



# A9 - Broadmeadow Way Proposed Greenway Between Malahide Demesne and Newbridge Demesne

## DAU Submission – Response



on behalf of  
**Fingal County Council**

**November 2019**

## 1.0 Introduction

This document responds to the submission made by the DAU on behalf of the NPWS in connection with the proposed Broadmeadow Way Greenway. This response considers:

- (1) Significance of Impacts on Special Conservation Interest (SCI) Bird Species;
- (2) Disturbance Impacts – Bird Species;
- (3) Visual Screen;
- (4) North Shore Habitat, Viewing Areas and Dog Control;
- (5) Cumulative/In-combination Impacts; and
- (6) Monitoring.

## 2.0 Significance of Impacts on Special Conservation Interest (SCI) Bird Species

In the NIS the extensive bird surveys and desktop data sources that underpin the assessment are detailed. The analysis of existing bird data was used to describe the SCI species that regularly occur within several hundred metres of the crossing of the Inner Estuary. As outlined in Section 5.4.50 of the NIS:

*“Several of the key conservation interests of the SPA do not regularly occur within 500m of the embankment. This would include Pintail, Golden Plover, Grey Plover, Knot, Dunlin, Godwit species and Redshank. Some of these species occur in areas adjacent to the weir and close-by in the outer estuary. Goldeneye are infrequently recorded close to the railway embankment, preferring the central portion of the inner estuary. Diving waterbirds including qualifying interests of Malahide Estuary SPA, Red Breasted Merganser and Great Crested Grebe, do regularly occur within a few hundred metres of the embankment. These birds actively feed in this area during the overwintering period.”*

Counts of birds occurring in proximity to the railway embankment were recorded over several winters. More recently, between 2017-2018 the location of birds within this zone (‘A’ north shore, ‘B’ central area, ‘C’ south shore) was also recorded (Figure 1 below). The analysis has been revisited to present species by species information on the percentage of the local population that has been recorded within 500m of the embankment.

### 2.1 Species Accounts

The conservation objectives of Malahide Estuary SPA were published in August 2013. The special conservation interests for Malahide Estuary SPA are:

- A005 Great Crested Grebe (*Podiceps cristatus*).
- A046 Brent Goose (*Branta bernicla hrota*).
- A048 Shelduck (*Tadorna tadorna*).
- A054 Pintail (*Anas acuta*).
- A067 Goldeneye (*Bucephala clangula*).
- A069 Red-breasted (Merganser *Mergus serrator*).
- A130 Oystercatcher (*Haematopus ostralegus*).
- A140 Golden Plover (*Pluvialis apricaria*).
- A141 Grey Plover (*Pluvialis squatarola*).
- A143 Knot (*Calidris canutus*).
- A149 Dunlin (*Calidris alpina alpina*).
- A156 Black-tailed Godwit (*Limosa limosa*).
- A157 Bar-tailed Godwit (*Limosa lapponica*).
- A162 Redshank (*Tringa totanus*).
- A999 Wetlands.



Figure 1. Coverage at Broadmeadow Estuary, illustrating the two main count sections (inner and outer), the vantage points used (blue = low-tide surveys only), the three distance bands on the inner estuary (100m, 300m, 500m), and the divisions from north (A) to south (C).

In this analysis three winter seasons of data (2012-2013, 2013-2014 & 2017-2018) are re-examined to present species by species information on the numbers of each SCI species occurring within 500m of the proposed Greenway crossing of the Inner Estuary. The range and median of each SCI species within this zone is presented. The peak count of each SCI species recorded in each winter period is presented as a percentage of the peak count of that species in (a) the Inner Estuary (b) in the Inner & Outer Estuary combines (c) the SPA reported population.

Table 3.1 (at end of response) presents the results of the SCI analysis for the winter of 2012-2013, Table 3.2 (at end of response) shows the same analysis for the following winter and Table 3.3 (at end of response) shows the analysis for the 2017-2018 period.

There are several of the SCI species that were not recorded within 500m of the embankment in any of the three winter periods. No Shelduck, Pintail, Golden Plover, Grey Plover, Knot and Bar-tailed Godwit were recorded in this area. In addition, no Black-tailed Godwit were present within 500m in the winter of 2012-2013, and no Dunlin were recorded within 500m of the embankment in the winter of 2013-2014. It is clear that for many of the SCI species the areas within 500m of the embankment are unattractive. That is not surprising given that there is no exposed intertidal areas in the zone and that is further reflected by the species that regularly occur in this area (diving ducks).

**Great Crested Grebe** is a diving duck species. The SPA population is recorded as 64 no. wintering individuals. The median numbers of Great Crested Grebes within 500m of the embankment across the three survey winters were 19, 19.5 & 23 (2012-2013, 2013-2014 & 2017-2018 respectively). The peak counts of the species recorded in the 500m zone were 19, 20 & 27 respectively representing 29-42% of the SPA population. The average percentage of the Great Crested Grebes in the Inner Estuary recorded within 500m of the embankment was similar in 2013-2014 (38.7%) and 2017-2018 (39%). This confirms that a significant proportion of the SPA population of this SCI species is typically recorded within 500m of the embankment. Field notes confirmed that the species was observed actively foraging in this area.

**Light-bellied Brent Goose** is one of the most abundant wintering birds recorded in Malahide Estuary. They are recorded widely, both in the Inner and Outer Estuary, as well on agricultural lands and amenity grassland around the coast. Median counts from the three winter surveys confirm that several hundred Brent Geese are typically recorded in the Inner Estuary (212-428). Median Counts recorded within 500m of the embankment are much lower (1, 9 & 22 respectively) with many count occasions with no Brent Geese present in this area. Peak Counts of Brent Geese recorded in this area across 2012-2013 (36) and 2013-2014 (50) are low and usually associated with small flocks of loafing and preening birds in the waters in the north-eastern portion of the Inner Estuary. A sighting of 116 no. Brent Geese within 500m of the embankment in the winter of 2017-2018 was associated with birds seen to be displaced by an active farm vehicle on lands at Kilcrea that resettled in the nearby waters close to the northern shoreline of the Inner Estuary. There is no feeding resource for the species in the 500m zone and the data shows that in general a very small proportion of the Brent Geese present in Malahide Estuary are recorded within 500m of the embankment.

