



River Slaney (Enniscorthy) Drainage Scheme

Foreshore Lease/Licence Application

January 2020

Wexford County Council
Carricklawn
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1 Introduction

Enniscorthy town has a known history of flooding which has led to the proposal of the Enniscorthy Flood Defence Scheme (FDS). The Scheme is designed to alleviate flooding in the town and will cover a 3.5 km stretch of the River Slaney. The area in question begins 1.5km upstream of Enniscorthy Bridge and extends as far as 2km downstream. The numerous measures are proposed to prevent future flooding, including bridge relocation, the construction of glass panelled flood walls and dredging of the river bed over a length of 2.2km.

The need for this Flood Defence Scheme has been long recognised within the town, with major flooding occurring as recently as 2015. Flooding represents a significant risk to those in the area with both houses and commercial properties experiencing many negative consequences as a result of the recurring flooding in the area. The flooding also has negative impacts on traffic in the area.

The Flood Defence Scheme is being progressed as an Arterial Drainage Scheme as set out in the Arterial Drainage Acts of 1945 and 1995. This legislation allows the OPW and its agents, Wexford County Council, to proceed with the construction of the scheme following Public Exhibition and Confirmation of the scheme by the Minister for Public Expenditure and Reform.

The purpose of this report is to provide a brief description of the scheme and to provide supplementary information required as part of the Foreshore Licence Application.

1.1 General

This foreshore lease/licence is being sought for the construction and maintenance requirements of the proposed elements for the Flood Defence Scheme at Enniscorthy. The Flood Defence Scheme includes the following works which are outlined in Section 2 of this report.

- River dredging/widening and infilling;
- Construction of flood defence walls;
- Seamus Rafter Bridge removal;
- Construction of new road bridge;
- Construction of new pedestrian bridge.

Maps of the locations along the scheme where a Foreshore Lease/Licence is required are included in Book 2.0 of the Foreshore Lease/Licence application.

The admiralty chart for the scheme location is included in Book 3.0 of the application.

1.2 Capital cost of works

The assumed capital costs of the Enniscorthy FDS will be in the region of €40-45M.

2 Enniscorthy Flood Defence Scheme

The following section of this report provides a description of the works to be undertaken as part of the Enniscorthy FDS.

2.1 Design Information

2.1.1 River Dredging

A key part of the scheme involves dredging (deepening) and/or widening and filling along various sections of the river in and adjacent to Enniscorthy Town. These river works are necessary to improve the conveyance of water and reduce flood water levels. This in turn reduces the height of the flood defence walls required. The river bed will be reinstated with some variability, to enable river bed habitats to develop over time following the completion of the works.

Currently, the existing minimum bed level for approximately half of the proposed works length is between 0.25 and 1.5m lower than the Design Bed Level, while the remaining bed levels will need to be deepened by approximately 0.25m to 0.8m to achieve the Design Bed Level.

The proposed works will form a river bed that falls 1.25m over a length of 3km. The river dredging works will commence approximately 1km upstream of Enniscorthy Town (chainage 6600) and will continue to where the Urrin joins the Slaney (chainage 4400). This is a total length of 2.2km. An area of the east side of the channel downstream of Seamus Rafter Bridge, at river chainage 5556 to river chainage 5125, is below the design bed levels and therefore does not require dredging.

2.1.2 River Widening/Infilling

River widening serves three functions, which are as follows:

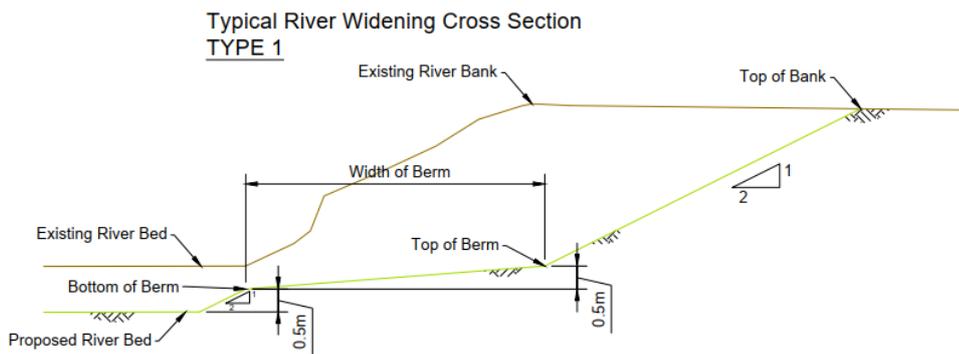
- Reduces flood levels at Island Road
- Facilitates the construction of the flood defences on the western extent of channel at the back of Island Road; and
- Reduces the flow velocities downstream of the railway bridge.

