St. Marnock's II DAC and Clear Real Estate Investments plc

Portmarnock South

Foreshore Licence Application

Engineering Report

JANUARY 2018

BARRY & PARTNERS
consulting engineers

CIVIL • STRUCTURAL • ENVIRONMENTAL • TRANSPORTATION

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SECTION 1: INTRODUCTION

1.1 St. Marnock's II DAC and Clear Real Estate Investments plc are applying for a Foreshore Licence to the Department of Housing, Planning and Local Government to install a storm water outfall into Baldoyle Estuary to facilitate a residential development on the Portmarnock South Local Area Plan lands in the townlands of Maynetown and Portmarnock, Co Dublin. The residential development will ultimately consist of c. 1200 residential units, a Local Centre and associated roads, footpaths, private driveways, landscaping, site services, SuDS measures including a regional wetland and sundry related works. This report has been prepared in support of the application to the Department of Housing, Planning and Local Government.

1.2 The proposed storm water outfall is located in Baldoyle Estuary approximately 125m south east of Portmarnock Bridge on lands currently owned by Helsingor Limited (in Receivership). The lands are in the process of being transferred to Fingal County Council. ITM coordinates for the location are E723553 N742383.

1.3 A planning permission for Phase 1A (101 houses) of the Portmarnock South LAP lands was obtained from An Bord Pleanala in July 2014 and construction is now nearing completion. The storm water outfall from this phase is through an existing Fingal County Council storm water network located in Station Road. A planning application for Phase 1B (150 houses) was made to An Bord Pleanala in accordance with the Strategic Housing Development regulations on the 20th of December 2017 (Ref. No. ABP-300514-17). To comply with the requirements of the Portmarnock South LAP, this phase requires the construction of a regional wetland, which provides attenuation, and a new storm water outfall to Baldoyle Estuary which will cater for the entire Portmarnock South LAP lands with the exception of a small area along Station Road.

SECTION 2: DESCRIPTION OF THE WORKS

2.1 The proposed storm outfall works are as follows:

- Installation of a 525mm outfall storm sewer complete with a Tideflex non-return valve.
- Excavation for and construction of a concrete base slab and wing walls, total area 33m2. A 14m2 section of the concrete base and wing walls is below the High Water Mark which therefore requires a Foreshore Licence.
- Reinstatement of the disturbed land and foreshore.

2.2 Details of the proposed regional wetland and storm water outfall are shown on drawings Y17205-C-202 Rev.G and Y17205-C-204 Rev. H respectively. Both of these drawings accompany this application.

SECTION 3: SURFACE WATER DESIGN

3.1 The storm water system for the entire Portmarnock South LAP lands is divided into two catchments namely:

- Catchment No 1(c. 37.55ha as shown in Figure 1 below).
- Catchment No 2 (c. 1.55ha along Station Road as shown in Figure 1).

3.2 Catchment No 1 drains to the Baldoyle Estuary via a proposed regional wetland and new storm water outfall. The storm water network for Catchment No 1 (shown on drawing Y17205-C-209 Rev. A) has been designed to cater for the existing Phase 1A, the proposed Phase 1B and all future phases of the entire development with the exception of Catchment No 2 (which outfalls to the existing Fingal County Council storm sewer network in Station Road). The regional wetland will provide attenuation for Catchment 1 with outflows restricted for the 1year, 30year and 100year critical storm events. The Q 1OO year outflow has been estimated at 200l/sec in accordance with the Greater Dublin Strategic Drainage Study. A flow control device will be installed on the outfall from the wetland limiting the outflow to 200l/sec. The network has been modelled using the Micro Drainage Suite of Programmes with attenuated outflows as noted above from the wetland for the conditions noted below:

FIGURE 1

Critical Storm Event	Discharge Conditions
1:1 years	free discharge
1:1 years	+3.70mOD tide level*
1:30 years	free discharge
1: 30 years	+3.70mOD tide level*
1:100 years	free discharge
1:100 years	+3.70mOD tide level*

+3.70mOD tide level* based on the 0.5% AEP (200 year return period) from FEM FRAMS of +3.2mOD plus recommended future OPW climate change of 500mm rise in sea level for the Mid-Range Future Scenario.

The modelling demonstrates the following:

- The system, for the 1:1year critical storm event, operates as an open channel under free discharge conditions, with some minor surcharging without flooding under the +3.70mOD tidal condition.
- The system, for the 1:30year critical storm event surcharges for both conditions but without flooding.
- The system, for the 1:100year critical storm event surcharges for both conditions but without flooding.

The results as outlined above are considered acceptable Engineering Practice for surface water design.
The detailed analysis/results for the modelling are contained in Appendix 1 and are summarised in Table 1 below.

Critical Storm	Discharge Conditions	TWL in Wetland	Pipe Flow (l/s)	Velocity (m/s)
1 Year	Free Discharge	+3.19mOD	130.20	0.60
1 Year	+3.70 Tide Level	+3.19mOD	164.70	0.76
30 Year	Free Discharge	+3.56mOD	169.50	0.78
30 Year	+3.70 Tide Level	+3.80mOD	199.10	0.92
100 Year	Free Discharge	+3.69mOD	182.90	0.85
100 Year	+3.70 Tide Level	+4.03mOD	207.60	0.96

TABLE 1

The above summary is based on the size of the regional wetland shown on drawing Y17205-C-202.

