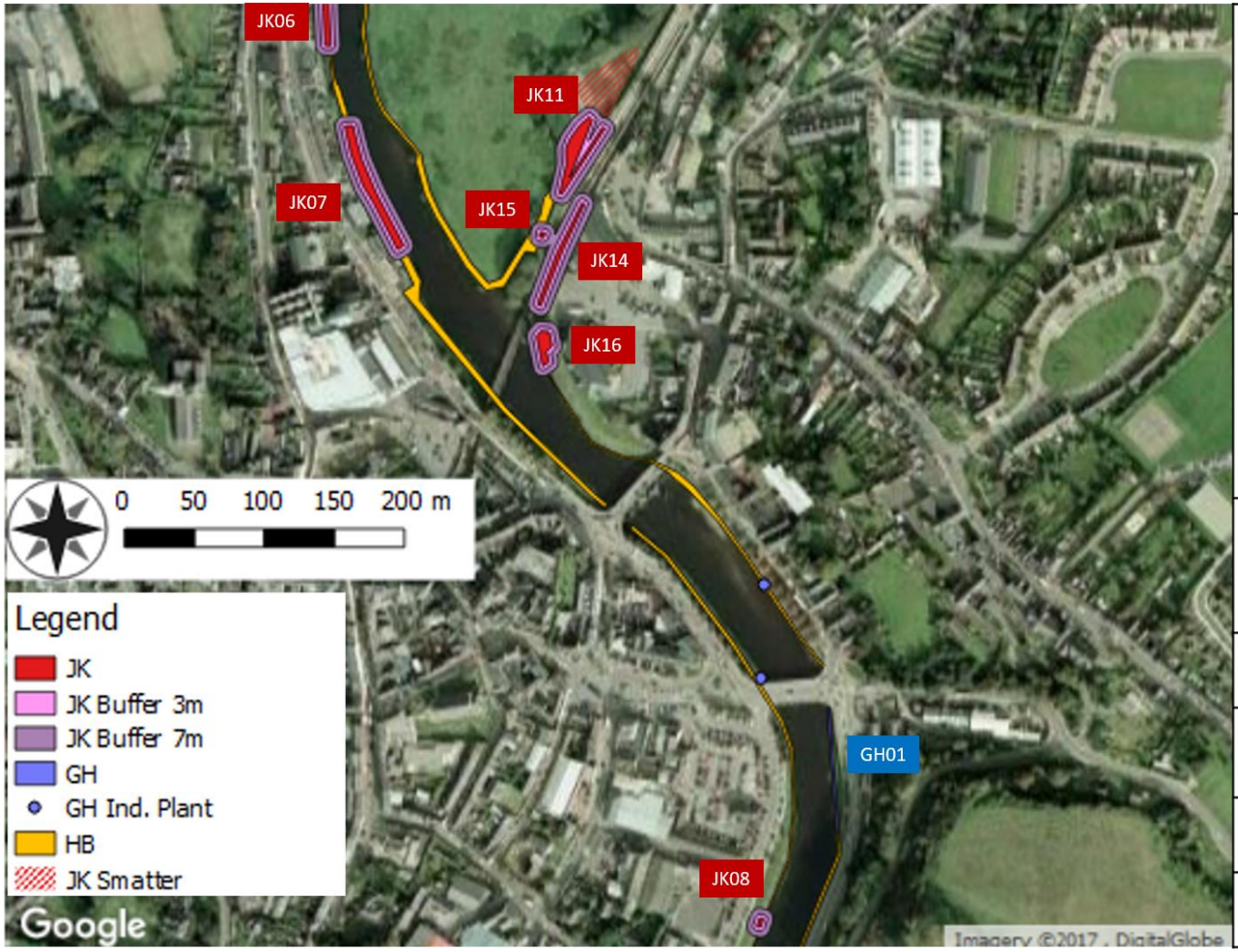
DRAWING 1:
INVASIVE SPECIES (SECTION 1)

Project Name: Invasive Alien Species Survey (Enniscorthy Flood Defence)

Project Code:	*Drawn:*	*Approved:*
00076	AG	MB

Date:	*Drawing Number:*
29th Sep, 2017	*00076.1/Enniscorthy/2017*

Source Background Digital Orthophoto:
Google Maps, 2017



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Drawing Title:

DRAWING 2:
INVASIVE SPECIES (SECTION 2)

Project Name: Invasive Alien Species Survey (Enniscorthy Flood Defence)

Project Code:	*Drawn:*	*Approved:*
00076	AG	MB

Date:	*Drawing Number:*
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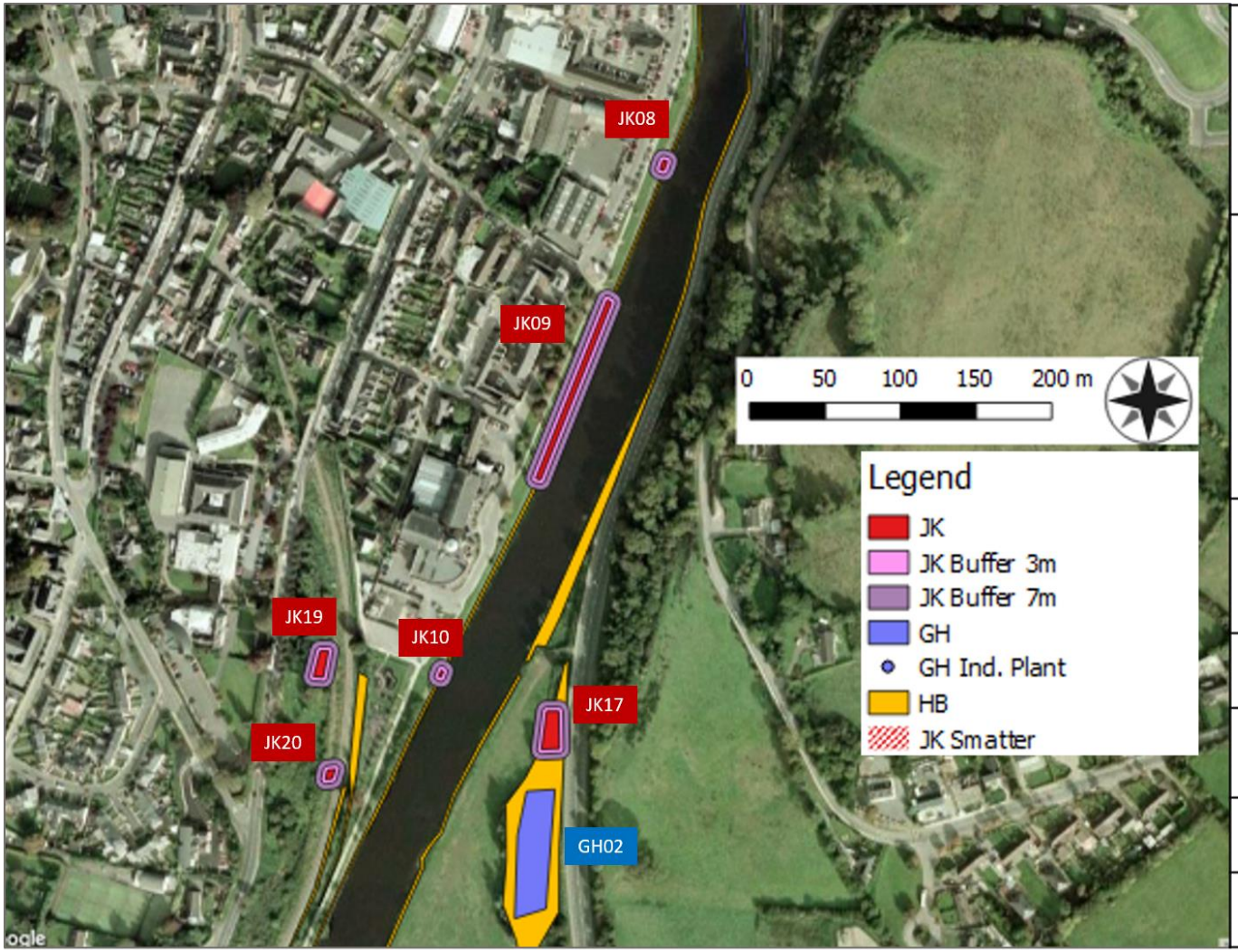

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Drawing Title:

DRAWING 3:
INVASIVE SPECIES (SECTION 3)

Project Name: Invasive Alien Species Survey (Enniscorthy Flood Defence)

Project Code:	*Drawn:*	*Approved:*
00076	AG	MB

Date:	*Drawing Number:*
29th Sep, 2017	*00076.2/Enniscorthy/2017*

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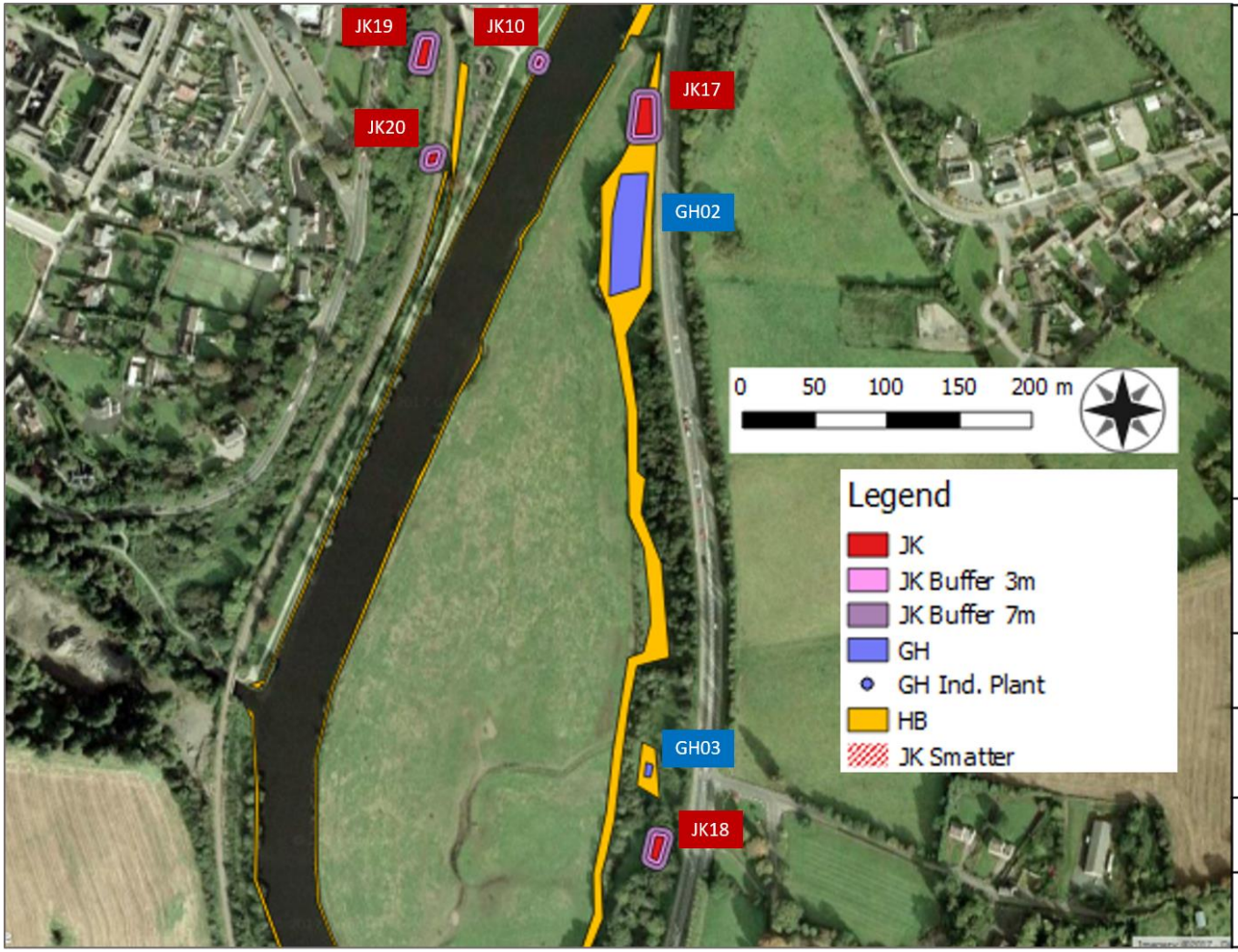

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Drawing Title:

DRAWING 4:
INVASIVE SPECIES (SECTION 4)

Project Name: Invasive Alien Species Survey (Enniscorthy Flood Defence)

Project Code:	*Drawn:*	*Approved:*
00076	AG	MB

Date:	*Drawing Number:*
29th Sep, 2017	*00076.2/Enniscorthy/2017*

Source Background Digital Orthophoto:
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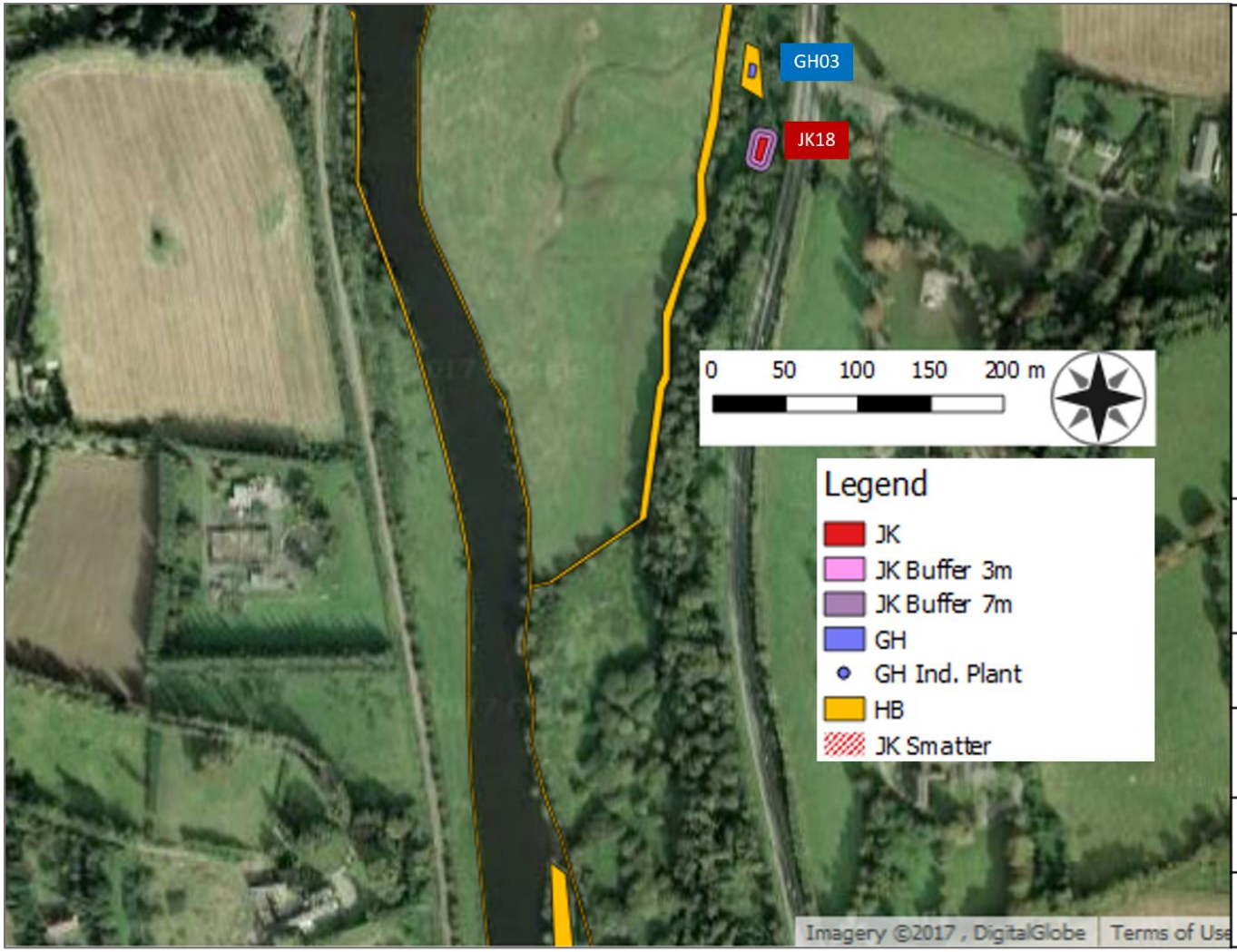

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Drawing Title:

DRAWING 5:
INVASIVE SPECIES (SECTION 5)

Project Name: Invasive Alien Species Survey (Enniscorthy Flood Defence)

Project Code:	*Drawn:*	*Approved:*
00076	AG	MB

Date:	*Drawing Number:*
29th Sep, 2017	*00076.2/Enniscorthy/2017*

Source Background Digital Orthophoto:
Google Maps, 2017

Client:

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Drawing Title:

DRAWING 6:
INVASIVE SPECIES (SECTION 6)

Project Name: Invasive Alien Species Survey (Enniscorthy Flood Defence)

Project Code:	*Drawn:*	*Approved:*
00076	AG	MB

Date:	*Drawing Number:*
29th Sep, 2017	*00076.2/Enniscorthy/2017*

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Google Maps, 2017

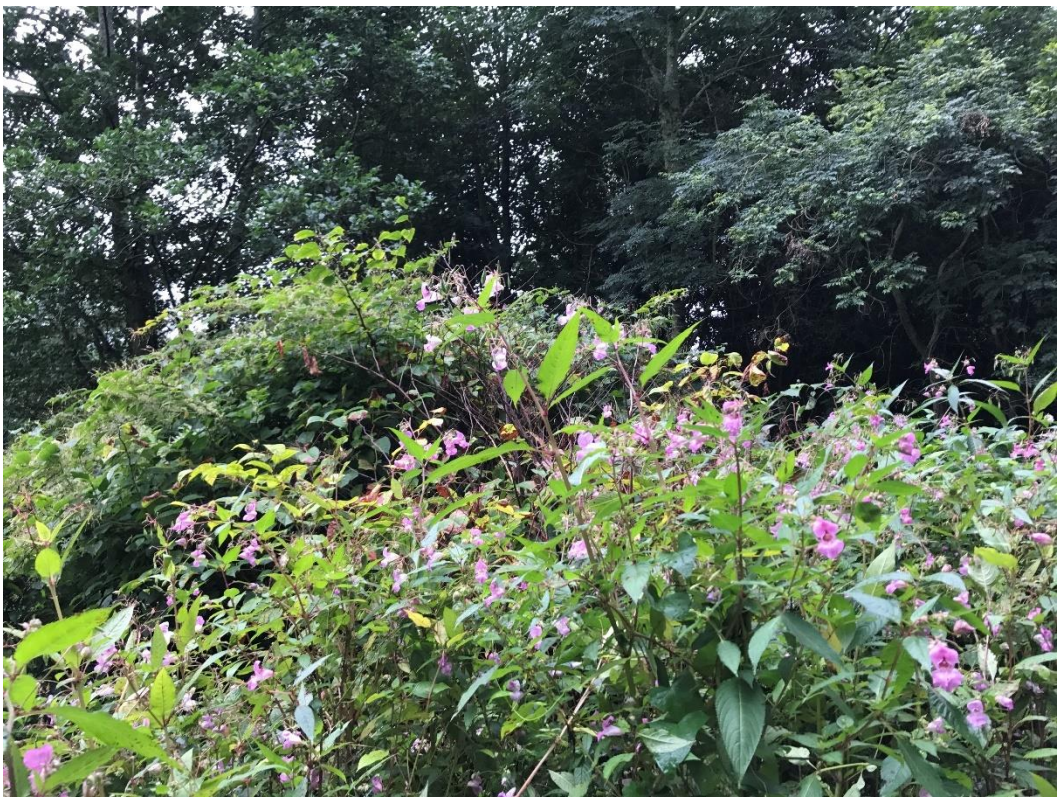


Fig 1. JK001

Fig 2. JK002

Fig 3. JK003

Fig 4. JK004

Fig 5. JK005

Fig 6. JK006 – 2 weeks after spray from land 2017

Fig 7. JK007

Fig 8. JK008

Fig 9. JK009

Fig 10. JK010

Fig 11. JK011

Fig 12. JK012

Fig 13. JK013

Fig 14. JK014

Fig 15. JK015

Fig 16. JK016

Fig 17. JK017

Fig 18. JK018

Fig 19. JK019

Fig. 20 JK020

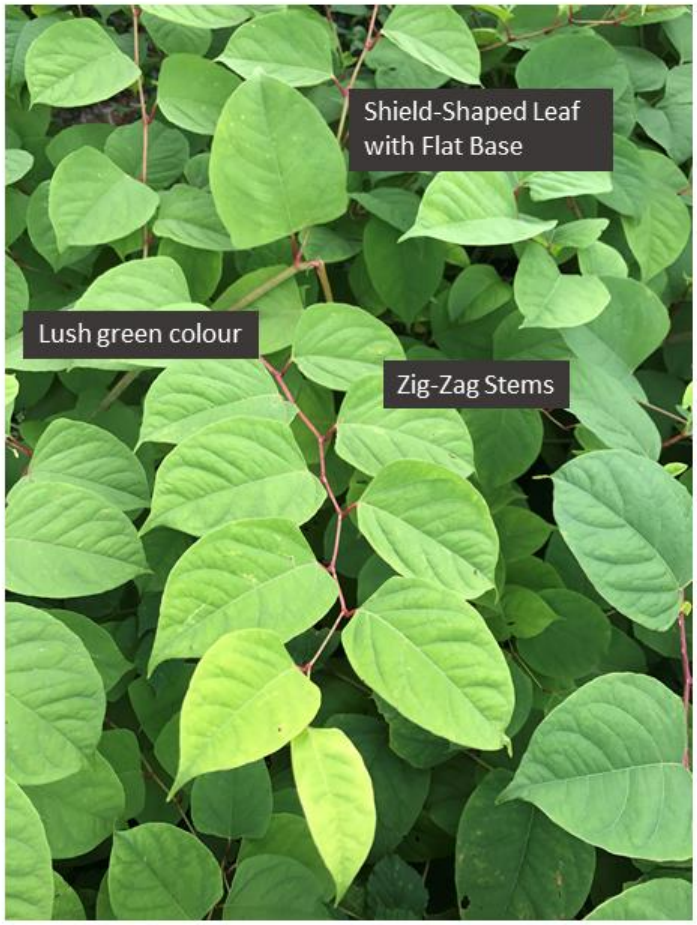
Fig 21. Himalayan Balsam along the eastern bank of the Slaney along the North Island

Fig 22. Giant Hogweed and Himalayan Balsam on east bank of the Slaney opposite the promenade

Fig 23. GH04

Fig 24. Himalayan Balsam was present along the banks of the Slaney for most of the survey area.

JAPANESE KNOTWEED IDENTIFICATION SHEET



Himalayan Balsam Identification Sheet

Giant Hogweed Identification Sheet

Flowerheads, may be 80cm across

Leaves may be 3m long

Red blotches and hairs on stem

Dead canes - winter

C. Wexford County Council Flood Plan

Flood Plan 2018

Title	**Flood Plan**
Date	**16 February 2018**
Version	**2.1 DRAFT**
Prepared By	**Paul L'Estrange**
Approved By	**John Carley**

Change record

This Plan is maintained and updated by the Wexford County Councils' Major Emergency Development Committee (MEDC). All responders are asked to advise the MEDC of any changes in circumstances that may materially affect the Plan in any way. Details of changes should be directed to;

- The Director of Service (Housing, Community, Libraries, Arts, Emergency Services & Environment), or,
- The Chief Fire Officer, or
- The Assistant Chief Fire Officer with responsibility for Major Emergency Management (MEM).

Date	Details	Amended By	Signature
22 Dec 2016	Main section updated moblisation procedures New Appendices	Ray M	Ray M
22 Dec 2017	Updates include addition of Gorey and Appendices update	Ray M	Ray M
16 Feb 2018	Removal of reference to manholes Introduction of surge forecast information Plan layout changes	Paul L	Paul L

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Glossary of Terms and Acronyms

AA	Automobile Association
AGS	An Garda Siochána
AER	Area Engineer Roads
AEW	Area Engineer Water
ACFO	Assistant Chief Fire Officer
CFO	Chief Fire Officer
CDO	Civil Defence Officer
DM	District Manager
DoS	Director of Service
E/D	Enniscorthy District
GSS	General Services Supervisor
MEP	Major Emergency Plan
MEDC	Major Emergency Development Committee
NECC	National Emergency Coordination Centre
Ops	Operations
OPW	Office of Public Works
PRA	Principle Response Agency (WCC, AGS, HSE)
RNLI	Royal National Lifeboat Institution
SMT	Senior Management Team
SE	Senior Engineer
SEE	Senior Executive Engineer
SE/E	Senior Engineer Environment
SER	Senior Engineer Roads
SEW	Senior Engineer Water
SWPS	Safe Work Practice Sheet
TF	Town Foreman
VMS	Variable Message Sign
WCC	Wexford County Council

1.1 Introduction

This flood plan has been developed to deal with frequently occurring flooding events throughout Wexford County. The focus of this plan is to aid in the preparedness and response to a flooding emergency and to assign responsibility to individuals and agencies who will be required to carry out functions in accordance with the attached appendices.

This plan forms part of the Wexford County Council's Major Emergency Plan and coordinates with the plans of the relevant Principal Emergency Services who may be involved in a response to flooding in Wexford County. This plan has been produced by the Major Emergency Development Committee (MEDC) of Wexford County Council.

2.1 Hazard analysis & Response

Wexford County Councils' Risk Assessment 2015 has identified the main risks that Wexford County may encounter. The risks associated with flooding are as follows;

Event Number		1
Risk/Scenario		Flooding: Shoreline, River, Heavy Rain
Vulnerable Groups		Waterside homes/businesses
Control Measures		Weather information, planning & preparedness, flood relief schemes
Impact		3
Likelihood		4
WCC Section Responsible		Roads & Municipal Districts
WLA Sub-Plan Procedures		Flood Plan/Severe Weather Plan

Table 1: Risk Assessment of severe weather and flooding incidents

This plan is to be reviewed annually and after incidents and exercises as required.

