

Dublin City Council

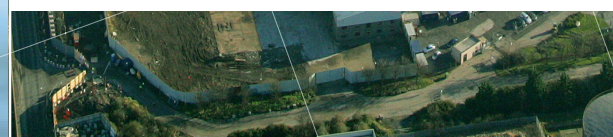
Ringsend Wastewater Treatment Works Extension Environmental Impact Statement

Non Technical
Summary

March 2012
Final



CDM  **BARRY
& PARTNERS**





Non-Technical Summary

As part of the Dublin Bay Project, the Ringsend Wastewater Treatment Works (WwTW), outlined in Figure 1, was planned to be constructed in phases. The first phase, commissioned in 2003 provided facilities to cater to a population equivalent (PE) of 1.64 million people. Today, the current average influent loading to the WwTW is approximately 1.8 million PE, which means the Plant, although still performing well, is operating over its design capacity and requires an extension.



Figure 1 Aerial View of Ringsend WwTW

This phase of the Dublin Bay Project will extend the Ringsend WwTW to meet current demand and help to address future development needs within the region, as envisaged in the Greater Dublin Strategic Drainage Study (GDSDS). However, the extension is physically limited to within the boundaries of the existing site and thus the extended capacity will also be limited. To help overcome this limitation, a second Regional plant is being planned by Fingal County Council. The two wastewater treatment plants are inextricably linked under the GDSDS and in the future, some of the loadings received at Ringsend will be diverted to the new Regional plant, thereby helping to extend the life of the Ringsend WwTW well into the future.

This phase of the Dublin Bay Project will provide for a firm capacity of 2.1 million PE on an average daily basis. The term “firm” is used in the context of a scenario in which processing is occurring with the largest single unit out of service. It is intended to ensure that there is sufficient processing capacity to meet all discharge limits at a 95th percentile compliance frequency. In the case of the Ringsend WwTW, the largest process units affecting capacity are the sequencing batch reactors (SBRs). In order to achieve this firm capacity of 2.1

million PE the design basis for the plant requires that the plant is designed to provide an ultimate design capacity of 2.4 million PE. In summary, this proposed extension allows for the extended works to be robust, reliable and provide adequate capacity even if one of the plant SBRs is temporarily out of service.

Since the Liffey Estuary has been designated as Nutrient Sensitive Waters under the EU Urban Waste Water Treatment Directive (UWWTD), nutrient removal is required to achieve the standard of 10 mg/litre Total Nitrogen and 1 mg/litre Total Phosphorus, in addition to normal secondary treatment standards, for continued discharge at the existing outfall into the Liffey Estuary. The WwTW, as currently configured, has limited ability to remove those nutrients. With open space on site extremely limited and with no ability to expand the WwTW's boundaries, it is most unlikely that compliance with the Directive's Total Nitrogen limit could be accomplished with conventional wastewater treatment processes. Other non-conventional processes which could meet the discharge standard are energy intensive and would impose 45% to 80% additional power consumption upon the proposed scheme. They would also add complexity to the operation and maintenance of the WwTW. In addition, compliance with the Total Phosphorus limit would require large quantities of chemicals to be applied, with resultant increases in sludge production of approximately 3,000 to 14,000 dry tonnes per year (approximately 10% to 30% increase), depending upon the process selected.

Designation of the Liffey Estuary as Nutrient Sensitive Waters has prompted consideration of the option of moving the outfall location to a point outside the Nutrient Sensitive Waters designation, where nutrient release is permitted (Figure 2). Under this scenario, the existing treatment process would be operated in a slightly different mode than they currently are and some facilities would be added to further improve the quality of existing treated water. Energy consumption would decrease from current usage levels. No additional chemicals would be required and sludge production would only increase in general proportion to the increase in influent loadings. This option is considered to be simpler, more reliable, more sustainable, and have a smaller carbon footprint than the non-conventional processes. It is also the least costly option as the operational costs are low, resulting in a lower present worth cost over the design life of the project.

