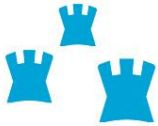


# Sutton to Sandycove Cycleway & Footway Interim Works: Bull Wall (Wooden Bridge) To Causeway Road

## Part VIII Proposals



Comhairle Cathrach  
Bhaile Átha Cliath  
**Dublin City Council**



**FINAL ISSUE**

*December 2012*



# Sutton to Sandycove Cycleway & Footway Interim Works Bull Road to Causeway Road

## Part VIII Proposals

---

Document No:.....12135.10 / Part VIII

Made:..... Barry Corrigan

Checked:..... Mark Smillie

Approved:.....Seamus MacGearailt

Document No.	Rev	Status	Made	Checked	Approved	Date
12135.10 / Part VIII	-	Draft				
12135.10 / Part VIII	1	Draft				05/12/2012
12135.10 / Part VIII	2	FINAL ISSUE				10/12/2012

# Sutton to Sandycove Cycleway & Footway Interim Works

## Bull Road to Causeway Road

### Part VIII Proposals

#### TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1.0 INTRODUCTION .....</b>	<b>3</b>
1.1 Previous Studies .....	3
1.2 Project Objectives .....	3
1.2.1 Promenade and Cycleway .....	3
1.2.2 Flood Defence for Clontarf Road and James Larkin Road - Interim Works....	4
1.3 Planning and Policy.....	4
1.3.1 Dublin City Development Plan 2011 - 2017.....	4
1.3.2 National Cycling Policy Framework 2009 - 2020 .....	4
<b>2.0 Alternative Designs Considered.....</b>	<b>5</b>
2.1.1 Description of Options.....	5
2.1.2 Appraisal of Options.....	7
<b>3.0 Proposed Works .....</b>	<b>8</b>
3.1 Existing Scenario .....	8
3.2 Cycleway Layout .....	8
3.3 Road Layout.....	8
3.4 Junctions and Crossing Facilities .....	9
3.5 Pavement.....	9
3.6 Bus Stops & Services.....	10
3.7 Sea Walls and Flood Defence .....	10
3.7.1 Flood Defence Measures .....	11
3.8 Parking.....	12
3.8.1 Existing Scenario .....	12
3.8.2 Proposed Scenario .....	13
3.9 Traffic Conditions .....	13
3.9.1 Existing Traffic Conditions.....	13
3.9.2 Pedestrian and Cyclists.....	14
3.9.3 Road Accident Statistics .....	15
3.9.4 Road Safety Benefits to Road Users.....	15
3.10 Drainage .....	15
3.11 Proposed Watermain.....	16
3.12 Public Lighting.....	16
<b>4.0 Environmental Mitigation Measures.....</b>	<b>17</b>
4.1 Human Beings.....	17
4.2 Terrestrial Ecology .....	18
4.2.1 Timing of Construction Works .....	18
4.2.2 Monitoring.....	19
4.2.3 Screening Report.....	19
4.3 Aquatic Ecology .....	20
4.4 Noise and Vibration .....	21
4.5 Air Quality .....	22
4.6 Hydrology and Hydrogeology .....	22
4.7 Soils and Geology .....	23
4.8 Landscape and Visual Impact .....	24

4.9	Archaeology and Cultural Heritage.....	25
4.9.1	Tram Shelter.....	26
4.9.2	Tram Lines.....	27
<b>5.0</b>	<b>Construction Stage.....</b>	<b>27</b>
5.1	Introduction.....	27
5.2	Construction Sequence.....	27
5.3	Traffic Management.....	28
5.4	Construction Impacts.....	29
<b>6.0</b>	<b>Conclusion.....</b>	<b>30</b>

## APPENDICES

APPENDIX A	Drawings
APPENDIX B	Habitats Directive Assessment Screening Report

## EXECUTIVE SUMMARY

The proposed Sutton to Sandycove Cycleway and Footway Interim Works : Bull Road to Wooden Bridge is a 2km cycle track which will provide the missing link in an overall 8km cycle track around North Dublin Bay. This is an Interim Scheme comprising of elements of two projects, the Dollymount Promenade & Flood Protection Project (DPFPP) and the North City Arterial Watermain (NCAM), both of which have planning approval from An Bord Pleanála. Both projects were also separately assessed in terms of the EU Habitats Directive and were concluded to have no significant effects on the Natura 2000 Sites and were assessed as having no adverse effect on the integrity of any of the Natura 2000 sites.

The scheme being promoted by Dublin City Council (DCC) and the National Transport Authority (NTA) started back in 2006 and resulted in a planning approval being granted by An Bord Pleanála in December 2011 to the Dollymount Promenade & Flood Protection Project (DPFPP). This c.2km promenade designed in 5 distinct sections provided an environmentally sustainable solution for a segregated cycle track and promenade from the Wooden Bridge to Causeway Road on the seaward side of the Clontarf Road and James Larkin Road.. The DPFPP also provided improved flood defence over the full length of the scheme which included repairs to the existing sea walls and new construction where required.

Due to the high cost of the DPFPP design solution, the scheme was assessed to allow for construction on a phased basis. Due to the current financial constraints, it has been deemed feasible to construct the two land based sections of the DPFPP scheme at this time. This avoids construction of the most expensive elements of the project in the lagoon.

Dublin City Council have also developed the North City Arterial Watermain Project to lay a trunk watermain between Fairview and Sutton including the section along Clontarf Road and James Larkin Road which was approved by An Bord Pleanála in July 2008. An opportunity exists for both the cycle track project and this section of the watermain project to be undertaken at the same time and thereby reduce the period of construction impacts on the environment and the community, both resident and working. Undertaking the construction of this section of the watermain whilst the cycle track construction and road resurfacing is being completed will result in significant cost savings in terms of traffic management, excavation and particularly surfacing works.

The typical cross section includes the following:

- Retain the existing footpath on the landward side of the road;
- 2m wide parking bay at locations shown;
- 2 x 3m wide traffic lanes;
- 3 - 3.5m wide two way cycle track utilising part of the existing carriageway; and
- Retain the existing footpath on the seaward side of the road.
- At the northern end of the scheme beginning at approx. Chainage 1+650 the cycle track will depart the carriageway and utilise the grassed area to the north of the Nanniken Stream. Through this section the cycle track will be located in on its current alignment on the landward side of a new flood bund with a Level of 4.25m OD. The proposed bund will merge into an existing earthen bund on the approach to the Causeway Road. The cycle track will be taken across the Causeway Road on the alignment of the existing crossing.

Traffic lane widths over the length of the scheme will generally be reduced to a width of 2 no. 3 metre traffic lanes. This will have a number of benefits to both users of the cycle track and also to local residents. The narrower traffic lanes will have the effect of calming traffic and due to the narrower traffic lanes and the number of crossings the speed limit of 50kph will be extended to the north of the Causeway Road/Watermill Road Junction. This will provide a much safer environment for pedestrians and cyclists alike while allowing residents easier access to Clontarf Road will remove the potential conflict with outbound cyclists.

The existing road carriageway will typically be reduced to 6m (2 no. 3 metre traffic lanes), which will provide an element of traffic calming and make space for the provision of the cycle track. The scheme includes the retention of on-street parking between Seafield Road East and Dollymount Avenue, where a number of properties do not have off-street parking. Between Doyles Lane and Dollymount Avenue, road markings are not present and the proposed design will formalise these arrangements through the provision of a build out at the bus stop and adjacent to the junctions. To the North of Dollymount Avenue there is a pinch point between the sea walls and the adjacent property boundaries and therefore any on-street parking along this section will be removed to facilitate the cycle track, resulting in the loss of a total of 7 on-street parking spaces. Of these 7 spaces being lost only two properties do not currently have private driveways. A further section of the Clontarf Road north of Dollymount Avenue has a tradition of parking although this is marked as a cycle track. These cars only permitted to park for up to 30 minutes for loading and unloading purposes but it is clear that currently parked vehicles cause significant obstructions and further reduce the extent of functioning cycle lanes. Significant additional parking will also be created on James Larkin Road outside of St. Anne's Park on the approach to Watermill Road.

Due to the ecological sensitivities of working within and in proximity to the South Bull Lagoon, designated as a Natura 2000 Site (SAC & SPA) a number of restrictions have been placed on the periods within which some works may be carried out and further mitigation measures have been proposed to avoid and minimise impacts. In brief all works within the lagoon will be carried out in the Summer season when the overwintering birds are not present.

On road works carried out during the winter period, should be confined to restricted areas at any one time so as to confine potential disturbance and would require provision of visual screening and monitoring of bird response. Any variation in contract conditions will be subject to agreement with the National Parks and Wildlife Service of the Department of the Environment, Heritage and Local Government.

