River Dodder Greenway
From the Sea to the Mountains

Feasibility Study Report

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1. Introduction

Roughan & O'Donovan and AECOM, together with Copenhagenize Consulting and Cunnane Stratton Reynolds, were commissioned in August 2012 to undertake a study into the feasibility of developing a high quality Walking and Cycling Route along the River Dodder Corridor. The Study is being co-ordinated by South Dublin County Council but also includes parts of the respective jurisdictions of Dublin City Council and Dún Laoghaire - Rathdown County Council. The study is being funded by the National Transport Authority.

The Study covers the entire length of the River Dodder between the mouth at the River Liffey at Grand Canal Dock to its source at Bohernabreena in the Dublin Mountains. The purpose of this report is to document the findings of the Study and to identify (a) feasible route(s) to complete a high quality amenity and commuter route between the city centre and the mountains.

This Feasibility Study Report has been prepared addressing the route in Sections, defined by geography and / or land use character. The route starts at Grand Canal Square at the confluence of the Canals Premium Cycle Route and the proposed River Liffey Cycleway scheme and follows the course of the River Dodder in a south-westerly direction to the Dublin Mountains at the Glenasmole Reservoirs in Bohernabreena.

2. Background / Planning Context

2.1 Background

This Feasibility Study Report has been prepared with reference to the following documents:

- Dublin City Development Plan 2011-2017;
- Bushy Park Landscape Masterplan and Management & Development Plan;
- Dublin Docklands Development Masterplan 2008;
- River Dodder Catchment Flood Risk Management Plan;
- Ringsend/Irishtown and the River Dodder Area Action Plan;
- South Dublin County Council Development Plan 2010 - 2016;
- The Dodder Valley Linear Park Draft Plan June 1996;
- Dún Laoghaire-Rathdown County Development Plan 2010-2016;
- GDA Cycle Network Plan;
- Smarter Travel: A Sustainable Transport Future 2009 – 2020; and
- National Cycle Policy Framework 2009.

2.2 Dublin City Development Plan 2011-2017

2.2.1 *Connecting and Sustaining the City's Infrastructure*

The vision for cycling is to make Dublin a city where people of all ages and abilities have the confidence, incentive and facilities to cycle so that by 2017, 25-30% of all new commutes within the city will be by bike. Infrastructure works will concentrate on improving cycle safety, access, parking and developing and improving the Dublin Cycle Network.

It is an objective of Dublin City Council to develop new cycle links including:
Sandymount to Clontarf using Dodder Bridge and Macken Street Bridge

Figure 2.1 below illustrates the Green Cycle Corridors proposed as part of the plan, of which the River Dodder is one.

Figure 2.1 Dublin City Green Cycle Network

2.2.2 *Greening the City*

It is an objective of Dublin City Council to continue to develop the Dodder Linear Parks between Lansdowne Road and Londonbridge, Ballsbridge and Donnybrook, and Donnybrook and Milltown and also to promote and actively pursue the development of a park in the area known as 'Scully's Field'.

For the river Dodder, it is an objective of Dublin City Council to take into public ownership/ create Rights of Way along and across the Dodder at key points and to maintain existing bridges for pedestrians and cycle traffic.

2.2.3 *Strategic Cycle Network*

Dublin City's Strategic Cycle Network has been subdivided into an indicative list under some of the following subdivisions:

- Inner city cycle routes
  Primary Priority: Essex Quay to a bridge over the Dodder mouth to York Road.
- Recreational routes
  River Dodder

2.3 Bushy Park Landscape Masterplan and Management & Development Plan

The sections below outline the key interventions as described in the Plan.

2.3.1 *New bridge & Universal Access Route*

- New car park proposed for southern bank of River Dodder;
- New bridge proposed over River Dodder into the park; and
- 4m wide, wheel chair accessible, pedestrian and cycle path from the southern to northern boundary of the park.

2.3.2 *Punctuation of Dodder Wall*

- Sections of the existing Dodder wall punctuated and replaced by ornamental railing to improve passive surveillance and biodiversity in woodland & river corridor; and
- New access gate into park at the northern end of the existing footbridge.

2.4 Dublin Docklands Development Masterplan 2008

The Dublin Docklands Masterplan 2008 includes strategies for the continued development of the Docklands, including the Point Village and North Lotts to the north of the Liffey together with Grand Canal Harbour and the Poolbeg Peninsula on the south side. The challenge here is to knit this new distinctive character area back in to the fabric of the city through public transport links, for example the DART Underground at Spencer Dock, new bridges and the proposed bridge at the river Dodder and by the regeneration of Pearse Street.

2.5 River Dodder Catchment Flood Risk Management Plan (CFRMP)

The methodology adopted for the Dodder Catchment Flood Risk Assessment and Management Study (CFRAMS) has been thorough and to a level of detail appropriate for the development of a CFRMP and associated flood mapping. It has included the collection of survey data and the assembly and analysis of meteorological, hydrological and tidal data. This data has been used to develop a suite of hydraulic computer models of the River Dodder, its tributaries and Dublin Bay. Flood maps are one of the main outputs of the study and are the way in which the model results are communicated to each of the end users. The flood maps allow identification of likely locations within the Dodder Catchment at risk of flooding. The impacts of flooding have been considered under three categories:

- Economic: loss or damage to buildings or infrastructure, and the disruption of activities that have economic value;
- Social: loss or damage to human life, health, community and social amenity; and
- Environmental and Heritage: consideration of the sensitivity of the river environment, habitats and species, plus the cultural and historical environment, to flooding.

A damage assessment has been undertaken to determine the direct economic damages to properties and infrastructure in the Dodder catchment as a result of current levels of flood risk. As expected, the greatest economic property damages occur in the lower Dodder area, which has the highest density of properties and a significant flood risk due to both fluvial and tidal flooding. The Whitechurch Stream and Dundrum Slang are at moderate economic flood risk and the majority of the remaining urban areas have a lower economic risk of flooding. The most significant number of properties at social risk is again located in lower Dodder (Donnybrook area) which is at risk from fluvial and tidal flooding.

The SEA process has assessed the impacts of flooding on the environment and heritage, at a strategic level, in terms of the loss, damage or benefit to the environment. Where flood risks are significant, the study has identified a range of potential flood risk management options to manage these risks, including structural options (e.g. flood walls and embankments) and non-structural options (e.g. flood forecasting and development control).

2.6 Ringsend/Irishtown and the River Dodder Area Action Plan

The main objective of the study is to set out proposals for the improvement of the River Dodder and its banks to provide a better amenity for the local population. The plan sets out specific policies as follows:

- The Authority will improve the riverside walkways along the Dodder to form a (continuous) route from the Grand Canal Basin to Herbert Park, including the provision of a cycle path.

Most of the works involved will be physical in nature and this study sets out particular proposals for the following:

- Landscaping and improvements including the provision of a cycleway to the Dodder Riverside.

2.7 South Dublin County Council Development Plan 2010 - 2016

In order to protect, strengthen and improve the biodiversity linkages within the County, as required by Article 10 of the Habitats Directive, the Council shall formulate a Green Network Plan or as part of the Biodiversity Plan indicating linkages between open space, sensitive habitats, river systems which shall incorporate walking routes and greenways.

It is the policy of the Council to provide for the continued development of the Dodder Valley Linear Park, including:

- Continued development of a walkway along the River Dodder and extension of the network of pedestrian footpaths;
- Enhancement of the waterfall and bridge at Oldbawn;
- Development and expansion of the Dodder Valley Linear Park in association with the development of the adjoining convent lands; and
- Development and extension of the Dodder Valley Linear Park by securing public access along the river bank from Oldbawn to Bohernabreena and development of lands at Tymon South in the Dodder Valley for active and passive recreation;

2.8 The Dodder Valley Linear Park Draft Plan, June 1996

The draft plan, covering the Dodder within the SDCC area between Oldbawn and Tallaght, contains a range of proposals including:

- Improved access and circulation particularly along the river bank, footpaths, footbridges and trails, improved and attractive pedestrian access points, car-parking and improved access for elderly and those with impaired mobility;
- Visitor Facilities, Attractions and Activities – seating and picnic areas, viewing areas, facilities for nature study, interpretative material – signs and information boards; and
- Community Involvement.

Section 6.3.2 of the plan recognises the potential of the park to be enjoyed by cyclists but also proposes that cycle tracks should be in peripheral areas of the park where conflict with other uses/users would be avoided and that bicycles on walking routes or within conservation zones would be discouraged

2.9 Dún Laoghaire-Rathdown County Development Plan 2010-2016

2.9.1 *Open Space and Recreation*

It is the vision of Dun Laoghaire Rathdown County Council to protect and enhance the established network of open spaces in Dún Laoghaire-Rathdown and to ensure that a range of high quality, relevant and easily accessible recreational and leisure facilities and public spaces are readily available to meet the needs of all residents of, and visitors to, the County. The Council will encourage the linkage of parks and greenways throughout the County.

It is Council policy to develop a comprehensive network of County greenways linking parks and public open spaces and to work with adjoining local authorities and other stakeholders to achieve and improve external linkages.

The Dodder River Valley has been identified as a greenway route.

2.10 Cycle Network Strategy for the Greater Dublin Area

AECOM and ROD are separately preparing a Cycle Network Strategy for the Greater Dublin Area. The emerging strategy has identified the River Dodder corridor as a key commuting and amenity route. As it is likely to be one of the first routes to be delivered, it should be a showcase route to set a standard for others to achieve as the wider network is developed over the coming decade.

2.11 Smarter Travel: A Sustainable Transport Future 2009 - 2020

This policy document sets its key targets as:

- Nationally, 500,000 more people will take alternative means to commute to work to the extent that the total share of car commuting will drop from 65% to 45%;
- Alternatives such as walking, cycling and public transport will be supported and provided to the extent that these will rise to 55% of total commuter journeys to work; and
- A reduction will be achieved on the 2005 figure for greenhouse gas emissions from the transport sector.

2.12 National Cycle Policy Framework 2009

The Government is committed to developing cycling as one of the most desirable modes of travel, it being good for your health, the economy and the environment. This National Cycle Policy Framework (NCPF) sets out objectives to the year 2020 to achieve its vision. The vision is that all cities, towns, villages and rural areas will be bicycle friendly. Cycling will be a normal way to get about, especially for short trips. Next to walking, cycling will be the most popular means of getting to school, university, college and work. The bicycle will be the transport mode of choice for all ages. We will have a healthier and happier population with consequent benefits on the health service. We will all gain economically as cycling helps in easing congestion and providing us with a fitter and more alert work force. A culture of cycling will have developed in Ireland to the extent that by 2020, 10% of all trips will be by bike.

The objectives presented in this framework cover the interventions relating to our physical environment that need to be made in order to encourage cycling. The objectives are presented moving, broadly, from the largest scale (urban / regional planning) to a detailed level (provision of cycling parking etc.) and are not necessarily related to their priority. In promoting cycling, we need to have cycling-friendly urban planning and cycling-friendly road design / traffic management measures and integration with public transport and plentiful cycling parking and the other measures described in this document. It is a very broad package of measures that is required, not just single, specific interventions.

Objective 3 is to provide designated rural signed cycle networks providing especially for visitors and recreational cycling. The network identified will mainly use a mix of minor roads, and some greenways. The greenways are especially important for, typically, the first 10km along the routes emanating from busy town centres which are heavily trafficked and particularly unattractive for inexperienced or very young cyclists. While the overall framework of the tourism network has been identified, there is more work to be carried out to identify further routes, particularly in the Midlands and particularly to use existing traffic free routes such as the canal and river tow paths. There is also further work to be carried out in identifying which sections of the extensive network of disused rail-lines would be most suitable to be converted to high quality, traffic-free routes suitable for cyclists of all ages and abilities.

3. Objectives for the Route

The function of the route will be manifold. The following is a non-exhaustive list of objectives for the route taken into account by the consultancy team in undertaking the study:

(i) To cater for commuting - the route will have to be sufficiently attractive to compete time-wise with the alternative on-road routes along the N81 and R114 into Dublin City from the greater Tallaght area.

(ii) To cater for tourist amenity - it is envisaged that the route will attract cycle tourists undertaking circuits through the Dublin and Wicklow Mountains.

(iii) To cater for local amenity - the route should benefit local communities through enhancing existing amenity paths and providing new linkages to adjacent communities and village centres.

(iv) To connect areas of parkland - the route should provide clear and coherent connectivity between existing parks along the river corridor - such as Bushy Park and Herbert Park.

(v) To enhance the ecological corridor - the scheme should have a neutral to positive impact on local ecology. This can be achieved by inclusion of complementary planting and features for flora and fauna.

(vi) To benefit local business - the scheme will increase accessibility to local businesses and village centres along the river corridor.

(vii) To be a Greenway of international renown - the scheme must avoid compromises and be on a par with the best greenways in the world.

European Greenways definition

"Greenways are communication routes reserved exclusively for non-motorised journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient and surface condition to ensure that they are both user-friendly and low-risk for users of all abilities. (Lille Declaration, European Greenways Association, 12th September 2000)."

In common with the project objectives above The European Greenways Association (EGA) describes the Functions of Greenways:

"In principle, Greenways - natural and cultural heritage trails have four basic functions:

1. Sustainable transport and safety

Greenways promote non-motorized forms of transport and mass transit, encourage mobility and tourism related to walking, cycling, horse-riding, boating etc. Greenways contribute to increasing road safety and sustainable transport in urban and rural areas for many different user groups, including disabled, elderly and children.

2. Promoting healthy lifestyles

Greenways contribute to promoting healthy life-styles and improving the quality of life of local residents and visitors by encouraging active tourism, recreation and sports in the open air and in natural environments.

3. Development of eco-tourism and natural and cultural heritage conservation

Greenways contribute to the development of different types of environmentally-friendly tourism, including creation and promotion of environmental tourist products. All tourist products promoted along Greenways share the common principle of using local potential and supporting local communities – they are created with local resources: tourist services, cultural opportunities, local products and point of sale, as well as other community initiatives. Greenways serve to support grassroots and regional initiatives aimed at cultural, natural and landscape heritage conservation.

4. Supporting economic and social development of communities, including enterprise development

Greenways contribute to the development of local economies and encourage enterprise among local populations. Establishment of Greenways serves to initiate development of accommodation, food and guiding services. Trails promote establishment of galleries and points of sale for local products, tourism information services, sport and tourism equipment hire services etc."

This study addresses the feasibility of creating a Greenway in terms of its route alignment and deliverability, however such a route is a resource or means to developing the Greenway concept which will be an ongoing process throughout the lifetime of the route. These concepts are further explored in Section 6.

4. General Requirements

The following requirements have been identified for the Greenway Route in order to achieve the objectives set out above:

- Coherence and Directness

  The route will have to be legible and coherent and easy for tourists and locals to follow. Even independent of any signage proposed, it should be possible to logically follow the route along the river.

- Width

  One of the principal considerations to be determined early on is the required width for the route. The National Cycle Manual suggests a minimum width of 2.5m for two cyclists cycling abreast with another overtaking. Given the need to also accommodate pedestrians on the route, a general width requirement of 4m is proposed. This will cater for two-way cycling and pedestrian activity. Where particular pinchpoints exist, an absolute minimum width of 3.0m should be provided to allow two cyclists to pass or one cyclist to pass a pedestrian.

- Priority

  Where at-grade public road crossings are required, and compromises in terms of traffic capacity are necessary, these should generally favour the greenway route. Advance sensors, be they radar or detection loops should be included on the greenway on approach to the road crossings so as to enable the cycle signals to switch to green promptly and minimise delay and disruption for cyclists. These might include intelligent sensors that would apportion priority based on the number of cyclists approaching, or which might give greater priority to the greenway in inclement weather conditions.

  All road crossings should be toucan crossings, a minimum of 4m wide, and with push button units on each side of the Greenway. Raised bars for cyclists to rest their foot on when stopped should also be provided on each side. Where the route is shared with traffic and crosses as busy road, the junction layout should generally be tightened to provide an increased area for pedestrians and cyclists.

- Lighting

  High quality public lighting should be installed along the route (where not already present) along the entire length of the scheme from the River Liffey to the gates of the Bohernabreena Reservoirs complex. While the route's commuter function will be minor west of Old Bawn Road, the continuation south-westward will be largely off-road and lighting will reduce the risk of anti-social behaviour. Uplighters rather than conventional lamp post lighting might be considered at the extreme eastern end of the route.

- Paving

  The route should provide a high quality and smooth riding surface, generally free from service chamber covers, bumps around tree roots, etc. Newer sections should be surfaced with fine cold asphalt or equivalent. There may be merit in the provision of a high quality aesthetic finish atop the asphalt along certain sections, similar to the surface treatment on the Grand Canal Route between Blackhorse and Adamstown. Such materials are costly and it would likely be unjustified to provide such surfacing continuously along the route.

- CCTV

  Certain sections of the route will may CCTV coverage for security reasons where it is remote from the main road corridors that provide passive surveillance. It will likely be impractical to monitor the entire length of the route. The preliminary design should consider locations where CCTV is most necessary.

- Environment

  The River Dodder provides an important ecological corridor through the length of the scheme from the Dublin Mountains to the River Liffey. The site links a number of parks from Glenasmole, Kiltipper Park, the Dodder Valley Park, Bushy Park, Orwell Park, Dartry Park and Herbert Park, allowing for the connection of existing nature areas and maintains a healthy ecosystem. The linking of nature areas allows for species to move, migrate, disperse and exchange populations between these areas in order to secure their long term survival. The site is an important habitat for a range of species including otter, kingfisher, badger and bats along with a numerous avian fauna. Habitats include wet grassland riparian woodlands, dry and calcareous meadows and tufa forming calcareous springs. The river support an excellent supply of fish and salmon are present in its lower reaches. Invasive species, in particular Himalayan Balsam and Japanese knotweed are found throughout the river corridor.

