Wexford to Curracloe Greenway

Preliminary Design Report

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Wexford County Council

Wexford to Curracloe Greenway

Preliminary Design Report

This project is funded by Wexford County Council.

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1.0 INTRODUCTION

To implement Wexford County Council's policy to promote greenways in the form of a combined walking / cycling trail, we have considered a number of route options around the northern zone of Wexford Harbour. The options considered are a mix of coastal and in-land routes out of Wexford Town to Curracloe beach. The trail would be a walking / cycling trails and constructed to 'greenway' standard. The primary focus of the project is to provide a safe cycleway and walkway linkage between Wexford Town and the Curracloe beach area without impacting on the environment.

The study area offered five route options for the proposed Greenway, to either traverse around or through the north sloblands, a 1,000 hectare plain of land reclaimed from the sea in the mid nineteen century. The Wexford town trailhead is located in the carpark at Ferrybank Bridge where four of the five routes proceeds north east by following the coast line to the wetlands at Burgess. One of the route options, the Orange route follows the R741 Regional Road to Fahey's Cross then turns onto the R742 Road to Curracloe and on to Culleton's Gap. The Purple route is an in-land option which traverses farm land to Ballinamorragh village and then onto Curracloe. The Green and Blue route options follow the perimeter stream around the slobland to Beggerin where the green route skirts the fringe of the slobland while the Blue route cuts through the centre of sloblands to the opposite trailhead which is located at Culleton's Gap carpark.

In addition to the main greenway the scheme includes a secondary trail, the Ferrybank Looped Trail which exit Wexford town north out along the R741 Regional Road to Ardcavan Business Park where it heads through the business park, then through fields to connect with Ardcavan Lane. It follows the Ardcavan Lane east to the coast where it can link up with any of the greenway route options.

1.1 Design Team

The project design team comprises of technical staff from the Environment Section of Wexford County Council.

Gerry Forde, BE., Dip.(Planning), C.Eng, MIEI: He is a senior engineer with 36 years experience in local government and he currently manages the Environment Section, Wexford County Council. He is the Project Manager for the proposed Greenway scheme and prepared the planning & policies report, winter closure report plus reviewed all planning documentation. He has experience in roads, water services, environment, planning and has received training in physical planning and roads design.

Rory O'Mahony, BSc.(Eng), Dip.(Eng), C.Eng, MIEI: He is a senior executive engineer and manages the waste enforcement team in the Environment Section, Wexford County Council. He is the Project Engineer for the proposed Greenway and prepared the preliminary design plus EIS screening report reviewed all planning drawings. He has received training in Recreational Cycle Route Planning & Development and in Trail Planning and is a member of Wexford Walking Trails.

Gillian Power, B.E., Dip. Public Management: She is an executive engineer, is an environmental enforcement officer and manages coastal facilities for the Environment Section, Wexford County Council. She has prepared the outline construction method statement & environmental management plan for the project. She has construction experience on major sewerage works, design and installation of water schemes, resident engineer on the construction of a new Landfill. She has received training and has extensive experience in Waste Management Practices. She is a member of Wexford Triathlon Club and an organiser on the Children's Events Committee.

George Colfer, BE MEngSc C.Eng MIEI: He is a executive engineer and manages the coastal infrastructure in the Environment Section, Wexford County Council. He has the traffic and parking report for the project. He has experience in compiling tender documentation, tendering process, construction supervision and liaising with the general public.

Scott Cawley Ltd ecologists were appointed to undertake field surveys, AA Screening, an AA appropriate assessment and prepare a Natura Impact Statement (NIS) of the proposed project. Scott Cawley have extensive experience in environmental assessments and have a team of qualified and experience ecologists and ornithologists.

1.2 Project Study Area

The study area will cover a zone of land from Ferrybank at Wexford Town to Culleton's Gap at Curracloe and is contained within the Regional Roads and Wexford Harbour shoreline. The study area will consider five route options including the Curracloe Regional Road option. The study area includes the North Sloblands, a 1,000 hectare plain of land recovered from the harbour in the mid nineteen century plus the Wexford Wildfowl Reserve established in1981 and now covering an area of 215 hectares which has become one of the most important winter feeding grounds for migratory geese. The eastern flank of the area is bounded by the Raven Wood, a 1930's plantation of pine conifers on a sand dune system extending from the Raven Point to Culleton's Gap and continuing north. The study area has a number of designated European Sites within or adjacent the route options.

Fig. 1.1: Project Study Area – A Zone between the Orange Road Route to the Yellow Coastal Route:

2.0 DESIGN REQUIREMENT

2.1 Planning Citation:

Wexford County Council is now submitting the proposed scheme in accordance with section 80(1)(k) of the Planning and Development Act, 2000 for the development of cycle and pedestrian greenway from Wexford to Curracloe.

2.2 General Requirements

A Greenway is defined as ‘a cycleway that caters for pedestrians and cyclists in a recreational environment’ and which provides independent communication paths” for exclusively non-motorised use which are accessible for any type of user because they have few or no slopes and are often built on old railway lines or canal towpaths.

The proposed Greenway will provide a high quality cycle and walking route between Wexford and Curracloe. The Greenway will be targeted at recreational users and tourists both domestic and overseas who visit the region. The proposed greenway should not be equated to or confused with a minor road as the design has been developed using cycle and trail design standards. The following documents are proposed to be used as a design guide to providing a high quality cycle route:

- 2011 NTA National Cycle Manual
- 2017 TII Rural Cycle Scheme Design (NRA TD 300/14)
- 2017 Sports Ireland Trails Classification and Grading for Recreational Trails
- 2017 Sports Ireland Trails Guide to Planning & Developing Recreational Trails

Similarly the greenway is not cited as a minor road in this planning application but rather an amenity facility, primarily for recreational use which would also facilitate cycle and walking commuters in the Ardcavan / Curracloe areas.

Fig. 2.1: Example of Typical Surfaced for a Greenway:

2.3 2011 NTA National Cycle Manual:

In accordance with the National Cycle Manual which has been developed by the National Transport Authority there are five needs of a cyclist; 1) Road Safety, 2) Coherence, 3) Directness, 4) Attractiveness and 5) Comfort, the proposed Greenway selected should scores well against each of the above headings and also with the following characteristics:

(i) Separated users from live traffic to increase safety.

(ii) An arterial route with various connections should form a coherent route for users.

(iii) The selected Greenway should link Wexford Town with the north fringe of the town at Ardcavan and link the Curracloe and Culleton's Gap beaches directly and provide an excellent commuter and recreational facility.

(iv) The location of the proposed Greenway along the Wexford Harbour shoreline should provide an attractive route for the user.

(v) The greenway surface and flat gradient should provide a smooth and very comfortable facility for cyclists.

2.4 2017 TII 'Rural Cycleway Design (Offline) (NRA TD 300/14):

The NRA has developed a design standard which was publication in 2017. The document outline the design standards and factors that need to be considered by Designers when providing cycling facilities in rural areas. The design standard has the following design principles which are to be considered for rural cycle schemes.

- Coherence
- Convenience
- Directness
- Safety
- Comfort
- Attractiveness
- Access

The alignment and layout of the proposed greenway is designed to the requirements set out of the 2017 TII 'Rural Cycleway Design (Offline) (NRA TD 300/14), including any relaxations in standards to the steps below desirable minimum.

2.5 Sports Ireland Trails Classification and Grading for Recreational Trails

The National Trails Office (NTO) was established in 2007 by the Irish Sports Council to coordinate and drive the implementation of an Irish Trails Strategy, and to promote the use of recreational trails in Ireland. The NTO has developed a number of publications which outline the required standards it expects of various trails and Greenways. The following list of headings outlines what is required of a high quality Greenway as listed in their Classification and Grading for Recreational Trails document.

- Relatively flat trails intended for use by walkers and cyclists of all ages (and possibly horse riders).
- Wide enough to accommodate two-way usage.
- Even consistent sealed surface with no trail features or obstacles.

- Has low gradient to ensure slow speeds and safe use in any direction.
- May include urban paths, canal tow paths, rural traffic free lanes, forest roads, etc.
- The NTO specifies a desired minimum trail width of 2.5m where a 3.0m width cannot be provided. It is proposed to maintain a constant trail width of 3m over the entire lengths of the Wexford to Curracloe Greenway.

2.6 Sports Ireland Trails – Guide to Planning & Developing Recreational Trails:

Sports Ireland Trails, formally known as The National Trails Office (NTO) has developed a number of guideline documents which provide step by step advice on the development of various types of trails. The document outlines what a trail (which includes Greenways) should accomplish and how it should sit into the existing environment. The document also highlights various aspects such as Land Ownership, Environmental Considerations, Safety, Trail Management, Liability & Insurance, Development Costs, Long Term Maintenance Commitment etc. The document provides very useful information which will be referred to in this report.

3.0 EXISTING ENVIRONMENT:

3.1 Environment Characteristics of the Route:

Fig. 3.1: Aerial Map of the Study Area:

The existing environment can be consider as three broad legs, the first is agriculture land at the fringe of Wexford Town extending to the edge of the sloblands. The land is slightly elevated, overlooking the harbour on soft clay coastline where aggressive erosion is occurring. The fields are bound by low hedging and the land is both farmed and unfarmed.

The second leg is the land contained in the North Slob. This land is flat open country with few hedges on heavy poor draining soil. The land is a mix of grass meadows and cereal / fodder crops. The western section of the slobland is within the Wexford Wildfowl Reserve and the eastern part is private farmland. All the sloblands are below sea level protected by a typically 4m high earth bunded sea wall. The land is drained by wide open ditches accumulating into large open channels where the water is eventually pumped to sea.

The third leg is the Raven Wood Nature Reserve which extends from the Raven Point to Culleton's Gap. The reserve is a sand dune system covered with a stand of mature pine tree. The outer dune's at the top of the point is open and covered in marine grasses.

3.2 Existing Corridor Restrictions

There are some restrictions along the routes options over the study area which need to be considered.

3.2.1 Wetland at Burgess:

Fig. 3.2: SAC / SPA Extends Inland over a Wetland at Burgess:

The Slaney River Valley SAC and Wexford Harbour & Slob SPA extends in from the shoreline to cover a wetland area in the townland of Burgess near Ardcavan. The wetland extends inland from the shoreline to form a restriction to the north / south corridor for the proposed coastal greenway.

3.2.2 Housing on Orchard Lane:

Orchard Lane runs east from the R741 Regional Road to the coast. Existing housing development has extended along the lane leaving limited number of corridor gaps to permit a greenway route through in a north south direction. The routing of a greenway across Orchard Lane will require a trail diversion in-land to maintain the continuous corridor.