A Habitats Directive Assessment Screening Report was undertaken and as a result of the assessment carried out it is the considered view of the authors that the proposed development, with the implementation of the proposed mitigation measures, will have no adverse effect on the integrity of any of the Natura 2000 sites listed and as such this report returns a conclusion that there is no potential for significant effects on the Natura 2000 sites. As such the project can be screened out under the Habitats Directive as not requiring a Stage 2 Appropriate Assessment.

## **1.0 INTRODUCTION**

Roughan & O'Donovan Consulting Engineers (ROD) was appointed by Dublin City Council (DCC) to undertake the options study, preliminary design, planning application and detailed design of the Sutton to Sandycove (S2S) Cycleway and Footway, Interim Works between Wooden Bridge / Bull Road and Causeway Road. The location of the cycleway and footway is shown on Drawing 001 included in Appendix A.

### **1.1 Previous Studies**

A number of studies have been undertaken to lead to the submission of this Part VIII Report. The Dublin Regional Authority (DRA) originally undertook studies into the possibility of developing a cycleway and promenade along the coast of Dublin Bay from Sutton to Sandycove resulting in the preparation of a Preliminary Design and Environmental Study Report for the overall Sutton to Sandycove Promenade and Cycleway Project which was published in January 2006. Dublin City Council commissioned a number of studies to examine the Bull Road (Wooden Bridge) to Causeway Road section of the S2S, which culminated with the production of the Dollymount Promenade and Flood Protection Project, Appropriate Assessment, June 2009 and Dollymount Promenade and Flood Protection Project, Environmental Impact Statement, June 2009.

The planning application was submitted to An Bord Pleanála in June 2009 and approval was received from An Bord Pleanála on 23<sup>rd</sup> December 2011.

### **1.2 Project Objectives**

The primary objective of the Sutton to Sandycove (S2S) Cycleway and Footway Interim Works is to provide 2km of promenade and cycleway connecting existing sections of cycleway and footpath along Clontarf and James Larkin Road Promenades. This will then provide 8km of continuous promenade and cycleway in North Dublin Bay and contribute to the overall aim of providing a 22km long cycleway around Dublin Bay.

It is also an objective to provide, or cater for improvements in, flood defence between Wooden Bridge / Bull Road and Causeway Road for residences along Clontarf Road and James Larkin Road.

#### **1.2.1 Promenade and Cycleway**

The proposed S2S Cycleway and Footway Interim Works is approximately 2km in length, extending from Causeway Road to James Larkin Road linking existing cycle and walking routes at either end.

The environment of Dublin Bay is of tremendous importance and large sections of it are designated as Special Areas of Conservation and Special Protection Areas under the EU Habitats and Birds Directives respectively, as well as other designations. The S2S Cycleway and Footway Interim Works will seek to balance the requirement to protect these designated areas with the provision of an enhanced accessibility to the coastal area and world class amenity.

The completed project will provide a major recreational, leisure and commuter facility readily accessible by all age groups with the potential to become a significant tourist attraction within the Dublin Region, especially as the route commands unparalleled views of Dublin Bay and, when completed, would be one of the longest such coastal promenades in Europe.



## 1.2.2 Flood Defence for Clontarf Road and James Larkin Road - Interim Works

As this is an Interim Works which is designed as the first stage towards the delivery of the overall DPFPP, the full flood defence level of +4.6m ODM as proposed in the DPFPP is not being provided as the wave reduction barrier element of the scheme will be constructed at a later stage of the delivery of the project. To ensure consistency with the design of the DPFPP and to ensure minimal redundant work when the DPFPP is constructed, flood defence will be provided to a level of +4.25m ODM which will then be increased to +4.6m ODM when the wave reduction barrier is added.

## 1.3 Planning and Policy

### 1.3.1 Dublin City Development Plan 2011 - 2017

*Chapter 5 - Connecting and Sustaining the City's Infrastructure* of the Dublin City Development Plan sets out the Council's policies and objectives for promoting modal change. Policy SI2 states:

*"It is the policy of Dublin City Council to continue to promote the modal shift from private car use towards increased use of more sustainable forms of transport such as cycling, walking and public transport and to implement the initiatives contained in the government's, 'Smarter Travel, A Sustainable Transport Future 2009-2020'."*

This project will provide a high quality facility specifically designed for pedestrians and cyclists. As it is completely separate to vehicular traffic it will assist in encouraging a modal change away from cars.

*Chapter 6 - Greening the City* specifically mentions the Sutton to Sandycove project. It states:

*"It is an objective of Dublin City Council to promote the development of the Sutton to Sandycove Cycleway scheme (S2S) as a key objective in both 'Smarter Travel' and in the 'National Cycle Policy Framework' subject to the appropriate environmental assessments, including any assessment required under 6(3) of the Habitats Directive. Subject to compliance with environmental regulations and statutory approvals, completion of this project is recognised as a significant development of Dublin Bay with potential recreational and tourism benefits, as well as providing a tram-free cycleway for both recreation and commuter cyclist."*

### 1.3.2 National Cycling Policy Framework 2009 - 2020

In recognising cycling as one of the most important form of sustainable transport the Department of Transport published a *National Cycling Policy Framework* in April 2009. The policy framework emanates from the Government's new transport policy for Ireland – *2009-2020 Smarter Travel – A Sustainable Transport Future*.

The framework sets out many policies and objectives in relation to cycling, with the ultimate aim of increasing cycling's share of the total travel market from 2% to 10% by 2020. The key objectives of the policy framework are as follows:

- Move 160,000 people a day to work by bike; an increase of 125,000 people;
- Invest in better, safer cycle routes around the country for commuters, leisure cyclists and visitors. (Improve existing cycle routes and introduce new routes to best international standards);

- Increase cycling's share of the total travel market, from 2% to 10%;
- Introduce a new approach to the design of urban roads to better recognise the needs of cyclists and pedestrians; and
- Retrofit major road junctions and roadways in key cities and towns to make them cycle-friendly.

Of particular note to the Sutton to Sandycove (S2S) Cycleway and Footway, Interim Works between Wooden Bridge / Bull Road and Causeway Road is Policy 2.10 of the framework policy which states:

*"We will complete the Sutton to Sandycove (S2S) cycleway/promenade. This 22km continuous facility will act as a commuting route as well as a world class recreational and tourist route. It will be a flagship project for the capital."*

## 2.0 Alternative Designs Considered

### 2.1.1 Description of Options

A number of scheme options were developed and assessed as follows:

- Do Nothing;
- Interim Scheme – Option 1;
- Interim Scheme – Option 2;
- Interim Scheme – Option 3;
- Interim Scheme – Option 4;
- Interim Scheme – Option 5; and
- DPFPP Option.

#### Do Nothing

The Do Nothing option would involve retaining the road layout as it currently exists with intermittent advisory cycle lanes.

#### Interim – Option 1

Interim Option 1 would involve a two-way cycle track on the seaward side of Clontarf Road / James Larkin Road.

The existing road carriageway would typically be reduced to between 6 - 6.5m plus the retention of on-street parking between Seafield Road East and Dollymount Avenue. North of Dollymount Avenue road space between the sea walls and the adjacent property boundaries is more restrictive and therefore any on-street parking along this section would be removed to facilitate the cycle track, resulting in the loss of a total of 12 on-street parking space. The provision of the cycle track would involve utilising part of the existing carriageway with a separator kerb / island between traffic and the cycle track on the seaward side of the road. The existing footpath on the seaward side of the road would be retained.

Space is limited between Dollymount Avenue and Mount Prospect Avenue and adjacent to St Anne's Park. To fit within the road space available, avoiding any encroachment into the lagoon, it would be proposed to reduce the traffic lanes to 2 x 3m wide each, the cycle track to 2.6m wide and the footpath to 1.8m wide.

In addition to the reduction in traffic lane widths it was proposed to install a number of speed tables as part of overall traffic calming measures to encourage traffic speeds not to exceed 50kph.

The cycle track would make use of a small part of the grassed area adjacent the tram shelter between chainage 0+275 and 0+600 and a new low wall and railing would be provided at the back of the relocated footpath to maintain a suitable boundary.

Necessary repairs would be undertaken to the existing sea walls. In addition the existing sea wall between chainages 0+380 and 0+620 will be protected by the construction of a rock armour tidal protection wall.

#### Interim – Option 2

Interim Option 2 similar to Interim Option 1 would include the provision of flood defence measures including increasing the height of low sections of wall, closing gaps within the existing walls, completing missing sections of wall and providing flood bunds and ramps. In addition the existing sea wall between chainages 0+380 and 0+620 would be protected by the construction of a rock armour tidal protection wall.

#### Interim – Option 3

Interim Option 3 similar to Interim Option 2 would include the construction of a raised cycle track adjacent to the road rather than providing a separator kerb and utilising the existing road surface. It would also include the provision of flood defence measures. In addition the existing sea wall between chainages 0+380 and 0+620 would be protected by the construction of a rock armour tidal protection wall.

The scheme would have the same impact on on-street parking as Option 1 and 2 with the loss of on-street parking equating to 12 spaces.