**Goldeneye** is a diving duck species with a SPA population of 215 no. individuals. Typically, the Goldeneye are concentrated in the middle part of the Inner Estuary, in calmer waters several hundred metres west of the embankment. The median count from the three winter survey periods confirms this contention (0, 0.5 and 3 Goldeneye respectively) with peak counts also low across the three winter survey periods. In addition, the counts of Goldeneye in the Inner Estuary were relatively low when compare to the SPA population. On occasion, the proportion of the Goldeneye in the Inner Estuary recorded within 500m of the

embankment is relatively high but even then, the peak counts of Goldeneye recorded in this area represent a small percentage of the overall SPA population (2.8% – 8.8%).

**Red-breasted Merganser** is another diving duck species. Like with Great Crested Grebe, this species is regularly observed foraging within several hundred metres of the embankment. Observations of this species were concentrated in the Inner Estuary, a good proportion of these within 500m of the embankment. Analysis of the 2013-2014 and 2017-2018 winter survey data revealed that on average c. 44-45% of the Red Breasted Mergansers recorded on each survey occasion were located within 500m of the embankment.

**Oystercatchers** are one of the most abundant wintering species in this SPA with a reported population of 1493 no. birds. This species was infrequently recorded within 500m of the embankment in any of the three winter survey periods. The median counts in the three survey periods were 2.5, 0 and 35 respectively. Even the peak counts recorded in the 500m zone represent a small proportion of the SPA population. There is no regular roost site for the species in this location. There were infrequent observations of Oystercatchers along the shoreline, particularly along the northern shoreline of the Inner Estuary. In the winter of 2017-2018, a flock of Oystercatcher were displaced from fields at Kilcrea and briefly joined some roosting birds on the northern shoreline (199 no. birds). These birds had departed within 30 minutes, probably disturbed by a dog-walker observed near this location.

**Dunlins**, similar to Oystercatchers, are very rarely present in areas within 500m of the embankment. This is one of the SCI species with the largest SPA wintering population (1594 no. birds). The median number of Dunlins recorded within 500m of the embankment in the winter survey periods of 2012-2013 and 2013-2014 was zero. Only one observation of two Dunlin was recorded in this area in this time. In winter 2017-2018 there were three observations of Dunlin within 500m of the embankment. One of these was a relatively large flock of 219 no. birds that briefly settled on the northern shore several hundred metres west of the embankment. The flock gathered, apparently from birds arriving from the Outer Estuary, increasing from 70-80 no. birds and moved westwards towards Seatown within 20 minutes. There is no regular roost or feeding site for the species within 500m of the embankment.

**Black-tailed Godwit** is a large wading bird that feeds and roosts in the intertidal areas around Seatown in the Inner Estuary and is frequently observed in fields around the estuary. It has a SPA population of 409 birds. Black-tailed Godwits are recorded very infrequently and in low numbers within 500m of the embankment. There is no known roost or feeding site in this zone. There was no observation of the species within 500m of the embankment in the winter of 2012-2013 and only one record (of 8 no. birds) in the following winter period. There were two sightings of Black-tailed Godwits in the 500m zone in the winter of 2017-2018.

**Redshank** is a wading bird widely recorded in the Inner and Outer Estuary at Malahide. Numbers recorded in the Inner Estuary are generally much lower than observed in the Outer Estuary. There are a number of high-water roost locations of the species near the Island on the Outer Estuary. The median number of Redshank observed within 500m of the embankment over the three winter was 2, 0.5 and 13 respectively. There was no regular roost or feeding sites for the species noted within 500m of the embankment.

The species by species analysis establishes that taking a nominal area of 500m from the proposed Greenway that most species do not occur in significant numbers or consistency to be at appreciable risk of disturbance from users of the Greenway. The area does not have any regular high-water roost for these species and there is a lack of suitable feeding habitat for most of the species under consideration. The exceptions are the diving ducks, particularly Great Crested Grebe and Red-breasted Merganser, and to a lesser extent Goldeneye.

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### 3.0 Disturbance Impacts – Bird Species

A literature review on available information regarding disturbance distance and effects on these species was carried out (refer to Appendix DAU-1). Unsurprisingly, there is considerably more focus on the source and nature of disturbance effects on these species in the breeding season. Disturbance studies are complicated by many site-specific factors, including the baseline level of disturbance, the nature of a particular disturbance stimulus, the number and species diversity of birds present in the area, the availability of other similar resources nearby etc. Useful reviews of birds and disturbance distance include (Hockin *et al.* 1992; Madsen & Fox, 1992; Platteuw & Henkens, 1997; Ruddock & Whitfield, 2007; Borgmann, K.L., 2012). These review papers describe the disturbance impacts reported for a wide variety of waterbirds from numerous experimental studies. The studies show a lot of variability in the extent and nature of disturbance impacts between species, type of disturbance stimulus etc. In general, fast and/or unpredictably moving vessels such as speedboats and jet skis are likely to disturb larger surface areas than sailing vessels that tend to move slower and along more or less fixed routes. Similarly, unleashed dogs tend to illicit a greater response and at a greater distance than pedestrians.

Outside of the breeding season there is little published information on disturbance impacts on **Great Crested Grebes**. There is some evidence that Great Crested Grebes habituate to regular and predictable sources of disturbance. For instance, Platteuw & Henkens (1997) reported that species including Great Crested Grebe habituated to such an extent that they were often observed resting, preening, foraging or even breeding at distances of <50 m from passing vessels. Several studies have also shown that reaction to disturbance is less in non-clustered feeding waterbirds such as Great Crested Grebes (e.g. Hockin *et al.* 1992; Ruddock & Whitfield, 2007).

