

Citizen Science Survey
of
Quiet Zone for Light Bellied Brent Geese
Maynetown Portmarnock
Winter 2019/ 2020

Prepared for Portmarnock Community Association

April 2020



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April 2020- Version 1.

Light Bellied Brent Geese Survey , Quiet Zone, Maynetown Winter 2019/2020

Contents

Summary.....	Page	3
Background	Page	3
Light Bellied Brent Geese	Page	4
Protected areas.....	Page	5
Importance of ex situ feeding sites.....	Page	6
Designated Quiet Zone.....	Page	7
Study area.....	Page	8
Recording methods.....	Page	10
Results.....	Page	10
December 24 th 2019 Survey.....	Page	11
January 30 th 2020 Survey.....	Page	12
January 31 st 2020 Survey.....	Page	14
February 23 rd 2020 Survey.....	Page	16
March 28 th 2020 Morning Survey.....	Page	20
March 28 th 2020 Afternoon Survey.....	Page	21
March 29 th 2020 Survey.....	Page	24
Overall conclusions.....	Page	25
References	Page	25

Citation: McMahon et al – Survey Light Bellied Brent Geese, Quiet Zone Maynetown Winter 2019/2020

Contact:

Summary

This study was conceptualised and completed in order to assess whether the Designated Quiet Zone for migratory overwintering birds and in particular Light Bellied Brent Geese was being utilised by the species for foraging purposes. The site was designated as a compensation measure when land at Maynetown was rezoned for residential development as part of the 2005-2011 Portmarnock Local Area Plan. The designation was confirmed in the Portmarnock South Local Area Plan 2013-2019 and the LAP's subsequent extension to 2023. The land was handed over by the developer to Fingal County Council for management, in addition to the ecological buffer zone that runs parallel to the R106 within Maynetown. The field at Maynetown which slopes up away from the road closely borders the Baldoyle Bay Special Protection Area and Baldoyle Bay Special Area of Conservation and is only separated from the SAC/ SPA by the R106. The designated Quiet Zone is set back from the main road slightly uphill and is completely fenced off with sturdy wood fencing and dense wire to prevent access to the area. Between the Quiet Zone and R106 within the buffer zone is the newly constructed Baldoyle to Portmarnock Cycleway. The fence and preparation of foraging grassland was completed in the winter of 2016/ 2017.

Background.

Citizen science refers to research initiatives in which civil society stakeholders are involved in the scientific production process. According to the EPA *"Citizen Science is research carried out by members of the public who volunteer to collect scientific data. This research often focuses on monitoring biodiversity, invasive species and climate. Carrying out citizen science offers many benefits for both citizens and scientists. Citizens working together can collect much more scientific data than scientists working alone. Participating in citizen science can increase public engagement with and understanding of important environmental issues. Citizen science can encourage people of all ages to get out into nature and can contribute to an increased sense of community"*.¹

Baldoyle SPA has regular wintering surveys for the yearly Birdwatch Ireland IWebs counts, the ex situ areas surrounding the SPA are surveyed less frequently. The Designated Quiet Zone is a fairly recent project started by Fingal County Council. In the last 3 years, in their comments on planning applications for the areas surrounding Maynetown, Fingal County Council had frequently stated that they had no evidence of use of the Designated Quiet Zone lands by overwintering birds since its creation in 2016. This position was contrary to local knowledge, as members of the Portmarnock and Baldoyle community who use the land for exercise, had noticed Light Bellied Brent Geese present within the Designated Quiet Zone in Maynetown.

In December 2019 after having a positive experience with the DCU Citizen Science water-blitz project in September 2019, it was decided in association with members of the Portmarnock Community Association and Portmarnock Uncovered Authors to attempt to survey the usage of the Quiet Zone by Light Bellied Brent Geese.

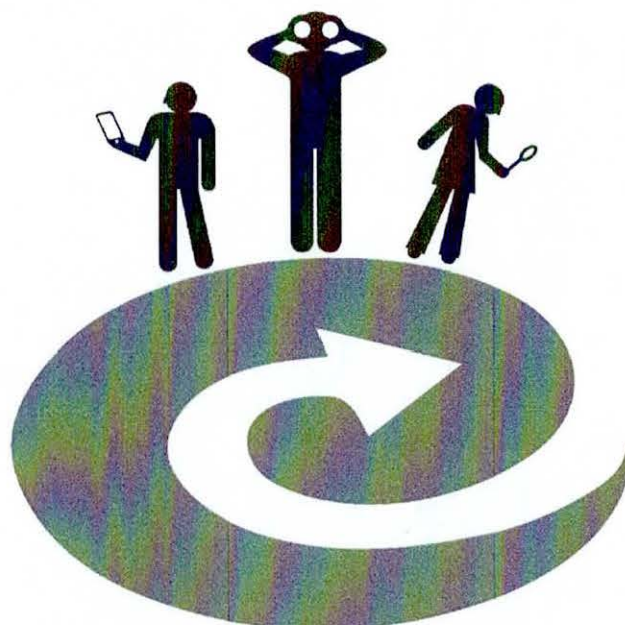




Figure 1: Light Bellied Brent Geese- Quiet Zone Feb 23rd 2020 - Phillip Swan

Light Bellied Brent Geese

The Irish Name for Light Bellied Brent Goose is Cadhan, Scientific Name is *Branta bernicla hrota*. The Light Bellied Brent Geese (LBBG) are winter migrants from the high Arctic Canada region. This particular population are resident to Ireland usually between the Months of October to April, although some group can arrive in Strangford Lough as early as September, so half of the year is spent on these shores. The Diet of the LBBG throughout the non breeding season, consists mainly of eel grass (*Zostera Marina*) up to 80% of its food source. *Zostera* has a high digestibility and nutritive value when compared with other available food sources. The relatively low level of disturbance (human, dog, watercraft etc.) in areas where there is *Zostera* availability is also a factor (Madsen 1988; Clausen 1994). However, Brent Geese in Dublin Bay are known to forage on sweet grass on a network of Ex Situ feeding sites (Benson 2009) consisting of sports fields, parks and agricultural pasture quite regularly in order to supplement their diet.

In the 1930's there was a massive die off of *Zostera* grasses which cut the Brent geese populations down to as low as 20% in some countries and another event in the 1980s which has contributed to LBBG being an amber listed species. The cause of the *Zostera* die off was initially believed to be due to a pathogenic species named *Labyrinthula zosterae*, a marine slime mould. *Labyrinthula* has consistently been found in diseased eelgrass populations. However, other contributing factors to the die off have been related to increased turbidity and nutrient enrichment (Kemp et al 1983) and increases in the level of pollution and sedimentation (Peres & Picard 1975). High levels of sediment have the added impact of blocking out UV light thus depleting oxygen levels and smothering the *Zostera*. If another die off of Eel Grass was to occur it would be devastating to the Brent Geese population, which is why protected areas such as the Designated Quiet Zone in Maynetown, Portmarnock are so important to the conservation of the population.