This option would also involve lowering the existing wastewater pumping station adjacent the tram stop to provide additional space for the cycle track at what is a particular pinch point along the route.

#### Interim – Option 4

Interim Option 4 would be similar to Option 3, except that a new sea wall would be constructed in place of the existing low wall along the edge of the grassed area adjacent the tram shelter between chainage 0+275 and 0+600 to make full use of the area available.

This proposed sea wall would not be consistent with the DPFPP proposed design which included the wall within the grassed infill area and returned the remaining infill area to mudflats. This proposal however would require the full extent of the grassed infill area and therefore no new mudflats would be created. There could be redundant work involved with this option.

#### Interim – Option 5

Interim Option 5 would be similar to Option 3, except that a new sea wall would be constructed in place of the existing low wall within the grassed area adjacent the tram shelter between chainage 0+275 and 0+600, which would utilise the parts of the grassed area proposed in the Dollymount Promenade and Flood Protection Project.

The new sea wall would be constructed within the infilled grassed area and some of the currently infilled area would be returned to mudflat. This option would be most consistent with the DPFPP proposed design as approved by An Bord Pleanála and would therefore mean less redundant work in this element of the design should the DPFPP be developed at a later date.

#### DPFPP Option

This option would be the complete full DPFPP proposal as per the scheme approved by An Bord Pleanála.

The proposal would be to provide a promenade and cycle track from Wooden Bridge to Causeway Road that would also provide flood defence along this section of Clontarf Road and James Larkin Road. Due to the sensitivity of the environment the proposed promenade has been designed so as to minimise the footprint in the lagoon and thereby the loss of habitat. Three distinct options will be used in tandem to provide an efficient and environmentally sensitive solution. These include a pile supported steel deck option, a retaining wall option which makes use of the existing grassy areas along the scheme and also cable stayed bridge structure supporting the promenade. The promenade also reverts to a land based walkway at chainage 1+650m and remains in this form until the completion of the scheme at Causeway Road.

### 2.1.2 Appraisal of Options

Option 5 which is the design solution most consistent with the approved DPFPP scheme was identified as the preferred solution when assessed against a number of headings as shown in Table 2.1 below.

**Table 2.1 Scheme Option Appraisal**

<b>Ranking</b>	<b>Do Nothing</b>	<b>Interim Option 1</b>	<b>Interim Option 2</b>	<b>Interim Option 3</b>	<b>Interim Option 4</b>	<b>Interim Option 5</b>	<b>Full DPFPP</b>
<b>Environment</b>	Neutral (0)	Slightly Negative (-1)	Slightly Negative (-1)	Slightly Negative (-1)	Slightly Negative (-1)	Neutral (0)	Slightly Negative (-1)
<b>Economy</b>	Neutral (0)	Neutral (0)	Neutral (0)	Neutral (0)	Neutral (0)	Neutral (0)	Moderately Negative (-2)
<b>Safety</b>	Neutral (0)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Moderately Positive (+2)	Moderately Positive (+2)	Highly Positive (+3)
<b>Accessibility and Social Inclusion</b>	Neutral (0)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)
<b>Integration</b>	Neutral (0)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)	Slightly Positive (+1)
<b>Overall</b>	<b>0</b>	<b>+2</b>	<b>+2</b>	<b>+2</b>	<b>+3</b>	<b>+4</b>	<b>+2</b>

## **3.0 Proposed Works**

### **3.1 Existing Scenario**

The location of the proposed Sutton to Sandycove (S2S) Cycleway and Footway Interim Works is along Clontarf / James Larkin Road in North Dublin, between a tie-in point just south of the Bull Road and a tie-in point just north of Causeway Road. See Drawing 0001 in Appendix A.

Currently along this section of the North Dublin Bay coastal walk and cycle route pedestrians use the existing narrow footpath and cyclists use the road. On the landward side of the James Larkin Road (northern half of the scheme) between Watermill Road and Mount Prospect Avenue is St. Anne's Park. This is a large mature park that accommodates a number of formal and informal recreational facilities. The park is a significant draw to residents from the surrounding area and to local sporting clubs. Clontarf Road starts at the southern end of St Anne's Park and has a much different appearance to the James Larkin Road to the north as this section is dominated by residential and commercial properties overlooking the foreshore. Most of the length of Clontarf Road between the Bull Wall/Wooden Bridge and Mount Prospect Avenue has on street parking on the northbound traffic lane. Another feature of the Clontarf Road over this section is the numerous roads and avenues running perpendicular to the coast and which have junctions onto the Clontarf Road.

### **3.2 Cycleway Layout**

The scheme involves the construction of a raised cycle track on the seaward side of the road and the adjacent existing footpath will generally be retained.

The typical cross section includes the following:

- Retain the existing footpath on the landward side of the road;
- 2m wide parking bay at locations shown;
- 2 x 3m wide traffic lanes;
- 3 - 3.5m wide two way cycle track utilising part of the existing carriageway; and
- Retain the existing footpath on the seaward side of the road.

At the northern end of the scheme beginning at approx. Chainage 1+650 the cycleway will depart the carriageway and utilise the grassed area to the north of the Nanniken Stream. Through this section the cycleway will be on the existing cycle track alignment on the landward side of a new flood bund with a level of 4.25m OD. The proposed bund will merge into an existing earthen bund on the approach to the Causeway Road. The cycleway will be taken across the Causeway Road on the alignment of the existing crossing.

### **3.3 Road Layout**

Traffic lane widths over the length of the scheme will generally be reduced to a width of 2 no. 3 metre lanes. This will have a number of benefits to both users of the cycleway and also to local residents. An Automatic Traffic Count (ATC) was also carried out between 07:00 and 22:00 hours on 24<sup>th</sup> May 2012 at Clontarf Road, immediately south of Dollymount Park. The surveys revealed that 85<sup>th</sup>ile speed is

59 km/hr on the inbound traffic lane and 56km/hr on the outbound traffic lane, which are both well in excess of the speed limit. The narrower traffic lanes will have the effect of calming traffic and as well as the number of crossings this will enable the speed limit of 50kph will be extended to the north of the Causeway Road/Watermill Road Junction. One of the main reasons for needing to narrow the traffic lanes is in order to provide a reasonably consistent width of cycleway. This will allow residents easier access to Clontarf Road will remove the potential conflict with outbound cyclists.

Build outs are also provided at regular intervals along the northbound traffic lane for traffic calming purposes and also to protect parked cars. These build outs have been positioned where possible to coincide with the bus stops on the north bound traffic lane and thereby make best use of the spaces.

### **3.4 Junctions and Crossing Facilities**

A number of pedestrian and cyclist crossing facilities are to be provided across Clontarf Road / James Larkin Road to provide safe and convenient access to the proposed cycle track on the seaward side of the road. These crossings will include toucan crossings adjacent to the Wooden Bridge, Dollymount Park and Mount Prospect Avenue. A Toucan crossing will also be provided across Wooden Bridge connecting to Clontarf Promenade at the southern end of the scheme while the existing arrangement will be maintained at the Causeway Road to James Larkin Promenade at the northern end of the scheme. Each junction has been designed to permit ease of access for cyclists from adjacent roads through the provision of drop crossings. All crossings have been designed to appropriate standards.

### **3.5 Pavement**

It is proposed to complete a full pavement overlay of the existing carriageway to reduce traffic noise thereby improving the experience for cyclists and other users of the facility, particularly where the existing pavement is of concrete construction (See Photo 3.1). In addition to the reduction in traffic lane widths it is proposed to extend the 50kph speed limit from Mount Prospect Avenue to the northern side of Causeway Road (See Drawing 1004 in **Appendix A**).



**Photo 3.1 Condition of Existing Road Pavement on James Larkin Road**

### **3.6 Bus Stops & Services**

The area is currently served by a two bus routes, namely the 104 and 130. There are a number of bus stops along the route as shown on Drawings 1001 - 1004 in **Appendix A**. Only one of the inbound bus stops will be affected by the proposed scheme as a bus shelter is to be removed and replaced with a bus stop pole at chainage 0+275. The adjacent bus stop pole at Chainage 0+565 will be provided with the renovated tram shelter which will act as a shelter for all Dublin Bus passengers.

On the outbound traffic lane all bus stops and shelters will remain with some slight optimisation of locations to coincide with build outs allowing safer access to and from buses for Dublin Bus passengers. All proposals will be agreed with Dublin Bus and any requirements included in the Contract Documents.

### **3.7 Sea Walls and Flood Defence**

The scheme also includes the provision of flood defence measures. The majority of the existing seawall can be repaired to bring the existing seawall up to a sufficient standard. However there are some sections of the existing sea wall which have deteriorated significantly and require complete replacement. The principle sections which have deteriorated the most are those that are formed from a low grade concrete which has deteriorated significantly in the sea environment.