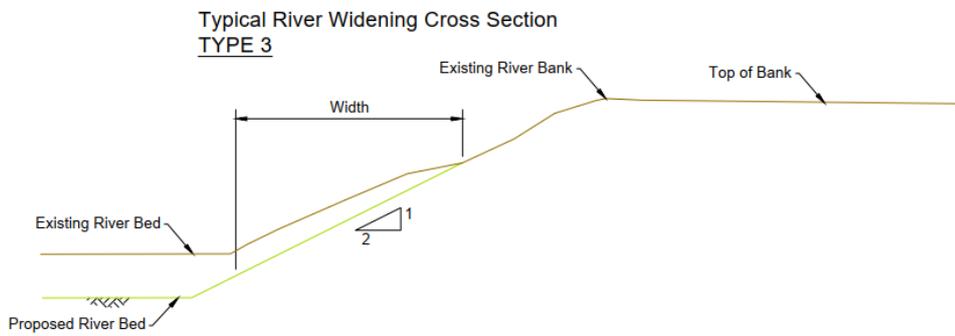
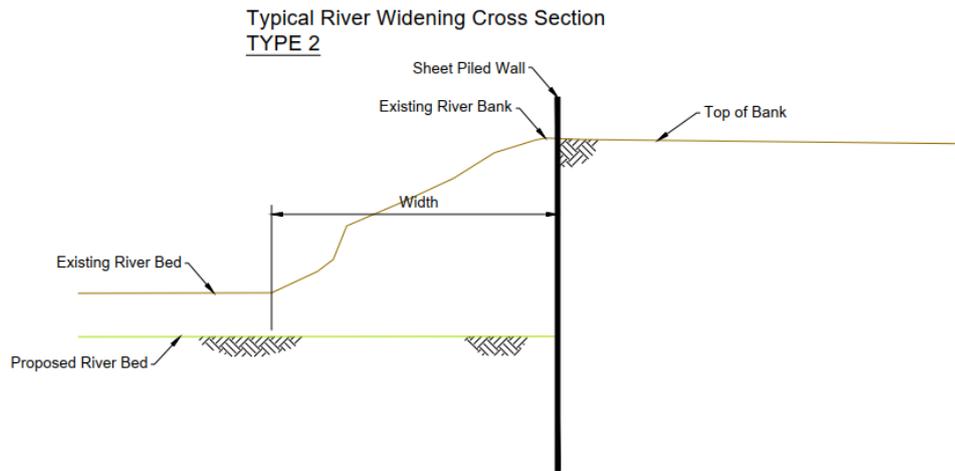
The proposed river widening works will generally comprise three different approaches which are carried out in consideration of the bank conditions encountered. These approaches are noted as Type 1, Type 2, and Type 3. Typical cross sections of each type are shown in Figure 1. The extent and nature of widening/infilling works are illustrated in the accompanying drawings provided in Book 4.0 of the Foreshore Lease/Licence application and summarised in Table 1.

Table 1 - Approximate Location of River Channel Works

Approximate Chainage	Location	Length of Bank Widening/Fill	Details
6785-6670	Eastern Extent (Left Bank of River) North Island	128m	River Widening Type 3
6670-5735	Eastern Extent (Left Bank of River) North Island	843m	River Widening Type 1
6125-5750	Western Extent (Right Bank of River) Island Road	392m	Bank In-fill Works
5710-5556	Eastern Extent (Left Bank of River) Leisure Centre	154m	River Widening Type 2
5735-5556	Western Extent (Right Bank of River) Island Street	183m	River Widening Type 3
5544-5500	Western Extent (Right Bank of River) Abbey Quay below Enniscorthy Br.	36m	River Widening Type 2
5375-4893	Western Extent (Right Bank of River) The Promenade	480m	River Widening Type 2
5180-4930	Eastern Extent (Left Bank of River) Wexford Road	255m	River Widening Type 3
4930-4765	Eastern Extent (Left Bank of River) West of Wexford Road	164m	River Widening Type 2
4765-4100	Eastern Extent (Left Bank of River) West of Wexford Road	620m	River Widening Type 1
4200-3830	Western Extent (Right Bank of River) At WWTP	347m	River Widening Type 1
3915-3750	Eastern Extent (Left Bank of River) At Hospital	172m	River Widening Type 1

Figure 1 - Typical River Widening Cross Sections





2.1.3 Flood Defence Walls

The proposed scheme includes the construction of new flood walls within Enniscorthy Town. The location and extent of the walls are illustrated in the accompanying drawings found in Book 4.0 of the Foreshore Lease/Licence application. A summary of the proposed works is provided in Table 2 below.

