



Environmental Impact Assessment Report (EIAR)

Volume 3 Part 5 Appendices

In respect of
The Royal Canal Urban Greenway

On behalf of
Fingal County Council

October 2026

This Volume should be read in conjunction with the EIAR Main Document. This Volume (Part 5) contains Appendices associated with Chapter 14 (Traffic and Transport) and Chapter 15 (Material Assets: Waste Management) as follows:

Chapter 14 Traffic and Transport

Appendix 14.1: Demand Analysis

Appendix 14.2: Parking Survey

Chapter 15 Material Assets: Waste Management

Appendix 15.1 Site Specific Resource and Waste Management Plan

Royal Canal Urban Greenway

Environmental Impact Assessment Report

Appendix 14.1 Demand Analysis

October 2026



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1. Introduction

This technical notes aims to set out the proposed updated methodology for the demand analysis to be applied to the Royal Canal Urban Greenway.

2. Demand Analysis

2.1. Baseline and Assumptions Used

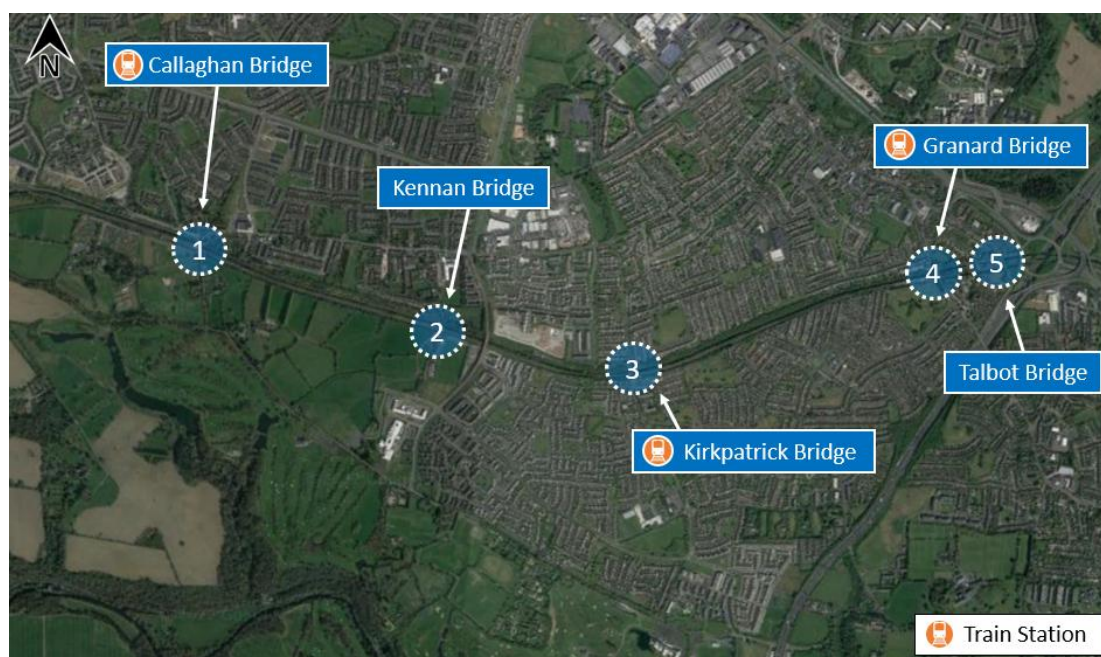
When seeking to predict future potential travel patterns for new schemes, it is useful to reference existing local travel characteristics within that area. Therefore, with the objective of establishing baseline local travel characteristics in the immediate environments of the proposed Royal Canal Urban Greenway scheme extents, reference has been made to the traffic survey data collected in March 2025, as well as the 2022 Census Data for Electoral Divisions in the Royal Canal Greenway catchment.

2.1.1. 2025 Traffic Survey Data

Pedestrian and cyclist counts were obtained from traffic surveys carried out on Tuesday 4th March 2025, by specialist survey company Tracsis. The surveys were conducted over a 12-hr period from 07:00 – 19:00 at 5 no. key nodes along the proposed route. Based on the pedestrian and cyclist counts conducted along the sites at the Royal Canal Urban Greenway, Table 2-1 below shows the existing daily flows for a weekday.

Table 2-1 2025 Recorded Weekday 12-Hour Pedestrian & Cyclist Flows

Site	Location	User	Pedestrians		Cyclists		Aggregated Two-way Flows	Average Pedestrians	Average Cyclists
		Direction	East	West	East	West			
1	Clonsilla Train Station/Callaghan Bridge		78	67	11	8	164	916	137
2	Kennan Bridge		99	105	15	11	230		
3	Kirkpatrick Bridge		1046	462	10	11	1508		
4	Granard Bridge		923	959	80	75	2045		
5	Talbot Bridge		421	418	243	222	1304		
Estimated Baseline Users								1053	


Figure 2-1 Location of 2025 Surveys along Royal Canal Route

Traffic surveys indicate that average flows across the sites establish an estimated baseline of 916 pedestrians and 137 cyclists along the route, resulting in a total weekday demand of 1,053 users under the “Do Nothing” scenario.

2.1.2. 2022 Census Data

As has been utilised within the *Sutton to Malahide Pedestrian and Cycle Scheme* within Fingal County Council, the SAPMAP tool (Small Area Population Map, an interactive census mapping application

developed by the Central Statistics Office (CSO) to provide access to Small Area Population Statistics (SAPS)) has been used to interrogate the findings of the 2022 Census. A total of 18 electoral divisions (ED) which could potentially use the proposed greenway for commuting were included in the analysis, the indicative boundaries of each of these electoral divisions are shown in Figure 2-2. The associated journey characteristics for each of these areas was then established.