LBBG must consume frequently in order to achieve optimal body condition for the long migratory journey home. The Brent goose also has the lowest body mass of all goose species, which increases the energy expended for thermoregulation in winter. This combination of factors leads to a high food demand and the need for efficient feeding, which can be severely impacted by disturbance. In Baldoyle SPA disturbance from dog walkers is listed as one of the highest impacts on the SPA. Small children, runners and walkers are also found frequently on Kingfisher green in Portmarnock and on the roads and sands surrounding the SPA. In the Quiet Zone the LBBG flocks can feed with

virtually no interruption on grasses that Fingal county council have maintained with appropriate nutrients for the sole purposes of producing high quality food source for the special conservation interest of Baldoyle Bay SPA.

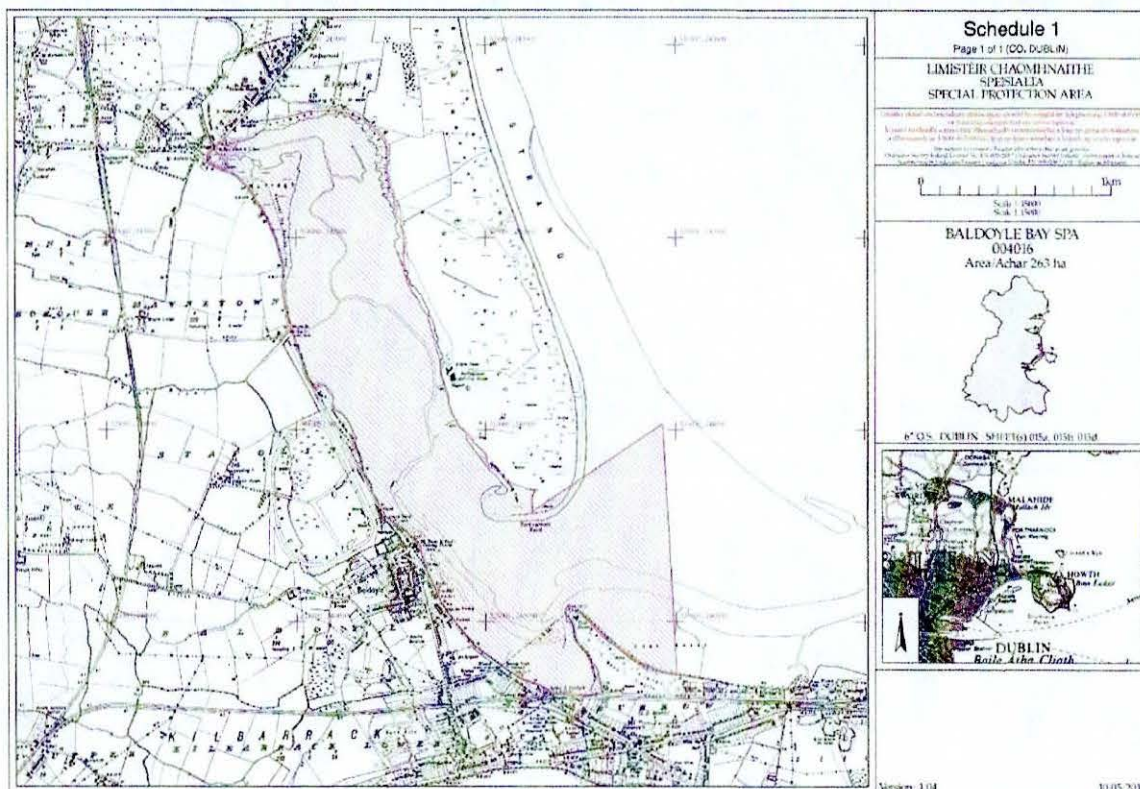
Protected areas

The Designated Quiet Zone is within lands immediately adjacent to the Baldoyle Bay SPA (site code 004016) Baldoyle Bay SAC (site code 000199). Light Bellied Brent Geese are listed as one of the Special Conservation Interests for the SPA due to the high populations that have been recorded using the site. The lands have historically been used by Baldoyle SPA's avifauna as ex situ feeding, breeding and roosting sites. The importance of Baldoyle Bay SPA for waterbirds is highlighted in the Baldoyle Bay SPA Conservation Interest supporting document – by the NPWS, which discusses water birds in detail and lists a number of water bird species regularly occurring on the site. Page 44 of document states:

"The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Ringed Plover, Golden Plover, Grey Plover and Bar-tailed Godwit. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds".²

Such Ex Situ sites are interdependent with the SPA and have been for decades. A number of reports have documented the use of the Maynetown lands by Light Bellied Brent Geese over the years. These documents include;

- The Natura Impact Statement for Fingal County Councils Baldoyle to Portmarnock cycle route planning application, identifies this area as a designated feeding site for Light Bellied Brent geese.
- The Ecological Study of the Coastal Habitats in County Fingal Phase II – Birds, also commissioned by Fingal County Council.
- Portmarnock South Local area plans 2013-2023 and supporting Natura Impact Statements.
- Baldoyle to Portmarnock Cycleway Natura Impact Statements
- Wintering Bird Survey of the lands surrounding the Baldoyle Estuary December to February 2011 – 2012 (Pierce and Dillon).



Importance of ex situ feeding sites

Fingal County Councils Portmarnock South LAP Natura Impact Statement identifies the Maynetown area as a feeding site for a number of qualifying species for the SPA. The Portmarnock Lap quotes: *"Informal consultation was also undertaken with Irish Brent Goose Research Group regarding lands to the south of the LAP area (Baldoye-Stapolin) and the Portmarnock South LAP lands. It was noted that the LAP lands used by Brent geese is dependent on whether, and where, winter cereals have been planted, with the geese being attracted to winter cereals. It was noted that this was not the case during the 2012/2013 winter, in the past large numbers (1000+) have been observed, particularly in the field which slopes up from the coast road within the east of the LAP lands. (pers. comm., Re sightings Co-ordinator, Irish Brent Goose Research Group, 2013)".* ³

The same report identifies main pressures and threats to Light Bellied Brent Geese habitats as the following: Habitat loss/degradation (human induced) – agriculture, infrastructural development, human settlement, tourism, recreation, dams, invasive species; accidental mortality – collision; persecution; pollution – global warming, sea level rise, water pollution; natural disasters – drought, storms, flooding; changes in native species dynamics – competitors, pathogens/parasites; poor regeneration, restricted range; human disturbance – recreation, transport, agricultural, industrial. The Portmarnock South Lap NIS also states:

"Bird species of Baldoye Bay SPA, in particular Light-bellied Brent Geese are known to use lands surrounding the SPA for feeding. A section of the agricultural lands adjoining the SPA, in the vicinity of C4 were noted to be of major importance with records of between 401-1450 Light bellied Brent Geese recorded from this area (Benson, 2009). Loss of feeding habitat may result in negative impacts upon qualifying interests of the SPA."