The measures proposed includes repair and raising of the existing seawall and the construction of a new sea wall to replace the existing low wall within the grassed area adjacent to the tram shelter between approx. chainage 0+275 and 0+600. This will

utilise the parts of the grassed area as proposed in the Dollymount Promenade and Flood Protection Project (See Photo 3.2).

As part of these wall repairs the two existing slipways will be permanently decommissioned and a replacement slipway will be provided off the Causeway Road as per the DPFPP approved scheme.



**Photo 3.2 View of existing low wall and the grassed area adjacent to DCC pumping station**

### 3.7.1 Flood Defence Measures

In addition to the repairs to the existing sea wall, as described above, it is possible to improve the flood defence capability of the existing wall by providing a continuous flood defence wall with a minimum level of 4.25m AOD. However this would require various sections of the sea wall to be increased in height as shown in Table 3.1 below.

**Table 3.1 Flood Defence Measures**

From Chainage	To Chainage	Increase in Wall Height Required	Comments
0+80	0+380	+0.25m	Closure of a slipway at Ch 0+380
0+380	0+620	+0.6m	The existing sea wall here is very poor & in need replacement. A new wall will be required to provide flood protection.
0+620	0+700	+0.25m	
0+700	1+010	None	The existing sea wall is at least 4.25m AOD
1+010	1+645	+0.25m to +0.85m	Sections of the sea wall along here are in need of repair.
1+645	2+049 (end)	+0.75m	The grassed area along the promenade is sufficiently wide to provide a landscaped earth bund as part of the flood defence.

In order to provide a continuous system of flood defence for the length of the scheme several distinct solutions may need to be employed and are discussed below.



An interim solution to provide a flood defence wall level of +4.25m ODM without the wave reduction barrier would not provide the same level of flood protection, however as this is an interim solution towards the delivery of the overall DPFPP scheme this will provide an additional level of flood protection until the full benefit is gained from the wave reduction measures to be implemented at a later date.

### Flood Bund

From Chainage 1+650m northwards, the scheme consists of a land based cycleway with a large grassed area separating it from the lagoon. Here the scheme's flood defence can be provided by the provision of a flood bund to the seaward side of the proposed cycleway. This will be provided to a level of +4.25m ODM. This bund will merge into the existing bund which runs along Causeway Road, which is in excess of +4.25m ODM for much of its length.

### Slipways

Two separate slipways are located along the proposed alignment of the cycleway. The first of these is located at chainage 0+380m. It is currently used sporadically by canoeists and fishermen seeking bait from the lagoon. This slipway will be decommissioned to provide a continuous flood defence. The second slipway is located at chainage 1+230m. This slipway is rarely used and has fallen in to disrepair and as such it will also be decommissioned.

Several other access locations also exist along the scheme, such as at chainage 0+675m. This access point leads to the landing stage which is no longer used. These interim access points will be extinguished and the wall will be made continuous at these locations.

Due to the extinguishment of the existing slipways, a new access point / slipway for users of the lagoon will be created along the Causeway Road (See Drawing 1004 in **Appendix A**).

## 3.8 Parking

### 3.8.1 Existing Scenario

There are sections of on-street parking along Clontarf Road between Seafield Road East and Mount Prospect Avenue. This parking is primarily provided for residents that do not have alternative off-street parking. The extent of the on-street parking is shown in Table 3.2 below.

**Table 3.2 Existing On-Street Parking Along Clontarf Road**

From Junction	To Junction	Total Parking (m / spaces)	House no. without off-street parking
Kincora Road	Seafield Road East	38m / 6 spaces	none
Seafield Road East	Dollymount Park	38m / 6 spaces	361
Dollymount Park	Doyle's Lane	84m / 14 spaces	8,9,10 Doyle's Court (parking at rear of properties)
Doyle's Lane	Dollymount Avenue	70m / 12 spaces	385 to 396 inclusive
Dollymount Avenue	Mount Prospect Ave	38m / 6 spaces	398 & 399

It is noted from observations that cars are often parked within the northbound cycle lane as the cycle lanes are marked as advisory and double yellow lines are only provided in short sections between the Wooden Bridge and Mount Prospect Avenue. These cars are only permitted to park for up to 30 minutes for loading and unloading purposes but it is clear that currently parked vehicles cause significant obstructions and further reduce the extent of functioning cycle lanes.

### **3.8.2 Proposed Scenario**

The existing road carriageway will typically be reduced to 6m (two no. 3 metre traffic lanes), which will provide an element of traffic calming and make space for the provision of the cycle track. The scheme includes the retention of on-street parking between Seafield Road East and Dollymount Avenue, where a number of properties do not have off-street parking. Between Doyles Lane and Dollymount Avenue, road markings are not present and the proposed design will formalise these arrangements through the provision of a build out at the bus stop and adjacent to the junctions. To the North of Dollymount Avenue there is a pinch point between the sea walls and the adjacent property boundaries and therefore any on-street parking along this section will be removed to facilitate the cycle track, resulting in the loss of a combined total of 7 on-street parking spaces. Of these 7 spaces being lost only two properties do not currently have private driveways.

A further section of the Clontarf Road north of Dollymount Avenue has a tradition of parking although this is marked as a cycle track. These cars are only permitted to park for up to 30 minutes for loading and unloading purposes but it is clear that parked vehicles currently cause significant obstructions to cyclists and further reduce the extent of functioning cycle lanes. Significant additional parking will also be created on James Larkin Road outside of St. Anne's Park on the approach to Watermill Road.

Parking will be retained outside all commercial properties.

## **3.9 Traffic Conditions**

### **3.9.1 Existing Traffic Conditions**

Classified junction turning counts were carried out on Thursday 24<sup>th</sup> May 2012 at the following junctions:

- Junction 1: Clontarf Road / Bull Road Signalised Junction; and
- Junction 2: Clontarf Road / Mount Prospect Avenue Signalised Junction.

An Automatic Traffic Count (ATC) was also carried out on the same day at Clontarf Road, immediately south of Dollymount Park. The surveys were carried out between 07:00 and 22:00 hours. Analysis of the survey data indicated that the weekday peak traffic periods occur between 08:00 – 09:00 and 17:00 – 18:00 and the current average traffic speed is slightly under the posted speed limit of 50km/hr. The surveys also revealed that 85<sup>th</sup>ile speed is 59 km/hr on the inbound carriageway and 56km/hr on the outbound carriageway, which are both well in excess of the speed limit.

The morning and evening peak traffic flows and Average Annual Daily Traffic (AADT) values are shown in Table 3.3 below.

**Table 3.3 Total Traffic Flows**

	Northbound (veh/hr)	Southbound (veh/hr)	Total (veh/hr)	AADT
<i>To North of Clontarf Road/Bull Road Junction</i>				
08:00-9:00	367	650	1,017	15,679
17:00-18:00	783	539	1,322	
<i>To South of Clontarf Road/Mount Prospect Avenue Junction</i>				
08:00-9:00	399	716	1,115	16,972
17:00-18:00	889	542	1,431	
<i>To South of Clontarf Road/Dollymount Park Junction</i>				
08:00-9:00	378	713	1,091	17,186
17:00-18:00	885	564	1,449	

The traffic flows for each turning movement at the above junctions are provided in the Table 3.4 below.

**Table 3.4 Total Traffic Flows Through Junctions**

<b>Clontarf Road/Bull Road Junction</b>				
<i>Time / Movements</i>	<i>Clontarf Road (From South)</i>	<i>Bull Road</i>	<i>Clontarf Road (From North)</i>	<i>Total</i>
08:00-9:00	379	14	650	1043
17:00-18:00	807	169	539	1515
<b>Clontarf Road/Mount Prospect Avenue Junction</b>				
<i>Time / Movements</i>	<i>Mount Prospect Avenue</i>	<i>Clontarf Road (From South)</i>	<i>Clontarf Road (From North)</i>	<i>Total</i>
08:00-9:00	76	399	785	1260
17:00-18:00	140	889	572	1601

### 3.9.2 Pedestrian and Cyclists

Pedestrian and Cyclist counts were also carried out on Thursday 24th and Saturday 26th May 2012 at the junctions outlined above. Analysis of the survey data indicated the following:

- The peak period for cyclists occurs between 19:00 – 20:00 on a Thursday; and
- The peak period for pedestrians occurs between 16:00 – 17:00 on a Saturday.

The peak period flows for cyclists are shown in Table 3.5 below.

**Table 3.5 Total Cyclist Flows**

Northbound (cyclists/hr)	Southbound (cyclists/hr)	Total (cyclists/hr)
<i>To North of Clontarf Road/Bull Road Junction</i>		
102	91	193
<i>To South of Clontarf Road/Mount Prospect Avenue Junction</i>		
115	110	225
<i>To South of Clontarf Road/Dollymount Park Junction</i>		
101	98	199

The pedestrian peak period flows are provided in Table 2.5 below.

