KILDARE COUNTY COUNCIL

Environmental Impact Assessment
Screening Report

GRAND CANAL GREENWAY

Aylmer Bridge to Clonkeen

November 2018

Contents

1. INTRODUCTION

Kildare County Council proposes to undertake a Part 8 planning application for works relating to the upgrading of the Grand Canal towpath to facilitate a Greenway off-road walking and cycling route.

The first EIA Directive was adopted in 1985 (Directive 85/337/EEC) and, following the adoption of amending Directives in 1997, 2003 and 2009, a codified Directive was adopted in 2011 (Directive 2011/92/EU). Directive 2014/52/EU amends the 2011 codified Directive but does not replace it. The EIA Directive requires that public and private projects that are likely to have significant effects on the environment be made subject to an assessment prior to development consent being given.

The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) came into operation on the 1st September 2018 and this EIA Environmental Impact Assessment Screening report has been prepared having regard to the provisions of all relevant legislation and regulations and seeks to determine whether this proposed development will require full Environmental Impact Assessment.

1.1 Legislative Background

The Directive outlines in Article 4 (1) 21 Annex 1 projects that require mandatory EIA. Article 4 (2) outlines Annex 2 projects that require consideration for EIA further to a case by case examination or through thresholds and criteria established by Member States. Projects requiring mandatory EIA are listed in Schedule 5 of the Planning and Development Regulations 2001, as amended. Where developments are under the relevant EIA threshold, planning authorities are required under Article 103 of the 2001 Regulations, as amended, to request an EIS where it considers the proposed development is likely to have a significant effect on the environment. In these cases the significant effects of the project are assessed relative to the criteria contained in Schedule 7a of the regulations, principally:

- the projects characteristics
- sensitivity of the project location, and
- characterisation of potential impacts.

In addition, where the development would be located on or in an area, site etc. set out in Article 103(2), the planning authority shall decide whether the development would or would not be likely to have significant effects on the environment for such site, area or land etc. the implication being that if it decides that it would be likely to have significant effects on the environment, it can invoke its powers to request an EIS.

Article 103(2) sites comprise the following:

a) A European Site;
b) An area the subject of a notice under section 16(2) (b) of the Wildlife (Amendment) Act, 2000;
c) An areas designated as a Natural Heritage Area under section 18 of the Wildlife (Amendment) Act, 2000;
d) Land established or recognised as a nature reserve within the meaning of section 15 or 16 of the Wildlife Act, 1976, as amended by sections 26 and 27 of the Wildlife (Amendment) Act, 2000; or
e) Land designated as a refuge for flora or as a refuge for fauna under section 17 of the Wildlife Act, 1976, as amended by section 28 of the Wildlife (Amendment) Act, 2000.

The proposed Greenway is located along the Grand Canal which is designated as a proposed Natural Heritage Area (site code: 002104).

The proposed development also falls under the EIA requirements of the Roads Act 1993 as amended by the Planning and Development Acts (2000-2011) and the Roads Act (2007) as well as regulations made under the Roads Acts, The European Communities (Environmental Impact Assessment) (Amendment) Regulations 1989-2018, and EC Directives 85/337/EC and 97/11/EC referenced above.

A road within the 1993 act is defined to include:

(a) any street, lane, footpath, square, court, alley or passage,
(b) any bridge, viaduct, underpass, subway, tunnel, overpass, overbridge flyover, carriageway whether single or multiple, pavement or footway,
(c) any weighbridge or other facility for the weighting or inspection of vehicles, toll plaza or other facility for the collection of tolls, services area, emergency, telephone, first aid post, culvert, arch, gulley, railing, fence, wall, barrier, guardrail, margin, kerb, lay-by, hard shoulder, island, pedestrian refuge, median, central reserve.

Furthermore Cycleway is referred to in Section 68 of the 1993 Act as follows:

(1) In this section "cycleway" means a public road or proposed pubic road reserved for the exclusive use of pedal cyclists or pedal cyclists and pedestrians.
(2) (a) A road authority may construct (or otherwise provide) and maintain a cycleway.
(b) Where a road authority constructs or otherwise provides a cycleway it shall by order declare either – (i) the cycleway is for the exclusive use of pedal cyclists, or (ii) that the cycleway is for the exclusive use of pedal cyclists and pedestrians.
(c) any person who uses a cycleway in contravention of an order under paragraph (b) shall be guilty of an offence.

A Screening Statement for Appropriate Assessment has also been prepared for this proposed project and should be read in conjunction with this report.

1.1.1 Recent changes to the EIA Screening process.

The EIA Directive (2014/52/EU) has recently been transposed into legislation by the enactment of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) which came into operation on 1st September 2018 in order to transpose the Directive into Irish planning. A number of changes to the EIA process were instigated through this new Directive, with a strengthening of the Screening process as follows:

Article 4 (4) of this Directive introduces a new Annex IIA to be used in the case of a request for a screening determination for Annex II projects. This is information to be provided by the developer on the projects listed in Annex II (see below):

1.1.2 Annex IIA: Information to be provided by the developer on the projects listed in Annex II.

1. A description of the project, including in particular:
   (a) a description of the physical characteristics of the whole project and, where relevant, of demolition works (Section 2 of this report);
   (b) a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected (Section 3 of this report)

2. A description of the aspects of the environment likely to be significantly affected by the project (Section 3 of this report)
3. A description of any likely significant effects, to the extent of the information available on such effects, of the project on the environment resulting from:
   (a) the expected residues and emissions and the production of waste, where relevant;
   (b) the use of natural resources, in particular soil, land, water and biodiversity (Section 4 of this report). 4.The criteria of Annex III shall be taken into account, where relevant, when compiling the information in accordance with points 1 to 3 (Section 4 of this report).

Article 4(4) specifies that the developer may provide a description of any features of the project and/or mitigation measures to avoid or prevent what might otherwise have been significant effects on the environment. It should be noted that this does NOT include compensation measures (Mitigation measures are provided in Section 2.2.).

1.1.3 Article 4(5) Determination of Screening

Article 4(5): The competent authority shall make its determination, on the basis of information provided by the developer in accordance with paragraph 4 taking into account, where relevant, the results of preliminary verifications or assessments of the effects on the environment carried out pursuant to Union legislation other than this Directive.

The determination shall be made available to the public and:
(a) where it is decided that an environmental impact assessment is required, state the main reasons for requiring such assessment with reference to the relevant criteria listed in Annex III; or
(b) where it is decided that an environmental impact assessment is not required, state the main reasons for not requiring such assessment with reference to the relevant criteria listed in Annex III, and, where proposed by the developer, state any features of the project and/or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment

1.2 Requirement for EIA Screening

As previously stated, this may be considered a sub-threshold EIA development, as EIA is not mandatory for walking and cycling routes such as this Greenway. The key issue for the competent/consent authority in the context of the possible need for EIA of sub-threshold is whether or not such development is likely to have significant effects on the environment. Consideration of significant effect should not be determined by reference to size only. The nature and location of a project must also be taken into account. This EIA Screening Report is therefore being undertaken to determine in light of the criteria listed in Schedule 7a of the Planning and Development Regulations whether or not this proposed development will require full EIA.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Introduction

The current Part 8 proposal is for the construction of the Grand Canal Greenway as outlined below, extending from the Kildare / Dublin boundary to the Kildare / Offaly. The route from Hazelhatch to Alymer Bridge was developed previously as part of the Arthur's Way project, and the current proposal seeks to extend the Greenway westward from Aylmer Bridge to Clonkeen on the County Offaly border.

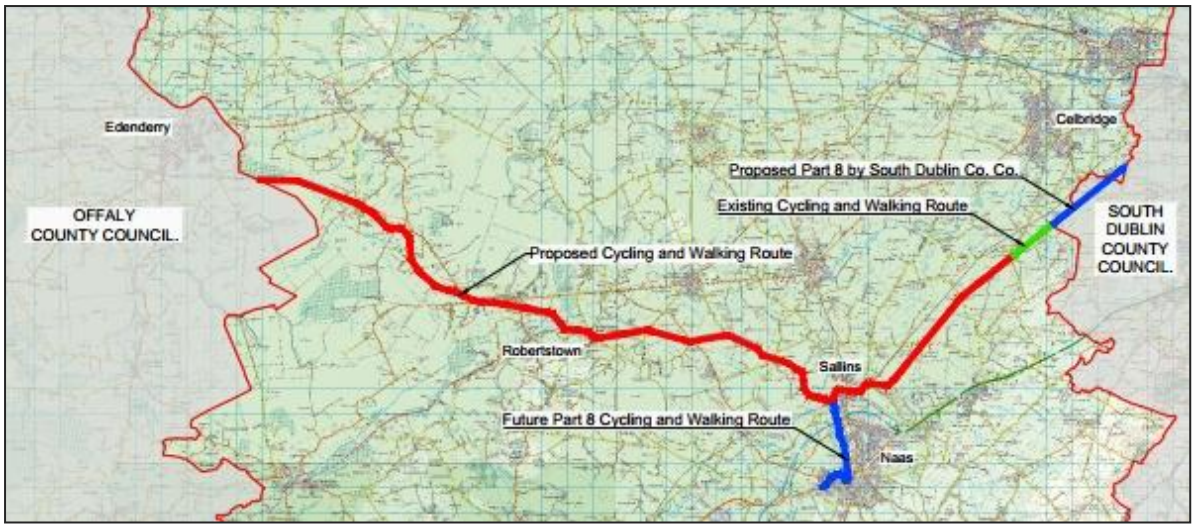

Figure 1: Grand Canal Greenway Route (Co. Kildare)

The Grand Canal Greenway in Kildare is considered in line with the National Greenway Strategy and will provide a nationally and regionally important high quality shared cycle way and footpath predominantly on the existing towpaths of the Grand Canal, the majority of which are also a National Way-marked Trail (The Grand Canal Way). The Greenway will provide a safe, scenic and substantially segregated amenity for the enjoyment of all ages and abilities. It is also envisaged that the Greenway will contribute to Ireland's tourism product and make a significant contribution to the rural development of County Kildare.

2.2 The Subject Site - The Grand Canal in County Kildare

The proposed Greenway route can be broken into the following segiments heading east to west;

- Alymer Bridge to 13th Lock - Existing unbound surface to the 13th lock running along the south bank of the Canal upgraded to a compacted stone and dust surface.

- 13th Lock to Henry Bridge to Ponsonby Bridge - Existing public road with a bound surface running along the south bank of the Canal. The Greenway along this section will be a shared surface. Consideration was given to creation of the Greenway along the north back at this location, to avoid a shared surface. However the north bank is lined by reed, a large sedge swamp and an existing treeline and is considered to be ecologically significant and therefore its disruption is unwarranted.

- Ponsonby Bridge to Devonsire Bridge - The Greenway remains on the south bank, and will see the existing grass towpath upgraded to a compacted stone and dust surface.

Figure 2 Grass towpath at Devonsire Bridge

- Devonsire Bridge to 15th Lock - The existing towpath on the south bank has an unbound surface from west of Devonsire Bridge at lock 14 to west of the 15th lock. This section will be upgraded to an compacted stone and dust surface.

- 15th Lock to Sallins to the Leinster Aqueduct - Remaining on the south bank the existing unbound and grass towpath will be upgraded to a compacted stone and dust surface. The canal bank entering Sallins is narrow in places and will require widening works to accommodate the Greenway. As the towpath does not continue under Sallins Bridge and there is no capacity to construct the Greenway under same, it is necessary for the Greenway to diverge from the canal bank. To accommodate this a shared cycle & pedestrian footbrige is proposed to take users north of the canal. Given the traffic hazards posed by crossing the Clane Road (R407) at the Sallins Bridge, the Greenway will run along Chapel Lane where an existing pedestrian crossing will be utilitised as a crossing point. The Greenway will at this point run on the northern bank of the canal along the existing bound road which will be upgraded as required. This bound surface runs as far the Leinster Aqueduct.

Figure 3 View east from Sallins Bridge

- The Leinster Aqueduct to Digby Bridge to Landenstown Bridge - The Greenway remains on the northern bank and will upgrade the existing unbound and grass towpath as far as Landenstown Bridge. The Greenway crosses over the public county road at Digby Bridge as the towpath does not extend under bridge.

Figure 4 The Leinster Aqueduct

- Landenstown Bridge to 18th Lock - The Greenway crosses from the nothern bank to the southern bank at Landenstown Bridge as there is not sufficient room between the public road and the canal bank for the Greenway to be safely accommodated. The Greenway follows the exising grass towpath which will be upgraded to to a compacted stone and dust surface. East of the 18th Lock a bridge will be installed and the Greenway will revert back to northern bank to follow the established grass towpath, which will be upgraded to a compacted stone and dust surface.

- 18th Lock to Cock Bridge to Bonynge Bridge - The Greenway will continue on the upgraded existing grass towpath on the northern bank under Cock Bridge and under Bonynge Bridge.

- Bonynge Bridge to Robertstown - West of Bonynge Bridge a new bridge is proposed to take the Greenway back to the southern bank and the existing grass towpath which will be upgraded to a compacted stone and dust surface. It was considered vital, during the route selection process that the Greenway arrive in Roberstown on the southern bank. This ensures that users of amenity are directed into the Village. This represents a unique opportunity for Robertstown, as the village is located on the midway point of the route through Kildare. The route will see visitors come off the Canal bank due to restrictions in width of the canal bank and the absence of space under Binn Bridge and traverse through the centre of the village. The opportunity for Robertstown as a community is to provide for a range of experiences that visitors expect from any high quality destination, including cafes, restaurants, pubs and a diversity of accommodation types. But perhaps more significantly is the potential to development and provide a wide range of things to see and do in the area, which if successful will serve to retain visitors in the area for longer.

Figure 5 Binn Bridge - Disused Canal Hotel Robertstown Village

- Robertstown to Shee Bridge - Amenity users revert back to the southern bank of the Canal west of Binn's Bridge. On the outskirts of the village a bridge will be installed to take the Greenway to the northern bank onto the existing bound and unbound and grass towpath, all to be upgraded as indicated on the accompanying drawings. The Greenway remains on the northern bank passing the 19th Lock, passing under Fenton Bridge, Bond Bridge and Shee Bridge.

- Shee Bridge to Hamilton Bridge - After exiting west under Shee Bridge the Greenway takes the form of a Boardwalk after which a proposed bridge will take users back to the southern back and along the existing grass towpath which will be upgraded to a compacted stone and dust surface for a distance of approximately 1km. After which a bridge will revert the Greenway back to the northern bank to the existing unbound and grass towpath and will extend under Hamiliton Bridge.

- Hamilton Bridge to County Bounds - The Greenway remains on the northern bank and will see the predominantly unbound and grass towpath upgraded to a compacted stone and dust surface. The Greenway passes under Lullymore Bridge and Ticknevin Bridge before extending to the Kildare / Offaly County Boundary and joining with the Offaly section of Grand Canal Greenway.

2.3 Scheme Description

As outlined above, the proposal is to develop a cycleway and footway on the exising towpaths of the Grand Canal. The proposal entails the upgrading of the existing towpath, which forms The Grand Canal Way a National Way-marked Trail. The route selection was determined to ensure as much as the route as possible is off-road. Where possibe the route utilises bridge underpasses to keep users on the canal bank and off public roads. This ensures that users are afforded an opportunity to cycle or walk on a predominantly traffic free route accross the entire County.

The proposed development, subject of this Part 8, will include the following;

1. Improvement and upgrading of the existing towpath along the Grand Canal through the provision of a suitable surface i.e. Quarry Dust, Surface Dressing or Asphalt (Tarmac) depending on local conditions for pedestrian and cyclist use.
2. Provision of traffic safety measures and signage to facilitate safe pedestrian and cycling crossings and access to shared surfaces at Sallins, Digby Bridge, Landenstown Bridge,Bonynge Bridge and Robertstown and along limited sections of existing local road network.
3. Provision of access controls (pedestrian / cycling friendly gates) road markings, traffic calming measures, ducting and associated drainage works on the proposed cycle / walk way.
4. Provision of route signage boards and marker/distance posts along the proposed route. The route signage boards will be located at main access points onto the route in towns and villages, while marker/distance posts will be installed at 5km intervals.