Finally, the Portmarnock South Area Lap NIS concludes:

"Once mitigation has been implemented in full, no decrease in favourable conservation status of Brent Geese are predicted and no significant impacts to Baldoye SPA site integrity will arise as a result of loss of feeding habitat. This assessment has taken account of best available scientific information including a) current and historical Brent data for the fields in question, b) increasing national and local Brent Geese populations c) the species is not red-listed nationally, and d) taking account of mitigation measures including seasonal fencing and management measures of fields to the east and south of the LAP lands for wintering bird species including provision of a quiet zone."

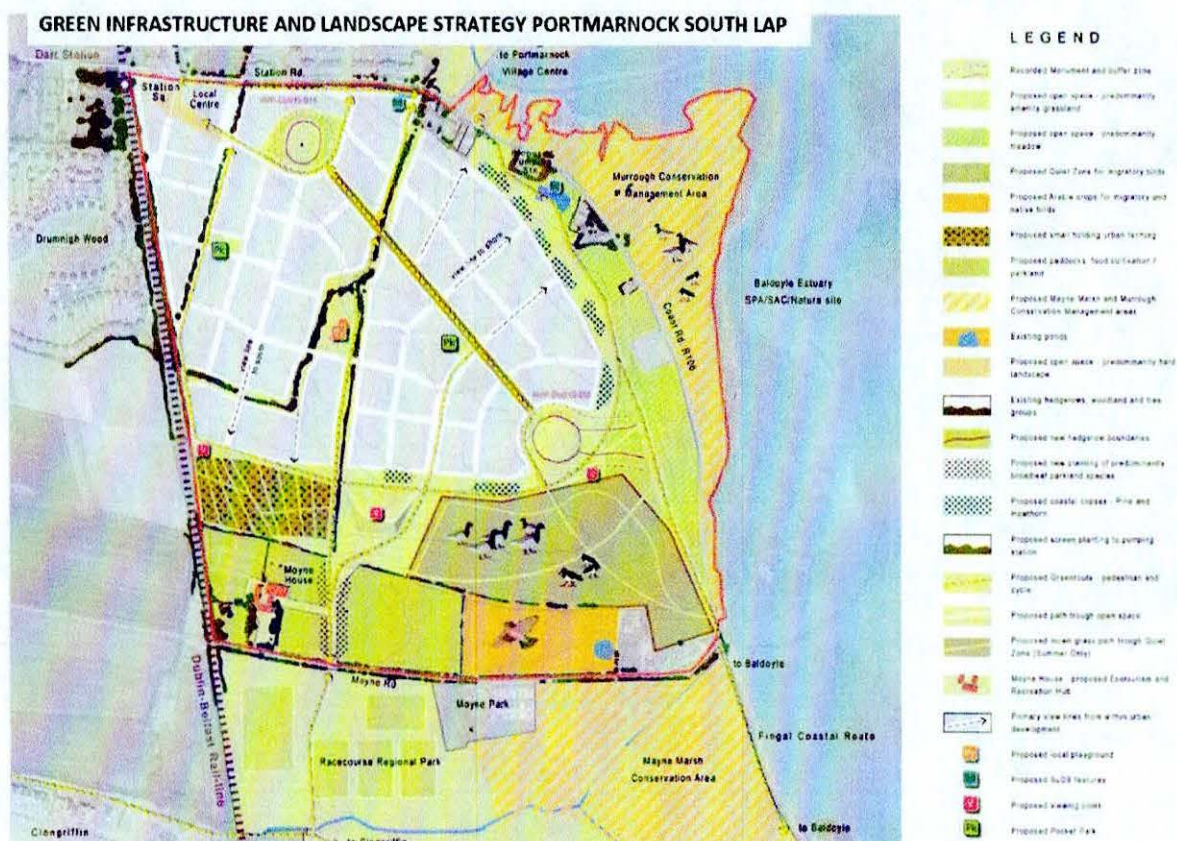
The fields adjacent to Baldoye Bay SPA constitute part of the SPA habitat by virtue of their role as an extremely important terrestrial feeding site for Light-Bellied Brent Geese. Over a thousand geese have been documented feeding here at one time according anecdotal reports referenced in Fingal County Council commissioned Natura Impact Statements. That constitutes approx. 2.5% of the current population in Ireland and approx. 8.5% of the Dublin area population according to BirdWatch Ireland. ³

The importance of the Maynetown site is confirmed in the Wintering bird survey of the lands surrounding the Baldoye Bay / Estuary December to February 2011 – 2012 which was commissioned as part of the South Portmarnock LAP. It states; *"This winter bird survey has demonstrated that the surrounding farmlands, amenity grasslands and golf club lands are important habitats for birds linked to the Baldoye Estuary and should be viewed as being ecologically linked and not divorced from the estuarine areas. In times of hard weather, storms, high tides and low human disturbance times e.g. dawn/ night times birds frequently move from the estuarine areas onto the surrounding lands for additional feeding or roosting needs. This valuable mix of land use together with the estuarine wetland habitats produces this diversity, if the mix stays as it is this level of diversity should continue"*.

The Designated Quiet Zone

The land the Designated Quiet Zone is within was historically agricultural land. Surveys by Benson in 2009 and Pierce and Dillion 2011 had identified surveyed and anecdotal use of the Maynetown lands by Migratory Wintering Birds including Light Bellied Brent Geese. Brent Geese feed on Eel Grass (*Zostera*) in Estuaries and when that food source depletes, will move to short sweet grass and agricultural grains in lands surrounding the Estuaries.

The Quiet Zone was designated by Fingal County Council in the Portmarnock South Local Area Plan. The site was a mitigation measure for agricultural land rezoned residential in the Portmarnock Local area plan adopted in 2006. As a condition of Planning applications F07/0947 and F13A/0248 the lands were designated and conditioned to be handed over to Fingal County Council with fencing off of the land to be completed by the Developer.



When the local community noticed works taking place in the Murrough Spit and Maynetown they were quick to contact Portmarnock Community Association. In correspondence with Fingal County Council in September 2016 The PCA received information relating to the Quiet zone from the Biodiversity section. The correspondence stated; "A much bigger feeding and roosting site is also being created in the parkland on the other side of the road. This area will also comprise of short grassland and will be grazed with Highland cattle for most of the year. This field will be topped and fertilized in September each year to provide good quality grass for grazing by Geese. The grass was sown in this area earlier this year and Baldoye homes will be installing the fencing over the next couple of weeks. We will be monitoring the area this winter to see how successful this area is in attracting birds such as Brent Geese, Lapwing, Curlew and others."