2.2 Priority areas

Three priority flood risks have been identified in Wexford County. These are;

1. Enniscorthy & Bunclody Towns
2. Wexford town
3. New Ross & Rosbercon (includes Arthurstown, Ballywilliam, Campile, Wellington Bridge)

Gorey, Rosslare Strand and townlands and villages throughout Wexford County are also susceptible to localised flooding. Bunclody flooding will be dealt with by Enniscorthy Municipal District, while Rosslare Strand is associated with coastal flooding in Wexford Harbour.

3.1 Low Level Alert for Enniscorthy Town

Enniscorthy Town is prone to flooding with little or no warning. This may not give enough time for a weather warning from Met Eireann. River levels are monitored on a daily basis by the Area Engineers and/or GSS's in the Enniscorthy Municipal District and this plan may be activated when a sudden rise in water levels is recorded.

3.2 Identification of key triggers for Enniscorthy Town

Triggers may be accompanied by one or more of the following;

a. snow melt in the Wicklow Mountains
b. continuous rain forecast for the following 24 hours or more
c. rising water level

The key triggers that will activate this plan are;

A. Area Engineers and/or GSS's in the Enniscorthy Municipal District notice a sudden rise in water level in Enniscorthy town, or,
B. An **Orange Alert** from MET Eireann and;
C. Flooding at Clohamon. Scarawalsh, Rectory Field (all north of Enniscorthy) and Bear Meadows (south of Seamus Rafter Bridge). River level on the staff on the north side of Seamus Rafter Bridge reads 2.7m and rising, and weather conditions could be conducive to flooding. The GSS is requested to put crews on standby for a flood event. Various other river levels will trigger subsequent actions.

Water levels may be monitored at the following locations (www.waterlevel.ie):

Tullow	Bunclody
Clohamon	Scarawalsh
Island Road, Enniscorthy	Clonhasten pumping station
Enniscorthy Old Bridge	Seamus Rafter bridge

3.3 ENNISCORTHY TOWN FLOOD PLANNING / RESPONSE CHECKLIST

	RESPONSIBILITIES	**RESPONSIBLE PERSON**
	Area Engineer Water (AEW) to be responsible for engineering aspects within District.	AEW
	District Manager (DM) to be responsible for non-engineering aspects within town boundary, including all communication with press, radio, elected members.	DM

	HEALTH AND SAFETY	**RESPONSIBLE PERSON**
	Ensure adequate and appropriate staff are trained in working near water.	AEW
	Ensure flotation devices are available for staff working near water.	AEW
	Ensure street/infrastructure maps (with gullies, manhole covers detailed) are available.	GSS

	ADVANCE PREPARATION	**RESPONSIBLE PERSON**
	Ensure adequate stock of sand, sandbags & filler frames are available.	GSS
	Ensure diversion routes (both major & minor) are pre-planned.	AER
	Ensure all planned diversion-specific detour signs are in stock and readily available.	AER and GSS
	Ensure an adequate supply of diversion signs, cones, emergency lights and corri-board signs is in stock and readily available.	AER and GSS
	Ensure N/M11 Ferry VMS signs are ready to	SE Roads

	take flood diversion messages + Mobile VMS.	
	Ensure adequate staff are trained in working near water.	AEW
	Notify Wexford District if necessary	AEW

	PRE-FLOOD ACTION	**RESPONSIBLE PERSON**
	Organise sand, sandbags, bag filler frames.	GSS
	Obtain assistance from other Areas if necessary to fill sandbags. Staff from other areas should generally be used for stationary duties such as sandbag filling, roadblock, i.e. they won't need knowledge of the town.	AEW
	Arrange for sandbag collection point and for dispersal of sandbags. Possible Collection Points: Island Road, Templeshannon side, Slaney Place, Abbey Square, Spring Valley. Other locations as necessary.	TF
	Warn occupants in flood areas: Island Road, Abbey and Shannon Quays, Templeshannon, Promenade. Use local radio, door to door visits, leaflets, twitter and mapalerter as required.	DM
	Call Principle Response Agency Liaison Team meeting – see under 'On-Site Coordination' below.	DoS Em
	Arrange for provision of back-up facilities (dry-boards etc) for in-house crisis team meetings.	DoS Em
	Alert SE Water Services Ops re flood risk and pump houses.	AEW

	Consider additional assistance from Community Wardens etc.	DM

	FLOOD AWARENESS	**RESPONSIBLE PERSON**
	Check & record river levels on staff gauge on the northern side of Seamus Rafter Bridge.	AER
	If Seamus Rafter Bridge staff water level reaches 2.7m and rising, consider having GSS put crews on standby for a flood event.	AER
	If Staff level reaches 2.8m have sandbags dropped as per sandbag map plan. **See Section 3.4.**	ATF
	Check & record Scarawalsh river levels.	AER
	Check County Carlow river levels with Carlow County Council.	AER
	Ensure planned diversion routes are still appropriate and driveable.	AER
	Diversion trigger levels on Seamus Rafter Bridge staff gauge:	
	• Close Abbey Quay @ 3.35m and implement short diversion route.	AER
	• Divert M11 southbound traffic via Ballycanew @ 3.4m.	AER
	• Implement 2-way traffic on Seamus Rafter Bridge @ 3.5m.	AER
	• Close Shannon Quay @ 3.5m.	AER
	• Divert all N11 through traffic to long diversion routes @ 3.5m.	AER
	• Close Seamus Rafter Bridge @ 3.9m.	AER

	TRAFFIC MANAGEMENT	RESPONSIBLE PERSON
	Meet with local AGS. Discuss traffic management and available resources.	AER
	Lay signs on chosen diversion routes.	GSS
	Prepare signage, cones etc. for town diversion routes including 2 way traffic on bridge.	GSS
	When implementing diversion, put up town signs and start/finish signs.	GSS
	Keep town traffic flowing over new bridge as long as possible.	AEW
	Remember to have M11/N11 VMS signs activated.	SE/R
	Check safety of staff on Killurin turn-off N11 northbound diversion (check driving southbound).	SE/R
	Keep check on Duffry Hill traffic – inclined to block when major diversion is in place. Get traffic control there if necessary. Liaise with AGS.	AEW
	Set up temporary bus stops. e.g. Pettit's Junction. Let buses pass the diversions and go through the town. Tell the staff at Killurin and Blackstoops to let buses through the town unless told otherwise (i.e. until Seamus Rafter Bridge is impassable).	AER
	Inform Bus Eireann and Wexford Bus of flooding and diversion. Tell them where buses can stop to pick up and drop off passengers. Request they allocate a staff member to stop and guide buses, and that they advice passengers in town centre if necessary.	DM
	Staffing at diversions:	AEW

	• Shannon Quay north. • Abbey Quay/Mkt Sq. • N11 Blackstoops. • N11 Killurin. This will vary as required.	
	Provide vehicles at diversion points - allows the crews take shelter in bad weather.	AER
	Abbey Quay can be re-opened a little earlier if two rows of cones, with arrows on leading cones, are placed to leave narrow, road-centre access for vehicles, and staff are present to slow vehicles down.	AER

	COMMUNICATIONS	**RESPONSIBLE PERSON**
	Arrange communications with Elected Members, residents, general public.	DM
	Arrange communication with Radio, Press.	DM
	Arrange WCC website updates.	DM
	Arrange communication with AA Roadwatch *(through AGS).*	AER
	Arrange communication with 24-hr Call Centre.	AER
	Arrange communication (diversion & situation updates) with Fire & Ambulance Service: Senior Area Engineer.	AER
	Keep DoS E/D and DoS Em informed.	AER
	Relay information to Co Mgr: DoS Em or by delegation DoS E/D.	DoS Em

	ON SITE COORDINATION	**RESPONSIBLE PERSON**

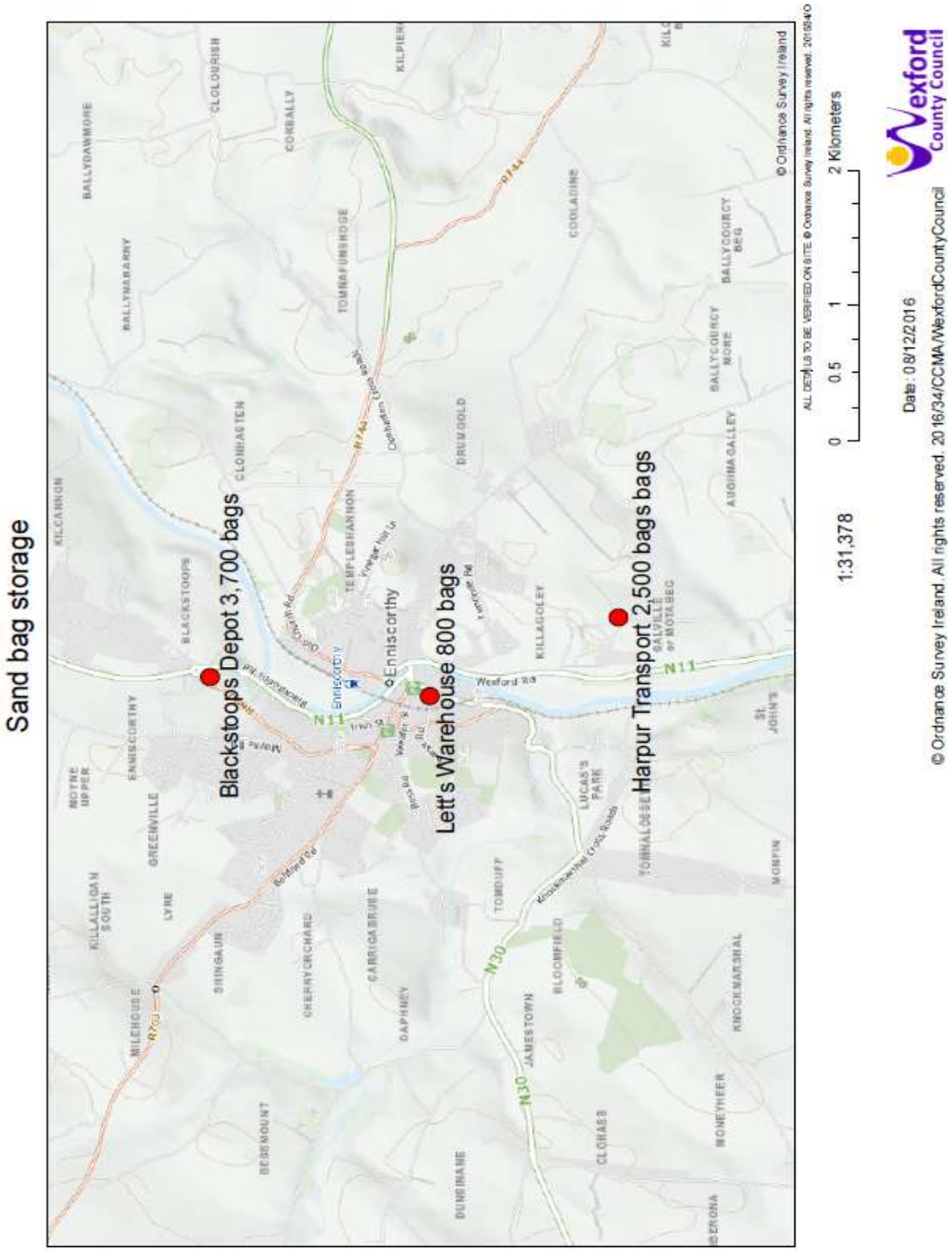
	Note MEP App. F5 PRA roles and responsibilities (see appendix C of this plan)	DoS/AE/DM
	Set up On-Site Coordination Centre for in-house Crisis Team, and PRA Liaison Team, if required, in Area Offices, EMD Offices.	DoS/DM/AEW
	Ensure out-of-hours access to office, if required	DM/AEW
	Call Crisis/Liaison team meetings as required: First pre-flood meeting should include AGS, CDO. Subsequent meetings may or may not be limited to SER, AER, AEW, DM, Town Engineer, GSS, DoS Em, DoS E/C, as the need arises.	DoS Em
	Consider whether MEP needs activation. e.g. are there evacuees? Is the flooding widespread in the County, putting strain on resources?	DoS Em
	Consider whether Army 4wd or high-axle vehicles may be needed.	DoS Em

	WELFARE	**RESPONSIBLE PERSON**
	Organise rota and relief for outdoor crews.	AER/DM
	Organise food and drink for; • outdoor crews, • Engineers, • Crisis teams and area office	AER/DM
	Consider whether Civil Defence are required for providing food etc.	DoS Em.
	Consider whether 4wd or high axle vehicles needed for ferrying staff and public over flooded areas. Local contractors, Civil Defence, Army may have resources.	DoS Em.
	Consider evacuation issues: transport, housing. What are implications if evacuees increase	DM

	significantly?	

	DEMOBILISATION	**RESPONSIBLE PERSON**
	Take start and finish signs and town centre signs down first if appropriate.	AER
	Advise radio & elected members.	DM
	Advise AA Roadwatch *(through AGS).*	AER
	Advise Emergency Services.	AER
	Advise volunteer services.	AER
	Do gullies need cleaning?	AER
	Replace missing signs for next event.	AER and GSS
	Debrief.	DoS Em.
	Brief MEDC.	DoS Em. and AER

3.4 Sandbag Storage and Drop-off points for Enniscorthy Town



Note: **Blackstoops Depot 1,500 sandbags & Delete Lett's Warehouse = 0.**

Sand bag drop off points

ALL DETAILS TO BE VERIFIED ON SITE © Ordnance Survey Ireland. All rights reserved. 2016/34/C