2.3.1 Surface Types

Tailered surface finishes shall be employed to ensure a durable and fit for purposed 3m wide trail in accordance with TII Publications DN-GEO-0347 - Rural Cycle Scheme Design and the National Trails Office guidance for Shared Use Trails / Greenways – Blueways. These surfaces will improve accessibility, and provide a more robust surface capable of withstanding increased footfall and traffic.

The proposed surface types to be used on the cycleway are outlined below;
Type A: Compacted Stone and Dust (unbound)
Type B: Surface Dressing (bound)
Type C: Asphalt / Tarmac (bound)

Type A which is an unbound dust surface is the preferred surface for the Greenway, given the rural nature of the proposal, where the surface is required to give a sense of the environment. Also given the rural setting of the Greenway proposal, the facilities attractiveness is equally as important as the comfort of the user. Therefore the unbound surface is the preferred option to minimise environmental impacts along the towpaths as it provides more natural aesthetics and blends with the rural environment. The unbound surface will complement and enhance the existing areas that it passes through whilst being sensitive to the surrounding environment.

Type B is an bound surface dressed surface and will be applied to any existing deteriorated bound surfaces and areas of road widening incorporating shared use surfaces. It will also be applied to existing sections of the canal bank that may be used by limited traffice in the future.

Type C is a bound asphalt / tarmac surface and will be applied to any similar existing deteriorated surfaces, areas of road widening incorporating shared use surfaces and approximately 15m either

side of approaches to road crossings.

Excavation on the towpath to accommodate the proposed works will be kept to a minimum and it is intended to construct on the existing surface in consultation with Waterways Ireland.

2.3.2 Construction Materials and Methodology

Materials for construction of the works will be imported and stockpiled within the site boundaries at the local and regional road access points as detailed in the construction methodology. The materials to be employed shall principally consist of:

- Geotextile ground reinforcing cloth
- Granular sub-base material (NRA clause 804)
- 6mm crushed limestone dust
- Dense Bitumen Macadam to NRA Specification for Road Works (Series 900)
- Hot rolled asphalt
- Topsoil / grass seed
- Signage and miscellaneous furniture

Construction Methodology

Construction materials will be transported from stockpiled areas either along the canal banks in bog meisers or along the existing public road in appropriately sized Dumpers or Trucks for construction of the trail. The detailed construction methodology included in the planning application lists the access points where it is likely that adjacent to these access points, and at a safe setback distance from canal stockpiles will be located.

Excavation, using mini diggers will be kept to a minimum, if undertaken at all, to ensure minimum disruption to the Canal Bank. Levelling of materials will be carried out using mini excavators in restricted areas. Excavation of the existing surface will be kept to a minimum and avoided completely where there is a risk of damage to existing tree roots. Excavated material will be used for the reinstatement of the edges of the new trail to reduce material importation costs as well as minimise the risk of the introduction of invasive species. It is not envisaged that there will be a need to remove large quantities of excavated material from within the site boundary.

Detailed construction methodologies for each of the surface types are contained below in the section relating to Construction Methodologies for Surface Types.

Access Routes

Access to the cycle path shall be gained via all existing regional and local road access points along the length of the route and are indicated on supporting drawings for this application.

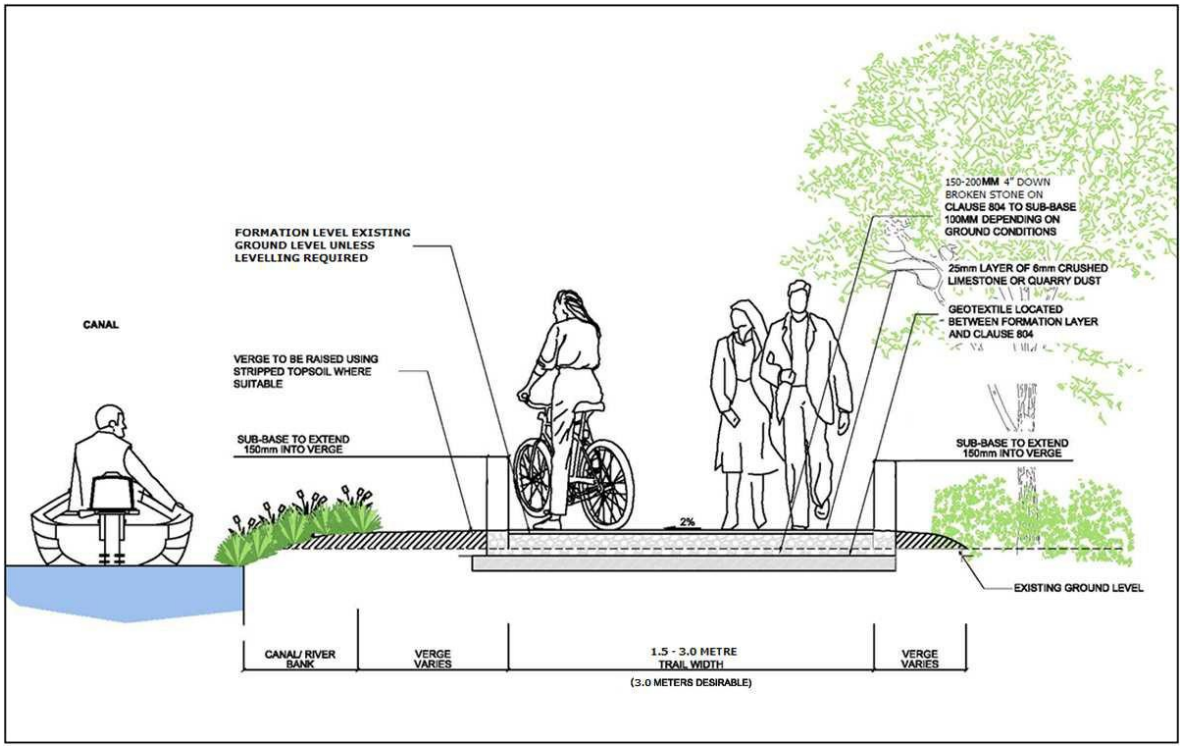

Figure 6 TYPE A: Compacted Stone and Dust

Type A: Compacted Stone and Dust	
LOCATIONS	MATERIAL SPECIFICATION
Primarily in rural areas along sections of the route that will be trafficked by pedestrians and cyclists only	Geotextile Polybrane 240 Membrane or alternative equivalent product grade Sub -Base layer 4" Down Broken Stone, then Granular sub-base, in accordance with Clause 804 of Tii Specification. Surface layer 0/6mm crushed limestone or quarry Dust.

CONSTRUCTION SEQUENCE (Refer Figure 6 above)

Formation Tray Excavation where unavoidable (Desirable Width of 3.3mm. Note width will vary from a maximum 3.3m wide and reduce to suit existing restricted access widths for example at lock houses and lock gates) (b) Overlay to Existing Path (Desirable Path Width of 3.0m. Note width will vary from a maximum 3.0m wide and reduce to suit existing restricted access widths for example at lock houses and lock gates)

- Grade out irregularities to form 3.3m wide formation tray (width of formation tray to be approximately 300mm wider than the path width) to maximum depth of 100mm below ground level. (Actual depth will depend on depth of sub-base being used, which will depend on ground conditions. Where possible new construction will overlay existing). Formation tray should be rectangular in section with vertical sides and level base.
- Any Stripped vegetation and excavated topsoil to be stacked neatly either side of formation tray to be used for reinstatement of path shoulders.
- There would be no excavation requirements in regard to the overlay of the existing surface other than to address isolated issues with soft spots.

Geotextile Installation

- Lay and secure geotextile sheet in formation tray or on top of the existing ground. Overlap joining sheets by 1.0m.
- If required in soft ground - Lay and secure geogrid on top of geotextile sheet. Overlap joining sheets by 1.0m.

Sub-Base Layer

- Using either a drag box or suitable excavator lay the required depth of 4" down Broken Stone upon the geotextile sheet to falls and levels, to form 1:50 (2%) camber or 1:40 (2.5%) cross-fall in maximum layer depths of 150mm – 200mm. Then 100mm Clause 804 granular sub-base. Depths of Sub-base will depend on existing ground conditions
- Compact sub-base layer using a pedestrian roller taking care not to apply undue pressures to the canal bank until satisfactory compaction is achieved.
- Once sub-base layer is compacted, check levels of the surface at regular intervals along the compacted sub-base layer for consistent even surface regularity. Any part of the sub-base layer deviating from the required level must be raked off or topped up with additional Clause 804 granular sub-base and re-compacted to the correct levels.

Surface Layer

- Using either a drag box or suitable excavator lay 25mm depth of 6mm limestone dust to falls and levels, to form 1.5m to 2.5m wide path surface with 1:50 (2%) camber or 1:40 (2.5%) crossfall along the centre line of compacted sub-base layer.
- Compact surface layer using a roller until satisfactory compaction is achieved.
- Once rolling is finished, check levels of the surface at regular intervals along the compacted surface layer for consistent even surface regularity. Any part of the surface layer deviating from the required level must be raked off or topped up with additional 6mm limestone dust and re-compacted to the correct levels.

Landscaping

- Using available topsoil and turfs from excavations (and only if necessary, imported topsoil). Landscaped verges and edges should be finished level with path surface and taper down and away from the path surface to allow surface water to run off onto adjacent verges

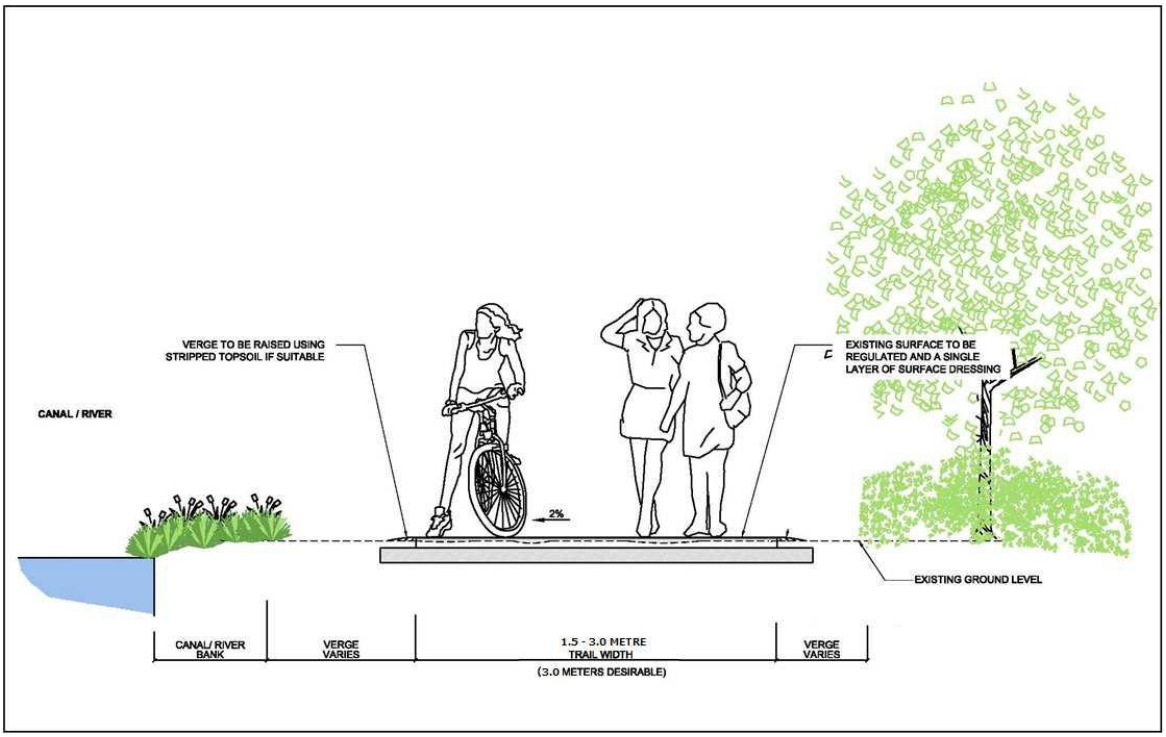

Figure 7 Type B: Surface Dressing (bound)

Type B: Surface Dressing (bound)	
LOCATIONS	MATERIAL SPECIFICATION
Existing deteriorated bound surfaces and locations. It will also be applied to existing sections of the canal Bank that will be used by limited traffic in the future.	Tack Coat Cationic Bitumen Emulsion in accordance with NRA Specification for Road Works and BS 434. Base layer Regulating course to NRA Specification for Road Works (Series 900) to fill potholes and surface irregularities and create necessary cross-falls and cambers. Surface layer Single layer of chippings (3mm) applied to a surface dressing adhesive of resin or hot sprayed coat of bitumen emulsion to NRA Specification for Road Works.

CONSTRUCTION SEQUENCE (Refer Figure 7 above)

Surface Preparation (Desirable Path Width of 3.0m and varies depending on width of existing bound surface)

- Clean existing surface of weed growth and debris and apply tack coat were required..Base Layer
- Using mini paving machine lay regulating course to fill potholes and achieve falls and levels, to form 3.0m wide surface (will vary depending on width of existing bound surfaces) with 1:50 (2%) camber or 1:40 (2.5%) cross-fall.
- Compact layer thoroughly using a roller and continue rolling until full compaction is achieved taking care not to apply undue pressures to the canal bank.
- Once rolling is finished, check levels of the surface at regular intervals along the compacted regulating layer for consistent even surface regularity. Any part of the regulating course layer deviating from the required level must be regulated with additional material and re-compacted to the correct levels.

Surface Layer

- Spray surface dressing adhesive of hot sprayed coat of bitumen emulsion on the regulated surface and apply the 10mm chippings in accordance with Clause 919.

- Compact surface course layer thoroughly using a roller until full compaction is achieved taking care not to apply undue pressures to the canal bank
- Loose chippings to be swept and removed from the finished surface before opening for use.

Landscaping

- Using available topsoil and turfs from excavations (and only if necessary, imported topsoil). Landscaped verges and edges should be finished level with path surface and taper down and away from the path surface to allow surface water to run off onto adjacent verges.

