

5.8 MATERIAL ASSETS

5.8.1 CONTEXT

The following section addresses the impact of the proposed development on traffic and transportation during construction; and property and natural resources of economic value including tourism, angling and recreational use.

5.8.2 TRAFFIC AND TRANSPORTATION DURING CONSTRUCTION

5.8.2.1 Context

The purpose of this section is to identify and classify any potential impacts upon the traffic and transportation in the town of Bray caused by the proposed development. Due to the nature of the development (ie a flood defence scheme), in its permanent state, the development will not impact upon the current traffic and transportation routes within the town. All traffic and transportation impacts of the development will only occur for the duration of construction works or part thereof.

5.8.2.2 Methodology

Using the description of the project in Chapter 3 of this report, potential impacts on traffic and transportation will be identified and rated. The potential impacts will be evaluated using the EPA Guidance Document "Guidelines on the information to be contained in Environmental Impact Statements" published in March 2002 based on:

- Magnitude and intensity
- Integrity
- Duration
- Probability

5.8.2.3 Description of Receiving Environment

The town of Bray is a well developed area with significant road infrastructure. The town is by-passed to the west by the M11 road which links up to the extended M50 north of Bray. There are 2 main exits off the M11 serving the town of Bray; the first at the Wilford Interchange linking onto the Dublin Road via Old Connaught Avenue with a second at Fassaroe leading onto the Upper Dargle Road. The main traffic route through the town is along the Dublin Road onto Castle Street, crossing over Bray Bridge and onto Main Street. Traffic using the Fassaroe interchange can travel along Upper Dargle Road and onto Castle Street. A number of smaller roads lead off these major roads to provide access to local residential areas such as Little Bray, The Maltings & Seapoint Court as well as the commercial areas such as Superquinn.

5.8.2.4 Potential Impacts

The potential impacts on traffic and transportation can be grouped under two headings;

- Deliveries to and from site

There will be deliveries to and from site throughout the estimated 18 month duration of works, the most substantial being the removal of soil from the riverbed and banks. There will be up to 160,000m³ of soil to be excavated during the course of construction. It is envisaged that up to half of this material will be transported along a temporary track in the river and deposited at Rehills Land. The remainder will be transported off site and disposed of at an appropriate waste management facility. Assuming a 10m³ capacity for a heavy goods vehicle (HGV) and 250 working days annually, this equates to, on average, 22 truck loads being removed from site each day. The HGVs will use the transport routes as set out in section 2.5.3 of this report. The number of HGV deliveries to site with materials is considered to be significantly less than the excavation as the option chosen primarily involves deepening/widening of the river channel.

The deliveries to and from site will have a slight negative impact upon the local traffic and transportation system as a number of additional vehicles will be using the road network within the town of Bray. The HGVs which will be delivering goods and materials to and from site will slightly increase noise and vibration levels as well as reducing air quality for a very short term in the locality of the works. This will be a short to medium term impact for the duration of the works which is expected to be in the region of 18 months.

The relatively small number of vehicles travelling to and from the works compared to the current volume of traffic on the road network means that this is a slight negative impact.

- Road closures to facilitate works

The construction of the culvert at Bray Bridge will require the closure of Ravenswell Road and a section of the Lower Dargle Road during the day. A temporary traffic diversion along Adelaide Villas and St. Cronans Road will be put into operation for the duration of the road closure. These road closures will be of a temporary nature and will have a slight negative impact on traffic and transportation.

The works under Castle Street will require the closure of a carriageway at night for 3-4 months. Castle Street is the only connection between north and south Bray within the town and as such any disturbance is undesired. However, the culvert is a vital component of the flood defence scheme and cannot proceed without the alternate temporary closure of the carriageway. A stop-go system will be implemented at Bray Bridge to minimise the impact on traffic through the town. The culvert works will have a temporary negative impact on traffic and transportation through the town.

5.8.2.5 Mitigation Measures

All possible measures will be undertaken to minimise the impacts upon the local traffic and transportation networks. The deliveries to and from site will be undertaken to a programme agreed between the contractor prior to works commencing to minimise disruption to the roads network particularly during times of peak traffic flow. The temporary closure of carriageways on Castle Street will take place at night to minimise impacts on traffic. The Design

Team/Contractor will liaise with relevant local authority and residents groups and advance notice will be given to the general public through local media before any road closures take place.

5.8.2.6 Residual Impacts

The mitigation measures outlined above will minimise the potential impacts upon traffic flow. The potential impacts as described in section 5.8.2.4 will remain but they will be minimised.

5.8.2.7 The Do Nothing Scenario

The 'do nothing scenario' (where no construction takes place) will have no impact upon traffic and transportation.