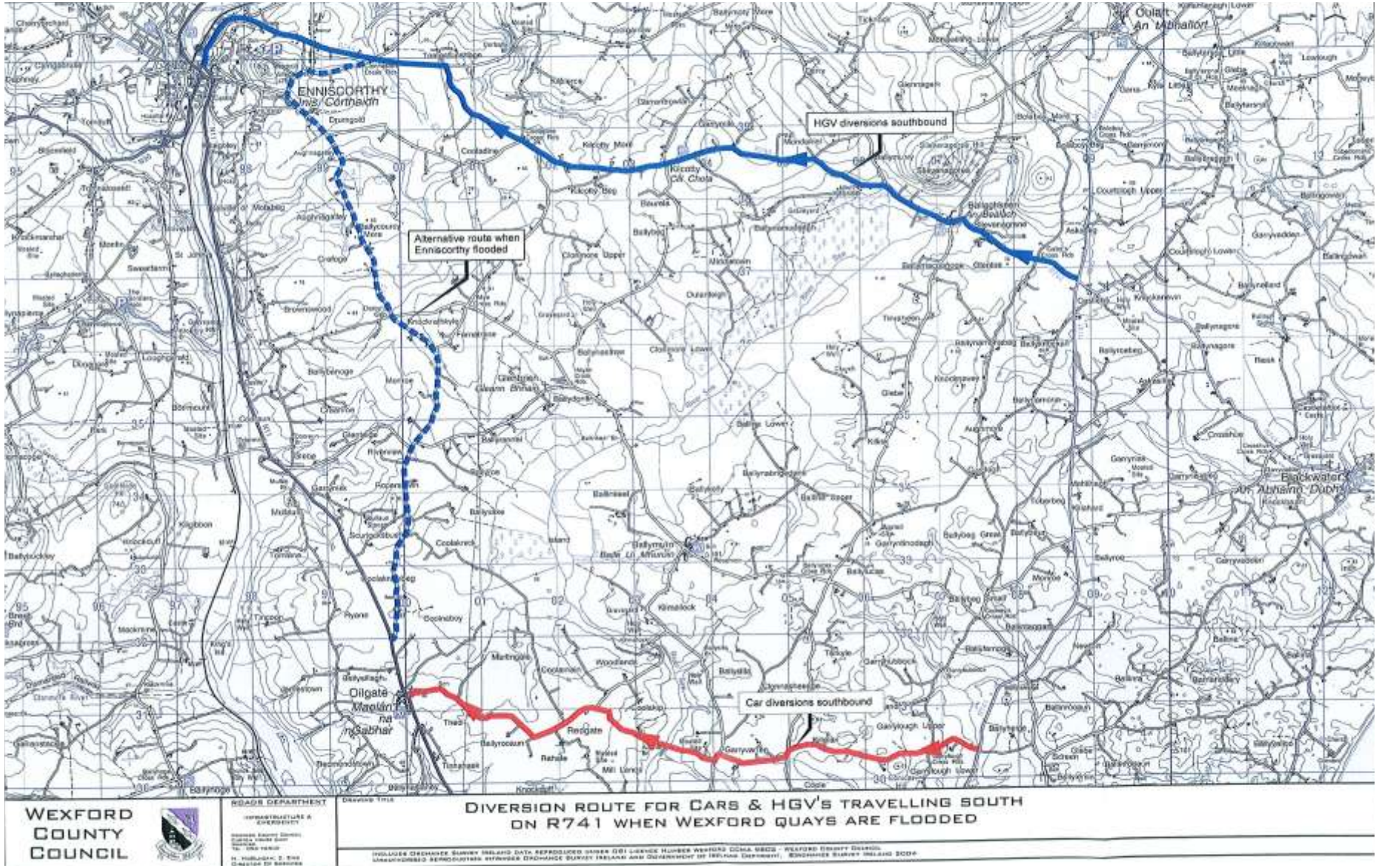
1:6,276

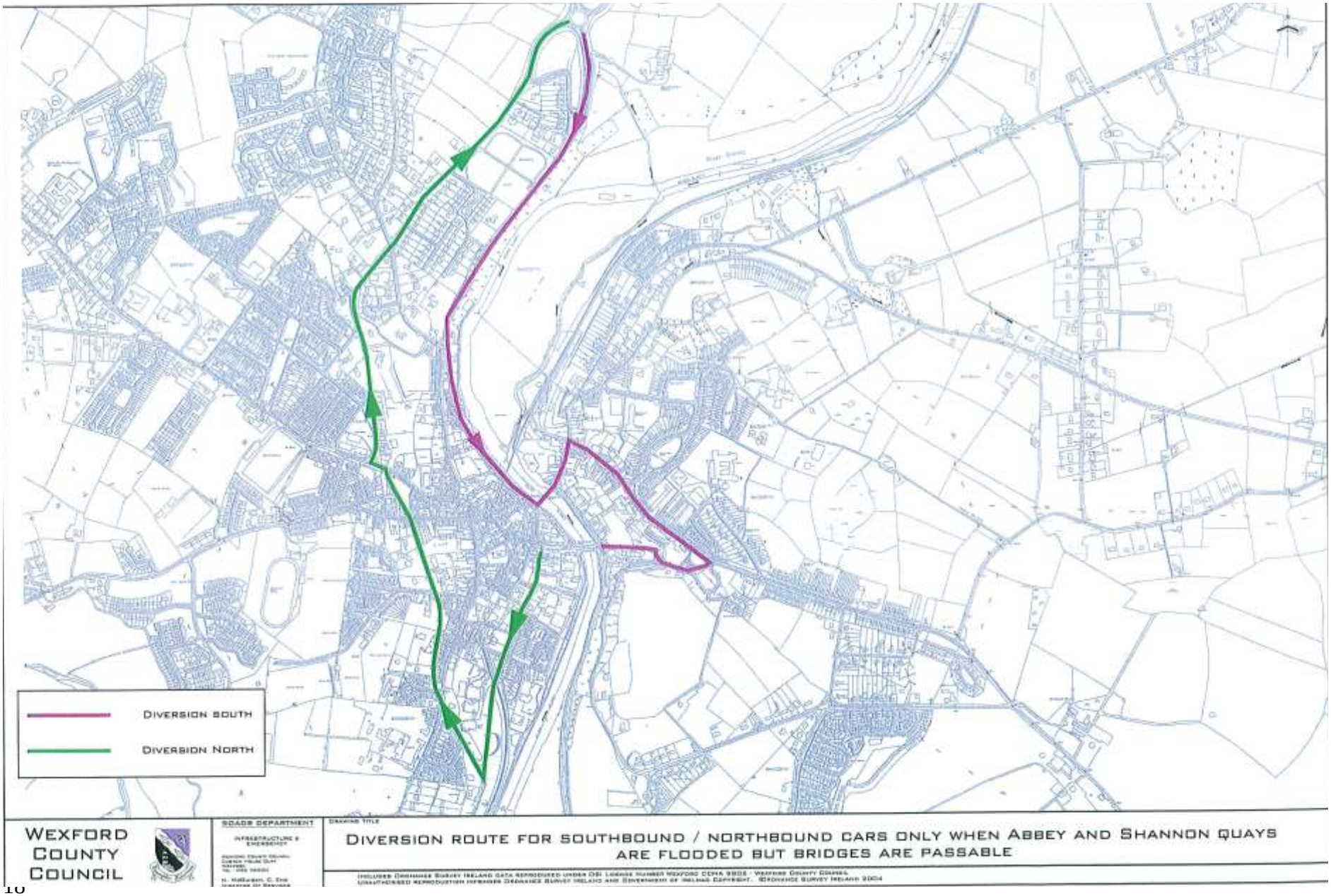
0 0.1 0.2 0.4 Kilometers

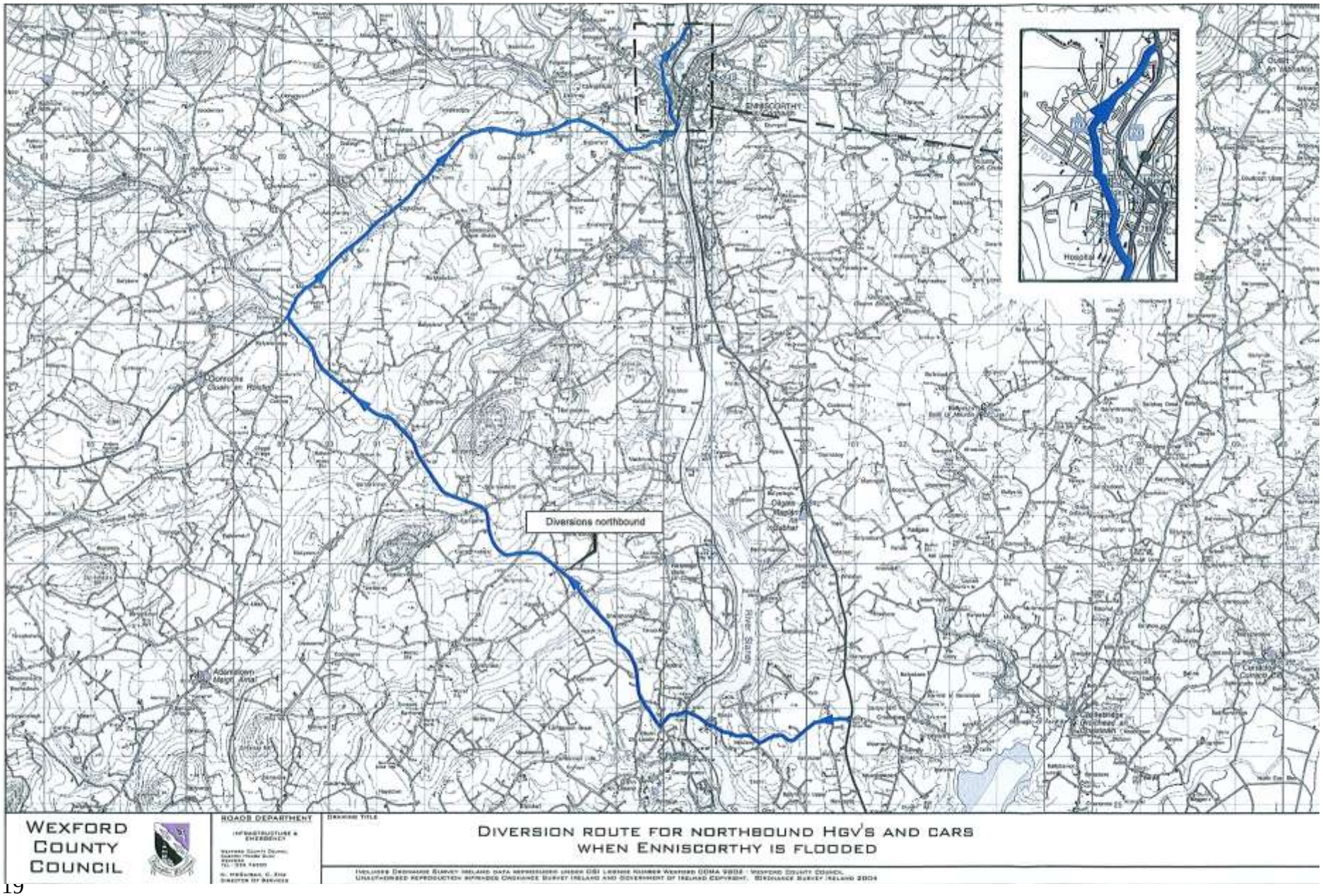
Date: 08/12/2016

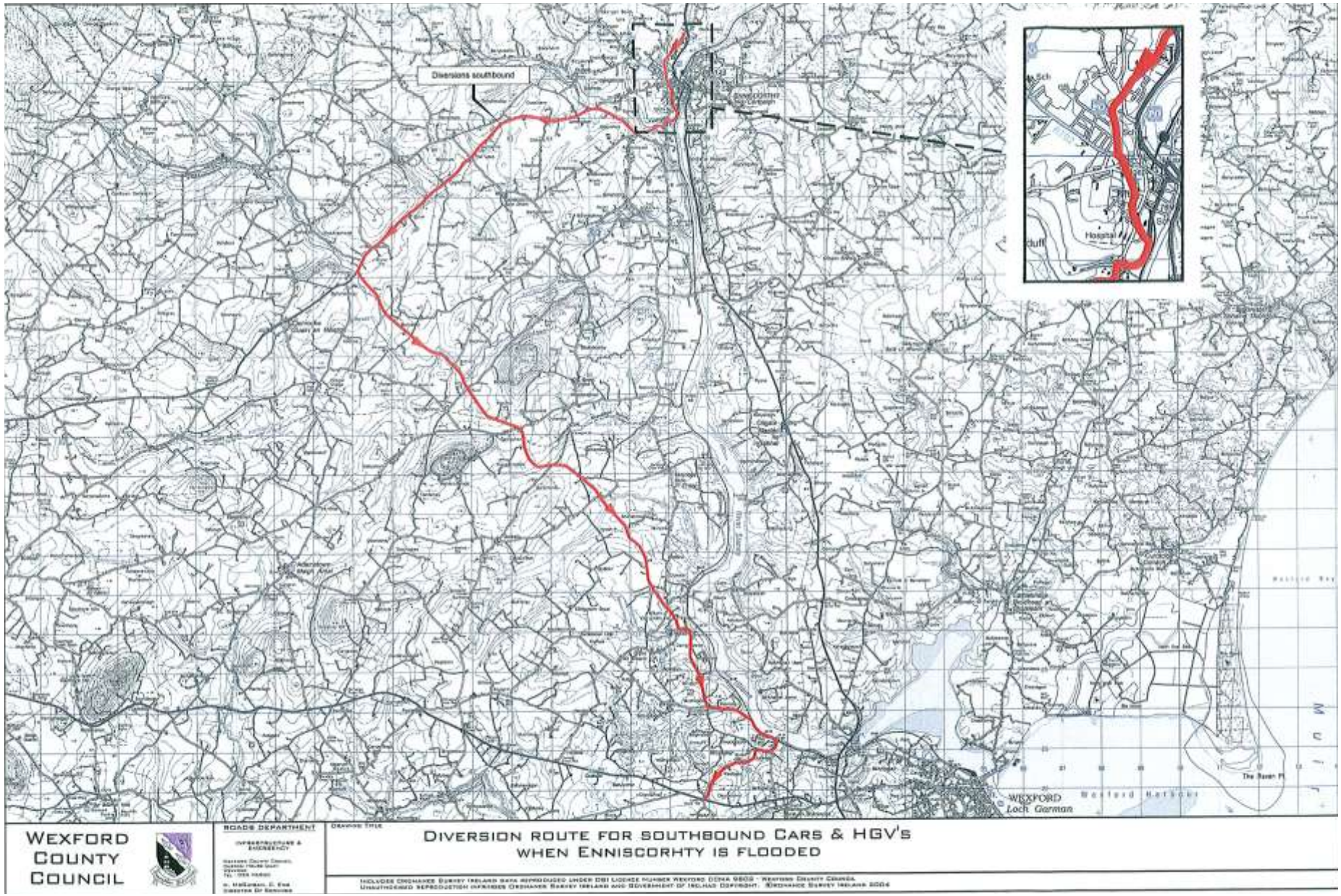
Wexford County Council

3.5 Enniscorthy Town Diversion Maps

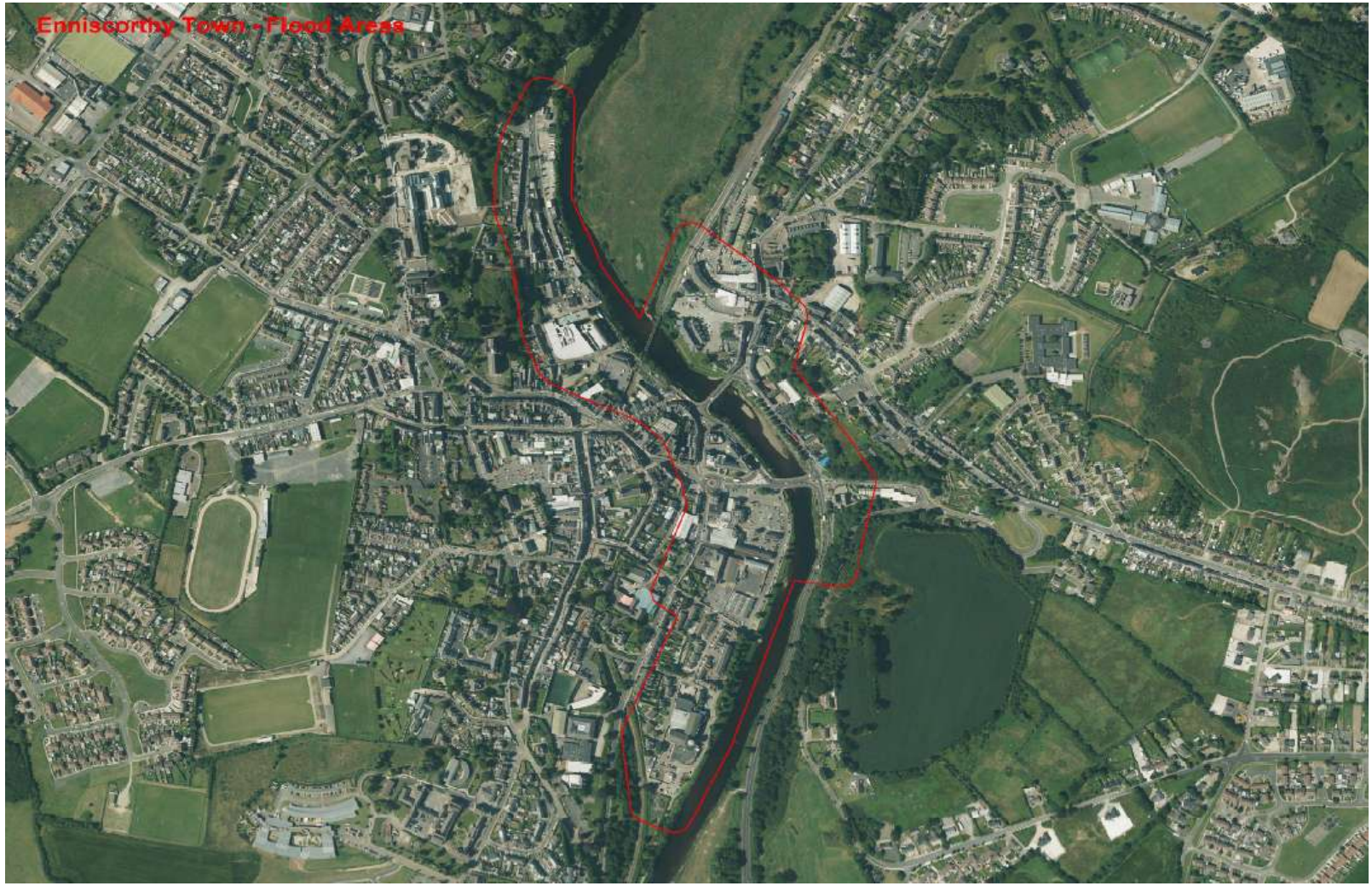



Diversion South
Diversion North
Wexford County Council
Roads Department
Infrastructure & Environment
Drawing Title
Diversion route for southbound / northbound cars only when Abbey and Shannon quays are flooded but bridges are passable


Diversions northbound
WEXFORD COUNTY COUNCIL
ROADS DEPARTMENT
DIVERSION ROUTE FOR NORTHBOUND HGV'S AND CARS WHEN ENNISCORTHY IS FLOODED


Diversions southbound
WEXFORD
Loch Garman
Hospital
WEXFORD COUNTY COUNCIL
ROADS DEPARTMENT
DIVERSION ROUTE FOR SOUTHBOUND CARS & HGV's
WHEN ENNISCORHTY IS FLOODED

Enniscorthy Flood Areas (Mapalerter)



Bunclody Flood Areas (Mapalerter)

4.1 Identification of key triggers for Wexford Town

Flooding of Wexford Town and Rosslare Strand is more a result of exceptionally high tides and surges and is somewhat related to rainfall insofar as local drains may surcharge. Warnings of very high tides, easterly or south easterly gales and very low pressure are all key triggers which may necessitate putting the flood response plan into operation.

<<SURGE TRIGGER INFO>>

Water levels may be monitored at the following locations (www.waterlevel.ie):

Edermine Bridge (available)	Wexford Bridge automatic level recorder
Ferrycarrig Bridge	Wexford Quays
www.wexfordharbour.info	www.wexfordharbour.com use the Links tab

4.2 WEXFORD TOWN FLOOD PLANNING / RESPONSE CHECKLIST

	RESPONSIBILITIES	**RESPONSIBLE PERSON**
	District Manager (DM) responsible for non-engineering aspects within town boundary, including all communication with press, radio, elected members.	DM
	Senior Executive Engineer (SEE) responsible for coordinating engineering services between town and county. The District Area Engineer (DAE) is to take direction from the SEE.	SEE
	Senior Executive Engineer (SEE) responsible for engineering aspects within District.	SEE
	Town Foreman (TF) and General Services	TF/GSS

	Supervisor (GSS) responsible for Staff mobilisation, equipment and signage.	
	Wexford County Council to be contacted to coordinate staff mobilisation, equipment and signage outside town boundary.	SEE/DAE SER/GSS

	HEALTH AND SAFETY	**RESPONSIBLE PERSON**
	Ensure adequate and appropriate staff are trained in working near water.	SEE /DER
	Ensure personal flotation devices are available for staff working near water.	DAE/TF
	Ensure street/infrastructure maps available for flood areas.	SEE

	ADVANCE PREPARATION	**RESPONSIBLE PERSON**
	Check storm drains and gullies are unblocked. Arrange for cleaning of same if required.	DAE/TF
	Adequate stock of sand, sandbags & filler frames. Consider when to start filling sandbags?	SEE/DAE/TF
	Check that diversion routes & road blocks are still appropriate as flooding continues?	DAE/TF
	Ensure all planned diversion specific signs/roadblocks in stock and readily available.	TF/GSS
	Routine checking of OPW tide gauge website for surge forecasts or www.waterlevel.ie.	SEE/DAE
	Check previous Wexford Flood Report (2004) and drawings for critical areas.	SEE/DAE

	Check with water services to ensure availability of Trinity Street facility and generator.	SEE/DAE SEW Ops
	Put plans in place for post-flood clean-up operations to begin asap.	DM/SEE

	PRE-FLOOD ACTION	**RESPONSIBLE PERSON**
	Note MEP App. F5 PRA roles and responsibilities (see appendix C of this plan).	DoS
	Warning on local radio, twitter, mapalerter, Chamber of Commerce, Elected Members. Warn occupants of flood risk areas.	DM
	Notify DoS Wxd & Em. Services.	DM
	Set up Coordination Centre meeting room for Liaison and in-house Crisis Management Teams: Consider District Council Offices, County Hall, or Fire HQ.	DM/DoS
	Arrange for provision of back-up facilities (dry-boards, stationery etc.) for team meetings.	DoS Em
	Initial Liaison team PRA meeting. Include AER, SEE SE/R, DM, DoS Em, DoS Wxd, CDO and AGS. Subsequent meetings may be more limited in attendance as appropriate.	DoS Em
	Inform NECC of inter-agency meeting.	DoS Em
	Consider whether RNLI (Wexford) may be of assistance, even on standby. Should they be at Crisis Team meeting?	DoS/SEE
	Consider need for assistance from WCC. Note:	SEE/AER

	WCC may well be overstretched already. Consider use of Civil Defence, Community Wardens?	
	Check with CDO: move some Civil Defence vehicles to either side of the bridge? Consider any use for the Civil Defence personnel and rib?	SEE/AER
	Organise sand, sandbags, filler frames.	SEE/AER
	Prepare signage and roadblocks at pre-planned locations.	TF/GSS
	Lay out signs/roadblocks in readiness for erection. Erect intermediate diversion signs in rural areas.	SEE/AER GSS (WCC) AER
	Coordinate with the Wexford Harbour Master for flood level readings	SEE

	FLOOD AWARENESS	**RESPONSIBLE PERSON**
	Arrange for check of actual water levels at quays against OPW predicted levels.	SEE/AER
	Check tide and wind forecast.	SEE/AER
	Critical flood areas, levels and breach points are indicated on Wexford Flood Report (2004) Maps	AER/SER
	First critical road flood should be traffic light junction at quays/bridge. (to be discussed, might be south main street, Monk street).	SEE/AER
	Arrange for member of staff to keep record of max. flood levels at various locations.	SEE/AER

	TRAFFIC & CROWD MANAGEMENT	**RESPONSIBLE PERSON**
	Advise AGS when blocking/diverting. Advise	SEE/AER

	AGS if notification to AA Roadwatch required.	
	Erect traffic signage as/when necessary. Put at least one person at each roadblock. Providing a vehicle allows them to take shelter in bad weather.	SEE/AER
	Request AGS to provide crowd control at quays.	DM
	Send out updates on website, Mapalerter, Twitter etc.	DM

	COMMUNICATIONS	**RESPONSIBLE PERSON**
	Arrange communications with Elected Members, residents and general public.	DM
	Remember: It is vital that information is communicated using the formal communication arrangements in place in order to ensure all staff at all levels are aware of the situation.	All staff
	Arrange communication with Radio, Press.	DM
	Arrange WCC website updates.	DM
	Communication with AA Roadwatch *(thru AGS)*.	SEE/AER
	Communication with 24-hr Call Centre.	SER
	Communication (diversion & situation updates) with Fire & Ambulance Service.	SEE/AER
	Keep DoS Wex and DoS Em informed.	DM/SEE/AER
	Relay information to Co Mgr. Delegate to DoS Wxd as necessary.	DoS Em
	Use VMS on Town Bypass to provide info to road users.	SER
	Notify Bus Eireann and Wexford Bus of impending flood, it will affect drop-off points. Are there alternative stops? Bus Eireann and Wexford Bus may need to put up a notice at the	DM

	train station, and/or use local radio.	
	Notify Iarnrod Eireann of impending flood.	DM
	Arrange for formal communication channels to be open and available with the Gardaí	DM

	ON SITE COORDINATION	**RESPONSIBLE PERSON**
	Refer to Coordination Centre meeting facilities under 'Pre-Flood Action' above.	DoS/AER/DM
	Ensure access to meeting room out of office hours if required.	DM
	Call on-site Crisis/Liaison team meetings as required.	DoS Em
	Consider whether MEP requires activation.	DoS Em
	Consider whether Army 4WD of high-axle vehicles may be needed.	DoS Em
	Ensure water pumps at Trinity street are operational. This will also require suitable staff to be available to operate same.	SEE/AER

	WELFARE	**RESPONSIBLE PERSON**
	Organise a rota and relief for outdoor crews	TF/GSS
	Organise food and drink for; • outdoor crews, • Engineers, • Crisis teams and area office	AER/DM
	Consider whether Civil Defence are required for providing food etc.	DM
	Consider whether 4 wd or high axle vehicles	Dos Em.

	needed for ferrying staff and public over flooded areas. Local contractors, Civil Defence, Army may have resources	
	Consider evacuation issues: transport, housing. What are implications if evacuees increase significantly?	DM

	DEMOBILISATION	**RESPONSIBLE PERSON**
	Check that further tidal flooding is unlikely	AER
	Arrange for removal of diversion/roadblock signs	AER
	Advise radio & elected members	DM
	Advise AA Roadwatch *(through AGS)*	AER
	Advise Emergency Services roads clear	AER
	Advise volunteer services	AER
	Make quay manholes safe	SE/W Ops
	Do gullies need cleaning?	AER
	Replace missing signs for next event	AER
	Debrief	DoS Em
	Brief MEDC	DoS Em/ AER/DM
	Arrange clean-up operations	DM/SEE

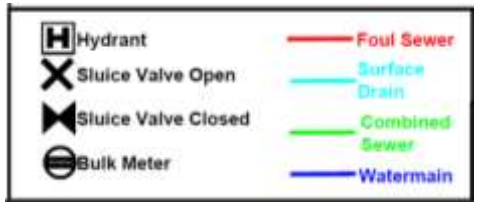
<< 4.3 Sandbag Storage and Drop-off points for Wexford Town Map>>

<<4.4 Diversion Route Signage Wexford Town>>

4.5 Wexford Flood Areas (Mapalerter)

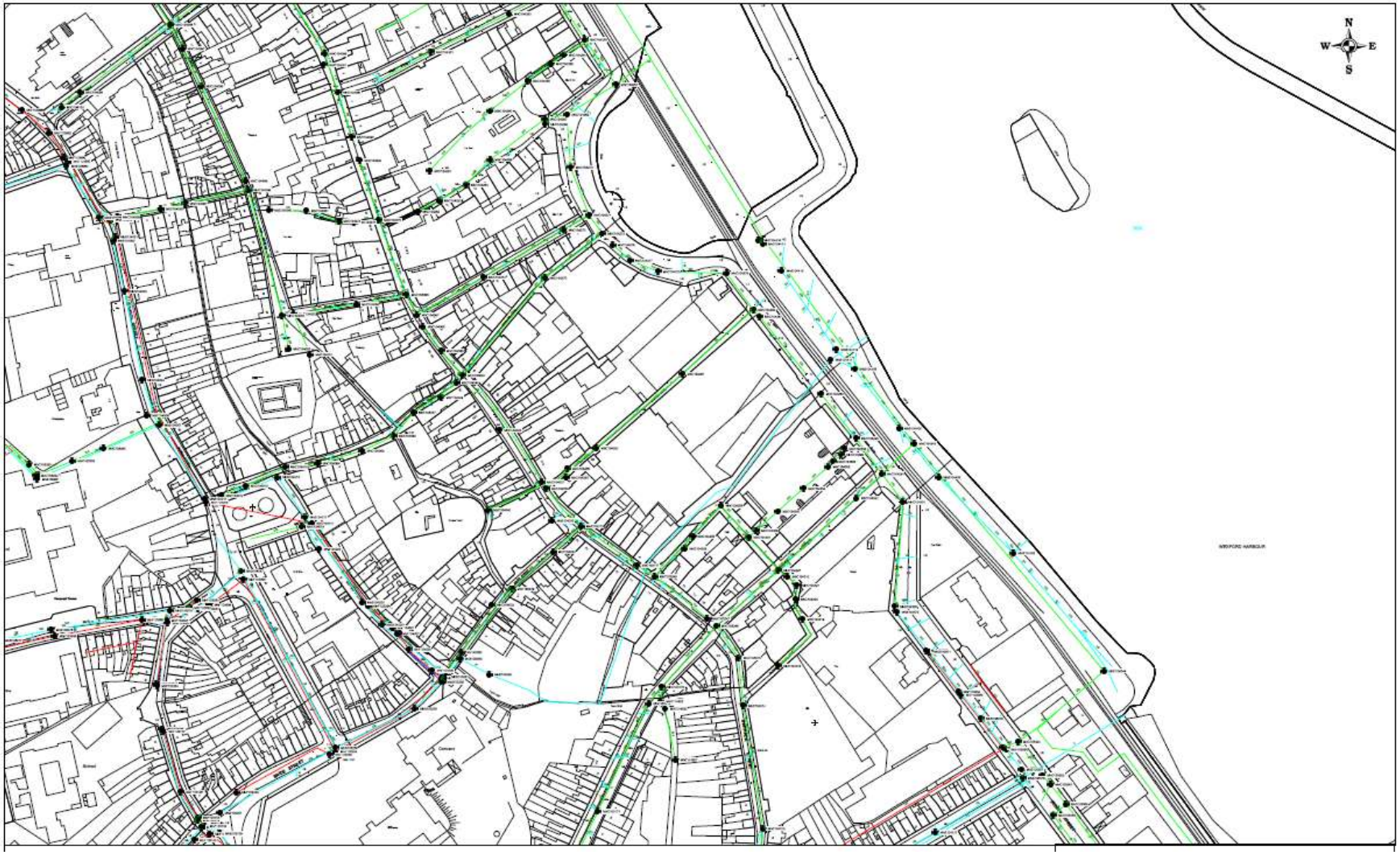
4.6 Wexford Town Sewer and Water mains Layout

Wexford Main St North



Key to **Wexford Town Sewer and Water mains Layout**

Wexford Main St South



Wexford Redmond Road

5.1 Identification of key triggers for New Ross Town (inclusive Rosbercon)

Triggers will be accompanied by one or more of the following;

a) continuous rain forecast for the following 24 hours or more
b) A rising water level
c) A south or south west wind (New Ross)
d) Extremely low atmospheric pressure
e) High tides
f) Equinox and other unique weather systems

Flooding along the quays in New Ross, Marshmeadows and Rosbercon.
Flooding also occurs along the N25, R733, Arthurstown, Ballywilliam, Campile and Wellington Bridge.

5.2 NEW ROSS & ROSBERCON TOWN FLOOD PLANNING / RESPONSE CHECKLIST

	RESPONSIBILITIES	**RESPONSIBLE PERSON**
	Area Senior Executive Engineer (SEE) to be responsible for engineering aspects within District.	SEE
	District Manager (DM) to be responsible for non-engineering aspects within the district, including all communication with press, radio, elected members.	DM

	HEALTH AND SAFETY	**RESPONSIBLE PERSON**
	Ensure adequate and appropriate staff are trained in working near water.	AER
	Ensure flotation devices are available for staff working near water.	SEE
	Ensure street/infrastructure maps are available.	SEE

	ADVANCE PREPARATION	**RESPONSIBLE PERSON**
	Ensure adequate stock of sand, sandbags & filler frames are available.	GSS
	Ensure diversion routes (both major & minor) are pre-planned.	AER
	Ensure all planned diversion-specific detour signs are in stock and readily available.	AER and GSS
	Ensure an adequate supply of diversion signs, cones, emergency lights and corri-board signs is in stock and readily available.	AER and GSS
	Ensure N25 VMS signs are ready to take flood diversion messages + Mobile VMS.	SE Roads/AER
	Ensure adequate staff are trained in working near water.	SEE
	Notify Enniscorthy District if necessary. Also Kilkenny County Council roads engineers.	AEW

	PRE-FLOOD ACTION	**RESPONSIBLE PERSON**
	Organise sand, sandbags, bag filler frames.	GSS
	Obtain assistance from other Areas if necessary to fill sandbags. Staff from other areas should generally be used for stationary duties such as sandbag filling, roadblock, i.e. they won't need knowledge of the town.	AER
	Arrange for sandbag distribution personnel/contractor and deliver sandbags to collection points. As per sandbag drop off plan (Need Map)	GSS

	Warn occupants in flood areas using local radio, mapalerter and twitter. Consider School closures.	DM
	Call Principle Response Agency Liaison Team meeting – see under 'On-Site Coordination' below.	DoS Em
	Arrange for provision of back-up facilities (dry-boards etc) for in-house crisis team meetings.	DoS Em
	Alert SE Water Services Ops re flood risk and pump houses.	AER

	FLOOD AWARENESS	**RESPONSIBLE PERSON**
	Check & record river levels on Quay wall by N25 Barrow bridge	AER
	Check water level at flood wall by O'Hanrahans bridge.	AER
	Check & record Water levels at Quays	AER
	Check County Kilkenny/Carlow river levels with Kilkenny/Carlow County Council.	AER
	Ensure planned diversion routes are still appropriate and driveable.	AER
	Diversion trigger levels (TBA)	
	•	AER
	•	AER
	•	AER

	TRAFFIC MANAGEMENT	**RESPONSIBLE PERSON**
	Meet with local AGS. Discuss traffic management and available resources.	AER

	Lay signs on chosen diversion routes.	GSS
	Prepare signage, cones etc. for town diversion routes including 2 way traffic on bridge.	GSS
	Keep town traffic flowing over bridge as long as possible.	AEW
	Remember to have N25 VMS signs activated.	SE/R
	Check safety of staff on diversion routes (note: drive route in opposite direction to main traffic flow)	SE/R
	Keep check on traffic on R733, N25 and N30. Liaise with AGS.	AEW
	Let buses pass the diversions and go through the town. Inform staff to let buses through the town unless told otherwise.	AER
	Inform Bus Eireann and Wexford Bus of flooding and diversion. Tell them where buses can stop to pick up and drop off passengers. Request they allocate a staff member to stop and guide buses, and that they advise passengers in town centre if necessary.	DM
	Staffing required at diversions: • Rosbercon N25 • Marshmeadows • N25 • R733 • Arthurstown • Ballywilliam • Campile • Wellington Bridge	AEW
	Provide vehicles at diversion points - allows the crews take shelter in bad weather.	AER
	Abbey Quay can be re-opened a little earlier if two rows of cones, with arrows on leading	AER

	cones, are placed to leave narrow, road-centre access for vehicles, and staff are present to slow vehicles down.	

	COMMUNICATIONS	**RESPONSIBLE PERSON**
	Arrange communications with Elected Members, residents, general public.	DM
	Arrange communication with Radio, Press.	DM
	Arrange WCC website updates.	DM
	Arrange communication with AA Roadwatch *(through AGS).*	AER
	Arrange communication with 24-hr Call Centre.	AER
	Arrange communication (diversion & situation updates) with Fire & Ambulance Service: Senior Area Engineer.	AER
	Keep DoS E/D and DoS Em informed.	AER
	Relay information to Co Mgr: DoS Em or by delegation DoS E/D.	DoS Em

	ON SITE COORDINATION	**RESPONSIBLE PERSON**
	Note MEP App. F5 PRA roles and responsibilities (see appendix C of this plan)	DoS/AE/DM
	Set up On-Site Coordination Centre for in-house Crisis Team, and PRA Liaison Team, if required, in Area Offices, Old Dublin Road	AER
	Ensure out-of-hours access to office, if required	AER
	Call Crisis/Liaison team meetings as required: First pre-flood meeting should include AGS, CDO. Subsequent meetings may or may not be	DoS Em

	limited to SER, AER, AEW, DM, Town Engineer, GSS, DoS Em, DoS E/C, as the need arises.	
	Consider whether MEP needs activation. e.g. are there evacuees? Is the flooding widespread in the County, putting strain on resources?	DoS Em
	Consider whether Army 4wd or high-axle vehicles may be needed.	DoS Em

	WELFARE	**RESPONSIBLE PERSON**
	Organise rota and relief for outdoor crews.	AER/DM
	Organise food and drink for; • outdoor crews, • Engineers, • Crisis teams and area office	AER/DM
	Consider whether Civil Defence are required for providing food etc.	DoS Em.
	Consider whether 4wd or high axle vehicles needed for ferrying staff and public over flooded areas. Local contractors, Civil Defence, Army may have resources.	DoS Em.
	Consider evacuation issues: transport, housing. What are implications if evacuees increase significantly?	DM

	DEMOBILISATION	**RESPONSIBLE PERSON**
	Take start and finish signs and town centre signs down first if appropriate.	AER
	Advise radio & elected members.	DM
	Advise AA Roadwatch *(through AGS).*	AER

	Advise Emergency Services.	AER
	Advise volunteer services.	AER
	Do gullies need cleaning?	AER
	Replace missing signs for next event.	AER and GSS
	Debrief.	DoS Em.
	Brief MEDC.	DoS Em. and AER

New Ross Flood Areas (Mapalerter)

6.1 Response Objectives

The objectives of Wexford County Council during a major flood incident are to;

- Minimize the impact of the flooding on affected communities
- Rescue any persons threatened
- Minimize the environmental impacts
- Ensure the safety and health of all responders
- Speed the recovery and return to normality for affected communities
- Maintain routine services to the wider community, including traffic movement

7.1 Activation of this Flood Plan

The (acting) District Manager of each Municipal district will activate this plan once information is received that a flood is likely to occur. This may be due to weather conditions, weather forecast and weather alerts or a sudden rise in water levels observed by the relevant Municipal District Engineers and GSS's. A call is then made to the relevant SEE and EE's by the District Manager and relevant staff are then notified.