3.2.3 Wexford Wildfowl Reserve:

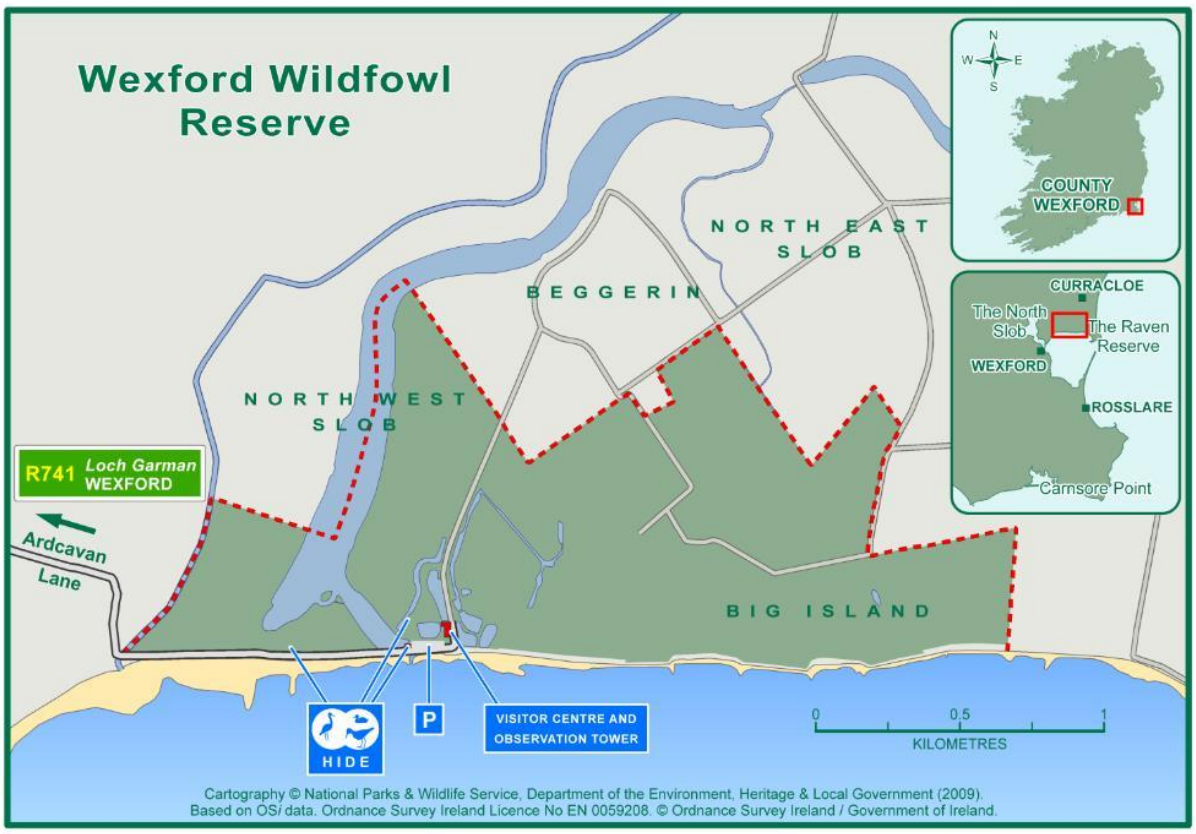

Fig. 3.3: Location of Wildfowl Reserve:

The Wildfowl reserve is located on the western side of the North Slob and hugs the sea wall for 3.1 km. There is an existing access road from Ardcavan Lane which extends 1.2 km into the reserve leading to the visitor centre. The remaining section of the reserve, a distance of 1.9 km continues along the sea wall and comprises of farm paths and a narrow strips of ground between sea wall and drainage ditches. This land restriction continues a further 1.5 km east beyond the reserve to the Raven Wood.

The location of the reserve and indeed the open agriculture fields on the slobland are route constrained due to the whole area being an established feeding and roosting area for winter geese, particularly the Greenland White Fronted Goose. The reserve and the slobland are effectively a blocking zone pushing any possible route along the base of the sea wall or inland around the perimeter of the slobland.

3.2.4 In-land Country Side:

In addition to the coastal route, three inland routes were considered within the study area. Due to the extensive size of the wildfowl reserve all other route options would need to be diverted substantially inland either following the perimeter of the slobland or by following the existing fields, lanes and county roads in the immediate vicinity of the sloblands.

Fig. 3.4: Purple Route – Poor Visibility on County Road:

The adjacent country side rises around the perimeter of the slobland with low hills and a patch work of small fields with good hedging enclosures. Apart from the sloblands the landholdings of the adjoining country side are fragmented and small, limited to a few fields in each holding. There are perimeter lanes around the slobland but they are not continuous and are primarily used for agriculture activity including the movement of large agriculture vehicles and livestock. The local county roads are tertiary roads with very low traffic volumes. However the roads are narrow, typically less than 5m wide and they are very windy with short steep rises and sharp crests all providing poor forward visibility and short stopping sight distances for traffic to see pedestrians ahead.

3.2.5 Parking:

Most of the county roads and lanes leading to the sloblands have limited parking space on verge or in some cases no parking space between hedge line boundaries. The only exception is at Culleton's Gap which has 46 car parking spaces plus approximately 20 verge spaces. However the capacity is not sufficient to cope with summer usage and frequently there is overspill to the intermediate carpark on the road leading to White's Gap.

4.0 CONSIDERATION OF ROUTE OPTIONS:

The overall goal of the Wexford to Curracloe Greenway is to link Wexford Town to the beaches of Curracloe while also providing a scenic route which can be enjoyed by locals and tourists. To achieve greenway standard every attempt has been made to follow the design principles set out in the TII's 'Rural Cycleway Design (Offline)' and compare each route option in achieving these principles. The primary design consideration for a recreational trail is that sufficient route length is 'off road' or where required segregated from live traffic. As highlighted in the existing environment chapter, the local county road network does not easily lend itself to a greenway standard. Therefore all route options were primarily routed off road through fields and lanes and only back onto public roads where no alternative route could be found.

The R741 and R742 Regional Roads were considered to test the feasibility of adapting and improving the existing footpaths, on-road cycle lanes and grass verges to provide a greenway route option, labelled the Orange Route. The Orange Route failed to achieve a greenway standard due to it being almost fully on-road with a number of unsuitable sections of road alignment. As the route was not considered a viable greenway option it was not included in the following comparison tables. However the Orange Route is described in chapter 'Route Assessment & Selection' and its attributes are examined in more detail for their merit and drawbacks.

Fig. 4.1: Typical Sections of the R742 Regional Road (Orange Route):

Thus four of the five corridor routes options were considered across the study area between Ferrybank and Curracloe. The route options were compared under the following headings; On/off road split, direct impact on landholdings, direct impact on special designated areas, winter closures, trail classifications and connectivity. Refer to Book No. 3, Greenway layout drawing ATR/105 to compare route options.

4.1 On / Off Road Split:

The routes options were compared against their proportional lengths which would travel on public roads versa along farms access path or through agriculture fields.

Road / Path Types	Green Perimeter 10.3 km	Blue Central 9.9 km	Purple Inland 11.7 km	Yellow Coastal 10.7 km
Public Roads (Low Traffic)	2.8km 27%	0.8km **8%**	4.3km 37%	1km 10%
Farm Access Paths	13%	**60%**	2%	11% Farm * + 29% Wood Path**
Thro. Fields	60%	**32%**	61%	50%

Fig. 4.2: Comparison of On / Off Road Split of each Route Option:

* All farm paths which would be acquired for the sole use of the trail route.

** Existing wood walking trail with very occasional use by NPWS vehicles.

There was a wide variation between the route options in the split between on / off road, farm access paths and through fields. The Blue Central Route proposed has 60% of its route length along existing farm access paths, however these paths are the main farm access paths servicing the sloblands and attract a lot usage by heavy and large farm vehicles. In contrast Yellow Coastal Route proposed has 11% of its route length on farm access paths, in contrast these paths are at the end of cul-de-sac's and only serve a few fields. Similarly both the Blue and the Yellow Routes have high proportions of route through fields, the actual level of land severance is very low as the vast majority of these routes are aligned to natural boundaries such as perimeter streams or sea wall defences.

Fig. 4.3: Typical Yellow Route Corridor Along North Slob Sea Wall (Ch:6+000):

The proposed Green and Purple Routes have a much greater impact on local farm fields as the route may follow field boundaries but they still cross through the centre of farm holdings which would lead to a large number of farm crossing points and conflict with agriculture vehicles.

The Purple Route proposes using a 1km section of the Ballyla Road which has short steep rise with tight bends and crests with limited stopping sight distances and forward visibility for other road users. This section of road would require the removal of hedging and / or addition of a trail adjacent to the road.

Additionally the Purple and Green Routes proposes using a 2.2km section of the Curracloe Road to Culleton's Gap. This section has heavy traffic volumes with poor alignment and some pinch points which would require the separation of the pedestrians on to a footpath where as the cyclists would continue to share the road with vehicles. Building constraints along the edge of this section of road would limit the feasibility of providing a constant footpath of minimal width.

4.2 Direct Impact on Landholdings:

An important consideration in the assessment of the route options is their impacts on surrounding landholdings and in particular where the trail directly impacts a landholding and the activities taking place on those holdings. The comparison distinguished between a route hugging the boundaries of a holding and where a route traverses through a holding with the disruptions that may cause.

Route Impact	Green Perimeter	Blue Central	Purple Inland	Yellow Coastal
No. Holdings	19	15	19	**12**
By Holding Boundaries	12	10	9	**11**
Bisecting Holdings	7	5	10	**1**

Fig. 4.4: Comparison of Route Impacts on Landholdings:

The comparison above shows the Yellow Coastal Route imposing the least impact on landholdings between the two route destinations. The Yellow Route impacts on the least number of landholdings and only bisects one landholding at Ardcavan. Additionally the Yellow Route proposes to use existing farm access path at the terminals ends where access is only required to a small number of fields.

Fig. 4.5: Proposed Yellow Route Traversing a Landholding at Orchard Lane:

The Blue Central Route impact only slightly on more holdings than the Yellow Route but bisects five landholdings. It should also be noted that on the Blue Route, the majority of the ten holdings impacted along their boundaries are on the common farm access paths where there would be significant conflict between leisure users and farm machinery and livestock movements.

Both the Green Perimeter Route and the Purple Inland Route have a direct impact on a high number of landholdings and bisect a high number of same. The two routes have similar number of impacts along landholding field boundaries but the comparison table does not count the impacts on farm activity where the routes follow a public roads and that road is straddling a single farm holdings.

4.3 Direct Impact on Special Areas:

All the routes traverse one or more designated areas of special interest for habitats or birds and the comparison below sets out the relative intrusion. The table illustrates the lengths through which the various routes traverse across the special areas of interest. Refer to the Book No.3, the trail layout drawings for the exact lengths, location and extent for which each route impacts on the various designated areas.

Special Areas of interest	**Green Perimeter 10.3km**	**Blue Central 9.9km**	**Purple Inland 11.7km**	**Yellow Coastal 10.7km**
Wildfowl Reserve	No	No	No	Yes, Edge 3,100m
SAC	Yes 300m	Yes 300m	Yes 100m	Yes, Edge 3,600m
SPA	5,300m adj. 5,000m trav.	2,200m adj. 7,700m trav.	No 100m trav.	10,400m adjacent 300m traversed

Note: The lengths of special areas may be duplicated where they over lap.

Fig. 4.6: Comparison of Route Traversing Special Designated Areas:

The Purple Inland Route has the least impact on all the designated areas. The route is aligned around and hugs the perimeter of the Wexford Harbour & Slob SPA but inside the R742 Curracloe Road, which is the Orange Route. The Green Perimeter Route offers the next least impact on designated areas, as it avoids the Wildfowl Reserve and cuts inside along the edge of the Wexford Harbour & Slob SPA for most of its route.