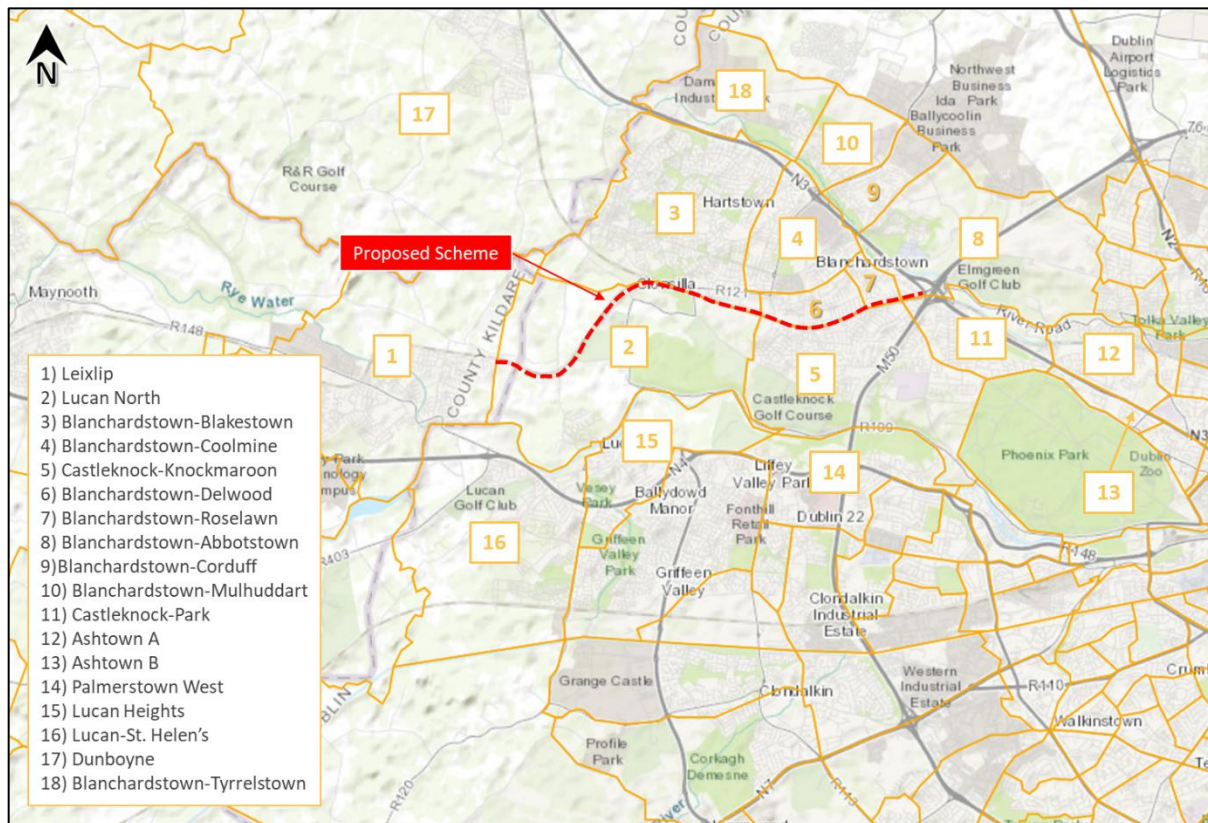


Figure 2-2: Studied Electoral Divisions Surrounding Scheme Extents

The distance from each ED centroid to the greenway was calculated to determine the likelihood of commuters from each ED using the greenway. It was assumed that the greater distance a route origin is away from the greenway, the less likely it is to use the greenway. A correlation between distance and the type of user i.e. walker or cyclist, was determined by inverting the origin centroid distance from the greenway to produce a reducing factor (RF). Anything less than 1km was left as a factor of 1.

The modal splits for each ED were extracted from the CSO 2022 commuting data, and the reducing factor for each ED applied.

2.1.3. Baseline Trips at Royal Canal Greenway

The modal split data retrieved for the electoral divisions was used, with RF applied, to determine a baseline figure for the number of pedestrian and cyclist commuters along the Royal Canal in a 'Do Nothing' scenario. The following daily average commuters (two-way trips) were estimated to be using the existing canal towpath.

- Pedestrians: 1109
- Cyclists: 255

The above figures would result in a total baseline demand of **1,364** users along the Royal Canal Greenway. The use of the CSO data, will provide a better baseline demand for the analyses, as the Traffic Survey data records the existing use of the towpath, and the CSO will represent the wider use of active travel facilities across the different electoral divisions, and the number of users at the area that will be inclined to use the route once built.

Having explored both methodologies to determine a baseline demand at the Royal Canal Greenway, the baseline data retrieved through the 2022 CSO Electoral Divisions is to be utilised in all further inputs for the purposes of the Proposed Development. The data considers a large catchment area, which has been appropriately adjusted and can be considered more representative of commuter behaviours.

2.1.4. Mode of Travel to School, College and Work

The initial analysis considered the mode of travel used by residents living in each of the above 18 electoral divisions, identified in the Census 2022, when travelling to school, college and work. A total of 123,933 people reside in the electoral divisions included in the analysis; though with the respective reduction factors applied to each electoral division's data the population catchment of the Royal Canal Greenway is considered to be approximately 76,230. Of these residents, the overall average principal mode of travel used across all the EDs is illustrated in Figure 2-3.