Table 2 - Summary of Proposed Flood Defences

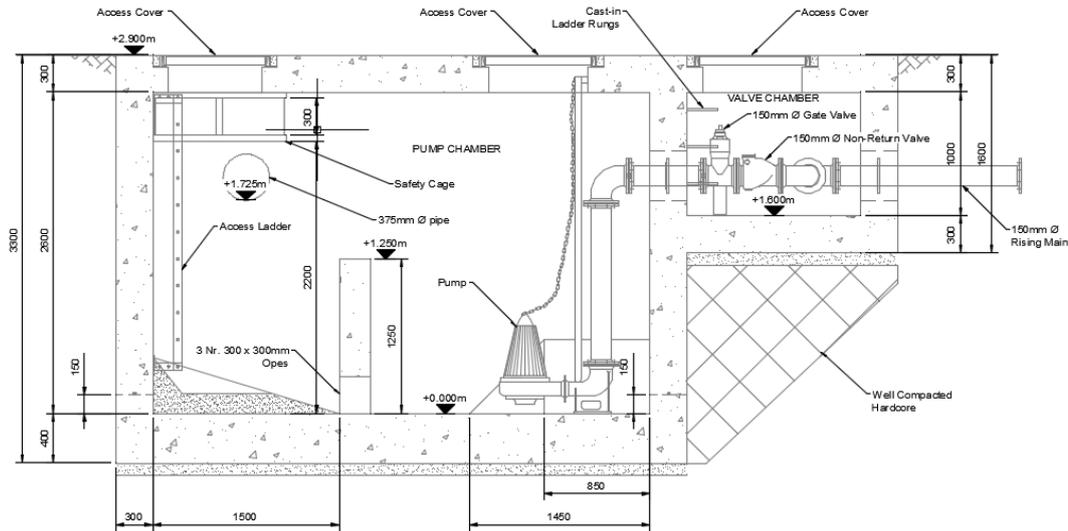
Approximate Chainage	Location	Length of Wall	Details	Top of Wall Levels (m OD)
6089 - 5740	Western Extent (Right Bank of River) Island Road	355m	Flood wall to 1.200m above proposed ground level.	5.810 - 5.900
5896	Western Extent (Right Bank of River) Along North Side of Rail Line	56m	Flood wall ranging from 1.330m to 1.230m above existing ground level.	5.630
5682	Western Extent (Right Bank of River) Along South Side of Rail Line	54m	Flood wall ranging from 1.330m to 1.130m above existing ground level.	5.630
6000 - 5750	South Side of Train Station	164m	Flood wall ranging from 0.22m above existing ground level to 0.42m below existing ground level.	5.490
5530 - 4893	Western Extent (Right Bank of River) Enniscorthy Bridge to South end of Hotel	626m	Flood wall ranging from 0.330m to 2.192m above existing ground level. 61.5m of 1.25m high Glass Wall Panels on Abbey Quay (Approx. River Chainage 5500-5435). 79m of 1.25m high Glass Wall Panels on The Promenade from Seamus Rafter Bridge down to shopping centre car park entrance (Approx. River Chainage 5365-5295). 15m of 1.25m high Glass Wall Panels on The Promenade (Approx. River Chainage 5240-5220). 15m of 1.25m high Glass Wall Panels on The Promenade opposite Mill Yard Ln (Approx. River Chainage 5115-5100). 50m of 1.25m high Glass Wall Panels on the promenade opposite Riverview Ct (Approx. River Chainage 5080-5050).	5.480 - 5.152
4980 - 4885	Western Extent (Right Bank of River) Wall around Hotel	158m	Flood wall ranging from 0.150m to 2.950m above existing ground level.	3.294 - 5.500
4980 - 4875	Western Extent (Right Bank of River) Wall at back of Hotel/along Rail Line	129m	Flood wall ranging from 0.000m to 2.810m above existing ground level.	5.350 - 5.152
5544 - 4930	Eastern Extent (Left Bank of River) Enniscorthy Bridge - Wexford Road	662m	Flood wall Ranging from 0.000m to 2.870m above existing ground level.	4.975 - 5.480

2.1.4 Pumping Stormwater from Behind the Flood Defences

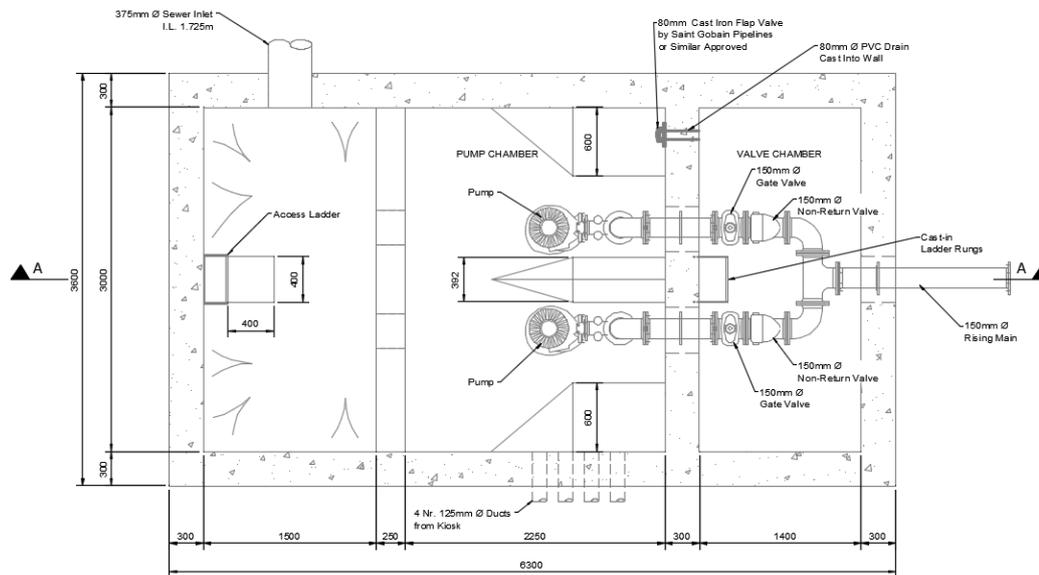
The management of stormwater on the land side of the defence walls is a key component of the scheme. During a flooding event, where existing storm water outfalls are below the flood level, the flow through the storm water outfall will be greatly restricted. The network could back up and flooding will occur within the town. With the provision of the pumping stations however, this will not occur. The scheme includes for the provision of 14 no. pumping stations, each varying in