Borgmann (2012) suggests that diving ducks show a response to rapidly approaching stimuli (e.g. boats) and recommended setback distances of c. 103m. In the same review, a recommended setback distance of 126m-200m for a number of related Grebe species was presented. Where the feeding resource is good, Great Crested Grebes may be difficult to dissuade from occurring in a particular area (e.g. Gagliardi *et al.* 2006). One of the recommendations of Borgmann (2012) is for visual screening from areas of sensitivity for groups of waterbirds. The proposed visual screen for the Broadmeadow Way crossing of the Inner Estuary will, in combination with the predictable nature of the route taken by users of the proposed Greenway, effectively minimise visual stimuli for diving ducks occurring in vicinity of the crossing.

**Red-breasted Merganser** is another diving duck species (of similar size) that is likely to have a broadly similar response to disturbance. As with Great Crested Grebes there has been relatively little research into disturbance impacts on wintering Mergansers. Gittings & O'Donoghue (2016) showed that wintering Red-breasted Mergansers in Wexford Harbour had a high degree of behavioural sensitivity to disturbance from marine traffic. However, the authors note that the high degree of behavioural sensitivity to disturbance from marine traffic noted in Wexford Harbour may have been partly explained by the proximity of an area regularly frequented by Mergansers to the main navigation channel in Wexford Harbour. Quickly approaching noisy sea vessels represent a different order of stimulus to users of the proposed Greenway. Based on the available literature we believe that the proposed visual screen for the Broadmeadow Way crossing of the Inner Estuary will, in combination with the predictable nature of the route taken by users of the Greenway, effectively minimise visual stimuli for diving ducks occurring in vicinity of the crossing.

Ruddock & Whitfield (2007) summarise the literature in relation to disturbance impacts on **Goldeneye**. Recorded response distances of wintering goldeneyes to disturbance caused by people on shore were reported as 100 - 200 m, although birds generally immediately re-

settled elsewhere on the water. Observed reactions in response to boats, particularly motorboats were considerably greater. A recent study on Flight Initiation Distance (FID) and waterbirds on rivers and lakes used a motorboat as the source of disturbance stimulus (Mayer *et al.* 2019). The mean FID for Goldeneye was 171.5m, with birds disturbed at greater distances on Lakes than Rivers. Goldeneyes typically feed several hundred metres from the proposed Greenway and given that the nature of the comparative stimuli (approaching motorboat vs. users of screened greenway) are substantially different, it is considered that there is no likelihood that operation of the proposed Greenway has the potential to significantly disturb or displace Goldeneyes occurring in the Inner Estuary.

## **4.0 Visual Screen**

Visual screening is a recommendation of Borgmann’s (2012) ‘Review of Human Disturbance Impacts on Waterbirds’. Visual screening is also recommended as an effective means of minimising impact on waterbirds (e.g. RPS 2018) and planted and constructed visual screening is a regularly used mitigation measure (e.g. Underhill-Day, 2015; Biosphere 2007). As stated by Biosphere (2007) it is believed that knee-waist high visual screens present a much-reduced visual disturbance stimulus to waterbirds occurring in the vicinity of a coastal greenway. In addition, the visual screening and effective corralling of dogs further reduces the potential for any measurable disturbance impacts on key bird species occurring in the vicinity of the proposed Greenway. The provision of a formalised walking and cycling route as provided for in the proposed Greenway is likely to lessen the usage of unscreened pathways that run closer to areas far more sensitive to disturbance, e.g. important feeding and roosting areas at Seatown at the west of the Inner Estuary.

The proposed screening along the crossing of the Inner Estuary is designed to break up the outline of pedestrian users of the proposed Greenway whilst allowing the views to be appreciated. The proposed wall of 1.2m with top rail (i.e. overall height of 1.4m), is considerably higher than many walls adjoining coastal SPAs in the Dublin area e.g. from James Larkin Rd. to Dublin Road and along the Clontarf Road. The Baldoyle to Portmarnock Greenway does not include visual screening as the route is separated from the coast by an existing roadway. Some coastal greenways have opted for natural (vegetation) screens and others have proposed paladin type fencing (e.g. Wexford to Curracloe Greenway). Neither option would ensure nearly as effective visual screening as proposed in this Broadmeadow Way Greenway. The wall and rail of 1.4m will ensure that dogs will not be visible to birds on the water and that the outlines of pedestrian and bicycling users are broken, effectively minimising the risk of any disturbance or displacement effects. Signage will advise users of the need to be respectful for the wildlife along the Greenway and feeding of birds will not be permitted.