  In parallel with the scheme there is opportunity to include features to enhance the existing ecological corridor.. Such features might include:
  - Assessment of the weirs along the route for potential provision of salmon passage.
  - Artificial otter holts.
  - Dipper and Bat boxes.
  - Vortex weirs for outfalls to improve water quality
  - Landscaping consideration for the enhancement of the aquatic environment

- Maintenance

  The scheme should require minimal maintenance to reduce the whole life cost. This should be considered in the design of any complementary planting along the route and in the design of bridges and other structures (which should all be fully integral).

- Access and Permeability

  All kissing gates along the route should be removed. These are an intolerable barrier to cycling and other means of controlling anti-social behaviour should be identified, including CCTV. A bollard or two at the entry to a 4m wide track would prevent vehicular access but can accommodate cyclists. Occasional abuse of the greenway by motorbikes may be a problem but the solution to this should not be to render the proposed cycleway unusable by the vast majority of responsible pedal cyclists.

  Links to the surrounding areas should be provided all along the route to maximise the usage of the greenway.

- Tourism

  The greenway should emphasise features of interest to tourists along the route. Signage boards and sheltered stops should be included in the design. Local businesses should be encouraged to engage with the scheme, which could deliver additional custom to their premises.

- Signage

  In addition to the signboards proposed for tourists, a comprehensive and coherent route signage strategy should be developed for the greenway. This should include complementary signage towards the route from its hinterland and from the greenway towards village centres and other features of interest.

- Flooding

  The preliminary design should take account of the Dodder Flood Defence Scheme, which is constructed or under construction from the Liffey as far as Ballsbridge. Further such flood works are likely to be required farther west along the river and these should be designed in a manner sympathetic to the greenway. Indeed, there may be considerable scope for synergy between the proposed greenway scheme and the required flood defence works.

- Mitigatory planting

  Where trees are required to be removed to facilitate the development of the greenway route, compensatory planting should be provided nearby. Where possible, existing greenery along the river corridor should be maintained.

- Dog walkers

  During the various route audit for the scheme, significant numbers of dog walkers were observed along the river corridor, particularly in the parks along the route. It is likely that the development and promotion of the greenway as a cycleway will alert dog walkers of the presence of cyclists. However, additional signage warning dog walkers to be conscious of leashes crossing the path of oncoming cyclists should be considered.

- Synergy with utility proposals

  The opportunities for synergies between the proposed Greenway Route along the River Dodder and proposals for new or upgraded services / utilities should be investigated. While it might provide an additional funding avenue, any appreciable volume of excavation would increase the environmental impact of the scheme and the implications would required detailed consideration.

- Green Energy

  The public lighting along the route will require power supply. Consideration should also be given to the inclusion of small hydro power turbines that could power the public lighting.

- Diversions during construction

  The design of the route should have regard to the need to maintain access to parks and the river corridor during the construction period, insofar as is practicable.

Some of these issues are elaborated on further in Section 6 “Developing the Greenway”.

5. Feasibility Assessment

The following assessment is illustrated on the accompanying drawings, grouped by Section in each case.

5.1 Grand Canal Square to Fitzwilliam Quay (Section 1)

The route will start from the Grand Canal Premium Cycle Route at Grand Canal Square at the junction of Forbes Street and Misery Hill / Hanover Quay, about 500m west of the confluence of the River Dodder and the River Liffey. The most logical route to the Dodder is along Hanover Quay to the Grand Canal Dock lock gates. A new crossing of the locks will be required to connect the route to the River Dodder at South Dock Road.

In the longer term, an alternative route may be provided following the construction of the Dodder Public Transport Bridge connecting the eastern end of Sir John Rogerson's Quay to Ringsend and on to the Poolbeg peninsula. This should provide a direct connection from the River Liffey Cycleway scheme to the River Dodder Greenway on the eastern side of the river.

At the plaza in front of the Grand Canal Theatre, the layout of the planters is incompatible with the provision of a high priority through route for cyclists. This issue was not addressed in the design of the Cross-City Canals Premium Cycle Route but should be revisited when the Dodder Route is developed, given the importance of the plaza as a principal intersection in Dublin City's emerging cycle network.

(1) Hanover Quay

There are buildings along the eastern section of the quay frontage blocking a route along the Campshire. Hanover Quay is a quiet road suitable for on-road cycling in a shared environment. A cycle track exists along the western section of the campshire, but it is too narrow for two-way cycling and walking and would require to be widened within the cobbled surface. Otherwise the route should remain on road until 30m - 50m before the Dock Gates, before joining the Campshire. The principal interventions required along this section of the scheme are:

- Road resurfacing and possible drainage enhancements to provide a smooth cycling surface;
- Route signage;
- Repaving of the eastern section of the campshire to provide a 4m wide areas for pedestrians and cyclists with a suitable transition to the shared road area.

Hanover Quay

Campshire

In conjunction with the above, it is recommended that Dublin City Council investigate the scope for renovating the delapidated buildings along the campshire to provide passive surveilance of the route and to continue the regeneration of the docklands area. A

Strategic Development Zone is currently being prepared for the South Docks area and this should have regard to the aspirations for the Dodder Greenway.

If the demolition of the delapidated buildings on the campshire is considered, it would be preferable to provide a 4m wide zone for pedestrians and cyclists along the full length of the campshire. This could be delivered as a future enhancement to the Greenway Route.

(2) Grand Canal Dock Locks

The first significant obstacle to the route is the crossing of the Canal Dock Gates. There are three separate locks (from west to east: Westmoreland Lock, Buckingham Lock and Camden Lock) with landing areas in between. At present, it is possible to walk across the lock gates of Westmoreland and Buckingham Locks and a fixed bridge exists across the larger Camden Lock.

Canal Locks

Fixed Bridge (background)

There is a range of options available to overcoming the obstacle posed by the Canal Lock. Options for consideration might include:

- Landmark fixed structure spanning over the three locks;
  The bridges along the Grand Canal have a general clearance of 2.75m (9 feet), however the railway bridge just upstream of Grand Canal Basin has a restriction of 2.45m. No such clearance restriction exists downstream of the Ringsend Road Bridge. The Basin is regularly used by yachts and, on that basis, it would appear to be impractical to impose a similar height restriction over the Canal Locks. Consultation would be required with the City Council, the Dublin Docklands Development Authority and Waterways Ireland if this option is to be further explored.
- Three opening bridges or a combination of fixed and opening bridges across the three locks. For example, (an) opening bridge(s) might be considered across Westmoreland and Buckingham Locks together with replacement or augmentation of the existing fixed bridge over Camden Lock to provide an overall wdith of at least 4m to accommodate cyclists along with pedestrians. Alternatively, the widths of Buckingham and Camden Locks (and the island in between) suit a two span bridge with a pivot on the island that would allow manual operation of a 3m wide structure and would reduce running costs. This would be complemented by a fixed bridge across Westmoreland Lock.

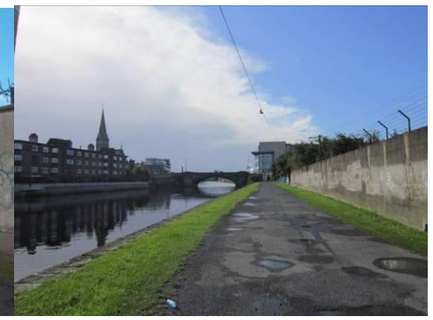
If the latter option (which is the more likely) proceeds, the two / three short bridges should, if possible, be constructed on a straight line alignment or as near as possible. The practicality of this will be dictated by the opening mechanism for the opening bridges, which would best rotate horizontally rather than by lifting as this would involve less disruption to the structure of the lock walls.

(3) South Dock Road

The area around the western landing at the Canal Lock is run down, with hoarding / high walls on either side of the route. Presumably, this will be redeveloped at some point. There is an opportunity as part of the South Docks SDZ to develop the former graving docks behind the wall into a heritage feature. Should such a heritage feature be developed, the heritage feature should logically include historical information on the River Dodder, including the development of the Bohernabreena Reservoirs and water supply infrastructure that can be visited further upstream. Features of ecological interest should also be described. This would provide information to tourists setting off from the city on the importance of the river to the city.

There is a wide route through to South Dock Road, and along the west bank of the River Dodder to Ringsend Road Bridge. The surface is poor and would require treatment to cater for cycling along the route.

Route from Lock



South Dock Road

(4) Ringsend Road Bridge Crossing

Development obstructs a route along the western side of the Dodder south of the Ringsend Road crossing. Furthermore, the recent flood defence works immediately abut the river and any new route on the western side would require significant modifications to these Works. Fitzwilliam Quay on the eastern side is suitable for a cycling route. The route will have to cross the Dodder in the vicinity of Ringsend Road, either upstream or downstream of the Ringsend Road bridge (Ringsend Road bridge is too narrow to accommodate two traffic lanes and the proposed Greenway Route. The footpaths on Ringsend Road Bridge are much too narrow and there is a separate need to provide improvements for pedestrians and cyclists along the route from Ringsend to the city centre).

The greenway route will also have to cross Ringsend Road from north to south. At present, there are steps from South Dock Road up to Ringsend Road, forming an obstacle to cyclists and the mobility impaired. There is no scope for the route to pass under Ringsend Road so the route design will require measures to overcome this level difference. [There is an alternative route following South Dock Road around to the west onto Ringsend Road at the South Lotts Road junction - but this is too circuitous to be attractive.]

Ringsend Road bridge is an attractive masonry structure and any new bridge adjacent would require high quality architectural design to complement the existing views of the bridge.

Ringsend Road Bridge

Steps to Ringsend Road

Possible design solutions might include:

- Bridge crossing north of the Ringsend Road bridge into the grounds of St. Patrick's Church with ramped approach on South Dock Road; Toucan crossing across Ringsend Road on the eastern side of the road bridge;
- Toucan crossing across Ringsend Road on the western side of the road bridge and bridge crossing immediately upstream of Ringsend Road bridge on the southern side.

Either option is feasible but the upstream option might be somewhat less intrusive. Nevertheless, independent of the River Dodder Greenway Route, there is a need to improve facilities for pedestrians across Ringsend Bridge. This is part of the most direct route for pedestrians from the city centre to the amenity areas of Poolbeg and Sandymount Strand and the current facilities provided are substandard. It may therefore be the case that new structures are required on both sides of the bridge - the bridge on the downstream side could perhaps be provided for pedestrian use only and the bridge on the upstream side shared as part of the greenway.

Ringsend Road Bridge

Upstream side of Bridge

It is recommended that the design is progressed on the basis of a 4m wide new light independent bridge crossing on either side of Ringsend Road Bridge. (The bridge on the north side could be constructed as 2m wide between parapets if cyclists are not to be accommodated).

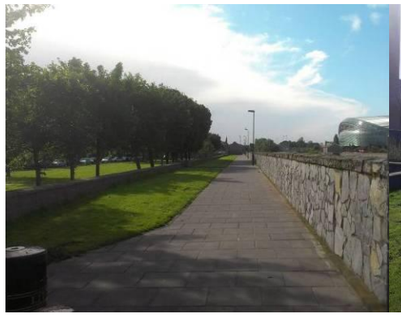
(5) Fitzwilliam Quay

There is a wide road carriageway with parking on either side along Fitzwilliam Quay. There is also a wide footpath on the river side. The road space would need to be reapportioned to gain additional space for a two way cycle track along the northern section. This will require adjustment to the current parking facilities. Should this not prove feasible, consideration could be given to making Fitzwilliam Quay one-way with return access to / from Irishtown Road via Dermot O Hurley Avenue.

Fitzwilliam Quay (view south)

Fitzwilliam Quay (view north)

The southern part of Fitzwilliam Quay comprises a footpath and linear park. There is scope to provide a two-way cycle track through the linear park alongside the footpath. The route is obstructed by an old pump-house and the best solution would be to leave the footpath pass on the narrow western side of the building and to take the cycle track around the other side.



Linear Park on Fitzwilliam Quay

Pumphouse

(6) Interface with Sutton to Sandycove Route

It is recommended that consideration be given to running the Sutton to Sandycove Route along the River Dodder Walking and Cycling Route from Grand Canal Square to Fitzwilliam Quay - at least in advance of the completion of the River Dodder Public Transport Bridge across the mouth of the river at Sir John Rogerson's Quay. A possible route along Dermot O'Hurley Avenue and St. Brendan's Terrace into Ringsend Park has been identified that could link onward to Strand Road. This has been postulated in a separate report by Roughan & O'Donovan and is beyond the scope of this study.

5.2 Londonbridge Road / Bath Avenue to Ballsbridge (Section 2)

(1) London Bridge to Lansdowne Road

Between Londonbridge Road / Bath Avenue and Lansdowne Road, there are pedestrian routes available on both sides of the river. The route on the eastern side was recently upgraded as part of the River Dodder Flood Defence Scheme. However, this route is quite narrow with a width of approximately 2.0m along the edge of Lansdowne Tennis Club. There are also pedestrian barriers along this section of the route which obstruct access for cyclists. There are occasional galleries along this section which permit passing - but overall it is considered unsuitable for the proposed River Dodder Walking and Cycling Route due to the narrowness.

It is desirable for the greenway to remain on the eastern (left) bank of the river along this section so as to avoid the need to cross the river twice at Bath Avenue and Lansdowne Road. It will be necessary therefore to widen the existing walkway to 4m to accommodate cyclists and pedestrians. The feasibility of widening the path into the river by the provision of a 2m cantilever should be explored at preliminary design stage. The principal concern with such a proposal is likely to be flooding considerations. However, given the width of the river at this point, and assuming a similar open parapet to the existing walkway, the impact of a cantilever structure on the carrying capacity of the river is likely to be almost negligible.

Route along Eastern Side of River

In the event that widening the path on the eastern side of the river is found to be infeasible or impracticable, the route could alternatively cross the river at Londonbridge Road / Bath Avenue and cross back at Lansdowne Road. This would however lead to a requirement for four sharp cornering manoeuvres for cyclists, reducing the attractiveness of the route and likely leading to many cyclists attempting to force their way up the narrow path on the eastern side of the river.

Notwithstanding the above concerns, the issues facing the alternative route are explored below.

London Bridge

London Bridge currently operates on a shuttle basis, with one lane alternatively catering for eastbound and westbound traffic movements. The shuttle runs along the middle of the bridge. It may be possible to amend the cross section of the bridge to move the traffic lane to one side. This would create space for a two-way cycle route or at least a 3m wide shared area on the other side. This would be the absolute minimum provision required to accommodate a route capable of achieving the objectives of a high quality greenway.

London Bridge

Alternatively, a boardwalk / independent structure could be constructed upstream or downstream of the existing bridge. A toucan crossing would be required across Bath Avenue - and the shuttle signals amended to ensure priority lies with the Greenway route.

London Bridge Road to Lansdowne Road

The path between Bath Avenue and the Aviva Stadium on the western side of the river is of good quality construction (fine cold rolled asphalt) and is in excess of 5m wide - it is used as a main access to the stadium on match days. However, it narrows down to 1.8m - 2m past the stadium and this would need to be widened to 4m minimum to accommodate the proposed high quality greenway for which there is space available within the grass verges. There are no particular environmental sensitivities along this section that would prevent this.

Walkway from Bath Avenue to Stadium

Route past Stadium

Lansdowne Road Bridge

There are residential properties between Lansdowne Road and Shelbourne Road and the left bank of the river upstream as far as Ballsbridge. There is no scope to continue a route along that side of the river without land acquisition. As such, the alternative route would have to cross back across the Dodder at Lansdowne Road Bridge. This bridge currently carries two traffic lanes with narrow footpaths. The options for the treatment of the crossing are similar to those at London Bridge:

- Implement shuttle system for traffic on the bridge and run the Dodder Walking and Cycling Route down one side;
- Construct a boardwalk / independent structure upstream or downstream of the bridge.

Lansdowne Road Bridge

Lansdowne Road Crossing

A toucan crossing is required across Lansdowne Road east of the bridge across the Dodder.

(2) Lansdowne Road to Railway Crossing

There is no available route on the north-western bank of the river, as private properties extend to the riverbank. There is a route along the opposite right bank beside Marian College school, which was recently improved as part of the flood defence scheme. This section of the route varies in width from about 2.5 minimum at pinch-points to 4m, but is generally adequate as far as the railway crossing. It may be desirable in future to widen the path at pinch-points by constructing a cantilever boardwalk into the river corridor - but this would rank as a relatively low priority compared to the other interventions being proposed by this study.

Route between Lansdowne Road and Railway Crossing

Consideration should be given to the relatively uncommon plant Ivy Broomrape (*Orobanche hederae*) which has been recorded between the River and Marian College.

(3) Railway Crossing

The east coast railway line - which carries Intercity and DART services is a major obstacle to the greenway route. The railway crosses the Dodder at the Aviva Stadium and indeed passes under the western stand of the stadium. The railway bridge is a composite structure and the steel beams supporting it are quite deep with very limited vertical clearance above river flood level. As such, it is infeasible to run a boardwalk under the railway bridge within the river corridor.