"The key roosting sites at the Baldoye Estuary are located at the tip of the sandspit, the soccer pitches at the Racecourse Park, Seagrang park, Kingfisher Green and the Sluice River Marsh. All these sites, with the exception of the Sluice River Marsh are subject to ongoing disturbance and the level of disturbance is likely to go up in the years to come as the population in the area increases. We hope that the migratory birds will use the dedicated roosting areas longer and more often than the other sites that are currently used by the birds. In theory, the birds would waste less energy and would be in a better condition to fly back to their breeding grounds in the Arctic. The monitoring of the bird usage in the newly developed fields and the rest of the Baldoye Estuary and surrounding lands will give us some indication how successful that approach is."

An inspired idea on the part of the council biodiversity officer Hans Visser, was to introduce grazing Highland Cattle to the Quiet Zone, in order to keep the grass cut during the year so that it would be at the optimum height for the Light Bellied Brent Geese when they arrived from October onwards. It is a novel and sustainable management plan that appears to have worked, as the surveys in the Winter period 2019/ 2020 have demonstrated.

Study Area

The Study area was focused on the Quiet Zone Enclosure and lands immediately adjacent to it. The Maynetown lands slope upwards from the Coast Road R106. It is not possible to view the quiet Zone enclosure from the Pedestrian Cycleway.

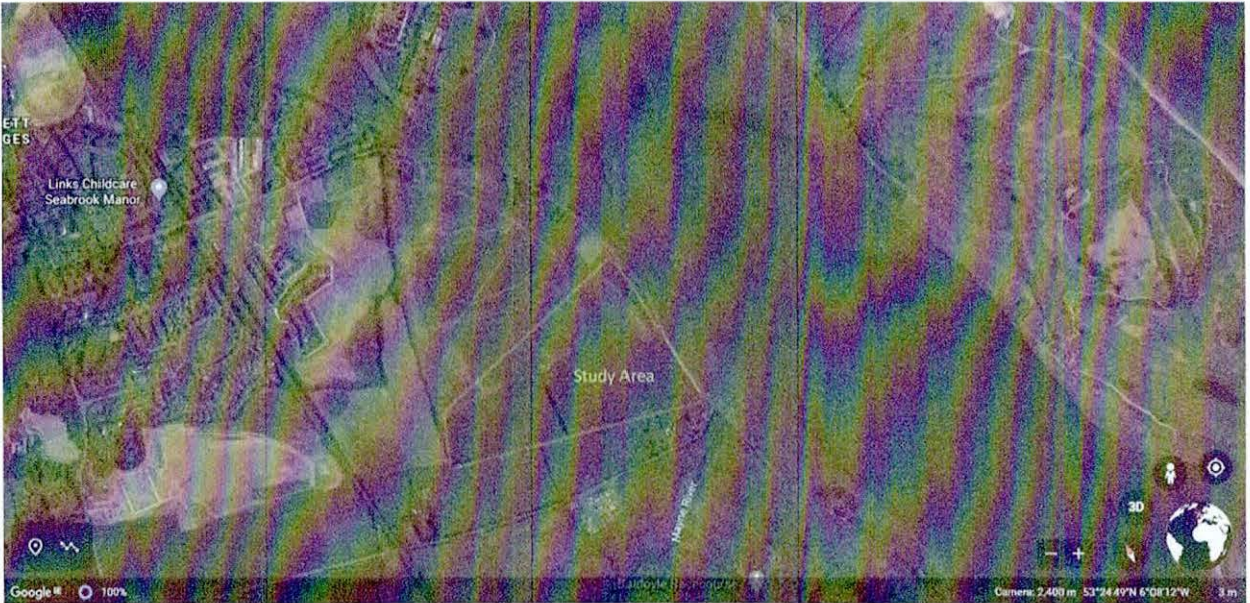


Figure 2: Google Earth satellite view of the study area lands at Maynetown

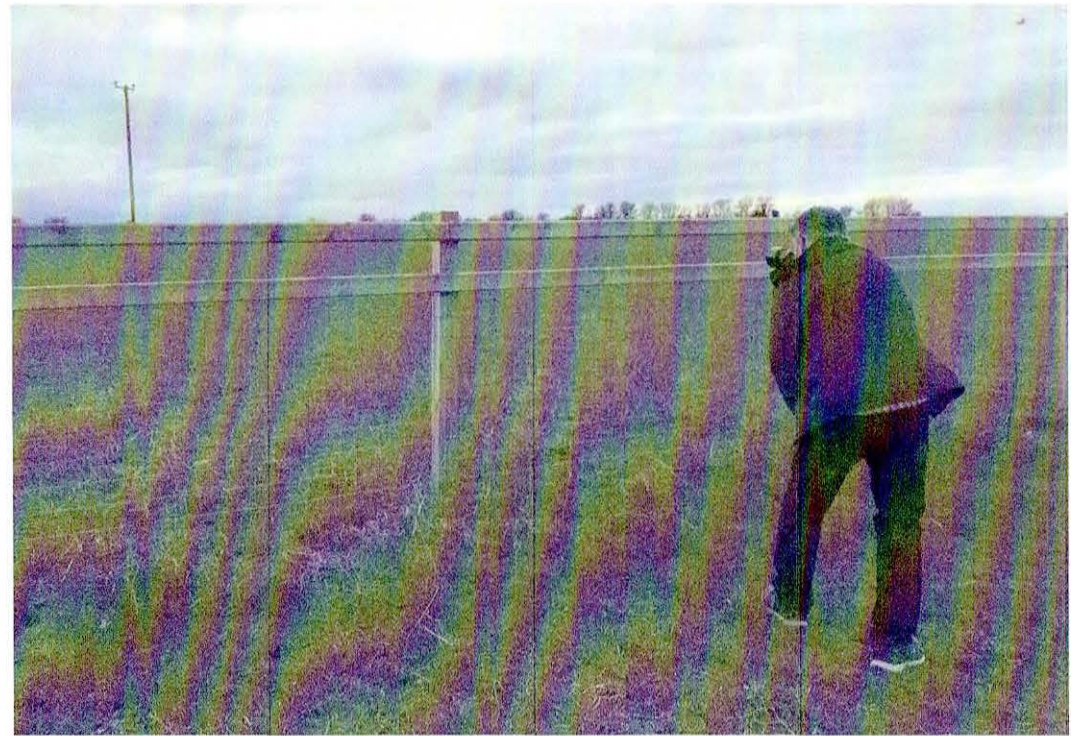


Figure 3: The Quiet Zone is completely fenced off with sturdy wooden fencing and wire to prevent access and disturbance from Pedestrians, Cyclists, Dog walkers etc.