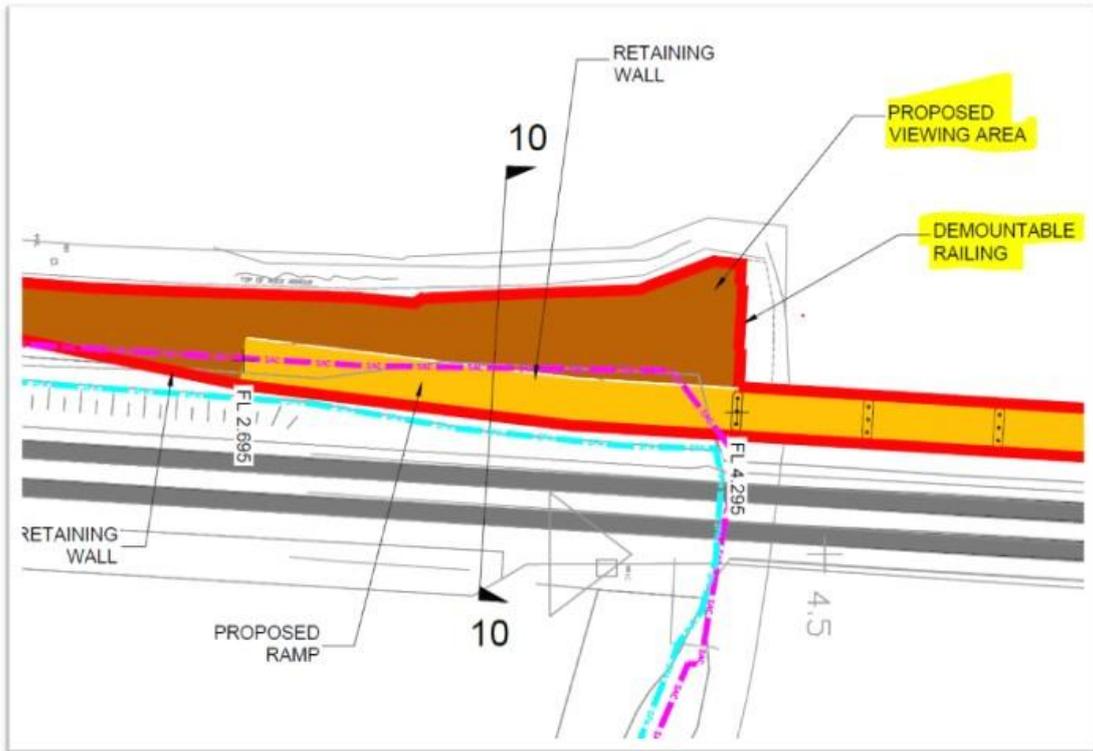
## **5.0 North Shore Habitat, Viewing Areas and Dog Control**

The viewing areas indicated on Drawing No. 12-160-146 relate to an early stage of the project evolution and as such this image is presented in Volume 4B EIAR Appendix 2-Route Option Analysis. The correct detail at the north shore is shown on Drawing 12-160-260 of the EIAR (see Figure 2 – expanded view of Drawing No. 12-160-260 below). No viewing area is proposed in this location. The fencing design will ensure that people and their dogs do not exit the Broadmeadow Way onto the shoreline or lands at Kilcrea. There will be no any interference with Annex 1 habitat – shingle and gravel shores (LS1) at this location (see Figure 1 above) as this lies outside the existing security fence at this point.

The extract from Drawing 12-60-258 of the EIAR Volume 3 shown below (Figure 3 below) illustrates the only dedicated viewing point on the crossing of the Inner Estuary. The 1.4m high wall and railing, located to the south of the weir is shown (red line) and this wraps around the viewing area with a demountable railing (also 1.4m high). The demountable

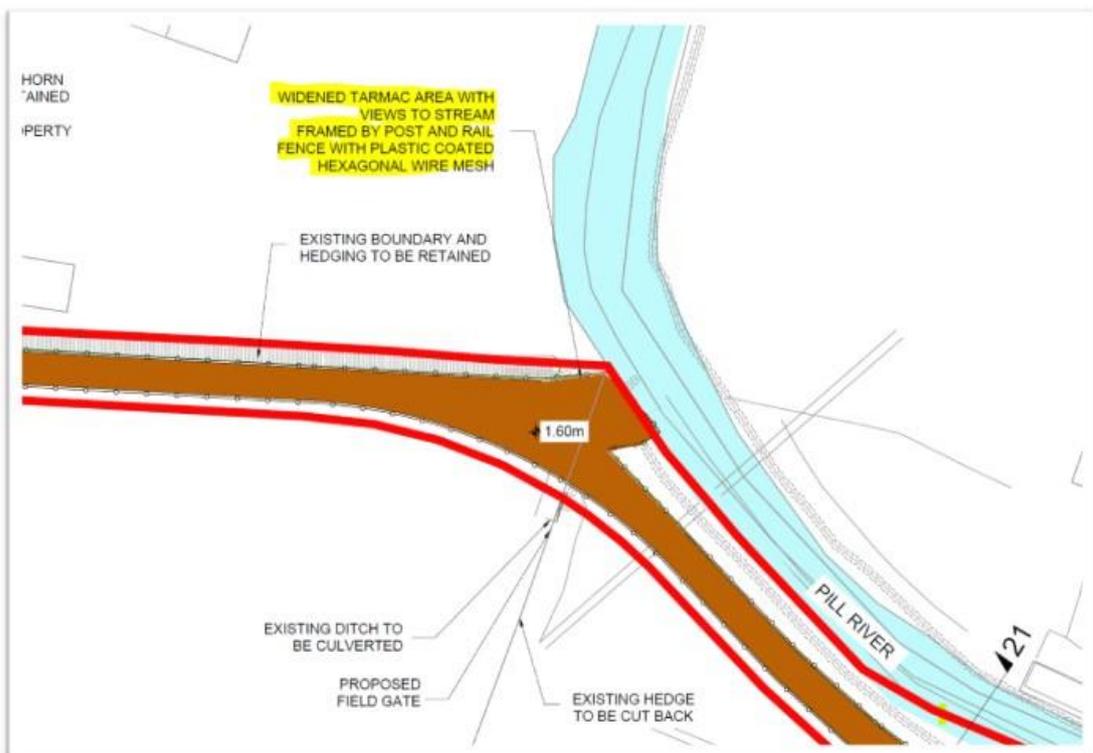
railing will allow access to the weir to Irish Rail for their scheduled maintenance inspections of the weir and rail bridge.





**Figure 3. Extract from Drawing 12-60-258 of the EIA Volume 3.**

The only other dedicated viewing area is located on the proposed Pill River crossing as per extract from Drawing 12-60-265 (see Figure 4 below). At this location a widened blacktop area is proposed, bordered by post and rail fence with plastic coated hexagonal wire mesh. The wire mesh will be effective in preventing egress by dogs.