**Table 3.6 Total Pedestrian Flows (ped/hr)**

<b>Clontarf Road/Bull Road Junction</b>			
<i>Northbound across Bull Road</i>	<i>Southbound across Bull Road</i>	<i>Westbound across Clontarf Road</i>	<i>Eastbound across Clontarf Road</i>
136	26	78	106
<b>Clontarf Road/Mount Prospect Avenue Junction</b>			
<i>Northbound at Mount Prospect Avenue</i>	<i>Southbound at Mount Prospect Avenue</i>	<i>Westbound across Clontarf Road</i>	<i>Eastbound across Clontarf Road</i>
19	12	3	4
<b>Clontarf Road / Dollymount Park</b>			
<i>Northbound at Dollymount Park</i>	<i>Southbound at Dollymount Park</i>	<i>Westbound across Clontarf Road</i>	<i>Eastbound across Clontarf Road</i>
68	73	7	15

### 3.9.3 Road Accident Statistics

A review of road accidents within the study area was undertaken using the Road Safety Authority Collision Database for a 14 year period from 1996-2009. The data showed that half of the serious and fatal accidents along this section were pedestrians

### 3.9.4 Road Safety Benefits to Road Users

The proposed S2S Interim Works scheme will provide significant benefits in terms of calming of traffic along this section of the Clontarf and James Larkin Roads. A number of measures will be provided which will assist in this traffic calming:

- the 50km/hr speed limit will be moved to the north of Watermill Road;
- narrower traffic lanes (2 no. 3 metre lanes); and
- build outs will also assist in slowing vehicles and providing a consistent carriageway width.

All of these measures will assist in reducing traffic speeds which as surveyed in May 2012 show that the 85%ile of vehicles travel at 59 km/hr on the inbound carriageway and 56km/hr on the outbound carriageway, which are both well in excess of the speed limit. This will provide a safer environment for cyclists, pedestrians and those living along or accessing the Clontarf and James Larkin Roads.

### 3.10 Drainage

Several drainage outfalls run through the existing sea defence wall and in to the lagoon. These outfalls will be reinstated where sections of the existing wall are replaced. All surface water outfalls located along the alignment of the proposed flood defence scheme, which facilitate surface water sewer discharges to the South Lagoon at points in the existing sea wall, shall be upgraded by the provision of additional overflow manholes and/or other appropriate measures. There are also drainage services associated with the Pumping Station at Ch 0+590.

A Dublin City Council pumping station is located just north of the tram shelter. The building will be lowered underground in consultation with Dublin City Council Drainage and Wastewater Services Department to provide the cycle track. A similar station has previously been lowered at Kilbarrack.

Where existing gullies are effected these will be relocated to the new kerb line and where the build outs are proposed double gullies with separate connections will be constructed. All drainage details will be agreed with Dublin City Council Drainage Department at Detailed Design stage.

### **3.11 Proposed Watermain**

It is proposed to construct a 400mm & 600mm trunk watermain along the length of the scheme. This water main is part of the North City Arterial Watermain, which was approved by An Bord Pleanála in July 2008.

### **3.12 Public Lighting**

Road lighting is proposed to utilise lighting columns no higher than 14m and to use high-pressure sodium lanterns. The impact on the existing public lighting scheme will be minimised during the detailed design and will be developed in consultation with Dublin City Council Public Lighting Services and Roads and Traffic.

## 4.0 Environmental Mitigation Measures

This Section outlines the mitigation measures that have been recommended in the Environmental Impact Statement for both the Dollymount Promenade & Flood Protection Project (DPFPP) and the North City Arterial Watermain (NCAM). As the Sutton to Sandycove Cycleway & Footway Interim Works: Bull Wall to Causeway Road has only some elements of each scheme only the relevant mitigation and control measures have been included.

### 4.1 Human Beings

In overall terms, it is considered that there are many significant positive impacts associated with the project. The project will represent a new community facility/amenity for the area, as well as providing better linkages between existing facilities. Sustainable transport options such as cycling and walking will be significantly improved with a dedicated cycleway. By providing better and safer facilities for walkers, cyclists and recreational users the project will indirectly have health benefits. The threat and consequential financial losses to existing established land uses including dwellings, businesses and amenity facilities from coastal flooding will be reduced. The upgraded cycleway / promenade will be more accessible to all users for a wide variety of activities and economic activity including tourism usage in the area may be increased as a result of the project, both during construction and on completion.

There are likely to be some negative impacts during the construction phase but these are likely to be temporary in nature. The most significant impact will be the loss of parking spaces. Over the full 2km of the scheme a total of 7 parking spaces will be lost. In one location immediately north of Dollymount Avenue, parking will be lost in front two properties which do not have private driveways although parking is available to the side of the properties on the adjacent Dollymount Avenue.

The appointed contractor will be required to prepare and implement an Environmental Management Plan, to be approved by DCC prior to the commencement of construction. The contractor will identify an Environmental Manager/Site Representative who will be responsible for implementing the Plan and who will act as a liaison between the contractor, DCC and the public with regard to the environmental management of the development works.

A Traffic Management Plan will be submitted for approval to DCC Road and Traffic Division by the appointed contractor prior to the commencement of any construction works as part of the Environmental Management Plan.

A Construction & Demolition Waste Management Plan will also be submitted to DCC's Waste Management Services for approval as part of the Environmental Management Plan.

A project liaison officer shall be appointed; the officer shall have specific responsibility for keeping the public, and, in particular, adjoining residents informed in advance of those elements of the construction works which can be expected to cause significant noise impacts.

## 4.2 Terrestrial Ecology

The international importance of Dublin Bay for winter fowl has long been recognised where very rich intertidal sand and mud flats provide food for the birds, whilst suitable high tide roosts are provided by the extensive salt marshes of the Bull Island, as well as the sandy beaches in the bay and even man-made structures such as jetties, piers and sea-walls (e.g. the Bull Wall and the South Wall).

At least 15 species of birds use this area in wintertime including Brent goose, ten species of waders, gulls and duck species. Redshank, Turnstone and oystercatcher are most common. However, only Turnstones occur in substantial numbers within the study area. The majority of birds occur in the area extending from the wooden bridge to the tram shelter associated with the grass verge. Very few birds are recorded within the study area during low tide. The study area is used mainly as a feeding area by the birds or in some cases by loafing or resting birds. It is largely unsuitable as a high tide roost, though at times the concrete outfall pipe provides a useful high tide roost for Turnstones.

Standard pollution prevention measures and best practice construction will all help to minimise potential degradation/disturbance of habitats used by wintering waterfowl.

### 4.2.1 Timing of Construction Works

There are mitigation measures specific to birds included in both previously prepared EISs particularly with regard to the timing of works as follows:

*DPFPP EIS "As much of the heavy construction work as is feasible will be carried out during the main summer season (May to July inclusive) when the least number of birds are present so as to minimise potential disturbance. Virtually all of the key species, such as Brent Geese, Shoveler, Knot and Bar-tailed Godwits, are away on the breeding grounds for this period. This is especially relevant to works from within the lagoon. Should works be carried out during the winter period, these should be confined to restricted areas at any one time so as to confine potential disturbance."*

There will be no physical works undertaken to the lagoon as the three sections of the DPFPP which required foundations in the lagoon have been omitted from this Interim Works although the wall repair works will need to be undertaken from the lagoon. It is therefore considered appropriate that the seasonal restriction of prohibiting works in the overwintering season should apply to all works required to be undertaken from the lagoon, namely the seawall repair and new seawall construction in the grassed embankment at chainage 0+275 to 0+600.

It is considered that once the main seawall repair and the new seawall construction have been completed that the final element of the project which is the laying of the watermain, surfacing of the road and cycletrack would not be considered as heavy construction works and are completely on road works. On this basis, it is proposed that as all of the main heavy construction is completed in the main summer season the on road works could be undertaken outside of the main summer season with appropriate mitigation measures including visual screening and monitoring bird response.

The Contractors proposed construction programme will be agreed with DCC, the Project Ecologist and NPWS at the commencement of the contract. Any extension beyond the periods agreed with NPWS will require the approval of all bodies.

## 4.2.2 Monitoring

### Construction phase

Owing to the high conservation value of the North Bull system, a qualified ecologist should be on site as considered necessary when works are being undertaken within the lagoon to ensure that minimal disturbance is caused to the intertidal sand and mud flats.

It is essential that good liaison is established with the local NPWS management. In particular, NPWS should be kept informed of the planning timescale for the proposed scheme.

At the end of construction works, a site inspection will be carried out by the ecologist and a report will be prepared for the NPWS.