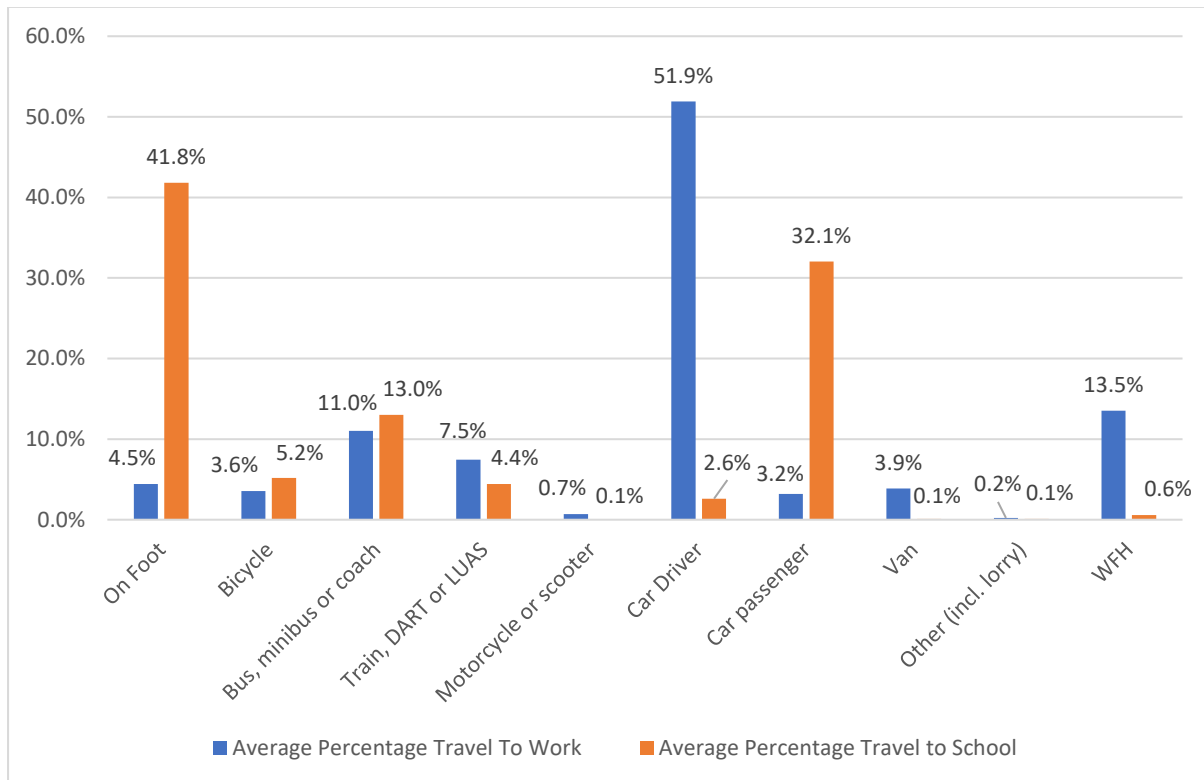


Figure 2-3: Modes of Travel: Electoral Divisions Studied

The results indicate that a large proportion of school children in the catchment area commute to school on foot, at an average of 41.8%. The next highest mode share for travel to school is recorded as car passengers, at 32.1%. The dominant mode share for travel to work amongst the EDs is by private vehicle at 51.9%, with active modes representing under 10% of the modal split.

The implementation of the Proposed Scheme has significant potential in influencing a mode shift to active modes in the greenway's catchment area and shifting further trips onto public transport modes.

In terms of public transport the study area has bus mode shares of approximately 12.0%. Though the overall study area mode share for Train, DART and Luas comes to 7.5% for those commuting to work, this is variable along the proposed route with some small areas showing a maximum of 14% for this public transport mode. Electoral divisions in close proximity to the rail stations (Clonsilla, Coolmine, Castleknock) predictably showed the highest uptake in heavy rail usage, with the increasing distance to the interchanges being inversely proportional to the likelihood of using these services to commute.

Electoral divisions with lower mode shares for public transport within the study area are likely a reflection of the limited public transport availability in those areas or the lack of connectivity to these public transport interchanges.

In summary the results indicate that despite the deficiencies in the pedestrian / cyclist infrastructure, a considerable portion of the existing population, particularly schoolchildren, in the areas surrounding the scheme commute to school by sustainable modes with 41.8% on foot and 17.4% by public transport.

2.1.5. Trips Recorded on Other Existing Walking/Cycling Routes

Literature Review & Case Studies

A comprehensive review of pedestrian and cyclist usage along similar greenways, i.e. walking/cycling routes, operating in Ireland as well as recent applications for greenway schemes and their methodologies in estimating demand was conducted to estimate the number of users that can be expected upon completion of the proposed scheme.

Table 2-2: Similar Walking/Cycling Routes for Comparison of Usage/Methodologies

Location	Characteristics
Great Western Greenway	Completed in 2010, recording up to 265,000 users annually
Waterford Greenway	Completed in 2017, recording 284,000 users in 2019
Baldoyle-Portmarnock Greenway	Completed, recording a total daily demand of 1,296 users in 2021
Royal Canal Greenway, Maynooth to Longford	Completed 130km route section in March 2021, recording 640,000 trips in 2021
Broadmeadow Way	Proposed between Malahide Demesne and Newbridge Demesne in Fingal County Council, using an additional future demand of 1,200
Sutton to Malahide Pedestrian and Cycle Scheme	Proposed in Fingal County Council, uses 2016 Census Electoral Divisions to determine future demand
Galway to Athlone National Cycleway Scheme	Proposed and forming part of EuroVelo 2 route as RCG, uses a series of growth rates to calculate low, central and high scenarios of demand

The Broadmeadow Way Environmental Impact Assessment Report (Clifton Scannell Emerson Associates Consulting Engineers), approved by An Bord Pleanála (Ref. PL06F.304624), was used as a reference as it comprises a detailed overview of Irish greenway schemes and their consequential impact. Table 2-3 below shows the greenways considered in order to determine a usage estimate for the Broadmeadow Way scheme.

Table 2-3: Greenways Considered for Broadmeadow Way Scheme

Location	Characteristics
(a) Cork City: Greenway along disused Passage West railway line between Blackrock and Mahon.	3km length; urban catchment; recreational route, and commuting route only during longer daylight times.
(b) Cork City: Blackrock/Mahon coastal greenway/amenity route	3km length; urban catchment; recreational route.
(c) Cork County: Passage West to Rochestown Greenway	5km length; urban catchment on both ends; recreational route and commuting route.
(d) Co. Mayo: Great Western Greenway between Mulranny-Newport.	18km length; scenic rural environment; recreational route, popular with cyclist-tourists, with commuter usage.
(e) Northern Ireland: Comber Greenway between Comber and centre of East Belfast.	7 miles length; urban catchment; recreational route, and commuting route only during longer daylight times.
(f) Northern Ireland: Lagan & Lough Cycleway along Lagan canal towpath between Union Locks in Lisburn and Stranmillis Weir in Belfast	11 miles length; scenic rural environment; recreational route.

Broadmeadow Way

The Broadmeadow Way EIAR (Clifton Scannell Emerson Associates Consulting Engineers, 2019) used the average daily trips retrieved from a number of similar Irish greenways in order to reach an estimated average usage of 1,200 trips/day in both directions. Further locality-based distinctions were made to determine the proportion of cyclists and pedestrians comprised within the estimated usage figure or commuting trips to recreational trips.