**Figure 4. Extract from Drawing 12-60-265.**

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## 6.0 Cumulative/In-combination Impacts

The construction and operation of the proposed Greenway was assessed with consideration of the current and projected future use of the areas close to the greenway and in a broader sense the activity in the wider area that could interact with the potential impacts arising from this project. The activity close to the route of the proposed Greenway is chiefly characterised by recreational use (e.g. Malahide and Newbridge Demesnes, walkers and joggers around parts of the inner estuary, boating on the inner estuary, occasional seasonal hunting) and commuting (walkers, cyclists, road vehicles, agricultural vehicles and trains). Agricultural activities dominate in areas north of the inner estuary (Kilcrea).

Activities that are most likely to cause disturbance to fauna are those related to noise, light, and visual and auditory cues. The existing (receiving environment) has a relatively high level of these types of disturbance, particularly in areas with high levels of human related activity near the Inner estuary. As such, it would be expected that many of the species occurring in the area are relatively tolerant of, or habituated to, these kinds of disturbance. The location and scale of the sources of disturbance are also critical factors in determining the overall impact and cumulative impact.

Creagh House (Environmental) Ltd (CHE) has carried out detailed and intensive observations on bird distribution and behaviour in the Inner Estuary since 2011. Relatively few large-scale disturbance events were noted during the intensive field surveys. The bulk of observations related to when people and their dogs accessed the shore or intertidal mudflats. Within the Inner Estuary almost all such observations were related to occasions when feeding and roosting flocks of wintering waterbirds were disturbed by people or their dogs leaving the pathways around the Inner Estuary at Seatown. This location is where many of the wintering waders congregate and these include flocking birds such as Golden Plover and Lapwing that will react as one to a perceived threat. Unleashed dogs caused the greatest disturbance and on occasion were observed putting thousands of birds into the air at Seatown. Such occurrences were not frequent but were by far the biggest incidents of disturbance noted during the intensive bird surveys. Walkers, shell pickers and unleashed dogs were also noted as causing several major disturbance events in the Outer Estuary over the years. However, the vast majority of counts were completed without any observations of such disturbance events.

### 6.1 Historical Projects

The Broadmeadow bridge carries the M1 motorway bridge across the Malahide Estuary at its western extremity. The bridge design commenced in 1993 and an Environmental Impact Statement (EIS) was prepared in 1995. The bridge was constructed in the period 2000-2003 as part of the Lissenhall section of the northern motorway contract no. 1 (Caffrey *et al.*, 2003).

*Malahide Estuary SAC (site code 000205) Conservation Objectives Supporting Document – Coastal Habitats (Version 1 – May 2013)* notes (p. 3): “The Broadmeadow M1 motorway bridge has been constructed to cross the western side of the inner estuary, above the saltmarsh” and further at p. 9, notes that “The M1 Broadmeadow motorway bridge was constructed to cross the estuary at Lissenhall in 2001-2003. Care was taken during the construction phase not to damage the structure or surface of the saltmarsh and by and large the structure of the saltmarsh has remained intact (McCorry, 2007)”.

The Malahide Wastewater Treatment Plant (WwTP) is located at Strand Road, Malahide, on the seaward side of the Malahide railway embankment. This WwTP has a plant capacity population equivalent (p.e.) of 21,000, and discharges to the outer Malahide Estuary. A Natura Impact Statement (NIS) was prepared in support of a discharge licence application to

the Environmental Protection Agency (EPA) in 2009. The NIS concluded that there would be no adverse effect upon the conservation objectives of the estuary due to operation of the Malahide WwTP. The annual environmental reports (AERs), up to and including 2017, to the EPA under licence registration number D0021-01 may be viewed at <http://www.epa.ie/licensing/watwaste/wwda/>.

The Swords WwTP is located at Spittal Hill Road, Swords at the head of the inner Malahide Estuary. This WwTP has a plant capacity P.E. of 90,000 and discharges to the inner estuary in proximity to the M1 motorway bridge. A NIS was prepared in support of a discharge licence application to the EPA in 2009. The NIS concluded that there would be no adverse effect upon the conservation objectives of the estuary due to operation of the Swords WwTP. The AERs, up to and including 2017, to the EPA under licence registration number D0024-01 may be viewed at <http://www.epa.ie/licensing/watwaste/wwda/>.

Construction of the Baldyole to Portmarnock pedestrian and cyclist greenway is scheduled to be completed in Q4 2019 having secured Planning Permission from An Bord Pleanála in July 2018 (PL06F.300840). This is a 1.8km long greenway adjacent to the Coast Rd. (R106) from Red Arches Road to just south of the Coast Road/Station Road roundabout. An Bord Pleanála considered the NIS and associated documentation submitted with the application for approval, the mitigation measures contained therein, the submissions and observations on file, and the Inspector's assessment. In overall conclusion the Board was satisfied that the proposed development, by itself or in combination with other plans or projects, would not adversely affect the integrity of the European sites, in view of the sites' conservation objectives.

Works to ensure the safety of railway workings were carried out to the northern and southern railway embankments by Irish Rail between 2002 and 2003. These works, by way of Ministerial Consent, included the armouring of the northern embankment (west side) and the armouring of the southern embankment (west side).

On the 21st August 2009 part of the rail bridge crossing the Malahide Estuary collapsed. Scouring of one of the pier bases, caused by the strong tidal flows under the viaduct, led to the sudden collapse of that pier together with the two adjacent bridge spans. By way of Ministerial Consent, Irish Rail reinstated the rail bridge and weir, engaged in embankment strengthening on the northern embankment (east side), and constructed a weir maintenance track from Bisset's Strand at Malahide to the weir in the period 2009-2012.

Following placement of all physical elements required for railway safety, a detailed hydrological analysis and physical refinement of the weir profile was conducted in 2010-2012. This was to ensure that water levels in the inner estuary were returned to the pre-collapse regime.