Prior to commencement of development, the applicant shall employ a suitably qualified project ecologist for the construction phase of the scheme. The ecologist shall have access to the Construction Methodology Plan and shall, where he/she considers it appropriate in regard to the Environmental Management Plan, have an input into that plan. The ecologist shall:

- i. monitor all construction works likely to impact on key species of birds within the lagoon,
- ii. identify the avoidance zone for each species,
- iii. liaise with the contractor in regard to the restrictions on works in terms of time, duration and location of such works,
- iv. advise in regard to the implementation of associated mitigation measures,
- v. advise on the duration, scale and extent of any vehicular movements, deemed necessary for construction purposes only, which may be permitted across the mudflats of the lagoon. Where vehicle ingress onto the mudflats is unavoidable for purposes of construction, the manner and route of such ingress shall be determined by the ecologist,
- vi. advise the National Parks and Wildlife Service (NPWS) on an ongoing basis of all monitoring and mitigation measures required to be implemented prior to, during, and post construction works,
- vii. identify the maximum area of the Lagoon which may be affected at any given time by construction works,

### Operation Phase

Following the completion of the works, it would be desirable that a series of surveys should take place over the course of at least one full winter. These would assess if the numbers of birds in the area are similar to the pre-construction baseline figures.

## 4.2.3 Screening Report

The first stage of the Appropriate Assessment process, screening, has been completed in compliance with the relevant European Commission and national guidelines. (See **Appendix B**)

The potential impacts during the construction and operation of the proposed S2S Cycleway & Footway Interim Works: Bull Road to Causeway Road and associated works have been considered in the context of the Natura 2000 sites, their Qualifying Interests and conservation objectives.



The evaluation undertaken identified that there will be no significant impact on any of the Qualifying Habitats or Species, either alone or in-combination, of the North Dublin Bay SAC, North Bull Island SPA or South Dublin Bay and River Tolka Estuary SPA.

Therefore, as a result of the assessment carried out, it is considered that the conservation objectives for the Natura 2000 sites will not be compromised by the proposed development, nor will the proposed development have any significant impact on the designated sites or the habitats or species for which they have been designated.

### Conclusion

As a result of the assessment carried out it is the considered view of the authors that the proposed development, with the implementation of the proposed mitigation measures, will have no adverse effect on the integrity of any of the Natura 2000 sites listed and as such this report returns a conclusion that there is no potential for significant effects on the Natura 2000 sites. As such the project can be screened out under the Habitats Directive as not requiring a Stage 2 Appropriate Assessment.

## **4.3 Aquatic Ecology**

The majority of the south lagoon is sedimentary with hard substrata restricted to the margins of the lagoon particularly along the proposed survey area. With the exception of dwarf sea grass, *Zostera noltii* (an important food source for Brent geese and widgeon and supports a diversity of epifauna, epiflora and infauna), no other species or biotopes of specific nature conservation importance are recorded. This *Zostera noltii* is only a small patch and located well outside the direct line of impact from the construction of the proposed promenade/ cycleway, this will not be impacted upon by the proposed development.

### Loss or Alteration of Habitat and Species

To minimise the loss of the littoral mudflat habitat and species, the area of construction within the lagoon should be kept to the minimum required. Construction should be approached where possible from the landward side to avoid disturbing neighbouring mudflats within the SAC. In terms of the proposed construction techniques, this would involve avoiding the creation of a "haul road" along the mudflat where possible, and rather undertake construction works from the Clontarf and James Larkin Road.

If required a temporary construction access up to a width of 10 metres may be constructed along the seawall from the Wooden Bridge to the Causeway Road. There may be an increase in the turbidity of the water during the construction of the cycleway resulting in increased siltation, smothering of organisms and a reduction of light for phytoplankton and seaweed. This is likely to be localised and restricted to the immediate area around the works and it is envisaged that any temporary increase in suspended solids is likely to have minimal impact.

### Increased Suspended Solids

To minimise the amount of suspended solids released into the water column during construction of the new seawall and repair of the existing seawall, efforts should be made to minimise the area disturbed. Needless clearing and grading should be minimised and phased to limit exposure. Excavation should be carried out at low tide when the area is exposed and there is no water to carry away disturbed sediment.

### Compacting of Littoral Sediments

Construction of the cycleway should be approached from the landward side. However, should it be necessary for construction of the embankment wall to occur on the seaward side of the site, vehicles movements on the mudflats should be kept to the minimum required and follow the same tracks as much as is practicable to minimise the area of compacting of littoral sediments.

### Pollutants and Waste

To prevent chemical pollution during construction, all fuels or chemicals kept on the construction site should be stored in bunded containers. All refuelling and maintenance should be carried out away from the site. Oil interceptors should also be installed in appropriate locations. Equipment should be regularly maintained and leaks repaired immediately away from the site. Accidental spillages should be contained and cleaned up immediately. Appropriate oil-spill containment equipment and oil-absorbent material should be available on-site and staff trained in its proper use should be on-site at all times during construction operations.

During the construction phase, contained chemical portable toilets should be used and all sewage should be removed from the site to an authorised treatment works. No sewage should be discharged to the lagoon.

## 4.4 Noise and Vibration

In particular, it is proposed that various practices be adopted during construction, including:

- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise and vibration;
- monitoring typical levels of noise and vibration during critical periods and at sensitive locations;
- all site access roads will be kept even so as to mitigate the potential for vibration from lorries.

It is recommended that vibration and noise from construction activities be limited to the values set out in Table 4.1 and 4.2. It should be noted that these limits are not absolute, but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage these limits may need to be reduced by up to 50%.

**Table 4.1 Allowable Vibration during Construction Phase**

Type of Structure	Frequency of Vibration		
	Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
Particularly sensitive / listed building	3 mm/s	3 to 8 mm/s	8 to 10 mm/s
Dwellings	5 mm/s	5 to 15 mm/s	15 to 20 mm/s

Light & flexible industrial / commercial	10 mm/s	10 to 30 mm/s	30 to 40 mm/s
Heavy and stiff buildings	20 mm/s	20 to 40 mm/s	40 to 50 mm/s

**Table 4.2 Maximum Permissible Noise Levels At the Facade of Dwellings during Construction**

Days and Times	Noise Levels (dB re. $2 \times 10^{-5}$ Pa)	
	$L_{Aeq(1hr)}$	$L_{Amax}$
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 16:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

Note \* Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

*Prior to commencement of any construction works on site, the applicant shall ensure that a Construction Methodology Plan and an Environmental Management Plan shall be drawn up for implementation on site. The Construction Methodology Plan shall provide, inter alia, for:*

- A. *The provision of three noise monitoring and vibration stations adjacent to the nearest noise sensitive receptors between chainages 0+000 and 1+000 and the provision of two additional noise monitoring and vibration stations between chainages 1+000 and 1+900.*
- B. *The provision of an appropriate acoustic barrier around any construction works site associated with the proposed development.*
- C. *The use of best available technology (BAT) to eliminate and control tonal and impulsive noise components and to reduce the noise impact to as low as is reasonably practicable.*
- D. *A limit on the duration of construction hours for noise generating works in proximity to dwellings.*
- E. *A schedule of enhanced mitigation measures to be taken in the potential event of noise monitoring and vibration levels exceeding the permissible levels set out in Table 7.4.4 and 7.4.6 of the (DPFPP) Environmental Impact Statement.*

#### 4.5 Air Quality

The key parameters in relation to air quality will be distance from the works to the sensitive receptors, the average traffic speeds and traffic levels due to construction. A dust minimisation plan will be formulated for the construction phase of the project, to ensure that all construction activities are minimised wherever possible.

#### 4.6 Hydrology and Hydrogeology

The impact of the proposed cycleway on the hydrology and hydraulics of the South Bull Lagoon is not expected to be significant.

The Naniken River crosses beneath the road and proposed cycle track (as it enters the inter-tidal lagoon south east of the Bull Island Causeway) and approximately 10 number surface water outfalls, which enter the lagoon via the existing sea wall. Only the Nanniken River culvert will be affected by the proposed works. The Office of Public Works (OPW) and DCC Drainage Department will be consulted on the repair

of the headwalls, the provision of a flap valve, the extension of the Nanniken stream culvert and Section 50 approval obtained.



**Photo 4.1 Collapsed section of wall at Naniken Stream culvert**

All surface water outfalls located along the alignment of the proposed flood defence scheme, which facilitate surface water sewer discharges to the South Lagoon at points in the existing sea wall, shall be upgraded by the provision of additional overflow manholes and/or other appropriate measures.

### **Hydrogeology**

The water-table behind the existing sea wall is relatively shallow and expected to be tidally controlled. Within the tidal mudflats of South Bull Lagoon, groundwater is tidally controlled.

Local groundwater vulnerability varies from high to low according to GSI surveys undertaken in this area. The bedrock aquifer is only moderately productive in local zones and no groundwater wells exist in the immediate vicinity of this proposed location.

A groundwater strike was recorded during drilling of a borehole along the eastern side of Clontarf Road at a depth of 2.3m bgl. Seasonal variations due to weather and tide could conspire to cause groundwater to be present at shallower depths.