size due to the various catchment sizes. A typical general arrangement of a pumping station is shown in Figure 2. The locations of these stations are set out in the accompanying design drawings found in Book 4.0 of the Foreshore Lease/Licence application

Figure 2 - Typical Pumping Station Design at River Chainage 5650 adjacent to the Leisure Centre



SECTION A-A

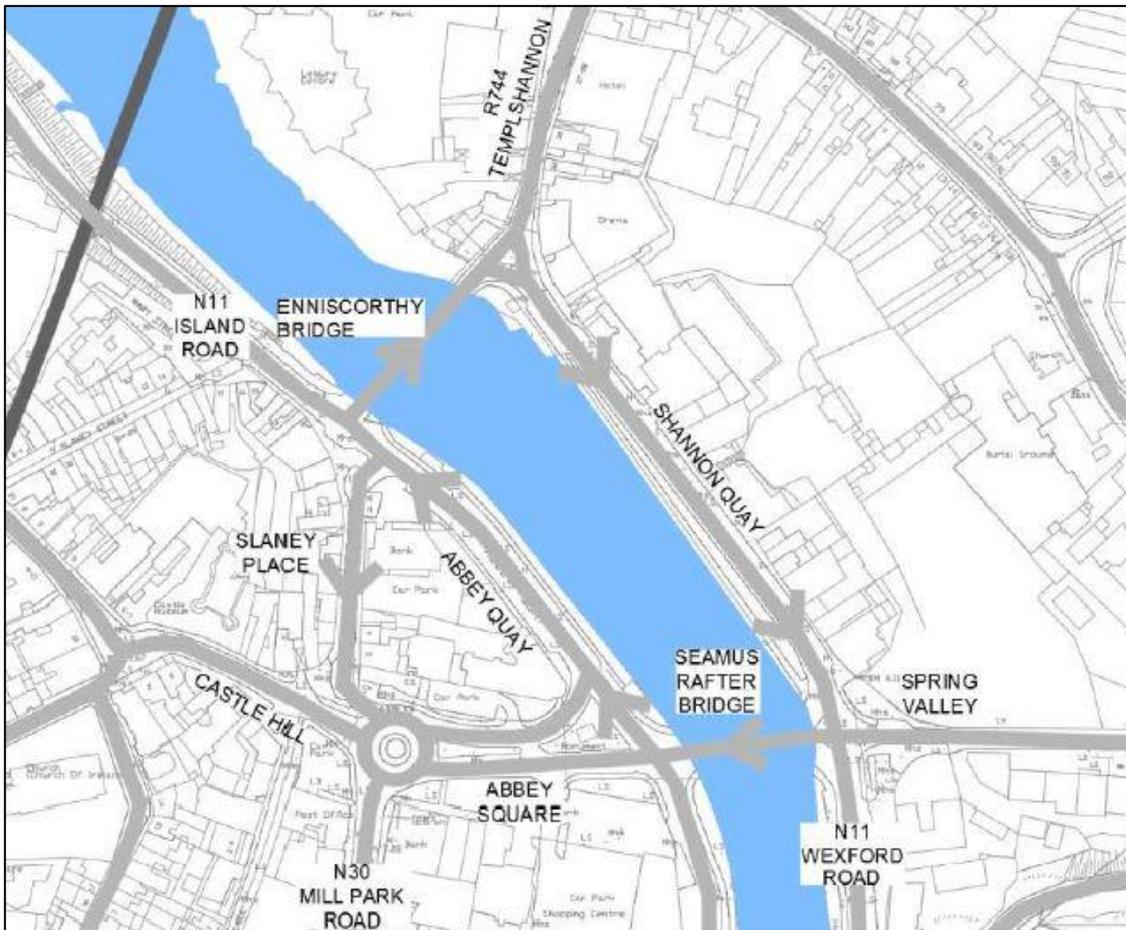


FLOOR PLAN

2.1.5 Seamus Rafter Bridge Removal and Construction of New Road Bridge

Enniscorthy is located along the current R773 Regional Road (old N30 National Primary road) which was previously the main road connecting Dublin and Wexford Town until the M11 Gorey to Enniscorthy motorway opened in 2019. Several other strategic roads intersect the R773 (old N11) in Enniscorthy, including the R702 and the R744 (old N30). Other important local roads include Spring Valley, and the R890 Convent Road. An overview of the existing road network within Enniscorthy is provided in Figure 3.