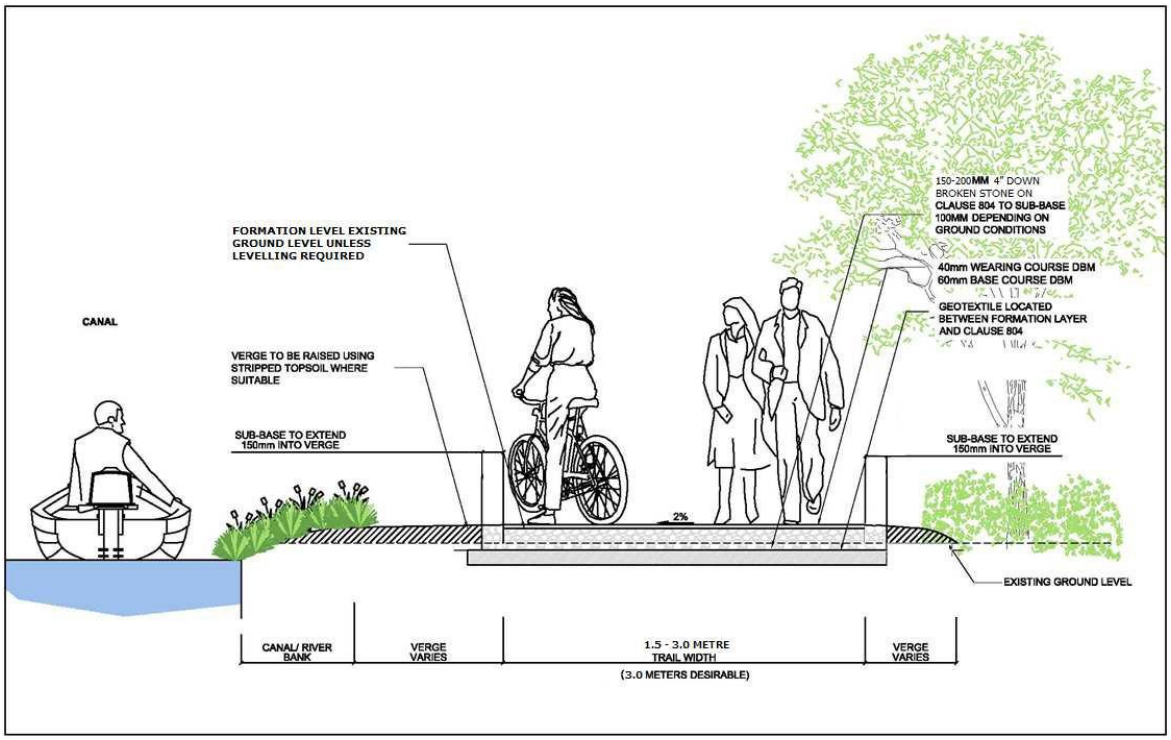

Figure 8 Type C: Bitmac/Asphalt

Type C: Bitmac/Asphalt	
LOCATIONS	MATERIAL SPECIFICATION
Urban sections of the trail, sections of road widening for shared use and approaches to road crossings.	Geotextile Polybrane 240 Membrane or alternative equivalent product grade Sub -Base layer 4" Down Broken Stone then Granular sub-base, in accordance with Clause 804 of Tii Specification. Base layer 60mm Dense Bitumen Macadam base course to NRA Specification for Road Works (Series 900) Surface layer 40mm hot rolled asphalt to NRA Specification for Road Works (Series 900) or Dense Bitumen Macadam wearing course to NRA Specification for Road Works (Series 900)

CONSTRUCTION SEQUENCE (Refer Figure 8 above)

(a) Formation Tray Excavation where unavoidable (Desirable Width of 3.3mm. Note width will vary from a maximum 3.3m wide and reduce to suit existing restricted access widths for example at lock houses and lock gates) (b) Overlay to Existing Path (Desirable Path Width of 3.0m. Note width will vary from a maximum 3.0m wide and reduce to suit existing restricted access widths for example at lock houses and lock gates)

- Grade out irregularities to form 3.3m wide formation tray (width of formation tray to be approximately 300mm wider than the path width) to maximum depth of 100mm below ground level. (Actual depth will depend on depth of sub-base being used, which will depend on ground conditions. Where possible new construction will overlay existing). Formation tray should be rectangular in section with vertical sides and level base.
- Any Stripped vegetation and excavated topsoil to be stacked neatly either side of formation tray to be used for reinstatement of path shoulders.
- There would be no excavation requirements in regard to the overlay of the existing surface other than to address isolated issues with soft spots.

Geotextile Installation

- Lay and secure geotextile sheet in formation tray or on top of the existing ground. Overlap joining sheets by 1.0m.

- If required in soft ground - Lay and secure geogrid on top of geotextile sheet. Overlap joining sheets by 1.0m.

Sub-Base Layer

- Using either a drag box or suitable excavator lay the required depth of 4" down Broken Stone upon the geotextile sheet to falls and levels, to form 1:50 (2%) camber or 1:40 (2.5%) cross-fall in maximum layer depths of 150mm – 200mm. Then 100mm Clause 804 granular sub-base. Depths of Sub-base will depend on existing ground conditions
- Compact sub-base layer using a pedestrian roller taking care not to apply undue pressures to the canal bank until satisfactory compaction is achieved.
- Once sub-base layer is compacted, check levels of the surface at regular intervals along the compacted sub-base layer for consistent even surface regularity. Any part of the sub-base layer deviating from the required level must be raked off or topped up with additional Clause 804 granular sub-base and re-compacted to the correct levels.

Base Layer

- Using mini paving machine lay 60mm depth of dense bitumen macadam base course to NRA Specification for Road Works (Series 900) and to falls and levels, to form 2.5m wide path surface with 1:50 (2%) camber or 1:40 (2.5%) cross-fall.
- Compact layer thoroughly using a roller and continue rolling until full compaction is achieved taking care not to apply undue pressures to the canal bank.

Surface Layer

- Using mini paving machine lay 45mm depth of hot rolled asphalt or dense bitumen macadam wearing course to NRA Specification for Road Works (Series 900) and to falls and levels, to form 2.5m wide path surface with 1:50 (2%) camber or 1:40 (2.5%) crossfall.
- Compact surface course layer thoroughly using a roller and continue rolling until full compaction is achieved taking care not to apply undue pressures to the canal bank.

Landscaping

- Using available topsoil and turfs from excavations (and only if necessary, imported topsoil). Landscaped verges and edges should be finished level with path surface and taper down and away from the path surface to allow surface water to run off onto adjacent verges.

Best Practice Construction Approach

All construction works, relating to the activities and construction sequence outlined above, will be undertaken in accordance with the following:

- Inland Fisheries Ireland's Requirements for the Protection of Fisheries Habitat during Construction and Development Works.
- CIRIA (Construction Industry Research and Information Association) Guidance Documents
- Control of water pollution from construction sites (C532)
- Control of water pollution from linear construction projects: Technical Guidance (C648)
- Control of water pollution from linear construction projects: Site Guide (C649)
- Environmental Good Practice on Site (C692)
- NRA Guidance Documents
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes
- Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads
- Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes.

Measures from the Ecological Cumulative Impact Assessment (2016)

Earthworks

- Excavation and infilling will be carried out in small progressive stages;
- Any topsoil that is of use for landscaping will be stored on the site. Where this is required during the construction phase, it will be stored suitably far away from the canal and other surface water features and covered to avoid excessive sediment run-off or wind blow;
- Whilst no significant run off of silt laden run off is anticipated, given the proposed construction methodology, the site will be regularly monitored by construction staff for signs of run-off such as silt in surrounding vegetation and measures will be put in place to prevent this where necessary. This may include the provision of a solid containment berm (of soil) or alternatively the erection of a silt fence. A silt fence may be constructed by attaching a sheet of geotextile membrane to a stock fence and burying the bottom of it into the ground, thus allowing water to pass through but not the heavier fraction of the sediment;
- Excavations will be carried out using a suitably sized excavator;
- Any excavated soil that is not re-used will be disposed of to a Local Authority approved waste disposal facility;
- In all circumstances, excavation depths and volumes will be minimised and excavated material will be re-used where possible.

Fuel Use and Storage

- The use of machinery at the site carries the potential for accidental hydrocarbon contamination of the area, by fuel spillages or oil leaks for example. The works will be carried out in accordance with the following measures to avoid such impacts:
- Mobile storage such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned.
- When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.

- All plant refuelling will take place on site using mobile fuel bowsers. Only dedicated trained & competent personnel will carry out refuelling operations.
- Plant refuelling will take place as far as practicable from watercourses. A spill kit and drip tray shall be on site at all times and available for all refuelling operations. Equipment shall not be left unattended during refuelling.
- All pipework from containers to pump nozzles will have anti siphon valves fitted.
- Strict procedures for plant inspection, maintenance and repairs shall be detailed in the contractor's method statements and machinery shall be checked for leaks before arrival on site.
- All site plant will be inspected at the beginning of each day prior to use.
- Defective plant shall not be used until the defect is satisfactorily fixed.
- All major repair and maintenance operations will take place off site.
- Care will be taken at all times to avoid contamination of the environment with contaminants other than hydrocarbons, such as uncured concrete or other chemicals.
- The plant refuelling procedures described above shall be detailed in the contractor's method statements.

During construction and maintenance works, existing excavated material will be used where possible, with importation of material only where necessary. Imported material will only come from a suitably assessed quarry, where there is no risk of importation of invasive species.

Should disturbance to species rich grassland be unavoidable, then its topsoil should be stockpiled, covered and stored. This topsoil will contain a species rich seed bank specific to the local area and should be utilised as backfill or landscaping material and allowed to regenerate naturally following construction.

Disseminate information on sensitive ecological receptors, such as sensitive habitats, breeding birds etc. occurring adjacent to or in the wider area surrounding routes. This information will aim to educate recreational users on the conservation status and sensitivities of such receptors to encourage responsible usage of routes.

Where necessary provide landscaping to minimise potential disturbance to sensitive species. Planting of vegetation screens and the management of existing hedgerows and treeline to screen sensitive species habitat i.e. nesting sites, from routes will be undertaken.

Provide route facilities, such as trail-heads in areas away from sensitive habitats and species. All work completed should be in compliance with the Wildlife Acts, 1976 – 2012;

In areas where aquatic Annex II-listed species (e.g. White-clawed Crayfish) or Flora Protection Order species are known to occur the works shall be carried out under licence from the NPWS.

In relation to the Greenway, if at detailed design stage, lighting or structural works in relation to bridges or other structures are proposed, bat surveys should be undertaken, with appropriate mitigation undertaken as necessary. None are proposed for these works.

All contractors should incorporate strict biosecurity protocols into their Construction Environmental Management Plans. This should include the thorough cleaning and disinfection of all machinery prior to arrival and departure from the site, to prevent the spread of invasive species. In the event that additional topsoil or infill material is required as part of the construction works, it should be sourced from a stock/quarry that has been screened for the presence of any invasive species and should

have confirmation that no invasive species are present.

Measures for Ecologically Sensitive Areas

Six ESAs have been identified close to or adjoining the Grand Canal Towpath. Meadsures to protect these areas will include:

- Any stripped topsoil from the species rich grassland areas will be stockpiled, covered and stored (outside species-rich areas, ESAs, areas prone to flooding or areas with tall herb vegetation). This topsoil will contain a species-rich seed bank and should be utilised, where possible, as backfill or landscaping material and allowed to regenerate naturally (ECIA pg 45)
- Prior to works commencing these will be identified from the maps and fenced off to restrict access of construction staff, machinery and other equipment/material from these areas.
- Prior to the commencement of construction a briefing outlining the sensitivity of this ESA and the requirement to adhere to measures intended to safeguard the status of this ESA will be provided to all construction staff.

Non-Native Invasive Species

The presence or otherwise of non-native invasive species has been identified along the proposed Greenway Route during habitat surveys undertaken in July and August 2015. The proposed works will involve the movement of soil on the site and will create disturbed ground that may be subject to colonization with invasive species such as Japanese Knotweed and Butterfly Bush. In stream works are not proposed as part of the Greenway, but are proposed as part of the ongoing maintenance works. There will be no in-channel works as part of the scheme but there is considered to be some potential for the spread of aquatic invasive species (e.g. Zebra Mussel or Elodea spp).

Any vegetation clearance or construction works to be undertaken in the vicinity of areas identified as supporting non-native species will be undertaken in accordance with the Transport Infrastructure Ireland (TII) (formerly the National Roads Authority (NRA)) guidance measures for the control and management of noxious weeds and non-native invasive species (see NRA, 2010).

- In the event that additional topsoil and quarried stone is required on the site, it will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.
- All machinery will be thoroughly cleaned and disinfected prior to arrival and departure from the site (through pre-agreed Biosecurity Protocols) to prevent the spread of invasive species such as Japanese Knotweed (Fallopia japonica), Giant Rhubarb (Gunnera sp.), Rhododendron (R. ponticum) and aquatic invasives. This process will be detailed in the contractor's method statement.
- Sites of known infestation shall be clearly marked prior to works and avoided during construction. The importance of preventing the spread of these species will form part of a tool box talk to all personnel prior to construction stage.

Measures to Protect Water Quality & Surface Water Bodies

- One aquaduct occur along the Greenway Route –the Blundell Aquaduct. This aqueduct crosses over watercourses associated with the Boyne catchment. To prevent the ingress of any surface water or dust emissions to these watercourses during the construction phase temporary silt trap and impermeable barrier will be placed along the edge of the aqueduct while dust screens will be placed over the aqueduct guardrails.

- Suitable prevention measures should be put in place at all times to prevent the release of sediment to the Grand Canal and other drainage channels associated with construction areas and migration to adjacent watercourses To reduce erosion and silt-laden runoff, create, where possible, natural vegetation buffers between the construction footprint and the Grand Canal and other drainage channels and divert runoff from exposed excavated areas.
- Disturbance to natural drainage features should be avoided during the construction and/or maintenance of routes.
- Excavated material will not be stored immediately adjacent to watercourses.
- During route maintenance no construction activities should be undertaken at watercourse crossing in wet weather conditions.
- Any refuelling or lubrication of machinery will not be undertaken within 50m of a watercourse.

<u>Other Measures to Minimise Disturbance During Construction</u>

- Any excavations and/or vegetation removal will minimised during construction and/or maintenance works.
- Construction machinery should be restricted to public and or site roads. As a general rule machinery should not be allowed to access, park or travel over areas outside the footprint of proposed walking/cycling routes.
- Where necessary drainage waters from construction areas should be managed through a series of treatment stages that may include swales, check dams and detention ponds along with other pollution control measures such as silt fences and silt mats.
- Where vegetation associated with treelines, hedgerows, individual mature trees, scrub or woodland is required, this shall only be undertaken outside the breeding bird season, between March and August inclusive.
- Where extensive areas of ground are to be exposure during route construction or maintenance dust suppression should be undertaken during periods of dry weather.
- All chemical substances required during construction and/or maintenance works will be stored in sealed containers.
- Spill kits will be required on site during construction and/or maintenance works.
- Disseminate information on sensitive ecological receptors, such as sensitive habitats, breeding birds etc. occurring adjacent to or in the wider area surrounding routes. This information will aim to educate recreational users on the conservation status and sensitivities of such receptors to encourage responsible usage of routes.
- Where necessary provide landscaping to minimise potential disturbance to sensitive species. Planting of vegetation screens and the management of existing hedgerows and treeline to screen sensitive species habitat i.e. nesting sites, from routes will be undertaken.
- Provide route facilities, such as trail-heads in areas away from sensitive habitats and species.

2.3.3 Road Crossing and Access Controls

To ensure the safety of users of the Greenway and to ensure that current agricultural practices can continue unhindered and that residential amenity of those who live along the proposed route is not adversely affected, a number of controlled accessed or gates are proposed over the length of the route (see drawings for locations). The proposed access controls are specifically designed for cyclist / pedestrian use while still providing sufficent security to the amenity. A typical detail of the arrangement is provided on drawing no 400/18/229 and is similar to that in the photograph below.

Figure 9 Access Control / Gates

Signage will be erected at the appropriate juntions and interfaces along the proposed route as identified on the scheme drawings. A post construction health and safety audit will identify the exact signage requirements and will be conducted prior to the route being fully operational. Additional safety measures to ensure the safety of users may be installed particularly on areas of shared surface and road crossings.

2.3.4 Local Residents and Agricultural Properties

The route traverses through the town of Sallins and the Village of Roberstown and the fringes of Allenwood Village, but for the most part the route is through areas of open countryside. The route has sections of shared surface, which currently provide access to residential and agricultural properties and are therefore lightly trafficked by vehicles. In addition where access to agricultural land is currently only available via the towpath, these sections are trafficked by agricultural machinery and livestock, on an infrequent basis. As a result passing bays are proposed, to accommodate traffic, cyclists / walkers in these sections. The proposal has been designed to minimise impact on residential amenity and agricultual practices.

2.3.5 Public Lighting

No lighting of the route is proposed under the current scheme.

2.3.6 Ducting

Appropriate ducting is to be provided for at construction stage subject to agreement with Waterways Ireland and relevant stakeholders.

2.3.7 Amenity

Any future proposals for amenity areas along the canal, including jetties / marina facilities for boat users, car parking, landscaping, or barge facilities etc. will require planning permission.

2.3.8 Architectural Heritage

There are a number of protected structures located within or adjacent to the proposed route. No works are proposed to any protected structure, it is considered therefore that the proposed development will not materially affect the character of any protected structure.

Structure	Townland	Kildare RPS Ref	NIAH Ref
Henry Bridge	Clonaghlis	B15-12	11901501
Ponsonby Bridge	Baronrath	B14-47	11901406
Devonsire Bridge	Kileenmore	B14-17	11901405
Leinster Aqueduct	Waterstown / Osberstown	B19-13	
Digby Bridge & Lock 16	Landenstown	B14-46	11901403
Landenstown Bridge & Lock 17	Landenstown	B14–45	11901402
Bonynge Bridge	Downings South	B13–16	
White-Eye Supply Single Arch Stone aqueduct with embankment	Robertstown	B13-32	11806012
Section of the Grand Canal	Robertstown	B13-35	11806015
Binns Bridge	Roberstown West	B13–12	11806004
Bond Bridge	Derrymullen	B13–42	11901304
Shee Bridge	Allenwood South	B12-02	11901201
Ticknevin Bridge	Ticknevin	B08–23	11900801

Table 1: Structures on RPS located on the Grand Canal Greenway route.