There is an existing underpass on the southern side of the river, which is uncomfortably narrow and prone to flooding. It is inadequate for the proposed high quality greenway route along the River Dodder. As such, a major structural intervention is required at this location. This challenge is further complicated by the presence of a major watermain within the same corridor. Detailed consideration will be required at preliminary design stage to establish how best to construct a new underpass under the railway on the south-eastern side of the river. It may be the case that the underpass would be located slightly south of the river to avoid impacting on the existing bridge abutments. This would however have the drawback of requiring land acquisition from Marian College on the eastern side of the railway and from another property on the western side which is a walkway access to the AIB Bank headquarters nearby. It is noted that four separate underpasses were successfully constructed under the railway as part of the Lansdowne Road (Aviva) Stadium redevelopment. [The railway underpass was closed for flood defence works when the Route Audit was undertaken.]

Railway Bridge Across Dodder

Pedestrian Underpass

An alternative (but significantly more expensive) option would be to replace the railway bridge structure altogether. The bridge recently suffered damage during the major flooding of October 2011 and required remedial works to be undertaken. A new structure would be better suited to withstanding flood events and could indeed have a longer span allowing:

(a) the greenway route to pass beneath the main span; and

(b) the greenway route to form part of the river channel in flood flow.

The replacement of the railway bridge would require a major logistical operation, given the importance of the east coast rail line and the undesirability of its closure for a lengthy period to allow the construction / erection of the new bridge. It would be more pragmatic to separate that project from the Dodder Greenway by focussing on either the improvement and widening of the existing underpass or its replacement with a new underpass in the short term.

5.3 Ballsbridge: Beatty's Avenue to Herbert Park (Section 3)

West of the railway bridge, the existing riverside walkway continues for approximately 300m to Beatty's Avenue at Ballsbridge. This section is at least 4m wide and is not open to general traffic (it is used for occasional maintenance access). It is perfectly suited for shared use.

Railway Crossing to Beatty's Avenue

At Ballsbridge this section includes one of the most complex road crossings required along the route, as it traverses the busy junction of Pembroke Road / Merrion Road, Anglesea Road and Shelbourne Road. Route choice through Ballsbridge will be greatly influenced by the direction of the greenway as it heads west towards Donnybrook. West of Ballsbridge, Anglesea Road is mostly shielded from the river by residential development along the riverbank. Any route along the southern side of the river would therefore require crossing through Donnybrook crossroads. Any such crossing would be even more problematic than the crossing of Pembroke Road and, in view of the fact that a route on the southern side wouldn't run along the river, it is considered preferable that the westward continuation of the route from Beatty's Avenue should be on the northern side of the river.

The following route options discussion is primarily engineering focussed but it would be desirable to undertake a more holistic study of the urban realm in Ballsbridge Village, which is currently dominated by traffic. Merrion Road / Pembroke Road is a primary radial transport corridor for general traffic, buses and cyclists into Dublin City Centre from the south-eastern suburbs. Anglesea Road - Shelbourne Road is a somewhat lesser, but nonetheless, important orbital route from Milltown / Clonskeagh towards the southeast city centre employment zone. The traffic function of these routes is incompatible with a pleasant village centre environment and a broader study of Ballsbridge Village should be undertaken investigating the scope to either:

a) Reduce the importance of the traffic routes with a view to promoting alternative routes away from Ballsbridge Village and redistribute the urban space to create friendlier urban village environment; or

b) Re-engineer the existing roadspace to reduce the dominance of traffic in the streetscape, while maintaining the necessary traffic capacity for the crossing traffic routes.

It would be beneficial if this study were undertaken in parallel with the preliminary design of the Dodder Greenway to allow the Greenway design to take account of any changes proposed.

A grade separated solution is not considered feasible at Ballsbridge due to:

a) An overbridge is unlikely to be workable on visual impact grounds.

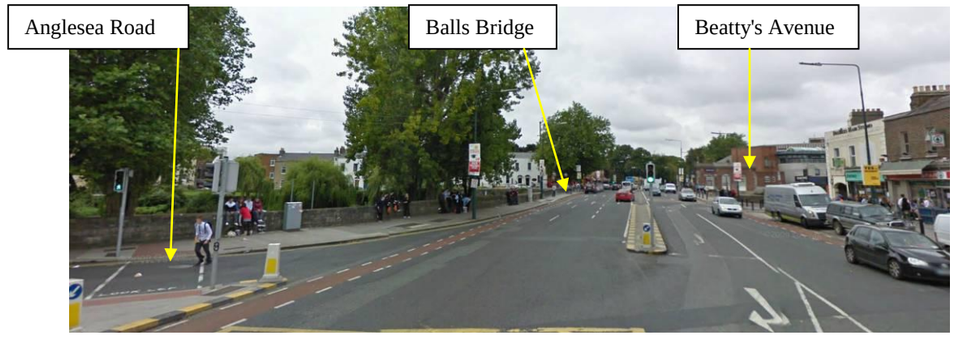
b) An underpass is unlikely to be feasible due to services constraints and proximity to the river.

A number of route options have been investigated for this section, as set out below.

Option 1: Beatty's Avenue to Herbert Park Hotel

This is the most direct of the route options considered - but the most problematic in terms of crossing Pembroke Road. The route would run along Beatty's Avenue - a quiet residential street suitable for shared use to Pembroke Road at Ball's Bridge over the river. A toucan crossing would be provided across Pembroke Road in the middle of the staggered junction between Anglesea Road and Shelbourne Road. This would require amendments to the current traffic signal cycle to create an additional phase for the crossing. It could however be achieved within the existing signal operations with minor amendment, similar to the recent addition of a toucan at Leeson Street Bridge as part of the Grand Canal Cycleway.

Beatty's Avenue



Pembroke Road (looking Northwest)

Pembroke Road (looking Southeast)

The route would continue into green space on the southern bank of the Dodder before crossing to the Herbert Park Hotel and Apartment complex upstream of Ball's Bridge. This would require either:

(a) a new bridge upstream of Ball's bridge; or

(b) a boardwalk style extension on the western side of Ball's Bridge.

While the latter might appear unattractive from an aesthetic and heritage perspective due to the impact on the historic Ball's Bridge, it is understood that flooding considerations require the open balustrade style western parapet of that bridge to be sealed. The construction of a boardwalk style extension on the side of the bridge would create an opportunity to retain the existing attractive parapet on the bridge and to provide a new solid flood protection barrier on the edge of the boardwalk. This would achieve the objectives of the flood defence scheme, while catering for the Dodder Greenway route.

There is an opportunity to develop a focal feature in the green space on the southern riverbank immediately adjacent to Balls Bridge. There is a now disused public convenience facility on this site at present and there is an opportunity to redevelop the site to provide a cafe, local information centre and stopping point along the Greenway Route. The scope for the development of such an amenity should be investigated as part of the broader Ballsbridge Urban Village study, suggested above.

The route would continue alongside the Herbert Park Apartment complex / Hotel into Herbert Park. It is noted that this section is currently private and that either:

- Land would need to be acquired from the Hotel / Apartment Complex; or
- A new boardwalk structure would be required on the outside of the Quay Wall.

The river bank along to the south of Embassy House contains a number of trees and plants of botanical interest and is dominated by remote sedge (Carex remota), broad-leaved helleborine (Epipactis helleborine), red campion (Silene dioica) and primrose (Primula vulgaris). The banks are known to contain an abundance of Japanese knotweed, an invasive plant which will require careful management for removal and to prevent further spread.

Bats commonly use the area with up to five species recorded along this stretch of river. The protected kingfisher has also been recorded using the site, although there is no nesting opportunity for the bird.

Views Eastward towards Balls Bridge from Herbert Park Hotel and Anglesea Road

Option 2: Beatty's Avenue to Herbert Park Hotel

Instead of crossing at the top of Beatty's Avenue, this option would amend the kerbline and/or restrict parking in front of the commercial premises east of Ball's Bridge. A toucan crossing would be constructed at the Anglesea Road Junction and the route would run along the southern (left) side of Anglesea Road to the bridge into the Herbert Park complex. A new toucan crossing and pedestrian / cycle bridge would be provided on the southern side of the Herbert Park complex access bridge.

This option would better suit the existing traffic signal arrangements at the Anglesea Road / Pembroke Road / Merrion Road / Shelbourne Road series of junctions and may prove attractive if traffic capacity requirements render Option 1 undesirable.

Option 3: Herbert Cottages to Herbert Park Hotel

This option is as Option 2 but following a route along Herbert Cottages and Ballsbridge Avenue rather than Beatty's Avenue so as to arrive at the Anglesea Road junction directly. It avoids the need to cross in front of the shops at Crowe's and Cullen's pubs and to disrupt the parking and public space which is heavily used during matches at the nearby Aviva and RDS stadia.

Option 4: Boardwalk on East Bank (left side) of River

This option is as Option 1 but with a boardwalk on the opposite side of the river to the Herbert Park complex and a new pedestrian / cycle bridge beside the Herbert Park complex access bridge, most likely on the downstream side.

Any of the above options should include provision for transition from the Merrion Road / Pembroke Road cycle lanes onto the proposed greenway route.

Options 2, 3 and 4 as outlined above follow the east bank of the river. The invasive plant Japanese knotweed is found along the river bank in this area and careful consideration is required during removal to avoid the spread of this species. There is no significant botanical interest on this side of the riverbank.

5.4 Herbert Park through Donnybrook to Eglinton Road (Section 4)

(1) Herbert Park

There is an existing wide, well surfaced and lit pathway route along the southern side of Herbert Park as far as Eglinton Cottages at Donnybrook. DCC Parks Department has suggested that the existing park boundary on the west side of the route should be removed to better integrate the greenway route into the park. A new low wall (for flood defence purposes) is required along the river side of the route.

Route along the Eastern Side of Herbert Park

(2) Eglinton Terrace

There is an access into Eglinton Terrace at the south-western end of Herbert Park. Eglinton Terrace is a quiet residential estate along the northern bank of the river. The route is considered suitable for shared use due to the slow speed and volume of traffic. If it is desirable to provide a segregated route, then it should be possible to acquire a strip of unused land from Donnybrook Rugby Stadium along the northern end of Eglinton Terrace.

Access to Herbert Park

Eglinton Terrace

Donnybrook Rugby Ground

Cyclists on Eglinton Terrace

(3) Crossing of Donnybrook Road

Donnybrook Road is a primary access route and Quality Cus Corridor into Dublin City and carries heavy traffic volumes. It is also a major cycle route that carries one of the highest volumes of cyclists in the city. A bridge across the road is unlikely to prove attractive as a bridge over such a road would require a vertical separation of at least 6.5m over the road. This is unlikely to prove attractive to users. An underpass would be better, as underpasses require vertical separation of the order of 3.5m. However, an underpass is likely to prove infeasible as Donnybrook Road is also a primary services conduit to the city and it would likely prove too costly to rearrange the services to suit an underpass.

There is an existing pedestrian crossing at the shop just north of the Eglinton Terrace Junction. A second cycle crossing is required at the Eglinton Terrace Junction that would operate in parallel with the existing pedestrian crossing. The programming should be altered to shorten the wait time for the crossing. The impact on traffic should be relatively minor as nearby major junctions such as Donnybrook Cross control the flow of traffic and restrict the green time for the arterial route. Care should be taken in the programming of the signals to ensure that buses on the Stillorgan Quality Bus Corridor aren't impacted upon.

There is an issue at the eastern side of Donnybrook Road in terms of providing a landing for the eastern side of the proposed toucan crossing. Consideration should be given to restricting movements on Eglinton Terrace to make it either one way in or one way out. It might even be possible to cul-de-sac the road at the junction with Eglinton Terrace but it would be necessary to provide a turnaround for vehicles and space is limited at the junction. The existing access into Donnybrook Rugby Stadium should also be reviewed in the design of the toucan crossing. Its integration into the Eglinton Terrace Junction might simplify traffic movements at the access. Provision should also be included for transitions from the Donnybrook Road cycle lanes onto the proposed greenway route.

Existing Crossing

Eglinton Terrace Junction

(4) Donnybrook Road to Eglinton Road

Brookvale Road (West) is generally suitable for cycling but is currently used as a traffic shortcut between Eglinton Road and Donnybrook Road. The existing one-way arrangement at the northern end is regularly ignored as there is just a hatched road marking rather than a footpath build-out to restrict the width of the road to in-only. Consideration will be required of the desirability of maintaining access onto this road from Donnybrook Road if it is to accommodate a high quality pedestrian and cycle route. The restriction of this movement would also benefit through traffic flow on Donnybrook Road.

Some reorganisation of kerblines, planting and parking facilities will be required at the western end of the proposed toucan crossing across Donnybrook Road to accommodate a suitable landing area.

Brookvale Road (West)

Southern Landing Area

It is not considered feasible to follow the river between Herbert Park and Donnybrook / Eglinton Road for the following reasons:

(a) Development along the right (southern) bank of the river on Anglesea Road;

(b) Donnybrook Rugby Stadium generally abuts the river corridor;

(c) There is no scope to cross under the road at Donnybrook Road Bridge due to the span width and flood clearance requirements;

(d) It is unlikely that a toucan crossing affording sufficient priority to pedestrians and cyclists could be accommodated at the extremely busy and complex Donnybrook Cross Junction.

5.5 Eglinton Road to Dundrum Road (Milltown) (Section 5)

(1) Eglinton Road to Beech Hill Road Weir

The first challenge along this section will be to achieve a satisfactory crossing of Eglinton Road. It is likely that, in order to accommodate a sufficiently attractive priority for pedestrians and cyclists that a fully signalised junction will be required (or at least toucan crossings on the eastern and western sides of the junction operating in parallel). The route will then continue into Brookvale Road (East) to rejoin the River Corridor.

Existing Junction of Eglinton Road and Brookvale Road (looking North)

Existing Junction of Eglinton Road and Brookvale Road (looking South)

Brookvale Road (East) is a quiet residential cul-de-sac suitable for shared use. The precise nature of the crossing across Eglinton Road will require detailed consideration such that there is (/are) (a) suitable landing facility(/ies) for any crossing(s). The existing entry is very wide for a cul de sac - A shuttle arrangement for general traffic akin to that at St. Bridget's Church Road / Merville Road in Stillorgan may merit consideration (See photo below). There is significant scope to reduce the road width on Brookvale Road at the mouths of the junctions on either side of Eglinton Road. This would be of great benefit to the proposed crossing of the latter. Provision should also be included for transitions from the cycle lanes on Eglinton Road onto the proposed greenway route.

Shuttle arrangement at entry to Merville Road in Stillorgan

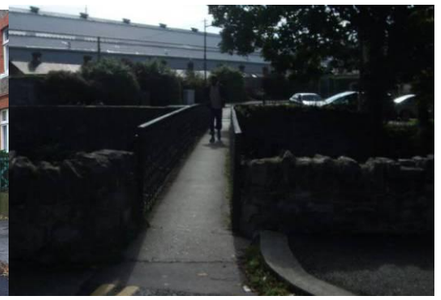
Brookvale Road (East)

The greenway route rejoins the River Dodder at Brookvale Road (East) where is a choice to either continue along the north bank or to cross the river to the south bank at Beaver Row.

Beaver Row / Beech Hill Road on the southern side of the river is generally unsuitable for pedestrian and cycle traffic as the road is very narrow and heavily trafficked. If the greenway route were to cross to that side, the existing very narrow footbbridge from Brookvale Road (East) would need to be widened and a boardwalk developed along the riverside to accommodate the route. It may be preferable to stay on the western side of the river, at least as far as the weir at Beech Hill Road.

It would be desirable to widen the footbridge to Beaver Row so as to provide a good connection towards the large Beech Hill Estate residential area on the southern side of Beaver Row. The population of this area could then bypass the busy Donnybrook Cross junction and join the greenway for short cycle trips towards Donnybrook village.

Brookvale Road (East)



Existing Bridge to Beaver Row

There is an existing path from the end of Brookvale Road (East) along the river that would need to be widened to 4m to accommodate the proposed greenway. The levels may also need to be raised somewhat to avoid impacting on tree roots. There are attractive old railings along the path but these have spikes on top and would require amendment to reduce the hazard these would pose to cyclists.

River Path towards Clonskeagh Road

(2) Beech Hill Road Weir to Clonskeagh Road

The existing path along the eastern side of the river hits a constraint at Ashton's pub where the route currently climbs up a steep incline and steps to Clonskeagh Road. A number of route options have been investigated for overcoming this obstacle.

The first option would be to cross the river to continue the route as far as Clonskeagh Road. This bridge could be located at 3 sites as follows in increasing distance upstream:

- Beech Hill Road Weir
- Ashton's Pub;
- At the old Smurfit Paper Mills complex.

It is understood that DCC is seeking to acquire two properties abutting the River on the eastern side adjacent to the Beech Hill Road Weir as part of the River Dodder Flood Defence Scheme. These would provide a suitable landing point for a bridge across the river at the weir - that could become an architectural feature along the route.

Beech Hill Road Weir **Steep Incline at Ashton's**

On the southern side of the river the greenway route would continue to Clonskeagh Road generally on a cantilever boardwalk structure as far as the building on the corner of Clonskeagh Road and Beech Hill Road. There is a 3m wide footpath past this building, but it is unlikely to be able to gain any appreciable extra space from the road in close proximity to the junction on Clonskeagh Road. In the context of the constraints, it is considered acceptable to accept the 3m pinch-point locally at this point.

Beech Hill Road Approach to Clonskeagh Road

Alternatively, the route could continue along the northern riverbank past Ashton's pub beside the old Smurfit Paper Mills complex with a boardwalk structure around the Applegreen petrol filling station to Clonskeagh Road at the bridge over the river. This would require land acquisition from the Smurfit Paper Mills site, which is currently vacant and partly demolished pending redevelopment. The river bank is likely to be in private ownership over this section and this option would required land purchase from a number of properties.