Figure 3 - Existing Road Network in Enniscorthy



Source: ROD, Traffic Modelling Report, 2016

It is proposed that Seamus Rafter Bridge at Chainage 5356, which forms part of the old N11 Dublin to Rosslare via a one-way traffic circulation system, be replaced with a new road bridge providing significant additional vertical clearance to the river. The Seamus Rafter Bridge will be completely removed, including the bridge deck, the abutments, and the piers within the river. It is proposed that a new road bridge be constructed at chainage 4800 some 100m downstream of the Riverside Park Hotel. The new road layout within Enniscorthy town once the Seamus Rafter bridge has been demolished and the new road bridge constructed is shown in Figure 4 and Figure 5.

The proposed bridge will be approximately 180m in length and 16.8m wide. The proposed bridge provides a direct means of access from the bridge to the amenity walkway and playground on the west bank. The new bridge will also span over the existing Dublin to Rosslare Railway Line. New junction tie-ins will also be provided between the R744 (old N30) New Ross Road and the R772 (old N11) Wexford Road.

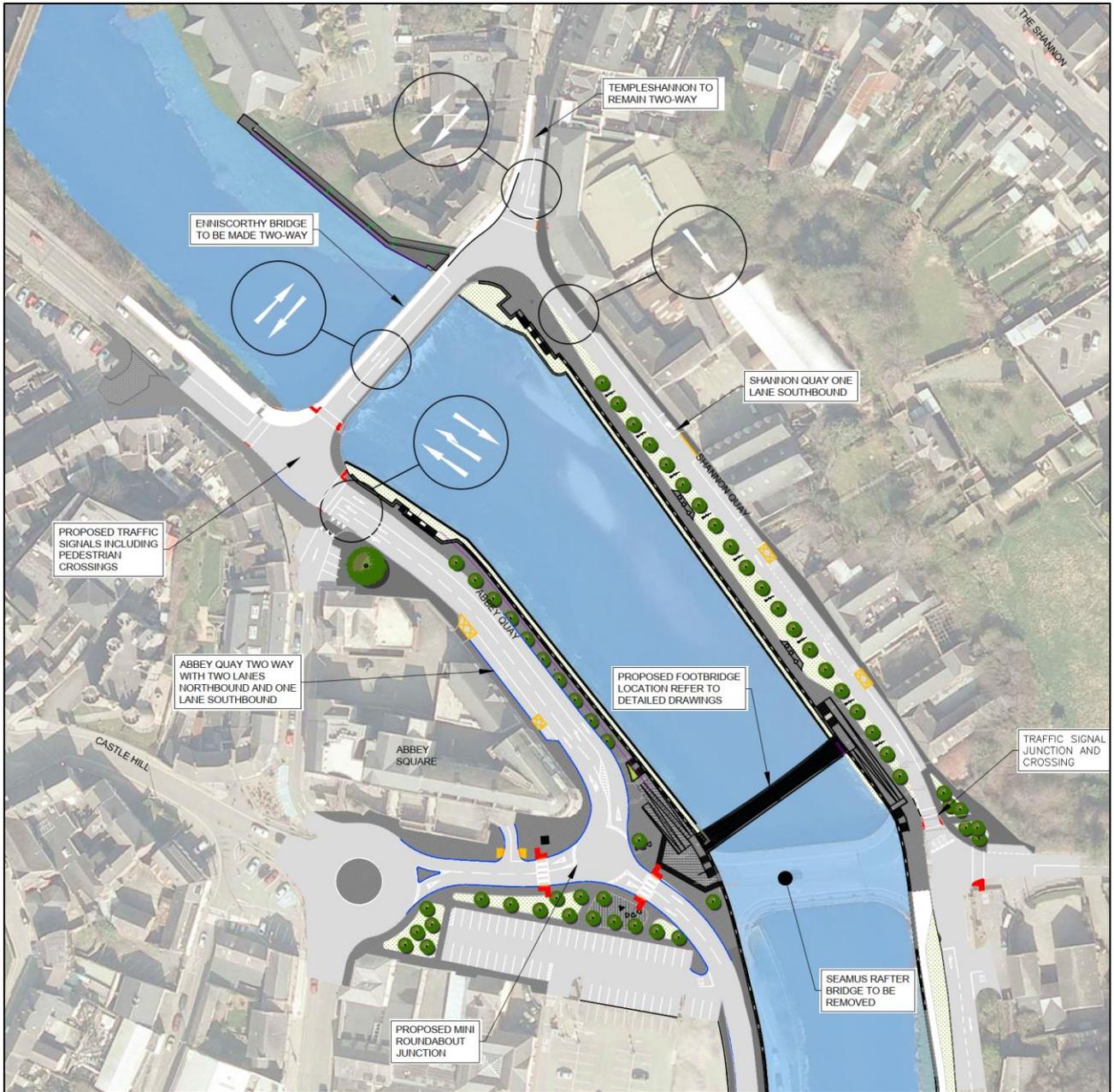
The proposed bridge design comprises a pair of steel boxes with inclined webs made composite with a reinforced concrete deck slab, which will incorporate precast panels, thereby minimising the requirement for pouring concrete over the railway or the river.