- Levels, intensity and duration of actual and forecast rainfall are noted.
- Enniscorthy: River level is noted on staff located on the north side of Seamus Rafter Bridge. Note is also made of the extent of flooding and/or available surface water storage at Clohamon. Scarawalsh, Rectory Field (all north of Enniscorthy) and Bear Meadows (south of Seamus Rafter Bridge).
- Enniscorthy/Bunclody: Contact is made with Tullow Area Engineer for Carlow County Council for River Slaney levels where available upstream. This has proved not to be conclusive or accurate with regard to flooding predictions for Enniscorthy. It is however useful to know whether the levels in Tullow or Baltinglass are rising, holding or falling.
- Wexford Town: Conditions for exceptionally high tides and surges are noted. Warnings of very high tides, easterly or south easterly gales and very low pressure are all key triggers. Rainfall may cause local drains to surcharge.
- New Ross Town & Rosbercon Flooding including Arthurstown, Ballywilliam, Campile and Wellington Bridge.

  Conditions for exceptionally high tides and surges are noted. South to Southwestarly winds, continuous rain, Low atmospheric pressure.
- **CONSIDER**;
    - Crew rotations, welfare etc., Volunteer management
    - Record keeping & Reporting (simple sheet required, photos to be taken, water levels and times to be recorded).

Appendix A Flood and Severe Weather Alert Warnings

Types of Warnings/ Forecasts	Level of Alert	Severe Weather Description	Impact Assessment by the WCC	County Council Actions	Inter-Agency Activity
Public Service Severe Weather Warning from Met Eireann General Met Eireann Weather Forecast or Alert Information from the Ice Cast Road Weather Information System	Alert Level 1 "Code Green"	All Clear	No severe weather alert in place	Routine monitoring / assessment	None
	Alert Level 2 – "Code Yellow"	Severe Weather Event	Event is a routine Severe Weather Event requiring alert by relevant operational sections	Respond to event as per standard procedures; keep situation under review.	Local Authority Response only. Inter-Agency arrangements not usually activated.
	Alert Level 3 "Code Orange"	Exceptional Severe Weather Event	Event will probably cause damage to property/ infrastructure or significant disruption to the community or significant disruption to the delivery of normal PRA services.	Convene CMT; if required. Notify alert to relevant sections of County Council; inform other PRA's and DoECLG where appropriate	PRA's in contact as necessary to deal with incident
	Alert Level 4 – "Code Red"	Major Emergency	Event will almost certainly exceed the response capability of the Emergency Services and satisfies the definition of a Major Emergency	Declare a Major Emergency if required; Follow MEP notification procedures	Convene Local Co-ordination Group or maintain contact as required.

[1] This table is based on guidance contained in "A Framework for Major Emergency Management - A Guide to Severe Weather Emergencies". The colour-coding provided is guided by information sourced from www.meteoalarm.eu (official website of weather warnings by the public European weather services) and is consistent with the approach adopted by Wexford County Council in the preparation of Wexford County Councils Flood Emergency Response Plan.

The following points should be noted when availing of the forecasting services of the Meteorological Service: The Warnings will only be issued when there is greater than a 50% chance of the criteria outlined above being fulfilled.

- The appropriate terms are: Probable: 50-70% Likely: 70-90% Very Likely: > 90%
- The following terms of lower probability will be used in the message only to indicate more severe conditions than specified in the basic criteria. Risk: < 20% Possible: 20-50%
- The target time for the issuing of a warning is 24 hours before the start of the event, but a warning may be issued up to 48 hours in advance when confidence is high.
- On Fridays and on the last 'normal' working day before a holiday period a preliminary warning or weather watch may be issued to County Councils.

<table>
<tr><td rowspan="3">MET Eireann</td><td>Duty Forecaster
01 8064255</td><td rowspan="3">General Forecasting Division
MET Eireann
Glasnevin Hill
Dublin 9

Email: forecasts@met.ie</td></tr>
<tr><td>Central Analysis and Forecasting Office
01 8064217</td></tr>
<tr><td>24hr FAX 01 8064275</td></tr>
</table>

The Office of Public Works emails storm surge alerts and advance notices of very high tides, to the Enniscorthy, Wexford and New Ross District Engineers, the Wexford Area engineer, the SE Roads, and the DoS Emergency Services.

Appendix B

Severe Weather Forecasting & Warning - System Details

Weather element	GREEN (NO SIGNIFICANT HAZARDOUS WEATHER)	YELLOW – WEATHER ALERT	ORANGE – WEATHER WARNING	RED – SEVERE WEATHER WARNING
Wind - Warnings normally issued on gust speeds and gusts tend to do the most damage.	Gusts less than 80km/h	Mean speeds between 50km/h (27kts) and 65km/h (35kts) Gusts between 90 km/h (45kts) and 110km/h (60kts)	Mean speeds between 65 km/h (35kts) and 80km/h (45kts) Gusts between 110km/h (60kts) and 130km/h (70kts)	Mean speeds greater than 80km/h (45kts) Gusts in excess of 130km/h (70kts)
Coastal Wind Warnings - For up to 20 nautical miles offshore	Winds less than Gale Force	Gale Force 8 or Strong Gale Force 9 (mean speeds)	Storm Force 10 (mean speeds)	Violent Storm of Force 11 or greater (mean speeds)
Rain - Lesser criteria may merit a warning if a prior very wet spell has resulted in saturated ground.	Less than 30mm in 24hrs Less than 25mm in 12hrs Less than 20mm in 6hrs	30mm – 50mm in 24 hrs 25mm - 40mm in 12 hrs 20mm – 30mm in 6 hrs	50mm – 70mm in 24 hrs 40mm – 50mm in 12 hrs 30mm - 40mm in 6 hrs	70mm or greater in 24 hrs 50mm or greater in 12 hrs 40mm or greater in 6 hours
Snow / Ice - Accumulations on high ground or in drifting should not merit a warning.	No snow, or some snow showers possible, mainly above 250m altitude.	Scattered snow showers giving accumulations of less than 3 cm below 250m AMSL. Slippery paths and roads due to accumulation of ice on untreated surfaces; situation improving.	Significant falls of snow likely to cause accumulations of 3 cm or greater below 250m AMSL. Slippery paths and roads due to accumulation of ice on untreated surfaces; situation stable.	Significant falls of snow likely to cause accumulations of 8 cm or greater below 250 m AMSL. Slippery paths and roads due to accumulation of ice on untreated surfaces; situation likely to worsen.
Thunder	None	No Criteria	Widespread thundery activity over an area of several counties	No Criteria
Low Temperature Warning	Minima higher than minus 3C and maxima higher than plus 2C.	Minima of minus 3C or minus 4C expected. Maxima of plus 1C or plus 2C expected.	Minima of minus 5C to minus 9C expected. Maxima of 0C or minus 1C expected.	Minima of minus 10C or lower expected. Maxima of minus 2C or lower expected.
High Temperature Warnings	Maxima less than 27C	Maxima in excess of 27C expected	Maxima in excess of 30C or minima in excess of 20C expected in a 24hr period	As Orange criteria but persisting for two or more consecutive nights
Fog	None	No criteria	Dense fog likely to cause a widespread and significant driving hazard on national primary routes.	No criteria

http://www.met.ie/nationalwarnings/warnings-explained.asp

Effects of extreme weather, the “Impacts” of extreme weather, the timing and location of the occurrence of extreme weather can significantly affect the impact which extreme weather may have on society, or on the economy.

www.meteoalarm.eu implies greater co-ordination of warnings across Europe

How are the Weather Warnings categorised?

Weather Warnings are presented in three categories:

A. **STATUS YELLOW - Weather Alert - Be Aware.** The concept behind YELLOW level weather alerts is to notify those who are at risk because of their location and/or activity, and to allow them to take preventative action. It is implicit that YELLOW level weather alerts are for weather conditions that do not pose an immediate threat

to the general population, but only to those exposed to risk by nature of their location and/or activity.

B. **STATUS ORANGE - Weather Warning - Be Prepared.** This category of ORANGE level weather warnings is for weather conditions which have the capacity to impact significantly on people in the affected areas. The issue of an Orange level weather warning implies that all recipients in the affected areas should prepare themselves in an appropriate way for the anticipated conditions.

C. **STATUS RED - Severe Weather Warning - Take Action.** The issue of RED level severe weather warnings should be a comparatively rare event and implies that recipients take action to protect themselves and/or their properties; this could be by moving their families out of the danger zone temporarily; by staying indoors; or by other specific actions aimed at mitigating the effects of the weather conditions.

What weather conditions are warned for?

Hazards deriving from the following weather-related types are covered by Met Éireann's weather warnings system:

1. Wind
2. Rain
3. Snow
4. Low Temperatures
5. Fog
6. High Temperatures
7. Thunderstorms
8. Coastal Wind Warnings

The system also covers warnings for the following weather-related phenomena (which will all be classified as YELLOW level - Weather Alerts only)

1. Potato Blight (May to September only)
2. UV / Sunburn (May to September only)
3. Pollen Levels (May to July only)

When will Weather Alerts/Warnings be issued?

Weather Alerts and Warnings will be issued whenever weather conditions meeting the detailed thresholds defined below are anticipated within a 48-hr period. There will be judgement required on the part of the forecaster who must weigh up the possible severity of the weather conditions and the likelihood of their occurrence. However on

some occasions (weekends, holiday periods) it may be necessary to issue Weather Warnings beyond this 48-hr horizon, if sufficient certainty derives from examination of the weather charts. Normally, however, a Weather Advisory (see below) will be used to flag severe weather beyond 48hrs and Advisories will normally anticipate only “Orange” or “Red” criteria weather hazards.

Given that the thrust of the Weather Warnings service is on potential “Impacts” of weather rather than on the numerical values attained by the weather elements themselves, it may on occasion be appropriate to issue warnings at a level higher than that strictly justified by the anticipated weather elements. An example would be when heavy rain was expected which might not quite meet the “Orange Warning” criteria but which might give rise to significant flooding because of already saturated ground, or because of a combination of rain, wind and tide in a coastal location.

Weather Advisories

Weather Advisories may be issued to provide early information on potential hazardous weather beyond the 48hr horizon. They may also be employed when a sum of weather elements acting together create a significant hazard, e.g. winds which may not be up to warnings strength but which, when combined with high tides and significant swell, generate a risk of flooding. Another possible use would be to advise of wind speed and direction on occasions of Volcanic Ash contamination. They might also be used to advise of expected significant medium-term accumulations of rain during a very unsettled period when soils are known to be saturated. The issue of Weather Warnings and Weather Advisories is at all times down to the judgement of the Met Éireann forecasters.

Weather Warning Criteria

The criteria for the different warnings levels (Yellow, Orange, Red) and the different weather elements (Rain, Wind etc) are laid out in the tables below.

Categories of Severe Weather encompassed by the National Weather Warnings System, together with the associated criteria:

Weather Element	**Criteria for Red - Severe Weather Warnings**
1. Wind	Mean Speeds in excess of 80 km/h

	Gusts Speeds in excess of 130 km/h
2. Rain	70mm or greater in 24 hrs 50mm or greater in 12 hrs 40mm or greater in 6 hrs
3. Snow/Ice	Significant falls of snow likely to cause accumulations of 8 cm or greater below 250 m AMSL. Slippery paths and roads due to accumulation of ice on untreated surfaces; situation likely to worsen.
4. Low Temperatures	Minima of minus 10C or lower expected. Maxima of minus 2C or lower expected.
5. Fog	No Criterion – not displayed.
6. High Temperature	As Orange criterion, but persisting for two or more consecutive nights.
7. Thunderstorms	No Criterion – not displayed.
8. Coastal Wind Warnings	Violent Storm Force 11 or greater. (Mean Speeds)

Weather Element	**Criteria for Orange – Weather Warnings**
1. Wind	Mean Speeds between 65 and 80 km/h Gusts between 110 and 130 km/h
2. Rain	50mm – 70mm in 24 hrs 40mm – 50mm in 12 hrs 30mm – 40mm in 6 hrs
3. Snow/Ice	Significant falls of snow likely to cause accumulations of 3 cm or greater below 250m AMSL. Slippery paths and roads due to accumulation of ice on untreated surfaces; situation stable.
4. Low Temperatures	Minima of minus 5C to minus 9C expected. Maxima of 0C or minus 1C expected.
5. Fog	Dense fog likely to cause a widespread and significant driving hazard on national primary routes.
6. High Temperature	Maxima in excess of 30C or minima in excess of 20C expected in a 24hr period
7. Thunderstorms	Widespread thundery activity over an area of several counties.

8. Coastal Wind Warnings	Storm Force 10. (Mean Speeds)

Weather Element	**Criteria for Yellow – Weather Alerts**
1. Wind	Mean Speeds between 50 and 65 km/h Gusts between 90 and 110 km/h
2. Rain	30mm – 50mm in 24 hrs 25mm – 40mm in 12 hrs 20mm – 30mm in 6 hrs
3. Snow/Ice	Scattered snow showers giving accumulations of less than 3 cm below 250m AMSL. Slippery paths and roads due to accumulation of ice on untreated surfaces; situation improving.
4. Low Temperatures	Minima of minus 3C or minus 4C expected. Maxima of plus 1C or plus 2C expected.
5. Fog	No Criterion.
6. High Temperature	Maxima in excess of 27C expected
7. Thunderstorms	No Criterion.
8. Coastal Wind Warnings	Gale Force 8 or Strong Gale Force 9. (Mean Speeds)

Weather Element	**Criteria for Green (i.e. no significant hazardous weather)**
1. Wind	Gusts less than 80 km/h
2. Rain	Less than 30mm in 24 hrs Less than 25mm in 12 hrs Less than 20mm in 6 hrs
3. Snow/Ice	No snow, or some snow showers possible, mainly above 250m altitude.
4. Low Temperature	Minima higher than - 3C and maxima higher than + 2C.
5. Fog	None
6. Thunderstorms	None
7. High Temperature	Maxima less than 27C
8. Coastal Wind Warnings	Winds less than Gale Force.

Appendix C Functions of Wexford County Council as a Principal Response Agency
(From Appendix F5 of a Framework for Major Emergency Management)

The Local Authority should undertake the following functions arising from the Framework in the response to a major emergency: -

- Declaration of a Major Emergency and notifying the other two relevant principal response agencies;
- Mobilisation of predetermined resources and activating predetermined procedures in accordance with its Major Emergency Mobilisation Procedure;
- Acting as lead agency, where this is determined in accordance with Appendix F7 and undertaking the specified coordination function;
- Protection and rescue of persons and property; controlling and/or extinguishing of fires;
- Dealing with hazardous material incidents including:
    - identification, containment, neutralisation and clearance of chemical spills and emissions;
    - decontamination (other than clinical decontamination) on-site of persons affected (under medical supervision where necessary);
- Advising on protection of persons threatened, by sheltering or evacuation;
- Arranging/overseeing clean-up of affected areas;
- Limiting damage to infrastructure and property;
- Provision of access/transport to/from the site of the emergency;
- Provision of additional lighting required, beyond what the principal emergency services normally carry;
- Assisting An Garda Síochána to recover bodies, when requested;
- Support for An Garda Síochána forensic work;
- Support for the Coroner's role, including provision of temporary mortuary facilities;
- Accommodation and welfare of evacuees and persons displaced by the emergency;
- Provision of food, rest and sanitary facilities as appropriate for personnel involved in the response to the emergency;

- Engaging any specialist contractors required to assist with emergency operations;
- Exercising control of any voluntary or other service which it mobilises to the site;
- Liaison with utilities regarding restoration/maintenance/or enhancing services provided to the site or to persons affected;
- Site clearance, demolition, clear-up operations, removal and disposal of debris;
- Monitoring and/or reporting on the impact in its functional area of any emergency/crisis which falls within the ambit of a “National Emergency”, and coordinating; undertaking any countermeasures in its functional area which are required/ recommended by an appropriate national body;
- Any other function, related to its normal functions, which is necessary for the management of the emergency/crisis;
- Any function which the On-Site Co-ordinating Group requests it to perform; and,
- Maintaining essential Local Authority services (e.g. roads availability, fire and emergency operations cover, public water supply, waste water treatment, waste disposal) during the major emergency.

D. Wexford County Council Major Emergency Plan

Wexford County Council

WEXFORD COUNTY COUNCIL
MAJOR EMERGENCY PLAN

May 2016

Title:	Major Emergency Plan
Version:	2
Date:	25 May 2016
Checked By: DoS (Housing, Community, Libraries, Arts, Em. Services & Environment)	
Approved By: (Chief Executive)	

CONTENTS PAGE

Section 7
The Common Elements of Response

Glossary of Terms and Acronyms

Ambulance Loading Point An area, close to the Casualty Clearing Station where casualties are transferred to ambulances for transport to hospital.

Body Holding Area An area, under the control of An Garda Síochána, where the dead can be held temporarily until transferred to a Mortuary or Temporary Mortuary.

Business Continuity The processes and procedures an organisation puts in place to ensure that essential functions can continue during and after an adverse event.

Casualty Any person killed or injured during the event. (For the purpose of the Casualty Bureau it also includes survivors, missing persons and evacuees).

Casualty Bureau Central contact and information point, operated by An Garda Síochána, for all those seeking or providing information about individuals who may have been involved.

Casualty Clearing Station The area established at the site by the ambulance service where casualties are collected, triaged, treated and prepared for evacuation.

Casualty Form A standard form completed in respect of each casualty and collated in the Casualty Bureau.

Civil Protection The term used in the European Union to describe the collective approach to protecting populations from a wide range of hazards.

Collaboration Working jointly on an activity.

Command The process of directing the operations of all or part of a particular service (or group of services) by giving direct orders.

Control The process of influencing the activity of a service or group of services, by setting tasks, objectives or targets, without necessarily having the authority to give direct orders.

Controller of Operations The person given authority by a principal response agency to control all elements of its activities at and about the site.

Co-operation Working together towards the same end.

Co-ordination Bringing the different elements of a complex activity or organisation into an efficient relationship through a negotiated process.

Cordons The designated perimeters of an emergency site, with an Outer Cordon, an Inner Cordon, a Traffic Cordon and a Danger Area Cordon, as appropriate.

Crisis Management Team A strategic level management group, which consists of senior managers from within the Principal Response Agency, which is assembled to manage a crisis and deal with issues arising for the agency both during the emergency and the subsequent recovery phase.

Danger Area An area where there is a definite risk to rescue personnel, over and above that which would normally pertain at emergency operations.

Decision Making Mandate Establishes the envelopes of empowered activity and decision-making to be expected, without references to higher authorities.

Decontamination A procedure employed to remove hazardous materials from people and equipment.

Emergency Response The short term measures taken to respond to situations which have occurred.

Evacuation The process whereby people are directed away from an area where there is danger, whether immediate or anticipated.

Evacuation Assembly Point A building or area to which evacuees are directed for onward transportation.

Friends and Relatives Reception Centre A secure area, operated by An Garda Síochána, for the use of friends and relatives arriving at or near the site of the emergency.

Hazard Any phenomenon with the potential to cause direct harm to members of the community, the environment or physical infrastructure, or being potentially damaging to the economic and social infrastructure.

Hazard Identification A stage in the Risk Assessment process where potential hazards are identified and recorded.

Hazard Analysis A process by which the hazards facing a particular community, region or country are analysed and assessed in terms of the threat/risk which they pose.

Holding Area An area at the site, to which resources and personnel, which are not immediately required, are directed to await deployment.

Impact The consequences of a hazardous event being realised, expressed in terms of a negative impact on human welfare, damage to the environment or the physical infrastructure or other negative consequences.

Information Management Officer A designated member of the support team of a principal response agency who has competency/training in the area of information management.

Information Management System A system for the gathering, handling, use and dissemination of information.

Investigating Agencies Those organisations with a legal duty to investigate the causes of an event.

Lead Agency The principal response agency that is assigned the responsibility and mandate for the Co-ordination function.

Likelihood The probability or chance of an event occurring.

Local Co-ordination Centre A pre-nominated building, typically at county or subcounty level, with support arrangements in place, and used for meetings of the Local Co-ordination Group.

Local Co-ordination Group A group of senior representatives from the three principal response agencies (An Garda Síochána, HSE and County Council) whose function is to facilitate strategic level co-ordination, make policy decisions, liaise with regional/national level Co-ordination centres, if appropriate, and facilitate the distribution of information to the media and the public.

Major Emergency Management The range of measures taken under the five stages of the emergency management paradigm described in Section 1.2.

Major Emergency Plan A plan prepared by one of the principal response agencies.

Major Emergency Any event which usually with little or no warning, causes or threatens death or injury, serious disruption of essential services or damage to property, the environment or infrastructure beyond the normal capabilities of the principal emergency services in the area in which the event occurs and requiring the activation of specific additional procedures to ensure an effective, co-ordinated response.

Media Centre A building/area specifically designated for use by the media and for liaison between the media and the principal response agencies.

Media Holding Statements Statements that contain generic information that has been assembled in advance, along with preliminary incident information that can be released in the early stages of the emergency.

Mitigation A part of risk management that includes all actions taken to eliminate or reduce the risk to people, property and the environment from the hazards which threaten them.

Mutual Aid The provision of services and assistance by one organisation to another.

National Emergency Co-ordination Centre A centre designated for inter-departmental co-ordination purposes.

On-Site Coordinator The person from the lead agency with the role of co-ordinating the activities of all agencies responding to an emergency.

On-Site Co-ordination Centre Specific area/facility at the Site Control Point where the On-Site Co-ordinator is located and the On-Site Co-ordination Group meet.

On-Site Co-ordination Group A Group that includes the On-Site Co-ordinator and the Controllers of Operations of the other two agencies, an Information Management Officer, a Media Liaison Officer and others as appropriate.

Principal Emergency Services (PES) The services which respond to normal emergencies in Ireland, namely An Garda Síochána, the Ambulance Service and the Fire Service.

Principal Response Agencies (PRA) The agencies designated by the Government to respond to Major Emergencies i.e. An Garda Síochána, the Health Service Executive and the County Councils.

Protocol A set of standard procedures for carrying out a task or managing a specific situation.

Receiving Hospital A hospital designated by the Health Service Executive to be a principal location to which Major Emergency casualties are directed.

Recovery The process of restoring and rebuilding communities, infrastructure, buildings and services.

Regional Co-ordination Centre A pre-nominated building, typically at regional level, with support arrangements in place and used by the Regional Co-ordination Group.

Regional Co-ordination Group A group of senior representatives of all relevant principal response agencies, whose function is to facilitate strategic level co-ordination at regional level.

Rendezvous Point (RVP) The Rendezvous Point is the location to which all resources responding to the emergency site are directed in the first instance. An Garda Síochána will organise the Rendezvous Point. Other services may have one of their officers present to direct responding vehicles into action or to that service's Holding Area.

Response The actions taken immediately before, during and/or directly after an emergency.

Resilience The term used to describe the inherent capacity of communities, services and infrastructure to withstand the consequences of an incident, and to restore normality.

Rest Centre Premises where persons evacuated during an emergency are provided with appropriate welfare and shelter.

Risk The combination of the likelihood of a hazardous event and its potential impact.

Risk Assessment A systematic process of identifying and evaluating, either qualitatively or quantitatively, the risk resulting from specific hazards.

Risk Holders Organisations and companies which own and/or operate facilities and/or services where relevant hazards are found.

Risk Management Actions taken to reduce the probability of an event occurring or to mitigate its consequences.

Risk Matrix A matrix of likelihood and impact on which the results of a risk assessment are plotted.

Risk Regulators Bodies with statutory responsibility for the regulation of activities where there are associated risks, such as the Health and Safety Authority, the Irish Aviation Authority, etc.

Scenario A hypothetical sequence of events, usually based on real experiences or on a projection of the consequences of hazards identified during the risk assessment process.

SEVESO sites Industrial sites that, because of the presence of dangerous substances in sufficient quantities, are regulated under Council Directive 2012/18/EU, referred to as the Chemicals Act (control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015.

Site Casualty Officer The Member of An Garda Síochána with responsibility for collecting all information on casualties at the site.

Site Control Point The place at a Major Emergency site from which the Controllers of Operations control, direct and co-ordinate their organisation's response to the emergency.

Site Medical Officer The medical officer with overall medical responsibility at the site, who will liaise with the health service Controller of Operations on all issues related to the treatment of casualties.

Site Medical Team A team drawn from a pre-arranged complement of doctors and nurses, with relevant experience and training, which will be sent to the site, if required.

Site Management Plan The arrangement of the elements of a typical Major Emergency site, matched to the terrain of the emergency, as determined by the On-Site Co-ordination Group.

Standard Operating Procedures Sets of instructions, covering those features of an operation that lend themselves to a definite or standardised procedure, without loss of effectiveness.

Support Team A pre-designated group formed to support and assist individuals operating in key roles, such as On-Site Co-ordinator, Chair of Local Co-ordination Group, etc.

Strategic Level The level of management that is concerned with the broader and long-term implications of the emergency and which establishes the policies and framework within which decisions at the tactical level are taken.

Survivor Reception Centre Secure location to which survivors, not requiring hospital treatment, can be taken for shelter, first aid, interview and documentation.

Tactical Level The level at which the emergency is managed, including issues such as, allocation of resources, the procurement of additional resources, if required, and the planning and co-ordination of ongoing operations.

Temporary Mortuary A building or vehicle adapted for temporary use as a mortuary in which post mortem examinations can take place.

Triage A process of assessing casualties and deciding the priority of their treatment and/or evacuation.