The Quiet Zone has three distinct areas.

Area A: is closest to the Road and new Baldoyle to Portmarnock Cycleway and pedestrian route.

Area B: is separated from Area A by a ditch that bisects the site. It is the highest point of the Quiet Zone.

Area C: is separated from the rest of the Quiet Zone by a ditch lined by a hedge of trees.

Areas A, B, C are interconnected and surrounded and protected by the fence. The hedge between areas B and C is boarded by a deep ditch which holds water. It appears this ditch is fed by run off from surrounding fields.

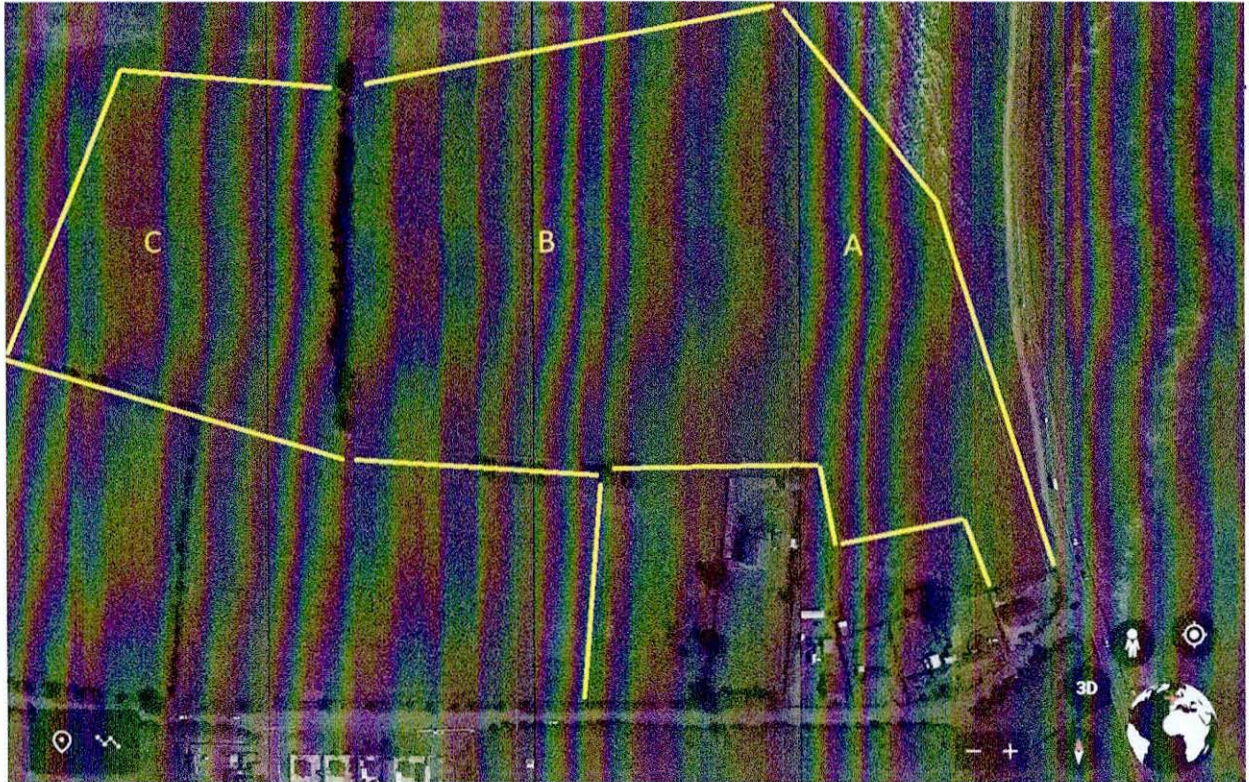


Figure 4: The Designated Quiet Zone.

The cycleway was routed through the Ecological buffer zone identified in the Portmarnock South Lap and handed over by the Developer to Fingal County Council as part of the compensation and mitigation measures for rezoning of the land to residential in the Portmarnock Local Area Plan adopted in 2006. It passes a few metres from the Quiet Zone.



Figure 5: Fence for Quiet Zone to the left. New cycleway and walkway (some flooding) to right.

Recording Methods

As a Citizen Scientists project the simplest method of survey which achieved the collection of the desired information was the goal. In saying that it was decided to roughly follow the IWebs methodology by visiting the Quiet Zone once a month during the overwintering period. The surveyors took note of the date, time, tide levels, basic meteorological conditions. Only one of the surveyors, John Lovett, is a professional surveyor, so we did not ask surveyors to attempt to count the number of light bellied Brent geese but to take photographic and video surveys for later inspection. The aim of the Citizen Science project was to identify if the Quiet Zone management plan was working and was being used by Light Bellied Brent geese. Recording Instruments were smart phones, digital cameras and video recorders.

Results

The results were definitive. There was use of the Quiet Zone recorded on all survey dates bar one. Survey dates where scheduled for at least once a month, approx one month apart. Surveys were carried out in December 2019, January 2020, February 2020 and March 2020. In Total there was 6 survey days with 7 site visits. Up to February there was usually more than one surveyor present, but due to the Covid-19 crisis and the need for social distancing the March surveys were carried out on two days by separate individuals. On January 30th 2020, bird survey expert John Lovett was present when the survey was carried out and he approximated up to 1000 birds. He returned with his own equipment the following day to validate the use of the Quiet Zone himself and again found a large flock utilising the site. Liam Dorgan's survey was at 8.14 am on a Saturday Morning on the 28th of March just after the Covid19 emergency measures and 2 Km restrictions came in. He found the LBBG flock just outside the Quiet Zone, but noted that the area was not subject to the usual amount of walkers, cyclists etc. Later that day David Kelly also walked the area and found the flock back in the Quiet Zone away from the now busier walkway.

Summary of survey dates and surveyors.

24 th December 2019	Sabrina Joyce-Kemper
30 th January 2020	John Lovett, Catherine McMahon, Philip Swan, Sabrina Joyce-Kemper
31 st January 2020	John Lovett
23 rd February 2020	Philip Swan, Sabrina Joyce-Kemper
28 th March 2020	Liam Dorgan
28 th March 2020	David Kelly (Portmarnock Community Association)
29 th March 2020	David Kelly

Date: Tuesday 24th December 2019
Time: 16:05 hours
Surveyor: Sabrina Joyce-Kemper
Weather: Clear sky overhead, heavy cloud bank to the south west of site, bitterly cold, breezy wind.
Tide: An hour after low tide.
Video Evidence: Yes
Notes: Stopped my car when I saw a flock of Brent geese rise from the Quiet Zone and fly towards the South. Some of the flock landed just outside the quiet zone area A. The cycle path/ buffer zone was flooded, approached from the road. As it was Christmas Eve there was no human activity on the Maynetown lands. I took a video and then the phone battery drained in the cold. These are two video stills.