The preliminary lighting design has been developed and seeks to minimise requirements for street lighting over the river span and flood plain on the east side of the river. A long section and a cross section of the proposed bridge are shown in Figure 6 and a series of 3D rendered images are shown in Figure 7.

The proposed road bridge falls longitudinally from west to east. A bridge deck drainage system will be provided on either side of the carriageway over the length of the bridge. An ACCO drain will be provided adjacent to the safety barrier upstand and pedestrian parapet upstand on the cantilevering footpaths/cycleways. Both systems will discharge to chambers at the low side of the bridge and tie into the R772 (old N11) drainage network.

Subsurface drainage will be provided on the bridge and will discharge to the abutment gallery at the low end. Drawings detailing the new road bridge are included in Book 4.0 of the Foreshore Lease/Licence application.

Figure 4 - New Road Layout in Enniscorthy Town Centre



Source: ROD, 2018

Figure 7 - 3D Images of the Proposed New Road Bridge



Source: ROD 2018

2.1.6 New Pedestrian Bridge

It is proposed to build a new bowstring arch pedestrian bridge immediately upstream of the existing Seamus Rafter Bridge at river chainage 5400. The new bridge will ensure that pedestrian detours are not necessary following the removal of the Seamus Rafter Bridge. The pedestrian bridge will greatly improve accessibility and safety for pedestrians. A section from a photomontage showing the proposed pedestrian bridge is shown in Figure 8 below. Drawings detailing the new pedestrian bridge are included in Book 4.0 of the Foreshore Lease/Licence application.

Figure 8 - Proposed New Pedestrian Bridge



Source: AECOM 2017

2.2 Construction Programme and Methods

2.2.1 Construction Programme

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 based on core working hours Monday-Friday 07.00 – 19.00 and Saturday 07.00-1300. The programme was used as a basis to provide an estimate of sequencing of the proposed works. The actual programme is dependent on the appointed contractor's proposals and the selected construction methods.

In the Gantt chart shown in Table 3 below a 36-month construction period is envisaged and the works have been broken in to seven tasks:

1. **Road Bridge** – To maintain traffic flows the proposed road bridge must be operational before Seamus Rafter Bridge is removed;
2. **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; and
3. **Flood Defences** – Construction of flood walls;
4. **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;
5. **River Bank Widening/Infilling and Dredging** – For safety and environmental reasons these works should be carried out in the dry;
6. **Widening Downstream of Urrin-** to ensure the integrity of the conveyance works
7. **Stormwater Pumping Stations-** management of stormwater on the land side of the defence walls.

The construction activities are divided into 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 parallel with the main flood defence scheme. The removal of the Seamus Rafter Bridge will only commence following the completion of the new road bridge along with the junctions onto the R772 (old N11), R744 (old 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; and
- River Slaney instream works - comprises dredging (deepening) and/or widening and filling along various sections of the river in and adjacent to Enniscorthy Town. Also included are associated measures such as the depositional zone, compound channel and regrading/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 work areas reduce the risk of pollution and significant sedimentation in the river. Further details on the dry work areas are 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 will need to be completed before the instream work can take place.

Table 3 - Indicative Construction Programme

	2020		2021				2022				2022					
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
New Road Bridge and Approaches																
Flood Defences																
Removal of Seamus Rafter Bridge																
River Widening and Dredging in Dry Works Area																
River Widening Downstream of Urrin																
Pedestrian Bridge																
Pumping Stations																

2.2.2 Construction Methods

2.2.2.1 Flood Defence Civil Engineering Works

The following sections describe how the various elements of the scheme could be constructed.

The Proposed New Road Bridge

The construction of the new road bridge and associated approach roads are scheduled to commence in advance of the instream works. The construction programme is envisaged to be 18 months in total.

The bridge superstructure will require construction over the live railway and the main river channel. It is anticipated that the steel beams will be fabricated offsite, delivered in sections, connected in a lay down area and lifted over the railway over the course of a weekend. The use of precast deck panels made monolithic with the steel beams are proposed to minimise the in-situ concrete construction over the railway and river. The construction activities will be sequenced into four primary work stages, which are summarised below:

Stage 1

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 the use of a mobile platform.

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 into 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 into place. Bridge deck precast panels shall be made composite with the deck in a sequenced manner.

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.

Stage 4

The playground and other works areas will be reinstated.

The construction of the bridge will include the provision of prefabricated boxes. This allows the main beams to be lifted by crane in stages. These will require temporary support adjacent to the haunched section at the west intermediate support and the pier at the east side of the river. It is anticipated that a crane could be provided adjacent to the river on the west side or on the area of flat ground adjacent to the R744 (old N30) to lift the west backspan, the east backspan and mainspan. These would be lifted from the flood plain on the east side of the river.