Acronyms

AAIU	Air Accident Investigation Unit
CBRN	Conventional Explosive, Chemical, Biological, Radiological or Nuclear
CMT	Crisis Management Team
EOD	Explosives Ordnance Disposal
ICG	Irish Coast Guard
METHANE	**M**ajor Emergency Declared
	Exact Location of the emergency
	Type of Emergency (Transport, Chemical etc.)
	Hazards present and potential
	Access/egress routes
	Number and Types of Casualties
	Emergency services present and required
MOU	Memorandum of Understanding
NEPNA	National Emergency Plan for Nuclear Accidents
NOTAM	Notice to Airmen
PDF	Permanent Defence Forces
PES	Principal Emergency Services
PRA	Principal Response Agency
RVP	Rendezvous Point
SAR	Search and Rescue
SLA	Service Level Agreement
SOP	Standard Operating Procedure
VIP	Very Important Person
WCC	Wexford County Council

Section 1

Introduction to Plan

1.1 An Introduction to the plan

A Major Emergency is any event which, usually with little or no warning, causes or threatens death or injury, serious disruption of essential services or damage to property, the environment or infrastructure beyond the normal capabilities of the principal emergency services in the area in which the event occurs, and requires the activation of specific additional procedures and the mobilisation of additional resources to ensure an effective, co-ordinated response.

1.2 Background

In 2006 the government approved a two-year Major Emergency Development Programme 2006-2008 (MEDP) to allow for the structured migration from current arrangements to an enhanced level of preparedness via the new emergency management process. The purpose of this plan is to put in place arrangements that will enable the three principal response agencies, An Garda Síochána, the Health Service Executive and the County Council to co-ordinate their efforts whenever a Major Emergency occurs.

The systems approach to Major Emergency Management involves a continuous cycle of activity. The principal elements of the systems approach are:

- Hazard Analysis/ Risk Assessment;
- Mitigation/ Risk Management;
- Planning and Preparedness;
- Co-ordinated Response; and
- Recovery.

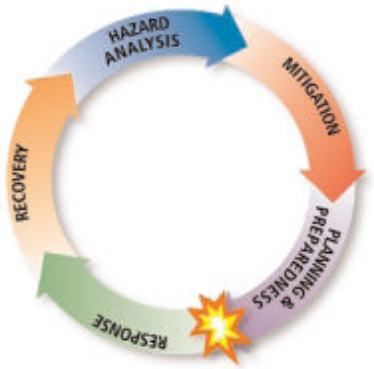


Fig 1.1: Five Stage Emergency Management Paradigm

1.3 Objectives

The objective of this Plan is to protect life and property, to minimize disruption to the area, and to provide immediate support for those affected. To achieve this aim the Plan sets out the basis for a co-ordinated response to a Major Emergency and the different roles and functions to be performed by the various agencies. The fact that procedures have been specified in the Plan should not restrict the use of initiative or common-sense by individual officers in the light of prevailing circumstances in a particular emergency.

1.4 Scope of the Major Emergency Plan

The Scope of the Major Emergency Plan is such that the plan provides for a co-ordinated inter-agency response to major emergencies beyond the normal capabilities of the principal emergency services.

1.5 The Relationship / Inter-Operability of the Major Emergency Plan with Other Emergency Plans

An Garda Síochána, the Health Service Executive and Wexford County Council are the principal response agencies (PRA's) charged with managing the response to emergency situations which arise at a local level. In certain circumstances, the local response to a Major Emergency may be scaled up to a regional level, activating the plan for regional level co-ordination. If this is so the principal response agencies are An Garda Síochána, the Health Service Executive and South East Region County Councils (Carlow, Kilkenny, Waterford and Wexford) members of which all sit on the Regional Steering Group.

1.6 The Language / Terminology of the Plan

In situations where different organisations are working together, there is a need for common vocabulary to enable them to communicate effectively. This is particularly the case where the principal emergency services and a range of other bodies are working together under the pressures that a Major Emergency brings. Therefore a full set of relevant terms and acronyms, which are provided in section 0, should be used by **all** agencies.

1.7 Plan Review and Update

The plan will be reviewed and updated on an annual basis or following any exercises or major incidents.

1.8 Public Access to the Plan

The Major Emergency Plan, without appendices, will be available to the public on Wexford County Council's website at www.wexford.ie

Section 2

Wexford County Council and its Functional Area

2.1 Role of Wexford County Council

The functional area of this plan is the administrative county of Wexford. Wexford County Council incorporates Wexford County Council and the municipal districts of Wexford, Gorey, Enniscorthy and New Ross.

In the event of a Major Emergency Wexford County Council will ensure that danger areas are made safe in order to permit other agencies to undertake their recovery and rehabilitation operations. In the immediate aftermath of an incident, principal concerns include support for the other emergency services, support and care for the local and wider community, use of resources to mitigate the effects of the emergency and co-ordination of the voluntary organisations. In the 'recovery' phase the County Council will be responsible to lead and co-ordinate the rehabilitation of the community and the restoration of the environment.

2.2 Boundaries and Characteristics of Area

County Wexford is in the South East region of Ireland, with a long coastline on the south and east. On the north it is bounded by the hills of County Wicklow and on the west by the River Barrow and the Blackstairs Mountains. The River Slaney runs centrally through Wexford from Bunclody to Wexford town.

Wexford has a population of 145,273 (Census 2011), with the main urban centres being Wexford, Gorey, Enniscorthy, New Ross and Bunclody.

2.3 Other Principal Response Agencies

Other agencies responsible for Emergency Services in this area are;

- Health Service Executive: South region comprising of counties Carlow, Cork, Kerry, Kilkenny, Waterford and Wexford;
- An Garda Síochána: Wexford Division.

2.4 Regional Preparedness

Under certain specific circumstances regional level major emergencies may be declared, with a Plan for Regional Level Co-ordination activated. This will provide for mutual aid, support and co-ordination facilities to be activated in the region, the boundaries of which are determined to suit the exigency of the particular emergency. There are eight regions in total that have been created for Major Emergency purposes. The regions are shown in the Map below.

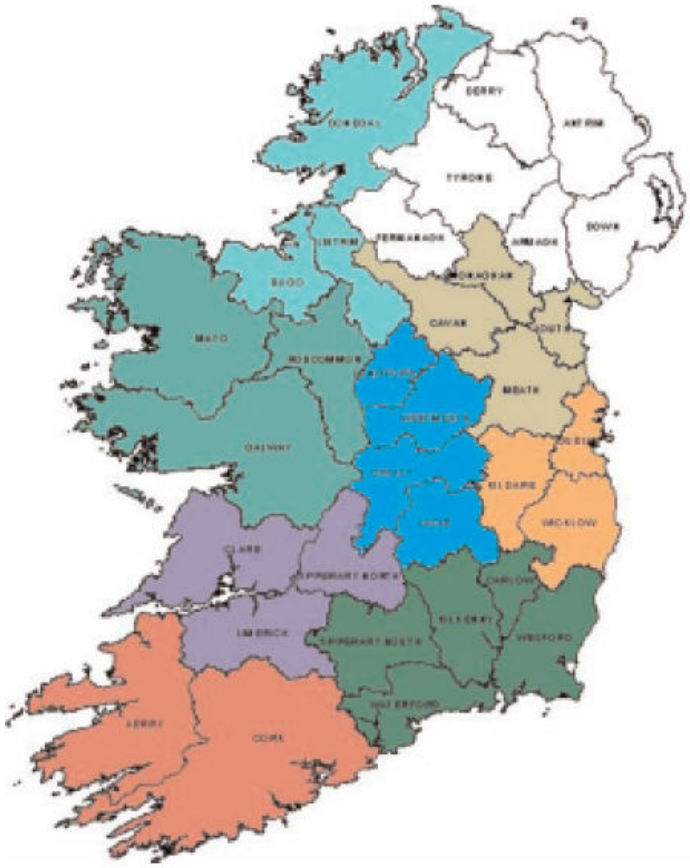


Figure 2.1: Map of the Major Emergency Management regions
Note: South Tipperary has become part of the Mid West MEM Region

Wexford County Council operates in the South East Major Emergency Management Region. This region incorporates the following counties; Carlow, Kilkenny, Waterford and Wexford.

An inter-agency Regional Steering Group was formed for the South East Major Emergency Planning Region. This group represents senior management from each of the principal response agencies (PRA's).

A Regional Working Group on Major Emergency Management was also established to support and progress Major Emergency Management in the South-East Region.

Section 3

Risk Assessment for the Area

3.1 The Risk Assessment Process

To prepare effectively to deal with potential emergencies it is necessary to have regard to specific risks faced by a community. Risk Assessment is a process by which the hazards facing a particular community are identified and assessed in terms of the risk which they pose and possible consequences. A detailed risk assessment for the area is contained in Appendix B.

3.2 The General and Specific Risks that May be Faced Locally and Regionally

A number of potential hazards were identified and risk assessments have been carried out in relation to these. The potential hazards can be broken into the following categories;

3.2.1 Natural

- Flooding/Severe weather;
- Landslide/Mine collapse/Rock slide;
- Forest fires;
- Earthquake/Tsunami/Volcano.

3.2.2 Transportation

- Aviation incident;
- Rail incident;
- Road incident;
- Ship and Port incident;
- Water rescue.

3.2.3 Technological

- Industrial incidents;
- Seveso sites;
- Loss of utilities/Infrastructure;
- Building collapse;
- Water contamination/pollution.

3.2.4 Civil

- Overcrowding;
- Epidemics/pandemics;
- Terrorism/CBRN.

3.3 Risk Management / Mitigation / Risk Reduction Strategies

By carrying out a risk assessment we can identify the risks posed to the county and mitigate for their effects. It also enables us to plan and prepare for those risks which cannot be eliminated. The risk assessment process was carried out initially by an inter-agency team, with invited members of An Garda Síochána, Health Service Executive and the County Council, before being undertaken and documented by the Major Emergency Development Committee (MEDC).

The risk assessment comprises four stages:

1. Establishing the context
2. Hazard Identification
3. Risk Assessment
4. Recording potential hazards on a risk matrix

By carrying out a risk assessment we can identify the risks posed to the county and mitigate for their effects. It also enables us to plan and prepare for those risks which cannot be eliminated.

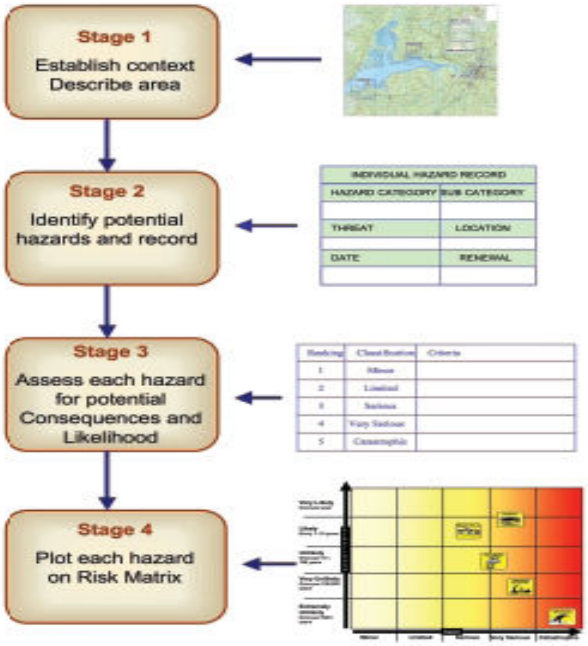


Fig 3.1 Schematic Risk Assessment Process

3.4 Associated Plans and Their Compatibility with the Major Emergency Plan

Appendix A contains details of sub-plans, section plans and external agency plans which are all required to be compatible with this Plan.

Section 4

Resources for Emergency Response

4.1 Structure / Resources / Services of the County Council

Wexford County Council includes the districts of Wexford Town, Gorey, Enniscorthy and New Ross. There are three Directorates in Wexford County Council headed up by a Director of Services who reports directly to the Chief Executive and are responsible for the functioning of their section within the council. These sections are;

1. Transportation, Water Services & Health & Safety.
2. Economic Development and Planning.
3. Housing, Community, Libraries, Arts, Emergency Services & Environment.

There is also the Head of Finance at directorate grade. The Chief Executive is responsible for supervising operations and implementing the policies adopted by the council. Each department within the County Council may be called upon to act in the event of a Major Emergency. A list of key contact personnel is contained in Appendix C.

4.2 Special Staffing Arrangements During a Major Emergency

Wexford County Council staff required to carry out functions in relation to a Major Emergency will be mobilised in accordance with pre-determined procedures (See Appendix C). Wexford County Council will however at all times maintain essential services during an emergency.

4.3 Other Organisations / Agencies that may be Mobilised to Assist

There are a number of organisations and agencies which may be called upon to assist the principal response agencies in responding to major emergencies in addition to specialist national and local organisations, including;

- Civil Defence;
- Defence Forces;
- Irish Red Cross;
- Irish Coast Guard;
- Other Voluntary Emergency Services;
    - Order of Malta,
    - Slaney Rescue,
    - RNLI stations Courtown, Wexford, Rosslare, Kilmore Quay, Fethard,
    - Wexford Sub Aqua and Hook Sub Aqua groups,
    - Cahore inshore service,
    - Coast guard units Courtown, Curracloe, Rosslare, Carne, Kilmore and Fethard,
- Utility companies (ESB, Bus Éireann etc.);

- Private contractors.
  (See section 7.10.1 and Appendix C)

4.3.1 Civil Defence

Civil Defence is a body of trained volunteers in the disciplines of EMT, first aid, rescue, fire, welfare, water based activities, search and recovery and technical line rescue. The Wexford Civil Defence has its own communications systems and an Incident Control Vehicle. There are currently 150 registered members in Wexford. A call out system is in place in the event of an emergency however it is worth considering that a response is completely subject to the availability of Volunteers. Civil Defence will be available to help with any area assigned to them to assist the County Council or other Statutory Service, subject to the availability of volunteers.

4.3.2 The Defence Forces

The Defence Forces can provide a significant support role in a Major Emergency response. However, there are constraints and limitations, and their involvement has to be pre-planned through the development of Memoranda of Understanding (MOU's) and Service Level Agreements (SLA's). Consequently, assumptions should not be made regarding the availability of Defence Forces resources or materials to respond to a major emergency. Provision of Defence Forces capabilities is, therefore, dependent on the exigency of the service and within available resources at the time.

It is recognised that assistance requested from the Defence Forces should be either in Aid to the Civil Power (An Garda Síochána), primarily an armed response or in Aid to the Civil Authority (County Council or Health Service Executive) unarmed response. All requests for Defence Forces assistance should be channelled through An Garda Síochána to Defence Forces Headquarters (DFHQ) in accordance with MOU's and SLA's.

4.3.3 The Irish Red Cross

The Irish Red Cross is established and regulated under the Red Cross Acts, 1938-54. These statutes define a role for the Irish Red Cross as an auxiliary to the state authorities in time of emergency and also provide a specific mandate to assist the medical services of the Irish Defence Forces in time of armed conflict. The main relationship with the principal response agencies in Major Emergency response is as an auxiliary resource to the ambulance services. Subsidiary search and rescue and in-shore rescue units of the Irish Red Cross support An Garda Síochána and the Irish Coast Guard.

4.3.4 The Community Affected

It is recognised that communities that are empowered to be part of the response to an emergency, rather than allowing themselves to be simply victims of it, are more likely to recover and to restore normality quickly, with fewer long-term consequences.

At an early stage the On-Site Co-ordinator, in association with the other Controllers, should determine if ongoing assistance is required from “casual volunteers’’ within the community, so that An Garda Síochána cordoning arrangements can take account of this.

Where the On-Site Co-ordinator determines that casual volunteers should be integrated into the response, it is recommended that the service tasking them, or involving them in tasks on which they are engaged, should request volunteers to form teams of three to five persons, depending on the tasks, with one of their number as team leader.

4.3.5 Utilities

Utilities are frequently involved in the response to emergencies, usually to assist the principal response agencies in making situations safe. They may also be directly involved in restoring their own services, for example, electricity supply in the aftermath of a storm.

It is important that there is close co-ordination between the principal response agencies and utilities involved in, or affected by, an emergency. Utilities operate under their own legislative and regulatory frameworks but, during the response to an emergency, they need to liase with the On-Site Co-ordinator. It is also recommended that representatives of individual utilities on-site should be invited to provide a representative for the On-Site Co-ordination Group. It is recommended that individual utilities be invited to attend and participate in relevant work of Local Co-ordination Groups (See Appendix C).

4.3.6 Private Sector

Private sector organisations may be involved in a Major Emergency situation in two ways. They may be involved through, for example, ownership of the site where the emergency has occurred or through ownership of some element involved in the emergency e.g. an aircraft, bus, factory, etc. They may also be called on to assist in the response to a Major Emergency by providing specialist services and equipment, which would not normally be held or available within the principal response agencies.

4.4 How Mutual-Aid will be Sought from Neighbouring Counties

The Local Co-ordination Group may request assistance via mutual aid arrangements from a neighbouring county or declare a Regional level emergency and activate the Plan for Regional Level Co-ordination. Support is most likely to be requested from Carlow County Council, Kilkenny County Council, Waterford City and County Council and/or Wicklow County Council.

4.5 Regional Level of Co-Ordinated Response

In the event of a Regional level response the lead agency which has declared the regional level emergency will convene and chair the Regional Co-ordination Group. Depending on the circumstances, the goal of regional co-ordination may be achieved by using a single Regional Co-ordination Centre. The method of operation of a Regional Co-ordination Centre will be similar to that of the Local Co-ordination Centre.

4.6 National / International Assistance

In the event that it is necessary to seek assistance from neighbouring or other regions of the country, or from outside the state, this decision should be made by the lead agency in consultation with the other principal response agencies and the lead government department liaison officer at the Regional Co-ordination Centre.

The South-East Regional Co-ordination Group should identify and dimension the level and type of assistance likely to be required and its duration. It should also seek to identify the possible options for sourcing such assistance, be that from neighbouring regions, elsewhere in the state, the United Kingdom or from other EU member states.

The South-East Regional Co-ordination Group may also request assistance from government. National resources will be available in the event of a Major Emergency at local or regional level. Requests for assistance should be developed at local or regional co-ordination level and directed by the lead agency to the lead government department.

The European Community has established a community mechanism to facilitate the provision of assistance between the member states in the event of major emergencies. Requests for such assistance should be made by the chair of the Wexford Local Co-ordination Group or South-East Regional Co-ordination Group to the National Liaison Officer at the Department of the Environment, Community and Local Government.

Section 5

Preparedness for Major Emergency Response

5.1 The Incorporation of Major Emergency Management into the County Councils Business Planning Process

The development of the Wexford County Council Major Emergency Plan is part of an emergency management development programme within the County Council to ensure that all necessary arrangements, systems, people and resources are in place to discharge the functions assigned by the plan. The plan therefore does not stand alone but is in fact incorporated into the authorities management programme. This management programme, which will be implemented on a three year cycle, is designed to maintain a continuous level of preparedness within the county.

5.2 Assignment of Responsibility

The Chief Executive (or designative alternative) and the Inter-agency Regional Chair are responsible for the principal response agency's Major Emergency Management arrangements and preparedness, as well as for the effectiveness of the agency's response to any Major Emergency which occurs in its functional area.

5.3 Documentation of a Major Emergency Development Programme

The responsibility for overseeing the Major Emergency Plan within Wexford County Council is assigned to the Director of Services for Housing, Community, Libraries, Arts, Emergency Services and Environment, whom the Chief Fire Officer will support along with other staff members within the fire services.

5.4 Key Roles Identified in the Major Emergency Plan

Wexford County Council has nominated competent individuals and alternates to the key roles to enable the agency to function in accordance with the common arrangements set out in its Major Emergency Plan.

5.5 Support Teams for Key Roles

Support teams will be formed to support and assist individuals in key roles and will prepare Operational Protocols setting out the arrangements which will enable the agency's support teams to be mobilized and function in accordance with the arrangements set out in the Major Emergency Plan.

5.6 Staff Development Programme

The provisions of the Framework and the tasks arising from the Major Emergency Management arrangements involve a significant level of development activity, both within Wexford County Council and jointly with our regional partners.

In parallel with risk assessment and mitigation processes and the preparation of the Major Emergency Plan, Wexford County Council should initiate an internal programme to develop its level of preparedness, so that in a Major Emergency it will be in a position to respond in an efficient and effective manner and discharge the assigned functions in accordance with the Framework. It is also imperative that we not only develop within our own agency but that we also continue to work with the other PRA's through continued training and inter-agency exercises.

5.7 Training Programme

All personnel involved in the Major Emergency Plan organisation will be required to participate in inter-agency training and exercises in order to ensure effective co-operation between agencies during a Major Emergency.

5.8 Internal Exercise

Internal exercises will be used to raise awareness, educate individuals on their roles and the roles of others and promote co-ordination and cooperation, as well as validating plans, systems and procedures.

5.9 Joint / Inter-Agency Training and Exercise

Joint interagency training will be provided at a Local and Regional level, co-ordinated by the South East Regional Working group. Exercises will follow on from this training to improve awareness and educate all involved in the roles and functions of the PRA's in the event of an emergency. Exercises will be preformed on a three yearly cycle.

5.10 The Allocation of Specific Resources Including a Budget for Preparedness

Wexford County Council and the South-East Regional Steering Group shall provide a budget for Major Emergency preparedness, which reflects the expenditure required to meet the costs of implementing the agency's internal preparedness, as well as the agency's contribution to the regional level inter-agency preparedness.

5.11 Procurement Procedures

The arrangements to authorise procurement and use of resources (including engaging third parties) to assist in response to major emergencies are governed by the Local Government Act: 2001. Arrangements may be put in place by Wexford County Council with local suppliers to supply urgent goods when required.

5.12 Annual Appraisal of Preparedness

Wexford County Council will carry out and document an annual internal appraisal of its preparedness for Major Emergency response, it shall then be sent for external appraisal to the Department of Environment, Community and Local Government in accordance with the appraisal process. An annual appraisal of the South East Regional level preparedness shall also be documented, again in accordance with the appraisal process.

5.13 Steps Taken to Inform the Public

There may be situations where it will be crucial for the Wexford County Council to provide timely and accurate information directly to the public on an emergency situation. This will be especially important where members of the public may perceive themselves and their families to be at risk and are seeking information on actions which they can take to protect themselves and their families.

The Local Co-ordination Group will take over the task of co-ordinating the provision of information to the public as soon as it meets. This activity should be co-ordinated by the lead agency. The Local Co-ordination Group may establish a sub-group for this purpose and use all available channels to make concise and accurate information available. This may include the use of dedicated help lines, social media, web-pages, Aertel, automatic text messaging, as well as through liaison with the traditional media.

Section 6

The Generic Command, Control and Co-ordination Systems

6.1 Command Arrangements

The Chief Executive is responsible for the Wexford County Council (WCC) Major Emergency Management arrangements and preparedness, as well as for the effectiveness of WCC's response to any Major Emergency which occurs in its functional area. WCC shall exercise command over it's own resources in accordance with its normal command structure.

At the site of a Major Emergency, WCC will exercise control over its own services and any additional external support services which the WCC mobilises to the site. Control of WCC services at the site of the emergency shall be exercised by the Controller of Operations.

6.2 Control Arrangements

Wexford County Council shall appoint a Controller of Operations at the site (or at each site) of the emergency. The officer in command of the initial response of WCC should be the Controller of Operations until relieved through the WCC's pre-determined procedures.

6.2.1 Controller of Operations

The Controller of Operations is empowered to make all decisions relating to his/her agency's functions, but must take account of decisions of the On-Site Co-ordination Group in so doing.

The role of the WCC Controller of Operations is to make such decisions as are appropriate to the role of controlling the activities of WCC services at the site. (Controlling in this context may mean setting priority objectives for individual services. Command of each service should remain with the officers of that service).

6.2.2 Mandate of the Controller of Operations

- To meet with the other two controllers and determine the lead agency;
- To undertake the role of On-Site Co-ordinator, where WCC is identified as the lead agency;
- To participate fully in the on-site co-ordination activity, including the establishment of a Site Management Plan;
- Where another service is the lead agency, to ensure that WCC's operations are co-ordinated with the other principal response agencies, including ensuring secure communications with all agencies responding to the Major Emergency at the site;
- To decide and request the attendance of such services as he/she determines are necessary;
- To exercise control over such services as he/she have requested to attend;

- To operate a Holding Area to which personnel from WCC will report on arrival at the site of the Major Emergency and from which they will be deployed;
- To requisition any equipment he/she deems necessary to deal with the incident;
- To seek such advice as he/she requires;
- To maintain a log of WCC's activity and decisions made at the incident site;
- To contribute to and ensure information management systems operate effectively;
- To liaise with WCC's Crisis Management Team on the handling of the major emergency.

6.2.3 On-Site Co-ordinator

The On-Site Co-ordinator is empowered to make decisions as set out below. Decisions should be arrived at generally by the consensus of the On-Site Co-ordinating Group. Where consensus is not possible, the On-Site Co-ordinator should only make decisions after hearing and considering the views of the other two Controllers.

6.2.4 Mandate of the On-Site Co-ordinator

- To assume the role of On-Site Co-ordinator when the three controllers determine the lead agency. Once appointed he/she should note the time and that the determination was made in the presence of the two other controllers on site;
- To inform all parties involved in the response that he/she has assumed the role of On-Site Co-ordinator;
- To determine which facility should be used as the On-Site Co-ordination Centre. Depending on the circumstance, this may be a vehicle designated for the task, a specific, purpose-built vehicle, a tent or other temporary structure or an appropriate space/building adjacent to the site, which can be used for Co-ordination purposes;
- To ensure involvement of the three PRA's and the Principal Emergency Services (and others, as appropriate) in the On-Site Co-ordination Group;
- To ensure that mandated co-ordination decisions are made promptly and communicated to all involved;
- To ensure that a Scene Management Plan is made, disseminated to all services and applied;
- To develop an auditable list of actions (an Action Plan) and appoint an Action Management Officer where necessary;
- To determine if and which public information messages are to be developed and issued;
- To ensure that media briefings are co-ordinated;
- To ensure that pre-arranged communications (technical) links are put in place and operating;
- To ensure that the information management system is operated, including the capture of data for record purposes at regular intervals;
- To ensure that the ownership of the lead agency role is reviewed, and modified as appropriate;

- To ensure that inter-service communication systems have been established and that communications from the site to the Local Co-ordination Centre have been established and are functioning;
- To exercise an over-viewing role of all arrangements to mobilise additional resources to the site of the major emergency, and to track the status of mobilization requests, and deployment of additional resources;
- To ensure that, where the resources of an individual PRA do not appear to be sufficient to bring a situation under control, or the duration of an incident is extended, support is obtained via mutual aid arrangements with neighbouring PRA's;
- To determine, at an early stage, if ongoing assistance is required from casual volunteers, so that An Garda Síochána cordoning arrangements can take account of this;
- To co-ordinate external assistance into the overall response action plan;
- To ensure that, where appropriate, pastoral services are mobilised to the site and facilitated by the principal response agencies in their work with casualties;
- To work with the Health Service Executive Controller to establish the likely nature, dimensions, priorities and optimum location for delivering any psycho social support that will be required, and how this is to be delivered and integrated with the overall response effort;
- To decide to stand down the Major Emergency status of the incident at the site, in consultation with the other Controllers of Operations, and the Local Co-ordination Group;
- To ensure that all aspects of the management of the incident are dealt with before the response is stood down;
- To ensure that a report on the co-ordination function is prepared in respect of the Major Emergency after it is closed down, and circulated (first as a draft) to the other services that attended.