In parallel with the above, it would be desirable for the route to include for an improved connection to Clonskeagh Road at Ashton's. If a satisfactory solution could be found to the steep incline at Ashton's - most likely gradual re-grading of the walk along the riverside, it would be possible to provide this connection. This would also provide a link towards Ranelagh. It would be desirable, in this context, to improve facilities along Clonskeagh Road, possibly by including a toucan crossing just south of the Ashton's access road and rearranging Clonskeagh Road to provide a two-way facility on the western side as far as the Beech Hill Road junction (in addition to retaining the existing southbound on road cycle lane).

Quiet Access Road at Ashton's **Clonskeagh Road**

This section of the route should also include for the following linkages:

a) Good transitions between the approach cycle lanes on Clonskeagh Road with the proposed greenway route;

b) Strong connection into UCD - preferably via Belfield Office Park on Beech Hill Road.

In this context, even if the preferred route runs through the former Smurfit Paper Mills site and around the Applegreen petrol filling station on the northern side of the river, a new bridge should be provided towards the junction at Belfield Office Park to allow for the connection toward the State's largest university. The signalised junction at Belfield Office Park should also be revised to cater for a toucan crossing from the proposed new bridge. Belfield Office Park is in private ownership and an agreement would have to be reached with the landowners if this option is to be pursued. If it proves infeasible, the existing cycle lanes along Clonskeagh Road should be improved with strong connections across Clonskeagh Road at the UCD accesses at Richview North (Architecture), Richview South (Civil Engineering) and Wynnsward Drive (main western entrance).

Plant species are present along the River Dodder that are uncommon to Dublin include giant fescue, broad leaved helleborine, ivy broomrape, three corned leek and bulbous butter cup which grow along the Smurfit site, There is significant growth of ivy broomrape beside the upper path between Ashton's and Donnybrook. An otter holt was recorded at Clonskeagh Bridge in 2004 and in 2007 otter signs were recorded. An otter survey will be required in this location and the design will need to ensure no disturbance to otter holts occurs.

(3) Clonskeagh Road to Dundrum Road at Milltown

Depending on the choice of (a) preferred route(s) between Ashton's and Clonskeagh Road, either one or two new toucan crossings will be required on Clonskeagh Road. These can be integrated into the existing traffic signal arrangements at the Beech Hill Road junction and the southbound stop line on Clonskeagh Road moved further north, if necessary.

There is an existing off-road greenway route along the southern side of the river between Clonskeagh Road and Dundrum Road. This is generally suitable for inclusion in the overall scheme with the following minor improvements:

- Widening from 3m to 4m and installation of trimmer kerbs to prevent vegetation encroachment;
- Re-grading of the approach to Dundrum Road to remove existing steep incline;
- Rebuilding of low wall on the eastern side of Dundrum Road to better facilitate cyclists;

- Better approach to toucan crossing across Dundrum Road and improved landing area on either side of the toucan crossing.

Route along Southern Side of River (note some vegetation ingress)

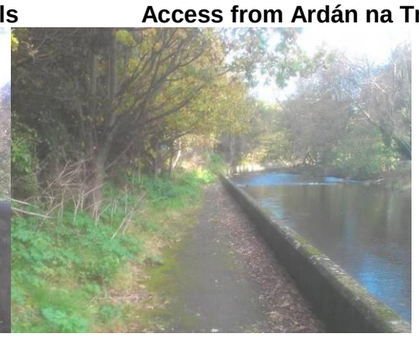
Steep incline to Dundrum Road and low wall restricting access

Dublin City Council has requested that a complementary route along the northern side of the river is also investigated, which would provide a loop feature within a riverside park on both banks. There is an existing walking track already substantially in place but it is narrow in sections. There is scope to improve and widen this route, but it would be costly along the section near Scully's Field (behind Ramleh Park), where retaining walls would have to be set back to achieve a minimum 3m width.

Access from Clonskeagh Road on North Bank at Clonskeagh Road

Middle Section with Retaining Walls

Access from Ardán na Trá



Western Section near Milltown

If this route is developed as a parallel option on the northern side of the river, it could avail of the existing underpass under Dundrum Road on the northern side of the river, thereby providing an improved crossing across Dundrum Road.

Scully's Field is an area of particular ecological interest. Badgers and otters are both recorded in the area. If the northern route along the river is developed on this section, it shall require mammal survey and the potential requirement for artificial otter holts to mitigate the negative impacts on the otter population. Bats are known to use the area with five species recorded in 2007.

There is an opportunity to create another feature along the route at the park opposite the catholic church in Milltown. A feature sheltered tourist signboard should be considered providing information on Milltown Village and the various services available such as a cafe and shops

5.6 Dundrum Road (Milltown) to Lower Dodder Road (Section 6)

(1) Dundrum Road to Classon's Bridge on Lower Churchtown Road

The existing greenway continues along the southern side of the River from Dundrum Road as far as Classon's Bridge (Lower Churchtown Road). The section nearest to Dundrum Road is only 3m wide and is dark as a result of overhanging vegetation. This should be widened to 4m, as should the continuation of the route to Lower Churchtown Road at Classon's Bridge.

Existing Greenway Route along Southern Side of River at Milltown

The existing path along the northern side of the river should also be widened to provide a continuous 4m wide route from the underbridge at Dundrum Road to Classon's Bridge. This will provide an extended cycle loop along both banks of the river. The greenway on either side of the river is already linked by the old Pack Horse Bridge just upstream of the Dundrum Road Bridge in Milltown. This bridge is of adequate width for shared use by cyclists and pedestrians, but the historic cobbles would require some treatment to make the surface comfortably passable on a bike. There is also a stub wall on the northern side that would need to be removed to widen the passage onto the bridge.

Old Bridge at Milltown

Stub Wall at Northern End

The route would then follow the path behind the Shanagarry Apartment Complex. Widening of this section is feasible without acquiring land from Shanagarry and would not require the removal of existing trees.

Existing Footpath behind Shanagarry to be Widened

The route would continue past the old Chimney and under the Nine Arches Railway Bridge which carries the LUAS Green Line light railway over the river valley. There may be an opportunity to provide another feature sheltered tourist signboard adjacent to the chimney and the Nine Arches Bridge, describing the history of the railway and the subsequent construction of the Luas. The signboard could also describe the history of the Chimney and the former industry on the site.

The River Dodder Greenway route would then follow the existing path along the river to Classon's Bridge. Careful consideration would be required of the section approaching Classon's Bridge, where existing Willow Trees provide an attractive feature but will need management to provide adequate headroom. Some form of railing would also be required adjacent to the river to protect cyclists from the drop at the edge, similar to that provided on the opposite bank.

Existing Footpath along River (Note Willow Trees).

The path from Milltown Road to the riverbank on the south-eastern corner of the Milltown Road / Lower Churchtown Road Junction should be realigned to allow lowering of the eastern approach to the pathway under Classon's Bridge. It would also facilitate a link from the cycle bridge proposed by Dún Laoghaire - Rathdown County Council (see below). The linking path should be widened to 4m and should loop around to pass from the proposed cycling bridge around and under the same bridge, continuing under Classon's Bridge.

Branch Route to City via Dartry

There is potential for a new cycle route towards the city centre via quiet roads along Palmerston Road and Mountpleasant Avenue. The most attractive direct linkage to this route from the Dodder Greenway would be via Richmond Hill next to Milltown Luas Stop.

A link should be provided just west of the Nine Arches Bridge from the Greenway to Milltown Road. A toucan crossing should be constructed to the bottom of Richmond Hill. As Milltown Road curves under the bridge, the lights on the westbound carriageway should be located east of the bridge to avoid being obscured by the bridge itself. It would be desirable to reconfigure the cross section of Richmond Hill to provide for southbound cycling, which is currently prohibited due to the narrow one-way northbound road carriageway.

(2) Classon's Bridge to Dartry Cottages

Dún Laoghaire - Rathdown County Council plans to develop a new cycle bridge immediately downstream of Classon's Bridge in 2013 as a connection from the Windy Arbour area across the river towards Dartry that avoids the narrow road bridge.

The land immediately west of Classon's Bridge on the southern side of the river is in private ownership and is heavily vegetated. Beyond that the land is used by Milltown Golf Club for a practice area. There is a park (Dartry Park) and the Dropping Well pub on the opposite side of the river. There is also an existing path on the northern bank of the river that passes under the northern arch of Classon's Bridge (overflow flood channel). As it is more feasible, it is recommended that the greenway route should switch to the northern bank of the river at Classon's Bridge, at least in the short term. The scope to continue a route along the southern bank should also be investigated. This could be achieved by gaining a right of way along the existing access avenue just south of Classon's Bridge and across the lands of Milltown Golf Club.

Classon's Bridge

Classon's Bridge (North-East)

Classon's Bridge (North-West)

There are three arches conveying the Dodder under Classon's Bridge. The northern archway currently accommodates a footpath through. This climbs steeply to the east at present to connect to the linking path to Milltown Road.

The re-grading of the eastern approach to the pathway under the northern arch of Classon's Bridge would remove a restriction to water flow in flood events. It would then be feasible to widen the path through the provision of a shelf over the water channel through this arch, which would in turn provide a path through the full width of the bridge arch. There is already a shelf at the western entry, and, in conjunction with the re-grading, this would not further restrict capacity for water flow in flood events.

While the vertical clearance under the bridge, at 2.2m is slightly below the desirable clearance for cyclists, it was found to be adequate for the cyclists undertaking the route audit and is considered to be satisfactory, perhaps subject to the addition of some warning signage.

The existing river bank pathway at the Dropping Well pub, which is located just west of Classon's Bridge will also require widening to 3m minimum to accommodate the proposed greenway. It is unlikely that much more than 3m can be achieved along this short section due to flood considerations. The existing pathway through the park west of the Dropping Well would also be widened to 4m as far as the weir.

Existing Path past Dropping Well Pub

Pathway along River

Milltown Weir

It is understood that the trees past the Dropping Well will be removed to accommodate a new flood defence wall and that widening of this section will be towards the pub rather than into the river. A railing is likely to be required along the riverside - the implications of which for accumulating debris in flood conditions will require consideration.

Dartry Mills

The Dartry Mills complex is a significant barrier along the northern side of the river as the building immediately abuts the river. As such, it will not be possible to construct a boardwalk past (as flood considerations would prevent a new structure within the river corridor and it would be extremely complex to cantilever off the existing buildings). It is undesirable to retain the existing alternative arrangement whereby cyclists and pedestrians are required to negotiate steep inclines on either approach. Therefore, it is

recommended that a new bridge be constructed near the weir to gain access across to the south bank of the river, and that a 4m wide strip of land is acquired from the Milltown Golf Club Practice Area along the river frontage.

The greenway route would then re-cross the river to the north bank so as to gain access to Dartry Park for the continuation westward. There is an existing old access bridge on the western side of Dartry Mills that could accommodate the route or alternatively a second new bridge could be provided to link across to Dartry Cottages.

Buildings adjacent to River

Old Access Bridge

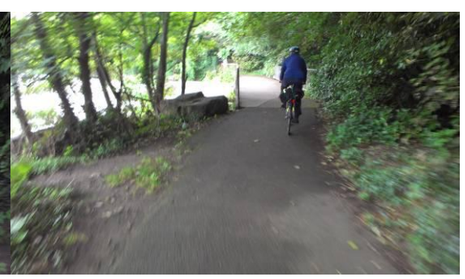
(3) Dartry Cottages to Lower Dodder Road

The oxbow features of the course of the River Dodder in Milltown are the nearest such features on any river to Dublin City Centre. These represent the natural alignment of the river and have not been artificially removed here as they have elsewhere on other rivers (through the construction of quay walls etc.). These physical features should be highlighted on an information board with a rest area in the small park at Dartry Weir.

Dartry weir is a barrier to salmon in the River Dodder and forms the upper reaches of salmon habitat as a result. There is opportunity in this location to provide fish passage at the weir thus extending the salmonid habitat upstream.

There are two routes through Dartry Park; a direct route along the back of the park and a second route along the river bank. Both of these should be widened and properly surfaced to accommodate the proposed greenway. The route through the park is likely to be more attractive to commuter cyclists, while the route along the river emphasises its oxbow alignment.

Western End of Dartry Park



Route west of Darty Park

The linking route to Rathmines via Dartry Cottages and Dartry Road should be signposted from the Greenway Route. While there is a steep gradient on approach to Dartry Road, the hill is relatively short and it is possible to cycle up.

There is an existing narrow footbridge from the western end of Dartry Park to Orwell Park. This is used by patients at and visitors to Mount Carmel hospital nearby. The existing steps should be removed on each side of this bridge to facilitate the passage of wheelchairs and buggies. This will require the localised raising of the greenway levels on the northern bank of the river. It is not considered necessary to widen the bridge to accommodate cyclists, as the bridge is lightly used and occasional cyclists can yield to pedestrians on rare occasions when both meet at the bridge.

The route continues along the river bank and passes under Orwell Road. The route should be widened to 4m along this section where it is currently less than 2m wide.

Approach to Orwell Road Underbridge

The route then continues into Orwell Park and should be widened to 4m. Orwell Park is currently gated and closed in hours of darkness. Public lighting should be provided and security arrangements should be revisited to accommodate 24 hour use of the route through this park. There is a link to Orwell Road at this location. Signposting towards the Greenway Route should be provided on Orwell Road and vice versa northwards to Rathgar and southwards to Churchtown and Dundrum.

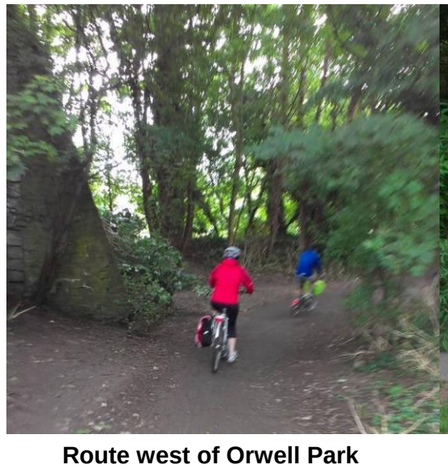
Orwell Park at Orwell Bridge

Gates of Orwell Park

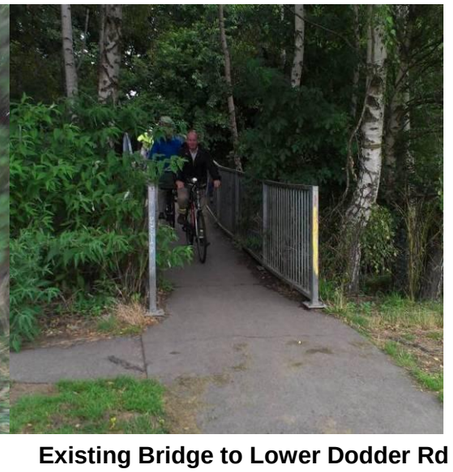
Link from Orwell Road

Route through Orwell Park

The route continues along the northern bank of the river as far as a narrow footbridge link to Lower Dodder Road beside the ornamental arch gateway (Ely Gate) at Braemor Road which once was an entrance to Rathfarnham Castle to the southwest. This bridge will need to be widened to accommodate a 4m wide route for pedestrians and cyclists. It is a fine example of a 20th Century haunched beam concrete structure and should be retained intact. A second bridge could be provided for cyclists alongside the existing bridge which would be used by pedestrians. A new cycle bridge should have a flat alignment instead of the humped profile of the existing bridge.



Route west of Orwell Park



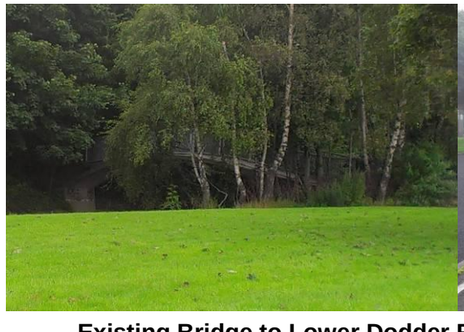
Existing Bridge to Lower Dodder Rd

Existing Bridge at Lower Dodder Road

Ely Gate

There is an existing off-road two-way cycletrack and footpath adjacent to Lower Dodder Road that continues the route as far as Rathfarnham Road. While there is one pinch-point in this section of two-way cycle track, it is considered suitable for incorporation in the overall Greenway scheme, as pedestrian flows are low. There may be scope to locally widen into the green river bank in places. The best arrangement would be to narrow the road beside the cycle track with a single track shuttle section, which would enhance the traffic calming effect on the road. The greenway could then be widened suitably.

It has been suggested by South Dublin County Council that a review should be taken at preliminary design stage to investigate the possible scope for lowering of the river bank outside the boundary wall to provide greater flood capacity.



Existing Bridge to Lower Dodder Rd

Lower Dodder Road

Angling is a popular activity along Lower Dodder Road and anglers could provide an obstacle to cyclists along the greenway route. It is recommended that (a) cantilever platform(s) be provided for anglers along this section. The location of these platforms should have regard to the location of Dipper boxes that Dublin City Council has installed along this section of the river in recent years. The angling platform(s) should be located an appropriate minimum distance from the nearest Dipper box.