The proposed Greenway extends under or over / across the protected structures outlined above. Proposed signage and access control gates and crossing points will be located in the vicinity of these protected structures. Consideration was given to the installation of safety rails along the trail edge under bridges where a 3m width is not achievable, however to safegaurd the protected structures this was decided against. To ensure the safety of users, cyclist will be encouraged by way of a controlled gate and signage to dismount and walk underneath the bridges. No works are proposed to the structures themselves.

2.4 Planning Policy

The following strategies, policy, guidelines and plans support the creation of Greenways and are relevent therefore to the Part 8 proposal.

- Project Ireland 2040 – National Planning Framework;
- National Development Plan 2018 – 2027;
- The Government's Smarter Travel Initiative;
- The National Cycle Policy Framework;
- People, Place and Policy Growing Tourism to 2025;
- The Action Plan for Rural Development Realising our Rural Potential;
- Strategy for the Future Development of National and Regional Greenways;
- Regional Planning Guidelines for the Greater Dublin Area 2010 – 2022;
- The Kildare County Development Plan 2017 – 2023;
- Sallins Local Area Plan 2016 – 2022;
- Allenwood Village Plan 2017 – 2023;
- Roberstown Village Plan 2017 – 2023;

Project Ireland 2040 – National Planning Framework

The National Planning Framework recognises that creating the environment to support job creation in rural areas will be a key enabler to rejuvenating rural towns and villages, sustaining vibrant rural communities and reversing rural decline. The following overarching objectives in relation to tourism, transport and Greenways are noted;

National Policy Objective 22 – Facilitate tourism development and in particular a National Greenways, Blueways and Peatway Strategy, which priorities projects on the basis of achieving maximum impact and connectivity at nationla and regional level.

National Policy Objective 46 – In co-operation with relevant Departments in Northern Ireland, enhanced transport connectivity between Ireland and Northern Ireland, to include cross-border road and rail, cycling and walking routes, as well as blueways, greenways and peatways.

National Strategic Outcome 3 – Strengthened Rural Economies and Communities – Rural Development; Invest in greenways, blueways and peatways as part of a nationally coordinated strategy.

National Strategic Outcome 7 – Enhanced Amenities and Heritage-Amenities and Heritage:

'Implementation of planning and transport strategies for the five cities and othe urban areas will be progressed with a major focus on improving walking and cycling routes, including continuous greenway networks and targeted measures to enhance permeability and connectivity'.

National Development Plan 2018 – 2027

Launched in conjunction with Project Ireland 2040 – National Planning Framework, the National Development Plan is a ten year strategy for public capital investment totally almost €116 Billion. This document makes provision for the following investment actions.

Rural Regeneration and Development Fund: €1 billion

Rural Recreation Infractructure Scheme:	This scheme supports the development and necessary maintenance, enhancement or promotion of recreational infrastructure throughout Ireland in light of the huge potential to develop the economic value of Activity and Recreational Tourism by Local Authorities, State Agencies and communities. Initiatives funded covered a broad spectrum, and range from walking trails to greenways and blueways.

Under the Strategic Investment Priorities 2018 – 2027:

Transition to a Low-Carbon and Climate-Resilient Society,	Sustainable travel measures, including comprehensive Cycling and Walking Network for metropolition areas of Ireland's cities, and expanded Greenways.

Smarter Travel: A Sustainable Transport Future 2009 – 2020
Launched in 2009 by the Department of Transport as the national transport policy document for Ireland. One of the main aims of the policy is to develop walking and cycling as viable communter modes in the short to medium term with a long term aim of fostering a lasting walking and cycling culture in Ireland.

The National Cycle Policy Framework (NCPF) 2009 – 2020
The NCPF recognises the positive benefits of cycling as a mechanism to improve quality of life for the countries citizens, by way of improved health but also on a broader communal sense, in terms of a reduction in CO2 emissions and increased social integration as people walk and cycle together. It is an overarching objective of the NCPF that 10% of all trips in Ireland will be made by bike by the year 2020.

People, Place and Policy Growing Tourism to 2025
The Department of Transport, Tourism and Sport's policy statement People, Place and Policy Growing Tourism to 2025 outlines the Government's objectives for tourism with a view to increase overseas visitors and revenue and employment. The Policy highlights the importance of sustainable development of tourism and recognises the contribution of facilities for activity for activity-based holidays to Ireland's positive image and attraction as a tourist destination. It supports the development and improvement of physical visitor attractions, visitor infrastructure and facilities for visitor activities, including Greenways.

Action Plan for Rural Development Realising our Rural Potential
The Action Plan for Rural Development Realising our Rural Potential highlights the potential of activity to contribute to economic frowth in rural areas, recognising "Outdoor adventure tourism is a key growth sector worldwide and has been identified as a priority for Irish tourism in future years. The development and promotion of this sector provides opportunities for growth, in rural areas in particular by facilitating businesses to leverage the tourism assets in their area in a sustainable way to support recreational activities such as canoeing, cycling, angling and hill walking".

Strategy for the Future Development of National and Regional Greenways
The publication of the Strategy for the Future Development of National and Regional Greenways to support activity tourism in rural areas is identified as an action point in the Action Plan for Rural Development Realising our Rural Potential. The Strategy seeks to assist in the strategic development of nationally and regionally significant Greenways in appropiate locations constructed to an appropriate standard to deliver a quality experience for Greenway users. The Strategy also seeks to increase the number and geographical spread of Greenways to deliver an increase in activity tourism to Ireland and also a recreational amenity for domestic visitors and locals, thereby promoting physical activity and contributing to a healthier society. The Strategy aims to provide substantially segregated off-road experience linking places of interest, recreation and leisure in areas with beautiful scenery and attrations.

Regional Planning Guidelines for the Greater Dublin Area 2010 – 2022;
The importance of the Grand Canal as a major recreational and amenity site for walking and cycling activities and access route is recognised by the Regional Planning Guidelines for the Greater Dublin

Area 2010 – 2022. Included in Actions for Green Infrastructure Developments in the GDA is the provision of linkages between river and canal corridors within the GDA region and adjoining regions to create interconnected routes including the development of walkways and cycleways.

The Kildare County Development Plan 2017 – 2023

The Kildare County Development Plan 2017 – 2023 includes specific policies and objectives supporting the proposed development and green infrastructure within the County. The following are considered most pertenint in relation to the development of a Greenway on the Grand Canal.

Chapter 13 Natural Heritage & Green Infrastructure

GI 1 Ensure the protection, enhancement and maintenance of Green Infrastructure and recognise the health benefits as well as the economic, social, environmental and physical value of green spcaes through the integration of Green Infrastructure (GI) planning and development in the planning process.

GI 7 Promote a network of paths and cycle tracks to enhance accessibility to the Green Infrastructure network, while ensuring that the design and operation of the routes respect and where possible enhances the ecological potential of each site.

Chapter 14 Landscape, Recreation, & Amenity;

WC 5 Promote the amenity, ecological and educational value of the canals and rivers within the county while at the same time ensuring the conservation of thir fauna and flora, and protection of the quantity and quality of the water supply.

WV 2 Preserve and enhance the scenic amenity of the river valleys and canal corridors and the quality of the vistas available from designated views.

Section 14.11.3 Countryside Recreation (ii) Cycling

The Council acknowledges that provision for cyclists should be provided as resourses permit and where appropiate.

Section 14.11.4 Recreation and Amenity (iii) Green Infrastructure

In developing green infrastructure, oportunities should be taken to develop and enhance networks for cycling, walking and other non-motorised transport.

CR 4 Develop, in conjunction with the Irish Sports Council and adjoining Local Authorities, long distance walking and cycling routes.

CR 5 Investigate the possibility of developing long distance walking routes, within the lifetime of the Plan, along disused sections of railway lines (e.g. Tullow line) and canals in the county (Corbally Line, Blackwood feeder and Mountmellick Line).

CR 7 Facilitate, where appropiate, the provision of cycle-ways or walkways along the extent of the canals and watercourses in the county in co-operation with landowners, Waterways Ireland, Government Departments and other Local Authorities.

CR 9 Promote the expansion of cycle facilities throughout the county and to liaise with Failte Ireland, the Sports Council, the National Transport Authority and other bodies in the development of cycling touring routes throughout the County and adjoining counties, in particular in areas of high amenity.

Sallins Local Area Plan 2016 – 2022;

The Sallins Local Area Plan 2016 – 2022 includes specific policies and objectives supporting the proposed development. The following are considered most pertenint in relation to the development of a Greenway on the Grand Canal.

CR 1 To support and facilitate the improvement of sports, recreational, community and cultural facilities in Sallins.

CR 2 To encourage recreational / amenity / community facilities in Sallins to be multi-functional and available for more than one group only.

CR 3 To retain, enhance and develop routes for recreation and tourism use and to increase permeability within and around the town.
CRO 3 To improve access to and promote the amenity of the Grand Canal and River Liffey in conjunction with all relevant statutory and non-statutory bodies.

Allenwood Village Plan 2017 – 2023;
The Allenwood Village Plan 2017 – 2023 includes specific policies and objectives supporting the proposed development. The following are considered most pertenint in relation to the development of a Greenway on the Grand Canal.
CE 2 Facilitate the provision of open space and amenity areas including a playground facility in the village.
NH1 Support the creation of an attractive hub of waterside activity and an attractive amenity area for use by the general public along the waterways within the village boundaries.

Roberstown Village Plan 2017 – 2023;
The Roberstown Village Plan 2017 – 2023 includes specific policies and objectives supporting the proposed development. The following are considered most pertenint in relation to the development of a Greenway on the Grand Canal.
AMR 1 Protect open space along the Grand Canal, as set out on Map V2-2.13A.
AMR 2 Control new development accessed from the Grand Canal towpath in order to protect it as walking / cycling route.
AMR 3 Develop a walking / cycling route from Binn's Bridge to Fenton's Bridge to link with routes on the Grand Canal and Barrow Navigation, as illustrated on Map V2-2.13B.

3. RECEIVING ENVIRONMENT

Schedule 6 of the Planning and Development Regulations, 2001, as amended, outline the aspects of the environment likely to be significantly affected by a proposed development. These include (inter alia):

- Human beings
- Fauna and flora
- Soil
- Water
- Air/climatic factors
- Landscape
- Cultural heritage, including the architectural and archaeological heritage and cultural heritage
- The inter-relationship between the above factors.

A summary of each of the above topics as they relate to the receiving environment is provided below:

3.1 Human Beings

This proposed project commences at Aylmer Bridge, to the south west of Celbridge town, and extends through a primarily agricultural landscape before terminating at the Offaly county boundary at Clonkeen some 39 kilometers away. The population data for the main settlements close to or on the relevant section of the Grand Canal is provided below:

Table 2 Population and development status of main settlements along/close to proposed Greenway

Main Settlements	Status in Kildare County Development Plan 2017-2023	Population Census 2016
Celbridge	Moderate Sustainable Growth Town	20,288
Straffan	Village	853
Sallins	Small Town	5,849
Naas	County Town – Large Growth Town I	21,393
Prosperous	Small Town	2,333
Robertstown	Village	707
Kilmeague	Village	1,082
Allenwood	Village	981
Derrinturn	Small Town	1,602

3.2 Flora and Fauna

A screening under Article 6 of the EU Habitats Directive has also been prepared for this planning application and should be read in conjunction with this EIA Screening report. Twelve European Sites comprising ten SACs and two SPAs occur within the surrounding 15km radius of the site. Please see the Appropriate Assessment Screening Statement for further detail on these European Sites.

The proposed Greenway is located along the Grand Canal which is designated as a proposed Natural Heritage Area.

Grand Canal pNHA (site code 0002104). The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy Otter spraints are found along the towpath, particularly where the canal passes over a river or stream. The Common

Newt breeds in the ponds on the bank at Gollierstown in Co. Dublin. The Rare and legally protected Opposite- leaved Pondweed (Groenlandia densa) (Flora Protection Order 1987) is present at a number of sites in the eastern section of the Main Line. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species.

An ecological survey was commissioned for the Grand Canal co-ordinated by Waterways Ireland in summer 2015 and the results of this survey for the relevant section of the Grand Canal were made available. An overview of the habitats identified are summarised below: More detailed inventories, habitat maps and descriptions can be found in the report – Habitat Survey of Grand Canal, Waterways Ireland 2015. This survey identified a particular mosaic habitat for the canal – Towpath Mosaic described as follows:

TPM (Tow Path Mosaic): bespoke habitat category devised between Waterways Ireland and ecologists in consultation with National Parks and Wildlife Service to describe the vegetation along the towpath from the canal edge to either the built/gravel road or the hedgerow/treeline/tree boundary (if there is no built road). The TPM comprises several habitats changing in quick succession moving away from the canal. It includes reedbed, marsh, wet grassland and drier grasslands. This habitat was devised as each of the level 3 habitats occurring within the TPM are linear and grade into each other over such a short distance the habitats cannot be delineated separately on a habitat map.

Table 3: Summary of habitats and fauna along relevant sections of towpath from Aylmer Bridge to Clonkeen

Location	Habitats and Flora	Fauna
County Boundary at Clonkeen to Hartley Bridge, Ticknevin	Along the northern bank of the canal around the 20th Lock, the towpath mosaic is characterised by a transition from reed and large sedge swamp along the edges of the canal to a mown grass towpath of improved amenity grassland, bordered by dry meadows and grassy verges and finally a treeline. Common species noted along the canal verge included Meadowsweet (Filipendula ulmaria), Reed Sweet Grass (Glyceria maxima), Reed canary-grass (Phalaris arundinacea), Bulrush (Typha latifolia). The surface of the towpath transitions from mown grass to gravelled access track east of the 20th Lock. The area north of the bordering treeline is dominated by improved agricultural grassland with patches of wet grassland, scrub and cutover bog, and a small area of mixed broadleaved/conifer woodland and a dry meadow. Wet willowalder- ash woodland is present west of the 20th Lock.	Common Frog (Rana temporaria), common invertebrates and birds typical of canal, meadow and woodland habitats such as Robin (Erithacus rubecula), Goldcrest (Regulus regulus), Chaffinch (Fringilla coelebs), Stonechat (Saxicola torquata), Swallow (Hirundo rustica), Starling (Sturnus vulgaris), Willow Warbler (Phylloscopus trochilus), Wren (Troglodytes troglodytes), Magpie (Pica pica) and Blackbird (Turdus merula).