Fig. 4.7: Farm Access Point to North Slob at Beggerin Island:

A significant drawback to both the Purple and Green Routes by remaining open through the whole year is it could facilitate access to the north slob during the geese wintering period. The route of the Purple and Green options would lead trail users past two assess points into the slobland. The access points are at Beggerin Island and at the Hook Bridge Road and both are unprotected. Secure gates would be required as mitigation measures to eliminate bird disturbance. As both these access points are active farm path with numerous machinery trips in and out each day, keeping the gates closed or locked during the winter period would be a concern.

To prevent passing trail users from entering these points appropriate measures such as electrified gates should be installed. The gates should also be operated by a fob so vehicles including tractors could enter and exit the slobland without the need to dismount to open and close gates. Additionally these access points are near to residential properties and Ballinamorragh village where local user may feel encouraged to use the trail during the winter period and without locked gates installed at these points, they may gain access onto the sloblands. This issue could be exacerbated as a higher proportion of local walkers tend to their walk dogs and in remote area tend to release their dogs off their leads. In this instance dogs would have uncontrolled access to the fields with migratory geese.

Fig. 4.8: Main Farm Access Path through the North Slob:

The Blue Central Route avoids the Wildfowl Reserve but bisects the Wexford Harbour & Slob SPA as it follows the main farm access path through the slobland. The route is through open country side with relatively no hedge screening which would result in the most significant disturbance to feeding and roosting birds. The Blue Route would require winter closure across the slobland leg of the trail to mitigate against bird disturbance. The locking down of the Blue Route over the winter period is not as secure as the Yellow Coastal Route as the route is on an active farm path with numerous machinery trips. Additionally should someone gain access beyond the secure gates, it is impossible to fence off the whole path plus all the side path leading off the main path and the surrounding fields as there are too many field gates which be left open depending on farm activity.

The Yellow Coastal Route traverses the largest extent of special designated areas.

Fig. 4.9: Proposed Route along the Shoreline of Burgess Wetland (Ch:1+500):

Burgess Westland: To reduce the impact on the SAC & SPA at Burgess, the shortest route was chosen which is along the shoreline and at low level. The Purple Route effectively avoids the SAC & SPA at Burgess as it is setback from the reeds edge as it traverses around the perimeter, however it dose overlook the reeded area on higher ground which could impact on this special areas and particularly the activities of the winter birds.

Wildfowl Reserve & Slobland: The Yellow Route traverses 3.33km along the edge of the Wildfowl Reserve from ch.2+520 to ch.5+850, of this 1.2km is along the existing visitor access road which is screened for the most part by mature trees. The remaining 2.13km of the reserve and 1.03km of the slobland is along terminating farm paths (cul-de-sac to one or two fields) or along a buffer zone (un-farmed field margin) between the sea wall and field boundary ditches. This leg of the route would be made secure with the addition of dog proof fencing on field side of the trail and secure high fencing on the other side to prevent access from the sea wall side. This length of route is referred to as the 2nd Leg and would be locked down over the winter period with four secure locked gates, refer to Constraints Map ATR/ 102 for their locations.

Signage will be erected educating greenway users of the sensitive nature of the sloblands and winter and its importance to the international Greenland white-fronted goose population, and prohibiting access to the mid-section during the closed period.

Raised Deck Viewing Platforms:

Apart from the trail route across Big Island the remainder of mid-leg trail is on very low ground at the base of the earth embankment sea wall with few opportunities to view out on to the slobland. It is proposed to provide raised deck platforms at two locations on the proposed trail route. The first is located opposite the ponds outside the visitor centre and opposite the Curracloe Channel, see Trail Layout drawing ATR/121 & 130. The platforms would be screened from the waterbodies with tinted glass panels to offer trail users a view of summer birds on the water or on the adjacent banks.

Fig. 4.10: Farm Lanes at Base of Sea Wall (Ch:4+000):

The farm paths along the base of the sea wall are secondary access points to adjacent fields. The primary field access is gained internally from a parallel farm path which is connected to the main farm access path.

Fig. 4.11: Farm Path at Base of Sea Wall (Ch:6+125):

It is proposed that these farm access lanes to fields immediately adjacent the base of the sea wall along the mid-leg of the route would be surrendered for the exclusive use of the trail as part of any agreement with effected landowners. This arrangement would permanently remove any field access gates onto the proposed Greenway route and also allow the complete lock down of the Greenway's mid-leg section across the slobland over the winter closed period.

Fig. 4.12: Existing Looped Trail Through The Raven Wood (Ch:8+500):

The Raven Wood: It should also be noted when comparing the lengths of routes over the special designated areas that the Yellow Route traverses the Raven SAC for a distance 3.5km in covered woodland on an existing trail path. The level of bird disturbance is very much reduced over this 3rd leg of the route due to the visual coverage.

To reduce the possibility of bird disturbance by Greenway users, it is proposed to re-surface the looped trail at the end of the Raven Wood with macadam surfacing similar to the main greenway route and place signage to encourage users to stay on the designated trails. Similarly signage would be placed on the existing spur path which leads off the main greenway route. It is hoped these measures would encourage trail users to remain on the designated looped trail.

The Natura Impact Statement (NIS), Book No.5, will address the types of impacts and the proposed mitigation measures to address those impacts in more detail.

4.4 Greenway Winter Closure:

The following table show which route could remain open all year around and which route would be restricted in use during the winter period due to the inward migration of winter geese and in particular the Greenland White Fronted Goose.

	Green Perimeter	Blue Central	Purple In-land	Yellow Coastal
Winter Closure	no	15th Sept-15th April	no	15th Sept-15th April

Note: The closure duration is inclusive of the months stated.

Fig. 4.13: Comparison of Route Closing Periods:

Both the Green Perimeter and the Purple Inland Routes are far enough away from the Wildfowl Reserve and the Wexford Harbour & Slob SPA as to not significantly impact on the wintering birds. However the routes do lead trail users past two active access points to the sloblands and significant secure measures would need to be applied to new access gates and these gate would need to be monitored to ensure they remain locked.

WILDFOWL RESERVE SECURITY GATE 1

Fig. 4.14: Secure Gates & Fencing at Reserve (Ch.3+700):

Both the Blue Central Route and the Yellow Coastal Routes would impact on the Wexford Harbour & Slob SPA and would require winter closure of any trail route. The extent of trail closure would be limited to the 2nd Leg or mid-leg which covers the Wildfowl Reserve and the slobland areas up to the edge of the Raven Wood. The duration of closure would

extend from 15th September to the 15th April each winter and would be enforced by a set of secure gates and fencing at entry point to the sloblands.

The trail mid-leg section to be closed would be made secure by erecting 2.4m high blocking gates at four locations, one to be placed beyond the Reserve Visitor Centre, the second is at the end of the Red Bridge farm access lane which forms a T-junction with the trail at ch:6+220, the third is on the trail aligned opposite the Curracloe Channel at ch:6+755 and at the final gate is at the edge of the Raven Wood, ch:7+130. The gates and associate railings would be constructed of galvanised box metal section capable of withstanding vandalism. The railings would be 2.4m in high and made up of vertical sections set at 100mm spacing with no horizontal bars so as to prevent it from being scaled. Refer to drawings ATR/108 & 109 for more details of the metal gate arrangement. The railings would extend into the adjacent ponds, into the sea wall embankment and deep into hedging / ditches.

Fig. 4.15: Wildfowl Reserve Visitor Centre:

Between the blocking gate /cross railing it is proposed to run a 1.8m high paladin mesh fence along the Greenwayl edge, beneath the sea wall embankment side for the full closed leg section, starting at the visitors centre, ch:3+700 and continuing to the edge of the Raven Wood, ch:7+130 a distance 3,430m. This extensive fencing would ensure that if a trail user approached the locked gates during the closed winter period and attempts to gain access to the trail mid-leg by climbing around the sea wall they would still be blocked by 1.8m high mesh fencing. Similarly should a trail user attempt to circumvent the blocking gates via the slobland fields they would be prevented by open channels, wide ditches and

large ponds. Effectively the trail mid-leg section is blocked on three sides by high fencing / gates and by channels, drainage ditches or ponds on the north side.

Fig. 4.16: Secure Blocking Gate Location, ch:6+755:

Additionally it is proposed to install CCTV cameras overlooking the gate locations which would be connected to Wexford County Council's CCTV surveillance network. It is also proposed to enact trail bye-laws to penalise persons for unauthorised access to the closed trail mid-leg with on the spot fines or issues fines as a result of conclusive CCTV footage evidence. The above restriction should be a sufficient deterrent to any unauthorised access to the closed trail mid-leg.

The Ferrybank Loop Trail which extends up to the edge of the north slob would remain open all year around as would the existing looped trail through the Raven Wood.

4.5 Classification:

Sports Ireland Trails classifies trails into five categories, the grading varies from multi-use which encompass all users to very difficult which is limited to accustomed walkers with navigational skills. In addition to the physical grading of a trail the classifications also consider other criteria such as carparks, path widths & surface firmness, resting places with seating, elevation, remoteness, etc,. The four routes below were assess using the Sports Ireland Trails classification system and all four route were assigned be to class 1 with the grading falling between multi-use or easy.

Classification	**Green Perimeter 10.3km**	**Blue Central 9.9km**	**Purple Inland 11.7 km**	**Yellow Coastal 10.7km**
Sports Ireland Trails Grading	Easy	Multi-Use	Easy	Multi-Use
Max. Ascent	20m	4m	20m	4m
On Road Suitability for Pedestrians / cyclists	Good	Good	Poor	V. Good

Fig. 4.17: Comparison of Route Classification and On-road Suitability:

The four route options considered would all achieve class 1 standard, effectively a greenway standard, however the Green and Purple Route have high proportions of their routes on public roads. The 2017 TII 'Rural Cycleway Design Standard' or the 2011 NTA 'National Cycle Manual' do not specify maximum proportion of route that can be on road. The potential leisure user of the proposed trail would expect a low proportion of on-road sections on the overall route.

All the routes except the Purple Inland Route and the Green Perimeter Route have suitable on-road sections in respect of their alignment, visibility, low traffic and country side environmental setting. The final legs of the Purple and Green Routes propose using a 2.2km section of the Curracloe Road to Culleton's Gap. This section has heavy traffic volumes with poor alignment and some pinch points. Additionally the Purple Route has over a 1km section at Ballyla which requires improvements in forward visibility such as hedge replacement with clear fencing or the addition of a greenway adjacent the road edge or immediately inside the hedge line.

Fig. 4.18: Multi-Use trails offers the widest range of participants to avail of the trail infrastructure:

4.6 Connectivity:

The proposed greenway will connect Wexford Town with Culleton's Gap and Curracloe beaches and provide alternative pedestrian and cycling connections with the north fringe of Wexford Town to the town centre.