Royal Canal Greenway (Maynooth to Longford)

In March 2021, a 130km route section of the Royal Canal Greenway opened connecting Maynooth to Longford. Research conducted in December 2021, along the length of the greenway (Figure 2-4), ascertained that more than 640,000 trips were made on the greenway in the 9 months subsequent to its completion. Comparatively, the Great Western Greenway recorded 484,000 trips in its fifth year after opening.

The research undertaken by Tracsis for Waterways Ireland along the Royal Canal Greenway, sought to limit double counting between sites. As such, data for certain user types at a small number of Royal Canal Greenway sites have not been used in creating the aggregated route data set. Factors were also applied to the data to counter the percentage of return trips made as well as faulty counter devices.

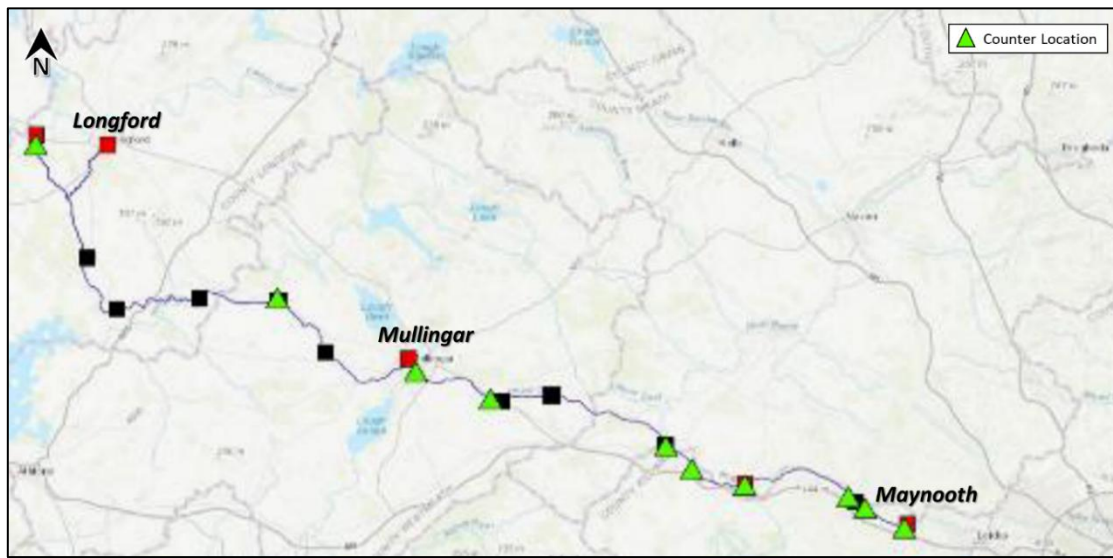


Figure 2-4: Counter Locations along Maynooth to Longford Royal Canal Greenway Scheme

Due to its proximity to the Proposed Development and its location in tying into the existing scheme, the recent findings from the Royal Canal Greenway are likely a representative forecast of the expected demand created by the proposed greenway. In addition, the results will represent post-Covid cycling uptake. The research found almost 60% of visitors live within 10km; for the proposed scheme, similar proportions of local users are expected due to the large number of residential developments bordering the scheme.

Extrapolating the findings from the Royal Canal Greenway, on average 1,750 trips per day occur along the route. Although the Maynooth to Longford scheme spans a distance of 130km, the proposed scheme (8.1km) is anticipated to attract a greater catchment due to the population density characteristics along the Proposed Development. This projected user demand would be in addition to the average demand found at the Maynooth to Longford scheme as both schemes will be tying in to one another.

As referenced above, the estimated average trips per day concluded within the Broadmeadow Way EIA was of 1,200 trips/day. As the Proposed Development is a key component in the EuroVelo

2 route spanning between Galway and Moscow, demand from local and international tourism at this route is expected to exceed that of Broadmeadow Way which primarily serves communities in Malahide and Donabate. Further, the route is anticipated to become an important sustainable travel commuting linkage for the large residential communities residing within the Royal Canal Greenway catchment. As such, an average demand in the region of between 1,200 – 1,750 trips per day would be deemed appropriate for the proposed scheme.

2.2. Demand Projection

2.2.1. Incremental Demand Increase

As per NTA recommendations, a 5.05% incremental yearly increase was applied to the baseline cyclist projected flow levels between 2022 and 2027. Table 2-4 shows the base data from ten eco-counters and the respective percentage increases recorded for each eco-counter which were used to determine the weighted average of **5.05%**.

Table 2-4: Analysis of Daily Cycling Volumes in DLR

Counter	Daily Avg. - Weekday	% Increase vs. 2022	Daily Avg. - Weekday	% Increase vs. 2022
	Current Year Avg.	Current Year	Rolling Year Avg.	Rolling Year Avg.
Grange Road Totem	246	3.90%	238	2.80%
Clonskeagh Totem	1600	1.90%	1621	3.00%
N11 Outbound (Montrose)	373	7.10%	412	45.70%
N11 Before UCD	578	2.20%	596	3.20%
DL @ Seapoint Beach	1172	4.20%	1068	-4.30%
Rock Road Totem Inbound	734	1.20%	705	-0.70%
Rock Road Park - New Counter	584	31.60%	533	30.30%
Wyattville Rd at Park Gate	101	30.90%	98	33.90%
Clontarf - Pebble Beach Car park	1293	0.50%	1161	-2.40%
Clontarf - James Larkin Rd	924	-7.20%	839	-9.50%
	Weighted Avg.	5.05%	Weighted Avg.	4.03%

The increase applied to Opening Year 2028 has been calculated in Section 2.2.4 Opening Year Growth Rates.

Subsequent to the opening year of 2028, the incremental annual increase that has been applied to cyclist flows is **1%**. The incremental annual increase in pedestrians is 1% for years prior and subsequent to the scheme's opening year.