5.8.2.8 The Worst Case Scenario

The worst case scenario would involve delays to the works leading to the road closures and diversions being in place for a longer duration. It is envisaged that this risk will be minimised through appropriate planning and programming by the contractor but there is always the potential for unforeseen circumstances delaying the works.

5.8.2.9 Positive Impacts

There will be no positive impact on traffic and transportation during construction but there will be after the development has been completed. The positive impacts of the development on traffic and transportation centre on the fact that the risk of flooding to roads and other infrastructure will be greatly reduced.

5.8.2.10 Reinstatement

The road closures and diversions required for construction of the culvert will remain in place for approximately 3-5 months. Upon completion, the roads will be immediately reopened and the diversions will no longer be necessary. Any trenches or excavations required on the road network will be reinstated upon completion of the works.

5.8.2.11 Monitoring

The stop-go system to be implemented to facilitate the construction of the culvert at Bray Bridge will be monitored to ensure the correct sequencing and duration for each traffic movement is being used. This will be done through visual inspection of traffic queues during times of peak flow and then an adjustment of the sequencing if required.

5.8.3 PROPERTY

The threat of flooding at Bray is an issue of ever increasing importance. Without a flood defence scheme, the number of residential and commercial properties at risk within the study area is likely to increase. In addition it is noted that there are a number of zoned (but undeveloped) landbanks within the Bray Town Council area which cannot be developed until such time as a flood defence scheme is put in place. (Chapter 4 specifically refers to these zoned landbanks).

It is therefore considered essential that a flood defence scheme is provided along the river Dargle at Bray for the purpose of a) protecting existing residential and commercial properties from flooding and b) facilitating the development of zoned but undeveloped land banks within the town, in the interests of meeting population targets and economic development objectives.

It is also important to ensure that the proposed flood defence scheme for Bray does not negatively impact upon the residential and recreational amenity currently enjoyed by existing residents; and that commercial activities can continue to operate along the River Dargle and environs and not be negatively impacted upon during construction phase or a flooding event.

5.8.3.1 Methodology

For discussion purposes, the Study Area has been divided into the following five areas:-

- Area 1 – Harbour Bridge to Bray Bridge;
- Area 2 – Bray Bridge;
- Area 3 – Bray Bridge to western end People's Park;
- Area 4 – Western end of People's Park through the Slang/Rehills Land to La Vallee; and
- Area 5 – La Vallee to N11 Bridge.

Within each of the five areas a number of engineering measures are required to provide flood defences along the river. Therefore, each engineering measure was assessed in terms of the impact on property directly affected. The significance criteria used is based on the EPA *Advice Notes on Current Practice (in the preparation for Environmental Impact Statements)*.

5.8.3.2 Description of the Receiving Environment

Bray originally developed from a small settlement located close to Bray Bridge on the banks of the River Dargle. The town expanded towards the coast following the opening of the railway line from Dublin to Bray in 1854.

Bray has expanded rapidly over the past 30 years. Extensive housing estates have been built, extending the urban area to the south and as far as the M11 to the west, and north of Little Bray to Corke Abbey and the north side of Old Connaught Avenue. Bray has also developed a substantial manufacturing base, with factories in Little Bray. The main commercial areas of the town centre around Main Street and Castle Street.

Residential Properties

Four major flood events have occurred in Bray during the last century. The area most affected by these flooding events is that part of the town located on the northern bank of the river, west of Bray Bridge. The area, known as Little Bray, is characterised by urban development comprising of residential properties, retail properties and commercial properties. This area also includes the recreational lands of People’s Park. Tracts of land on the north and south banks of the river between Bray Bridge and Bray Harbour have also been subjected to flooding. During the most recent storm in 1986, the lower tier of the Golf Club Lands and the Ravenswell Road adjacent to the north bank of the river, and the Seapoint Court Estate on the south bank were flooded.

Areas to the west of People’s Park, on lands that now house the Coburg Estate have also been inundated during these events.

Retail Properties

Bray is the primary retail, commercial and service centre in Wicklow. Bray Town Centre extends in a north/south direction from the Dublin Road to Market Square, and in an easterly direction, encompassing Quinsborough Road, Florence Road, Bray Dart Station and part of Novara Avenue. The core retail area of the town includes Castle Street, Main Street, Quinborough Road and the section of Florence Road that extends from the junction of Main Street to the junction of Eglinton Road.

Commercial Properties

Bray has a well established economic base comprising a large number of small to medium size enterprises, a wide range of commercial activities and an increasing number of ‘high-tech’ industries. There is also a wide range of manufacturing and warehousing activities, located in the southern part of the town.