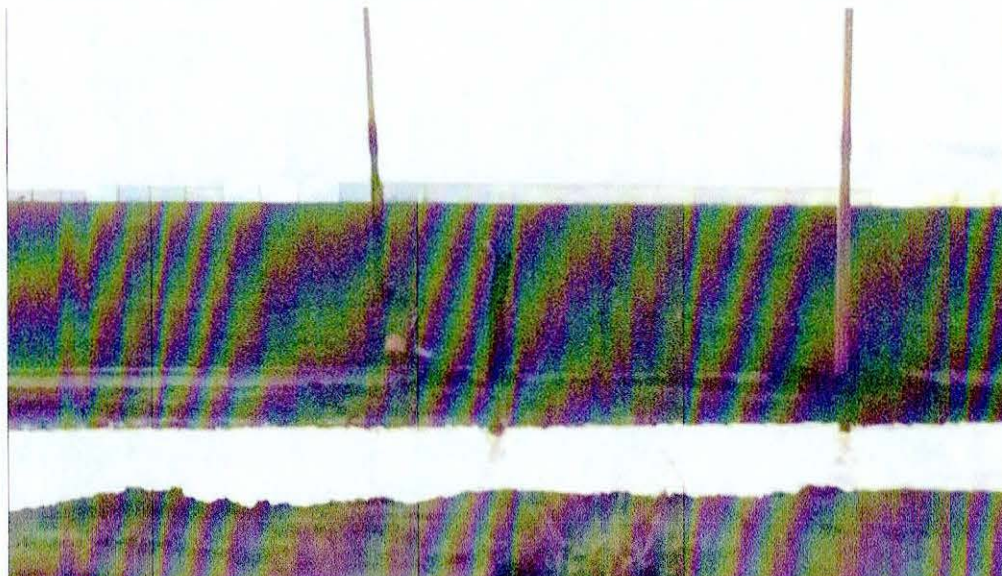


Figure 6: LBBG - Maynetown – Christmas Eve- Sabrina Joyce-Kemper

Photographs:

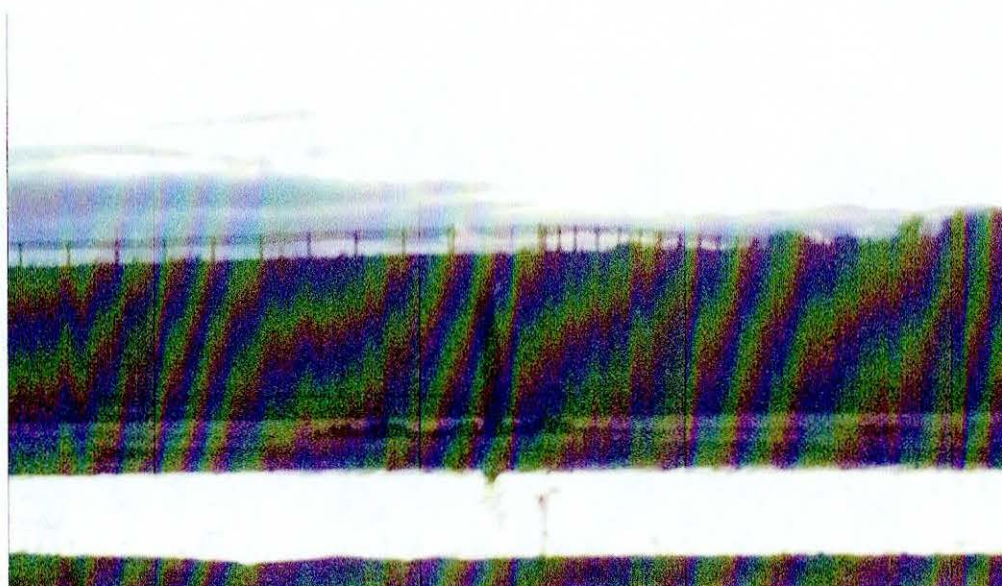


Figure 7: LBBG - Maynetown- Christmas Eve- Sabrina Joyce-Kemper

Date: Tuesday 30th January 2020

Time: 15.29 hours
Surveyor(s): John Lovett, Philip Swan, Catherine McMahon, Sabrina Joyce-Kemper
Weather: Strong wind, blue sky some cloud. Good visibility.
Tide: 30 mins after High Tide
Video Evidence: Yes.
Notes: There was in excess of one thousand birds within the Designated Quiet Zone. A population of international importance. Remained feeding in Area B.

Photographs:



Figure 8: LBBG Inside Quiet Zone - Section B- Philip Swan

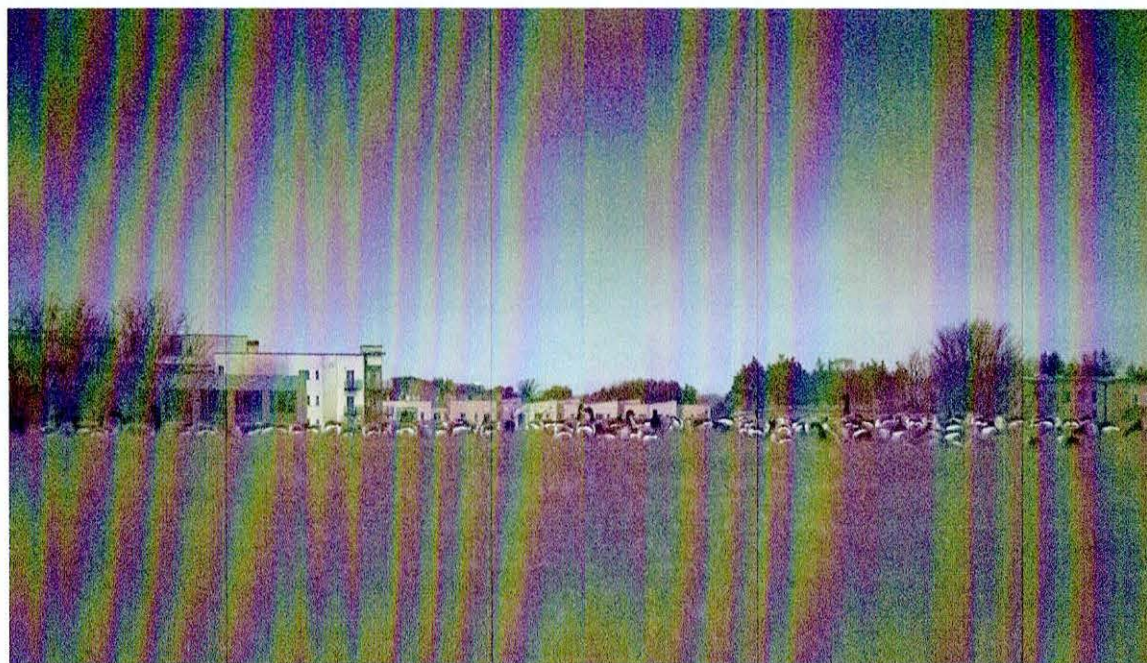


Figure 9: LBBG Inside Quiet Zone - Section B- Philip Swan

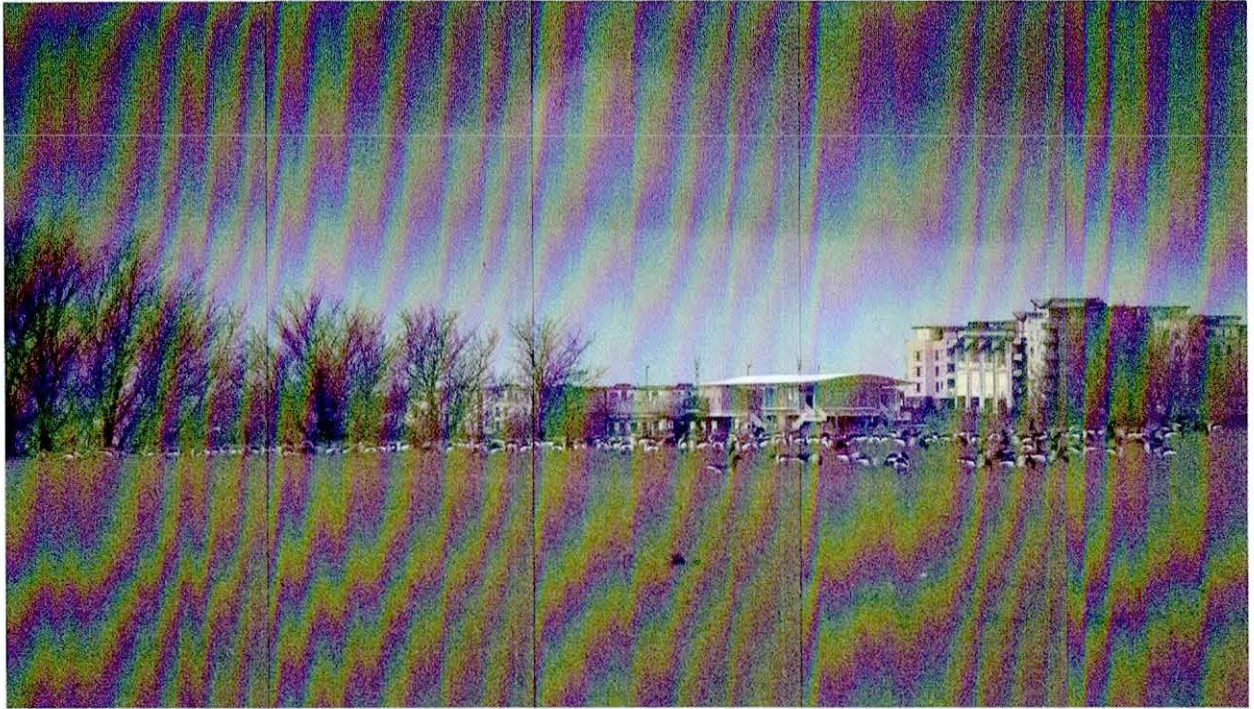


Figure 10: LBBG Inside Quiet Zone - Section B- Philip Swan



Figure 11: LBBG Inside Quiet Zone Section B - Philip Swan

Date: Wednesday 31st January 2020
Time: 17.45 hours
Surveyor(s): John Lovett
Weather: Slight wind, overcast . Good visibility.
Tide: 2 hours after High Tide
Video Evidence: Yes
Notes: Grazed in area B and towards the back over the hill to the south of area B.

Photographs:



Figure 12: LBBG - Area B- John Lovett



Figure 13: LBBG- Area B- John Lovett



Figure 14: LBBG - Southern area B- John Lovett

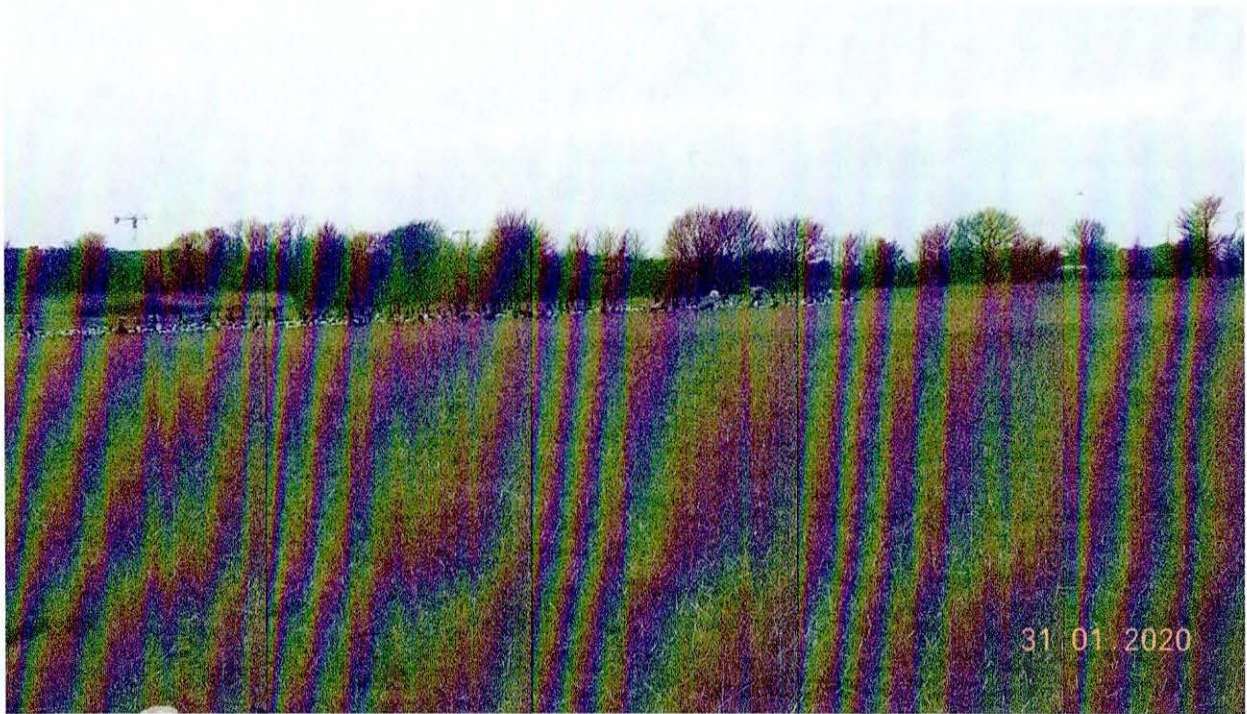


Figure 15: LBBG- Area B- John Lovett

Date: Sunday 23rd February 2020
Time: 14.27 hours
Surveyor(s): Sabrina Joyce-Kemper, Philip Swan
Weather: Slight wind, overcast, low cloud, Good visibility.
Tide: 3 hours after High Tide
Video Evidence: Yes
Notes: Large Flock of LBBG were spotted initially in Area B of the Quiet Zone. They grazed gradually through the field and moved through the hedge into Area C to continue grazing. The whole flock then lifted into the air and landed again in Area A to continue grazing further.