Given the open rock armour nature of the weir, and high velocities of flood and ebb tides under each span of the viaduct, there is a necessity for continuous monitoring and inspection of the weir structure. Under the Railway Safety Act 2005, Irish Rail requires the use of the weir maintenance track from Bisset's Strand for inspection, routine maintenance and repair of the weir and bridge structure.

The environmental report on the remedial works on the Malahide Viaduct (CHE, 2010) concluded that the works did not adversely affect the conservation objectives of the European sites at Malahide.

The works carried out by Irish Rail to the weir and the railway embankments allow for the completion of the greenway across the estuary without an adverse effect upon conservation objectives of the European sites at Malahide. The hydraulic investigations conducted by Irish

Rail in agreement with NPWS allow certainty in knowledge as to the non-adverse effects of temporary works to the weir crest.

## **6.2 Current Projects**

There are a number of known proposed development projects in the Fingal area which, in combination with the proposed Greenway, may have a cumulative environmental effect. These projects include.

- Malahide: Sutton to Swords Greenway (design stage).
- Kilcrea: Donabate Distributor Road (construction stage, project opening late 2019).
- Kilcrea: Expansion of Portrane Hospital (construction stage, project opening 2020).
- Kilcrea: Housing application (McGarrell Reilly Homes, planning ref. F17A/0113) (opening late 2019).
- Dublin-Belfast Railway Line – electrification of section between Malahide and Drogheda not expected for five years.

With the exception of the Donabate Distributor Road, the other construction projects will be completed in advance of potential works or are remote in terms of location or design stage. An EIS and NIS were prepared in support of the Donabate Distributor Road in 2010. The NIS found that the development of this road scheme, to the north of the Malahide Estuary, would not have an adverse effect upon the conservation objectives of the European sites at Malahide. No adverse cumulative construction effect has been identified as the project is due to complete in late 2019. The proposed Broadmeadow Way will continue in planning phase at this time. Likewise, no adverse cumulative operational impact has been identified.

## **6.3 Plans**

### **6.3.1 Greater Dublin Area – Cycle Network Plan**

For the proposed Greenway, as in similar projects elsewhere in the Great Dublin Area, there has been considerable attention given to a spatial strategy (GDA Cycle Network Plan; Transport Strategy for GDA 2016-2035). This seeks to improve connectivity through the region without compromising the local biodiversity. By formalising the routes of cycleways/greenways people are encouraged to enjoy the natural environment along selected corridors where the potential for cumulative disturbance impacts can be carefully considered and mitigated as appropriate. By concentrating use along formalised networks, it can also serve to decrease the more unpredictable usage of informal routes and access points with a cumulative benefit in terms of overall disturbance on important locally occurring species and habitats.

### **6.3.2 Fingal Coastal Way**

The Fingal Coastal Way project is a proposed coastal walking and cycling greenway planned to extend from Newbridge Demesne in Donabate through Rush, Loughshinny, Skerries, Ardgillan and Balbriggan, as far as the county boundary with Meath. Like the Broadmeadow Way, this scheme will align with part of the overall route FG1/N5 of the Greater Dublin Area Cycle Network Plan. The overall length of the scheme is envisaged to be approximately 32km, the exact length will depend on the final route selected. The route is envisaged to be predominantly a leisure and tourist amenity and will developed to be a flagship scheme for recreational walking and cycling in the county with the potential to promote and enhance the local environment for walkers, runners, cyclists and nature enthusiasts, as well as bringing benefits to the local tourist economy. Given its potential to link into a number of existing settlements, it will significantly improve connectivity between the urban centres along the route including a number of schools, train stations and other amenities, and it is therefore

likely to serve as a local commuter route and to provide an attractive option for pedestrians and cyclists that will help promote modal shift and sustainable travel choices.

The scheme is currently at constraints and feasibility study stage, with a series of non-statutory public information meetings due to take place in November 2019. Preliminary design and route options stages are planned for 2020 and submission of a planning application is programmed for 2021, with construction commencing in 2022. The scheme is fully funded up to 2022 under the Fingal Capital Programme 2020-2022.

### **6.3.3 Fingal Development Plan 2017-2023 – Strategic Environmental Assessment (SEA)**

The Fingal Development Plan SEA (March 2017) at p. 79 recommends that policy Objective MALAHIDE 6 – the development of the Fingal Coastal Way between Malahide and Donabate peninsula includes the phrase “whilst avoiding any routing along northern boundary of Malahide inner estuary by virtue of its ecological sensitivity). Such a routing refers to the potential east-west use of the inner estuary shoreline along its northern boundary. Cognisance of this objective has been taken in the design and development of the proposed Broadmeadow Way Greenway. Its operation will not involve the east-west use of the northern shoreline.

### **6.3.4 Fingal Biodiversity Action Plan**

The Fingal Biodiversity Action Plan (Fingal BAP) 2010-2015 sets out in its vision for the Fingal estuaries and wetland and their surrounding buffer zones that these will continue to provide an excellent wintering habitat for the thousands of birds that spend the winter here. It envisages that the buffer zones around the designated sites shall be developed as multi-functional landscapes and that the agricultural land-use shall be maintained and where appropriate combined with nature conservation targets and low-intensity recreational use. The plan identifies the townlands of Kilcrea and Corballis as part of an ecological buffer zone on the northern margin of Malahide Estuary. In its design, construction and operation the Broadmeadow Way has taken cognisance of the Fingal FBAP and complies with its conception of low-intensity recreational use in the areas of Kilcrea and Corballis.

## **6.4 Summary**

The potential for adverse cumulative impacts on species and habitats of qualifying interest was considered throughout the assessment. Many of the qualifying bird species, for instance, are known to move between coastal SPAs within the Greater Dublin Area and the potential for wider scale impacts (e.g. arising from displacement) were considered. The overall conclusion was that with the implementation of the proposed mitigation measures there is no potential for adverse residual impacts on European sites or the conservation objectives arising from the proposed Greenway, on its own or in combination with other plans or projects in the wider area.