5.8.3.3 Potential Impacts (Direct, Indirect, Cumulative)

Area I – Bray Harbour to Bray Bridge

Within this area it is proposed to provide the following measures:-

<p>Measure A4 - Bray Golf Club</p>	<p>This measure seeks to provide reinforced concrete wall along the perimeter of the Golf Club lands where it adjoins Ravenswell Road. A new embankment will be provided behind the retaining wall.</p> <p>The retaining wall and embankment will cut into the Golf Club lands for up to 12 m for a stretch of 150m north of the Railway Bridge. This is to provide a more efficient approach to the bridge.</p> <p>It is also proposed to provide a flood relief route along the northern side of the flood defence wall, within the Golf Club Lands.</p> <p>Any planting that is lost during construction will be replaced.</p>
<p>Measure A5 - Seapoint Court Defences</p>	<p>A new embankment is to be provided above a sheetpile wall.</p> <p>Any planting that is lost during construction will be replaced.</p> <p>A landscaped walkway will be provided to link Seapoint Court with the river corridor</p>
<p>Measure A6 - Abattoir Defences</p>	<p>This measure seeks to provide a reinforced concrete wall along the perimeter of the former Abattoir Site (where this site adjoins the river) the a new embankment to the rear of this wall</p>

	The existing overgrown planting will be removed. The proposed new embankment will be landscaped.
Measure R5 - River Regrading	The river regarding will involve lowering the existing bed level by up to 0.6m over a length of approximately 80 m upstream of the railway bridge. Any planting that is lost during construction will be replaced. The riverbed will be planted with reed bed planting.
Measure R4 - River Regrading 4	This river regarding will involve the removal of the existing weir located approximately 170m downstream of Bray Bridge. Any planting that is lost during construction will be replaced. The riverbed will be planted with reed bed planting.

Construction Phase

The scheme may temporarily impact on access to certain properties during construction. Therefore, there will have a significant temporary negative impact during construction.

Operational Phase

Each of the measures will have a positive long-term impact on property within Area 1 in that they will protect properties and adjoining lands from flooding and substantially reduce the risk to property during a flooding event. The proposed measures will also facilitate the development of the Bray Golf Club Lands which is currently restricted until such time as an appropriate flood defence scheme is approved. This impact is considered to be a significant positive impact on Property.

There will be a slight negative impact at the Golf Club Lands due to the excavation of part of the land bank in the vicinity of the Railway Bridge. We also note that there is planning permission for residential development at the former Abattoir site, the layout of the permitted scheme may be affected by the proposed works. However, it is noted that the proposed scheme will have an overall positive long-term impact on property generally within the study area.

Area 2 – Bray Bridge

Within this area it is proposed to provide the following measures:-

Measure B2 - Deepen River Bed Locally at Bridge	This measure involves regrading of the river bed at Bray Bridge. Bray Bridge will remain operational during these works. The bridge will require extensive underpinning to allow the regarding to take place. These works will require a piling rig being brought into the river. The riverbed will be planted with reed bed planting.
Measure B3- New Culvert Bray Bridge	A concrete culvert 7.4m wide and 4m deep by c. 80 m long will be constructed on the northern side of Bray Bridge to act as a 4 th Arch for the bridge. These works will be phased to minimise traffic construction. Any planting that is lost during construction will be replaced.

Construction Phase

The proposed works to Bray Bridge relate entirely to the area in the immediate vicinity of Bray Bridge and therefore will not have a direct impact on Property.

However, as the works involved under Measure B3 will require road closures and diversions, the scheme may temporarily impact on access to certain properties. This measure will therefore have a significant temporary negative impact on access to properties within a localised and wider area during construction. Traffic congestion could have a negative impact on businesses operating along Main Street.

Operational Phase

The proposed measures will have a positive longterm impact on Area 2 in that they will protect all adjoining lands and properties from flooding and substantially reduce risk to property during a flooding event. This impact is considered to be a significant positive and permanent impact on Property.