## **4.7 Soils and Geology**

### **Potential Impacts**

During the construction phase of the development there is potential for densification of soil under temporary access roads by plant machinery. Damage to the existing

wall from vibrations during the pilling process and by other plant machinery could also ensue.

The new retaining wall will require excavation behind the existing wall and additional backfill.

Soft soils and sediments that exist in the lagoon could potentially be subjected to settlement processes as a result of drainage during construction. Construction works are planned to be carried out with the least feasible disturbance of soils. Contractors shall be required to submit and adhere to a Construction Method Statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

Other relevant construction mitigation measures identified in the NCAM EIS for the watermain include:

- Construction works are planned to be carried out with the least feasible disturbance of soils. Contractors shall be required to submit and adhere to a Construction Method Statement indicating the extent of areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.
- Where soil/made ground and subsoil stripping occurs the resulting excavated soil fractions will be segregated into material that can be disposed of in the appropriate manner in accordance with Waste Management legislation;
- Where possible the excavated inert spoil will not be stored beyond the working day, however in the event that this is not practical appropriate precautions in relation to the material will be taken.
- All material will be removed off-site for storage or disposal.
- For the importation of topsoil and backfill material, the material will be brought from as near a site as possible, in order to reduce transport distances.
- To minimise any impact on the underlying subsurface strata from material spillages, all fuels oils, solvents and paints used during construction will be stored within specially constructed dedicated temporary bunded areas or within bunded containers.
- Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place away from surface water gulleys or drains. Spill kits and hydrocarbon adsorbent packs will be stored in the site compound and operators will be fully trained in the use of this equipment.
- Fuel for vehicles will be stored in a mobile double skinned tank.
- All associated hazardous waste residuals will also be stored within temporary bunded storage areas prior to removal by an appropriate EPA approved waste management contractor for off-site treatment/recycling/disposal. Any other building waste will be disposed of to on-site skips for removal by a licensed waste management contractor.

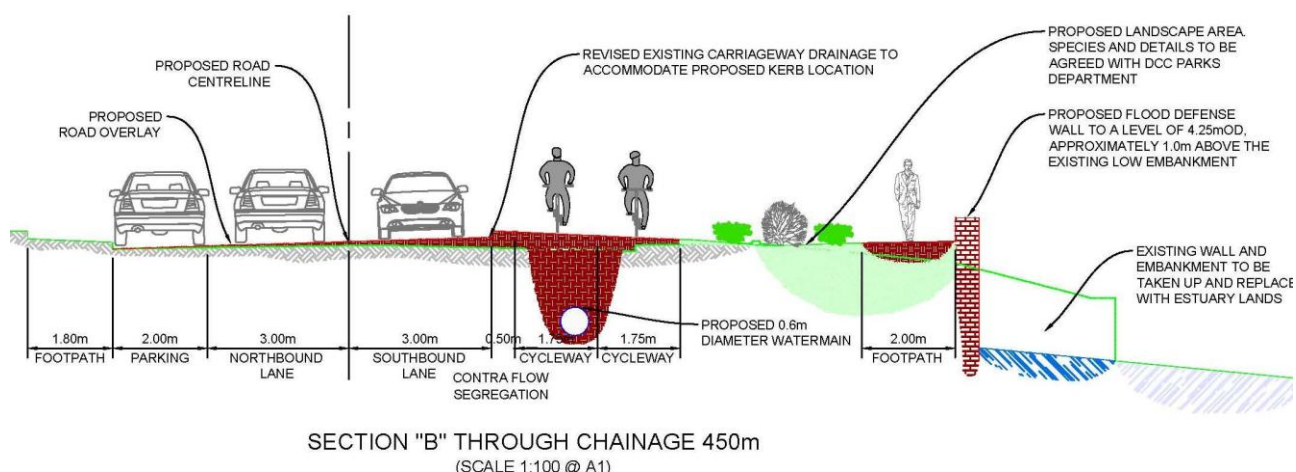
The contractor will be required to submit a C&D Waste Management Plan to Dublin City Council for approval which should address all types of material to be disposed of.

#### **4.8 Landscape and Visual Impact**

The scheme will have relatively low impact profiles from all strategic viewpoints. The most likely concerns are in relation to potential visual impacts of the flood defence wall. The flood defence wall will be provided to a level of 4.25m ODM. This is the same level as proposed in the Dollymount Promenade & Flood Protection Project approved by An Bord Pleanála. Along the majority of the scheme the existing sea

wall is at a level of approximately 4.0 metres ODM and will therefore only require an increase of up to 0.25 metres. In some locations however only a low wall exists outside of the footpath the new wall will need to be increased by up to a metre. This will however still only be slightly higher than the level of the footpath. See Photo 4.2 below and Drawings 1001 - 1004 in **Appendix A**.

Details on the proposed landscaping plan and the detailed design of the entrance to the Bull Island Nature Reserve at the Causeway Road will be agreed with DCC Parks Department to provide a more aesthetic entrance.



**Photo 4.2 Section showing most increase in flood defence wall**

#### 4.9 Archaeology and Cultural Heritage

The archaeological assessment found that the proposed development would potentially have a direct impact on eleven sites of cultural heritage.

The only archaeological site directly affected by the proposed development, Site A1, is listed in the Record of Monuments and Places. It is the site of a dwelling (“dower house”), armorial stone, watermill and millrace – most of which date to the 16th century. Its confines are directly affected by the proposed works, but the site of the monument itself is approximately 30 metres outside the footprint of the development.

The eight architectural sites directly affected by the proposed works are not listed for protection by Dublin City Council. Their cultural value is subjective – but the seawall, Site AH1, tram shelter, Site AH2, and street name plaque, Site AH6, should be fenced off and avoided where necessary during the construction phase of the development as agreed with the DCC Architect and Archaeologist.

Likewise, it is recommended that the indirectly affected listed Wooden Bridge, Site AH9, be fenced off (if relevant) and avoided during construction work.

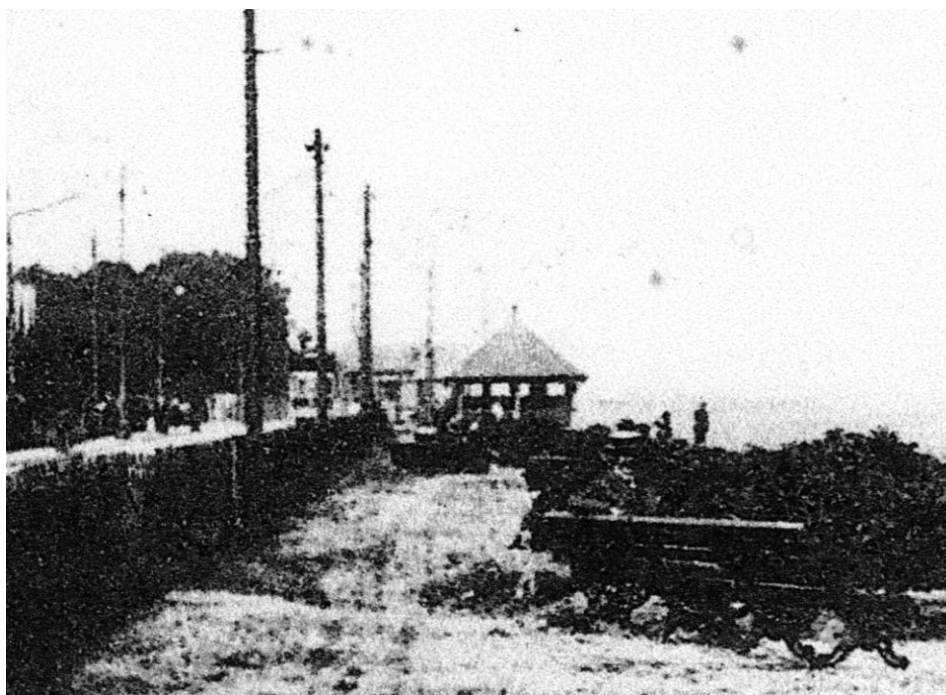
Prior to commencement of construction works, the applicant shall employ a suitably qualified archaeologist to monitor all works, including construction and reductive ground works associated with the proposed development as well as any reinforcement works proposed to be undertaken in respect of the existing sea wall. The archaeologist shall provide an on-going monitoring report to the applicant and the Department of the Environment, Community and Local Government as well as advice on foot of consultation with that Department on any mitigation measures deemed necessary as a result of the aforementioned works. The applicant shall, in consultation with the archaeologist, provide satisfactory arrangements for the

recording and removal of any archaeological material which may be excavated on site, where such is deemed necessary by the archaeologist.

Prior to commencement of development, and following consultation with the Department of Arts, Heritage and The Gaeltacht, a detailed design statement shall be drawn up by the developer in respect of the protection and preservation of historical artefacts, structures and other features of historical importance along the route of the scheme likely to be affected by the scheme.