2.2.2. Demand Uplift Owing to Scheme Opening

Cyclist Flows

In order to calculate the initial increase in cyclist volumes due to the subject scheme's opening, a number of similar greenways and their impacts were assessed. The base data for the schemes listed in Table 2-5 was retrieved to deduce a weighted average increase for cyclists. As such, a **80.4%** increase will be applied to cyclist flows to represent the uplift in cyclists directly attributed to the scheme opening.

Table 2-5: Weighted Average Increase for Cyclists

Scheme	Increase in Cyclists	Weighted % Increase
Great Western Greenway	236%	73.8%
Limerick Greenway	67%	6.6%
Weighted Average		80.4%

Pedestrian Flows

As was done for the cyclist flows, a weighted average increase was determined for pedestrians based on greenways projects. The percentage increase of **101.7%** will be applied to pedestrian volumes to represent the additional pedestrians which will be attracted to the scheme upon completion.

Table 2-6: Weighted Average Increase for Pedestrians

Scheme	Increase in Pedestrians	Weighted % Increase
Great Western Greenway	236%	48.4%
Limerick Greenway	67%	53.2%
Weighted Average		101.7%

2.2.3. Network Effect

Having calculated a proportional uplift in demand for the scheme users owing to the scheme opening, the scheme's impact in the connectivity of the Major Route was explored.

A comprehensive literature review was conducted to determine the potential increase in pedestrian and cyclist volumes as a result of the 'network effect'.

Cyclists

One paper assessed the network effect through modelling scenarios for cycling connectivity in Warsaw, including the existing network and two scenarios¹. For Scenario 1, incomplete links and nodes along primary roads were added to the network. Scenario 2 represented a full system of cycling links. Table 2-7 below shows an extract from the paper's findings which surmises that the addition of 100km of interconnected cycling links results in a 26.5% increase in the cycling mode share.

Table 2-7: Increase in Cyclists through Network Expansion

	Existing Cycling Routes	Scenario 1 Main Routes	Scenario 2 Full Network
Total length of cycle routes (km)	161	197	295
Number of junctions	239	256	461
Number of connections	38,464	50,526	136,067
Number of cyclists (current & predicted)	35,883	259,830	735,608
Share of Warsaw population (%)	2	14.5	41

Similar research has come to conclusions reiterating the exponential increase in cyclist volumes owing to network expansion. Table 2-8 below shows the main findings from these research works. It was ensured that only research which analyses the creation of interconnected networks on cycling flows was included, as opposed to the impact of isolated schemes or pop-up COVID-19 infrastructure.

Table 2-8: Literature Review of Studies Examining the 'Network Effect'

¹ *Sustainable Urban Transport—Why a Fast Investment in a Complete Cycling Network Is Most Profitable for a City*, Wałdykowski et. Al, December 2021

Paper	Location	Main Findings
Is cycle network expansion cost-effective? A health economic evaluation of cycling in Oslo ²	Oslo, Norway	100 km of new cycle network construction would increase the cycling share by 3%
Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them – Another Look ³	35 Large Cities, USA	For typical U.S. cities over 250,000 population, each additional mile of bike lanes per square mile is associated with a roughly one percent increase in the share of workers commuting by bicycle
The evaluation of large cycling infrastructure investments in Glasgow using crowdsourced cycle data ⁴	Glasgow, UK	For the years 2013–2016 results show that new infrastructure projects have had 12% to 18% increase in the monthly total volume of cycling trips
A Longitudinal Analysis Of The Effect Of Bicycle Facilities On Commute Mode Share ⁵	Minneapolis, USA	Locations were compared before and after cycling facilities were built, determining that a cycling mode share increase from 1.7% to 2.0% took place
If you build them, commuters will use them ⁶ (One of the first papers to examine correlations between aggregate levels of bicycle infrastructure and commute rates)	18 Cities, USA	One additional mile of combined bike paths and lanes per 100,000 residents is associated with a 0.069% increase in commuters cycling to work
Bikeability and the induced demand for cycling ⁷	Copenhagen, Denmark	Relative to the situation without bicycle lanes, the simulation suggests that the extensive Copenhagen bicycle lanes network has resulted in a 59% increase in bicycle trips and a 88% increase in the total distance travelled

Utilising the research above, a conservative ‘network effect’ for cyclists was deemed appropriate, equivalent to an increase of **2.15%**. This is derived through the use of the Warsaw-based paper, and adjusting the cycling mode share increase to be in line with the subject 8.1km scheme.

Pedestrians

The beneficial effects of the implementation of bicycle infrastructure on other mode choices can be evident through improved crossings at intersections or wider footpaths for pedestrians. However, research quantitatively assessing this impact for pedestrians or their increased likelihood to walk as a result of a newly built cycle scheme is scant.

² Is cycle network expansion cost-effective? A health economic evaluation of cycling in Oslo, Lamu et. Al, 2020

³ Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them, Commuters Will Use Them – Another Look, Dill et. Al, 2003

⁴ The evaluation of large cycling infrastructure investments in Glasgow using crowdsourced cycle data, Hong et. Al, March 2019

⁵ A Longitudinal Analysis Of The Effect Of Bicycle Facilities On Commute Mode Share, Barnes et. Al, July 2005

⁶ If you build them, commuters will use them, Nelson et. Al, 1997

⁷ Bikeability and the induced demand for cycling, Fosgerau et. Al, April 2023

A paper assessing the impact of the implementation of a number of cycle tracks in Washington surveyed cyclists and pedestrians on their Levels of Service post-scheme-implementation⁸. Of the respondents, 80% stated that they encountered fewer cyclists on the footpaths as a result of the scheme.

The *Walking and Cycling Index 2025* (NTA) has recorded that 72% of residents of the Dublin Metropolitan Area feel that they would walk or wheel more if there were wider pavements.

The mode choice of a sample size of over 100,000 trips was assessed in a recent study based on a number of variables, from weather, trip purpose, income, age, gender and distance to the nearest station amongst others⁹. It was found that the non-automobile mode share would increase by 3.0% in the whole sample and 9.9% in the frequent transit user sample. The paper defined a frequent transit user as anyone who used public transport at least once a week.