Area 3 – People’s Park and the Maltings

Within this area it is proposed to provide the following measures:-

<p>Measure C1- People’s Park</p>	<p>This measure involves the excavation of the steps, trees and low lying narrow strip of the Park, immediately upstream of Bray Bridge. This measure also requires the construction of a secant pile concrete wall along the Lower Dargle Road boundary with the Park. The existing stone wall along the boundary of the Park will be replaced with a sheetpile wall, up to 0.5m above the existing wall height.</p> <p>Some trees will be removed as part of the excavation (referred to above). New trees will be planted. Reed Bed Planting is proposed.</p> <p>A high level pedestrian walkway will be provided to replace the loss of the recreational amenity of this small portion of the Park.</p>
<p>Measure C4 - Maltings Housing – Excavate Bank</p>	<p>This measure seeks to replace the existing gabion wall at the Maltings (which is structurally unstable under hydraulic loading) with a new stone clad concrete wall built over a sheetpile wall. The existing strip of land along by the river will be excavated to increase flow capacity.</p> <p>Reed planting will be provided along the newly formed river bank. The area behind the walls will be planted with native tree and shrub species creating a more visually attractive area along the river compared to the overgrown situation that exists at present.</p>
<p>Measure C5 - Maltings Upstream – Excavate Bank</p>	<p>This measure involves widening the river channel by up to 20m in this area.</p> <p>Native shrub planting will be provided along the river bank with reed planting</p>
<p>Measure C7- Glenwood Excavation</p>	<p>This measure involves the widening of the river channel by up to 20m in this area, to tie in with Measure C5.</p> <p>Native shrub planting will be provided along the river bank with reed planting</p>

Construction Phase

There will be no direct impact on property during construction.

The scheme may temporarily impact on access to certain properties during construction. Therefore, there will be a significant temporary negative impact during construction.

Operational Phase

The proposed measures will have a positive long-term impact on Area 3 in that they will protect properties and all adjoining lands from flooding and substantially reduce the risk to property during a flooding event. This impact is considered to be a significant positive and permanent impact on Property.

Area 4 – People’s Park through the Slang/Rehills Land to La Vallee

Within this area it is proposed to provide the following measures:-

Measure D1-Coburg Estate Wall	<p>This measure involves improving the retaining wall at Coburg. The new sheetpile wall will vary in heights from 6.5 to 6.9m OD and will be timberclad above ground level. (The existing wall at Coburg is 0.5-0.75m above Ground Level. The new wall will be approximately 1.5-1.75m above Ground Level).</p> <p>A 1500m wide shrub planting strip will be provided along the river edge with reed bed planting inserted along the regarded river bed, creating a new ecological habitat location.</p> <p>Any other planting removed on the Coburg Side of the wall during construction will be replaced.</p>
Measure D2-County Brook	<p>This measure seeks to culvert the County Brook Stream with a non-return valve. This will allow the construction of defences and prevent water back surcharging during flood events.</p> <p>Any planting removed during construction will be replaced.</p>
Measure D3-Upper Dargle Road Residence Embankment	<p>Apart from the first property upstream of Coburg, the properties along Upper Dargle Road do not require constructed defences as the existing ground profile provides sufficient protection. The first property upstream of Coburg will require an earthen embankment. The embankment will be constructed to a level of 7m OD (Malin) to an agreed detail between the resident and the Design Team.</p> <p>Any planting removed during construction will be replaced</p>
Measure R3 – River Regrading 3 – The Slang/Killarney Glen / Peoples Park	<p>This river regarding will involve lowering the bed level by up to 1.5m over a length of approximately 1,000 m.</p> <p>When the river regarding is completed, reed bed planting will be inserted along the newly formed river bed.</p>
Measure D5 – The Slang Northern Bank	<p>The existing gabion baskets and low level wall on the northern bank of the Slang will be retained and repaired as required. A degree of underpinning will be required due to regarding.</p> <p>Any planting removed during construction will be replaced</p>
Measure D7-Killarney Glen Sheetpile	<p>This measure involves the construction of a new sheetpile wall to the rear of the residences at Killarney Glen. Shrub planting will be provided along the river bank and reed bed planting will be inserted along the regarded river bed.</p> <p>Any planting removed during construction will be replaced</p>
Measure D8-Rehills Land – Excavate South Bank	<p>This measure involves extensive excavation of the existing embankment at Rehills. As the Rehills Lands are currently undeveloped.</p> <p>Any planting removed during construction will be replaced along the newly formed river bank</p>
Measure D9-Debris Trap	<p>This measure involves the provision of a debris trap in the river channel at Rehills Land, which will prevent trees from becoming an obstruction to the flow of the river.</p> <p>Any planting removed during construction will be replaced</p>

Measure R2 - River Regrading 2 – The Slang	<p>This measure involves regrading the river bed.</p> <p>Reed bed planting will be inserted along the regarded river bed.</p>
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Construction Phase

There will be a negative impact on the residential amenity of properties along Coburg due to the construction of the new retaining wall and due to the construction of an earthen embankment.

The scheme may temporarily impact on access to certain properties during construction. Therefore, there will be a significant temporary negative impact during construction.

Operational Phase

The proposed measures will have a positive long-term impact on Area 4 in that they will protect properties and all adjoining lands and substantially reduce the risk to property during a flooding event. The proposed flood defence scheme will also facilitate the development of the Rehill’s Lands which is currently restricted in the absence of a flood defence scheme. This impact is therefore considered to be a significant positive and permanent impact on Property.