## **6.5 Concluding Statement on Potential Disturbance of Birds**

Detailed bird surveys have shown that the permanently inundated waters close to the crossing of the inner estuary generally hold a relatively low diversity and abundance of bird species. Typically, there is very little usage of the areas within 500m of the crossing by any of the qualifying interests of the SPA. Occasional flocks of loafing Brent Geese and Gull species are recorded in the waters close to the causeway. Three diving duck species do regularly occur in significant numbers within several hundred metres of the proposed Greenway.

Disturbance studies for these species indicate that rapidly approaching stimuli (e.g. boats or dogs) illicit the greatest response, with responses typically occurring up to 200m. The scale and extent of disturbance is believed to be directly related to the level of threat perceived by the bird species. Pedestrians and cyclists moving along a predictable path or causeway would be expected to be perceived as a considerably lesser threat, particularly as birds habituate to this type of predictable behaviour. Direct observations made at the Inner Estuary over the past decade have shown that roosting and feeding birds are well habituated and relatively tolerant of the background level of disturbance from walkers and boats using the area. The one area where disturbance has been frequently observed is at Seatown where on occasion flocking birds such as Golden Plover and Lapwing are disturbed by people or unleashed dogs, typically when dogs or people leave the pathways and encroach closer to feeding or roosting flocks.

The diving ducks feeding within several hundred metres of the greenway are widely dispersed and are therefore more likely to make individual rather than collective appraisals of disturbance stimuli. These species are much less likely to react as a flock. On many occasions in the past decade all three diving duck species have been observed continuing to feed within a relatively short distance (<100m) of sailing boats on the Inner Estuary.

From the literature review and direct observations made at the site it is considered unlikely that the users of the causeway would significantly affect the distribution or usage of the Inner Estuary by these diving ducks. However, adopting a precautionary approach we have accepted that without mitigation there would be some risk that pedestrians and their dogs could disturb and displace some birds from areas within 200m of the embankment. We are confident that the visual screen will be effective in addressing this risk. The use of screening to minimise the visual disturbance to waterbirds is a well-established wildlife management technique (e.g. Hockin, 1992; Borgmann, 2011). The proposed solid wall screening will be effective in breaking up the outline of users of the walkway and minimising visual disturbance to birds present on the adjacent parts of the inner estuary. Similarly, the lighting design minimises the risk of disturbance to birds. The LED segmented dimming lamp-arrays are designed to light the greenway surface only during the periods when the greenway will be in active use. Light spill to the inner estuary will be insignificant and the design will ensure that there are prolonged periods of darkness throughout the night-time period.

Waterbirds moving between feeding and roosting sites in the area regularly overfly the existing railway embankment and there is no reason to anticipate that the construction or operation of the proposed development will impact upon these commuting flights.

With the application of the mitigation measures there will be no adverse impact on the Malahide Estuary SPA.

There will be no long-term impacts on the key relationships that define the structure or function of the European sites considered in this NIS. The integrity of Malahide Estuary SPA and Malahide Estuary SAC will not be adversely affected by the proposed development in terms of wholeness or soundness of their conservation objectives.

## **7.0 Monitoring**

Monitoring (during construction and once operational) is a standard commitment arising from the EIA Directive. The monitoring is intended to provide independent evidence of the application of environmental mitigation and all other commitments arising from the planning permission. Monitoring the bird abundance and distribution during construction and in the early stages of operation will provide information on:

- The overall bird usage of the Inner & Outer Estuary using comparable survey methodologies as used to inform the EIAR
- The pattern of bird usage of the lands through which the greenway traverses
- Distribution of SCI bird species during the construction and operational phases of the Greenway
- Targeted distribution and abundance surveys of diving ducks and other bird species within 500m of the greenway crossing of the Inner Estuary.

In response to the suggestion from NPWS to collect more longitudinal information on the bird distribution and abundance in the area during the operational phase of the proposed Broadmeadow Way Greenway follow-up bird surveys in Years 1, 3 and 5 of the operational phase of the Greenway are proposed. This will provide information on the bird usage and distribution in the area as the scheme matures.

## Appendix DAU-1: Literature Review References

**Biosphere Environmental Services (2007).** Proposed Dundalk to Blackrock Coastal Walkway: Ornithological Assessment. Report for Tobin Consulting Engineers.

**Borgmann, K. L. (2012).** A Review of Human Disturbance Impacts on Waterbirds. Audubon CA report for San Francisco Bay Joint Venture.

**Gagliardi, A., Martinoli, A., Preatoni, D., Wauters, L.A. & Tosi, G. (2006).** Behavioral Responses of Wintering Great Crested Grebes to Dissuasion Experiments: Implications for Management. *Waterbirds* 29(1), 105-114.

**Gittings T. & O'Donoghue, P. (2016).** Disturbance response of Red-breasted Mergansers *Mergus serrator* to boat traffic in Wexford Harbour v. 10, *Irish Birds*.

**Hockin, D., Ounsted, M., Gorman, M., Hill, D., Keller V. & Barker, M. (1992).** Examination of the effects of disturbance on birds with reference to the role of environmental impact assessments. *Journal of Environmental Management* 36:253–286.

**Madsen, J. & Fox, A.D. (1995).** Impacts of hunting disturbance on waterbirds - a review. *Wildlife Biology*, 1(1), 193-207.

**Mayer M., Natusch D. & Frank, S. (2019).** Water body type and group size affect the flight initiation distance of European waterbirds. *PLoS One*. 2019;14(7).

**Platteeuw, M. & Henkens, R.J.H.G. (1997).** Possible impacts of disturbance to waterbirds: Individuals, carrying capacity and populations. *Wildfowl* 48: 225–236.

**RPS (2018).** Natura Impact Statement Dublin Port Masterplan 2040. Report for Dublin Port Company.

**Ruddock, M., Whitfield, D.P., (2007).** A review of disturbance distances in selected bird species. Report from Natural Research (Projects) Ltd. to Scottish Natural Heritage. Natural Research, Banchory, UK.