A diversion of 9.9% from the public transport mode share from the scheme's previously determined 18 census small areas was assumed. This would equate to 55 additional active travel users (pedestrians and cyclists) based on the small areas immediately adjacent to the proposed scheme. This would represent a conservative approach as the scheme is likely to attract trips from more than these small areas.

Having determined the additional cyclists projected for the central opening year scenario (41 cyclists), this was subtracted from the total additional number of active travel users owing to the 'network effect' to reach a percentage increase in pedestrian volumes when compared with the aforementioned baseline of 1109 pedestrians. As such, the resulting increase in pedestrian flows due to the 'network effect' is **1.3%**.

2.2.4. Opening Year Growth Rates

Combining the percentage uplift in flows with the percentage increases due to the network effect, a growth rate to be applied to the scheme's opening year was summed for pedestrians and cyclists.

As such it was ascertained that a 102.9% increase for pedestrians and a 82.6% increase for cyclists would be applied as the central growth rates. The high and low rates were determined by having a 30% offset from the central growth rate.

⁸ *Evaluation of Innovative Bicycle Facilities in Washington, D.C., Goodno et. Al, 2013*

⁹ *Exploring the Impact of Bike Infrastructure on Mode Choice: Simulation-Based, Route-Level Analysis, Hwang et. Al, April 2022*

Table 2-9 below summarises the percentage growth rates for the 2028 opening year to be applied to establish the future cyclist and pedestrian demands.

Table 2-9: Pedestrian & Cyclist Opening Year 2028 Growth Rates

Mode	Low Scenario	Central Scenario	High Scenario
Pedestrian Rates:	72.6%	102.9%	133.3%
Cyclist Rates:	52.2%	82.6%	112.9%

Table 2-10 below summarises the average daily trips for pedestrians and cyclists, for the opening year 2028, as determined for low, central, and high scenarios.

Table 2-10: Potential Future Pedestrian & Cyclist Demand for the Scheme

Users (Two-way Flows)	Existing Scenario	Future Daily Trips – Year 2028 Opening Year		
		Low Scenario	Central Scenario	High Scenario
Average Daily Pedestrian Trips	1109	2012	2366	2719
Average Daily Cycling Trips	255	497	596	695
Average Daily Users	1364			

Figure 2-5 and Figure 2-6 below show the projected growth in the number of pedestrians and cyclists respectively for low, medium, and high scenarios for the scheme, over a 30-year lifecycle. User growth along the route is expected to increase gradually commencing at scheme completion, as new cyclists and pedestrians within the scheme catchment are attracted to the use of the scheme. Years subsequent to the scheme opening will see a large initial uplift followed by progressive growth in user numbers as nearby residents experience steady behavioural changes towards active travel and mode shift from private vehicles to utilising the route.