The proposed measures may have a negative impact on visual amenity at Coburg due to the improvements to the existing wall and the construction of the embankment. The height of the existing wall will be increased by approximately 1 metre (from 0.5 to 0.75m at present to 1.5 to 1.75m) and may therefore restrict views of the river from those existing properties. .

There will also be a permanent negative impact at Rehills Lands due to the excavation of land, which will reduce the extent of this existing landbank.

However, it is noted that the proposed scheme will have an overall positive long-term impact on property generally within the study area by reducing the risk of flooding.

Area 5 – La Vallee to N I I Bridge

Within this area it is proposed to provide the following measures:-

Measure E2 - Excavate South Bank	<p>This measure involves the excavation of the southern bank along La Vallee.</p> <p>Trees identified as posing a risk or being vulnerable to eroding ground will be felled.</p> <p>Existing planting which is removed during construction will be replaced and reed planting will be inserted along the regarded river bed.</p>
Measure R1 - River Regrading – Upstream of La Vallee	<p>This river regarding will involve the lowering of the bed by up to 1m. A proportion of this regarding will require excavation of bedrock</p> <p>Existing planting which is removed during construction will be replaced and reed planting will be inserted along the regarded river bed.</p>

Construction Phase

The southern bank of the river will be excavated during construction resulting in the loss of part of this landbank.

Operational Phase

Once the flood defence measures are in place, there will be a permanent positive impact on property due to reduced risk of flooding at this location.

5.8.3.4 Mitigation Measures

In order to ensure property is not at increased risk to flooding during the construction period, an “Emergency Procedure in the Event of Flooding During Construction” will be implemented by Bray Town Council.

Once the flood defence scheme is constructed, rigorous monitoring and maintenance will be carried out by Bray Town Council to ensure that the flood defences do not deteriorate.

5.8.3.5 Residual Impacts (Direct, Indirect, Cumulative)

The flood defence scheme will improve flood defences along the River Dargle. Therefore, there will be a permanent positive impact on property due to reduced risk of flooding. The flood defence scheme will involve the creation of new embankments and retaining walls, which may restrict views of the river from certain properties and in some cases curtail direct access to the river from properties. This will create a significant negative impact on a small no of properties.

Overall the proposed scheme will have a positive impact on property within the Study Area by reducing the risk of flooding within the town.

5.8.3.6 The Do Nothing Scenario

The occurrence of a 1 in 100 year flood event would have a profound negative impact on all lands along the river. Lands affected would include the residences of Seapoint Court; Ravenswell Road; Belton Terrace; Dwyer Park; Barboza Terrace; St Laurences Terrace; Adelaide Villas; Loretto Terrace; Fairgreen Terrace; Fairgreen Terrace; Fairgreen Road; Gertrude Terrace; Herbert View; Sutton Road; Sutton Villas; Matland Street; Ardee Court; Dangan Street; Pearse Road; Pearse Square; the Maltings; Glenburgh Terrace; Coburg; Dargle Road; Killarney Glen and River Vale.

A 1 in 100 year river flood event would also result in extensive flooding of the Golf Club Lands and Rehills Lands, which are zoned for mixed use development.

In the event of a 1 in 100 year river flood event, it is estimated that approximately 646 residential properties and 9 commercial properties will be flooded.

A 1 in 200 year tidal flood event would have a profound negative impact on property along the river between the Harbour and Bray Bridge. Lands worst affected would include residential and commercial property within the immediate vicinity of the Harbour; Seapoint Court; the former Abattoir site; Milton Terrace; the Golf Club Lands; No.'s 1-4 Ravenswell Road; Belton Terrace; and Dwyer Park.

5.8.3.7 The Worst Case Scenario

The worst case scenario with respect to property would arise in the event that flood defences were not put in place, leaving Bray at risk of flooding.

5.8.3.8 Positive Impacts

Once the flood defence measures are in place, there will be a permanent positive impact on property due to reduced risk of flooding.

5.8.3.9 Reinstatement

There will be no reinstatement in relation to property.

5.8.3.10 Monitoring

Continuous monitoring will be required to ensure that the flood defence scheme is maintained to the highest quality. Maintenance of the River Dargle and its environs is currently undertaken by Bray Town Council and will continue following the completion of the proposed scheme. A preliminary maintenance programme is set out in Section 2.6 of the EIS.

5.8.4 ACCESS AND RIGHTS OF WAY

This section of the EIS describes how the flood defence scheme will impact upon access and existing rights of way. Impacts may be positive or negative, resulting in:-

- Termination of a right of way;
- Creation of new rights of way;
- Improvement to the safety and amenity of a right of way; and
- Physical and visual severance of an existing right of way from the river.