6.2.5 The On-Site Co-ordination Group

The primary mechanism used to deliver co-ordination on-site is the arrangement for an On-Site Co-ordinator, provided by the lead agency as discussed above. As soon as they meet, the three Controllers of Operations should determine which is the lead agency and thereby establish who is the On-Site Co-ordinator. The On-Site Co-ordinator will chair the "On-Site Co-ordinating Group". In addition to the On-Site Co-ordinator, this group should comprise of the controllers of operations of the other two PRAs, an Information Management Officer, a Media Liaison Officer, an Action Management Officer (where considered appropriate), representatives of other agencies and specialists as appropriate.

6.2.6 The Local Co-ordination Group

The members of the Local Co-ordination Group are the senior managers of the principal response agencies, who will meet at a pre-arranged location (usually the WCC council Chamber, if accessible) designated for this purpose. The representative of the lead agency will chair the Local Co-ordination Group and will exercise the mandates associated

with this position. The Local Co-ordination Group will also comprise of an Information Management Officer, a Media Liaison Officer, an Action Management Officer (where considered appropriate), representatives of other agencies and specialists, as appropriate.

6.2.7 Mandate of the Local Co-Ordination Group

- To establish high level objectives for the situation, and give strategic direction to the response;
- To determine and disseminate the overall architecture of response co-ordination;
- To anticipate issues arising;
- To provide support for the on-site response;
- To resolve issues arising from the site;
- To ensure the generic information management system is operated;
- To take over the task of co-ordinating the provision of information for the public as soon as it meets and use all available channels to make concise and accurate information available;
- To decide and to take action to manage public perceptions of the risks involved, as well as managing the risks, during emergencies that threaten the public;
- To co-ordinate and manage all matters relating to the media, other than on-site;
- To establish and maintain links with the Regional Co-ordination Centre (if involved);
- To establish and maintain links with the lead Government Department/National Emergency Co-ordination Centre;
- To ensure co-ordination of the response activity, other than the on-site element;
- To decide on resource and financial provision;
- To take whatever steps are necessary to start to plan for recovery.

6.2.8 Crisis Management Team

The Crisis Management Team is a strategic level management group within each principal response agency, which is assembled during a major emergency. The functions of WCC's CMT are;

- Manage, control and co-ordinate WCC's overall response to the emergency;
- Provide support to WCC's Controller of Operations on-site and mobilise resources from within WCC or externally as required;
- liase with the Department of the Environment, Community and Local Government on strategic issues;
- Ensure appropriate participation of WCC in the inter-agency co-ordination structures.

The members of the Crisis Management Team are usually the senior managers of each PRA, who will meet at a pre-arranged location (usually the WCC council Chamber, if accessible) designated for this purpose. The use of the Crisis Management Team within WCC facilitates the mobilisation of senior staff to deal with the crisis, in light of the evolving situation, rather than leaving multiple roles to a small number of individuals who hold key

positions. In this way, the objectives of prioritising and managing a protracted crisis can be dealt with effectively, while keeping the day-to-day business running.

The Crisis Management Team provides support to WCC's representative at the Local Co-ordination Group, supports the WCC Controller of Operations on-site and maintains WCC's normal day-to-day services that the community requires.

6.2.9 Control of External Organisations/Agencies Mobilised

There are a number of organisations and agencies, which may be called on to assist WCC in responding to major emergencies. The arrangements for this assistance should be agreed, where possible, with each agency.

6.3 Co-ordination Arrangements

6.3.1 Lead Agency

The concept of the Lead Agency is accepted as the method for establishing which Agency has initial responsibility for Co-ordination of all services on the site of a Major Emergency. The predetermined and default agencies for different types of emergencies are set out in Appendix B.

6.3.2 On-site Co-ordination Function, Including Arrangements for Support Teams

On-site Co-ordination is facilitated by the On-Site Controller of operation and the On-Site Co-ordination group. The roles of the On-site Co-ordinator and the On-Site Co-ordination group have been outlined in sections 6.2.3 and 6.2.5 of this document.

6.3.3 Co-ordination Function at the Local/Regional Co-ordination Centres

When a Major Emergency has been declared and the lead agency determined, the lead agency should implement the Local Co-ordination Group mobilization procedure.

The Chair of the Local Co-ordination Group may declare a regional level emergency and activate the Plan for Regional Level Co-ordination and in so doing activate the "Regional Co-ordination Group" to maintain co-ordination of the principal response agencies involved from the extended "response region".

Any one of the nominated Local Co-ordination Centres may be used as a Regional Co-ordination Centre, or a specific Regional Centre may be designated for this purpose. The choice of location will be determined in each situation by the Chair of the Local Co-ordinating Group declaring the regional level emergency and will depend on the location and nature of the emergency.

6.3.4 Mutual aid and Regional Level Co-Ordination

Each Controller of Operations should ensure that, where the resources of their individual principal response agency do not appear to be sufficient to bring a situation under control, or the duration of an incident is extended, support is obtained via mutual aid arrangements with neighbouring principal response agencies.

6.3.5 Incidents Occurring on the County Boundaries

In certain situations, e.g. where an emergency affects an extensive area or occurs near the borders of divisions of An Garda Síochána or areas of the Health Service Executive or of the County Council, there may be response from multiple units of any PRA. There should be only one Controller of Operations for each of the three PRA and it is necessary to determine from which unit of the principal response agency the Controller of Operations should come.

In the case of the County Councils, which are statutorily empowered in respect of their functional areas, procedures for resolving such issues may already be established. Where they are not established and the issue cannot be resolved quickly in discussion between the responding officers of the different units of those services, the County Council Controller of Operations should be the designated person from the County Council whose Rostered Senior Fire Officer was first to attend the incident.

6.3.6 Multi-Site or Wide Area Emergencies

Multi-site or wide area emergencies may require the setting up of multiple On-site Co-ordination centres which will feed into the **one** Local Co-Ordination Group.

6.3.7 Links with National Emergency Plans

The Wexford County Council Major Emergency Plan will operate as an integral part of any National plans developed for scenarios affecting the population on a National Level.

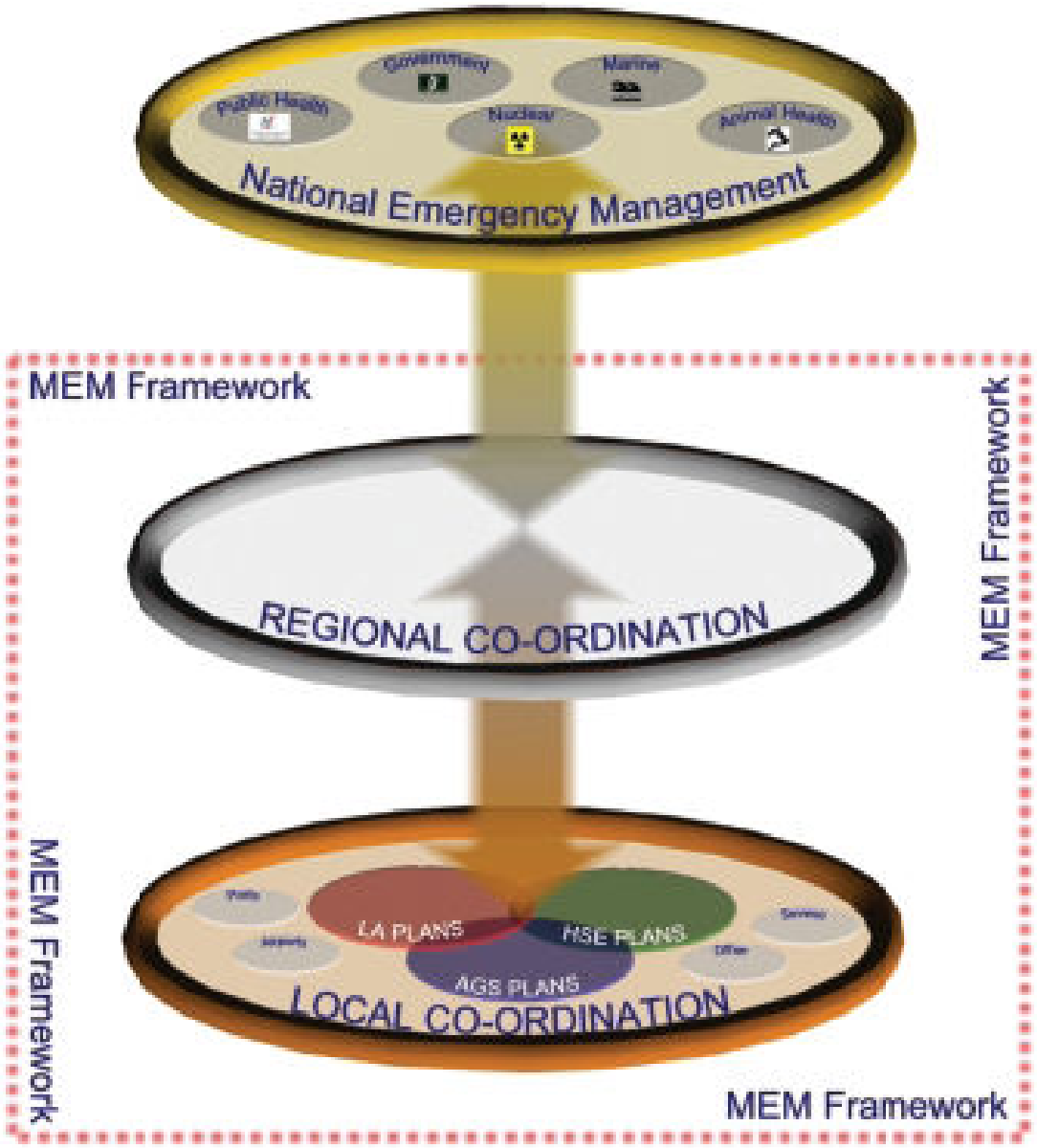


Figure 6.1: Linking Major Emergency Plans with National Plans and Other Plans

6.3.8 Links with National Government

In every situation where a Major Emergency is declared, each principal response agency should inform its parent department of the declaration, as part of that agency's mobilisation procedure. The three parent departments, should then consult and agree, which department will be designated as lead department, in keeping with the directions set out in *A Framework for Major Emergency Management.*

Section 7

The Common Elements of Response

7.1 Declaring a Major Emergency

The Major Emergency Plan should be activated by whichever of the following agencies first becomes aware of the major emergency;

- Wexford County Council (see Appendix D for authorised persons);
- An Garda Síochána;
- Health Service Executive.

It is the responsibility of the highest ranking authorised member of the first responding section of WCC to carry out a situation appraisal on-site and decide if WCC's procedures for declaring a Major Emergency should be activated. See Appendix D for persons/grades authorised to make this decision.

He/she should activate the WCC Major Emergency Plan by;

- Notifying and gaining the agreement of the Chief Executive or a Director of Services (or alternates) and then by contacting the East Regional Control Centre (**Dial 999/112 Request Fire Service**) giving the following message.

> - **This is …….. (Name, rank and service) …….....**
> - **A …..… (Type of incident) …..… has occurred/is imminent at ……**
> - **(Location) ……..…….....**
> - **As an authorised officer I declare that a <u>MAJOR EMERGENCY</u> exists.**
> - **Please activate the mobilisation arrangements in the Wexford County Council Major Emergency Plan** (Appendix D).

After this declaration is made, the person activating the Plan should then use the mnemonic METHANE to deliver further information to the ERCC:

M	**Major Emergency Declared**
E	**Exact Location of the Emergency**
T	**Type of Emergency (Transport, Chemical, etc.)**
H	**Hazards, Present and Potential**
A	**Access / Egress Routes**
N	**Number and Type of Casualties**
E	**Emergency Service Present and Required**

The DoECLG should be notified by the Chair of the WCC Crisis Management Team of the activation of the Major Emergency Plan using the format outlined in Appendix E.

7.1.1 Major Emergency Plan Exercise

In the course of a Major Emergency Plan exercise, the above declaration messages should be preceded by the words;

"THIS IS AN EXERCISE"

7.2 Major Emergency Mobilisation Procedure

Wexford County Councils Major Emergency mobilisation procedure will be implemented immediately on notification of the declaration of a major emergency. When this Plan has been activated, each County Council service requested shall respond in accordance with pre-determined arrangements. See Appendix D.

In some situations, there may be an early warning of an impending emergency. Mobilisation within WCC may include moving to a standby/alert stage for some of its services or specific individuals, until the situation becomes clearer.

There may also be circumstances where the resources or expertise of agencies other than the principal response agencies will be required. In these situations the relevant arrangements outlined in this Major Emergency Plan will be invoked. No third party should respond to the site of a Major Emergency unless mobilised by one of the principal response agencies through an agreed procedure.

7.3 Command, Control and Communication Centres

In the event of a Major Emergency being declared initial mobilisation will be carried out by the East Regional Control Centre (ERCC), who will communicate with the personnel on-site until such a time as the Crisis Management Team and Co-ordination Group have been established in accordance with WCC's pre-determined arrangements. Please refer to Section 6 of this document for further details on the functions of these Teams/Groups.

7.4 Co-ordination Centres

7.4.1 On-Site Co-ordination

An on-site co-ordination centre will be deployed in the event of a Major Emergency for onsite operational support and command. This may be a dedicated vehicle, tent or an adjacent building that will accommodate all principal response agencies.

7.4.2 Local Co-ordination and Crisis Management Team

WCC have identified the following locations as suitable Local Co-ordination Centres for strategic level co-ordination;

- The council chamber county hall, Wexford.
- The machinery yard building, Enniscorthy (Alternative).

These buildings have been chosen to facilitate the effective working of the Local Co-ordination Group and WCC's Crisis Management Team.

7.4.3 Layout of Co-ordination Centres

Strategic level co-ordination is more usually exercised at the Local Co-ordination Centre. All co-ordination centres will follow a generic model of operation. The generic centre illustrated below has the following characteristics.

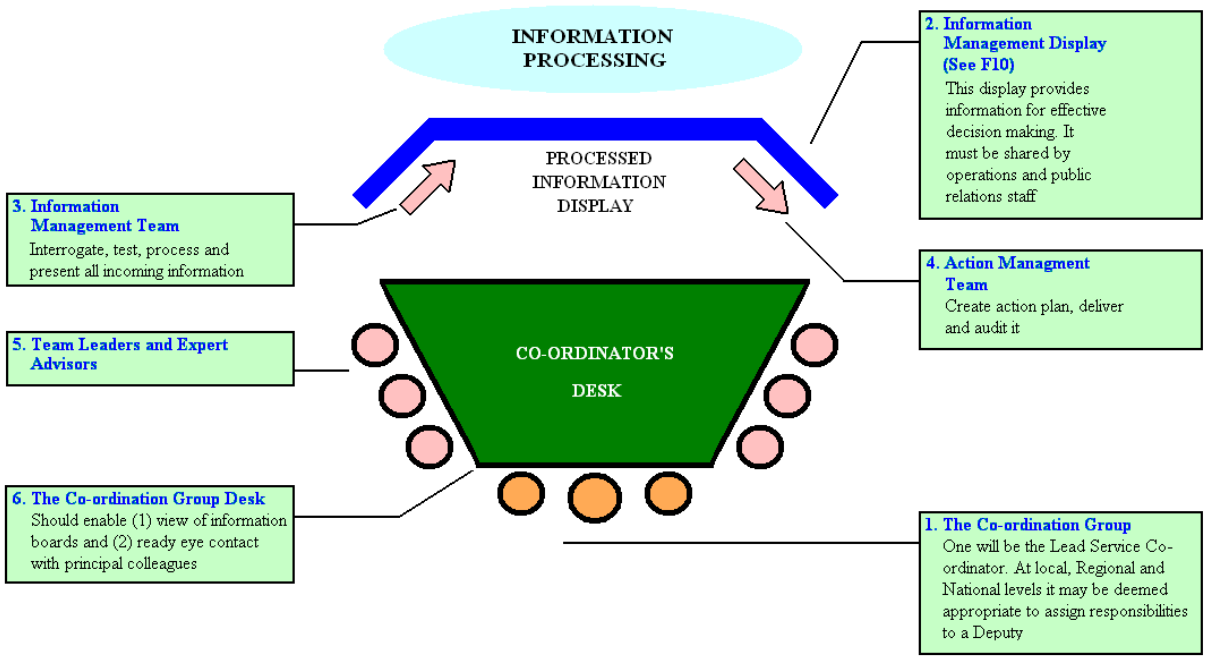


Figure 7.1: Generic Co-ordination Centre

7.4.4 Location of the predetermined Regional Co-ordination Centre(s)

The local co-ordination centres will have the capacity to act as a regional co-ordination centre, should the Major Emergency be scaled up to a regional level.

7.4.5 Information Management

The role of Information Manager will be assigned to middle and senior management. The function of the information management team will be to interrogate, test, process and present all incoming information required for the decision making process.

7.4.6 Action Management Officer/Team

The role of the Action Management Officer is to assemble an Action Plan (from information that has come from the Information Management System) and ensure that it is communicated to all agencies responsible for delivering it, and monitor/audit delivery as well as reporting this back to the Co-ordination Group. At less complex incidents one Officer/Team may undertake both the information and action management functions. Where the demands of the Major Emergency require the appointment of a separate Action Management Officer, this person may be a representative from one of the agencies other than the lead agency.

7.4.7 Team Leaders and Expert Advisors:

A range of specialist team leaders and expert advisers may be assigned permanent or temporary seats at the Co-ordination Group desk. They may themselves lead teams either at or remote from the centre. Generally they should advise or direct activity strictly within their mandate of authorities. On occasion they may be invited to contribute to debate in a broader context. They need to be quite clear in which capacity they are acting at any juncture and adjust their perspective accordingly.

7.4.8 Support Teams

Each PRA should put support teams in place for key roles and should prepare Operational Protocols setting out the arrangements which will enable the agency's support to be mobilised and function in accordance with this MEP.

7.5 Communications Facilities

7.5.1 Communications Systems

Wexford County Council relies on technical communication facilities to enable it to function and for different units to communicate, both at the site and between the site and its co-ordination centre/s.

7.5.2 Inter-agency Communication On Site, Including Protocols and Procedures

Communication systems serve command structures within services and it is neither necessary nor desirable that there is inter-agency radio communication at all levels. However, at Controller of Operations level it is critical that robust arrangements for inter-agency communication on-site(s) are provided. For this purpose, the HSE will provide a set of hand-portable radios, dedicated specifically to inter-agency communication on site.

7.5.3 Communications Between Site and Co-Ordination Centres

All communication between the On-site Co-ordination group and the Local Co-ordination group shall be supported by the work of trained Information Management Officers at the scene and at the local co-ordination centre. Communications between the site and the local co-ordination centre will be facilitated by a two way radio/phone system made available to relevant personnel.

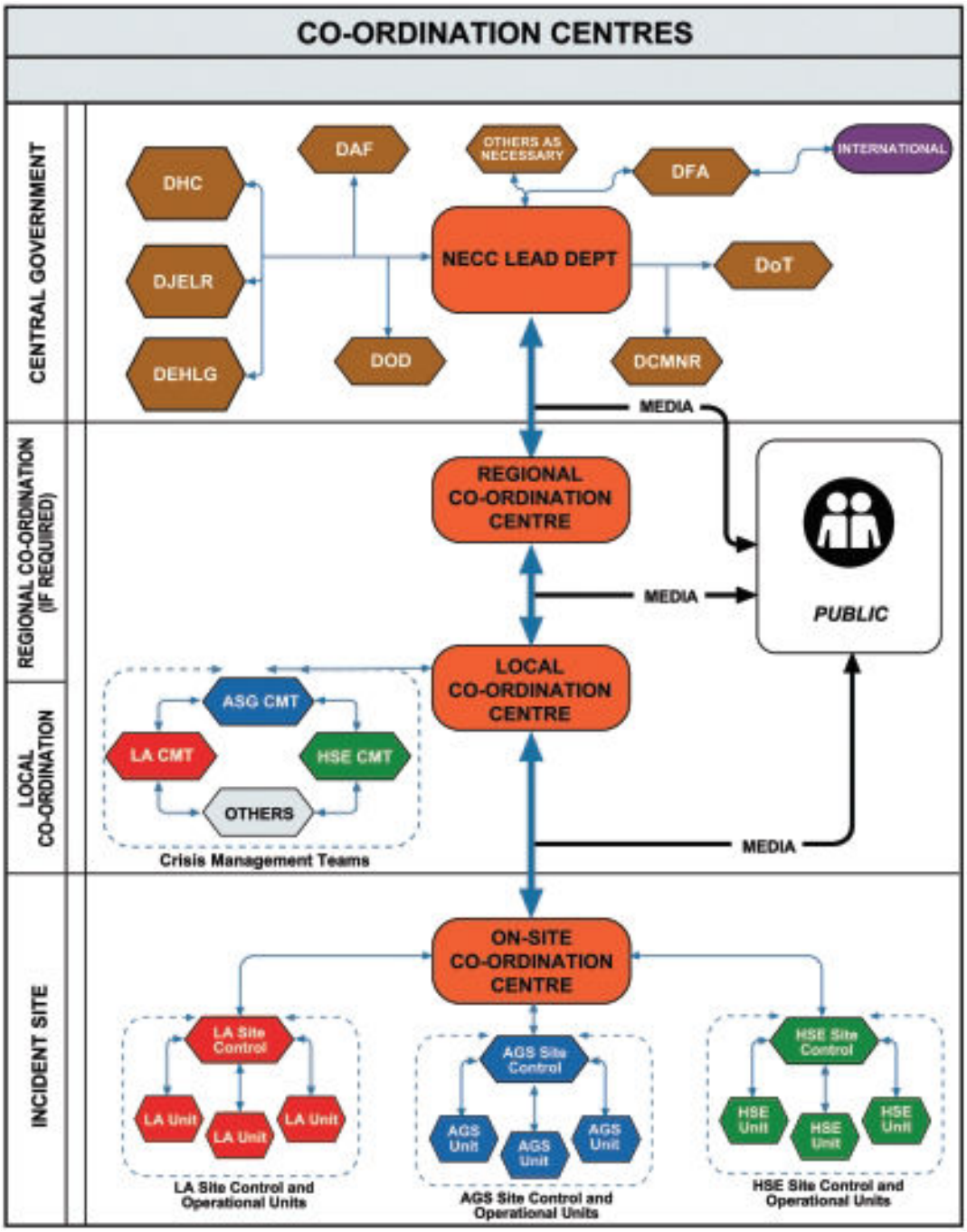


Figure 7.2: Communication

7.6 Exercising the Lead Agency's Co-ordination Roles

7.6.1 Lead Agency

One of the three PRA's will be designated as the lead agency for any emergency and will assume responsibility for leading co-ordination. See Section 6.3 of this Document.

7.6.2 Review and Transfer of the Lead Agency Role

The lead agency role may change over time, to reflect the changing circumstances of the major emergency. Ownership of the lead agency mantle should be reviewed at appropriate stages of the major emergency. All changes in lead agency designation emanating from the site, and the timing thereof, will be by agreement of the three Controllers of Operations, and should be recorded and communicated as per the initial determination, informing the Local Co-ordinating group. As the emphasis of operations may shift from the site to other areas, the Local Co-ordination Group may review the issue and determine a change in the lead agency, as appropriate.

7.6.3 Wexford County Councils Co-Ordination Role as a "Lead Agency"

In the event of Wexford County Council been assigned the Lead Agency role, it will be assigned the responsibility for the co-ordination role (in addition to its own functions) and it should lead all the co-ordination activity associated with the emergency both on-site and off-site. The function of the lead agency for any emergency includes ensuring;

- involvement of the three PRA's and the principal emergency services in sharing information on the nature of the emergency situation;
- involvement of the range of organisations (other than PRA's) who may be requested to respond in co-ordination activities and arrangements;
- co-ordination decisions are made promptly and communicated to all involved;
- site management issues are addressed and decided;
- public information messages and media briefings are co-ordinated and implemented;
- pre-arranged communications (technical) links are put in place and operating;
- operating the generic information management systems;
- ownership of the lead agency role is reviewed, and modified as appropriate;
- all aspects of the management of the incident are dealt with before the response is stood down;
- a report on the co-ordination role is prepared in respect of the emergency after it is closed down, and circulated (first as a draft) to the other services which attended.

7.7 Public Information

There are circumstances when it may be necessary to protect members of the public who are in the vicinity of an emergency event. This protection is usually achieved by moving people temporarily to a safe area, by evacuation where appropriate or feasible, or by

advising affected individuals to take shelter in an appropriate place. The On-Site Co-ordination Group will take the decision on how best to protect a threatened population.

The Local Co-ordination Group should manage the task of co-ordinating the provision of information to the public. This activity should be co-ordinated by the lead agency.

Early warning and special public notices shall be relayed in the event of an emergency. The Public can be kept informed by use of the following;

- Internet service, www.wexford.ie
- WCC social media accounts,
- Local broadcasters;
- Emergency helpline service;
- Loudhailers.