Fig. 4.19: Route Options for the Proposed Greenway:

The connectivity of each route options is outlined below;

4.6.1 Yellow Coastal Route Connections:

The proposed Yellow Route hugs the coast line around Wexford harbour and connects with an existing path through the Raven Wood. The first connection similar to all route options considered commences at the trailhead located in the large carpark at Ferrybank Bridge where the route proceeds north crossing Orchard Lane. The private access at Orchard Lane will provide a trail connection to local residents only. The trail continues north and connecting with Ardcavan Lane which would provide a new 25 space carpark. Trail users at this location have the added option of following the Ferrybank Loop Trail inland west to Ardcavan and back to the Ferrybank trailhead. At Ardcavan Lane the route proceeds east along the access road to the Wildfowl Reserve and is the only route option to directly connect with the visitor centre.

Fig. 4.20: Proposed Coastal Route North of Wexford Town at Burgess:

The final connection is to the existing 3.5km long trail through the Raven Wood where the existing carpark at Culleton's Gap which has 46 carparking spaces plus approximately 20 verge spaces. There is continuous beach from Culleton's Gap to White Gap (Curracloe) and they are also connected via a low traffic road. During the summer season and most weekends throughout the year there is a mobile coffey dock present at the trailhead throughout the day.

Restroom facilities are provided at White Gap carpark, which is 1km north of Culleton's Gap. The trailhead carparks at Culleton's Gap and the Ferrybank would allocate space for cabins to allow bike hire firms to provide a bike drop-off type service from either location.

4.6.3 Blue Central Route Connections:

The Blue Route commences at the carpark at Ferrybank Bridge and follows the shoreline and heads inland around the SAC at Burgess connecting with the Orchard Lane. The route connects with a new proposed 25 space carpark at Ardcavan Lane and then continues north to the end of a public road at Ballyla with has only nominal verge parking. The Blue Route would be closed at this location over the winter period thus creating an intermediate trailhead which would lack any parking spaces.

Fig. 4.21: Blue Route crossing the Westside Channel at Beggerin Island:

The route then heads east over a causeway to Beggerin Island along the private main farm access path through the north slob emerging at Culleton's Gap where an existing carpark provide 46 spaces plus verge parking.

4.6.5 Green Perimeter Route Connections:

The Green Route is similar to other routes commencing at Ferrybank carpark then following the shoreline and connecting with the new proposed carpark at Ardcavan Lane, then heads north following the perimeter stream lane to connect with Ballyla Road. Though the route follows the Garrygibbon Road the connection point of lane with Ballya Road has only nominal verge parking which is inadequate.

Fig. 4.22: Green Route East Along Garrygibbon Road:

The route heads north through fields before connecting with the Hook Bridge Road on the southern fringe of Ballinamorragh village again there is only nominal verge parking at this location. The route continues east until it connects with a private Lane at Barnahask which emerges onto the Curracloe Road. This connection point has no verge parking and the lane is semi-private and the public road is narrow. Greenway users would need to park back at the large carpark at Culleton's Gap.

4.6.7 Purple Inland Route Connections:

The Purple Route commences at Ferrybank carpark and heads inland crossing Orchard Lane which has no verge parking space, it then heads north through fields crossing Ardcavan Lane at the townland of Craanagam again where the road is narrow and there is no verge space. Then route head inland before crossing the Ballyla Road at Ardcolm village where there is limited parking. The route follows the Ballyla Road to Irishtown where it heads inland through fields until it connects with Ballinamorragh village where verge parking is available. The route continues east through fields until it further connects with Barnahask Lane which emerges at Curracloe Road on the fringe of Curracloe village. There is no parking available at the lane connection point and trail users would need to park back at the existing carpark at Culleton's Gap.

Fig. 4.23: Purple Route Links with Barnahask Lane, Curracloe:

5.0 ROUTE ASSESSMENT & SELECTION

5.1 Route Assessment:

In assessing the four route options a marking system was developed to compare the options relative to each other in bid to determine an emerging preferred trail route. The Ferrybank Loop Trail is not considered in the comparison as it is common to all route options.

The marking system and the distribution of the weighting used in the above assessment is based on 100 marks divided over ten headings typically used in the comparison of greenway schemes and principles to be considered as outlined in TII's 'Rural Cycleway Design (offline)'. These headings can be considered in three broad groups, those headings relating to; trail users, 30 marks; landowners issues, 25 marks; environmental considerations, 40 marks and separately project cost, 5 marks.

The following points should be noted when reading the comparison table 5.1 below;

* The length of a trail is not use in this comparison of routes.

** 'Multi-use' path grading is the easier to use and has more gentle slopes than an 'Easy' grading.

*** The suitability of a public road used as a section of the trail route is based on its traffic volume, alignment and forward visibility.

**** The points of interest for each route option are;

3 No. for the Green Perimeter - Garrygibbon Motte, Snip Field & Ardcavan Graveyard.

3 No. for the Blue Central - Beggerin Church Ruins & Graveyard, Snip Field & Ardcavan Graveyard.

3 No. for the Purple In-land - St. Columb's Well, Ballyla Fishing Pond & Ballinamorragh Garden Centre.

3 No. for the Yellow Coastal - Wildfowl Reserve Centre, Pump House & The Raven Wood Reserve.

***** The ecology assessment below only compares distance traversed through a special area. Refer to NIS for ecological impact assessment.

Table 5.1: The matrix below displays the assessment headings and marking adopted;

	Comparison of Route Options							
Attributes:	**Green Perimeter**		**Blue Central**		**Purple Inland**		**Yellow Coastal**	
Route Sections:								
Total Length (m) *	10,300m	100%	9,900m	96%	11,700m	114%	10,700m	104%
Mark (0)	*n/a*		*n/a*		*n/a*		*n/a*	
USERS: (30 Marks) Classification:								
NTO Trail Grading **	Easy		Multi-use		Easy		Multi-use	
Mark (5)	*4*		*5*		*4*		*5*	
On / Off Road Split								
Public Roads (m)	2,475m	24%	775m	8%	4,350m	37%	1,200m	11%
Mark (10)	*8*		*9*		*6*		*9*	
Public Road Suitability:								
Suitability ***	Good		Good		Poor		V. Good	
Mark (5)	*4*		*4*		*1*		*5*	
Connectivity:								
Connectivity Points (No.)	6 No.		4 No.		8 No.		4 No.	
Mark (5)	*4*		*3*		*5*		*3*	
Tourist, Monument & Heritage Features:								
Points of Interest (No.)	3 No.		3 No.		3 No.		3 No.	
Mark (5) ****	*5*		*5*		*5*		*5*	
Land Owners: (25 Marks)								
Land Holdings Impacted	19 No.		15 No.		19 No.		12 No.	
Mark (10)	*6*		*8*		*6*		*10*	
Bisected Landholdings No.	7 No.		5 No.		10 No.		1 No.	
Mark (15)	*2*		*3*		*2*		*15*	
Environment: (40 Marks) Ecology:								
SAC Traversed (m) (10)	300m	3%	300m	3%	100m	1%	4,300m	40%
SPA Traversed (m) (10)	5,000m	49%	7,700m	78%	100m	1%	300m	3%
Mark ***** (20)	*10+7*	*17*	*10+3*	*13*	*10+10*	*20*	*4+10*	*14*
Winter Closure:	No		Yes		No		Yes	
Trail Closure (months)	0mths		7mths		0mths		7mths	
Mark (15)	*0*		*9*		*0*		*9*	
Prelim. Cost Estimated:								
Project Cost	€1,055,794	133%	€859,641	109%	€1,123,611	142%	€791,502	100%
Mark (5)	*4*		*5*		*4*		*5*	
Total Marks (100)	**54**		**64**		**53**		**80**	

5.2 Route Selection:

The selection of the preferred route is based on the above comparative assessment and the marking system adopted in that comparison between route options.

The marking system allocated 40 marks towards environmental / ecological concerns. Winter closure was banded in this group as routes which did not require a trail closure were awarded extra marks. The next largest band was 30 marks towards the usability and suitability of each route from a trail user's perspective. The final band was landownership issues which were allocated 25 marks to distinguish between routes with greater or lesser impact on property and particularly with land severance. Project costs were not assigned into any band but were allocated 5 marks as a factor for consideration in route selection. However the overall route lengths were considered neutral in the comparison process.

The attributes used in the above assessment are described below to demonstrate the benefits and drawbacks associated with each route option.

5.2.1 Yellow Coastal Route:

The emerging preferred route based on the above assessment is the Yellow Coastal Route. The route scored better than any other options on the least number of landholdings to be directly impacted by the trail with just one landholding having the trail bisect its lands. The Yellow Route also scored better than any other option regarding the suitability of the on-road sections. The relevant road section is the 1.2km access road to the Wildfowl Reserve. This access road is a straight cul-de-sac with low traffic movements at regulation speeds of less than 30kmh. Additionally the Yellow Route avails of existing farm lane but intercepts them at the lane's terminals ends, which are cul-de-sac's, currently little used with minimal conflict with farm activity. These lanes would be surrendered for the exclusive use of the trail as part of any agreement with effected landowners.

The route got the highest scored for the estimated project cost, this is attributable to using 1.2km of access road, 1.1km of farm access lanes and 3.5km of existing trail paths through the Raven Wood. The Yellow Route scored marginally less regarding the on/off road split, the 1.2km of access road to the Wildfowl Reserve is designated a public road but effectively it is an access road which terminates at the visitor centre.

The Yellow Route was allocated 3 out of 5 marks for connectivity with only 3 access points along its entire route length, this is due to the remoteness of the route from public roads and adjacent villages / settlements. The Yellow Route was allocated 9 of the 15 marks for the winter closure arrangement of the trail mid-leg as this attribute provides more security to migratory geese than open all year of other routes. The Yellow Route was allocated 0 marks for the route traversing over The Raven SAC, however it scored 14 marks for low traversing of SPA's. There are a number of proposed mitigation measures against bird disturbance which would prevent trail users accessing the trail over the winter period and eliminate or reduce the impact on the special areas as was outlined in section 4.3 of this report.

5.2.2 Blue Central Route:

The next highest scoring route was the Blue Central Route. It was allocated the highest marks for on/off road split as the alignment avails of the farm lanes along the perimeter stream of the sloblands and the main farm access lane through the centre of the slobland which accounts for 60% of the route alignment. The route scored well on the low number of landholdings impacted but scored poorly on the number of landholdings bisected by the route. The Blue Route also scored well on the suitability of the on-road sections along the route. The only section of on-road is the short section of the Orchard Lane. It should be noted that a significant proportion of the off-road route is along the main farm access lanes through the slobland. These lanes are frequently used by large heavy agriculture machinery and the movement of livestock which would cause considerable conflict between trail users and farm activity.

The Slobland Commission have expressed their concern's with this route option during our pre-application consultations. These relate not just to the frequency of large heavy agriculture vehicles but to the speed these vehicles can operate along the straight sections of lanes. They are concerned at the turning in / out manoeuvrings of large vehicles at field gates and the potential for conflict trail users particularly kids on bikes. They are concerned with field gate being open and / or trail users wandering into field paddocks to take short cuts.