5.8.4.1 Methodology

For discussion purposes, the Study Area has been divided into the following five areas:-

- Area 1 – Harbour Bridge to Bray Bridge;
- Area 2 – Bray Bridge;
- Area 3 – Bray Bridge to the western end of People’s Park;
- Area 4 – Western end of People’s Park through the Slang/Rehills Land to La Vallee; and
- Area 5 – La Vallee to NII Bridge.

Within each of the five areas a number of engineering measures are required to provide flood defences along the river. Therefore, each engineering measure was assessed in terms of the impact on access and rights of way directly affected. The significance criteria used is based on the *Advice Notes on Current Practice (in the preparation for Environmental Impact Statements)*.

5.8.4.2 Description of the Receiving Environment

The only vehicular river crossing point within Bray is Bray Bridge. During a flooding event this road is generally impassable. Therefore, a flood defence scheme is required to protect this important access route through the town.

Access to the River for pedestrians is generally restricted due to a) the canalisation of the river below Bray Bridge; b) the anti-social behaviour that is common at many unsupervised locations along the river; c) the overgrown nature of many existing pathways along by the river. It is an objective of the Bray Development Plan to promote the use of the Dargle riverbank between La Vallee and Bray Harbour as a leisure and natural amenity area through the development of a Dargle River Walk.

A number of private properties within the Study area have direct access to the river.

5.8.4.3 Potential Impacts (Direct, Indirect, Cumulative)

Area 1 – Bray Harbour to Bray Bridge

The engineering measures for Area 1 are set out in Section 5.8.3.3 above.

Construction Phase

During construction there will be temporary significant negative impacts due to a) the temporary closure of Ravenswell Road; b) a section of the Lower Dargle Road; and c) restricted access to the northern and southern river banks.

The works under Castle Street will require the closure of a carriageway at night for 3-4 months. These works will have a temporary negative impact on access through the town during night-time hours.

Operation Phase

The flood defence measures proposed for this area will have a positive impact on access and rights of way with the creation of a new walkway at Seapoint Court. This measure will have a significant positive impact by improving access for local residents. The provision of the walkway (as part of an overall Dargle River Walk) will also have an overall positive impact for the town of Bray by improving access to the River.

During times of flooding, Ravenswell Road will be inundated, thereby restricting access to the Golf Club lands.

Area 2 – Bray Bridge

The engineering measures for Area 2 are set out in Section 5.8.3.3 above.

Construction Phase

The works required under Measure B3 will require road closures. This will have a significant negative impact on access. However, these works will be temporary and phased to minimise traffic disruption.

Operational Phase

The measures proposed will have a neutral impact on access.

Area 3 – People’s Park and the Maltings

The engineering measures for Area 3 are set out in Section 5.8.3.3 above.

Construction Phase

The scheme will be a temporary impact on access through the town during construction. Therefore, there will be a significant temporary negative impact during construction.

However, these impacts will be temporary in nature and are therefore not considered to be significant.

Operational Phase

These measures will have a significant positive impact with the creation of a new walkway along People’s Park.

Area 4 – People’s Park to the Slang/Rehills Land

The engineering measures for Area 4 are set out in Section 5.8.3.3 above.

Construction Phase

The scheme will be a temporarily impact on access through the town during construction. Therefore, there will be a significant temporary negative impact during construction.

Operational Phase

Properties with direct access to the River will be negatively impacted upon by the construction of an embankment and increase in the height of the existing defence wall at this location. This impact will be significant and permanent.

Area 5

The engineering measures for Area 5 are set out in Section 5.8.3.3 above.

Construction Phase

The scheme will be a temporarily impact on access through the town during construction. Therefore, there will be a significant temporary negative impact during construction.

Operational Phase

The measures proposed in this area will have a neutral affect on access once the defence scheme is in place.

5.8.4.4 Mitigation Measures

In order to minimise disruption during construction, a phased programme for construction will be implemented, as described in Section 2.5.1 of the EIS.

Once the flood defence scheme is constructed, rigorous monitoring and maintenance will be carried out by Bray Town Council to ensure that the flood defences do not deteriorate.

5.8.4.5 Residual Impacts (Direct, Indirect, Cumulative)

Restrictions to access will be for the most part significant but temporary, occurring during the construction phase. The provision of a new Dargle Walkway is considered to be a significant positive and permanent impact which will benefit the entire town. Direct access to the river for a small number of properties will be restricted as a result of the proposed defence scheme. This impact is considered to be significant, permanent but localised.