On a national level the public shall be informed by use of the following;

- Television and Radio – arrangements exist whereby emergency announcements may be made on RTÉ television and radio channels.
- TeleText Services – not for emergency alerts, but useful for posting more information than would be communicable by emergency calls or broadcasts. See appendix C for useful contact numbers and resources.

7.8 The Media

7.8.1 Arrangements for Liaison with the Media

The media will respond quickly to a large-scale incident and this media presence may extend into days or weeks. It is the responsibility of the lead agency to establish a media centre at or near the site of the emergency for use by the principal response agencies in dealing with the media at the site. The Local Co-ordination Group will be responsible for official media statements and press releases off-site.

7.8.2 Arrangements for Media On-Site

There shall be a Media Liaison Officer appointed at both the On-site and Local Co-ordination Centres. The Media Liaison Officer must keep accurate and timely information on the emergency in consultation with the local Co-ordination Groups so that they;

- can be the point of contact for all media enquiries.
- can answer information queries from the general public.
- can obtain and provide information from/to Rest Centres, other agencies, press officers, local radio, press etc.
- will be responsible for setting up an information helpline.

7.8.3 Arrangements for Media at Local and/or Regional Co-ordination Centres

The Local/Regional Co-ordination Group should take the lead in terms of working with the media, away from the site, during a major emergency. As with arrangements at the site,

each principal response agency should designate a Media Liaison Officer at the Local Co-ordination Centre and the activities of the Media Liaison Officers should be co-ordinated by the Media Liaison Officer of the lead agency. All statements to the media at this level should be cleared with the chair of the Local/Regional Co-ordination Group.

7.8.4 Arrangements for Media at, or Adjacent to, Other Locations Associated with the Major Emergency

In many situations media attention will move quickly away from the site to other locations, including the Local Co-ordination Centre, hospitals and mortuaries. The Local Co-ordination Group should take the lead in terms of working with the media, away from the site.

7.9 Site Management Arrangements

7.9.1 Generic Site Management Elements/Arrangements

Wexford County Council shall appoint a Controller of Operations at the site (or at each site) of the emergency (see section 6 of this document). The initial important task of the Controller of Operations in association with the other two controllers is the development of a Site Management Plan. Once agreed, the resulting site plan should be implemented and communicated to all responding groups.

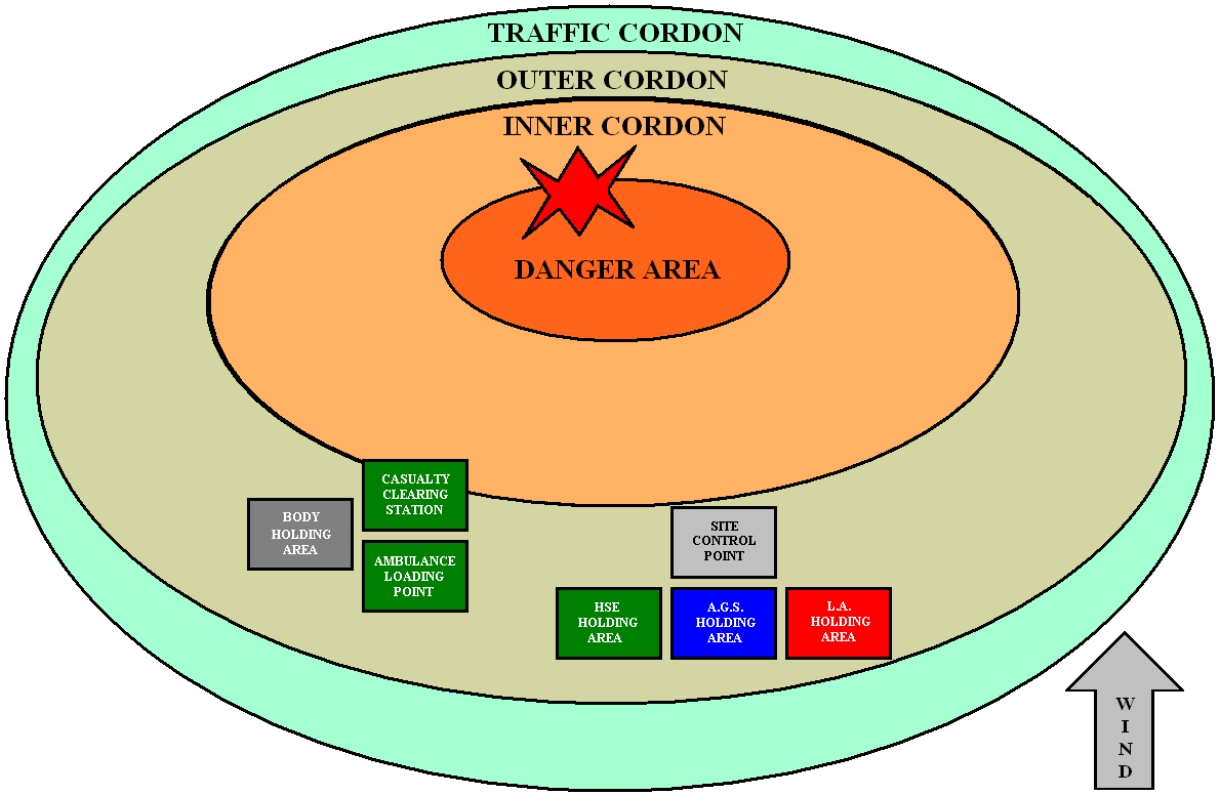


Figure 7.3: Idealised Scene Management Arrangements

The main components of a typical Site Plan should contain some or all of the following: (See Appendix D for detailed information on Scene Management)

- Inner, Outer and Traffic Cordons;
- A Danger Area, if appropriate;
- Cordon and Danger Area Access Points;
- Rendezvous Point;
- Site Access Routes;
- Holding Areas for the Different Services;
- Principal Response Agency Control Points;
- Site Control Point;
- On-Site Co-ordination Centre;
- Casualty Clearing Station;
- Ambulance Loading Area;
- Body Holding Area;
- Survivor Reception Centre;
- Friends and Relative Reception Centre; and
- Media Centre.

7.9.2 Control of Access

In order to control access to a Major Emergency site, cordons will be established as quickly as possible at the site of a Major Emergency for the following reasons;

- to facilitate the operations of the emergency services and other agencies;
- to protect the public, by preventing access to dangerous areas; and
- to protect evidence and facilitate evidence recovery at the site.

Three cordons will be established. An Inner, Outer and Traffic Cordon, along with access cordon points. This will be done by An Garda Síochána after a decision by and agreement with the On-site Co-Ordination Group.

7.9.3 Danger Area

A Danger Area may be declared where there is a definite risk to rescue personnel, over and above that which would normally pertain at emergency operations.

Each service should establish from the On-Site Co-ordinator if a Danger Area has been defined as part of site management arrangements and, if so, what particular safety provisions may apply.

Where a situation deteriorates to a point where the officer in charge of the Danger Area decides that it is necessary to withdraw response personnel from a Danger Area, a signal, comprising repeated sounding of a siren for ten seconds on, ten seconds off, will be given. All personnel should withdraw on hearing this signal to a pre-determined safe zone.

7.9.4 Identification of Personnel at the Site of a Major Emergency

All uniformed personnel, responding to the site of a major emergency, should wear the prescribed uniform, including high visibility and safety clothing, issued by their agency. The service markings on this clothing should be made known in advance to the other organisations that may be involved in the response.

Senior personnel who are acting in key roles, such as the On-Site Co-ordinator and the Controllers of Operations, should wear bibs designed and co-ordinated as follows:

Organisation	Bib Colour	Wording
Health Service Executive	Green and White Chequer	HSE Controller
County Council	Red and White Chequer	County Council' Controller
An Garda Síochána	Blue and White Chequer	Garda Controller

When the lead agency has been determined, the On-Site Co-ordinator should don a distinctive bib with the words On-Site Co-ordinator clearly visible front and back. Below is an example of how the bibs should look for each of the responding agencies.

Figure 7.4: Distinctive Bibs used by the PRA's

7.9.5 Non-Uniformed Personnel

Non uniformed personnel from Wexford County Council should attend the scene in high visibility jacket with the name Wexford County Council and their job function clearly displayed.

7.9.6 Air Exclusion Zones

Where the principal response agencies consider it appropriate and beneficial, the On-Site Co-ordinator may request, through An Garda Síochána, that an Air Exclusion Zone be declared around the emergency site by the Irish Aviation Authority. When a restricted zone above and around the site is declared, it is promulgated by means of a "Notice to Airmen" - NOTAM - from the Irish Aviation Authority.

7.10 Mobilising Additional Resources

The voluntary emergency services sector can provide additional equipment and support in the event of a major emergency. Details of the local Voluntary Emergency Services, the resources they can provide and their mobilisation procedure is outlined in Appendix C. Voluntary emergency services will link to the principal response agencies in accordance with Table below.

Principal Response Agency	Linked Voluntary Emergency Service
An Garda Siochána	Irish Mountain Rescue Association Irish Cave Rescue Association Search and Rescue Dogs Sub-Aqua Teams River Rescue
Health Service Executive	Irish Red Cross Order of Malta Ambulance Corps St. John's Ambulance
County Council	Civil Defence

Each principal response agency with a link to voluntary emergency services is responsible for the mobilisation of that service and their integration into the overall response. The internal command of volunteer organisations resides with that organisation.

7.10.1 The Mobilisation of all Voluntary Emergency Services

The mobilisation of all voluntary emergency services is described in section 4.3 above and Appendix C.

7.10.2 Mobilisation of Utilities

Utilities are frequently involved in the response to emergencies, usually to assist the principal response agencies in making situations safe. They may also be directly involved in restoring their own services, for example, electricity supply in the aftermath of a storm. Utilities operate under their own legislative and regulatory frameworks but, during the response to an emergency, it is important that they are involved in the co-ordination arrangements. Utilities may be requested to provide representatives and/or experts to the On-Site Co-ordination Group, the Local Co-ordination Group and/or the Regional Co-ordination Group, as appropriate. A list of utilities and their emergency/out of hours contact arrangements are listed in Appendix C. Please refer to section 4.3.5 of this document for further details.

7.10.3 Mobilisation of Private Sector

Private sector organisations may be involved in a Major Emergency through ownership of the site where the emergency has occurred or through ownership of some element involved in the emergency e.g. an aircraft, bus, factory, etc. They may also be called on to

assist in the response to a major emergency, by providing specialist services and/or equipment. Private sector representatives and/or experts may be requested to support the work of the On-Site Co-ordination Group, the Local Co-ordination Group and/or the Regional Co-ordination Group, as appropriate. A list of experts and equipment within the private sector is detailed in Appendix C.

7.10.4 Arrangements for Identifying and Mobilising Additional Organisations

The County Council Controller of Operations should ensure that, where the resources available do not appear to be sufficient to bring a situation under control, or the duration of an incident is expected to be extended, the levels, types and duration of assistance/support are identified, and that the request for support is passed to either the County Council's Crisis Management Team or the Local Co-ordination Centre who will arrange to obtain the support via mutual aid arrangements with neighbouring authorities.

Where resources that are held at a national level are required, as part of the management of the incident, requests for those resources should be directed by the lead agency to the lead government department.

7.10.4 Arrangements for Command, Control, Co-ordination and Demobilisation of Organisations Mobilised to the Site

Each principal response agency with a linked voluntary emergency service/organisation is responsible for the demobilisation of that service and their disintegration from the overall response. The internal command of the organisations resides with that organisation. Refer to section 4.3.1 through to 4.3.6 and section 7.10.1 of this document.

7.10.5 Mutual Aid Arrangements

Refer to section 4.4 of this document.

7.10.6 Requests for Out-of-County Assistance

The decision to seek assistance from outside the county will be made by the lead agency, in association with the other principal response agencies, at the Local/Regional Co-ordination Centre. Please refer to section 4.4 of this document.

7.10.7 Requests for National Assistance

A Regional Co-ordination Group may also request assistance from Government. National resources will be available in the event of a Major Emergency at local or regional level. Requests for assistance should be developed at local or regional co-ordination level and directed by the lead agency to the lead government department. Please refer to section 4.6 of this document.

7.11 Casualty and Survivor Arrangements

7.11.1 General

The primary objective of any response to a Major Emergency is to provide effective arrangements for the rescue, care, treatment and rehabilitation of all of the individuals who are affected by the emergency. These individuals may be divided into two main categories as follows: Casualties, including persons who are killed or injured, and Survivors. Survivors will include all those individuals who are caught up in an emergency but not injured, such as, uninjured passengers from a transport accident or evacuees.

As well as making provision for casualties and survivors, the principal response agencies should also make arrangements for the reception, facilitation and support of the friends and relatives of these individuals.

7.11.2 Casualties and Survivors.

The On-Site Co-ordinator, in association with the other Controllers, will need to make an early assessment of the casualty situation and identify if there are particular aspects which may impact on casualty management, such as, significant numbers of disabled, sick or immobile persons involved, and take action accordingly.

At the site of a major emergency, the priorities of the principal response agencies are to save life, prevent further injury, rescue those who are trapped or in danger, triage casualties, provide them with appropriate treatment and transport them to the appropriate hospital(s) where necessary.

7.11.3 Arrangements for Triage

Triage is a dynamic process of assessing casualties and deciding the priority of their treatment, using a two-stage process of triage sieve and triage sort. Following initial triage, casualties will normally be labelled, using Triage Cards, and moved to a Casualty Clearing Station. The purpose of this labelling is to indicate the triage category of the casualty, to facilitate the changing of that category, if required, and to record any treatment, procedure or medication administered. A standard card with Red (Immediate), Yellow (Urgent), Green (Delayed) and White (Dead) sections is normally used for this purpose.

7.11.4 Transporting Lightly Injured and Uninjured Persons from the Site

It should be noted that while some casualties will be transported to the Receiving Hospital(s) by the Ambulance Service with assistance from the County Council, some casualties may leave the site by other means and may arrive at the designated Receiving Hospital(s), or other hospitals, in cars, buses, etc.

7.11.5 Casualty Clearing

Patients must be moved to the Casualty clearing station. The Casualty clearing station will be established by the ambulance service, in consultation with the Health Service Executive. At this location the casualties are collected, further triaged, treated, as necessary, and prepared for transport to hospital. The Health Service Executive Controller of Operations will, in consultation with the Site Medical Officer and the designated receiving hospitals, decide on the hospital destination of casualties.

7.11.6 Fatalities

The bodies of casualties, which have been triaged as dead, should not be moved from the incident site unless this is necessary to affect the rescue of other casualties. The only other circumstance where bodies should be moved, before the Garda evidence collection process is complete, is if they are likely to be lost or damaged due to their location or the nature of the incident.

Bodies to be moved should be photographed first and their original position clearly marked and recorded. The recovery of the dead and human remains is part of an evidence recovery process and, as such, is the responsibility of An Garda Síochána acting as agents of the Coroner. The County Council can assist An Garda Síochána in this function.

7.11.7 Coroners Role

The Coroner is an independent judicial officer, who has responsibility for investigating all sudden, unexplained, violent or unnatural deaths. It is the task of the Coroner to establish the 'who, when, where and how' of unexplained death. All such deaths in Ireland are investigated under the Coroners' Act, 1962.

The On-Site Co-ordinator, in association with the other Controllers, will decide if it is necessary to establish a Body Holding Area at the site. The Body Holding Area, if established, should be situated close to the Casualty Clearing Station. Members of An Garda Síochána will staff this area and they will maintain the necessary logs to ensure the continuity of evidence.

It should be noted that the Body Holding Area is not the appropriate place for the prolonged storage of the dead and appropriate arrangements should be made to ensure minimal delay in moving bodies to a mortuary (temporary or otherwise).

7.11.8 Temporary Mortuaries

It is the responsibility of the County Council to provide a Temporary Mortuary, if required; each County Council should consult with the District Coroners and health service pathologists in its area on the options/arrangements/plans for Temporary Mortuaries.

7.11.9 Identification of the Deceased

The Coroner, with the assistance of An Garda Síochána, has overall responsibility for the identification of bodies and remains and s/he is entitled to exclusive possession and control of a deceased person until the facts about their death have been established. A full post-mortem and forensic examination will be carried out on everybody from a Major Emergency and each death will be the subject of an Inquest. The post-mortem is carried out by a Pathologist, who acts as the 'Coroners Agent' for this purpose.

7.11.10 Survivor Reception Centre

A Survivor Reception Centre should be designated and established at the earliest possible opportunity. It is the responsibility of the County Council to establish and run this centre. Transport from the Survivor Reception Centre to home/meet relatives/safe place will be arranged as soon as it is practicable.

7.11.11 Arrangements for Dealing with Uninjured Survivors who Require Support

All those who have survived the incident uninjured can be directed to Survivor Reception Centres, where their details will be documented and collated by An Garda Síochána. Provision should be made at these centres for the immediate physical and psychosocial needs of survivors (e.g. hot drinks, food, blankets, telephones, first aid for minor injuries, etc.).

The assistance of Civil Defence and the voluntary ambulance services may be required to provide a variety of services at the Survivor Reception Centre. The Survivor Reception Centre should be secure from any unauthorised access and provide the maximum possible privacy for survivors. See Appendix C for Temporary Accommodation List.

7.11.12 Casualty Bureau

Gathering of casualty information will be the responsibility of An Garda Síochána. In the event of a Major Emergency involving significant numbers of casualties, An Garda Síochána will establish a Casualty Bureau to collect and collate the details (including condition and location) of all casualties and survivors.

A liaison/casualty officer will normally be sent by An Garda Síochána to each hospital, survivor reception centre and casualty reception centre where casualties are being treated. The County Council may assist in the collection and collation of casualty data. Any information collected on any casualty is transferred via An Garda Síochána to the Casualty Bureau, who will generally set up an information hot line, in order that concerned family and friend may inquire about 'loved ones'.

7.11.13 Friends and Relatives Reception Centres

The purpose of a reception centre is to provide a comfortable area where friends and relatives of those involved in the incident (primarily the casualties and survivors) can be

directed for information. The Local Co-ordination Group will determine the need for and arrange for the designation and operation/staffing of such centres.
A building used as a Friends and Relatives Reception Centre should be secure from media intrusion and contain sufficient room to afford privacy to families receiving information about relatives. There will also be a need for a reliable process to establish the credentials of friends and relatives.

7.11.14 Non-National Casualties

In some incidents an emergency may involve significant numbers of casualties from other jurisdictions. In such circumstances the Local Co-ordination Centre should notify the relevant embassy if the nationality of the victims is known. The Department of Justice should be approached if assistance is required in obtaining interpreters from private sector providers. The Department of Foreign Affairs (which operates an out of hours Duty Officer System) should also be approached for appropriate assistance and liaison purposes. See Appendix C for contact numbers.

Advice may be sought from An Garda Síochána as to the use of interpreters. Generally the local Garda Station will have a list of approved interpreters which may be called upon in the event of an emergency. Advice may also be sought from the Department of Foreign Affairs.

7.11.15 Pastoral and Psycho-Social Care

The On-Site Co-ordinator will ensure that, where appropriate, pastoral services are mobilised to the site and facilitated by the PRA's in their work with casualties and survivors. Similarly, individual services should make arrangements for necessary pastoral services at any other locations associated with the emergency, such as hospitals.

Pastoral and psycho-social support arrangements for casualties and other affected members of the public are the responsibility of the Health Service Executive. Requests for such care can be made through the HSE crisis management team which will then make the appropriate arrangements.

7.12 Emergencies involving Hazardous Materials

7.12.1 Hazardous Materials Incidents

Wexford County Council is the lead agency for response to hazardous materials incidents within Wexford County, with the exception of those involving biological agents. Where terrorist involvement is suspected, An Garda Síochána will act as the lead agency. The Defence Forces, when requested, will assist An Garda Síochána in an Aid to the Civil Power role with Explosive Ordnance Disposal teams. Details of specific actions to be taken in the event of a CBRN incident are contained in the Protocol for Multi-Agency Response to Suspected Chemical and Biological Agents arising from terrorist activity.

7.12.2 CBRN Incidents

Details of specific actions to be taken in the event of a CBRN (*CBRN meaning terrorist incidents involving C - conventional explosives/chemical substances; B - biological agents; R - radiological and N - nuclear material)* incident are detailed in the Protocol for Multi-Agency Response to Suspect Chemical and Biological Agents. These protocols deal with a range of matters relevant to managing such incidents, including the identification of the materials involved. They also provide for involvement of the National Poisons Information Centre and the National Virus Reference Laboratory. Where terrorist involvement is suspected, An Garda Síochána will act as the lead agency.

7.12.3 Biological Incidents

Details of specific actions to be taken in the event of a biological incident are detailed in the Protocol for Multi-Agency Response to Suspect Chemical and Biological Agents.

7.12.4 National Public Health (Infectious diseases) Plan

For infectious diseases such as Avian Flu, Pandemic Flu and Foot and Mouth Disease there will be a link to the National Plan as outlined by government. Wexford County Council will provide assistance under the command of the lead government department.

7.12.5 Nuclear Accidents

Details of specific actions to be taken in the event of a local radiological emergency or the activation of the National Emergency Plan for Nuclear Accidents are detailed in the Protocol for Multi-Agency Response to Radiological/ Nuclear Emergencies.

7.12.6 Decontamination

The On-Site Co-ordinator, in association with the other Controllers of Operations, will establish the need for decontamination. The Health Service Executive has responsibility for providing clinical decontamination and medical treatment to casualties affected by hazardous materials. The fire services have responsibility for providing other forms of physical decontamination of persons at the site. The Health Service Executive will be responsible for decontamination where required to protect health service facilities, such as hospitals, from secondary contamination.

Where emergency decontamination of the public is required, the County Council fire service may use its fire-fighter decontamination facilities, or improvised equipment may be used prior to the arrival of dedicated equipment. Where it is decided that persons should undergo this practice, it should be carried out under the guidance of medical personnel.

7.13 Protecting Threatened Populations

7.13.1 Threatened Population

The On-Site Co-ordinator will take the decision on how best to protect a threatened population, after consultation with the other Controllers of Operations. This protection is usually achieved by moving people temporarily to a safe area, by evacuation where appropriate or feasible, or by advising affected individuals to take shelter in an appropriate place.

7.13.2 Evacuation Arrangements

The On-Site Co-ordinator will take the decision on how best to protect a threatened population, after consultation with the other Controllers of Operations. Evacuation is usually undertaken on the advice of the County Council or Health Service Executive. Where decided upon, the process of evacuation will be undertaken by An Garda Síochána, with the assistance of the other services. A suitable evacuation assembly point will need to be established and rest centres set up by Wexford County Council.

Personnel from the County Council and from voluntary agencies will staff rest centres. The centres will provide security, welfare, communications, catering and medical facilities. Evacuees should be documented and basic details passed to the casualty bureau. The County Council will assist in this role. Temporary Accommodation may also be required. See Appendix C - Temporary Accommodation List.

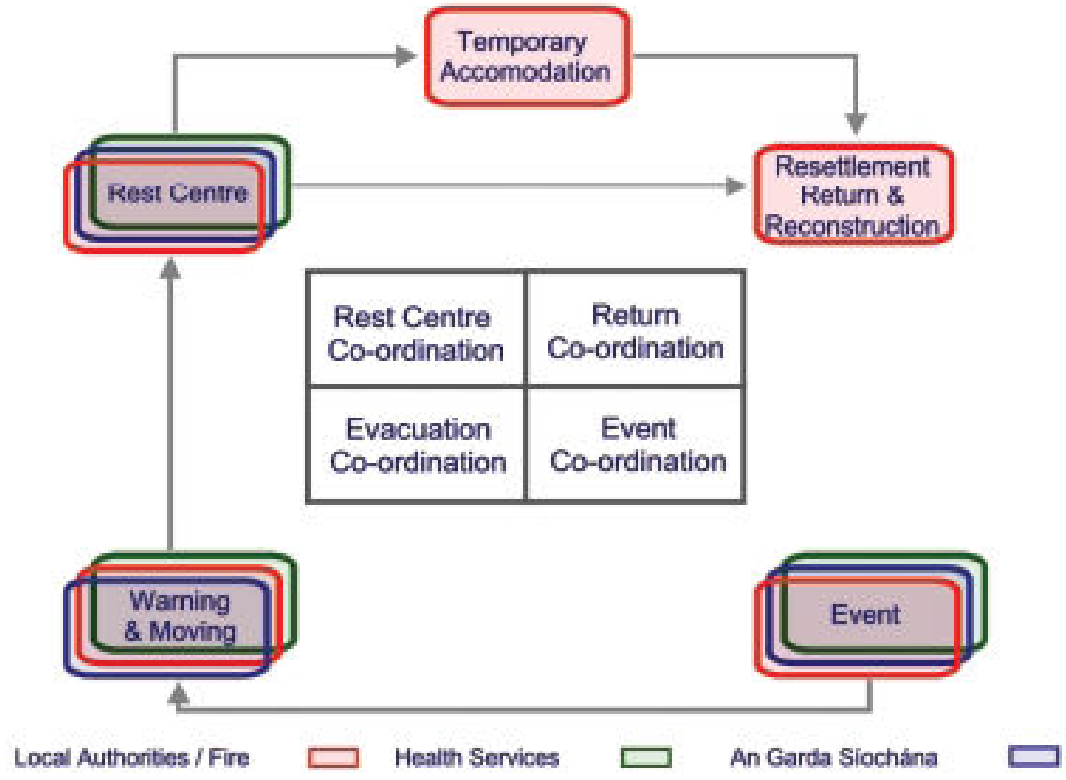


Figure 7.5: Structure of Evacuation

7.13.3 Arrangements for the Involvement of the Public Health Service

Where an emergency results in a real or perceived threat to public health by, for example, the release of chemical, radioactive or biological agents, the contamination of water or food supplies, or the spread of contaminated flood water, it can be anticipated that there will be considerable concern among both the persons immediately affected and the wider public. In such situations, the Health Service Executive Controller of Operations should ensure that the local public health services are informed of the situation as soon as possible so that they can become involved in the response at the earliest possible stage.

7.14 Early and Public Warning Systems

7.14.1 Monitoring Potentially Hazardous Situations

Early warning systems are currently set in place for Severe Weather forecasts. This is a 24 hour service provided by Met Éireann. There may be a need to inform the public of the current situation or of possible evacuation. *Please refer to Section 11.1 of this document.*

7.14.2 How Warnings are to be Disseminated.

Warnings may be disseminated to the public by use of some or all of the following mediums;

- Door to Door;
- Radio and T.V. broadcasting;
- Local helpline / information line;
- Web services and internet services;
- Social Media;
- Automated Text services;
- Loud hailers;
- Establish site specific warning systems.