Photographs



Figure 16: LBBG - Area A- Philip Swan



Figure 17: LBBG - Area B - Philip Swan



Figure 18: LBBG- Quiet Zone - Area C- Philip Swan



Figure 19: LBBG - Quiet Zone- Area C - Philip Swan



Figure 20: LBBG - Quiet Zone - Area C- Philip Swan



Figure 21: LBBG - Quiet Zone - Area B- Philip Swan

Date: Saturday 28th March 2020
Time: 08.14 hours
Surveyor(s): Liam Dorgan
Weather: Clear Skies, good visibility.
Tide: 1 hour after Low Tide
Video Evidence: No.
Notes: Large Flock of LBBG were surveyed just outside of the Quiet Zone area A. Between the cycleway and the fenced monument. Very quiet in the area. Emergency measures restricting movement to 2k for exercise had just been announced.

Photographs



Figure 22: LBBG - Maynetown- Liam Dorgan

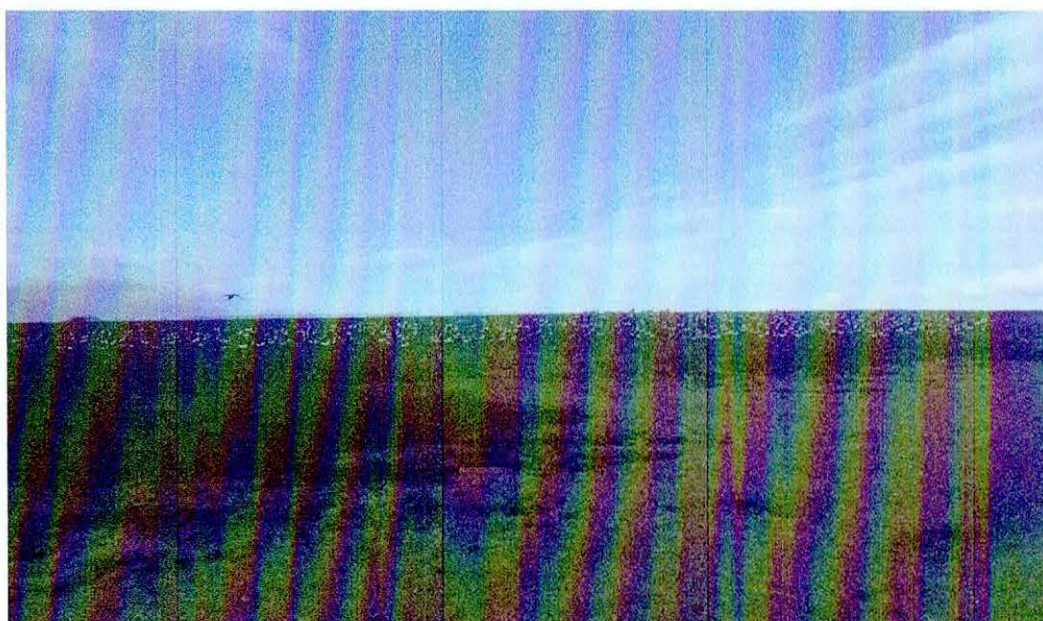


Figure 23: LBBG- Maynetown- Liam Dorgan

Date: Saturday 28th of March 2020
Time: 12.45 hours
Surveyor(s): David Kelly
Weather: Overcast, strong wind, Good visibility
Tide: 1 hour before High Tide
Video Evidence: Yes
Notes: Grazed in area A and moved on to Area B .

Photographs



Figure 24: LBBG- Area B - Quiet Zone - David Kelly



Figure 25: LBBG - Quiet Zone - Area B- David Kelly



Figure 26: LBBG - Quiet Zone Area B - David Kelly



Figure 27: LBBG - Quiet Zone - Area B - David Kelly



Figure 28: LBBG- Quiet Zone - Area B- David Kelly

Date: Saturday 29th of March 2020
Time: 08:00 hours
Surveyor(s): David Kelly
Weather: overcast, good visibility, windy.
Tide: 1 hour before High Tide
Video Evidence: No
Notes:

Photographs:



Figure 29: LBBG- Area B - Quiet Zone David Kelly

Conclusions

The survey demonstrated that Citizen Science has an important role to play in bridging gaps in biodiversity information that may otherwise remain an unknown quantity. The use of smart phones, cameras and video recorders in addition to annotated notes provides a colourful and easy methodology to compiling information. The local knowledge that Brent geese did utilise this area, drove this project to a very definitive outcome. It is heartening to note that every time a survey was done there were Light Bellied Brent Geese present. The use of the same area just outside the Quiet Zone is also interesting as the Geese were found here during very low traffic times (Christmas Eve at sunset and the first Morning of the Covid19 emergency 2km travel restrictions). The Geese tended to be found in Area B of the Quiet Zone but were noted to have grazed in succession in Areas B, C and A all in one foraging visit.

There is no doubt that the Quiet Zone is being managed by Fingal County Council well and that the optimum balance has been found. The sustainable methods of keeping the grass at the right height via cattle and sheep grazing also seems to be balanced enough that competition for food is not an issue for the Light Bellied Brent Geese. The Quiet Zone represents a foraging area where geese can safely feed with access to fresh water without having to expend precious energy taking flight avoiding predators or sources of disturbance. It has been established that human disturbances can have negative effects on the energy budget of light bellied brent geese (Clausen et al). The recent routing of the cycleway through the ecological buffer zone, will introduce cyclists and pedestrians to the species that utilise the lands and will raise awareness of the rich biodiversity in the area. However it will also bring further encroachment by humans and their dogs into the ecological buffer zone. However the availability of the Designated Quiet Zone give light bellied brent geese and other birds that use Baldoyle Estuary somewhere safe to go during high tides, Storm events and disturbance events. While at present in Maynetown a balance has been struck between human activity and biodiversity this balance is susceptible to issues such as urban development and climate change and management plans should be regularly assessed to ensure the balance does not tip too heavily away from natural protections due to negative human impacts.

References

1. NWPS - Baldoyle Bay SPA conservation interests supporting document.
2. Portmarnock South Local Area Plan 2013-2019
3. page 20 Winter wings 2017 – published by Birdwatch Ireland.