5.7 Lower Dodder Road to Springfield Avenue (Section 7)

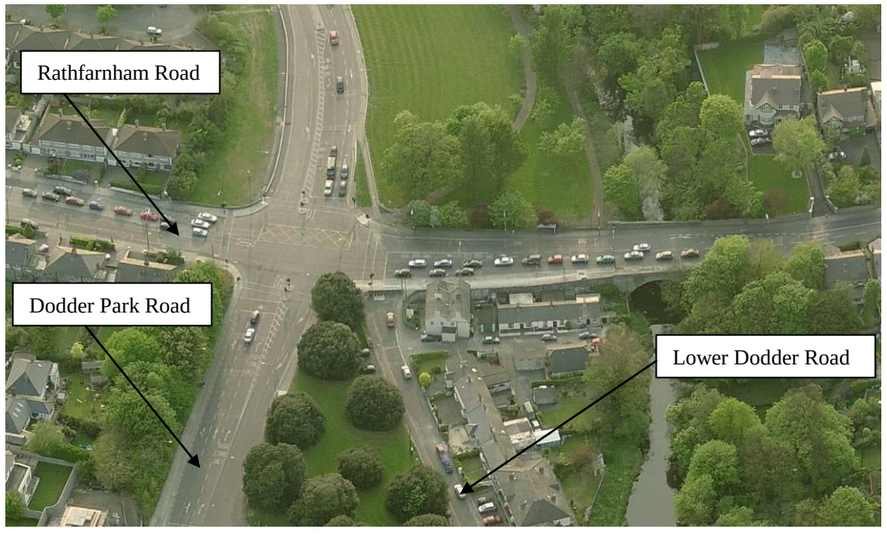
(1) Crossing of Rathfarnham Road

The route along Lower Dodder Road continues to just short of Rathfarnham Road. The western end is a cul de sac but there are steps for pedestrians and a ramp for cyclists and the mobility impaired to the junction of Rathfarnham Road and Dodder Park Road. The surface is poor along the cul de sac section and the cycle route is designated westbound only. Some revisions will be required to the road layout within the cul de sac to improve the standard of the route for two-way cycle traffic.

Lower Dodder Road Cul-de-Sac

Ramp to Rathfarnham Road

The River Dodder crosses under Rathfarnham Road through a single arch structure. It doesn't appear feasible to run the greenway through this arch as the clearance on either side of the river is limited. Therefore, it is likely that the greenway route will have to cross Rathfarnham Road at the junction.



Rathfarnham Road / Dodder Park Road Junction

Arch Bridge over Dodder at Rathfarnham Road

During the route audit, the team experienced unacceptably long delays at the Rathfarnham Road crossing, particularly coming eastbound. The wait time for pedestrians and cyclists will have to be significantly reduced at the junction to ensure the attractiveness of the greenway route relative to other on road options if the scheme is to achieve its objectives. This may require alterations to the junction layout to allow different traffic movements be separately signalled, thus releasing capacity for the greenway crossing.

It would be preferable to construct an underpass under Rathfarnham Road from the cul-de-sac at the end of Lower Dodder Road to the green area on the northwestern corner of the Rathfarnham Road / Springfield Road junction. If this option is pursued, connectivity should also be retained to Rathfarnham Road via ramps on either side of the junction to provide for linkage towards Rathfarnham and Terenure Villages with appropriate directional signs. A tourist information signboard should be provided on the western side of the junction with details of the local parks and villages with available amenities.

(2) Rathfarnham Road to Springfield Avenue

There are off road cycle lanes on each side of Springfield Avenue from the junction with Rathfarnham Road as far as Rathfarnham Shopping Centre. However, the westbound route is relatively difficult to access across the Rathfarnham Road junction and is unlikely to be attractive to commuter or leisure cyclists. These off-road tracks are shared with pedestrians in a number of areas and are insufficiently wide for a cyclist to pass a buggy. A route along the river corridor itself is preferable, feasible and substantially in place and therefore this route is proposed to form part of the proposed greenway.

Along Springfield Avenue about 300m west of Rathfarnham Road, the river and road converge with a retaining wall separating the two. This constriction precludes a route for the greenway along the southern bank of the river, and the route must therefore once again cross to the northern bank.

There is a pathway from the Rathfarnham Road junction down to the riverbank that would need to be widened to 4m to achieve the standard desirable. There is a ford crossing across the river for pedestrians about 100m west of Rathfarnham Road. A new bridge would be required to make this crossing suitable for cyclists. The Bushy Park Masterplan proposes a new bridge upstream of the ford, which is considered to be a suitable location for the greenway route crossing. It is therefore recommended that this bridge be constructed as part of the Greenway scheme.

West of Rathfarnham Road

Ford across Dodder

From the ford crossing westwards there is a reasonable standard concrete path along the outside of Bushy Park on the northern bank of the river as far as the Springfield Avenue bridge. If possible, this path should be widened to 4m. There are a few 100mm wide breaks in the concrete surface (for minor drainage runs) that require attention to make the route smoother for cyclists but it is generally an attractive route. It is proposed, as part of the Bushy Park Masterplan, to open the park up more towards the river by introducing sections of railing within the existing 2m high wall. This would be complementary to the proposed greenway.

There is an existing narrow bridge from Bushy Park to Springfield Avenue from the eastern part of Bushy Park that serves as a link southward to Rathfarnham Village and the westbound cycle track along Springfield Avenue. This bridge is of the same design as the one further downstream at Lower Dodder Road as mentioned previously. It should be replicated with a cycleway bridge so as to improve the connectivity of the greenway route to the surrounding area.

The two route options should be developed in this area. The most direct route is to continue on the northern bank behind Templeogue Village. The other route option is along the northern side of the river by widening the path behind Rathfarnham Shopping Centre. The steep escarpment behind Rathfarnham Shopping Centre may prove difficult to regrade. Both routes pass under Springfield Avenue Bridge and are narrow in places and requires widening.

Route along Bushy Park

Crossing under Springfield Avenue

In terms of ecology, Bushy Park is recognised for a rich and varied birdlife with Sparrowhawk and Kingfisher nesting observed in 2007. Dippers, Grey Wagtails, Moorhens and Grey herons were also observed. Six species of bat have been recorded foraging within the park. Evidence of Badger activity were recorded within the park in 2012 and otter sprats are frequently found along the riverbank. Important habitats within the park include calcareous springs.

The design of the Greenway route will need to ensure minimal disturbance to habitats and wildlife along the route. There may also be an opportunity to provide enhanced habitat in the form of landscaping, nesting boxes, bat boxes etc. as part of or in parallel with the Greenway scheme. Measures should also be considered to restrict the spread of invasive species such as Japanese knotweed and Himalayan Balsam.

5.8 Springfield Avenue to M50 (Section 8)

The route from Springfield Avenue to Spawell is problematic in that no path exists along the northern river bank west of Riverside Cottages, or between Kilvere and the St. Brendan's complex on the southern bank. There are private properties extending to the river bank on either side along this section.

North Bank Path to Riverside Cottages

End of path at Riverside

The preferred option along this section is to follow the river corridor all the way to Spawell rather than to divert to the road system so as to get around the bottleneck. This will require the acquisition of portions of the riverbank at the end of very long back gardens on the northern side of the river behind Templogue Village. The section on the northern river bank opposite Kilvere is problematic from an ecological perspective and there is also an oxbow in the river alignment. It is therefore recommended that the route crosses the river twice at the oxbow to both avoid the area of greatest ecological sensitivity and to achieve a straighter route. This will require two new bridges on either side of the Kilvere Estate. The first of these will span from Riverside Cottages to the east side of Kilvere.

On the southern bank east of Kilvere, there are existing paths through the parkland beside and behind the housing estate. The area is sensitive ecologically and includes calcarious grassland and badger setts. Therefore, the route should follow one of the existing paths through the parkland to minimise ecological disturbance. The path through the parkland should be widened to 4m.

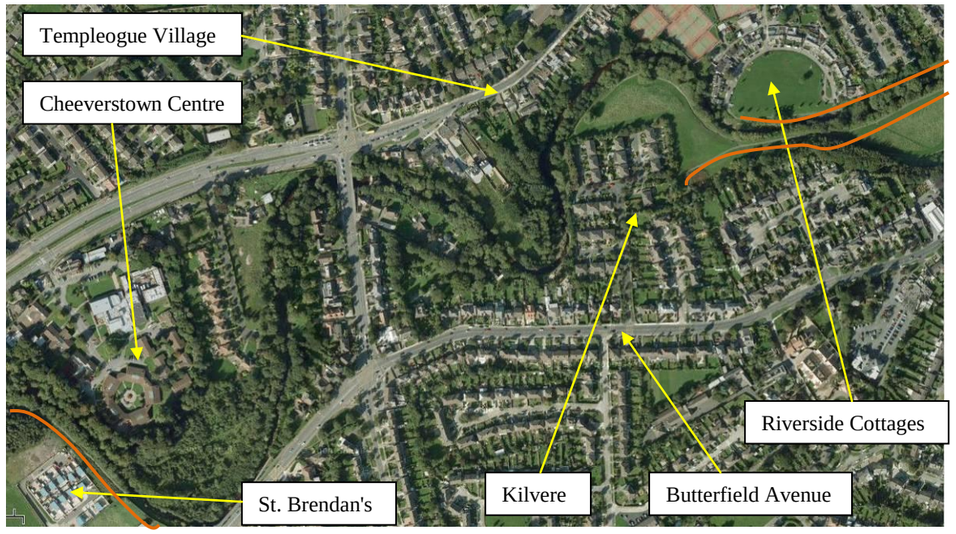
The route would continue behind Kilvere following the Dodder's oxbow alignment which is potentially home to rare flora broad leaved helleborine which will require survey to identify the least intrusive alignment through. At the western side of Kilvere, the route will cross back to the northern side of the river. A strip of land should be acquired from the long back gardens of the properties which front onto Templeogue Road between Kilvere and Old Bridge Road. This will likely require a compulsory purchase order.

The escarpment on the northern side of the river is very steep and vegetated just east of Old Bridge Road. A complex structural solution is likely to be required to connect to the existing path under the bridge. The complex nature of the structural intervention required is such that significant temporary land acquisition may also be required to accommodate its construction.

West of Old Bridge Road, a recent planning permission for the Ladyswell site included a requirement for ceding a 10m corridor along the river. Should this development not proceed in the short term, this strip of land should be acquired through the compulsory purchase process. It would be desirable to also include for a link to Templeogue Road at the Ladyswell site.

There is scrubland behind the Cheeverstown complex which provides an important habitat for Otters, Badgers and Kingfishers. The least sensitive area is immediately behind the Cheeverstown Centre and the greenway route should therefore follow the rear boundary wall of the centre. The route should continue along the river's meandering alignment and cross to the back of the St. Brendan's complex on a new bridge to join the pathway through parkland to the M50.

The connection to Firhouse Road beside the St. Brendan's complex should be improved and widened to connect the greenway to the surrounding area. The kissing gate at Firhouse Road should be removed.



If the route along the river cannot be developed in the short term, there are two other possible options that might be investigated:

1) Via Riverside Cottages, Templeogue Village, Cypress Grove Road / Old Bridge Road and Firhouse Road; or
2) Via a new bridge, Kilvere, Butterfield Avenue and Firhouse Road.

Templeogue Village is very constrained and the existing cycle facilities through are substandard at best. The route is circuitous and is unlikely to be attractive to commuter cyclists in particular.

Riverside Cottages

Templeogue Village

The latter option is preferable, as it provides a more direct route. There is an existing path along the southern side of the river connecting to the eastern end of the Kilvere Estate. If this option is developed, the gate at the entrance to the park from Kilvere should be removed. The quiet estate roads link to Butterfield Avenue.

Kilvere

Entry to Riverside Path

The cross section of Butterfield Avenue and Firhouse Road could be reconstructed to provide a 4m wide cycleway / footpath along the northern side. This would require revisions to the layout of the junction of Butterfield Avenue / Old Bridge Road and Firhouse Road. From there, the route would continue along the northern verge / footpath (again, widened to 4m) to connect to the existing path along the river behind the St. Brendan's complex.

Butterfield Avenue

Firhouse Road

The first section of path behind the St. Brendan's complex is narrow and overgrown with vegetation. This would need to be widened and improved. However, the path soon opens up into parkland and widens to 2.8m. It is probably unnecessary to widen this section, as flows along the route here are likely to be considerably lower than further east towards the city centre.

The route then continues through parkland along the river and crosses under the Spawell Link Road and under the M50 just south of Junction 11 to Firhouse Weir. The path narrows in places and should be widened to provide a consistent width. The path from the crossing under the M50 to Firhouse Weir is quite steep and should be regraded to provide a maximum gradient of 5% if possible.

There are a number of kissing gates along this section of the route, all of which should be removed. The link towards Tallaght Village East alongside the M50 should also be developed.

Path at St. Brendan's

Path behind Cherryfield Way

Bridge under Spawell Road

Route through Parkland

Crossing under M50

Firhouse Weir

5.9 M50 to Old Bawn Road (Section 9)

The route will continue westward from Firhouse Weir along the river banks through Dodder Valley Park as far as Old Bawn Road. The route will then cross Old Bawn Road and continue along the banks of the Dodder.

(1) Dodder Valley Park

From the Firhouse Weir the route passes behind Mount Carmel Park and links into Dodder Valley Park. Mount Carmel Park provides for potential links to Firhouse, Ballycullen and Knocklyon/Scholarstown at this location. The access route to Dodder Valley Park is extremely narrow and should be widened to 3m or 4m to accommodate the proposed greenway. The existing surface is poor and will require replacement to form part of the cycle route. This will only be required over a short length as the majority of the existing route through the Park is approximately 3m wide and the existing surface would not require any additional treatment.

Access to Dodder Valley Park

Route through Dodder Valley Park

The first significant obstacle to this section of the route is the pedestrian gateway, as shown in the picture below. At present, it is possible to navigate this gate but it requires the cyclist to dismount the bicycle. This gate would need to be removed or replaced with an alternative method of deterring access for vehicles and motorcyclists.

Overgrown vegetation along the route would need to be cut back and maintained. Trimmer kerbs should be installed to prevent vegetation re-invading the pathway in future.

Pedestrian gate in Dodder Valley Park

Overgrown vegetation along the route

The route continues along the southern bank of the river as far as the back of the Bolbrook Enterprise Centre where the river is at its narrowest. There is potential to provide a bridge at this point which would accommodate a cycle route between the Tallaght Bypass to the North and Firhouse Road to the South. If provided, it could link to a possible Greenway link and/or Cycle way to Tallaght Village to the North and a potential link along Avonmore Road.

The route continues through the Dodder Riverbank Park along the river bank. It is of sufficient width and properly surfaced to accommodate the proposed greenway. There are two other routes through the Dodder Riverbank Park, both of which lead to the pedestrian entrance to the park on Firhouse Road. A Toucan crossing should be provided at this location to link into the residential areas to the south east.

All three routes through the Dodder Riverbank Park meet at the back of the Victory Centre. At this location, it is proposed to link to the proposed Tallaght to Ballyboden Cycleway Scheme (being separately progressed by South Dublin County Council) and which will commence at Firhouse Road opposite Ballycullen Avenue, crossing the River Dodder on a new bridge, continuing behind the Victory Centre for approximately 280m and crosses the River Dodder again on another proposed bridge. Here it links into existing routes through the park on the northern side of the river and along the boundary of the Bawnville Estate. The route will also link to Firhouse Road at this location.
The Dodder Greenway Route will, continue along the southern bank of the river as far as Old Bawn Road. The route should be widened to 4m to accommodate the proposed greenway. The existing surface is poor and will also require replacement to form part of the cycle route.

Dodder Valley Park South

Existing Route on Northern Bank

The Dodder Valley Park is designated as a proposed Natural Heritage Area from Firhouse Bridge to Oldbawn Bridge due to evidence of species including:

- Early purple orchid along with a diversity of other plant species;
- Forty-eight bird species including Little Grebe, Kingfisher, Dipper and Grey Wagtail;
- Active Otter holts;
- Badgers;
- Bat roosts,
- Habitats included dry calcareous grasslands, dry meadows and woodlands;
- Tufa forming calcareous springs along the northern bank of the Dodder.

As such, the design of the route will have to be sympathetic to these ecological sensitivities

(2) Crossing of Old Bawn Road

Well established cycling facilities currently exist along Old Bawn Road. Toucan crossings should be provided across Old Bawn Road either side of the bridge over the River Dodder. This will require amendments to the current traffic signal cycle to create an

additional phase for the crossing. As in the case of other public road crossings proposed as part of the Dodder Greenway Scheme, the balance of priority should heavily favour the greenway route.

Links and signage should be provided to the hinterland around Old Bawn Road and towards Tallaght.

Exit onto Old Bawn Road

Old Bawn Road

5.10 Old Bawn Road to Kiltipper Woods Cafe (Section 10)

It is not considered feasible to follow the river on the east bank or follow Bohernabreena Road for the following reasons:

1) There is a large HGV content on Bohernabreena Road; and
2) There are large tracts of privately owned land abutting the river corridor.

The Greenway Route should continue along the northern bank of the river as far as Kiltipper Woods Cafe. This will require land acquisition from a small number of private landowners along Kiltipper Road.

There is an area of high ecological sensitivity along the riverbank, where habitats include both wet grasslands, riparian woodland and areas of caclareous grassland. Tufa forming springs are present on the northern bank of the river and continue through the length of Kiltipper Park to the north of Fort bridge. This area should be avoided by the route deviating from the riverbank to run alongside the pitch and putt club boundary along this section.

SDCC Owned Lands

Thomas Davis GAA Club

Alternative Route along Kiltipper Road

If the land acquisition process causes delays, an alternative route along Kiltipper Road might be considered in the short term. Kiltipper Road is too narrow to accommodate two traffic lanes and a 4m pedestrian and cycle corridor. However, it is a quiet traffic calmed road, with a speed limit of 50kph, which is suitable for on-road cycling in a shared environment.

Kiltipper Road

Kiltipper Road at Glenville Pitch & Putt

The route would turn off Kiltipper Road along the private avenue to Kiltipper Woods Care Centre, There is an agreement already in place for hillwalkers to use this private avenue and the owners of the complex should be consulted to confirm that this could be extended to permit cyclists to use the route. Of course, it would generate additional custom for the café within the complex, which would provide an attractive stopping point for tourists along the route.