#### 4.9.1 Tram Shelter

During the development of the Dollymount Promenade and Flood Protection Project it was decided that the existing tram shelter on Clontarf Road should be retained and improved to become a focal point of the scheme. It is thought to be the last remaining shelter from the old horse tramway from Dollymount to Nelsons Pillar which opened in 1873, see Photo 4.3 and 4.4 below. Although unlikely that much of the original building remains the design team on the advice of a resident expert on the old tramways (Mr. Michael Corcoran author of "*Through Streets Broad and Narrow: A History of Dublin Trams*") have proposed the tram shelter to become a central feature of the scheme. The road side part of the renovated tram shelter will be used as a new shelter for an adjacent bus stop as a bus shelter closer to the Wooden Bridge is to be removed.



**Photo 4.3 Early image of Tram Shelter showing the low wall is more recent construction (Date & Source unknown)**

The structure will be renovated in consultation with the DCC Architect and Archaeologist using materials which will attempt to restore the structure to its former condition prior to vandalism and disrepair. Prior to works commencing on the structure the existing tram shelter will be architecturally recorded. The exact function of this aspect has not yet been decided upon but will be undertaken following consultation with all relevant stakeholders including the residents and users.



**Photo 4.4 Tram Shelter at Dollymount**

#### **4.9.2 Tram Lines**

In the late 1800's a tramline used to operate along the road adjacent to Clontarf Promenade. The tram ran between Howth and the City Centre until 1949. Single tramlines are shown on the 1907 map along this stretch of the coast road. During site investigations remains of the Dublin to Howth tramlines were found along the centre of the road carriageway.

The route of the tramline will be avoided where possible. If it is uncovered, the line should be recorded. A representative section, including the rectangular cut stone blocks which made up the former road surface, should be retained for future display in a relevant location.

### **5.0 Construction Stage**

#### **5.1 Introduction**

The construction period to complete the proposed works is expected to be between 9 and 12 months.

The following sections highlight the significant factors to be addressed during construction.

#### **5.2 Construction Sequence**

Due to the seasonal constraints necessary to undertake construction works in the South Bull Lagoon, the Contactor will be provided with restricted periods within which he may undertake certain works.

##### **Seawall Repair and construction**

Seawall repair and construction works at chainage 0+275 to 0+600 will largely be undertaken from the lagoon. Due to the sensitivity of working within the lagoon, while the overwintering birds are present, the construction period for such work is restricted



to the period March to September. As much of the heavy construction work as is feasible will be carried out during the main summer season (May to July inclusive) when the least number of birds are present so as to minimise potential disturbance.

### **Cycle Track, Watermain and Road Works**

A Detailed Traffic Management Plan, prepared by the Contractor, will need to be agreed with Dublin City Council. It is expected that as the Contractor completes sections of the watermain they will also undertake elements of the cycle track construction and some surfacing works. This will minimise the amount of construction works needed for completing the cycle track and as such the road surfacing and cycle track construction can be completed in a short timescale. These works will all be undertaken out of the lagoon and would therefore not be intrusive in terms of impacts on the overwintering birds.

On this assumption that all heavy construction works will be completed during the summer months, then the on road construction of laying the watermain, road surfacing and general cycletrack works could be undertaken outside of the main summer season. This will require implementation of appropriate mitigation measures such as visual screening and monitoring bird response.

## **5.3 Traffic Management**

The contractor will be required to prepare a Traffic Management Plan that maximises the safety of the workforce and the public and minimises traffic delays, disruption and maintain access to residences and businesses, and must meet the approval of the DCC's Traffic Management Division. The Traffic Management Plan will also address temporary disruption to traffic signals, footpath access and the management of pedestrian crossing points. The contractor shall maintain a signed alternative route via the R105 Howth Road, supplemented by an appropriate information campaign for the duration of the construction works.

The contractor will be required to prepare a Traffic Management Plan that maximises the safety of the workforce and the public and minimises traffic delays, disruption and maintain access to residences and businesses, and must meet the approval of the DCC's Traffic Management Division. The Traffic Management Plan will also address temporary disruption to traffic signals, footpath access and the management of pedestrian crossing points. The following restrictions will be adhered to in the Traffic Management Plan unless agreed otherwise with DCC's Traffic Management Division:

- The contractor shall maintain a signed alternative route via the R105 Howth Road, supplemented by an appropriate information campaign for the duration of the construction works.
- It should be possible to maintain two-way traffic during construction for the majority of the works however where space is restricted, in particular on Clontarf Road between Dollymount Avenue and Mount Prospect Avenue chainage 600 – 1,025, a one-way shuttle arrangement may be required to allow sufficient space for pipe laying and sea wall repairs. Areas where space is restrictive and one-way shuttle arrangements are necessary shall be carried out in working sections of 150-250m maximum lengths to minimise traffic disruption. Only two working sections will be allowed at one time and the minimum distance between the two working sections shall be 500m.
- The working section shall be secured with 2.2m high "Block n Mesh" type fencing made of removable panels. The fencing shall be kept in place until the

works within the working section are complete and the Contractor is ready to move to a different working section.

- During the pipe laying operations the existing footpath on the seaward side of the road within working section shall be closed.
- The Contractor shall ensure that vehicles exiting the properties fronting the works area can see the traffic lights at each end of the one-way shuttle sections.
- The Contractor shall provide and maintain a minimum carriageway width and lateral/longitudinal safety zone as per the DOT *Traffic Signs Manual*.
- The Contractor shall ensure that a high level of lighting is provided on the fencing at night.
- During the working hours the Contractor shall provide manual actuated electric traffic control light signals controlled by operatives at either end of the working area and such traffic signs as may be required for the control of one way (shuttle) traffic. The operatives at either end of the site should have a direct line of sight to each other and should be visible from all side roads and property entrances. The operatives shall be provided with two-way radios to enable instructions and messages to be communicated to each end of the site. At junctions the Contractor shall provide additional manual actuated electric traffic control light signals controlled by an operative. The contractor shall keep all junctions open to traffic.
- At all side streets and property entrances where vehicles will be joining the traffic under one-way shuttle operation the Contractor shall provide adequate signage and operatives to advise traffic of the altered traffic conditions. Where necessary the Contractor shall shorten the length of the working area to ensure the safe flow of traffic.
- At the end of working hours the Contractor shall provide temporary fixed time electric traffic control light signals at each end of the working section. In addition the contractor shall provide an operative who will provide assistance to vehicles entering and exiting the properties fronting the road and also deal with any emergencies.
- The Contractor shall be cognisant of the location of the bus stops along the pipeline route and liaise with Dublin Bus at least one month in advance to provide adequate signage at the working sections affecting the bus stops.

#### 5.4 Construction Impacts

Prior to commencement of any construction works on site, the applicant shall ensure that a Construction Methodology Plan and an Environmental Management Plan shall be drawn up for implementation on site. The Construction Methodology Plan shall provide, inter alia, for:

- a) The provision of three noise monitoring and vibration stations adjacent to the nearest noise sensitive receptors between chainages 0+000 and 1+000 and the provision of two additional noise monitoring and vibration stations between chainages 1+000 and 1+900.
- b) The provision of an appropriate acoustic barrier around
- c) The use of best available technology (BAT) to eliminate and control tonal and impulsive noise components and to reduce the noise impact to as low as is reasonably practicable.
- d) A limit on the duration of construction hours for noise generating works in proximity to dwellings.
- e) A schedule of enhanced mitigation measures to be taken in the potential event of noise monitoring and vibration levels exceeding the permissible

levels set out in Table 7.4.4 and 7.4.6 of the DPFPP Environmental Impact Statement.

An environmental monitoring and liaison committee shall be established by the applicant for the construction period; membership shall be restricted to four persons plus an independent Chairperson. The committee shall comprise representation from:

- Dublin City Council
- The local community which borders the project
- Ecological groups with a specialist interest in the area
- National Parks and Wildlife Service (NPWS)
- Office of Public Works.

## 6.0 Conclusion

The proposed S2S Cycleway & Footway Interim Works: Bull Road to Causeway Road is comprised of elements of two projects, the Dollymount Promenade & Flood Protection Project (DPFPP) and the North City Arterial Watermain, both of which have planning approval from An Bord Pleanála. Both projects were also separately assessed in terms of the EU Habitats Directive and were concluded to have no significant effects on the Natura 2000 Sites.

In order to ensure the public are adequately consulted on the S2S Cycleway & Footway Interim Works: Bull Road to Causeway Road, this Part VIII Report and Application are being submitted and a (Habitats Directive Assessment) Screening Report has been undertaken.

Environmental issues have been identified and appropriate mitigation measures proposed to protect the environment during the construction of the proposed scheme. A Screening Report (Habitats Directive Assessment) has concluded that the scheme will have no significant effects on the Natura 2000 Sites.

It is the recommendation to the City Council to proceed with the scheme as proposed.

## **APPENDIX A Drawings**



## **APPENDIX B**

### **Habitats Directive Assessment Screening Report**