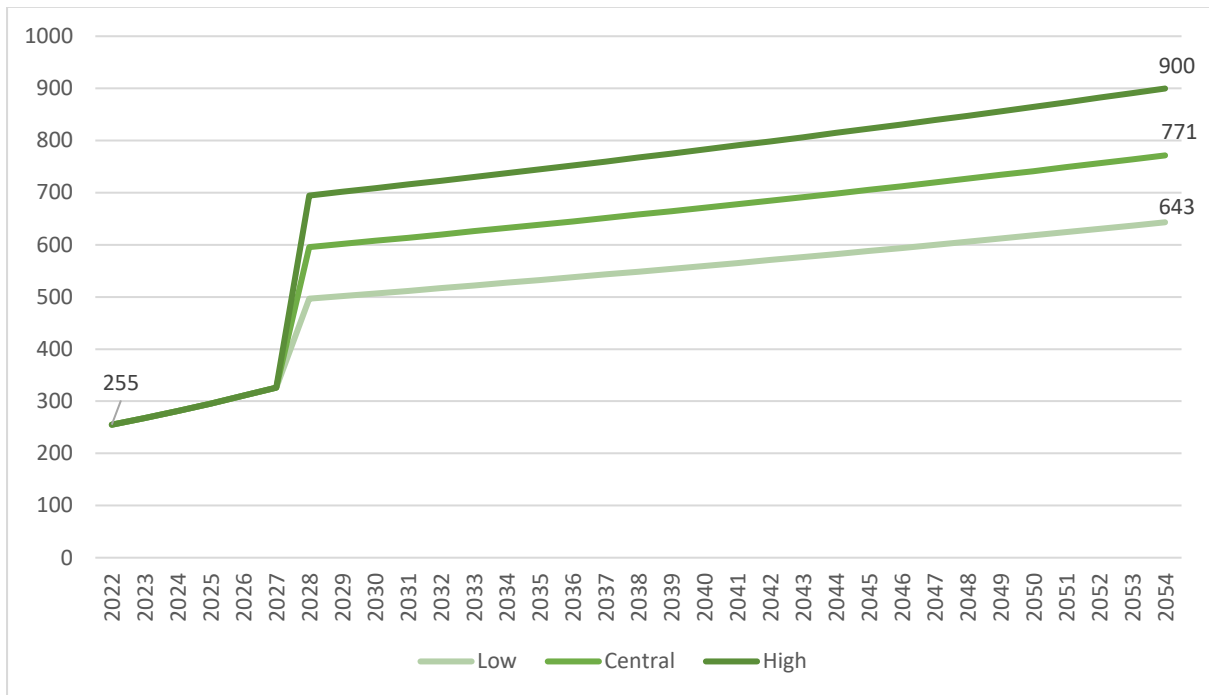


Figure 2-5: Annual Average Cyclist Demand for the scheme

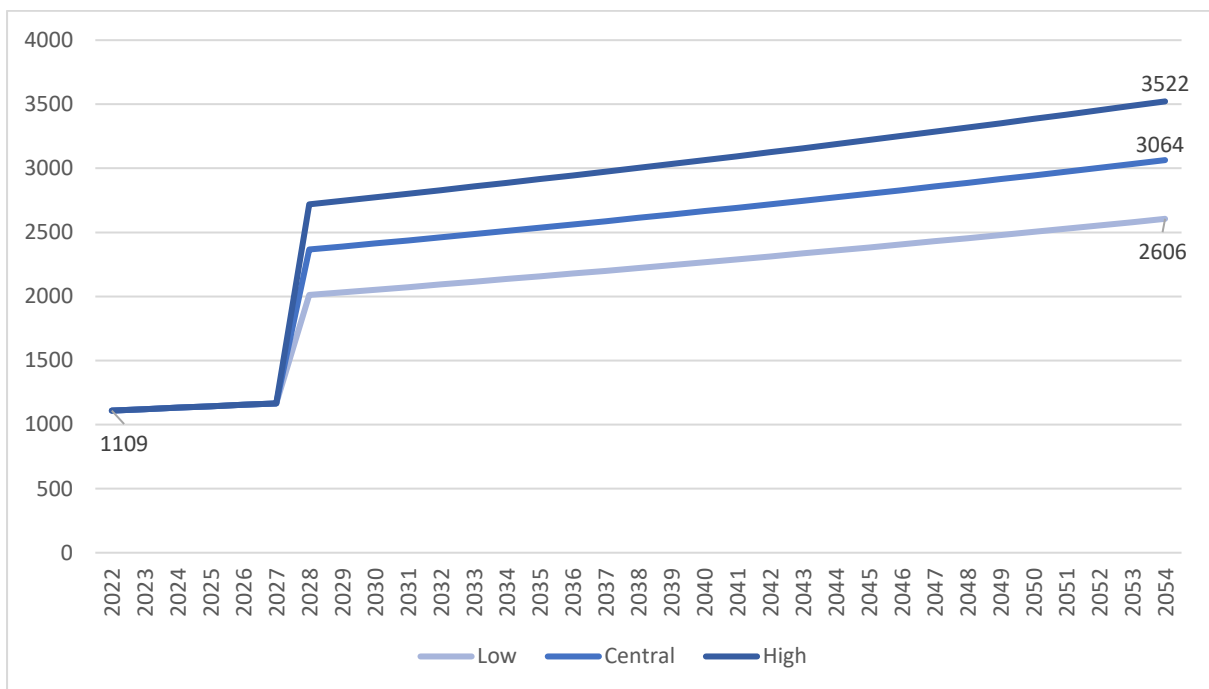


Figure 2-6: Annual Average Pedestrian Demand for the scheme

Royal Canal Urban Greenway

Environmental Impact Assessment Report

Appendix 14.2 Parking Survey

October 2026



Royal Canal Urban Greenway

Car Parking Survey - Delwood & Brompton

170239-X-XX-XXX-X-RP-DBFL-CE-0005



March 2024



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1 Background

1.1 Scope

The purpose of this Technical Note is to provide the details and results of a car parking survey of a number of residential roads in the vicinity of Delwood and Brompton, in Dublin 15.

The surveys were undertaken by DBFL Consulting Engineers on the 8th of February 2024 during the AM (07:30 – 9:30) and PM (16:15 – 18:15) Peak Periods.

The car parking surveys were commissioned to gather baseline figures of the informal on-street car parking levels. **Appendix A** contains a more detailed breakdown of each of parking surveys results.

1.2 Tech Note Structure

SECTION 2 of this report describes survey specification and background details

SECTION 3 outlines the results of the parking survey

A summary and conclusions of the report is found within **SECTION 4**.

2 Survey Specification & Background Information

The car parking survey was completed by 3 members of DBFL Consulting Engineers on Thursday the 8th of February 2024. The parking survey took place across 15 minute beats, for a 2 hour AM Period (07:30 – 9:30) and a 2 hour PM Period (16:15 – 18:15). These periods were chosen to capture both the residential parking, as well as any other potential overspill parking, from the nearby school, shops, train station, or other amenities.

The weather during the survey was poor, and there was a weather warning in place for both wind and rain across the country.

The streets surveyed were residential in nature, and included wide carriageways. In general, the width of the carriageways allowed for vehicles to be parked on both sides, while retaining vehicular traffic flow.

The on-street car parking is currently informal within the parking survey extent/area, with no designated parking locations or controls in place. The cul-de-sacs/turning areas were included as part of the survey. An example of one of the streets surveyed is Brompton Lawn as shown in **Figure 2.1** below:



Figure 2.1: Brompton Lawn

For the purposes of this survey, both sides of each road were independently surveyed, in order to gain the most accurate results. The survey locations (outlined in **Figure 2.2**) were chosen as they are all located along potential access/egress points to the proposed Royal Canal Urban Greenway.

Approximately 3 streets were assigned to each surveyor (including both sides), and surveys were undertaken every 15 minutes for a total of 2 hours in the AM period, and 2 hours in the PM period. The full results can be found in **Section 3 and Appendix A**.

In order to determine the potential maximum capacity of each zone (street), it was assumed that vehicles can potentially park either side of the carriageway where they are not blocking the driveways to the in-curtilage car parking (no line markings). It was assumed that a vehicle informally parked along the carriageway would be approximately 5 metres in length. For example, on the below street (Figure 2.2) it was determined that 2 vehicles can park informally between the two driveways.