5.8.4.6 The Do Nothing Scenario

Under the do-nothing scenario, no flood defences would be put in place.

In the event of a 1 in 100 year flood event there would be extensive damage to lands along the north and south of the River. Therefore, there would be a profound negative impact on access to property during such an event. Lands affected would include the residences of Seapoint Court; Ravenswell Road; Belton Terrace; Dwyer Park; Barboza Terrace; St Laurences Terrace; Adelaide Villas; Loretto Terrace; Fairgreen Terrace; Fairgreen Terrace; Fairgreen Road; Gertrude Terrace; Herbert View; Sutton Road; Sutton Villas; Matland Street; Ardee Court; Dangan Street; Pearse Road; Pearse Square; the Maltings; Glenburgh Terrace; Coburg; Dargle Road; Killarney Glen and River Vale.

A 1 in 100 year river flood event would also result in extensive flooding of the Golf Club Lands and Rehills Lands, which although currently undeveloped, are zoned for mixed use development.

In the event of a 1 in 100 year flood event, Bray Bridge would be inaccessible. This would have a profound negative impact in terms of access.

In the event of a 1 in 200 year tidal flood event, there would be extensive damage to lands to the north and south of the river between the Harbour and Bray Bridge. Therefore, there would be a profound negative impact on access to property during such an event. Lands worst affected would include residential and commercial property within the immediate vicinity of the Harbour; Seapoint Court; the former Abattoir site; Milton Terrace; the Golf Club Lands; No.'s 1-4 Ravenswell Road; Belton Terrace; and Dwyer Park.

5.8.4.7 The Worst Case Scenario

The worst case scenario with respect to access and rights of way would arise in the event that flood defences were not implemented, leaving Bray at risk from future flooding events. This would have a profound negative impact during times of flooding as access within the study area would be greatly restricted.

5.8.4.8 Positive Impacts

Once the flood defence measures are in place, there will be a permanent positive impact due to the creation of new rights of way and access to the river.

5.8.4.9 Reinstatement

Works at Bray Bridge will involve temporary road closures during the construction phase only. Once all works are completed, all roads will be re-opened.

5.8.4.10 Monitoring

Continuous monitoring will be required to ensure that rights of way are maintained. Maintenance of the River Dargle and its environs is currently undertaken by Bray Town Council and will continue following the completion of the proposed scheme. A preliminary maintenance programme is set out in Section 2.6 of the EIS.

5.8.5 TOURISM AND RECREATION

This section of the EIS describes how the flood defence scheme will impact upon tourism and recreation within Bray.

5.8.5.1 Methodology

For discussion purposes, the Study Area has been divided into the following five areas:-

- Area 1 – Harbour Bridge to Bray Bridge;
- Area 2 – Bray Bridge;
- Area 3 – Bray Bridge to the western end of People’s Park;
- Area 4 – Western end of People’s Park through the Slang/Rehills Land to La Vallee; and
- Area 5 – La Vallee to N11 Bridge.

Within each of the five areas a number of engineering measures are required to provide flood defences along the river. Therefore, each engineering measure was assessed in terms of the impact on the area directly affected and the overall impact on tourism within Bray directly affected. The significance criteria used is based on the *Advice Notes on Current Practice (in the preparation for Environmental Impact Statements)*.

5.8.5.2 Description of the Receiving Environment

Bray has a strong tourism resource base, comprising of both natural and built heritage. Tourism in Bray is primarily associated with the areas surrounding the Seafront and Bray Head. Other recreational amenity areas within the town include People’s Park and associated playing pitches; in addition to the River Dargle and associated angling and other recreational activities.

5.8.5.3 Potential Impacts (Direct, Indirect, Cumulative)

Area 1 – Bray Harbour to Bray Bridge

The engineering measures for Area 1 are set out in Section 5.8.3.3 above.

Construction Phase

During construction there will be temporary negative impacts including increased noise and dust emissions, and restriction on access to the river. This will have a temporary negative impact on tourism and recreation. These impacts will be significant in the short- term.

Operational Phase

Each of these measures will have a positive impact on Area 1 in that they will protect all adjoining lands and properties from flooding. The creation of a new walkway and landscaping treatments will improve the visual amenity, which will have a positive impact on recreation and tourism within the town.

In addition it is considered that the ancillary landscaping treatment proposed in this area (which will incorporate a walkway along the southern bank of the River) will have a positive long-term impact by a) improving the visual amenity along this stretch of the river; b) improving access to the river for local residents; c) complying with

the objectives of Bray Town Council to promote the use of the Dargle Riverbank between La Vallee and Bray Harbour as a leisure and natural amenity area through the Development of a Dargle River Walk.