Location	Habitats and Flora	Fauna
Hartley Bridge, Ticknevin – Bord na Móna Bridge, Kilpatrick	The northern bank of the canal is characterised by a towpath mosaic incorporating reed and large sedge swamp, a gravelled access track, a grassy verge and bordering treeline. The grassy verge between the track and the treeline is very narrow along much of this section and the reed and large sedge swamp habitat transitions to less diverse amenity grassland approximately 800m east of Hartley Bridge. The dominant land-use north of the bordering treeline is agricultural, comprised primarily of improved agricultural grassland and arable crops. Around Hartley Bridge are numerous roads, buildings and gardens together with a small area of mixed broadleaved woodland to the northwest and an area of recolonising bare ground to the east.	Common Frog (Rana temporaria), common invertebrates and birds typical of canal, improved grassland and woodland habitats such as Robin (Erithacus rubecula), Meadow Pipit (Anthus pratensis), Willow Warbler (Phylloscopus trochilus), Rook (Corcus frugilegus), Jackdaw (Corvus monedula), Whitethroat (Sylvia communis), Blue tit (Parus caeruleus), Goldcrest (Regulus regulus), Swallow (Hirundo rustica), Starling (Sturnus vulgaris), Wren (Troglodytes troglodytes), Magpie (Pica pica) and Blackbird (Turdus merula).
Bord na Móna Bridge, Kilpatrick – Hamilton Bridge	Both the eastern and western banks of the canal are characterised by the typical towpath mosaic with broken treelines. Habitats present beyond the towpath mosaic included improved agricultural grassland and buildings and artificial surfaces with gardens and lawns. Treeline bordered both the northern and southern sides of the towpath in places.	Common Frog (Rana temporaria), common invertebrates and the following birds: Buzzard (Buteo buteo), Chiffchaff (Phylloscopus collybita), Goldfinch (Carduelis carduelis), Willow Warbler (Phylloscopus trochilus), Woodpigeon (Columba palumbus), Goldcrest (Regulus regulus), Jackdaw (Corvus monedula), Starling (Sturnus vulgaris), Reed Bunting (Emberiza schoeniclus), Wren (Troglodytes troglodytes), Swallow (Hirundo rustica), Blackbird (Turdus merula) and Coal Tit (Periparus ater hibernicus)
Hamilton Bridge – Light Railway Bridge (lifting)	Both the north-eastern and south-western banks of the canal are comprised of the typical towpath mosaic habitats with broken treelines and some adjoining amenity grassland. A roadway and buildings and gardens are present on the southwestern side. Improved agricultural grassland dominates beyond the towpath mosaic on both sides of the canal.	Common Frog (Rana temporaria), common invertebrates and the following birds: Sparrowhawk (Accipiter nissus), Coal Tit (Periparus ater hibernicus), Long-tailed Tit (Aegithalos caudatus), Willow Warbler (Phylloscopus trochilus), Meadow Pipit (Anthus pratensis), Dunnock (Prunella modularis), Goldfinch (Carduelis carduelis), Goldcrest (Regulus regulus), Robin (Erithacus rubecula), Wren (Troglodytes troglodytes), Swallow (Hirundo rustica), Blackbird (Turdus merula) and Blue tit (Parus caeruleus)

Location	Habitats and Flora	Fauna
Light Railway Bridge (lifting) – Shee Bridge	The northern bank of the canal east of the Light Railway Bridge is characterised by a towpath mosaic incorporating a sharp transition from canal to grassy verge to a gravelled access track, bordered by a treeline. Approximately 600m east of the Light Railway Bridge, this gravel path meets a tarmac road running alongside the canal and separated from it by a wide grassy verge. In the west of the section, the land both north and south of the canal is mostly improved agricultural grassland, while in the east of the section, land north of the canal is mostly tilled land and land south of the canal contains many buildings and gardens. The invasive plant species Gunnera sp. Has been noted in this section east of the light railway bridge.	Common Frog (Rana temporaria), common invertebrates and the following birds: Goldfinch (Carduelis carduelis), Swallow (Hirundo rustica), Rook (Corcus frugilegus), Great tit (Parus major), Jackdaw (Corvus monedula), Coal Tit (Periparus ater hibernicus), Robin (Erithacus rubecula), Willow Warbler (Phylloscopus trochilus), Magpie (Pica pica), Blackbird (Turdus merula) and Wren (Troglodytes troglodytes).
Shee Bridge – Bond Bridge, Allenwood	This section includes Ecologically Sensitive Area 2 (see Section 2.2 for detailed description). The typical towpath mosaic is recorded along both the northern and southern banks of the canal in this section with long strips of Phragmites well developed along the canal banks. The land on the north of the canal is mostly wet grassland including some areas of mixed wet grassland and scrub. Land to the south is dominated by wet grassland with some scrub and cutover bog.	Common Frog (Rana temporaria), common invertebrates and the following birds: Long-tailed Tit (Aegithalos caudatus), Robin (Erithacus rubecula), Woodpigeon (Columba palumbus), Swallow (Hirundo rustica), Rook (Corcus frugilegus), Great tit (Parus major), Coal Tit (Periparus ater hibernicus) and Wren (Troglodytes troglodytes).
Bond Bridge, Allenwood – Junction with New Barrow Line	This section comprises Ecologically Sensitive Area 2 (see Section 2.2 for detailed description). East of Bond Bridge, the canal banks are characterised by the typical towpath mosaic with continuous treelines and wide grassy verges. Approximately 250m east of Bond Bridge, drainage ditches entered the canal from both banks and the treeline on the south bank transitioned to hedgerow comprised of primarily of Hawthorn. Further east, broadleaved woodland and dry meadows and grassy verges are recorded on both sides of the canal. Land to the north of the canal contained many buildings and artificial surfaces and gardens, as well as some arable crops, improved agricultural grassland, recolonising bare ground, an active quarry and a small area of broadleaved woodland.	Common Frog (Rana temporaria), common invertebrates and the following birds: Woodpigeon (Columba palumbus), Swallow (Hirundo rustica), Rook (Corcus frugilegus), Great tit (Parus major), Hooded Crow (Corvus corone cornix), Willow Warbler (Phylloscopus trochilus), Jackdaw (Corvus monedula), Wren (Troglodytes troglodytes), Robin (Erithacus rubecula) and Blackbird (Turdus merula)

Location	Habitats and Flora	Fauna
Junction with New Barrow Line – 19th Lock, Lowtown and Lowtown Marina	This section forms part of ESA3. The towpath mosaic on the northern bank of the New Barrow Line between the junction with the Main Line and the R415 Bridge showed a transition from reed and large sedge swamp to a paved towpath and associated grassy verge with a bordering treeline. The land north of this treeline is a patchwork of improved agricultural grassland, broadleaved woodland and mixed broadleaved/conifer woodland, with a small area of scrub and buildings and artificial surfaces adjacent to the bridge. West of the R415 Bridge, a drainage ditch runs between the grassy verge and the bordering treeline. Two artificial ponds are also present, one of which is surrounded by trees and has an associated area of wet grassland. East of the Main Line in this section is an area of wet grassland bound by treeline, a hedgerow and drainage ditches. The northern drain is a reed and large sedge swamp with a strip of broadleaved woodland to the north of which there is a conifer plantation.	Common Frog (Rana temporaria), common invertebrates and the following birds: Goldfinch (Carduelis carduelis), Great tit (Parus major), Woodpigeon (Columba palumbus), Coal Tit (Periparus ater hibernicus), Rook (Corcus frugilegus), Willow Warbler (Phylloscopus trochilus), Jackdaw (Corvus monedula), Magpie (Pica pica), Robin (Erithacus rubecula), Goldcrest (Regulus regulus), Swallow (Hirundo rustica), Wren (Troglodytes troglodytes), Pied Wagtail (Motacilla alba yarrellii) and Blackbird (Turdus merula). There is a good diversity of both dragonfly and damselfly in this area with the presence of the following species noted: Brown Hawker Dragonfly (Aeshna grandis), Common Blue Damselfly (Enallagma cyathigerum and Banded Demoiselle (Calopteryx splendens).
19th Lock, Lowtown and Lowtown Marina – Binn's Bridge, Robertstown	The towpath mosaic on the northern bank includes a paved road and broken treeline. To the north, habitats include improved agricultural grassland, arable crops and extensive areas of wet grassland. Many of these fields are divided by hedgerows, treelines and drainage ditches. Roads and buildings, as well as gardens and areas of improved amenity grassland, are also recorded. A few small areas of dry meadows and a broadleaved woodland are also present.	Common Frog (Rana temporaria), common invertebrates and the following birds: Long-tailed Tit (Aegithalos caudatus), Swallow (Hirundo rustica), Woodpigeon (Columba palumbus), Pied Wagtail (Motacilla alba yarrellii), Rook (Corcus frugilegus), Blue tit (Parus caeruleus), Hooded Crow (Corvus corone cornix), Willow Warbler (Phylloscopus trochilus), Jackdaw (Corvus monedula), Wren (Troglodytes troglodytes), Robin (Erithacus rubecula) and Blackbird (Turdus merula).
Binn's Bridge, Robertstown – Bonynge Bridge or Healy's Bridge	The typical towpath mosaic is found continuously along both banks of the canal in this section, though a small patch of scrub occurred at one point on the south bank. The mosaic in this section is bound by a wide strip of mixed wet grassland and scrub from east of Binn's Bridge, save for a small patch of broadleaved woodland on the northern bank. Apart from a relatively small area of houses and gardens just east of Binn's Bridge, agriculture is the dominant land-use on the northern bank of the canal, with much improved	Common Frog (Rana temporaria), common invertebrates and the following birds: Goldfinch (Carduelis carduelis), Willow Warbler (Phylloscopus trochilus), Rook (Corcus frugilegus), Goldcrest (Regulus regulus), Robin (Erithacus rubecula), Wren (Troglodytes troglodytes), Swallow (Hirundo rustica), Blackbird (Turdus merula) and Blue tit (Parus caeruleus). Signs of Otter were also noted at this location.

Location	Habitats and Flora	Fauna
	agricultural grassland and wet grassland, some of which is mixed with scrub. To the south, there are extensive areas of wet grassland, sometimes mixed with scrub, mixed broadleaved/conifer woodland, improved agricultural grassland and wet willow-alder-ash woodland. Drainage ditches ran through this area and drained into the canal. There is a small area containing houses and gardens southwest of Bonynge or Healy's Bridge. Hedgerows are also present in areas of improved agricultural grassland.	
Bonynge Bridge – Burgh Bridge	This section forms ESA4 (see Section 2.2 for a detailed description). The northern bank of the canal in this section is characterised by the typical towpath mosaic with an adjacent linear broadleaved woodland. The southern bank is characterised by a sharp transition from canal to a very narrow grassy verge to broadleaved woodland immediately east of Bonynge Bridge, to improved agricultural grassland for approximately 300 m of the bank, and to mixed dry meadow and scrub for the remainder of the section. A hedgerow borders the aforementioned strip of agricultural grassland. South of the canal, improved agricultural grassland dominates with a field of arable crops and a small area of buildings and gardens near Burgh/Cock Bridge.	Common Frog (Rana temporaria), common invertebrates and the following birds: Sparrowhawk (Accipiter nissus), Willow Warbler (Phylloscopus trochilus), Long-tailed Tit (Aegithalos caudatus), Magpie (Pica pica), Rook (Corcus frugilegus), Bullfinch (Pyrrhula pyrrhula), Robin (Erithacus rubecula), Sand Martin (Riparia riparia), Swallow (Hirundo rustica), Wren (Troglodytes troglodytes), Great tit (Parus major), Blackbird (Turdus merula) and Chiffchaff (Phylloscopus collybita).
Burgh Bridge (Cock) – 18th Lock	This section forms ESA5 (see Section 2.2 for detailed description). The northern bank of the canal presented the typical towpath mosaic for most of this section, except at 18th Lock, which contained only amenity grassland with a paved access track. North of the towpath mosaic is a continuous strip of scrub approximately 50m wide. The southern bank of the canal is characterised mainly by scrub. A treeline of approximately 200 m in length is present on the southern bank in the middle of this section. A small strip of grassy verge is also present. Immediately around 18th Lock, there is an area of improved amenity grassland surrounded by broadleaved woodland. A strip of wet grassland is also recorded alongside the scrub. South of the	Common Frog (Rana temporaria), common invertebrates and the following birds: Long-tailed Tit (Aegithalos caudatus), Coal Tit (Periparus ater hibernicus), Heron (Ardea cinerea), Chiffchaff (Phylloscopus collybita), Woodpigeon (Columba palumbus), Willow Warbler (Phylloscopus trochilus), Rook (Corcus frugilegus), Magpie (Pica pica), Raven (Corvus corax), Dunnock (Prunella modularis), Robin (Erithacus rubecula), Bullfinch (Pyrrhula pyrrhula), Chaffinch (Fringilla coelebs), Goldcrest (Regulus regulus), Coot (Fulica atra), Whitethroat (Sylvia communis), Swallow (Hirundo rustica), Blackcap (Sylvia communis), Pied Wagtail (Motacilla alba yarrellii), Wren (Troglodytes troglodytes), Blue tit

Location	Habitats and Flora	Fauna
	riparian zone, the land is dominated by improved agricultural grassland with some buildings and gardens and treelines. Poaching by cattle is evident on the southern bank in this section.	(Parus caeruleus), Blackbird (Turdus merula), Great tit (Parus major) and Song Thrush (Turdus philomelos). Signs of badgers and grey squirrels were also noted.
18th Lock – 17th Lock, Landenstown Bridge	The northern bank of the canal at the 18th Lock is characterised by improved amenity grassland and a paved access track bounded by an area of scrub. Approximately 800m east of the lock, the access track joins a road with a grassy verge and sometimes amenity grassland on both sides. Closer to the 17th Lock, a treeline is present alongside the road. North of the banks, improved agricultural grassland is dominant interspersed with buildings and gardens. The southern bank of the canal in this section is characterised entirely by the typical towpath mosaic with adjoining broadleaved woodland. South of the bank, improved agricultural grassland dominated.	The following birds were recorded at this location: Mallard (Anus platyrhynchos), Jackdaw (Corvus monedula), Goldfinch (Carduelis carduelis), House Martin (Delichon urbica), Siskin (Carduelis spinus), Robin (Erithacus rubecula), Rook (Corcus frugilegus), Swallow (Hirundo rustica), Pied Wagtail (Motacilla alba yarrellii), Magpie (Pica pica), Great tit (Parus major), Dunnock (Prunella modularis), Coal Tit (Periparus ater hibernicus), Wren (Troglodytes troglodytes), Chiffchaff (Phylloscopus collybita) and Blackbird (Turdus merula). The common frog was noted in this section amongst the reed vegetation on the northern canal bank.
17th Lock, Landenstown Bridge – 16th Lock, Digby Bridge	The northern bank of the canal in this section is characterised along the entire length by the typical towpath mosaic with a bordering treeline. To the north of the treeline the land is dominated by improved agricultural grassland. A small area of broadleaved woodland is also present, as well as some buildings with gardens. The banks at Lock 16 are of improved amenity grassland. The south bank is of approximately 50% wet grassland with a bordering treeline and 50% typical towpath mosaic habitat. South of the canal, mixed wet grassland/scrub, broadleaved woodland and wet grassland are dominant.	Common Frog (Rana temporaria), common invertebrates and the following birds: Goldfinch (Carduelis carduelis), Blue tit (Parus caeruleus), Treecreeper (Certhia familiaris), Great tit (Parus major), Woodpigeon (Columba palumbus), Coal Tit (Periparus ater hibernicus), Rook (Corcus frugilegus), Willow Warbler (Phylloscopus trochilus), Jackdaw (Corvus monedula), Magpie (Pica pica), Robin (Erithacus rubecula), Dunnock (Prunella modularis), Jay (Garralus glandarius), Wren (Troglodytes troglodytes), Swallow (Hirundo rustica), Blackbird (Turdus merula), Pied Wagtail (Motacilla alba yarrellii) and Song Thrush (Turdus philomelos).
16th Lock, Digby Bridge – Leinster Aqueduct	The northern bank of the canal in this section is characterised along the entire length by the typical towpath mosaic with a paved road and bordering treeline. A small area of broadleaved woodland occurred just west of the Leinster Aqueduct. To the north of the treeline the land is dominated by improved agricultural grassland except for an area of broadleaved woodland with buildings and extensive amenity grassland just	Common Frog (Rana temporaria), common invertebrates and the following birds: Long-tailed Tit (Aegithalos caudatus), Magpie (Pica pica), Rook (Corcus frugilegus), Dunnock (Prunella modularis), Jackdaw (Corvus monedula), Wren (Troglodytes troglodytes), Robin (Erithacus rubecula), Blackbird (Turdus merula) and Swallow (Hirundo rustica).