3.3 A 525mm diameter pipe will outfall from the wetland to Baldoyle Estuary. The outfall will require the construction of a concrete base and wing walls outfall structure and the installation of a Tideflex non-return valve at the outfall point to the Estuary. The geometry of the outfall structure has been designed to be outside the Annex 1 Habitat area of Baldoyle Estuary.

3.4 An assessment of the potential scouring of the existing channel in the estuary has been carried out by the Coastal Engineering Department of RPS Consulting Engineers. This assessment is based upon the outfall details shown on J B Barry and Partners Ltd's drawing Y17205-C-204 Rev.H. The RPS report is contained in Appendix 2. The report concludes that the proposed storm water outfall will have no significant impact on the hydraulic or sediment regime of Baldoyle Estuary.

3.5 SUDS devices that are being employed in the proposed residential development include water butts, soakaways, permeable paving, bioretention areas, filter strips, swales, silt traps, hydrocarbon interceptors, detention basin and a regional wetland. The storm water runoff from the proposed development will pass through a minimum of 3 SUDS devices. This treatment train approach will ensure compliance with the requirements of Volume 2, New Development, of the Greater Dublin Strategic Drainage Study (GDSDS) and the Portmarnock South LAP.

SECTION 4: ACCOMPANYING REPORTS

4.1 A Natura Impact Statement prepared by Brady Shipman Martin accompanies this report. The NIS includes a specialist report on Marine and Coastal Habitats prepared by John Brophy (who carried out the original study in 2005) and Fionnuala O'Neill of BEC Consultants. This concludes that no

Annex 1 habitat will be lost or disturbed due to the construction and operation of the proposed outfall. In addition, there will be no significant impact on the mudflat or saltmarsh habitats of Baldoyle Estuary due to changes in flow from the proposed development.

The NIS concludes that, as no works are proposed within any area of the Annex I habitat, it will not be necessary to reinstate any saltmarsh or mudflat habitat. It is, however, intended to reinstate any areas disturbed during the construction of the outfall within the Baldoyle Bay SAC/SPA boundary. The area that will be disturbed is not part of the Qualifying Interests/Scientific Conservation Interests of the SAC/SPA.

Soil removed as part of the construction works will be stored on site, in an appropriate manner, adjacent to the works area. On completion of the works the construction area will be regraded using the retained soil. No imported seed will be utilised – the reinstatement will rely on natural vegetative means and regeneration from the existing seed bank.

The reinstated area will be monitored for a period of one year post-construction to ensure success and to ensure that no non-native/invasive species become established.

4.2 An archaeological assessment of the vicinity of the proposed storm water outfall is contained in Sections 7 and 8.4 of an Archaeological Report prepared by Courtney Deery Heritage Consultancy and which accompanies this report as a separate document. The report concludes that prior to the commencement of construction works, all excavation/exploratory work within the area will be archaeologically supervised or investigated as deemed necessary by the National Monuments Section of the DCHG. If any features are revealed, it is proposed to record them as required by excavation, a photographic and scaled survey will be undertaken and a written description prepared prior to their removal. It is proposed that investigation/supervision works can take place in a coordinated manner with other disciplines in order to minimise disturbance and disruption to the estuary.

SECTION 5: CONSTRUCTION METHOD STATEMENT

5.1 Construction Compound

- The construction compound will be located to the west of Coast Road/Strand Road adjacent to the works on land controlled by the Applicant. The construction compound will contain site huts, welfare facilities and material storage areas including bunded areas for storage of oil and lubricants.

5.2 Method & Sequence

- Fence off construction site where practical and install traffic management system.

- Under the supervision of a licensed archaeologist excavate for the base and wing walls of the storm outfall and the trench for the 525mm diameter outfall pipe. Working space to be kept to a minimum. Excavated material to be stored within land controlled by the Applicant adjacent to the works west of Coast / Strand Road.

- Install the outfall pipe. It is envisaged that the outfall pipe will be installed in open cut across Coast Road as the road contains a foul rising main and it would not be practical to employ trenchless techniques. Excavated material will be stored as above. This material will be used to backfill the pipe to the original ground level. Surplus excavated material will be disposed of offsite under license.

- Construct the outfall concrete base slab and wing walls.
- Restore foreshore as far as practical to its original condition.

5.3 Mitigation Measures

- Works compound located away from foreshore.
- Only use well maintained plant and machinery.
- Fuelling of plant will be done from within bunded areas. Drip trays to be used.
- Oil spill kits to be provided and the knowledge of how to use them.
- Area of construction to be kept to a minimum.
- Minimise disturbance of adjacent habitats.
- Employ biosecurity measures to prevent the spread of invasive species.
- Construction to be carried out at low water.
- Pumped groundwater to be discharged through settling tanks.

SECTION 6: RELEVANT DRAWINGS

6.1

Drawing No	**Title**
Y17205-C-201 Rev. G	Proposed Storm Sewers Layout – Phase 1B
Y17205-C-202 Rev. G	Proposed Regional Wetland - Plan & Sections
Y17205-C-204 Rev. H	Storm Water Outfall Details
Y17205-C-205 Rev. D	Storm Water Outfall Location Plans
Y17205-C-209 Rev. A	Storm Sewer Network – Portmarnock South LAP
Y17205-C-401 Rev. A	British Admiralty Map
Y17205-C-402 Rev. A	Foreshore Licence/Lease Map

Appendix 1

Surface Water Calculations

Appendix 2

RPS

Estuary Bed Scour Study