7.15 Emergencies Arising on Inland Waterways

The Irish Coast Guard has responsibility for dealing with Inland Waterway emergencies via the 999/112 emergency calls system and mobilising the necessary resources. An Garda Síochána will be the principal response agency to undertake initial co-ordination at inland waterway emergencies. After the initial response, this role may be re-assigned, following consultation between the Irish Coast Guard and An Garda Síochána.

Wexford County Council can provide assistance in the form of the Civil Defence for water rescue/recovery. There are also some inland water rescue volunteer organisations that may be asked to provide assistance. Refer to Appendix C for further details on resources.

7.16 Safety, Health and Welfare Considerations

Each principal response agency (and other responding organisations) is responsible for the Safety, Health and Welfare of its staff responding to emergencies and should operate its own safety (including personal protective equipment) and welfare management procedures.

Each service should establish from the On-Site Co-ordinator if a Danger Area has been defined as part of site management arrangements and, if so, what particular safety provisions may apply.

The WCC Controller of Operations should ensure that appropriate rest and refreshment facilities are provided for response personnel at the site, as well as for survivors. These facilities may include the provision of food and drink, rest facilities and sanitary facilities.

WCC staff who are particularly traumatized by the events of a Major Emergency may require skilled professional help. This will be provided by Wexford County Council. Currently a care line exists which enables employees and their immediate family to access confidential advice and support 24 hours a day 365 days a year.

7.17 Logistical Issues/ Protracted Incidents

7.17.1 Arrangements for Rotation of Front Line Staff

Front line staff will be relieved and rotated as necessary at protracted incidents in accordance with the County Council Safety, Health and Welfare arrangements.

7.17.3 Arrangements for Initial and Ongoing Welfare for Front Line Staff

The WCC Controller of Operations should ensure that appropriate rest and refreshment facilities are provided for response personnel at the site, as well as for survivors. The Civil Defence may be called upon to provide aid in the administration of such needs. Welfare facilities such as toilets etc. may also be required and supplied by Wexford County Council.

7.18 Investigations

7.18.1 Investigations Arising from the Emergency

The scene of a suspected crime should be preserved until a complete and thorough examination has been made. An Garda Síochána will need to obtain evidence of the highest possible standard and will require that all evidence is left in situ, unless a threat to life or health prevents this. Statements may be required from WCC staff on their involvement.

7.18.2 Minimise Disruption of Evidence

The preservation of the site of a major emergency, which results from criminal action, is of paramount importance and should receive a priority rating from the outset by all PRA's. The first member(s) of An Garda Síochána to arrive at the site of a Major Emergency where a suspected crime has been committed automatically incurs the responsibility of preserving the site.

7.18.3 Other Parties with Statutory Investigation Roles

Depending on the nature of the Major Emergency, agencies other than An Garda Síochána may require access to the site for the purposes of carrying out an investigation. These agencies include the Health and Safety Authority (HSA), the Air Accident Investigation Unit (AAIU) and the Environmental Protection Agency (EPA). An Garda Síochána is responsible for carrying out criminal investigations. Any agency including the County Council, with an investigative mandate should liaise in the first instance with the On-Site Co-ordinator, who will direct them to the Controller of Operations of An Garda Síochána.

7.19 Community/VIPs/Observers

7.19.1 Links to Communities Affected by an Emergency

Where communities are affected by a major emergency, efforts should be made to establish contacts/links with the community utilising established links such as community groups, public representatives and community liaison officers within the community.

7.19.2 VIP Visits

All requests for visits to the site or facilities associated with it should be referred to the Local Co-ordination Group. Requests for visits to agency specific locations should be referred to WCC management. Public representatives and other dignitaries may wish to attend the site of the emergency, as well as associated facilities, such as hospitals, to express sympathy on behalf of the public to the injured and bereaved, and to support the emergency response workers.

Visits by dignitaries will usually require security arrangements and liaison with the media. It is important that the organisation of such visits does not distract from the response effort. As a general rule, VIPs should be advised not to visit sites where dangers still exist or where ongoing rescues are in progress.

7.19.3 Arrangements for National / International Observers

National and International observers may request to attend the incident. The presence of experts from other regions or jurisdictions, who wish to act as observers at an incident, can greatly enhance the operational debriefings and facilitate the process of learning lessons

from the emergency. The Local Co-ordination Group should make arrangements for any such observers.

7.20 Standing Down the Major Emergency

A decision to stand down the Major Emergency status of the incident at the site should be taken by the On-Site Co-ordinator, in consultation with the other Controllers of Operations at the site and the Local Co-ordination Group. Where organisations other than the principal response agencies have responded, they should be informed of the decision to stand them down by the Controller of Operations of the agency which mobilised them. Services operating at other locations should be stood down in a similar manner.

7.20.1 Standing Down WCC Services

The Plan may be stood down generally following agreement by the three PRAs responding to the emergency or partially stood down in respect of all or certain WCC services following consultation with the other PRAs.

7.20.2 Operational Debrief

When the Plan is stood down, each agency will carry out an operational debriefing of its involvement. The three PRAs will review the inter-agency co-ordination aspects of the response after every declaration of a major emergency. This review will be hosted by WCC when it has acted as the lead agency at an emergency. The purpose of the review should be to formulate the lessons learned from the incident in relation to co-ordination and to document these.

A composite report, based on appropriate input from each PRA's internal report and the review on co-ordination should be compiled by the lead PRA for submission within a reasonable timescale to the South East Regional Steering Group and the National Steering Group.

Section 8

Site Specific Plans and Wexford County Council Sub-Plans

8.1 Agency Specific Plans

External Emergency Plans for Major Accidents at;

- Atlantic Industries, Drinagh, Wexford, Co. Wexford
- Roche Freight and Warehousing Ltd. Kilrane, Co. Wexford

Rosslare Europort Emergency Plan

Waterford Port Emergency Plan

Iarnrod Eireann, Waterford District, Local Emergency Plan for Wexford Railway Station

BAM, M11 Motorway Emergency Response Procedure

8.2 Wexford County Council Sub-Plans

Coastal Pollution response Plan

Drinking Water Incident Response Plan (DWIRP)

Fire and Emergency Operations Plan

Flood Plan

Kilmore Quay Marine Emergency Plan

Phone and Data Plan

Severe Weather Plan

Wexford Harbour Marine Emergency Plan

Winter Service Plan

Section 9

Plan for Regional Level Co-ordination

9.1 Regional Level Co-ordination

The Chair of the Local Co-ordination Group may declare a regional level emergency and activate the Plan for Regional Level Co-ordination. The key provision in ensuring co-ordination of the extended response is the activation of a "Regional Co-ordination Group". The primary function of the Regional Co-ordination Group is to maintain co-ordination of the principal response agencies involved from the extended “response region”.

Section 10

Links with National Emergency Plans

10.1 National Emergency Plans

Each principal response agency should provide for working with appropriate national bodies and responding to and activating appropriate aspects of their Major Emergency Plan following requests arising from national emergency situations.

10.2 National Emergency Plan for Nuclear Accidents

Details of specific actions to be taken in the event of a local radiological emergency or the activation of the National Emergency Plan for Nuclear Accidents are detailed in the Protocol for Multi-Agency Response to Radiological/ Nuclear Emergencies.

10.3 National Public Health (Infectious Diseases) Plan

Details of specific actions to be taken in the event of an activation of the National Public Health (Infectious Diseases) Plan are detailed in the Protocol for Multi-Agency Response to Emergencies arising from Infectious Diseases Pandemics.

10.4 Animal Health Plan

For infectious diseases such as Avian Flu, Pandemic Flu and Foot and Mouth there will be a link to the National Plan as outlined by the Government. Wexford County Council will provide assistance under the command of the lead Government Department.

10.5 Activations on request from the Irish Coast Guard

Wexford County Councils Major Emergency Plan may be activated in response to a request from the Irish Coast Guard following a threatened or actual emergency in the Irish Maritime Search and Rescue Region.

10.6 Activation on request from a Minister of Government

Wexford County Councils Major Emergency Plan may be activated in response to a request from the Minister for the Environment, Community and Local Government in the event of an emergency/crisis situation.

Section 11

The Recovery Phase

11.1 Support for Individuals and Communities

Although the emergency response stage may have passed, the recovery phase is also important and includes consideration of many strategic issues, which need to be addressed, at both individual principal response agency and inter-agency level, during this phase. The recovery phase can typically include;

- Assisting the physical and emotional recovery of victims;
- Providing support and services to persons affected by the emergency;
- Clean-up of damaged areas;
- Restoration of infrastructure and public services;
- Supporting the recovery of affected communities;
- Planning and managing community events related to the emergency;
- Investigations/inquiries into the events and/or the response;
- Restoring normal functioning to the principal response agencies;
- Managing economic consequences.

The recovery phase should provide support and long term care for individuals involved in the incident and the communities affected by the incident. It is imperative that Wexford County Council restores critical services to a pre-emergency state as quickly and efficiently as possible. The services and staff WCC may be able to provide are based upon a wide range of skills and resources drawn from its day-to-day operations such as;

- Technical and engineering support;
- Road services;
- Water and sanitary services;
- Environmental protection;
- Provision of reception centres;
- Re-housing and accommodation needs;
- Transport;
- Help lines;
- Welfare and financial needs;
- Clean-up.

11.2 Co-ordination of the Recovery Phase

There is a need for the co-ordination of emerging recovery issues, such as managing public appeals and external aid, from the earliest stages of the response phase. For this reason, the arrangements for co-ordination of response should continue to operate during the transition from response stage to recovery stage. At a point when the issues on the agendas of Co-ordination Groups are largely recovery focussed, it may be appropriate to

re-title the group as the Local, Regional or National Recovery Co-ordination Group. From the earliest stage, it may be appropriate also for the Local, Regional or National Co-ordination Groups to appoint a Recovery Working Group to plan ahead.

It is the responsibility of the Co-ordination Groups together with the Recovery Working Group to prioritise events during the recovery phase. The co-ordination groups should monitor the recovery phase and put in place any protection measures required to guard against continuing hazards.

It is recommended that the WCC Crisis Management Team will continue to function until the issues arising in the response phase are more appropriately dealt with by normal management processes.

11.3 Clean-Up

In the aftermath of an emergency the clean-up operation will be assigned to Wexford County Council. The removal of debris and contaminated waste is one of the principal concerns. In consultation with the EPA and specialist companies WCC will commence clean up of the site as soon as possible but without hindering the investigation process. Careful consideration must be given to the removal of contaminated debris to locations that will not affect communities.

11.4 Procedure for liaison with utilities

The utility companies may need to be mobilised in the recovery phase in order to provide essential services such as electrical supplies and telecom facilities.

The WCC IT section may also have a roll to play in the recovery phase and will need to liaise with utilities in order to bring services back on line, such as communication links etc.

Section 12

Review of the Major Emergency Plan

12.1 Internal Review Process

An internal review of the Major Emergency Plan will be undertaken by Wexford County Council on an annual basis and if necessary following major exercises or incidents. The review should;

- Update the roles of individuals that hold key positions;
- Update the risk holders within the functional area of WCC;
- Update contact details of key personnel/resources/utilities;
- Review risk assessments and update as required;
- Plan exercises.

14.2 External Review Process

Wexford County Councils Major Emergency Plan may also be reviewed by the South-East Regional Steering Group on an annual basis and a copy of the revised Plan forwarded to the Department of the Environment, Community and Local Government.

14.3 Appraisal of the Major Emergency Plan

Following the declaration of a Major Emergency and activation of the Plan, WCC will review and report on the performance of its functions during the emergency and on the co-ordinated response with the other PRAs.

Section 13

Appendices

A1	Section Plans/ Sub-Plans/ National Plans
A2	Plan for Regional Level Co-ordination
B1	Risk Assessment
B2	Lead Agency Pre-determined Procedures
C1	Contact Personnel / Key Roles
C2	Voluntary Emergency Services
C3	Emergency Telephone List/ Emergency Resources/ Utilities/ Private Sector (Plant Hire)
C4	Temporary Accommodation List
D1	Persons Authorised to Activate the Plan
D2	Activation of Wexford County Councils MEP
D3	Scene Management
E1	Notification to the DoECLG

E. Fish Translocation Protocol

ENNISCORTHY FLOOD DEFENCE SCHEME, ENNISCORTHY, CO. WEXFORD

Fish Translocation/Salvage Outline Methodology

(18th April 2018)

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INTRODUCTION

All instream construction activities have the potential to kill fish and it is standard practise to translocate these fish out of the way of works or rescue them from areas enclosed or dewatered. In the current project temporary isolation structures (piling) will be erected in the river and fish may become trapped inside if they are not moved out of the way they will die when the enclosure is pumped dry. Fish are collected using various means, including electrofishing and netting, and are immediately moved to an unaffected area – in this case an area upstream of the works.

The current document provides an outline method statement addressing how fish can be collected and transplanted from the affected site.

The key approach taken in any operation such as this is to minimise the number of fish which will be in the area to be enclosed in the first place. This will involve avoiding undertaking piling during the times when fish are migrating. River lampreys in particular will be vulnerable to getting trapped behind the piling – so this will be avoided by not undertaking any piling during the times when they will be migrating or spawning. Salmonids are very mobile and can be encouraged not to enter an area, or to leave an area prior to instream works commencing using disturbance methods. This is a preferable approach to handling fish – especially adult salmon and this should be avoided if at all possible.

Because juvenile lampreys live in burrows it is more difficult to encourage them to move away from an affected area on their own accord. It is proposed to capture juvenile lampreys present in the affected areas using electrical fishing in advance of any works taking place. Lampreys captured will be translocated to suitable nursery habitats located upstream of the proposed works. Translocating juvenile lampreys is a difficult, labour-intensive and time-consuming procedure. All areas of silt/fine substrate will need to be fished using a varied “pulse and draw” method for up to one minute per m^2. It will not be feasible to remove small larvae; however, it should be possible to remove a significant proportion of all other age groups present. The fishing effort will focus on areas where the most lamprey ammocoetes occur. During dredging works a best effort will also be required to examine spoil removed from the river and salvage juvenile lampreys.

Other fish likely to be in the study area will include Juvenile salmon, Brown trout, Minnows, Gudgeon, European eel, and possibly Twaite Shad. Adult salmon will be migrating throughout the period when works are being completed and could potentially end up behind the piling. These fish will all be removed using standard electrical fishing undertaken from a boat with a crew of 4 ecologists/technicians. The enclosed areas will be fished at least 3 times to ensure that most of the fish present are captured. Areas behind the piling will be divided up into manageable sections using fine meshed stop nets.

OUTLINE METHODS

Fish salvage / translocation operations can only be conducted by qualified ecologists/technicians. A licence issued under Section 14 of the Fisheries (Consolidation) Act, 1959 as substituted by Section 4 of the Fisheries (Amendment) Act, 1962. is required for this work. Licences can take up to 6 weeks (or more) to obtain so this contractor will need to be appointed well in advance of works.

General guidelines for electrical fishing include ‘*Guidelines for Electric Fishing Best Practice’* by Beaumont et al., (2002). Also relevant is the ‘Electrofishing team leader training manual’ by SFCC (2007). Guidance for wadable stretches is given in CFB (2008). Lamprey ammocoete survey methodology is given in Harvey J & Cowx I (2003).

There is no guidance manual for fish rescue / translocation / salvage operations, but the approach would be broadly the same methodology as used for a survey (e.g. Delanty et al., 2017).

The electrofishing work will be expected to require the use of both back packs and also generator gear mounted in a flat-bottomed boat. A 'boom-boat' electrical fishing system may also be required. These systems are particularly suited to large river channels (Cowx et al., 1988).

The fish translocation work needs to be undertaken in tandem with the piling works. The detailed method statement (MS) for fish rescue works needs to be drawn up at the same time as the MS for the piling and dewatering works. Piling should only take place outside of the times when adult River Lampreys are migrating. River Lampreys are very vulnerable to be trapped behind piling – their migration period generally extends from October to April so will be protected with the standard salmonid close-season.

In shallow areas fish should be translocated before the piling work is done. This can be achieved by enclosing areas behind silt curtains prior to piling. Piling itself will kill fish, particularly juvenile lampreys in sediments. Therefore, where possible the fish/lampreys should be removed in advance. This will need to be planned out in detail at the pre-construction stage between the appointed contractors. The detailed method statement will be required for the Section 14 licence application.

Fish translocation – especially moving lampreys – is a very slow and tedious process. The current phases of the piling / dredging works will need to be divided into smaller units for this to be successful. In lamprey nursery habitats (which occur throughout the area upstream of the railway bridge) active electrofishing will take up to 1 min per m^2.

Fishing will be quicker downstream of Seamus Rafter Bridge, where the river is freshwater tidal. Only very low densities of juvenile lampreys were indicated to occur in this area during the baseline surveys. However, other fish will be present in this area, including the critically endangered European eel *Anguilla anguilla*, salmonids, and possible Shad species. Other fish such as Flounder *Platichthys flesus*, Minnow *Phoxinus phoxinus* and Gudgeon *Gobio gobio* will be abundant.

The key effort will be try to ensure that fish are not trapped behind the piling in the first place. This will not be possible for juvenile lampreys but with careful planning and implementation of the piling under the supervision of the fish rescue team leader, many fish can be encouraged to leave the area on their own accord.

Upstream of Seamus Rafter Bridge both juvenile lamprey translocation and standard multiple pass electrical fishing will have to be completed in the enclosed areas. Downstream of this bridge only multiple pass electrical fishing will be required. However, if patches of juvenile lampreys are detected then efforts will have to be made to move the lampreys also.

Prior to works taking place in any particular area the affected section of river will be cordoned off using a 'stop net'. The areas will generally be workable sections/units of around 250m^2. Within these areas there will be patches of lamprey microhabitats. These will need to be fished using the lamprey removal methods. The entire section will need to be fished using standard multi-pass electrical fishing.

The stop nets should extend to the river bed and ideally should be weighted with lead rope, chain or equivalent. A frame can also be required to support the net. The top of the net can be floated on the surface of the river with floats or can be suspended by alternative means. The stop net will prevent fish returning to the section once the removal exercise has been completed. The net will remain in place until piling has been completed to ensure that fish populations do not re-colonise the fished area. The net mesh size should be a maximum of 2mm in diameter.

There will be practical difficulties in doing this in many areas due to the strong flows. The exact approach taken in each area will have to be decided on-site by the site ecologist / fish salvage team. The large piling areas / sections will have to be broken down into small areas of around 250m^2.

For lamprey ammocoetes, the selected area of habitat will then be electrically fished using a pulsed DC electrical fishing. The affected area will be fished in a zigzag pulse and draw manner with a minimum effort of 1 minutes fishing per m^2. A fishing operation will be started with the gear constantly 'on' followed by a regular on/off sequence. While the gear is 'on' the anode will be slowly pulled backwards in the water to cause lampreys to emerge from burrows as a result of electro-taxis. This procedure will be repeated throughout the operation, working though consecutive adjoining $1m^2$ areas. By keeping the anode 1-15cm above the sediment and pulling the anode backwards, the number of lampreys stunned within the substrate will be reduced. Captured lampreys (and other fish) will be removed quickly using the anode net or dip net and placed into a container of river water. The operation will be continued until the lamprey removal exercise in the cordoned off section has been completed.

Many of the affected areas are unsuitable for burrowing ammocoetes (e.g. gravel areas, and almost the entire sections downstream of Seamus Rafter Bridge). These can be spot checked and moved over at a faster rate. However, it must be noted that some juvenile lampreys can also be present in cobble/gravel areas, particularly where a high level of siltation occurs. A best-effort by the electrofishing team will be required.

By working in cordoned-off areas/units all other fish can be removed also in this way. Depletion fishing will be undertaken until it can be shown that <90% of the fish have been captured.

Captured fish will be removed using a dip net (not an anode net) and placed in a bucket of river water. Every 5 minutes (or sooner if large numbers are captured) the catch will be placed into a larger tank with an aeration system. Fish should not be kept in the aeration tank for more than 2 hours. Following this the tank will be transported upstream of the works and fish will be released into suitable habitats. Lampreys will be spread out in suitable habitats at a density of <10 m^2. All other fish (especially juvenile salmonids) need to be placed quickly into the aerated tank. Any adult salmon should be released immediately outside the cordoned off area. It is likely that very few salmon and trout would remain inside the cordoned off area, but some may be encountered. It is recommended that eels be recorded and moved out of the study area with the lampreys. In the event that fish from outside the cordoned off area are drawn into the electric field, the operator should suspend fishing for a few seconds to allow such fish to escape.

During hot weather conditions work may have to be suspended. The electrofishing team will monitor dissolved oxygen levels in the buckets and tanks and if 90% levels are difficult to maintain, or if there are mortalities, then the operation will have to be suspended.

Records of all captured fish (and especially any mortalities) must be kept.

Captured lampreys will be identified on the basis of their external pigmentation and trunk myomere counts as described by Potter & Osborne (1975) and Gardiner (2003). It is considered important to document what is being translocated, and especially record any Sea Lamprey ammocoetes.

During dredging works in areas which are too deep, inaccessible, or with insufficient visibility for using the electrofishing approach spoil dredged from the watercourse will be checked for the presence / absence of lampreys and these will be collected from the spoil. Juvenile lampreys will be in the top 20cm of substrate in the river, so it is recommended to first remove the top 200cm of silt using the machine bucket and spread this out on the barge for examination. This approach will be also be set out in the detailed method statement.

If the piled / dewatered area is flooded, then the above fish removal works will have to be repeated.

PLATES

Plate 1 Fish translocation works from behind piling on the Ennis Flood Scheme. This is an example of the approach that will be taken at Enniscorthy using a boat crew and generator electrical fishing units (Ecofact).

Plate 2 Fish translocation works on the Ennis Flood Scheme. In this case translocation was undertaken in advance of piling with a silt curtain suspended on a frame (Ecofact).

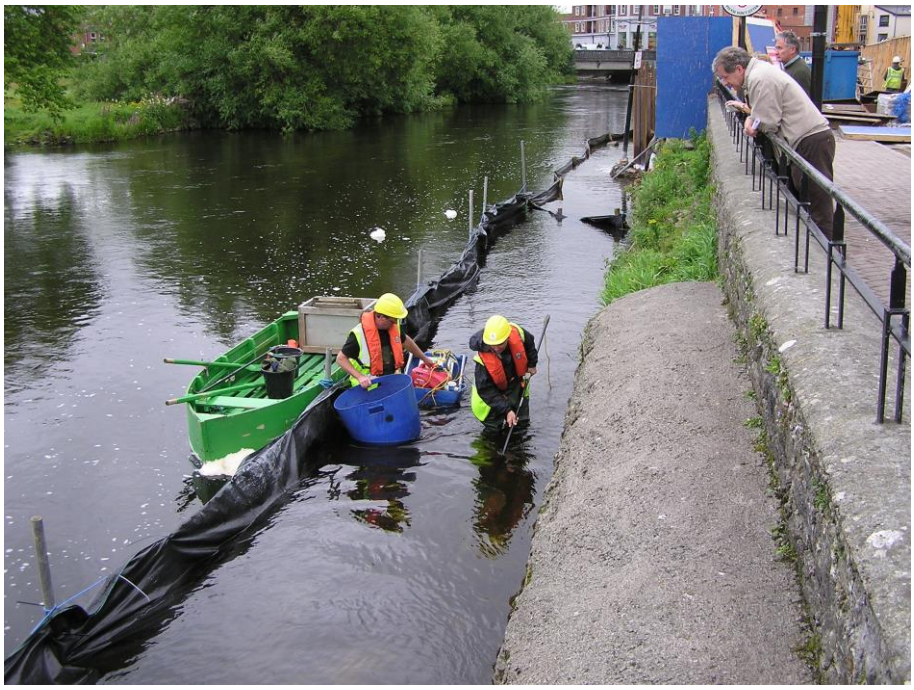

Plate 3 Fish translocation works on the Ennis Flood Scheme (Ecofact).

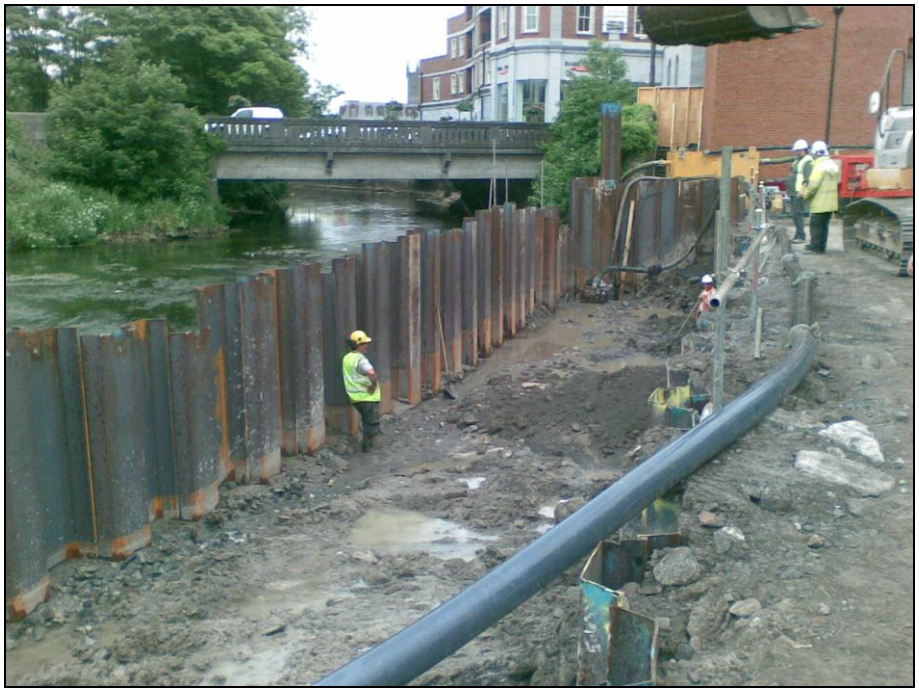

Plate 4 Dry works area maintained behind piling on the Ennis Flood Scheme (Ecofact).

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