Location	Habitats and Flora	Fauna
	east of the 16th Lock and Digby Bridge, and areas of wet grassland west of the Leinster Aqueduct. The typical towpath mosaic is also observed along the entire length of the south bank at the Leinster Aqueduct, where it is replaced by a grassy verge and a gravelled track associated with a small patch of broadleaved woodland. This artificial surface forms part of the towpath mosaic along this entire section. A treeline is also present along much of the southern bank in this section. Habitats occurring to the south included wet grassland, a large dry meadow, a substantial amount of improved agricultural grassland and a small area of arable crops, as well as some improved amenity grassland and a small area of broadleaved woodland. In addition, patches of scrub occurred within fields containing agricultural grassland. Himalayan balsam (Impatiens glandulifera) is noted to the south of the Leinster Aqueduct, growing along the river bank.	
Leinster Aqueduct – Junction with Naas Line at Railway Bridge	Along the northern bank of the canal, the typical towpath mosaic incorporating a gravelled road and continuous treeline is observed along the entire section. The area to the north is dominated by improved agricultural grassland and amenity grassland. Just west of the junction with the Naas Line, there is an area of mixed broadleaved woodland and scrub, within which are a small building, a small patch of horticultural land and an area of improved agricultural grassland. An island of broadleaved woodland is present at the junction of the Main Line and the Naas Line.	Common Frog (Rana temporaria), common invertebrates and the following birds: Swift (Apus apus), House Sparrow (Passer domesticus), Heron (Ardea cinerea), Coal Tit (Periparus ater hibernicus), Woodpigeon (Columba palumbus), Chiffchaff (Phylloscopus collybita), Rook (Corcus frugilegus), Dunnock (Prunella modularis), Jackdaw (Corvus monedula), Goldcrest (Regulus regulus), Robin (Erithacus rubecula), Sand Martin (Riparia riparia), Chaffinch (Fringilla coelebs), Starling (Sturnus vulgaris), Swallow (Hirundo rustica), Wren (Troglodytes troglodytes), Great tit (Parus major) and Blackbird (Turdus merula).
Junction with Naas Line at Railway Bridge – Sallins Bridge	The western and northern banks of the canal in this section presented the typical towpath mosaic incorporating a tarmac access road and treeline over the first 500m (approx.). Land to the west is dominated by improved amenity grassland while land to the north is dominated buildings and gardens and recolonising bare ground near Sallins Bridge. The eastern bank (early section) is characterised by the	Common Frog (Rana temporaria), common invertebrates and the following birds: Sparrowhawk (Accipiter nissus), Willow Warbler (Phylloscopus trochilus), Long-tailed Tit (Aegithalos caudatus), Magpie (Pica pica), Mallard (Anus platyrhynchos), Bullfinch (Pyrrhula pyrrhula), Rook (Corcus frugilegus), Goldcrest (Regulus regulus), Jackdaw (Corvus monedula), Wren (Troglodytes troglodytes), Robin

Location	Habitats and Flora	Fauna
	typical towpath mosaic with a treeline, later turning to riparian woodland and then to broadleaved woodland after the canal turns to take an easterly course. To the south, land is dominated by houses with gardens and amenity grasslands.	(Erithacus rubecula), Blackbird (Turdus merula) and Swallow (Hirundo rustica). Signs of Otter were also noted at this location.
Sallins Bridge – Railway Bridge	The northern bank of the canal is characterised by amenity grassland immediately east of Sallins Bridge and thereafter by a thin grassy verge. In the early part, this is accompanied by a strip of mixed wet grassland and scrub and then by riparian woodland. Immediately east of Sallins Bridge, the southern bank is one of amenity grassland and a road. The amenity grassland transitioned to a grassy verge with a strip of scrub after approximately 100m. Further east, this bank is replaced by the typical towpath mosaic with a broadleaved woodland. A treeline of approximately 300 m in length is also present in the middle of this section.	Common Frog (Rana temporaria), common invertebrates and the following birds: Mallard (Anus platyrhynchos), Jackdaw (Corvus monedula), Goldfinch (Carduelis carduelis), Coot (Fulica atra), Rook (Corcus frugilegus), Jay (Garralus glandarius), Swallow (Hirundo rustica), Coal Tit (Periparus ater hibernicus), Pied Wagtail (Motacilla alba yarrellii), Magpie (Pica pica), Great tit (Parus major), Goldcrest (Regulus regulus), House Sparrow (Passer domesticus) and Wren (Troglodytes troglodytes). Signs of Brown Rat and Grey Squirrel were also noted at this location.
Railway Bridge – 15th Lock	Along the northern bank of the canal, reed and tall sedge swamps transitioned to grassy verges and then to broadleaved woodland. An additional riparian woodland reduced to a treeline in the middle of the section. Amenity grassland with some scrub and exposed sand, gravel or till is present around the 15th Lock. Stone walls also occurred. The southern bank is characterised by the typical towpath mosaic. A broadleaved woodland is present along much of this section. Further north/east, this is gradually replaced by scrub accompanied by a treeline. Around the 15th Lock, amenity grassland is present with an area of scrub and exposed sand, gravel or till. A drain and treeline are also present. Improved agricultural grassland dominate south of the canal.	Common Frog (Rana temporaria), common invertebrates and the following birds: Woodpigeon (Columba palumbus), Swallow (Hirundo rustica), Rook (Corcus frugilegus), Blue tit (Parus caeruleus), Hooded Crow (Corvus corone cornix), Dunnock (Prunella modularis), Jackdaw (Corvus monedula), Starling (Sturnus vulgaris), House Martin (Delichon urbica), Wren (Troglodytes troglodytes), Robin (Erithacus rubecula) and Blackbird (Turdus merula).
15th Lock – 14th Lock, Devonshire Bridge	The towpath mosaic on the northern (western) bank is characterised by a transition from reed and large sedge swamp to improved amenity grassland and grassy verges. A treeline is present along much of this section and is doubled in places. Buildings and stone walls are present at the 14th Lock. The southern (eastern) bank is	Common Frog (Rana temporaria), common invertebrates and the following birds: Goldfinch (Carduelis carduelis), Swallow (Hirundo rustica), Woodpigeon (Columba palumbus), Blue tit (Parus caeruleus), Rook (Corcus frugilegus), Magpie (Pica pica), Jackdaw (Corvus monedula), Goldcrest (Regulus regulus), Mute Swan (Cygnus

Location	Habitats and Flora	Fauna
	characterised by a transition from reed and large sedge swamp to an access track and a strip of improved amenity grassland, accompanied by a drainage ditch and a bordering treeline. Killeen Golf Club is present to the south (east) of the canal and represented scattered trees and parkland.	olor), Starling (Sturnus vulgaris), House Martin (Delichon urbica), Wren (Troglodytes troglodytes), Robin (Erithacus rubecula) and Blackbird (Turdus merula). Signs of Brown Rat at this location.
14th Lock, Devonshire Bridge – Ponsonby Bridge	Immediately north of Devonshire Bridge, the northern (western) bank of the canal is characterised by a transition from reed and large sedge swamp to improved amenity grassland, which is replaced by scrub after 100m. A treeline is present also and continued almost unbroken until Ponsonby Bridge. Between the aqueduct over the Painestown River, only a treeline is present on the bank. The southern (eastern) bank of the canal is characterised by the typical towpath mosaic with a bordering treeline. A drainage ditch is present with the treeline from Ponsonby Bridge to the aqueduct over the Painestown River and an area of recolonising bare ground is present where this drained into the river.	Common Frog (Rana temporaria), common invertebrates and the following birds: Woodpigeon (Columba palumbus), Great tit (Parus major), Rook (Corcus frugilegus), Coal Tit (Periparus ater hibernicus), Jackdaw (Corvus monedula), Willow Warbler (Phylloscopus trochilus), Robin (Erithacus rubecula), Magpie (Pica pica), Swallow (Hirundo rustica), Goldcrest (Regulus regulus), Pied Wagtail (Motacilla alba yarrellii), Wren (Troglodytes troglodytes), Blue tit (Parus caeruleus) and Blackbird (Turdus merula).
Ponsonby Bridge – Henry Bridge	The northern bank of the canal consists mostly of reed and large sedge swamp. Just after Ponsonby Bridge, this transitions to a strip of improved amenity grassland, which includes a road for approximately 300 m. After this, the reed and large sedge swamp transition into a treeline. For the last 600 m before Henry bridge, a typical towpath mosaic is accompanied by a treeline. Reed and sedge swamp are present along the entire section from Ponsonby Bridge to Henry Bridge, as is a road. Strips of grassy verges and improved amenity grassland alternate along the southern side of this road. A treeline is present along much of the southern bank in this section and stonework is present at Henry Bridge. There is an area of recolonising bare ground approximately 300 metres west of Henry Bridge.	Common Frog (Rana temporaria), common invertebrates and the following birds: Long-tailed Tit (Aegithalos caudatus), Blue tit (Parus caeruleus), Goldfinch (Carduelis carduelis), Great tit (Parus major), Woodpigeon (Columba palumbus), Coal Tit (Periparus ater hibernicus), Rook (Corcus frugilegus), Chiffchaff (Phylloscopus collybita), Jackdaw (Corvus monedula), Magpie (Pica pica), Robin (Erithacus rubecula), Wren (Troglodytes troglodytes), Swallow (Hirundo rustica) and Blackbird (Turdus merula).

Location	Habitats and Flora	Fauna
Henry Bridge – 13th Lock	The northern bank of the canal is lined by reed and large sedge swamp and a treeline running almost continuously along the bank for this section. The southern bank of the canal is characterised by the typical towpath mosaic with a broken treeline and stone walls. A surfaced roadway runs along the entire length of this section and is bordered on the south by the Lyons estate. At the 13th Lock, some amenity grassland is present to the north and buildings and artificial surfaces are present to the south.	Common Frog (Rana temporaria), common invertebrates and the following birds: Woodpigeon (Columba palumbus), Dunnock (Prunella modularis), Jackdaw (Corvus monedula), Goldcrest (Regulus regulus), Robin (Erithacus rubecula), Wren (Troglodytes troglodytes), Willow Warbler (Phylloscopus trochilus), Blackbird (Turdus merula) and Magpie (Pica pica).
13th Lock – Aylmer Bridge	This stretch comprises ESA6 (see Section 2.2 for detailed description). A gravel path runs along the southern side of the canal between the 13th Lock and Aylmer Bridge. This section is bound on the southern side by the old stone wall of the Lyon's Estate, with certain sections having a narrow treeline growing intermittently on either side of the wall. The vegetation along this section is species poor with large areas bordering the southern side of the south towpath overgrown by butterbur and nettles. A narrow verge of Reed and large sedge swamp can be found growing along the verge on either side of the canal. The northern side of the canal consists of a narrow strip of reed and sedge swamp with a strip of dry meadows and grassy verge habitat in parts that then gives way to a narrow strip of broadleaved woodland. Small areas of improved amenity grassland which appears to be regularly maintained can be found around the 13th Lock and Aylmer Bridge.	Common Frog (Rana temporaria), common invertebrates and the following birds: Long-tailed Tit (Aegithalos caudatus), Chiffchaff (Phylloscopus collybita), Woodpigeon (Columba palumbus), Willow Warbler (Phylloscopus trochilus), Jackdaw (Corvus monedula), Goldcrest (Regulus regulus), Robin (Erithacus rubecula), Starling (Sturnus vulgaris), Swallow (Hirundo rustica), Wren (Troglodytes troglodytes), Pied Wagtail (Motacilla alba yarrellii), Blackbird (Turdus merula) and Coal Tit (Periparus ater hibernicus).

Ecologically Sensitive Areas

In line with Waterways Ireland methodology, ecologically sensitive areas (ESA) were identified, using the following criteria:

- Links with EU Habitats Directive Annex 1 habitats
- Species Diversity
- Rare or unusual species present
- Rarity within the study area.

A summary of these ESAs is provided below in Table 4.

Table 4 Ecologically Sensitive Areas along proposed Greenway

ESA Name	Habitats Present and Habitat Code
ESA1 **Clonkeen (Offaly Border) to the 20th Lock at Ticknevin**	The canal verge supports a diverse flora, with many species representative of both damp and dry neutral grassland. At the towpath boundary, the grassland type and species composition reflects the slightly increased level of management comparative to the canal verge. Here the herb layer is less. The towpath boundary grades sharply into a dominant stand of Pteridium for long sections. This ESA is also of ecological interest for the diversity and heterogeneity of heath and scrub communities beyond the canal boundary. This area has representative climax vegetation types for both wet and dry heath communities. Beyond the Pteridium, a sloping bank zones into Salix and Ulex scrub with dense and open heath dominated by Calluna-Vaccinium-Cladonia subcommunity. As the slope grades down to the peatland basin Molinia dominates with Scirpus and Erica tetralix. The shrubby species Myrica gale is an important sub community in saturated areas this ESA. Further patchworks of Pterdium and Salix occur throughout and increasing so in regenerated cut over areas and ditches.
ESA2 **Shee Bridge to Bond Bridge**	This ESA includes canal bank and the high ecological quality habitats beyond the canal boundary within the townland of Allenwood, bordering Derrymullen to the east. The open channel Nuphar-lutea community is abundant with a diverse Phragmites-Glyceria fringe zoning into a canal verge Filipendulo-Iridetum mosaic with many constant species of neutral grassland frequent through-out. The habitats within the canal boundary on the north bank comprise a mosaic of neutral to wet grassland with pockets of regenerating Salix and Crateagus-Prunus scrub subject to low intensity and infrequent management. Beyond the canal boundary on the south bank is regenerating Salix and broadleaved woodland on cut-over bog with links to a woodland corridor extending south west of the canal. A remnant lowland Calluna-Scirpus mire wet heath community occurs in an area of cut over bog adjacent to the canal. The range of habitats from scrub, heath and canal verge make this stretch of ecological interest.
ESA3 **Bond Bridge to 19th Lock at Lowtown**	The ESA runs from Bond Bridge east including the junction with the New Barrow Line and inclusive of the 19th Lock incorporating the Milltown Feeder. This ESA is important in terms of its connectivity function linking three main canal channels. These areas are well trafficked and maintained, however there is a diverse emergent Phragmites-Glyceria- Schoenoplectus fringe on both banks and the canal verge is species rich.

ESA Name	Habitats Present and Habitat Code
ESA4 **Bonynge to Cock Bridge**	The ESA includes both embanked sides of the canal boundary which comprise a continuous band of dense woodland/scrub interspersed with semi natural grassland mosaic on the sloped shallow neutral and calcareous soils. The mosaic and verge of the canal towpath are particularly species rich with species typical of dry calcareous and neutral grassland. A diverse herb layer is frequent. The canal verge is also species rich with a mixture of wet neutral grassland species zoning into Filipendula ulmaria-Angelica sylvestris mire community and/or a community typical of Filipendulo-Iridetum. Many common and tall herbs are frequent such as Gypsewort Lycopus europeaus, Rumex acetosa, Angelica sylvestris and Valeriana officianalis. Other species such as Stachys palustris, Lychnis flos-cuculi and Cirsium palustre are occasional. Toberdaly Bog, a dry degraded remnant raised bog, is characterised by bog cotton, bog asphodel, ling, cladonia and white beak sedge, with Sphagnum capillifolium and S.pappillosum. The degraded raised bog, which is being cut at the northern edge, may align with the Annex I habitat 'degraded raised bogs still capable of natural regeneration (7120)' if the hydrology of the bog can be repaired.
ESA5 **Cock Bridge to 18th Lock (Landenstown)**	This ESA has been identified for the species rich grassland and scrub mosaic on the embankment running parallel to the north canal boundary and the species rich canal verge on both banks between Cock Bridge to the 18th Lock. From the 18th Lock due west the raised northern embankment begins as a low and narrow ridge covered in Crataegus monogyna- Prunus spinosa-Rubus fruticosus scrub with a species rich towpath verge typical of a disturbed Cynosurus cristatus-Centaurea nigra community. A small basin or shallow seepage zone of Molinia-Anthoxanthum sub-community occurs at the eastern end of the embankment. Devil's bit Scabious Succisa pratensis, Tormential Potentilla erecta, and Carex spp. are constants and abundant. As the top of the embankment slopes gradually upwards the ground becomes freer draining and the tussocky patchwork of Purple Moor Grass-Sweet Vernal Grass Molinia- Anthoxanthum grades into semi-natural species rich neutral grassland. Grazing pressure by rabbits maintains a short sward on canal-ward sides of the embankment free of scrub encroachment. As the embankment progresses westward, the Crataegus-Spinosa scrub is more dense and mature with little apparent grazing pressure. Within the understorey of mature Ivy covered scrub stands Remote Sedge C. remota and Hart's Tongue Fern Phyllitis scolopendrium are frequent. The embankment becomes fully dominated by Crataegus-Prunus- Rubus scrub at the western end of the embankment before Cock Bridge. The structural diversity and grading between successional scrub layers and species rich grassland supports a rich terrestrial invertebrate community with 11 butterfly species recorded during the survey within this ESA. The ESA is also rich in Hoverflies (Syrphidae). Although of limited size, the Molinia-Anthoxanthum sub community patchwork at the east of the embankment had high consistency of Devil's bit Scabious, host plant of the Marsh Fritillary. No larval webs were detected during the survey. The scrub patchwork provides excellent nesting habitat for birds of conservation concern, notably Yellowhammer Emberiza citrinella and Linnet Carduelis cannabina and important breeding habitat for Whitethroat Sylvia communis, Blackcap Sylvia atricapilla. There are a number of trails through the vegetation on the top and crest of the embankment indicative of low recreational pressure. Future access to this area should be closed to the public using wildlife friendly fencing to limit the disturbance and the denudation of vegetation.