**Underhill-Day, J. C. (2015).** Assessment of the probability of wintering bird disturbance from a new coastal path at The Fleet, Chesil. A report by Footprint Ecology to Natural England.

**Table 3.1 Summary analysis of SCI species – winter 2012-2013.**

<b>Species</b>	<b>Median Count Overall (Winter 2013-2014)</b>	<b>Median (Inner Estuary)</b>	<b>Median (&lt;500m from Embankment)</b>	<b>Range within 500m</b>	<b>Peak Count &lt;500m in Season</b>	<b>% of Peak Count recorded in Inner Estuary that Season</b>	<b>% Peak Overall Count for Inner &amp; Outer Estuary that Season</b>	<b>Peak Count within 500m of Embankment % of SPA wintering population</b>
Great Crested Grebe	16	16	8	0 to 19	19	46.34	41.30	29.7
Light-bellied Brent Goose	970	212	1	0 to 36	36	3.28	1.83	3.8
Shelduck	153	3	0	0 to 0	0	0.00	0.00	0.0
Pintail	8	0	0	0 to 0	0	0.00	0.00	0.0
Goldeneye	2	2	0	0 to 19	19	82.61	82.61	8.8
Red-breasted Merganser	20	20	16.5	0 to 35	35	49.30	29.66	33.3
Oystercatcher	528	9	2.5	0 to 46	46	55.42	3.36	3.1
Golden Plover	327	82	0	0 to 0	0	0.00	0.00	0.0
Grey Plover	4	0	0	0 to 0	0	0.00	0.00	0.0
Knot	2	0	0	0 to 0	0	0.00	0.00	0.0
Dunlin	187	0	0	0 to 2	2	25.00	0.29	0.1
Black-tailed Godwit	259	158	0	0 to 0	0	0.00	0.00	0.0
Bar-tailed Godwit	46	4	0	0 to 0	0	0.00	0.00	0.0
Redshank	278	47	2	0 to 10	10	2.80	1.93	1.7

**Table 3.2 Summary analysis of SCI species – winter 2013-2014.**

Species	Median Count Overall (Winter 2013-2014)	Median (Inner Estuary)	Median (<500m from Embankment)	Range within 500m	Peak Count <500m in Season	% of Peak Count recorded in Inner Estuary that Season	% Peak Overall Count for Inner & Outer Estuary that Season	Average % of Inner Est Total (on each survey)	Peak Count within 500m of Embankment % of SPA wintering population
Great Crested Grebe	20	19.5	8.5	3 to 20	20	46.51	46.51	38.7	31.3
Light-bellied Brent Goose	368.5	245.5	9	0 to 50	50	4.11	3.09	12.4	5.2
Shelduck	233.5	2	0	0 to 0	0	0.00	0.00	0	0.0
Pintail	1	0	0	0 to 0	0	0.00	0.00	0	0.0
Goldeneye	21	21	0.5	0 to 19	19	24.36	24.36	24.6	8.8
Red-breasted Merganser	20.5	19.5	15	0 to 84	84	84.00	71.79	43.7	80.0
Oystercatcher	477	27	0	0 to 5	5	5.26	0.58	3.1	0.3
Golden Plover	22	22	0	0 to 0	0	0.00	0.00	0	0.0
Grey Plover	0	0	0	0 to 0	0	0.00	0.00	0	0.0
Knot	6.5	0	0	0 to 0	0	0.00	0.00	0	0.0
Dunlin	22	1	0	0 to 0	0	0.00	0.00	0	0.0
Black-tailed Godwit	119	57	0	0 to 8	8	3.74	3.23	12.1	2.0
Bar-tailed Godwit	12.5	0	0	0 to 0	0	0.00	0.00	0	0.0
Redshank	74.5	48	0.5	0 to 7	7	13.46	5.26	6.4	1.2

**Table 3.3 Summary analysis of SCI species – winter 2017-2018.**

<b>Species</b>	<b>Median Count Overall (Winter 2013-2014)</b>	<b>Median (Inner Estuary)</b>	<b>Median (&lt;500m from Embankment)</b>	<b>Range within 500m</b>	<b>Peak Count &lt;500m in Season</b>	<b>% of Peak Count recorded in Inner Estuary that Season</b>	<b>% Peak Overall Count for Inner &amp; Outer Estuary that Season</b>	<b>Average % of Inner Est Total (on each survey)</b>	<b>Peak Count within 500m of Embankment % of SPA wintering population</b>
Great Crested Grebe	23	23	4	1 to 27	27	67.50	64.29	39	42.2
Light-bellied Brent Goose	595	428	22	0 to 116	116	12.86	11.76	5.2	12.1
Shelduck	352	6	0	0 to 0	0	0.00	0.00	0	0.0
Pintail	11	0	0	0 to 0	0	0.00	0.00	0	0.0
Goldeneye	15	15	3	0 to 6	6	5.04	5.04	12.3	2.8
Red-breasted Merganser	28	21	12	0 to 44	44	86.27	78.57	44.9	41.9
Oystercatcher	801	50	35	0 to 199	199	51.96	13.33	32.8	13.3
Golden Plover	0	0	0	0 to 0	0	0.00	0.00	0	0.0
Grey Plover	6	0	0	0 to 0	0	0.00	0.00	0	0.0
Knot	66	0	0	0 to 0	0	0.00	0.00	0	0.0
Dunlin	209	2	40	0 to 219	219	59.19	42.86	17.7	13.7
Black-tailed Godwit	180	29	18.5	0 to 28	28	5.97	5.85	2.3	6.8
Bar-tailed Godwit	45	0	0	0 to 0	0	0.00	0.00	0	0.0
Redshank	148	45	13	0 to 53	53	47.32	18.34	20	9.1