Area 2 – Bray Bridge

The engineering measures for Area 2 are set out in Section 5.8.3.3 above.

Construction Phase

Measure B3 will require road closures and diversions. These works will be phased to minimise disruption. It is considered that this measure may have a temporary negative impact on tourism due to traffic disruptions in the area. These impacts will be significant in the short-term.

Operational Phase

The proposed measures will have a positive long-term impact on Area 2 in that they will protect all adjoining lands and properties from flooding.

In addition it is considered that the ancillary landscaping treatment proposed in this area (which will incorporate a walkway along the southern bank of the River) will have a positive long-term impact by a) improving the visual amenity along this stretch of the river; b) improving access to the river for local residents; c) complying with the objectives of Bray Town Council to promote the use of the Dargle Riverbank between La Vallee and Bray Harbour as a leisure and natural amenity area through the Development of a Dargle River Walk.

Area 3 – People’s Park and the Maltings

The engineering measures for Area 3 are set out in Section 5.8.3.3 above.

Construction Phase

People’s Park is a recreational area for the residents of the town. There are currently two playing pitches in People’s Park. During construction, the site compounds and works will be at the lower end of People’s Park. Therefore, there will be no impact on the playing pitches. The playing pitches will be available for the duration of the works.

Operational Phase

The proposed measures will have a positive long-term impact on Area 3 in that they will protect all adjoining lands and properties from flooding. There will also be a positive impact on tourism and recreation due to the provision of a new pedestrian walkway.

In addition it is considered that the ancillary landscaping treatment proposed in this area (which will incorporate a walkway along the southern bank of the River) will have a positive long-term impact by a) improving the visual amenity along this stretch of the river; b) improving access to the river for local residents; c) complying with the objectives of Bray Town Council to promote the use of the Dargle Riverbank between La Vallee and Bray Harbour as a leisure and natural amenity area through the Development of a Dargle River Walk.

Area 4 – People’s Park through the Slang/Rehills Land to La Vallee

The engineering measures for Area 4 are set out in Section 5.8.3.3 above.

Construction Phase

During construction there will be temporary negative impacts including increased noise and dust emissions, and restriction on access to the river. This will have a temporary negative impact on tourism and recreation. These impacts will be significant in the short-term.

Operational Phase

In addition it is considered that the ancillary landscaping treatment proposed in this area will have a positive long-term impact by a) improving the visual amenity along this stretch of the river and b) improving access to the river for local residents.

Area 5

The engineering measures for Area 5 are set out in Section 5.8.3.3 above.

Construction Phase

During construction there will be temporary negative impacts including increased noise and dust emissions, and restriction on access to the river. This will have a temporary negative impact on tourism and recreation. These impacts will be significant in the short-term.

Operational Phase

The proposed measures will have a positive long-term impact on Area 5 in that they will protect all adjoining lands and properties from flooding.

In addition it is considered that the ancillary landscaping treatment proposed in this area will have a positive long-term impact by improving the visual amenity along this stretch of the river, which will have a positive impact on recreation and tourism.

5.8.5.4 Mitigation Measures

In order to minimise disruption during construction, a phased programme for construction will be implemented, as described in Section 2.5.1 of this EIS.

Once the flood defence scheme is constructed, rigorous monitoring and maintenance will be carried out by Bray Town Council to ensure that the flood defences do not deteriorate.

5.8.5.5 Residual Impacts (Direct, Indirect, Cumulative)

There will be no residual impacts in relation to tourism and recreation.

5.8.5.6 The Do Nothing Scenario

In the event of a 1 in 100 year flood event, there would be extensive damage to lands to the north and south of the river. During such an event there would be extensive damage to People's Park and property along the river. Bray Bridge would also be inaccessible during such an event. Such destruction would have a significant negative impact on tourism and recreation within Bray.

5.8.5.7 The Worst Case Scenario

The worst case scenario with respect to tourism and recreation would arise in the event that flood defences were not put in place, and Bray was not protected from risk of future flooding.

5.8.5.8 Positive Impacts

Once the flood defence measures are in place, there will be a significant positive impact on tourism and recreation as lands along the north and south of the river. The flood defence scheme also provides for new walkways along the river which will have a significant positive impact on tourism within Bray.

5.8.5.9 Reinstatement

The flood defence scheme will involve reinstating and improving People's Park.

5.8.5.10 Monitoring

Continuous monitoring will be required to ensure that the flood defence scheme is maintained to the highest quality. Maintenance of the River Dargle and its environs is currently undertaken by Bray Town Council and will continue following the completion of the proposed scheme. A preliminary maintenance programme is set out in Section 2.6 of the EIS.