ESA Name	Habitats Present and Habitat Code
ESA6 **Ardclough to Aylmer Bridge**	This ESA is identified for the diverse vegetation within the open channel and the rich diversity and zonation on the canal verge. The aquatic diversity includes Sagittaria sagittifolia swamp amongst well developed fringe Nuphar-Potamogeton communities.

Ecological Cumulative Impact Assessment

In acknowledgement of the ecological corridor function of the Grand Canal, Waterways Ireland commissioned a cumulative ecological impact assessment of the Grand Canal in 2015. This assessed total habitat loss associated with proposed Greenways along the full Grand Canal corridor and branches off the canal. This assessment has assumed a worst case scenario and quantified habitat loss based on a 5m construction envelope based on a 3.5m wide path. The proposed path for this Greenway is 3m wide.

The ECIA has identified the following habitat loss based on the above assumptions:

Table 5 ECIA percentage habitat loss for Grand Canal total

Habitat	% total habitat loss
Towpath Mosaic	42.7%
Paved towpath, classed as Buildings and Artificial Surfaces	33.4%
Gravel pathways classified as Spoil and Bare Ground	2.1%
Mown grassland classified as Amenity Grassland	3.6%
Species poor grassy verges classified as Dry Meadows and Grassy Verges	7%
Scrub (WS1)	8.2%

The report states that the latter habitats account for approximately 96% of the maximum construction envelope of the Greenway and the dominant habitats are common in a local, national and international context and in terms of sensitivity and magnitude; these habitats collectively are not of significant conservation interest.

Of the six ESAs identified along or adjacent to this Grand Canal Greenway, two correspond to dry calcareous and neutral grassland. To avoid disturbance to these ESAs measures as outlined in section 2 will be applied.

3.3 Soil

The more productive agricultural areas along the line of the Grand Canal are based on till derived from limestones. This tends to be the dominant soil type from Aylmer Bridge to Robertstown interspersed with small areas of alluvium and hummocky sand and gravel.

To the west of Robertstown the predominant quaternary sedimentation is comprised of cut over raised peat.

3.4 Water

The Grand Canal between Aylmer Bridge and Clonkeen lies within three catchments. The area to the east of Robertstown lies within the Liffey and Dublin Bay Catchment and the river waterbody status of rivers in the vicinity of the Grand Canal in that catchment area is generally moderate (sub-catchments Liffey 120 and Morell 030) to good (sub-catchments Morell 040 and Liffey 140). The Grand Canal to the west of Roberstown as far as Ticknevin lies within the Barrow Catchment and the river waterbody status of rivers in the vicinity of the canal in that area is generally poor (sub-catchments Slate 040, Slate 030 and Figile 010) to moderate (sub-catchment Slate 050). The canal to the west of Ticknevin flows through the edge of the Boyne Catchment and the river waterbody status in that area is moderate.

Groundwater quality status along the length of the Grand Canal in County Kildare is recorded as being of “good” quality.

3.5 Air and Climatic Factors

All developments, agriculture, energy generation, industry and commercial activity and waste generation contribute emissions to air and greenhouse gas (GHG) emissions; however the emission of pollutants from vehicles is one of the main threats to air quality in Ireland and contributes significantly to the increase of greenhouse gases. The latest annual report on Air Quality in Ireland 2014 (EPA 2014) states that overall air quality in the country is good. Measured values of sulphur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), Ozone (O3), particulate matter (PM10 and PM2.5), heavy metals, benzene and polycyclic aromatic hydrocarbons (PAH) were all below limit and target values set out in the CAFE Directive and 4th Daughter Directive. However, when some of these parameters are compared to the tighter WHO Air Quality Guideline values, it highlights some potential issues. Ireland is above these guideline values with respect to PM10, PM2.5, ozone and PAH. This may have important implications for Ireland in the future, if these WHO guideline values are adopted as limit values by the EU, which may occur following the European Commission’s The primary sources of pollutants are traffic (source of nitrogen dioxide and particulate matter), and domestic solid fuel use (particulate matter).

Longer term encouraging a modal shift from cars to walking and cycling will benefit local air quality.

3.6 Landscape

Kildare County Council's Landscape Character Assessment (included in the Kildare County Development Plan 2017-2023) classifies landscapes according to their sensitivity to different types of development. The County is classified into fifteen character areas and ranked for sensitivity.

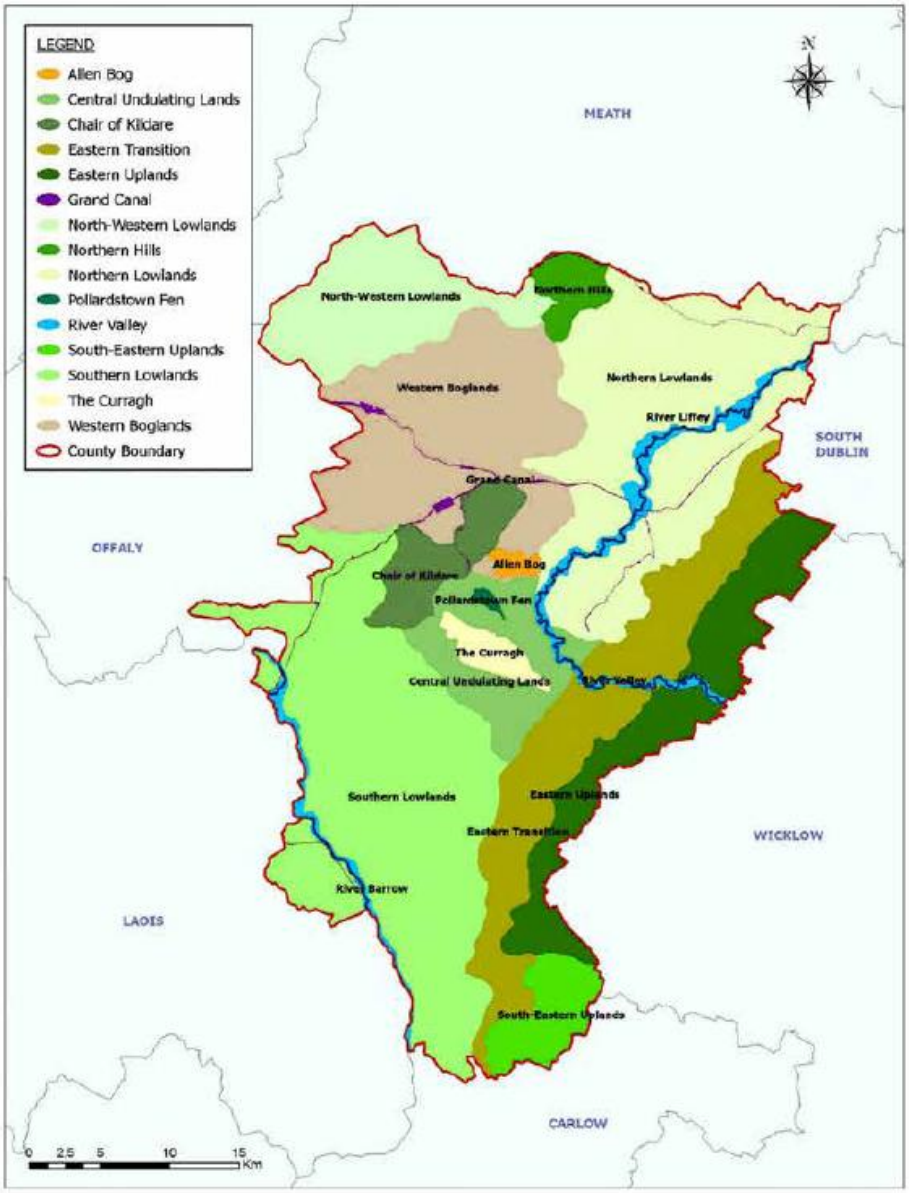

Figure 10 Landscape Character Areas

The Grand Canal is identified as its own Landscape Character Area. and the following description is provided:

The Development Plan defines the Grand and Royal Canal Corridors as areas of High Amenity and includes the following description of the corridors at section 14.5.4 of the plan:

> *The Grand Canal and the Royal Canal are extensive water corridors that flow through the county. The Grand Canal flows in an east to south-west direction and divides at Sallins into the Naas and Corbally Branch, and is further divided in three branches at Robertstown; the Milltown Feeder, the Barrow Line and the continuation of the Grand*

Canal into neighbouring County Offaly.

The Royal Canal flows in an east to west direction along the northern boundary of the county through Leixlip, Maynooth and Kilcock and continues into County Meath.

The canal corridors and their adjacent lands have been landscaped and enhanced along the sections where the canals flow through urban areas. Canal locks are distinctive features of these water corridors. The smooth terrain, generally gentle landform and low canal bank grassland that characterise the canal corridors allow vistas over long distances without disruption, where the canal flows in a straight-line direction. Consequently, development can have a disproportionate visual impact along the water corridor and it can prove difficult for the existing topography to visually absorb development. The occurrence of natural vegetation, coniferous and mixed plantations adjacent to the water corridors can have shielding and absorbing qualities in landscape terms, by providing natural visual barriers.

Canal corridors are potentially vulnerable linear landscape features, as they are often highly distinctive in the context of the general landscape. In some cases landscape sensitivities may be localised or site-specific.

Scenic Routes are listed in Table 14.5 of the Kildare County Development Plan 2017-2023 and two of these scenic routes relate directly to the Grand Canal:

Scenic Route 6	Views of Robertstown Countryside and Views across the Canal at Mylerstown, Lowtown, Littletown, Derrymullen, Robertstown East
Scenic Route 38	Views of Allenwood to Lullymore Local Road

Views to and from bridges on the Grand Canal which relate directly to the proposed Greenway and are protected by virtue of their inclusion in Table 14.9 of the Kildare County Development Plan 2017-2023 are:

GC2	Henry Bridge, Clonaghris
GC3	Ponsonby Bridge, Barrowrath
GC4	Devonshire Bridge, Sherlockstown Common
GC5	Digby Bridge, Aghpaudeen
GC6	Landenstown Bridge, Landenstown
GC8	Cock Bridge, Goatstown
GC9	Bonynge Bridge, Mouds
GC10	Binn's Bridge, Robertstown
GC11	Fenton Bridge, Lowtown
GC12	Bond Bridge, Derrymullen
GC13	Hamilton's Bridge, Killinagh Lower
GC14	Ticknevin Bridge, Ticknevin
GC27	Aylmer Bridge, Kearneystown Upper

A general landscape policy objective of Kildare County Council as set out at section 14.8.5 of the Kildare County Development Plan 2017-2023 which directly relates to the proposed project is Objective WC7 which states that:

It is the policy of the Council to explore the establishment of the Barrow Valley and the Royal and Grand Canals as Areas of Special Amenity, as per section 202 of the Planning and Development Act 2000 (as amended).

3.7 Cultural Heritage

The cultural heritage resource is significant along the Grand Canal and includes a diversity of industrial heritage features associated with the canal itself including locks, bridges, aqueducts and lock keepers cottages. The map below shows the locations of all structures which are listed on the Kildare County Council Record of Protected Structures (RPS) in close proximity to the project site:

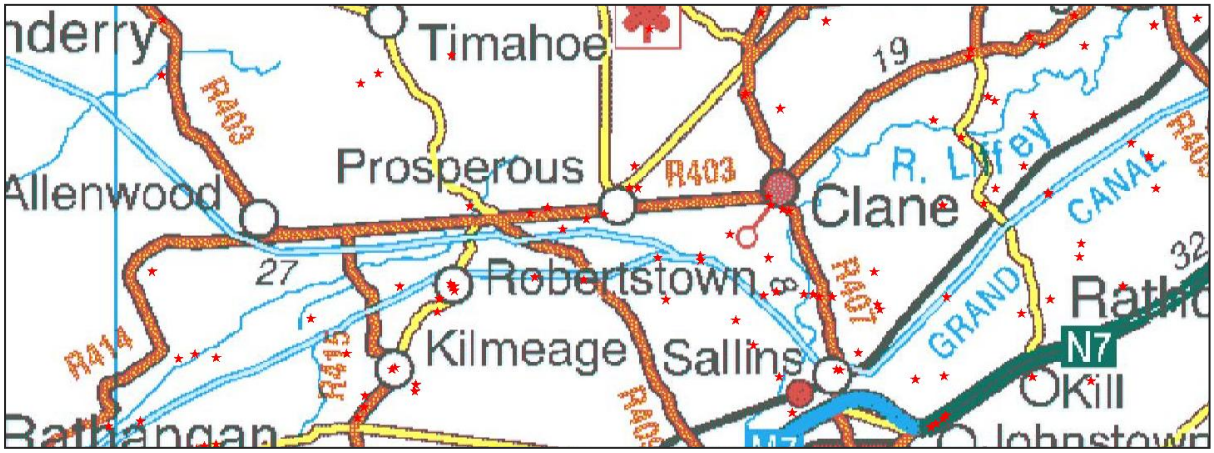

Figure 11 Record of Protected Structures

Also, there are a significant number of recorded archaeological sites close to the line of the Grand Canal. Figure 12 below illustrates the location of all Recorded Archaeological Sites within the canal corridor.

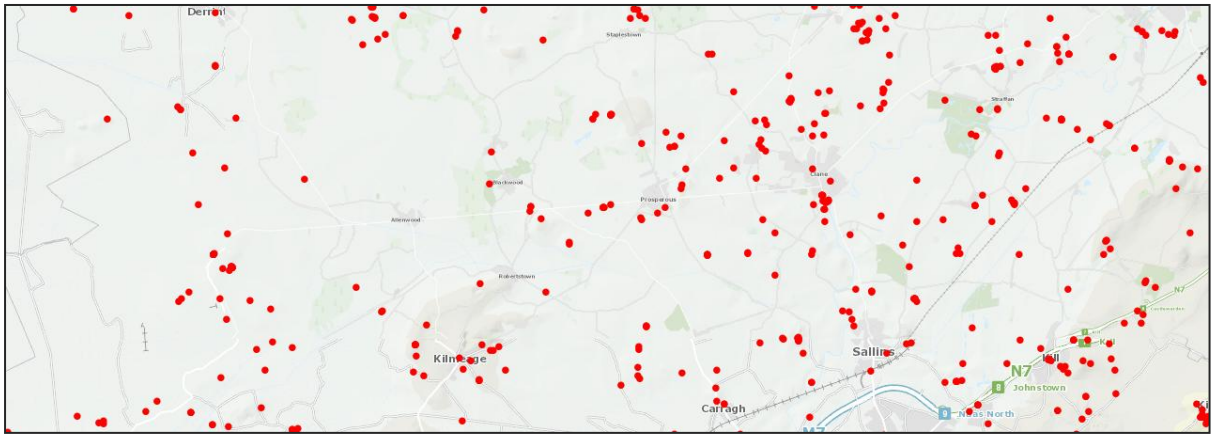

Figure 12 Recorded Archaeological Sites

The proposed Greenway Project does not anticipate any works which would directly impact on any recorded archaeological sites as the works will be limited in scope and will be confined to the canal towpaths which are relatively recent man-made features in the landscape.