The proposed bridge will span an area of Annex I priority habitat alluvial woodland. The presence of these species / habitats and the potential impacts that the works could have on them is to be considered very carefully in the planning of the works. It is planned that, with the exception of some local tree topping by a qualified arborist, no works will occur within this woodland. The area will be marked out under the supervision of both a woodland ecologist and the EnCoW and temporary fencing will be erected around it prior to construction. During tree topping, measures will be undertaken by the Contractor to ensure that there is minimal disturbance to the ground, field and shrub layers within the woodland. Tree topping, and associated works will be supervised by a woodland ecologist. This work will be carried out in the winter period only.

A Herras type safety fencing will be required to secure the perimeter at all bridge construction sites. In addition, visual screening may be required to reduce the risk of waterbird collision. This will be advised by the EnCoW.

Ingress and egress from the Bare Meadows will be limited to one designated point only at the existing gate way at the north of the field. The identified access route will be clearly demarcated on site and checked by the EnCoW prior to site mobilisation and will be followed by any crew engaged by the appointed contractor.

Construction of Flood Walls

The flood walls are to be constructed bankside only and access will be from defined access routes such as public road and the Leisure Centre carpark.

To minimise the risk of seepage, the flood walls in most locations are comprised of a sheet pile driven to the required depth, which is bedrock in most cases. In other locations the flood walls are comprised of reinforced concrete. Both wall types are clad above ground in local random rubble stone laid in layers. For the sheet pile wall, the stone cladding is built off a below ground reinforced concrete support which is fixed to the sheet pile.

Where river widening and/or dredging are required adjacent to the flood walls, the widening and/or dredging will take place after the construction of the walls are complete. This will minimise the risk of people and construction materials falling into the river during the construction process.

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. Another dry works area will then 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 full width flow of the Slaney will be re-established.

2.2.2.2 Instream Works

The proposed instream works consist of river bank widening and infilling, and river bed dredging. To facilitate the instream works in the main channel, it is proposed to create a series of temporary dry works areas. To create these areas, a partial cross-section of the channel will be isolated and kept dry with the use of an impermeable barrier and if required a dewatering system (pumps).

Where appropriate, dredged material will be deposited onsite to facilitate the construction of the permanent depositional zone and infilling along the North Island and sections of the river channel. Material that is removed from river banks downstream of the Seamus Rafter Bridge will be removed by truck to a licenced facility via the Bare Meadows and the R772 (old N11). Where the excavation cannot be accessed directly from the Bare Meadows, the excavated material will be placed in a floating barge and transported to the Bare Meadows, where it will be loaded onto dump trucks for transportation off site.

2.2.2.3 Preparation of Dry Works Area

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 through best practice and are proven technologies/methods. 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. Consideration has been given to the possibility that the impermeable barrier employed to create the dry works areas may cause or accentuate flooding in the town and so it is planned that the dry works areas will be created in the summer months only (June – September), when the probability of flooding is greatly reduced. It is envisaged that a 2-3m high impermeable barrier (above bed level) will be used. It is envisaged that the instream works will be carried out in 4 distinct phases in 4 separate dry works areas:

- North east - excavated material to be deposited on the North Island
- North west - excavated material to be deposited on the North Island
- South east - excavated material to be exported via the Bare Meadows; and
- South west - excavated material to be exported via the Bare Meadows.

Within each dry works area, the channel will be dredged to the required depth and any river bank filling or widening will be carried out. The earthworks will be carried out using mechanical excavators and the excavated material will be hauled along designated route by lorries and or dump trucks. This approach will ensure that flow will always be maintained within the River Slaney, and therefore should not impede upstream migration within the River Slaney. The dry works area shall be designed such that, when operational, all river flows are 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.

If the method chosen by the Contractor to create the impermeable barrier is the driving of sheet piles, it is anticipated that approximately 1200m of sheet pile could be installed in 1 week.

The possible sequence of works is illustrated in the accompanying drawings in in Book 4.0 of the Foreshore Lease/Licence application. The proposed piling sequence is noted alphabetically (A-J) on the drawings. The progression of instream works areas are noted numerically on the drawings.

Depending on water 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.

The upper and lower extents of the river channel in the dry works area are to be closed off with the installation of an impermeable barrier from the river bank to the barrier at the centre line of the river. Within each dry works area, the channel will be dredged to the required depth along one side, maintaining an open river flow at all times. Dewatering will be carried out in a controlled manner to prevent environmental pollution. Fish, lamprey and other aquatic species will be carefully removed under supervision of a qualified ecologist and returned to the flowing section. The dewatering and electrofishing protocol will be prepared by a competent aquatic ecologist in consultation with the IFI. Necessary derogation licences and consents will be sought from the appropriate statutory authorities and granted in advance of the works.

The water will be pumped out of dry area to allow works to take place, in a phased approach. Any disturbed sediment within the closed area will settle in advance of dewatering. The approach to dewatering is discussed in Section 2.2.2.4 below.