Private Avenue through Kiltipper Woods

Dublin Mountain Way Signage

5.11 Kiltipper Woods Cafe to Bohernabreena Reservoirs (Section 11)

The Greenway Route will continue along the existing Dublin Mountain Way Route through Kiltipper Park from Kiltipper Cafe. The greenway will cross the R114 and continue along a new path for a short section as far as the entrance to the Bohernabreena Reservoirs.

(1) Kiltipper Woods Cafe

There is an existing well surfaced pathway route along the Dublin Mountain Way from Kiltipper Cafe Car Park as far as the entrance to Kiltipper Park.

Access to Dublin Way at Kiltipper Cafe Dublin Mountain Way at Kiltipper Cafe

(2) Kiltipper Park

The first significant obstacle to this section of the route is the bicycle barrier, as shown in the picture below. It is possible to navigate this gate but it requires the cyclist to dismount the bicycle. This gate should to be removed and replaced with an alternative method of deterring access for vehicles and motorcyclists.

A good quality, 4m wide route currently exists along the Dublin Mountain Way in Kiltipper Park. The route has sufficient width to accommodate the proposed greenway, is well surfaced and the well maintained. The provision of public lighting through the park should be considered, although this westernmost section of the route is likely to be used by recreational cyclists and strollers only and public lighting may be an unnecessary intrusion into the local environment.

Bicycle Barrier at Kiltipper Park

Existing Route through Kiltipper Park

(3) R114 Bohernabreena Road

There is another bicycle barrier obstructing the western end of the route through Kiltipper Park. This gate should to be removed and replaced with an alternative method of deterring access for vehicles and motorcyclists.

The route will cross the road at the R114 at the western access to Kiltipper Park. A zebra crossing should suffice at this location, as the crossing would be very visible on approach from the west and the existing sharp bends on the R114 at Fort Bridge immediately to the east control traffic speeds along that approach.

The greenway should then continue along the path that is currently being improved as part of flood defence works in the vicinity of Fort Bridge.

Bicycle Barrier at exit to Kiltipper Park

Existing Path along the R114

The route is generally adequate as far as the boundary of the private dwelling located at the entrance to Bohernabreena Reservoirs. It will be necessary to acquire a strip of land from or a right of way across Dublin City Council which owns this property to provide a continuous route along the south side of the R114.

R114

Entrance to Bohernabreena Reservoirs

5.12 Bohernabreena Reservoirs (Section 12)

The existing Dublin Mountain Way route through the Bohernabreena reservoirs complex which is within the Glenasmole Valley Special Area of Conservation has been assessed as part of this study. The existing route consists of a 4m wide, well surfaced shared use road that is open to the public for walking and cycling.

The road to the lower reservoir is approximately 1.3km long. Just prior to arriving at the reservoir there is a very steep but short hill, approximately 100m that might require cyclists to dismount their bicycle. It is recommended that Dublin City Council considers the development of a better graded cycle route up to the reservoirs in the lands alongside the road, although this may prove contentious, given the environmental designation of the area.

It is a further 1km to the upper reservoir. At the upper reservoir the Dublin Mountain Way continues to the east, ultimately as far as Shankill. There are links from Bohernabreena to Military Road at Featherbed and Glencree / Sally Gap / Enniskerry in the Wicklow Mountains and a walking route to Kippure Mountain.

Route through Bohernabreena Reservoirs

Bohernabreena Reservoirs

6. Developing the Greenway Concept

The European Greenway Association sets out a range of functions and criteria to which Greenways should aspire. In summary, as well as the provision of a safe and sustainable transport route for non-motorized transport they include:

- The promotion of healthy lifestyles
- The promotion of eco-tourism and natural and cultural heritage
- Supporting the economic and social development of communities, including enterprise development.

As with any amenity provided for recreational as well as functional purposes the quality of materials and the character of the route is all important. In this context the amenity is the route corridor, in many places a series of linked green spaces, sometimes a continuous green corridor, elsewhere part of the surrounding built fabric, or towards the mountains, open countryside and uplands.

This section addresses how the Greenway Concept can be interpreted through the Dodder corridor across a range of criteria and dimensions.

6.1 Materials and Furniture

It would be important at an early stage to set out a design manual for the Dodder Greenway. The proposed route may be one of a number of Greenways and/or cycleways, forming a network of non-motorized transportation routes throughout the city, or indeed regionally or nationally. It would therefore be important to consider a coordinated response to a family of materials and furniture/features as well as to allow flexibility for the distinctiveness of each route to be expressed in design responses to, or particular places along, that route.

Key components in the design of route would consist of:

- Surfacing/Paving
- Kerbing
- Local Details and Variants
- Signage (directional)
- Furniture
- Lighting
- Planting

6.1.1 Surfacing/Paving

As indicated in Section 4 General Requirements, paving should be simple, cost effective providing a smooth, high quality riding surface. Although fine cold asphalt could be perceived as utilitarian, an easily maintained simple material is more desirable than long stretches of higher quality finishes that may not be maintainable in an optimum condition. Where the environment demands a higher quality aesthetic response, this can be in the form of permanent elements of detail rather than extensive upgrading of the surface, see 6.1.3. below.

Natural and Coloured asphalt/applied aggregate.

6.1.2 Kerbing

As with the surfacing/paving a simple utilitarian pcc kerb construction is appropriate. In the parkland environment of much of the route, kerbs will be encroached on by adjacent grassed areas and thus primarily invisible. However local details and material variants may be appropriate in a more urban setting.

6.1.3 Local Details and Variants

The proposed Greenway passes through many parts of Dublin with their own distinctive style and character. From Docklands and the maritime industrial heritage and contemporary regeneration around Grand Canal Dock to some of the villages of south Dublin to the mountains there are opportunities to vary the core palette of materials to reflect and refer to the surrounding character – on arrival, crossing a road, gateway features etc. This can be achieved through details in the paving or a complete change in the materials so the cycleway passes unobtrusively through the surrounding place. Typical variations could include threshold paving, drainage details, crossings and kerbing.

Cobbled rumble strips and details marking transition points in paved areas

6.1.4 Signage

See Section 4.

6.1.5 Furniture

Furniture consists of seating, railings, bollards, bins etc.

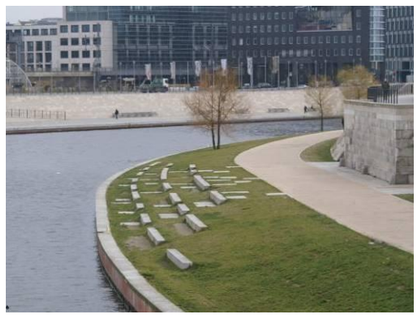
Seating

The route passes through some of the most beautiful parts of urban and sub-urban Dublin all linked by the continuous natural landscape of the river Dodder corridor. There are many places where it would be appropriate to sit and enjoy a tranquil view or a thunderous weir. In many respects the Greenway is a linear park and is currently used as such. In developing the Greenway this function will be enhanced and additional users will be generated.

Opportunities to provide seating should be looked for to add value and enhance use and the users experience. Seating should be considered in terms of formal seating areas through the provision of benches and picnic areas and informal seating through the use of logs, rocks, level changes or steps, and similar robust approaches. In general formal seating should be provided in more trafficked, supervised or managed areas along the greenway such as parks or urban villages, and more natural seating provided in more informal unsupervised and less used areas.

When preparing a Design Manual a limited palette with a consistent style should be selected.


Formal Seating provision




Informal robust waterside seating – Berlin and Dublin Docklands


Natural robust seating

Bollards

In general bollards should be used sparingly. Other street furniture can often be employed to perform the same functions and thus avoid clutter.


Seating used as bollards to separate corridors and low key discrete bollards - Dublin Docklands

6.1.6 Planting

In general the propose cycle route will involve the widening of existing paths within grassed areas. Soft landscape inputs will involve reinstatement of grassy margins and proactive landscape management as described in 6.3 below to maintain a safe and inviting route. Whilst individual locations may require more soft landscape interventions, in general planting will be confined to individual tree lines or avenues highlighting the route and providing shelter and ecological mitigation planting. Shrub planting which may generate issues of safety and increased maintenance will, in general, be avoided.

Other

In some locations opportunities exist to repair existing or create a new built feature within the streetscape to accommodate the greenway e.g. a level change, a bridge landing or approach, screening / fencing etc.

6.2 Tourism and Amenity

6.2.1 The Tourism Resource

The proposed Greenway from Dublin Docklands along the river Dodder to the mountains at Bohernabreena provides a unique cycling link between Dublin's Dockland heartland through many of its southside Victorian, Edwardian and 20th Century suburbs to the new suburb of Tallaght in south west Dublin and ultimately the start of the Dublin and Wicklow Mountains at the Bohernabreena Reservoir, and the Dublin Mountain Way.

As a commuter cycling route, and a Greenway, it encompasses a journey from sea to source along one of Dublin's historic rivers, almost entirely off road and almost entirely through public parkland and, near the end, south Dublin countryside and mountain landscapes. In this regard as well as offering an interesting and enjoyable commute to daily users, it also offers a distinctive new experience of Dublin to visitors and residents alike. The new corridor will encompass:

- Rich habitat and ecological experiences
- Some of the distinctive villages of Dublin along or adjacent to the corridor – Ballsbridge, Donnybrook, Clonskeagh, Dartry, Rathfarnham, Terenure, Templeogue, Tallaght.
- Possible angling opportunities
- Iconic landmarks of Dublin – Grand Canal Dock, Square and Bord Gais Energy Theatre, Aviva Stadium, Herbert Park/RDS, Milltown Weir & Viaduct, Bushy Park, Rathfarnham Castle, Firhouse Weir, Kiltipper Woods and Bohernabreena.

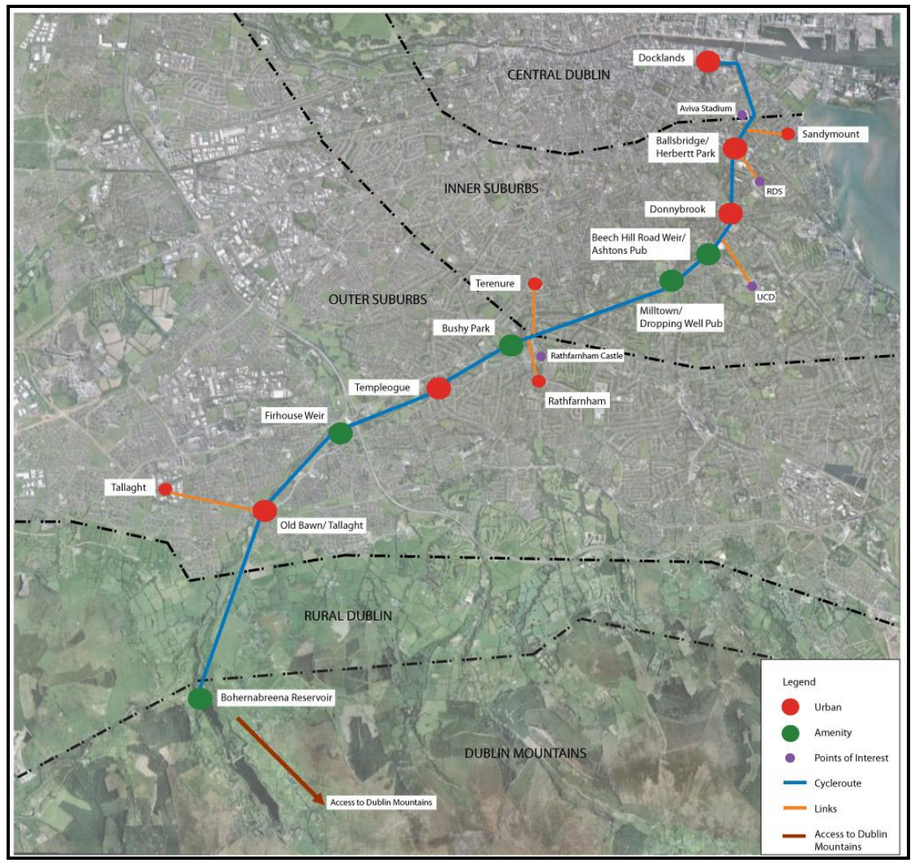


Diagram interpreting the core of the Greenway corridor and points of interest

The proposed route along the Dodder provides additional access to a significant residential population and range of potential attractions, points of interest, hostelries, restaurants, shops and retailers, accommodation and possibly arts and crafts manufacturers / outlets within a 500m corridor either side of the river. Clearly any additional draw created by the new Greenway to local visitors or to those from abroad will support existing enterprises and jobs along the route as well as potentially generate new enterprises and jobs.

For example the Taff Trail in South Wales linking Cardiff City with Brecon in the Brecon Beacons some 88km inland along the Taff river attracts an estimated 628,000 visits annually generating an additional spend locally of £21M Stg. Although the route is three times longer, more rural by comparison with the Dodder, and primarily recreational, Dublin is also a much larger city with a strong tourism destination value in itself. Parts of the Danube Cycleway in Austria generate millions of tourist trips per annum.

It is recommended that the "Trail" nature of the tourism product be evaluated further and partner agencies identified for additional support. Different trail types or themes could be evaluated including "Dodder food/drink trail", "Dodder craft trail", "Dodder nature trail", "Industrial Dodder trail", "Dodder Castles trail", etc., however it is likely that the availability of such an attractive off-road amenity in itself would add significant value to the growing and discerning green and health–aware tourist visitor.

6.2.2 Interpretation

Whilst a general design manual will address directional and regulatory signage, an interpretation and information signage strategy would also be required to maximize the benefit of the route.

Early consideration should be given to evaluating how much of this should be installed site signage and how the use of WiFi and digital throughout the route could provide a much more comprehensive source of data and indeed could be an attractive added value in itself to the corridor. The potential for sponsorship of WiFi provision should also be evaluated.

Where the route passes through or near villages an information board should be displayed covering local history and local services. Such boards could also be sponsored by local businesses.

Directional signage, nature panels

6.3 Landscape Management and Security

The proposed cycleway alignment and related design issues are described in Sections 2-5 above, however, as described previously, the proposed Greenway is essentially a linear park through which the proposed enhanced cycleway will pass. International studies of public parks have highlighted a hierarchy of requirements for successful parks as follows:

- Safety and cleanliness is a core requirement.
- Quality soft and hard landscape
- Other attractions - sculpture, artwork, water features, performance spaces and views, play facilities, as well as more intimate areas.
- Additional amenities – fitness zones / equipment, adjacent café/retail areas

Whilst some of these are a function of the wider Greenway corridor there is undoubtedly a high functional and aesthetic requirement in both the design and construction stage and the long term management stage of the new facility.

There will therefore be an increased management requirement to ensure the success of the route. Success is measured in numbers of trips and this will include family outings with children, lone male or female cyclists as well as cycling commuters. The route must be maintained clean, litter particularly glass removed regularly, vegetation cut back, grass verges trimmed so that the route looks and feels safe and cared for. This management regime will also need to be consistent throughout the route.

Where gateways and barriers have been erected in the past due to anti-social behaviour in poorly supervised green space, increased pedestrian and cycling use will enhance informal supervision and push anti-social behaviour elsewhere. CCTV will assist in this process.

Landscape management will therefore need to focus on the following:

- Litter removal
- Shrub and bushes intruding on the route and creating “unsafe” areas
- Maintenance of grass verges 1-2m each side of the paved surface.
- Creative landscape management to open of views of the river or other built, natural amenities to enhance the quality of the trip, whilst having regard to ecological issues.
- Control of alien and invasive vegetation such as Japanese Knotweed and Himalayan Balsam

Uninviting, threatening landscapes of overgrown and encroaching vegetation along the proposed Greenway

Existing good management practices inviting the user along the proposed Greenway

6.4 Sustainability

The proposed Greenway is an indicator of more sustainable lifestyles and will reflect best practice in sustainable design, long-life materials, minimising negative ecological impacts and where feasible enhancing the local ecology. Section 4. highlighted a number of areas where the sustainable agenda could be developed further.

Development of small scale Hydroelectric Schemes:

Up to 45 mills once drew their energy from the Dodder’s fast flowing waters to power their operations. A number of significant weirs remain including that at Firhouse, 80m long and 10m high. The potential to generate sufficient electricity to power the Greenway lighting and other electric amenities (if not a surplus) should be investigated in order to create a carbon neutral route during its life. The feasibility of such an initiative and potential partnership with Sustainable Energy Ireland should be investigated.

Small hydro-electric power stations on the Bandon River in Cork and in Austria

Educational and interpretive water mill feature in a park in Portugal.

Sustainable Urban Drainage

Permeable paving and/or attenuation areas should be considered as part of design development and the design manual.

Attractive soft drainage detail

6.5 Site Specific Objectives

6.5.1 Ballsbridge village, Herbert Park Hotel and environs of river.

Whilst a local area plan may be developed for the wider village of Ballsbridge which could inform the design of elements of the route and Greenway corridor as it passes through the village, there is scope within the Greenway project to develop the potential of the river corridor and banks south and west of the bridge. Opportunities her include:

- Resolution of route alignment options
- Opening up safe access to the banks from adjacent roads through use of railings and decked areas amongst the trees – creating riverside lounge areas and bringing the park to the centre of the village.
- Provision of bicycle parking
- Incorporation of any additional crossings required.
- Refurbishment and renovation of 1943 toilet block as café/tea kiosk

View south from bridge to unused riverside banks and unused 1943 public toilet

Aerial View

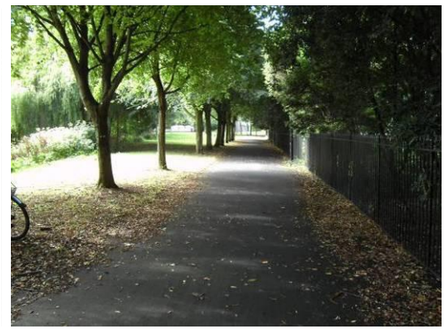
The Thames at Richmond

Killiney Hill kiosk cafe

6.5.2 Herbert Park – Eastern Boundary

As described in section 5 above there is a need to improve the route through this section and coupled with improvement works to the river bank / wall, this creates an opportunity to reimagine the relationship between Herbert Park and the river, currently difficult to perceive. Clearnce of vegetation and opening up of views and improved access/proxiunmity to the water would enhance the park and the Greenway through it.