3.8 Material Assets

There is an existing long distances way marked walking route along the banks of the Grand Canal from Grand Canal Basin in Dublin to Shannon Harbour in County Offaly. The proposed scheme would see that existing way marked walking route upgraded to facilitate its use by cyclists, children in buggies or on scooters and those with mobility impairments as well as able bodied walkers.

The following Regional Roads traverse the Grand Canal along its route through County Kildare:
R407 at Sallins Bridge
R409 at Cock Bridge
R415 at Bond Bridge
R414 at Shee Bridge
In addition, the R403 runs alongside the Grand Canal for approximately 700 metres to the west of Shee Bridge.

The existing towpath already has an unbound surface along some of its length to facilitate vehicular access to private dwellings and third party agricultural lands and the existing way marked route follows some limited section of local roads with an existing tarmacadam surface where walkers share this space with vehicular traffic. The proposed scheme intends managing these shared surfaces through appropriate signage, road markings and traffic management to protect the safety of vulnerable road users which at the same time maintaining existing vehicular access.

4. EIA SCREENING

4.1 Methodology

This EIS Screening Report has been undertaken in line with the following guidance.

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning and Local Government, August 2018
- Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2017.
- European Commission guidance documents on the implementation of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU)16 as follows:
  - Environmental Impact Assessment of Projects: Guidance on Screening, European Commission, 2017
  - Environmental Impact Assessment of Projects: Guidance on Scoping, European Commission, 2017
  - Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017

A desktop study of environmental, archaeological, visual and cultural receptors along the proposed route was carried out. This was supplemented by a detailed ecological corridor study of the Grand Canal commissioned by Waterways Ireland and surveyed over the summer of 2015. The habitat survey is of particular relevance as it also highlighted certain areas of ecological sensitivity that merit additional protection and consideration. Waterways Ireland also commissioned an Ecological cumulative impact assessment of the total route of the Grand Canal as well as branch lines; this has also informed the assessment and where appropriate measures identified in the ECIA have been incorporated into the Best Practice Construction Guidelines in Section 2.3.2 of this report.

As the Greenway proposal does not fall within the categories of developments that automatically trigger EIA, it is to be assessed as a sub-threshold development, where the competent authority evaluates whether the project is likely to have a significant effect on the environment, with reference to its scale, nature, location and context.

4.2 Environmental Factors to be considered in the EIA Screening

Schedule 7 of the Planning and Development Regulations 2001-2018 outline the criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to an Environmental Impact Assessment.

In addition, Schedule 7A of the Planning and Development Regulations 2001-2018 outline the information to be provided by the applicant or developer for the purposes of screening sub-threshold development for Environmental Impact Assessment.

The assessment as set out in the table on the following pages follows the same format as provided for in the relevant Regulations.

4.3 Impact Assessment

Having considered the above environmental factors the aim of the section below is to address likely impacts on the environment by the implementation of the proposed development. A brief overview of the sensitivities and impacts will be highlighted. Whether an EIA would be deemed relevant to the

scale of the project and the environment will then be determined. The following sections presents the EIA Screening based on the criteria contained in the Regulations and are grouped under the following headings.

(a) Characteristics of the Proposed Development
(b) Location of the Proposed Development
(c) Characteristics of Potential Impact

Characteristics of the Proposed Development	
Screening Question	Response
Size and design of the whole of the proposed development.	The proposed Greenway utilizes the existing towpath and will not be any wider than 3 metres at any stage. As it uses the existing towpath and a public road, land take is minor. The total route will be approximately 38km in length along the canal towpath. The habitat survey of 2015 classified the towpath as a mixture of amenity grassland, Towpath Mosaic and graveled access track. The exception to this is the section between Henry Bridge and Ponsonby Bridge which is a surfaced public road. The six habitats identified as ecologically sensitive areas will not be significantly impacted by the proposed development.
Cumulation with other existing development and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(*b*) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment .	There are currently no major infrastructural schemes in preparation in the project area. However, in the longer term there are a number of linked walking and cycling routes that may give rise to increased use of the Grand Canal towpath by walkers and cyclists. As this is an established recreational route with no additional lighting proposed, it is considered that no significant cumulative effects will arise. The Ecological Cumulative Impact Assessment (2016) for the Grand Canal concluded that cumulative impacts, if any, are most likely to arise during the construction phase. The most significant potential for adverse cumulative impact is in the loss of habitat. The Greenway will be required to implement strict construction management plans and provide compensation for any loss of habitat where possible. Given the existence of such management controls, it is considered that the cumulative impacts can be mitigated during construction and will be inconsequential during operational phases in the long term. Measures identified in the above ECIA have been incorporated into the Best Practice Guidelines that will apply during construction.

Characteristics of the Proposed Development	
Screening Question	Response
Nature of any associated demolition works.	No associated demolition proposed.
Use of natural resources, in particular land, soil, water and biodiversity.	Natural resources will be used in terms of surfacing of the towpath as necessary and will use a variety of surface dressings as outlined in Section 2 of this report. The primary surface will be compacted dust and stone for much of the Greenway through rural areas with bound surface used only where the existing bound surfaces are deteriorated or limited traffic will be permitted. There may be some removal of soil to facilitate the surface dressing but measures to conserve and manage soil are detailed in Section 2 of this report. Minor amounts of water and fuel will be used to clean machinery and fuel machinery required during construction works.
Production of waste.	Very limited quantities of solid waste may be produced during construction but materials will be only ordered as required. Any wastes from the construction process will either be reused within the scheme, or recycled/disposed of at an authorized waste facility.
Pollution and nuisances.	The construction phase presents the greatest risk of pollution to water resources, and disturbance/damage to flora and fauna. Potential sources of water pollution to both surface and groundwater include fuel, lubricants, suspended solids and asphalt. Silt-laden surface runoff could arise during construction during vegetation stripping and the resurfacing of section of grass towpath and/or during the resurfacing of existing gravel towpath and public roads. The input of such runoff to the Grand Canal might have the potential to negatively affect water quality within the Canal. These issues are specifically addressed by the construction methodology as set out in section 2 of this report. Potential pollution to water resources from operation include increased surface run off containing suspended solids associated with increased cycling or pedestrian traffic. However this is not predicted to represent a risk to surface water quality due to its proposed use as a cycling and walking route, both of which are not predicted to have the potential to generate polluting water emissions

Characteristics of the Proposed Development	
Screening Question	Response
	to the canal. In addition, noise disturbance during construction may impact on bird species associated with the canal or neighbouring wetlands of raised bog/cutover bog. However this is temporary in duration and significant levels of machinery are not anticipated to be used.
Risk of major accidents, and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge.	The risk of major accidents is not considered to be significant subject to best construction practices being followed through the construction phase. This will include proper site management, maintenance and operation of all machinery and works associated with the construction phase, on site safety and training. It is considered that there is no significant risk of major accidents and/or disasters arising as a result of the operational use of the Greenway as a walking and cycling route.
Risks to human health (for example, due to water contamination or air pollution).	Significant risks to human health are not anticipated as a result this proposal. The environmental protection measures, particularly for the construction phase are detailed in Section 2 and subject to full and proper implementation, potential risks associated with construction activity will be avoided.
Will the proposed development create a significant amount of nuisance during its construction or operation?	The Grand Canal is already a well-established walking route with frequent use, it is also used for vehicular traffic along sections that are a public road. It is not anticipated that significant noise levels will arise during construction (they will be temporary and restricted to machinery associated with surfacing) and operational noise is not identified as being significant.

Conclusion:
No significant effects likely to arise associated with the characteristics of the proposed development.

Rationale: The works associated are minor in character and relate to upgrading the existing towpath of comprising amenity grassland and towpath mosaic. Waterways Ireland commissioned a cumulative ecological impact assessment of the Grand Canal in 2015 and a copy of that assessment is published alongside this report. That assessment presents a detailed breakdown of estimated habitat type loss resulting from the proposed project. That report concludes that the dominant habitats are common in a local, national and international context and in terms of sensitivity and magnitude; these habitats collectively are not of significant conservation interest. In addition, detailed measures, as presented in Section 2 of this report, as well as avoidance of the identify Ecologically Sensitive Areas (ESAs) will ensure that, subject to full implementation and adherence to same, significant effects are avoided.

Location of the Proposed Development	
The environmental sensitivity of geographical areas likely to be affected by the proposed development, with particular regard to—	Response
The existing and approved land use	The Grand Canal itself although an artificial structure represents a significant east west ecological corridor nationally. The most sensitive habitats identified along the route are those identified through the ecological survey as Ecologically Sensitive Area (ESAs). ESAs will be fenced off and closely monitored by an Ecological Clerk of Works to avoid disturbance during works.
The relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground	The works are relatively minor in nature, utilising an existing towpath along an artificially constructed canal that is over 200 years old. The proposed Greenway is not identified as giving rise to significant effects in relation to abundance, availability, quality and regenerative capacity of nature resources.
The absorption capacity of the natural environment, paying particular attention to the following areas:	
Wetlands, riparian areas, river mouths	A number of wetlands, bogs and watercourses exist at locations adjacent or proximate to the Grand Canal. However, no interaction or works are proposed within these areas and ESAs will be fenced off for duration of works.
Coastal zones and the marine environment	Not applicable.
Mountain and forest areas	Not applicable.
Nature reserves and parks	Not applicable.
Areas classified or protected under legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive	The Screening Statement for Appropriate Assessment that accompanies this report has assessed the likely significant effects of the proposal on the conservation management objectives of European Sites within a 15km buffer of the route and determined a finding of no likely significant effects. The Grand Canal is also designated as a proposed Natural Heritage Area and the ecological survey works have informed the precise route alignment and avoids the areas identified as most sensitive. Good Environmental Construction Guidelines and the appointment of an Ecological Clerk of Works will provide sufficient safeguards to protect resources associated with habitats or species listed in Annex 1 of Annex II of the EU Habitats Directive.

Location of the Proposed Development	
The absorption capacity of the natural environment, paying particular attention to the following areas:	
Areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure	Whilst surface water quality within the wider area is variable, there are no direct or indirect effects identified for the project and potential risks to these surface waters. The greatest risk would relate to the construction phase and detailed measures as outlined in Section 2 of this assessment will apply.
Densely populated areas	The route generally traverses lightly populated rural areas, passing through the settlements of Sallins and Robertstown. No negative effects are identified in relation to this criteria, positive effects relating to increased recreational use are identified.
Landscapes and sites of historical, cultural or archaeological significance	The Landscape Character Assessment for County Kildare identified the Grand Canal as being of high sensitivity in parts. However given the proposal relates to the existing towpath, no visual intrusions that would detract from the landscape character or visual amenity is anticipated. No architectural conservation areas are listed within or adjoining this section of the Grand Canal and no impacts are identified. The proposed development is not considered likely to directly impact on archaeological sites or protected structures such as canal bridges although careful consideration will be required to balance pedestrian and cycling safety and protected structures such as bridges to avoid over use of heavy signage and result in visual clutter. These are not identified as being impacted by the proposed Greenway.

Conclusion:
No significant effects likely to arise associated with the location of the proposed development.

Rationale: The works associated are minor in character and relate to upgrading the existing towpath; although the ecological, cultural heritage and landscape resources are considerable within the area; the most sensitive ecological areas have been avoided and the Screening Statement for Appropriate Assessment has determined a finding of no likely significant effects on the conservation management objectives of European Sites within a 15km of the study area; additionally, works relate to upgrading of existing towpath and this is considered to result in minor to negligible impacts in terms of landscape character, cultural heritage and visual amenity; increased use of the path will also provide an opportunity to raise awareness of these resources and increase users appreciation of the natural and cultural heritage. Sensitive signage and design of gates/fencing will be used where such items are required.

Type and characteristics of the potential impact

Type and characteristics of the potential impact are assessed having regard to the likely significant effects on the environment of proposed development in relation to criteria set out under paragraphs 1 and 2 of Schedule 7 of the Planning and Development Regulations 2001-2018, with regard to the impact of the project on the environmental factors listed in Article 3 of the Directive, taking into account:

(a) the magnitude and spatial extent of the impact (for example, geographical area and size of the population likely to be affected),
(b) the nature of the impact,
(c) the transboundary nature of the impact,
(d) the intensity and complexity of the impact,
(e) the probability of the impact,
(f) the expected onset, duration, frequency and reversibility of the impact,
(g) the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(*b*) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment, and
(h) the possibility of effectively reducing the impact.

Characteristics of Potential Impacts on Environmental Parameters	
Environmental Topic	Potential Impact
Population and human health	Potential temporary negative impacts to residents and farmers along the canal associated with construction works which need to be managed throughout the construction phase. Positive long term impact on completion associated with increased accessibility of the area for walkers and cyclists.
Biodiversity, with particular attention to species and habitats protected under the Habitats and Birds Directives	Temporary impacts associated with construction and longer term operational impacts associated with increased footfall. Invasive species recorded at locations along the canal so risk of spreading of same is a key issue. Biosecurity measures are provided for and presented in Section 2 of this screening report. Potential water quality impacts. Removal or clearance of vegetation close to towpath, no tree removal proposed. The construction phase represents the greatest potential risk to water quality and flora and fauna, and measures applied in Section 2 will reduce this risk and provide good practice in construction.
Land, soil, water, air and climate	Permanent and minor negative impact related to works phase, particularly in relation to areas requiring excavation and fill works. Significant amounts of fill are not anticipated; surface dressing only.

Characteristics of Potential Impacts on Environmental Parameters	
Environmental Topic	Potential Impact
	Potential exists for alterations to hydrology which may impact upon watercourses and other water based habitats such as the wet grassland although given the approach to Best Practice Construction it is considered sufficient safeguards are included in this approach. If not mitigated, surface water quality impacts arising from the construction stage could arise. Localised impacts arising from machinery such as mini diggers or excavators. Emissions during works phase will be minimized through best practice. Traffic emissions are not considered likely to be significantly increased and objective is to reduce non authorised traffic access and increase pedestrian and cycling use with accompanying local positive impacts.
Material assets, cultural heritage and the landscape	No significant impacts identified other than potential visual clutter and indirect impacts on protected structures in absence of mitigation. No significant alteration of landscape character
The interaction between the foregoing factors	The key interrelationship arises between water quality and habitats in particular.

Conclusion: No significant effects likely to arise associated with the potential impacts on environmental parameters.

Rationale: As the preceding table shows, potential impacts relate primarily to temporary impacts at construction stage and the implementation of the Best Practice Construction measures, including the appointment of an Ecological Clerk of Works for the project, will provide safeguards to avoid significant impacts at this stage; to avoid ingress of surface water or dust emissions over watercourses associated with the relevant catchments, temporary silt trap and impermeable barrier will be placed along the edge of the aqueduct and dust screens will be placed over aqueduct guardrails. To further reduce erosion and silt-laden run off, natural vegetation buffers will be created where possible, between the construction footprint and the Grand Canal and other drainage channels.

5. CONCLUSION AND DETERMINATION

Article 4(5): The competent authority shall make its determination, on the basis of information provided by the developer in accordance with paragraph 4 taking into account, where relevant, the results of preliminary verifications or assessments of the effects on the environment carried out pursuant to Union legislation other than this Directive.

The determination shall be made available to the public and:

(a) where it is decided that an environmental impact assessment is required, state the main reasons for requiring such assessment with reference to the relevant criteria listed in Annex III; or

(b) where it is decided that an environmental impact assessment is not required, state the main reasons for not requiring such assessment with reference to the relevant criteria listed in Annex III, and, where proposed by the developer, state any features of the project and/or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment.

The Grand Canal Greenway has been assessed as a sub-threshold EIA development. This EIS Screening Report has concluded that the characteristics of the proposed development are considered potentially not significant due to the minor development footprint.

The existence and reuse of the towpath reduces any additional land take and proposed works are minor in nature being confined to resurfacing when required and no tree removal. The implementation of the environmental management practices (See Section 2) will also provide safeguards in relation to potential impacts identified in the preceding tables.

The overall conclusion for this EIS Screening Report is that for the Grand Canal Greenways, a full Environmental Impact Assessment is not required and Kildare County Council, as the competent authority, has made that determination based on the foregoing screening.