The Blue Route was allocated good marks for connectivity with 4 access points, these points were at public roads at both trailheads plus Orchard Lane and Ballyla / Garrygibbon Roads. The Beggerin Island access would be closed during the winter period with secure gates similar to Yellow Route option, however unlike the Yellow Route the frequency of farm movements in and out and the opening and closing of gates would undermine the security to prevent unauthorised access. Even if the gates were electrified with fob control system the probability of gates breaking down, carelessly being left open or trail users slipping in when the automated gate are in open / closing operation. The route was allocated good marks for the estimated project costs, this is attributable to using 0.5km of residential lane and almost 6km of existing farm lanes. The Blue Route was allocated 9 of the 15 marks for the winter closure arrangement of the trail even though there are concerns regarding the reliability of gate security mentioned above. The Blue Route was allocated 13 marks for the route traversing little over SAC's but scored poorly for impact on SPA, the route traverses through the centre of the Wexford Harbour & Slob SAC, see section 4.3 of this report for impact on special areas.

5.2.3 Green Perimeter Route:

The Green Route was allocated the second lowest scoring of all four routes. It was allocated poor marks for on/off road split as the alignment used of a significant proportion of public roads, 1.3km of public road at Ballyla / Garrygibbon and 1km at White Gap. The route score poor on the high number of landholdings impacted and on the number of land

holdings bisected by the route. The Green Route scored good on the suitability of the on-road sections even if the proportion of on-road was high. These sections were a short length of Orchard Lane plus sections of the Ballyla / Garrygibbon Roads, however the section of the White's Gap road would require improvement works to separate pedestrians from live traffic on a narrow road.

The Green Route was allocated good marks for connectivity with 6 access points. The route made connections at Orchard Lane, Ballyla / Garrygibbon Roads, through Ballinamorragh village and Barnahask Lane. The route was allocated good marks for the estimated project cost, which was only 33% higher than the lowest cost estimate. The Green Route was allocated maximum marks for not requiring a winter closure of the trail as the proposed route was a sufficient distance from the roosting areas on the sloblands as not to cause bird disturbance from using the trail. The Green Route was allocated no score for the route traversing over special designated areas.

5.2.4 Purple Inland Route:

The Purple Route was allocated the lowest scoring of all four routes. It was allocated poor marks for on/off road split as the route is aligned along a high proportion of public roads, 1.2km at Ballyla Road, 1km through Ballinamorragh village and 2.1km on the Curracloe/Culleton's Gap Road. The route score poor on the high number of landholdings impacted and on the number of landholdings bisected by the route. The Purple Route also scored poor on the suitability of the on-road sections, while the short section of Orchard Lane is fine, there is poor alignment of a section of the Ballyla Road and 2.1km section of the Curracloe/ Culleton's Gap Road would require improvement works to separate pedestrians from live traffic on the narrow road while cyclists would have to share the busy road with vehicles. The feasibility of building a constant footpath along the road edge is not easy as there are a number of pinch points due to existing buildings close to the road.

The Purple Route was allocated maximum marks for connectivity with 8 access points. The route was aligned inland making connections at Orchard Lane, Ballyla / Garrygibbon Roads, Ballinamorragh village, Barnahask Lane and Curracloe village. The route was allocated good marks for the estimated project cost, which were not excessive at 42% higher than the lowest cost estimate. The Purple Route was allocated no marks as the route does not provide a winter closure facility of the trail and trail users could enter the sloblands at two locations, Beggerin Island and Hook Bridge Road. To prevent bird disturbance in the feeding areas an automated gate system at the two access locations would need to be installed but the issues of keeping the gate closed is not reliable as mentioned with the Blue Route. The Purple Route was also allocated maximum mark as it was aligned to hug the Wexford Harbour & Slob Special Protection Area and does not impact on any SAC.

6.0 FERRYBANK LOOP TRAIL (in-land):

6.1 Regional Road Leg:

To compliment the main greenway route and to cater for winter closure of the mid-leg of the greenway across the slobland, it is proposed to develop an additional trail around the Ardcavan area to form an overall loop length of 6.2km back to Ferrybank. This looped trail would provide greater connectivity in the locality for leisure and work commuting. The townlands of Crosstown and Ardcavan are zoned for both future commercial and residential development.

The proposed looped trail would start at the main trailhead carpark at Ferrybank bridge, head north out the R742 Regional Road along the existing footpath as a dual cycle lane on the eastern side of the carriageway for 1.6km before turning right into and through the Ardcavan Business Park and then along field boundaries for 1km to connect with Ardcavan Lane. The route would follow Ardcavan Lane east for another 1km to the new carpark at the edge of the North Slob. Here the trail joins the coastal greenway and turns south towards Wexford Town by following the coast line for 2.6km back to Ferrybank.

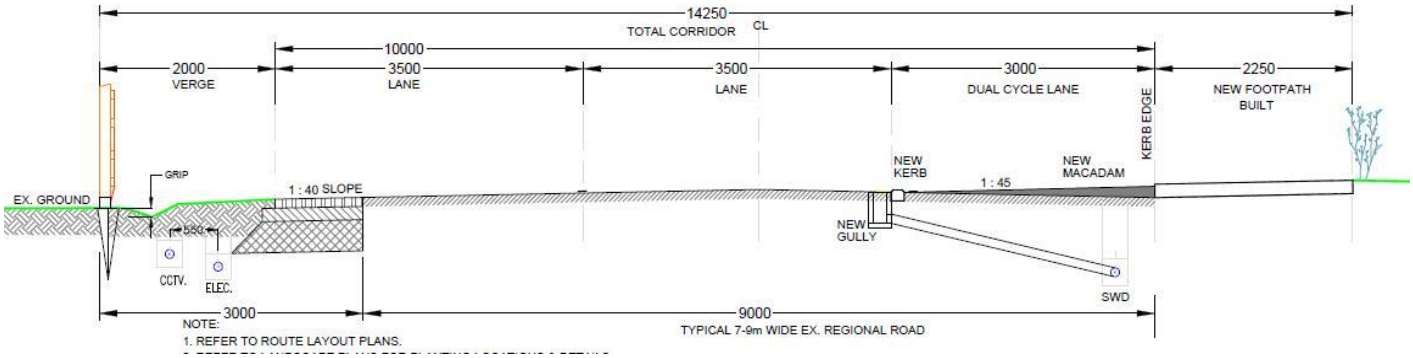

Fig. 6.1: Addition of Dual Cycle Lanes to the Regional Road:

The Ferrybank Loop would be common to all route options and provide an all year walking and cycling facility for commuters and trail users particularly during the winter closure period of the mid-leg of the main greenway.

The dual cycle lanes would be superimposed over the existing regional road by re-marking the traffic lanes over to the western side of the carriageway. The addition of the cycle lanes would require an extra 1m width of carriageway from Ferrybank North to Crosstown, increasing to 3.5m on the approach to Crosstown junction. The existing carriageway from Crosstown to Ardcavan Business Park is 13m wide and has cycle lanes included in the cross section makeup which would be re-marked to provide dual cycle lanes. The existing carriageway along the estuary from the trailhead carpark to Ferrybank North a distance of 400m is 7m wide with 1.8m wide footpaths on either side. It is not possible to add dedicated cycle lanes on this section of the route and cyclist would be directed to merge with the vehicular traffic lanes. The sharing of road space between cyclist and motorist

over short sections of a proposed greenways is not uncommon particularly within speed controlled zones at the approach's to towns.

Fig. 6.2: Dual Cycle Lanes Applied to Clontarf Road, Dublin:

6.2 Ardcavan Business Park - Leg:

The trail would be routed through the second phase of the development of the Ardcavan Business Park and be aligned with the main access road down to the boundary. The route would then follow the eastern boundary of the business park along a green linear strip heading north into agriculture land and following the hedge line before connecting with the Ardcavan Lane. The looped trail from Wexford Town would allow alternative means of travel for people working in the business park and other businesses on the regional road. Refer to trail layout drawings ATR/135 to138 for more details.

6.3 Ardcavan Lane - Leg:

The road carriageway along the Ardcavan Lane is very narrow, typically only 4m wide. It is proposed to widen the road by 1m where verge widths permit, however there is not sufficient corridor space to add a cycle/ footpath over its entire length. It is proposed to align a 3m wide greenway trail inside the field hedge and follow the road boundary, see typical trail sections; drawing ATR/107 for details and trail layout drawings ATR/138 to 140 for extent of the alignment. The fields impacted by the trail would be made secure with dog proof fencing and gate plus staggered gates on the trail to control users on approach to the crossing. As the trail route head further east the road corridor widens sufficient to merge the off-road trail with the road carriageway. The trail would be adjacent the carriageway but slightly raised, 25mm kerb to segregate the pedestrians / cyclists form vehicular traffic. The route leads back to the main coastal greenway at a new carpark at the end of Ardcavan Lane. At this point during the summer season user would have a choice to head east and north on the greenway to Culleton's Gap or head south back along the coast to Wexford Town and the Ferrybank trailhead.

Fig. 6.3: Narrow Country Road (typically less than 4m) – Ardcavan Lane:

7.0 PROPOSED GREENWAY

The following section outlines the design requirements required for the proposed North Slob greenway.

7.1 Construction Method:

The construction method adopted for this project will need to address the fact that three quarters of the proposed site is within special designated areas. These designated areas have restrictive requirements which will restrict the working seasons, site clearance, noise generation and the limited access points along the site. The nature of the site and the restrictive requirements imposed on it are outlined in more detailed in a separate document, Book No.7, 'Outline Construction Method Statement & Environmental Management Plan' for the Wexford to Curracloe Greenway project.

Fig. 7.1: Macadam Paving Machine Laying Sub-base:

7.1.1 Typical Cross Section:

The proposed trail shall to be 3m wide hard surface with 1m wide grass verge either side plus an additional meter for drainage grip / hedging if required. The overall width of trail corridor shall typically be 6m wide, see figure below or for more detail refer to TCD/100/01 in the standard details Book No.4.