Aerial View with Herbert Park corridor highlighted.



Current railed footpath between Herbert Park and the Dodder

6.5.3 Beech Hill Weir and Environs at Clonskeagh

Beech Hill Weir looking from northwest side of river

Aerial View

This location on the approaches to Ashton's pub along the river, arrives suddenly at a beautiful, partly ruined, romantic weir. The location suggests a sitting area and some interpretation, including reference to the local ecology. The relationship with an amenity such as the pub and the potential to engage with the redevelopment of the former Smurfit paper mill site, and its own weir and dam, provides a unique opportunity to create a distinctive place or node along the route, interpreting its historic functions.

6.5.4 Viaduct at Milltown to Weir beside Dropping Well Pub and adjacent Park

The route east of Classon's Bridge - Looking under Classon's Bridge

The resident Rhinocerasus adjacent the Dropping Well pub! And the Weir at Milltown

The Dropping Well Pub overlooking the river and extensive flood damage

Extract from Google Earth

At Milltown the combined assets of the river, weir and 19th century feature viaduct, an established public house and restaurant on the river itself (quite unique along the corridor), the nearby Luas stop and golf driving range, and problematic issues of flooding, parking and access through Classon's Bridge and the need for a new bridge south and wst across the river, provide the potential for a reimagining this location as a leisure node / stop-off point along the cycle route, with enhanced amenities within the park and adjacent services from the pub/restaurant.

6.5.5 Bushy Park/Dodder Corridor Reflecting Park Masterplan Concepts

Routing the cycleway along the existing eastern boundary wall and walk of Bushy Park requires widening and the provision of a bridge. These proposals complement recent masterplanning for the park which proposes the provision of a bridge and the creation of openings in the boundary wall of the park, these openings would be important for enhancing the sense of safety along this poorly supervised route. Such complementary works could be delivered by the Greenway project in consultation with Dublin City Council.

6.5.6 Firhouse Weir Heritage Park and Greenway

Panorama of Firhouse Weir

Aerial Photograph

The Dodder Valley Linear park study and South Dublin County Council both propose the development of a Heritage and Visitor Centre at Firhouse weir. The proposed route runs along the south bank of the river with little impact in itself, however as part of a suite of points of interest along the Greenway the weir offers unique opportunities. These include:

- The development of seating and viewing points.
- The potential for electricity generation through exploiting the height and scale of this weir, as part of the sustainability agenda for the Greenway.
- The preparation of a site specific masterplan coordinating locations and concepts for a visitor centre and other features

7. Planning / Environmental

7.1 Defining the Requirement for EIA

Legislation

The legal requirements for Environmental Impact Assessment of a road development are defined in the Roads Act (1993) as amended by the Planning and Development Acts (2000 – 2011) and the Roads Act (2007), and by Regulations made under the Roads Acts, The European Communities (Environmental Impact Assessment) (Amendment) Regulations 1989 – 2001 and the EC Directives 85/337/EC and 97/11/EC.

The proposed development falls under the requirements of the Roads Act as "Road" is defined within the act 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

A summary of the relevant provisions of the Roads Acts in relation to Environmental Impact Statements for a public road development is set out below.

Environmental Impact Statement (EIS) Section 50 of the Roads Act, 1993 as amended by Section 9(d)(i)(a) of the Roads Act 2007 states:

"*A road authority or the Authority shall prepare a statement of the likely effects on the environment ('environmental impact statement') of any proposed road development consisting of...*

(III.) Any prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road."

The prescribed type of road development as defined in S.I. No. 119 of 1994 paragraph 8, is defined for the purpose of subsection (1) (a) (iii) of section 50 of the acts as follows:

"(c) Where a road authority considers that any proposed road development ...consisting of the construction of a public road or the improvement of an existing public road would be likely to have significant effects on the environment, it shall inform the Board in writing and where the board concurs with the road authority it shall give a direction to the road authority..."

Furthermore, S.I. No 119, 1994 was amended by the insertion of section (d) from Section 14, Paragraph (a) of the European Communities (Environmental Impact Assessment) (Amendment) Regulations 1999 with the following:

"(d) Where a proposed road development ... consisting of the construction of a proposed public road or the improvement of an existing public road would be located on:

(i) a special area of conservation,

(ii) a site notified in accordance with Regulation 4 of the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997),

(iii) an area classified pursuant to paragraph (1) of (2) of article 4 of Council Directive No. 79/409/EEC of 2 April, 1979, on the conservation of wild birds (O.J. No. L 103, 25 April, 1979),

(iv) a site where consultation has been initiated in accordance with article 5 of Council Directive 92/43/EEC of 21 May, 1992, on the conservation of natural habitats and of wild fauna and flora (O.J. No. L 206, 22 July, 1992),

(v) land established or recognised as a nature reserve within the meaning of section 15 or 16 of the Wildlife Act, 1976 (No. 39 of 1976)

The road authority concerned shall decide whether the proposed road development would or would not be likely to have significant effects on the environment. "

Where a development is sub-threshold, the decision as to the requirement for EIA must be decided on a case by case basis. Article 27 of the Third Schedule of S.I. No. 93 of 1999 and Schedule 7 of the Planning and Development Regulations 2001 (S.I. No. 600 of 2001) provides '*criteria for determining whether a development would or would not be likely to have significant effects on the environment*'. These are copied below:

1. *Characteristics of proposed development*

   The characteristics of proposed development, in particular:

   - *the size of the proposed development;*
   - *the cumulation with other proposed development,*
   - *the use of natural resources,*
   - *the production of waste,*
   - *pollution and nuisances,*
   - *the risk of accidents, having regard to substances or technologies used.*

2. *Location of proposed development*

   The environmental sensitivity of geographical areas likely to be affected by proposed development, having regard in particular to:

   - *the existing land use,*
   - *the relative abundance, quality and regenerative capacity of natural resources in the area,*
   - *the absorption capacity of the natural environment, paying particular attention to the following areas:*
     - *a. wetlands,*
     - *b. coastal zones,*
     - *c. mountain and forest areas,*
     - *d. nature reserves and parks,*
     - *e. areas classified or protected under legislation, including special protection areas designated pursuant to Directives 79/409/EEC and 92/43/EEC,*
     - *f. areas in which the environmental quality standards laid down in legislation of the EU have already been exceeded,*
     - *g. densely populated areas,*
     - *h. landscapes of historical, cultural or archaeological significance.*

3. *Characteristics of potential impacts*

   The potential significant effects of proposed development in relation to criteria set out under paragraphs 1 and 2 above, and having regard in particular to:

- *the extent of the impact (geographical area and size of the affected population),*
- *the transfrontier nature of the impact,*
- *the magnitude and complexity of the impact,*
- *the probability of the impact,*
- *the duration, frequency and reversibility of the impact.*

The proposed scheme does not register on Schedule 5 as a project automatically requiring EIA. It does however lie alongside the River Dodder which is an important ecological corridor. In addition the river is sourced in the Glensamole Valley SAC and flows into the River Liffey which flows into Dublin Bay SAC/SPA. The route additionally crosses though the Dodder River Valley proposed Natural Heritage Area. As these sites are specifically referenced under Criteria 2 of Schedule 7 it is important that it is determined whether or not EIA is required.

7.2 Guidance and Methodology

The following documents were reviewed for the purpose of this assessment:

- European Commission *Guidance on EIA Screening (2001);* and
- Department of the Environment, Heritage and Local Government *Guidance for Consent Authorities regarding sub-threshold Development* (2003).

The first two stages in the EIA process are 'Screening' and 'Scoping'. Screening is that part of the EIA process which determines whether an EIA is required for a particular project; Scoping is the activity of deciding on matters to be investigated as part of the EIA. The EC Guidance on EIA Screening highlights that these two can overlap as a preliminary assessment of the environmental issues may be undertaken to assist in the screening decision.

Therefore, in order to determine whether or not this project requires EIA, a preliminary assessment of the topics has been carried out to make this determination i.e. a Screening Assessment, and is outlined below.

7.3 Screening Assessment on Aspects of the Environment

7.3.1 Air Quality and Climate

The River Dodder Greenway involves the design and construction of a high quality cycling and pedestrian trail from the mouth of the River Dodder at Grand Canal Dock to the mountains at Glensamole Valley and is principally along the existing pathways through the River Dodder corridor. The objective of the project is to increase the number of cyclist and pedestrian journeys throughout the route. At operation stage, it is therefore considered that there will be no impact on air quality or climate.

Similarly, it is considered that the level of construction traffic required for a project of this scale will have no appreciable impact on the local air quality or climate nor will a construction project of this scale result in any significant generation of dust.

7.3.2 Noise and Vibration

At operation stage, an increase in the number of cyclists or pedestrians will have negligible impact on noise or vibration in the local environment.

It is also considered that the level of construction traffic and construction operations required for a project of this scale will not result in the creation of any significant levels of noise or vibration. Furthermore, works will be carried out in compliance with BS5228: Part 1 and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001, which will ensure a controlled level of noise during construction phase.

7.3.3 Soils and Geology

Due to the scale of the project and the minimal volume of excavation required, it is not anticipated that there will be any significant impacts on soils and geology as a consequence of the construction or operation of the scheme.

7.3.4 Hydrology

The principal potential impacts to surface water are associated with discharges to the receiving watercourses – in this case the River Dodder.

It is anticipated that there will be no impact on hydrology or water quality during the operational phase of the Greenway

During the construction stage, there is potential for pollution of the river to occur as a result of sediment loading arising from surface water run-off or spills on site. It is considered that the enforcement of industry best practice pollution prevention measures will prevent the occurrence of a pollution event (for example CIRIA Guideline Document C532 *Control of Water Pollution from Construction Sites* and *C648 Control of water pollution from linear construction projects).* As such, no the proposed scheme will not adversely affect hydrology.

7.3.5 Hydrogeology

Hydro-geological assessment addresses the potential impact of the proposed project on groundwater features and groundwater flow regime.

As the cycleway will be largely on existing pathways and will require no significant cuttings for construction, it is concluded that there will be no appreciable impact on the groundwater regime during either the construction or operational stages.

7.3.6 Ecology (Flora and Fauna)

The site lies alongside and within the River Dodder corridor. The project will be designed to ensure that no permanent adverse impact occurs that would affect the Ecology of the site. In particular, habitats and species that are legally protected will be avoided as part of the design process and a suite of measures will be put in place to ensure that no adverse effects on habitats and species occur during the construction stage.

A Habitats Directive Screening for Appropriate Assessment is required (appended hereto) in order to address the potential impact on SACs and SPAs within and in proximity to the site. This Assessment addresses the potential impact the project may have on the Qualifying Features (Habitats and Species) of the designated sites and the conservation objectives for same.

The project generally follows existing walkways where widening will be required, and along these areas, the site is made up of a range of habitats included calcareous grasslands, riparian woodlands, tufa forming springs, wet grasslands, amenity lands, parklands and scrub. Species of importance include lamprey, salmon, otter, bats and kingfisher. The design should avoid areas where important habitats or species are present.

The aquatic habitat present will be crossed in several locations by footbridges. There will generally be no instream works (other than possible enhancements for the local ecology) and water quality control measures at construction will ensure there is no impact on the populations of fish through pollution or sedimentation.

As a consequence of the proximity of the existing walkways and cycle tracks to the River Dodder, the design will require consideration of habitats and species of importance along the route in particular to protection of otter and kingfisher habitat and water quality to ensure there

will be no impact on the availability of otter prey items. Similarly, it is considered that there will be no impact on Kingfisher nesting habitat (eroding banks into which the Kingfisher excavate the nest burrow) and there will be no loss of favoured hunting perches. Calcareous Grassland and Tufa forming calcareous springs will be avoided as part of the route design. The impact on trees in the riparian environment is in places unavoidable, however effort will be made to minimise the loss of trees throughout the route.

The ecological assessment at preliminary design stage should assess the potential impact on biodiversity, species and habitats as part of the planning process.

7.3.7 Archaeology, Architecture and Cultural Heritage

It is considered that the cycleway project will have no direct impact on any sites of historical and cultural importance and with the correct archaeological and architectural supervision, serve to enhance any sites present or in proximity through improved access and interpretation.

However, the design will of the project will nonetheless require an assessment of the impact on the archaeological and architectural resource, the identification of required mitigation measures and input to the interpretation strategy by a cultural heritage expert with archaeological & architectural conservation expertise.

7.3.8 Material Assets

A construction project may affect assets if it involves any of the following:

- Acquisition of land;
- Loss of land used by the community;
- Demolition of private property;
- Revaluation of or change in the development potential of adjoining lands / properties.

The proposed scheme does not require the demolition of any buildings but acquisition of land is required in sections of the scheme. The scheme will provide an asset to the community as a commuting and amenity resource. There will be limited impact on private property and hence the impact on Material Assets can be considered as minimal or positive with respect to the provision of improved amenities.

7.3.9 Landscape and Visual Amenity

The proposed Greenway is essentially an improvement to and existing route and will therefore not entail an appreciable adverse impact on the River Dodder landscape. The cycleway will not detract from the existing views of the river or views to or from any natural and built heritage features present. Landscaping design has the potential to create a positive landscape and visual impact through the provision improvement of the degraded sections of the corridor and of additional views and interpretation of river corridor and its natural and designed heritage.

During the construction stage, it is inevitable that the temporary presence of plant and machinery along the river corridor will detract from certain views and amenity. However this is considered to be only a slight temporary impact which is easily offset by the benefits accrued at the operational stage.

7.3.10 Socio-economic

The objective of any socio-economic assessment is to examine the potential impact of the construction and operation of the proposed development on the local community and business activities in the local area.

The opening of the greenway will have only beneficial impacts as it will attract people to the area thereby having a knock on economic effect with respect services in the form of commuting and recreational tourism, restaurants, cafes etc. Similarly, during construction, the influx of construction workers will benefit the local economy.

This is supported by the evidence gathered in support of similar projects; for example a survey by Mayo County Council concluded that a 145,000 persons used the Great Western Greenway (Westport – Achill) in Mayo in its first year of opening.

7.3.11 Resource and Waste Management

The key phase with regard to resource and waste management is the construction phase. As the cycleway is largely an improvement to an existing route, there will be no requirement for any significant cut or fill. It is therefore considered that there will not be a significant amount of waste generated from the construction of the scheme and efforts will be made to reuse material on site where possible thus minimising waste.

7.4 Screening Conclusion and Recommendation

When the criteria in Schedule 3 of the EC (EIA) (Amendment) Regulations 1999 and Schedule 7 of the Planning and Development Regulations (2001) are reviewed in the context of the above preliminary assessment of potential environmental impacts it is concluded that a full Environmental Impact Assessment is not required. While the cycleway is located alongside and within an area which is considered sensitive and does have a low absorption capacity with respect to potentially damaging development, in this instance the characteristics of the proposed development have been shown to be relatively benign and it has been concluded that the potential impacts will be negligible or positive.

However due to the potential impact on the biodiversity of the river corridor and the River Dodder Valley pNHA it is recommended that an Ecological Impact Assessment and Habitats Directive Screening for Appropriate Assessment be completed and submitted alongside any future planning application (The screening for the Appropriate Assessment has already been undertaken provisionally and is appended hereto). This conclusion is reflected in DEHLG *Guidance for Consent Authorities regarding sub-threshold Development* (2003) which quotes at Section 5.25 that 'where an assessment is considered necessary under the Habitats Directive, it does not automatically mean that an EIA is the necessary form of assessment'.
In addition due to the potential to impact on historical and cultural heritage resource the project will require the advice of and input from a cultural heritage expert with archaeological & architectural conservation expertise.

Section 179 of the Planning and Development Act 2000, and Part 8 of the Planning Regulations 2001 set out the process to be used for planning approval for local authority projects that are not subject to a requirement for a formal Environmental Impact Statement (EIS) under other relevant legislation. The planning approval process will involve a period of public consultation (including relevant statutory bodies) after which the Local Authorities will review any submissions made. The final decision to approve or reject the scheme will be made at a meeting of the elected members of the County Council.

It is therefore recommended that the scheme be advanced on the basis of three separate Part VIII Planning Applications (one in each of the three affected local authority jurisdictions). A single Environmental Impact Report (and relevant screening documents) should be undertaken for the entire route corridor to ensure that no accusation of project splitting can arise. The need for full EIA and the preparation of an EIS should be reviewed as the preliminary design progresses and the conclusions of this report amended as necessary if the design varies significantly from that contemplated herein.

8. Implementation

While it would be desirable to deliver the scheme, as proposed in this report, in full, as a single construction project, that may prove impracticable from a funding perspective. Therefore, three different implementation options have been investigated:

1) Do maximum: the scheme as proposed in this report, in full.
2) Do medium: A reasonable standard greenway with key pinch points addressed and lighting and cctv provided.
3) Do minimum: A minimal scheme to establish a continuous cycleable route along the Dodder corridor.