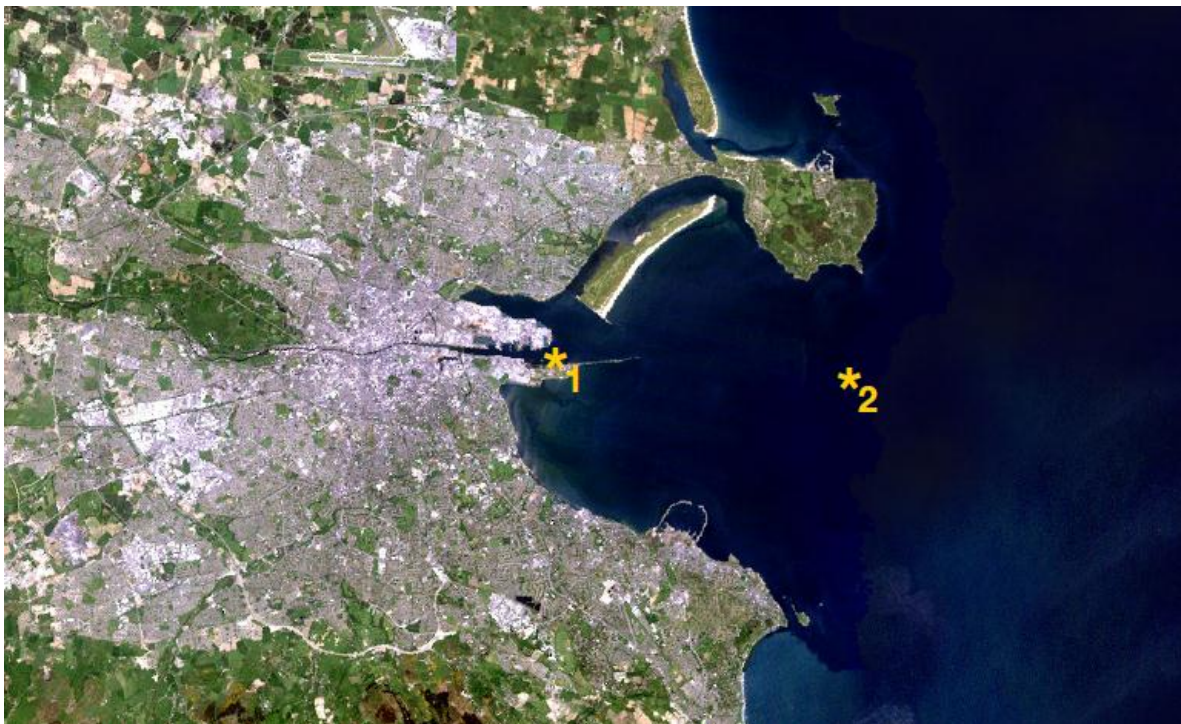


Figure 2 Existing and Proposed Outfall Locations (Points 1 and 2, respectively)



Figure 3 Ringsend WwTW and Tunnel Compound Site Locations (red) and open 0.8 ha space for construction (yellow rectangle)

The proposed project involves the following elements:

- Upgrades on the existing WwTW site;
- Transfer of discharge location to Dublin Bay through the provision of a 9 kilometre long sea outfall ; and
- Road network improvements in immediate vicinity of site (construction phase).

As stated, there will be some onsite upgrades to the WwTW at the current site: the existing treatment process will be operated in slightly different mode and some facilities would be added to further improve the quality of existing treated water within the current site footprint. Additional secondary treatment capacity of 0.4 million PE is proposed to be constructed on a 0.8 hectare open space within the site which was left specifically for future expansion under the original Dublin Bay contract. No element of the proposed extension will be higher than the existing plant structures.

The tunnel inlet shaft will be located on the tunnel site compound, as shown in Figure 3 with the proposed discharge point as shown on Figure 2, Point 2.

It is anticipated that the construction works will commence in 2013 and are expected to last for 3 years, with all works completed by 2016.

The proposed project conforms to the policies and objectives for Dublin City as set out in the Dublin City Development Plan 2011-2017 and the GSDS. The WwTW extension will contribute to the fulfilment of Dublin City Council's obligations under the Urban Wastewater Treatment (UWWT) Directive and the Water Framework Directive. The proposed project will also result in Ringsend WwTW being compliant with the terms of the Waste Water Discharge Licence (Licence Number D0034-01).

The proposed extension of the Ringsend WwTW is predicted to have no significant negative impacts on the local area and economy. The extension of the treatment plant will provide a significant

positive impact on the regional economy during the operational phase of the development, by improving the public utilities infrastructure and generating additional treatment capacity for commercial, industrial and residential customers.

Extensive water quality modelling of the existing discharge situation and the proposed long sea outfall discharge was carried out. The proposed discharge will be located almost 9 kilometres out to sea in a deep underwater area (more than 20 metres depth) with more suitable dispersion characteristics and at a greater distance from amenity and protected areas. There will be a positive benefit to the Liffey and Tolka Estuaries and Dublin Bay due to improved water quality and compliance with the UWWT Regulations, the Environmental Objectives (Surface Waters) Regulations 2009 (SI 272 of 2009) and the Water Framework Directive. There will be no negative impact to the water quality of Dublin Bay at the long sea outfall discharge point. The modelling results have demonstrated that the treated water will disperse to within acceptable concentration limits outside the immediate mixing zone and will not impact negatively upon any designated sites, recreational areas or beaches in Dublin Bay or the eastern coastal area.

There are a number of protected areas within Dublin Bay and the surrounding areas which form part of the Natura 2000 network. These areas required assessment in terms of their conservation objectives and site integrity as part of the ecological assessment. The discharge point will be outside these protected areas and will not impact upon them.

In terms of potential impacts on marine ecology during construction, possible temporary negative impacts on marine mammals could occur. Noise levels from the drilling operation may result in some sensitive species of marine mammals moving away from the immediate area during the drilling of the diffuser shaft. This impact will be short-term and temporary and will not cause any harm to the mammals. No impact is expected on the planktonic community, benthic (seabed) ecology or fisheries during construction.