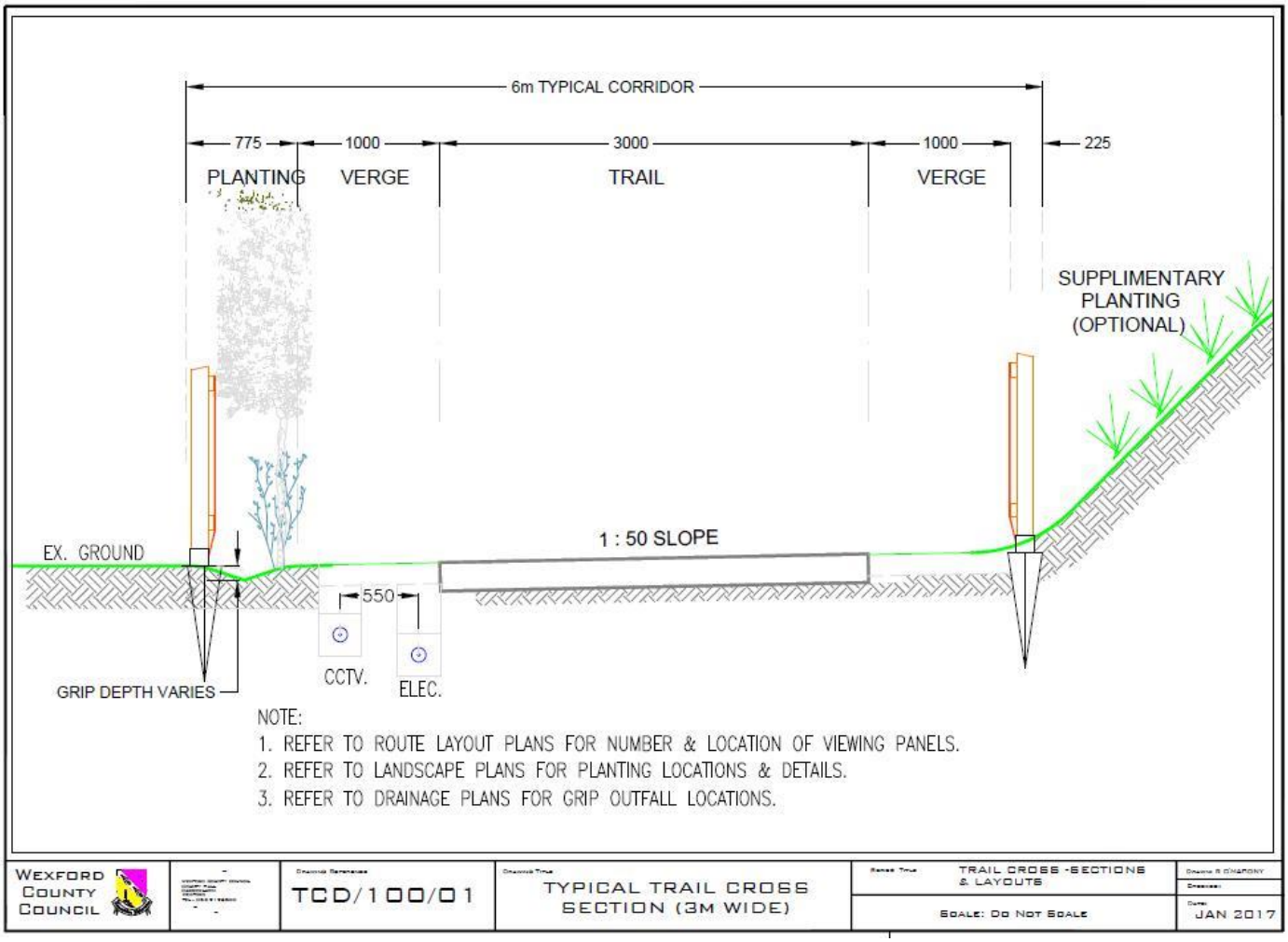

Fig. 7.2: Typical Trail Cross Section:

Note: Not applicable over the Wildfowl Reserve.

7.1.2 Pavement:

The expected number of trail user is 1,178 / day, see Book No.9, Traffic & Parking Report. This volume is less than 1,500 users therefore the Greenway would be a low volume facility with 3m wide pavement as recommended by TII Rural Cycleway Design (offline) 2017, Table 4.1. The proposed Greenway pavement shall to be made up of 40mm bituminous surface laid on 150mm of crushed stone sub-base. The sub-base should be laid with a paving machine so as to give a high-quality surface level control which is a requirement for multi-user trails. Machine paving is standard practice on the European continent and has also been used in a number of greenway and cycleway scheme in Ireland.

Fig. 7.3: Macadam Contained with Precast Concrete Edging:

The excavation required to construct the greenway pavement shall be limited to topsoil stripping. Typically that depth would not be greater than circa 300mm. Where ground conditions are soft extra over dig may be required and backfilling with a stone capping layer wrapped in a geo-textile membrane. Stripped topsoil and subsoil shall be spread out adjacently the path to form a flush verge / edge tilted away from the greenway. It is anticipated that topsoil / subsoil will be reused on-site and that removal off-site will not be necessary. The depth of excavation is too shallow as not to cause any significant impact on soil / subsoil derogation or any bedrock or geology impacts.

7.1.3 Culverts:

A number of culverts will be required to cross wide open shallow ditches. The proposed culverts shall be precast concrete boxes laid on 0.5m deep stone capping (100mm sized stone) wrapped in terram geo-textile. The culvert wing walls shall be 100mm solid concrete blocks laid on the flat and built off the capping layer. The internal base shall be flush with the natural ditch bed level. Refer to trail layout drawings for the culvert size, layout and for detail refer to TCD/500/01 & 02 in the standard details in Book No.4.

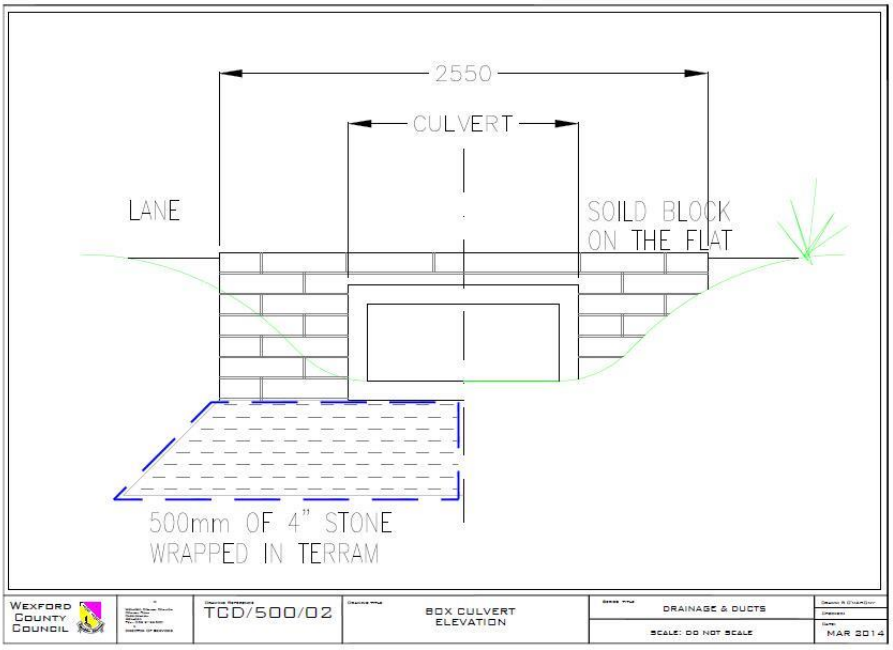

Fig. 7.4: Precast Concrete Box Culvert:

Fig. 7.5: Precast Concrete Box Culvert:

7.1.4 Boardwalks:

Fig. 7.6: Light-weight Reinforced Plastic Boardwalk:

The project requires boardwalks at a number of locations over the site. The boardwalks shall be constructed of light-weight reinforced plastic boards on similar beams and cross beams frames. The frames shall be erected off precast concrete posts / piles either driven or built into the existing ground, see the figure below or for more detail refer to TCD/1000/03 in the standard details book in Book No.4.

Additionally it is proposed to provide raised deck viewing platforms at two locations on the proposed trail route. The first is located opposite the ponds outside the visitor centre, see Trail Layout drawing ATR/121. The other is located opposite the Curracloe Channel, see Trail Layout drawing ATR/130. The platforms would be screened from the waterbodies with tinted glass panels to offer trail users a view of summer birds on the water or on the adjacent banks.

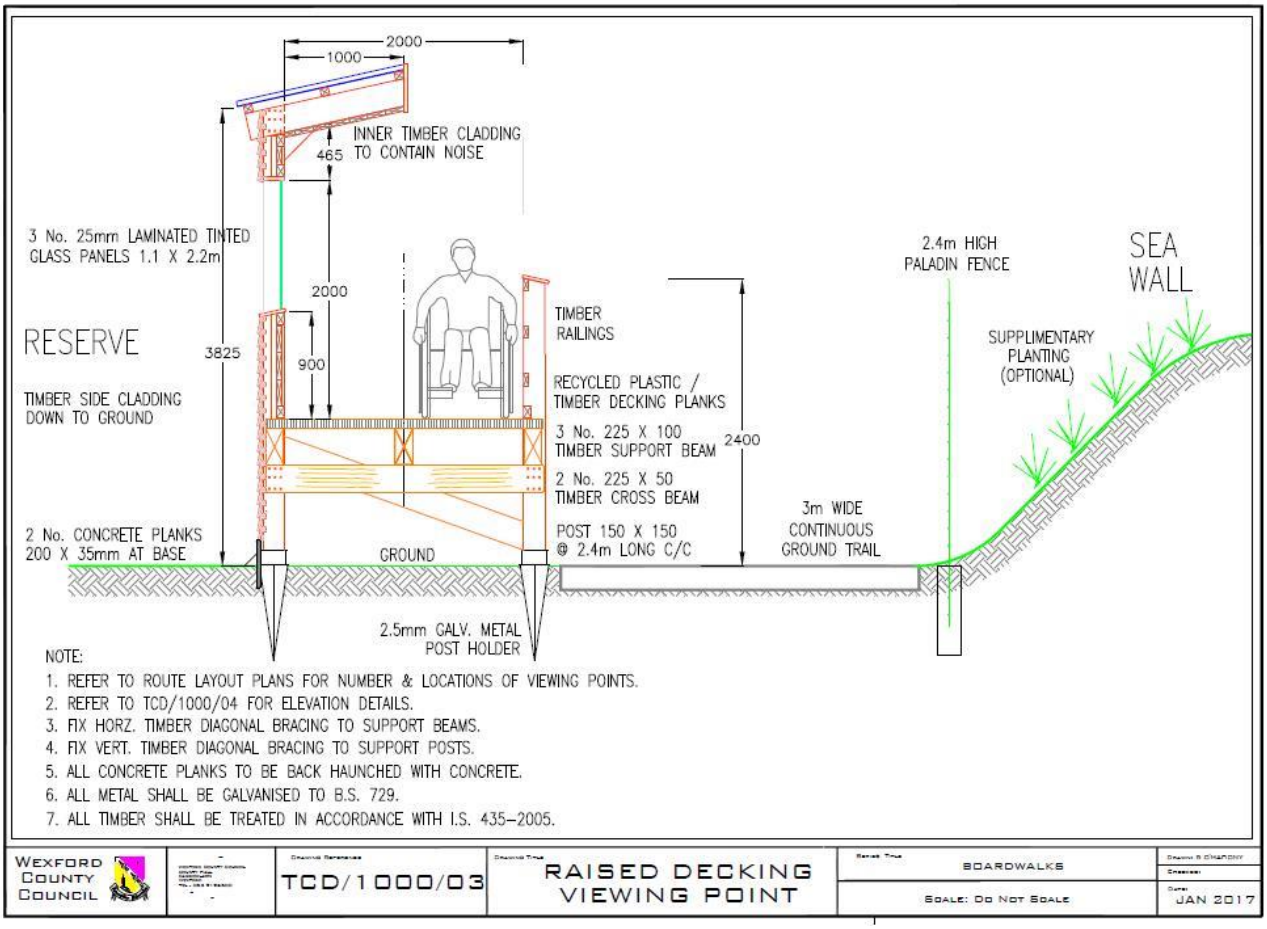

Fig. 7.7: Raised Deck Viewing Point:

7.1.5 Road Crossings:

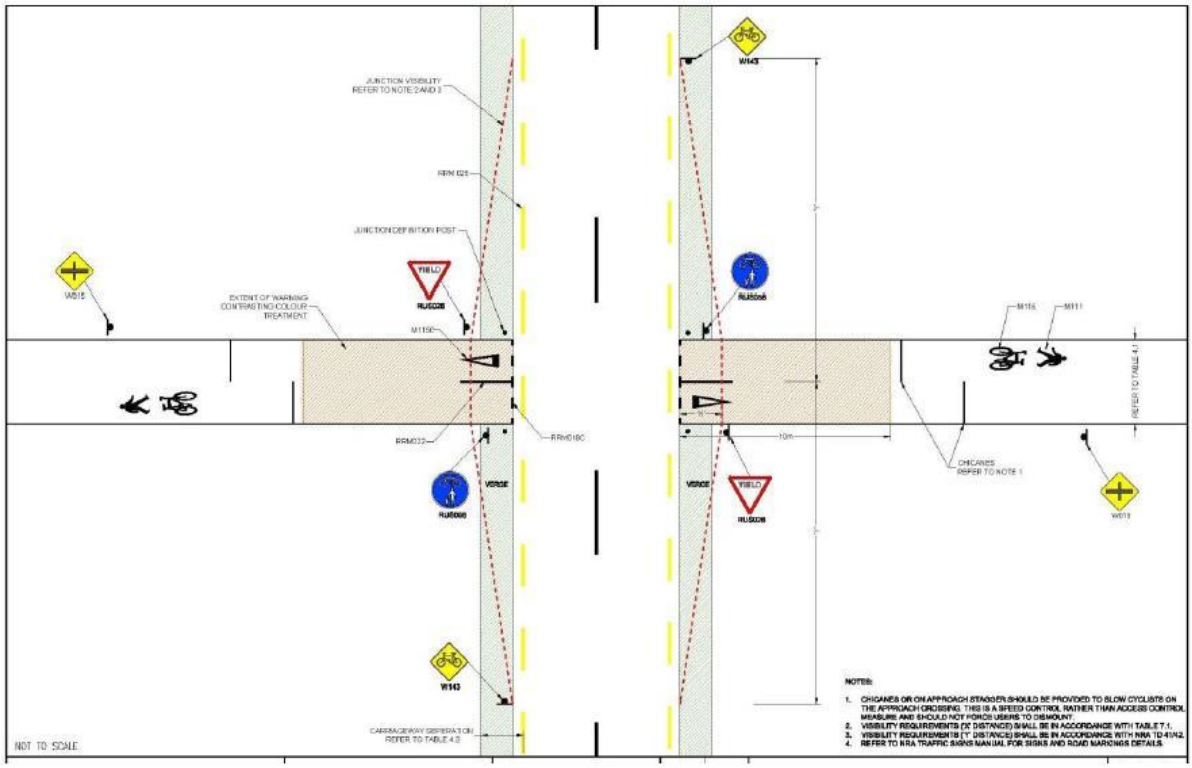

Fig. 7.8: Trail Crossing at Minor Road - TII's 2017 'Rural Cycleway Design (offline)':

There are a number of at-grade road crossings points and tee-junctions onto local roads along the proposed route which shall require traffic calming works to provide a safe crossing for all users. There are proposed at-grade crossing points at both trailheads, Orchard Lane, Ardcavan Lane and at the Reserve Visitor Centre. The proposed works may include additional road markings, signage and other traffic calming requirements on the local roads. The level of traffic calming will depend on the level of vehicular traffic on these local roads which are to be crossed, as well as visibility at the crossing. Signage and access controls will also be required on the cycleway itself to warn cyclists of the upcoming road crossing. A Section 38 Application made to the relevant authority will be required under the Roads Traffic Act 1994 for any traffic calming proposals which fall under this legislation.

7.1.4 Drainage:

The existing drainage ditches located along the route and particularly through the sloblands are to be retained. A proposed cross fall of pavement will be 2% and direct runoff towards the existing drainage ditch adjacent to the proposed trail route. The pavement shall always tilt to one side and the lower grass verge shall tilt away at 5% or greater, see example of a drainage ditch in Photo 7.5 below and refer to TCD/100/01 in the standard details book in Book No.4.

Fig. 7.9: Trail Runoff to Drainage Grip / Ditch:

It is not proposed to pipe any of the existing drainage ditch along the proposed trail route. Where the proposed trail is to be placed over any existing ditch, a new ditch shall be created adjacent the new trail. Drainage ditches adjoining the route shall be cleared of any blockages / debris during the construction phase and maintained their after.

As the additional runoff from the new 3m wide trail surface would be insignificant in comparison to the existing wide open drainage ditches prevalent along the route it is considered that the ditches are more than capable of providing sufficient drainage storage capacity for the runoff generated from greenway hard surface and therefore attenuation is not required. As all rainwater falling inside the sea wall onto the slobland as either surface runoff to ditches or percolation through soil will eventually discharges into the main storage channel there is no net increase in water volume generated annually to be pump out other than the normal seasonal variations.

7.1.5 Screening:

The proposed trail route between Wexford and Curracloe passes close to a number of residential houses at Orchard Lane. The provision of screening at affected houses shall be provided in order to protect the privacy of local residents, reduce noise transmission and provide additional security. Additionally screens shall be softened by earth mounds with hedging or landscaping to reduce the visual effect on the landscape and any possibility of bird disturbance.

The method of screening could vary from planting a number of trees/shrubs to providing a solid fence along the affected area. The extent of screening will be determined following further landowner consultation during the detailed design stage of this project. The proposed screening shall be 1.8m high and the suggested locations and extents are shown on the trail layout drawings, for more details refer to TCD/100/05 in the standard details book in Book No.4. Screening is also provided along the trail adjacent the ponding at the Wildfowl Reserve visitor centre and at Curracloe Channel. The screens would eliminate visual disturbance and reduce noise transmission to the summer stay birds grazing on the sloblands. The tightly packed boarding in the screen will block noise transmission and the 25mm thick boards will not generate noise along the top leading edge of the screen. The screens would be softened by earth mounds with hedging / landscaping in front allowing the screens fit more easily into the landscape.

Fig. 7.10: Example of Solid Timber Screen with Adjacent Landscaping:

7.1.6 Secure Fencing:

Additional to the boundary screening there will be extensive secure fencing along the route. It is proposed to place secure fencing and a lockable gate at the end of the Ferrybank caravan park. The fencing along the end of the park shall be 1.8m high paladin mesh thus preventing access beyond that point. The fencing leading along the park edge shall be 1.4m paladin mesh fencing allowing visitors to appreciate the harbour views. Similarly where the trail crosses Ardcavan Lane (county road) at a proposed new carpark at the western edge of the North Slob, a secure lockable gate and fencing shall be erected to prevent access inland, see Greenway management section for the control of the gate.

Fig. 7.11: 1.8m High Paladin Secure Fencing:

The paladin mesh fencing along the greenway has see through panels which will allow the existing hedging / vegetation to be see by trail users. Over time foliage will grow into the fence and until then perpendicular paladin fencing would be erected every 500m behind the greenway fence into the sea wall bank to prevent anyone walking along the back of the fence. The trail intercepts Orchard Lane mid way between Ferrybank and Ardcavan. The full length of Orchard Lane has not been taken-in-charge and the final eastern section is private. It is at this section that the proposed trail crosses the lane. It is proposed to erect an electrified security gate across the lane with complimentary stone piers or similar access arrangements with the relevant lane users. Refer to the trail layout drawings for the proposed gate location and associate secure fencing.

See Fig. 7.8 below for a sample gate elevation as an indication of a possible gate / pier combination. The piers should suggest a private entrance and some gate signage would

confirm that the access beyond is private. This arrangement would need to be agreed with the residents at the end of the lane before it could be finilised prior to construction.

Fig. 7.12: Example of Secure Gate / Pier Combination:

To compliment the security gates on the lane it is proposed to erect two types of fencing in the vicinity of the lane. The first is a standard 1.8m high paladin fencing (see photo 7.7) which would be erected along hedge lines leading to the lane where access restrictions are required and the second type is a 1.8m high solid screens with planting and landscaping to prevent overlooking of residencies, see Fig. 7.6.

7.1.7 CCTV Security:

The scheme would include ducting and chambers to be placed under the greenway path during construction stage to allow for the future rollout of cables so the route could be added to Wexford County Council's CCTV monitoring network.

7.1.8 Mammal Passes:

The Natura Impact Statement has identified the need for mammal passes under the securely fenced trail mid-leg through the reserve and slobland. The pass shall be constructed of precast pipes / box across the full width of the trail corridor emerging beyond the fencing / screens, for details refer to TCD/200/05 in the standard detail, Book No.4 and trail layout drawings for their locations.

7.1.9 Greenway Winter / Spring Closure:

To mitigate against bird disturbance particularly the Geenland White Fronted Goose the Natura Impact Statement (NIS) has recommended the seasonal closure of the trail mid-leg. That is the section from the reserve visitor centre to the edge of the slobland on the Raven Wood side, a distance of 3.5km. It is proposed to close the mid-leg from 15th September to 15th April each year. To secure the route against unauthorised entry it is proposed to erect 1.8m high secure fencing with lockable gates across the trail path and extending into the ponds / hedging on either side. Additionally a 1.8m high secure fencing will be placed along the inside edge of the trail, at the base of the sea wall on the landward side for the full mid-section. The extent of fencing and the proposed gate locations are shown on the Greenway layout drawings and for more details refer to drawing ATR/107.

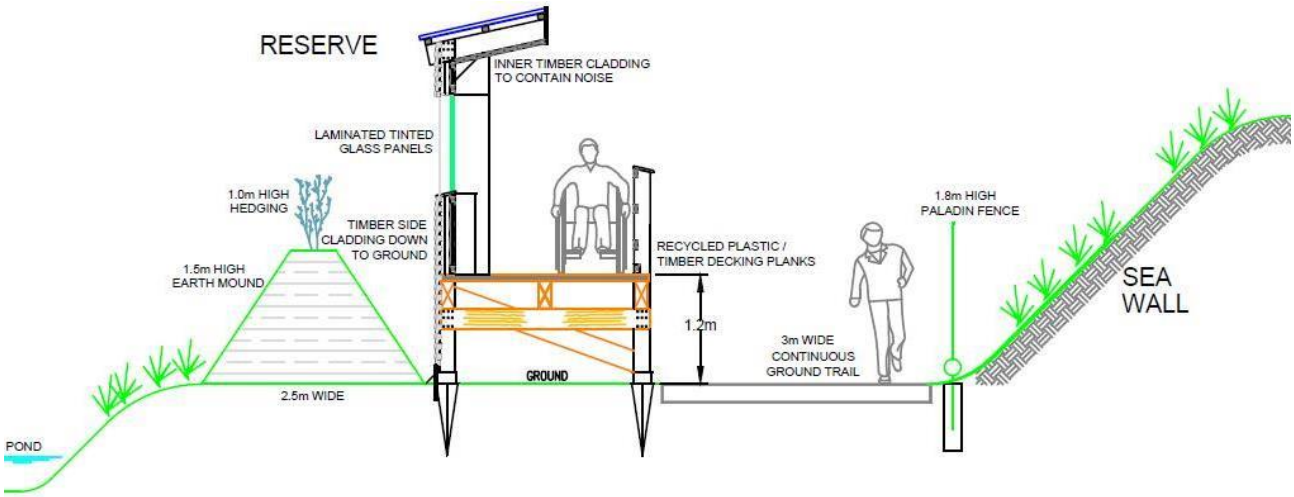

Fig. 7.13: Pond Screening and Secure Fencing at the Reserve Visitor Centre:

7.2 Environmental Mitigation:

As part of the development of this Preliminary Design Report, a Screening for Appropriate Assessment (AA) was carried out to determine the potential effects, of the proposed scheme on sites with European conservation designations (i.e. Natura 2000 sites). The purpose of the assessment is to apply the legal test pursuant to Article 6(3) of the Habitats Directive of the proposal in the context of the conservation status of such sites. Following an environmental assessment, mitigation measures were identified for the preferred Greenway route and the measures proposed are:

i) Implement a construction exclusion zones over the Burgess wetlands and mid-leg of north slob along the proposed Greenway during the closed winter period;

ii) Allocate an Ecological Clerk of Works (ECoW) with ornithological experience during the winter period to ensure external project works outside the exclusion zone are not impacting on the winter geese or hen harrier;

iii) If disturbance is recorded by ECoW, all construction work on the project cease until the Greenway open period resumes;

iv) Where vegetation removal can only be done during the nesting period due to constructional exclusion zone imposed during the winter then ECoW to assess whether birds are nesting in the working areas;

v) All working areas shall be demarcated to prevent sprawl into surrounding habitat areas, hedgerow, trees and reinstated work areas post construction;

vi) ECoW shall monitor all Annex I habitat areas, particularly reed-bed area at Burgess. Access to the Burgess area shall be limited to the southern shore;

vii) Pre-commencement checks for otter holts and badger setts along the proposed route by ECoW including recording temporary and permanent mammal passage routes;

viii) ECoW shall review temporary lighting within the working area to minimise impact on foraging activity;

ix) Check for bats prior to tree felling for roosting features and if any found in the work area contact NPWS and apply for derogation licence where necessary.

Refer to the Natura Impact Statement Report for more detailed information and details.

8.0 GREENWAY MANAGEMENT & MONITORING:

8.0 Greenway Management:

The proposed Greenway will be the responsibility of Wexford County Council and managed by the environment section. Greenway supervision and monitoring shall be carried out by authorised community wardens. A trail manager will be appointed to manage the day to day operation of the Greenway and the role will include;

- Act as point of contact for any trail issues.
- Draft and implement a trail monitoring regime
- Manage the trail wardens assigned to monitor the trail.
- Supervise the handling of all complaints.
- Liaise with landowners about ongoing maintenance or any Greenway issue.
- Draft and implement a Greenway maintenance regime.
- Manage the trail maintenance team.

8.1.1 Daytime Greenway Supervision:

It is Wexford County Councils intention to provide a warden to monitor the Greenway, possible on a bike and supervise trail users plus deal with litter and any other maintenance issues that may arise. The supervising warden would inspect the whole open section of the route at least once each day but could inspect more frequent if the need arose or complaints were received.

8.1.2 Night Time Closing:

The proposed Greenway would be closed from dusk until dawn but not later than 9pm in the summer season. It is proposed to place lockable gates at the Ferrybank caravan park and similarly secure lockable gate where the trail end meets the Ardcavan Lane at the proposed new carpark at the edge of the North Slob. A supervisory warden would be assigned the task of locking and unlocking the gates on a daily basis. Our warden would walk or cycle the full route between Ferrybank and Ardcavan to ensure that all users had vacated the trail before locking the gates. The task of confirming the route is clear prior to locking would double up with trail maintenance check.

8.1.3 Complaint Handling:

Signage on the gates would have contact phone number so complaints would be logged with Wexford County Council. All complaints would be vetted in real time during office hours by a reception deck staff assigned to that role. The receptionist would contact the Greenway manager or the supervising warden so he/she could respond on site. A series of internal protocols would be developed to deal with different complaints particularly emergency situations or safety concerns.

The receptionist would log all call on a data system and be expected to filter out on-going issues as they develop along the route. The receptionist would forward this log to the Greenway manager where these issues would be brought to the management in the Environment Section for consideration.

8.1.4 Implement Adaptive Mitigation Measures:

The importance of the annex species listed for the North Slob SPA requires that on-going monitoring of the greenway corridor is required during construction and for a number of years post construction. The monitoring shall test the effectiveness of the proposed mitigation measures with actual bird survey counts and behaviour analysis to the new greenway. This monitoring shall be carried out by a trained ornithologist and a report of each inspection shall be prepared and reviewed at the start and finish of each season the greenway is active.

The ornithologist shall where necessary recommend adaptive mitigation measures to be implemented by the trail management team, provide advise during the implementation of measures and further monitor the effectiveness of any adaptive measures once deployed. The performance of the particular measures of importance shall be observed, these include the security of the gates either end of the trail mid-leg over the reserve and sloblands, the durability of the fencing erected, the effectiveness of the screen wall and feeding habits of geese adjacent the screens.

8.2 Maintenance Programme:

As with all infrastructure projects a maintenance programme is required to ensure that a high quality facility is provided not just in the first year but also subsequent years, this is especially the case with public and tourist facilities. Wexford County Council has extensive experience in developing and maintaining trails and a maintenance plan will be developed by the trails officer. The Trail Maintenance Team have the training, skills and equipment to maintain trails and currently undertake maintenance task on other trails around the county. It is proposed to assign the trail maintenance the Wexford to Curracloe Greenway to this crew.

8.2.1 Trail Maintenance Plan:

A bespoke trail maintenance plan shall be draughted for the Wexford to Curracloe Greenway. The plan shall set out in accordance with Sports Ireland Trails 2017 ‘Guidance Notes for Local Trail Monitors’ and Sustrans 2016 ‘Greenway Management Handbook’. The plan shall include trail monitoring schedule, trail monitoring forms to record issues, trail maintenance work planner templates, weekly record sheets of actual maintenance carried out and whether by rapid response crew or external contractor. The plan shall also maintain records of all members of the rapid response crew and track their training needs. An up to date copy of all training certificates / ticket shall be included in the plan and vetted by the trails officer from time to time.

The trail maintenance plan shall typically include the following crew tasks;

- Erect marker post and finger posts
- Erect information signs at trailheads and threshold signs at access points.
- Clear debris off trails and clear back under growth.
- Pick litter and remove waste where dumped.
- Cut low hanging branches with hand saw.
- Surface dress trails with dust / grit / granular material. This may include hauling in material with bobcat / dumper / quad, etc.
- Lay shallow land drains across paths where ponding / soft areas occur.
- Place granular material to build up path to remove dips, soft areas or trip hazards.
- Install seating benches.
- Install trail counters on trees or posts.
- Construct short sections of boardwalk over soft areas / flooding areas.

Refer to Book No.7, Outline Construction Method Statement & Environmental Management Plan for more information on mitigation measures and trail management.

8.3 Trail Accreditation:

Prior to the trail becoming operational Wexford County Council will seek accreditation of the trail by Sports Ireland Trails (formerly National Trails Office).

8.3.1 Inspection:

The trail will be inspected near completion by Sports Ireland trails inspectors and a report given to the trails officer. Any rectifications in the report shall be auctioned on before a final Sports Ireland Trails inspection is made. The Greenway will then become an official trail and be registered on the Sports Ireland Trails Database and website.

8.3.2 Insurance:

Once a trail receives Sports Ireland Trails accreditation, the trail will be insured under the Irish Public Bodies (IPB) trail insurance policy which covers public liability insurance. The Sports Ireland Trails inspection process is part of the NTO insurance policy and routine trail inspections must be made and up loading to Sports Ireland Trails website to maintain insurance coverage.

8.4 Direct Access to Greenway:

Direct access to the Greenway will not just be provided at the trailheads at either end of the route but also at Ardcavan Lane. Property owners living along the greenway will be able to avail of direct access to the route which will provide them with an alternative means of accessing Wexford Town or Curracloe Beaches. As constructing such individual access points is relatively straight forward the provision of access points can be explored during the consultation process with local groups.

The trail access will also give local people and visitors an opportunity to explore the local countryside, see panoramic views of Wexford Harbour or access the visitor centre at the Wildfowl Reserve.

9.0 PRELIMINARY COST ESTIMATE

An outline estimated of project costs are provided and are based on the scope of work presented on the trail layout drawings, planning set and associated standard details. A more detailed estimate would be made when a number of design decisions on accommodation work are finilised at detailed design stage. It is possible however, to provide an initial cost estimate based on the preliminary design and using our previous experience in working on similar schemes.

An initial cost estimate for the preferred Yellow Coastal Route is €3,028,500 (inclusive of VAT) but does not include land or right-of-way acquisition. The estimate is based on a 3m wide bituminous greenway with grass verge and associated fencing and other ancillary works. A more detailed breakdown of the cost estimate is presented in Appendix C.

10.0 CONCLUSIONS

The preferred route for the Wexford to Curracloe Greenway, the Yellow Route will fit seamlessly into the surrounding environment by using native screening and appropriate construction materials and it will provide an excellent facility for locals and visitors to the area of Wexford and Curracloe as well as the surrounding countryside of County Wexford. The Greenway, as well as providing a recreational facility for walkers and cyclists, will also provide a safe traffic free commuter route for local people into Wexford Town.

The fact that the proposed scheme is located entirely off road except for the access road to the Wildfowl Reserve will provide a greater advantage to the cyclist and pedestrians both in comfort and safety. It is proposed to include signage and information boards along the route to highlight the heritage features encountered, including the development of the North Sloblands, the Wildfowl Reserve and the Raven Wood.

The scheme does not include any large obstructions which would necessitate any large civil works etc. Most of the proposed works involved could easily be carried out by medium sized contractors. It is important however that the finished product is up to the required standard and that the appropriate equipment required such as a paver is used to ensure a smooth surface is provided. The only relatively large works involve are laying macadam and erecting fencing along the route.

A flat route over exiting lanes, paths and fields with no significant structures has yielded a relatively low scheme cost €283/m compared to other similar schemes. This relatively low cost with projected summer users should provide significant benefits particularly to the local economy. This economic benefit and positive experience has been realised by the nearest operation scheme, the Deise Greenway in County Waterford and is validation of what a greenway scheme can bring to a district and wider county.

From reviewing the above conclusions it is evident that a greenway between Wexford Town and Curracloe will be a positive and a beneficial project for the locality and the wider communities in Wexford, Ardcavan, Castlebridge and Curracloe.

Appendix A:

Photo Montages

Appendix B:

Access Controls

B1.0 Access Controls in Rural Environments:

The provision of what type of access controls, if any, is an important consideration in developing a greenway especially where access is shared with adjacent farm fields.

Photo B1: Staggered Access Control using bollards (Great Western Greenway)

The preferred access control to restrict vehicular access but not limit or hinder the cyclist and pedestrians from trying to access on the proposed greenway would be the use of bollards.

Photo B2: Bollards to restrict vehicles but not cyclists (Deise Greenway):

Appendix C:

Preliminary Cost Estimate

Appendix D:

Outline Project Programme