These are discussed in turn below.

8.1 Do Maximum Scheme

Subject to funding availability, it would be desirable to construct the entire scheme, which would consist of the following elements:

1) Resurfacing of Misery Hill and Hannover Quay
2) Construction of new opening bridges across Grand Canal Dock Locks.
3) Resurfacing of South Dock Road
4) Construction of a new ramp to Ringsend Road
5) Construction of a toucan crossing on Ringsend Road
6) Construction of new 2m wide bridge north of Ringsend Road Bridge
7) Construction of new 4m wide bridge south of Ringsend Road Bridge
8) Reconfiguration of Fitzwilliam Quay
9) Improvements to toucan crossing of Bath Avenue
10) Construction of new boardwalk from Bath Avenue to Lansdowne Road
11) Construction of new toucan crossing of Lansdowne Road
12) Construction of new underpass at the East Coast Railway
13) Construction of new bridge linking to the Oval from Beatty's Avenue
14) Construction of a toucan crossing at Ball's Bridge and reconfiguration of the junctions of Pembroke Road / Merrion Road with Shelbourne Road and Anglesea Road
15) Acquisition of lands from the Herbert Park complex
16) Upgrade of the route through Herbert Park
17) Resurfacing of Eglinton Terrace
18) Construction of a toucan crossing on Donnybrook Road and rearrangement of the footpaths on either side of the road
19) Resurfacing of Brookvale
20) Reconstruction of the Brookvale / Eglinton Road junction
21) Widening of the path from Brookvale to Ashtons
22) Regrading of the path from Ashtons to Clonskeagh Road
23) Two-way cycle track on west side of Clonskeagh Road
24) New bridge over Clonskeagh Weir - landmark feature bridge
25) New boardwalk along Beech Hill Road to Clonskeagh Road
26) Widening of route from Clonkseagh Road to Dundrum Road
27) Construction of new route north of river between Clonskeagh Road and Dundrum Road north of river
28) Improvements to toucan crossing of Dundrum Road
29) Lighting of Dundrum Road underpass
30) Widening of routes north and south of river between Dundrum Road and Lower Churchtown Road (Classon's Bridge)
31) New link from route north of river to Richmond Hill with toucan crossing of Milltown Road
32) Widening of route under north arch of Classon's Bridge by construction of a boardwalk and regrading of the ground.
33) Widening of route past Dropping Well
34) Widening and realignment of route through Dartry Park East
35) New bridge across Milltown Weir - landmark feature bridge
36) Land acquisition from Milltown Golf Club and construction of path along oxbow river alignment to Dartry Park West
37) New bridge to Dartry Park West
38) Widening / resurfacing of both paths through Dartry Park West
39) Regrading of approaches to Orwell Gardens Bridge
40) Improvements to route between Dartry Park West and Orwell Park
41) Improvements to route through Orwell Park
42) New bridge to Lower Dodder Road
43) Minor improvements and angling platform on Lower Dodder Road
44) Resurfacing of Lower Dodder Road cul de sac
45) New underpass under Rathfarnham Road
46) Widening of path through green area west of Rathfarnham Road
47) New bridge to Bushy Park
48) Improvements to route along Bushy Park to Riverside Cottages
49) New bridge from Riverside cottages to Kilvere
50) Widening of path around Kilvere
51) New bridge from Kilvere to north side of river
52) Land acquisition and construction of 4m wide path to Oldbridge Road
53) Boardwalk / structure at escarpment just east of Oldbridge Road
54) New 4m route through Ladyswell continuing behind Cheeverstown Centre
55) New bridge to rear of St. Brendan's complex
56) New link from Firhouse Weir to Dodder Valley Park
57) New link from Dodder Valley Park to rear of Victory Centre including bridge over river tributary
58) Improvements to path between Victory Centre and Old Bawn Road
59) Construction of new toucan crossing of Old Bawn Road
60) Acquisition of land and construction of new route from Old Bawn Road to Kiltipper Woods Cafe
61) Construction of new toucan crossing of Bohernabreena Road
62) Acquisition of land and construction of new 4m wide route to complete link to Bohernabreena.

Additionally, the scheme includes provision of public lighting and cctv along the entire route (except cctv not proposed at Beatty's Avenue or Lower Dodder Road, where passive supervision is available, or at Kiltipper Park at the extreme southwestern end of the route. The scheme also includes the removal of all kissing gates along the route.

8.2 Do Medium Scheme

The do medium scheme is sufficient to provide a reasonable standard greenway along the route of the River Dodder. The following compares the inclusions in the scheme to those in the Do Maximum scenario (omissions / alterations indicated by strikethrough).

~~1) Resurfacing of Misery Hill and Hannover Quay~~ Provision of link from Hannover Quay onto campshire
2) Construction of new opening bridges across Grand Canal Dock Locks.
3) Resurfacing of South Dock Road
4) Construction of a new ramp to Ringsend Road
5) Construction of a toucan crossing on Ringsend Road
~~6) Construction of new 2m wide bridge north of Ringsend Road Bridge~~

7) Construction of new 4m wide bridge south of Ringsend Road Bridge
8) Reconfiguration of Fitzwilliam Quay
9) Improvements to toucan crossing of Bath Avenue
10) Construction of new boardwalk from Bath Avenue to Lansdowne Road
11) Construction of new toucan crossing of Lansdowne Road
12) Construction of new underpass at the East Coast Railway
~~13) Construction of new bridge linking to the Oval from Beatty's Avenue~~
14) Construction of a toucan crossing at Ball's Bridge and reconfiguration of the junctions of Pembroke Road / Merrion Road with Shelbourne Road and Anglesea Road
15) Acquisition of lands from the Herbert Park complex
~~16) Upgrade of the route through Herbert Park~~
17) Resurfacing of Eglinton Terrace
18) Construction of a toucan crossing on Donnybrook Road and rearrangement of the footpaths on either side of the road
19) Resurfacing of Brookvale
20) Reconstruction of the Brookvale / Eglinton Road junction
21) Widening of the path from Brookvale to Ashtons
22) Regrading of the path from Ashtons to Clonskeagh Road
23) Two-way cycle track on west side of Clonskeagh Road
~~24) New bridge over Clonskeagh Weir - landmark feature bridge~~
~~25) New boardwalk along Beech Hill Road to Clonskeagh Road~~
26) Widening of route from Clonkseagh Road to Dundrum Road
~~27) Construction of new route north of river between Clonskeagh Road and Dundrum Road north of river~~
~~28) Improvements to toucan crossing of Dundrum Road~~
~~29) Lighting of Dundrum Road underpass~~
~~30) Widening of routes north and south of river between Dundrum Road and Lower Churchtown Road (Classon's Bridge)~~ Widening of route south of river between Dundrum Road and Lower Churchtown Road (Classon's Bridge)
31) New link from route north of river to Richmond Hill with toucan crossing of Milltown Road
32) Widening of route under north arch of Classon's Bridge by construction of a boardwalk and regrading of the ground.
33) Widening of route past Dropping Well
34) Widening and realignment of route through Dartry Park East
35) New bridge across Milltown Weir - ~~landmark~~ feature bridge
36) Land acquisition from Milltown Golf Club and construction of path along oxbow river alignment to Dartry Park West
37) New bridge to Dartry Park West
38) Widening / resurfacing of ~~both~~ path~~s~~ along river through Dartry Park West
39) Regrading of approaches to Orwell Gardens Bridge
40) Improvements to route between Dartry Park West and Orwell Park
41) Improvements to route through Orwell Park
42) New bridge to Lower Dodder Road
43) Minor improvements and angling platform on Lower Dodder Road
44) Resurfacing of Lower Dodder Road cul de sac
45) ~~New underpass under Rathfarnham Road~~ Construction of new toucan crossing and rearrangement of signal staging at Rathfarnham Road Crossing
46) Widening of path through green area west of Rathfarnham Road
47) New bridge to Bushy Park
48) Improvements to route along Bushy Park to Riverside Cottages
49) New bridge from Riverside cottages to Kilvere
50) Widening of path around Kilvere
51) New bridge from Kilvere to north side of river
52) Land acquisition and construction of 4m wide path to Oldbridge Road
53) Boardwalk / structure at escarpment just east of Oldbridge Road
54) New 4m route through Ladyswell continuing behind Cheeverstown Centre
55) New bridge to rear of St. Brendan's complex
56) New link from Firhouse Weir to Dodder Valley Park
57) New link from Dodder Valley Park to rear of Victory Centre including bridge over river tributary
58) Improvements to path between Victory Centre and Old Bawn Road
59) Construction of new toucan crossing of Old Bawn Road
60) Acquisition of land and construction of new route from Old Bawn Road to Kiltipper Woods Cafe
61) Construction of new toucan crossing of Bohernabreena Road
62) Acquisition of land and construction of new 4m wide route to complete link to Bohernabreena.

The scheme includes public lighting and cctv as in the do maximum scheme, except for exclusion of cctv along Bushy Park and Herbert Park and along other sections where works are not proposed as part of the scheme.

8.3 Do Minimum Scheme

The do minimum scheme is sufficient to provide a passable cycleway along the route of the River Dodder. The following compares the inclusions in the scheme to those in the Do Maximum scenario (omissions / alterations indicated by strikethrough).

~~1) Resurfacing of Misery Hill and Hannover Quay~~ Provision of link from Hannover Quay onto campshire
2) Construction of new opening bridges across Grand Canal Dock Locks.
3) Resurfacing of South Dock Road
4) Construction of a new ramp to Ringsend Road
5) Construction of a toucan crossing on Ringsend Road
~~6) Construction of new 2m wide bridge north of Ringsend Road Bridge~~
7) Construction of new 4m wide bridge south of Ringsend Road Bridge
8) Reconfiguration of Fitzwilliam Quay
9) Improvements to toucan crossing of Bath Avenue
~~10) Construction of new boardwalk from Bath Avenue to Lansdowne Road~~ Reconfiguration of London Bridge and Lansdowne Road Bridge for shuttle operation for vehicular traffic and provision of 3m wide cycleway / footway on one side. Widening of path past Aviva Stadium to 4m.
11) Construction of new toucan crossing of Lansdowne Road
~~12) Construction of new underpass at the East Coast Railway~~ Retention of existing underpass as a pinchpoint along the route.
~~13) Construction of new bridge linking to the Oval from Beatty's Avenue~~
14) Construction of a toucan crossing at Ball's Bridge and reconfiguration of the junctions of Pembroke Road / Merrion Road with Shelbourne Road and Anglesea Road
15) Acquisition of lands from the Herbert Park complex
~~16) Upgrade of the route through Herbert Park~~
~~17) Resurfacing of Eglinton Terrace~~
18) Construction of a toucan crossing on Donnybrook Road and rearrangement of the footpaths on either side of the road
~~19) Resurfacing of Brookvale~~
20) Reconstruction of the Brookvale / Eglinton Road junction
21) Widening of the path from Brookvale to Ashtons
22) Regrading of the path from Ashtons to Clonskeagh Road
23) Two-way cycle track on west side of Clonskeagh Road
~~24) New bridge over Clonskeagh Weir - landmark feature bridge~~

~~25) New boardwalk along Beech Hill Road to Clonskeagh Road~~
26) ~~Widening of~~ Retention of existing route from Clonkseagh Road to Dundrum Road
~~27) Construction of new route north of river between Clonskeagh Road and Dundrum Road north of river~~
~~28) Improvements to toucan crossing of Dundrum Road~~
~~29) Lighting of Dundrum Road underpass~~
~~30) Widening of routes north and south of river between Dundrum Road and Lower Churchtown Road (Classon's Bridge)~~ Widening of route south of river between Dundrum Road and Lower Churchtown Road (Classon's Bridge)
~~31) New link from route north of river to Richmond Hill with toucan crossing of Milltown Road~~
32) Widening of route under north arch of Classon's Bridge by construction of a boardwalk and regrading of the ground.
33) Widening of route past Dropping Well
34) Widening and realignment of route through Dartry Park East
35) New bridge across Milltown Weir - ~~landmark~~ feature bridge
36) Land acquisition from Milltown Golf Club and construction of path along oxbow river alignment to Dartry Park West
37) New bridge to Dartry Park West
38) Widening / resurfacing of ~~both~~ path~~s~~ along river through Dartry Park West
39) Regrading of approaches to Orwell Gardens Bridge
40) Improvements to route between Dartry Park West and Orwell Park
41) Improvements to route through Orwell Park
42) New bridge to Lower Dodder Road
~~43) Minor improvements and angling platform on Lower Dodder Road~~
44) Resurfacing of Lower Dodder Road cul de sac
45) ~~New underpass under Rathfarnham Road~~ Construction of new toucan crossing and rearrangement of signal staging at Rathfarnham Road Crossing
46) Widening of path through green area west of Rathfarnham Road
47) New bridge to Bushy Park
48) Improvements to route along Bushy Park to Riverside Cottages
49) New bridge from Riverside cottages to Kilvere
~~50) Widening of path around Kilvere~~ Signage through Kilvere to Butterfield Avenue; provision of two-way cycletrack on north side of Butterfield Avenue / Firhouse Road; reconfiguration of Butterfield Avenue / Oldbridge Road junction to improve priority for cyclists; widening of path from Firhouse Road around St. Brendan's complex.
~~51) New bridge from Kilvere to north side of river~~
~~52) Land acquisition and construction of 4m wide path to Oldbridge Road~~
~~53) Boardwalk / structure at escarpment just east of Oldbridge Road~~
~~54) New 4m route through Ladyswell continuing behind Cheeverstown Centre~~
~~55) New bridge to rear of St. Brendan's complex~~
56) New link from Firhouse Weir to Dodder Valley Park
57) New link from Dodder Valley Park to rear of Victory Centre including bridge over river tributary
58) Improvements to path between Victory Centre and Old Bawn Road
59) Construction of new toucan crossing of Old Bawn Road
~~60) Acquisition of land and construction of new route from Old Bawn Road to Kiltipper Woods Cafe~~ Signage of route along Kiltipper Road (shared use) to Kiltipper Woods Cafe
61) Construction of new toucan crossing of Bohernabreena Road
62) Acquisition of land and construction of new 4m wide route to complete link to Bohernabreena.

The scheme includes public lighting and cctv as in the Do Medium scheme between Templeogue and the city centre only and excludes the provision of cctv where pathways already exist (e.g. between Clonskeagh Road and Lower Churchtown Road (Classon's Bridge).

9. Cost

The following parameters have been used in assessing the costs of the different scheme options:

- Planing / Resurfacing Works: €45,000 per km per m width;
- Landscaping Works: €25,000 per km per m width;
- Public Lighting: €130,000 per km;
- CCTV: €135,000 per km;
- Ducts: €55,000 per km;
- Boardwalk: €1,200 per sqm;
- Bridges: €1,000 - €3,500 per sqm;
- Underpasses: €3,500 - €6,000 per sqm.

The costs include 15% preliminaries and 10% contingency but exclude VAT and client costs (e.g. design and supervision). Land acquisition costs have also been excluded.

On the basis of the foregoing, the following costs have been estimated:

9.1 Do Maximum Scheme

The cost of the Do Maximum scheme has been estimated as €23.2m. Of this, structures costs total €10.1m and CCTV and public lighting costs total €5.5m. The breakdown by Local Authority jurisdiction is as follows:

- Dublin City Council: €12.3m
- Dún Laoghaire - Rathdown County Council: € 3.2m
- South Dublin County Council: € 7.7m

9.2 Do Medium Scheme

The cost of the Do Medium scheme has been estimated as €15.8m. Of this, structures costs total €6.9m and CCTV and public lighting costs total €5.2m. The breakdown by Local Authority jurisdiction is as follows:

- Dublin City Council: € 8.7m
- Dún Laoghaire - Rathdown County Council: € 0.2m
- South Dublin County Council: € 6.9m

9.3 Do Minimum Scheme

The cost of the Do Minimum scheme has been estimated as €8.33m. Of this, structures costs total €2.1m and CCTV and public lighting costs total €3.7m. The breakdown by Local Authority jurisdiction is as follows:

- Dublin City Council: € 5.7 m
- Dún Laoghaire - Rathdown County Council: € 0.03m
- South Dublin County Council: € 2.6 m

10. Conclusion and Recommendation

The conclusions of the Feasibility Study are as follows:

- It is feasible to develop a high quality greenway route along the River Dodder linking the Liffey at John Rogerson's Quay to the Bohernabreena Reservoirs at Glenasmole.
- The route is consistent with Planning Policy, including the emerging Cycle Network Plan for the Greater Dublin Area.
- The route should aspire to be on a par with the best in Europe and should include ancillary features for tourists and amenity users.
- The route should be considered as both:
  - A transportation corridor; and
  - A linear park

  along the River Dodder
- Consideration should be given to environmental enhancement measures along and within the river in the development of the route.
- The route may not require a full Environmental Impact Assessment and the preliminary design stage should proceed on the basis of three separate Part VIII Planning Applications being required (one in each of the affected local authority jurisdictions).
- The cost of implementing the scheme is €23.2m excluding client costs (design and supervision), land acquisition costs and VAT.

If funding availability precludes the full realisation of the scheme in the short term, two variant options have been suggested to either:

a) Establish a cycleable greenway, albeit not to the gold standard envisaged for the ultimate scheme; or
b) Establish a passable route for cyclists along the River Dodder corridor, following existing roads in some instances.

The costs of the above are €15.8m and €8.33m respectively, excluding client costs, land acquisition costs and VAT.

It is recommended that the National Transport Authority and the various affected local authorities continue to develop the River Dodder Greenway on the basis of a preferred option of the above, to be decided based on an overall assessment of the scheme in relation to various policy objectives and the availability of funding.