During the operational phase there will be little or no impact on the water column or benthic production. *E. coli*, while it does act as a food source for microplankton, will not have a negative impact due to the relatively small aerial extent of the bacterial numbers. No significant negative change in intertidal benthic secondary production is predicted. An improvement in benthic sedimentary conditions and an associated increase in macrobenthic diversity may occur inside parts of inner Dublin Bay including the Bull Lagoon. Given the increase in nutrients at the offshore disposal site, phytoplankton within the zone will benefit from this increase and be more productive. As algal blooms are not known to occur at present in the Liffey Estuary, they will not occur in the offshore site. No negative impacts are predicted to occur during the operational phase of this project on marine mammals. Due to extremely small scale of the foot print on the seabed, impact on commercial fisheries is considered to be negligible.

In terms of terrestrial ecology, the only possible impact of the construction phase of the proposed development at Ringsend WwTW would be indirect disturbance from construction workers to Brent Geese and other waterbirds using the compensatory grassland, immediately to the south of the WwTW. To mitigate against such disturbance, solid screening will be erected prior to construction to reduce or eliminate any visual disturbance. Since these waterbirds are habituated to traffic and machinery noise within Dublin Port and on the Tolka Estuary, they should not be disturbed by construction noise on the site of the proposed development.

In terms of the operational impact, in particular, the potential for reduced nutrient discharges to impact waterbird populations was assessed. The present discharge is treated to secondary level so that there is no significant discharge of particulate organic matter, which could affect feeding for gulls in Dublin Bay. Changes in waterbird populations are caused by a large number of variable factors and the interactions between these factors. Whilst it is not possible to demonstrate a simple cause-effect

relationship with one of these factors in isolation, previous research studies and surveys have not confirmed any significant relationship between the removal of a wastewater treatment discharge point and /or improved process treatment and the change in waterbird populations in the area. Similarly, there is no proven link between treated water discharge from Ringsend WwTW and waterbird population trends. This is further complicated by other major sources of nutrients entering Dublin Bay, such as from the River Liffey and River Tolka.

In addition, some of the important prey species (such as the lugworm *Arenicola marina* and the Baltic tellin *Macoma balthica*) of the waders that occur in internationally important numbers here, are sensitive to over-enrichment of the sediment; the populations of these species would be expected to benefit from reduction in nutrient discharges to the intertidal areas of Dublin Bay. Improved water quality is also likely to lead to higher diversity of macroinvertebrates in the sediment which should be of benefit to waterbird populations in the long term. Hence, it is concluded that proposed changes in the transfer of treated water from the present outfall at Ringsend to a long-sea outfall will have no significant effect on waterbirds in Dublin Bay and therefore the residual impact will be neutral.

The proposed development, when completed, will form part of a general pattern of utilities and industrial activities associated with the port and, as such, will not give rise to any significant impact on the character and visual environment of the peninsula or the overall bay area. Photomontages were prepared for the EIS and examples of two of these from high amenity areas are presented in Figures 4 and 5 below.



Figure 4 Proposed Extension as seen from Sandymount (red outline represents proposed development which will remain hidden behind the hillock to the left of the chimneys)



Figure 5 Construction Phase as seen from the South Bull Wall (tower cranes to the far left of the chimneys may be visible)

The construction of the tunnel will give rise to some local impacts and pedestrian access will be affected for the duration of its construction, but pedestrian access to the Great South Wall will be maintained throughout construction.

A traffic survey and traffic modelling was carried out to assess potential impacts of the proposed project. It was established that construction on the WwTW site and tunnel site is anticipated to generate a maximum of 38 heavy goods vehicles (HGV) trips per hour. Of these approximately 27 will be generated by the tunnel works. This equates to approximately 1 HGV movement every 2 minutes on the Pigeon House Road where the coastal walking route between Sandymount and the Great South Wall is coincident with the HGV haul route. Annual average daily traffic totals are shown in Figure 6, overleaf. During the construction phase, pedestrian road safety barriers will be erected between the path and roadway where the coastal walking route from Sandymount to the Bull Wall is coincident with the HGV haul route. Following completion of construction and reinstatement there will be no residual impacts on pedestrian activity in the area.

A traffic management plan will be drafted in full consultation with Dublin City Council, An Garda Síochána, the Fire Service and the Ambulance Service. No construction traffic will be permitted during peak traffic periods (7 am to 10 am and 4 pm to 7 pm) and all construction traffic will be required to use the port tunnel to minimise impacts on the city road network. During construction, pedestrian road safety barriers will be erected between the path and roadway where the coastal walking route from Sandymount to the Bull Wall is coincident with the HGV haul route, as previously mentioned. A formal uncontrolled pedestrian crossing will also be provided at this location.

The Ringsend WwTW has had a history of odour problems dating back to before 2005. Dublin City Council (DCC), over the course of three years, implemented a number of permanent odour control improvements that reduced odorous emissions by 75 %. These physical improvements, coupled with an enhanced operations focus that includes a full-time odour control specialist, have reduced the frequency and intensity of off-site odour events. The Ringsend WwTW Extension affords DCC the opportunity to make the further improvements.