It is proposed that dredging/widening and infilling works within dry area be carried out simultaneously by mechanical plant.

2.2.2.4 Dewatering Works Area

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 that 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 to be taken are 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. Necessary derogation licences and consents will be sought from the appropriate statutory authorities and granted in advance of the works. The EnCoW will consult with IFI 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 if appropriate, returned to the flowing section of the River Slaney.

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 area 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 onsite 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 be 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 by 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. 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. In order to minimise the effect of sedimentation, a series of silt curtains will be spaced approximately 20m apart downstream of the works area. When the area is re-flooded, the levels of fine sediment in the re-flooded area would be monitored and when the sediment levels drop to an acceptable level, the silt curtains would be removed.

2.2.2.5 Proposed New Pedestrian Bridge

It is envisaged that the construction of the new pedestrian bridge will consist of the following stages;

- Driving of piles and construction of abutment foundations

- Construction of abutments and ramps
- Installation of the steel bridge structure
- The placing and fixing of a precast concrete bridge deck
- Placing of bridge parapets and other furniture; and
- Reinstatement of area.

2.3 Operation and Maintenance of the Proposed Scheme

2.3.1 Lighting during operation

The lighting for the proposed road bridge will be provided by two lighting posts approximately 10m above finished bridge deck road level on either side of the road at both ends of the bridge.

There will be approximately 25m high (above road level) lighting masts, adjacent to the bridge on both sides, located at the intermediate pier on the western side.

In addition, where required, lighting for the road will be complemented by lighting located in the rail of the road safety barrier. Lighting for pedestrians will be provided by the tall lighting masts and where required will be complemented by lighting in the handrail of pedestrian guardrail.

2.3.2 Maintenance during operation

The River Slaney through Enniscorthy is considered to be a low to moderate energy system. Given the depositional nature of the river through Enniscorthy, the proposed scheme design includes creating a sediment deposition zone in the upstream extent of the scheme. The design of the sediment trap eliminates the need for regular maintenance dredging of the entire reach of the river channel in Enniscorthy.

Gravel will have to be removed from the sediment trap periodically. Gravel will be deposited here when high velocity flows carry large sized sediment down the Slaney during a flood event. When the flow enters the sediment trap the velocity of the flow will reduce and the large sediment will drop out of suspension. It estimated that such a high flow event will occur on average once every 5-7years. The gravel will be removed from the left bank of the channel during low flows in the summer when the gravel is exposed. Works will be carried out in dry working conditions only in consultation with IFI.

The sediment trap and the debris trap will require maintenance as required using a long reach excavator from the North Island and west bank. Maintenance will be carried out in accordance with the latest OPW Environmental Management Protocols and Standard Operating Procedures which are currently being updated by the OPW.

During flood events, floating debris may be accumulated in the debris trap. Following each flood event, the debris trap will be inspected and if necessary, material will be removed using a long reach excavator located on the river bank.

The new pedestrian bridge and new road bridge will require inspection and maintenance which will be carried out in accordance with the EIRSPAN Bridge Management System or similar. The Railway Bridge and Old Enniscorthy Bridge will also require regular inspection during the construction & maintenance period of the project. Environmental protection measures will be implemented in advance of maintenance works.

3 Pre-application Consultations

3.1 Consultations with Relevant Authorities

Consultations were also held with the following relevant authorities:

- Inland Fisheries Ireland
- Development Applications Unit (DAU) of the Department of Culture, Heritage and the Gaeltacht
- Department of Foreign Affairs and Trade
- Department of Employment Affairs
- Department of Finance
- Department of Justice and Equality
- Department of Rural and Community Development
- Department of Education and Skills
- Department of Business, Enterprise and Innovation
- Irish Water
- HSE
- An Taisce

Details of these consultations are included in the Stakeholder Consultation report, 355741-R-013-A, which accompanies this application.

3.2 Public Consultations

Public Consultations were held between June and July 2019.

A Public Exhibition was held in Enniscorthy Library on Friday 17th May 2019. Scheme details were available for inspection from Friday 17th May to Tuesday 18th June in Enniscorthy Library and in the offices of Wexford County Council. Responses have been provided to all comments/queries submitted as part of the Public Consultations/Exhibitions.

Part of the foreshore for which the licence is being sought is in private ownership. Landowner plots have been included in Book 8.0 of this application outlining the relevant sites. The property owners of sites along the scheme in which the foreshore is located are as follows:

- Anthony Bailey - Plots 108, 109, 114;
- Michael & Marie Doyle - Plots 112, 116;
- Right Honourable Newton Earl of Portsmouth And Heirs - Plot 114;
- Slaney River Trust Limited - Plots 120 & 121;
- Inland Fisheries Ireland - Plots 120 & 121.

4 Environmental Reports

The following Environmental reports are included as accompanying documents in Books 6.0 and 7.0 of this application:

- Environmental Impact Assessment Report (EIAR) - 355741-R-011-E (including Non-Technical Summary - 355741-N-R-010);
- Natura Impact Statement (NIS) - 170068-D03.