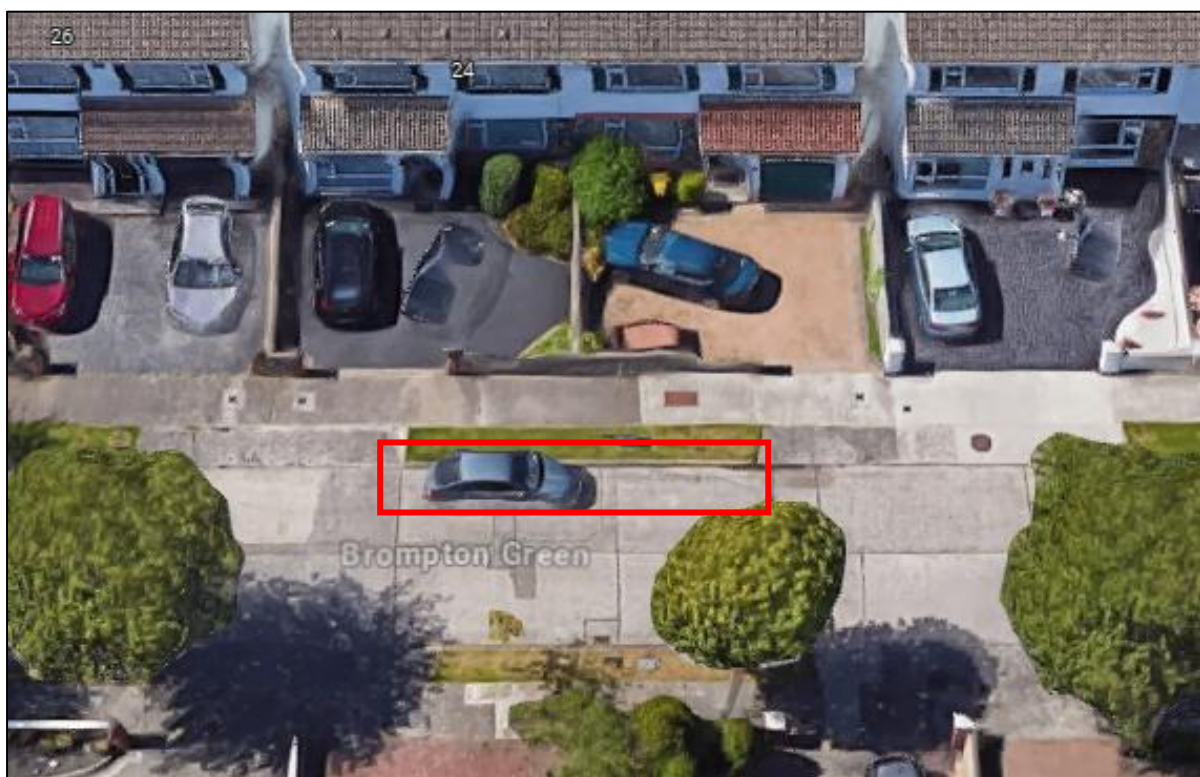


Figure 2.2: Informal car parking calculation

The surveyed streets can be seen in **Figure 2.3** overleaf. The maximum number of informal spaces along each survey zone can be seen in **Figure 2.4**.

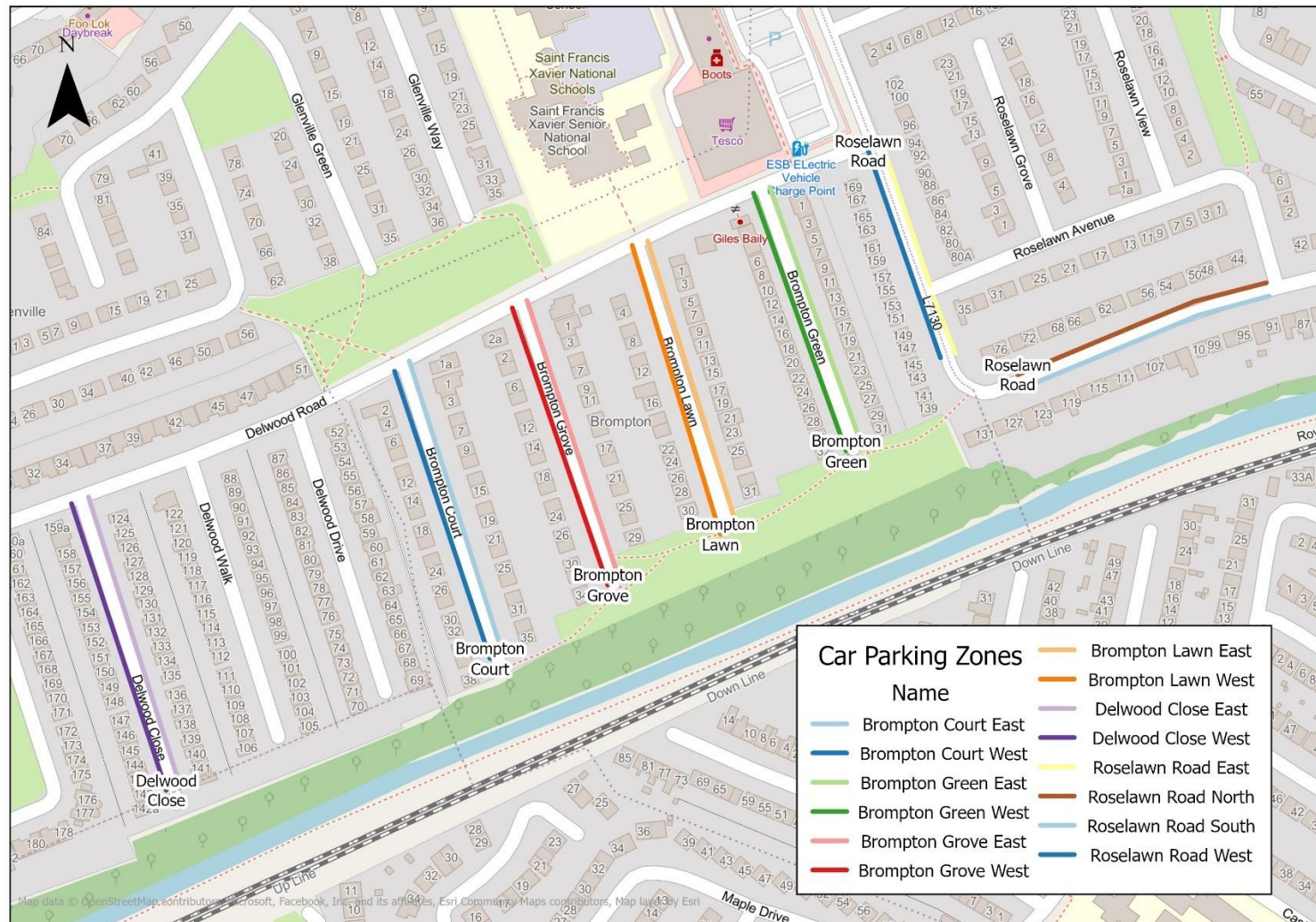


Figure 2.3: Car Parking Survey Locations



Figure 2.4: Maximum On-Street Car Parking Capacity for each Surveyed Street



3 Survey Results

The overall results of the survey are presented in **Figure 3.1 and 3.2** below: The calculation of car parking capacity was determined using the methodology outlined in Section 2, and the car parking usage was determined from the survey results.

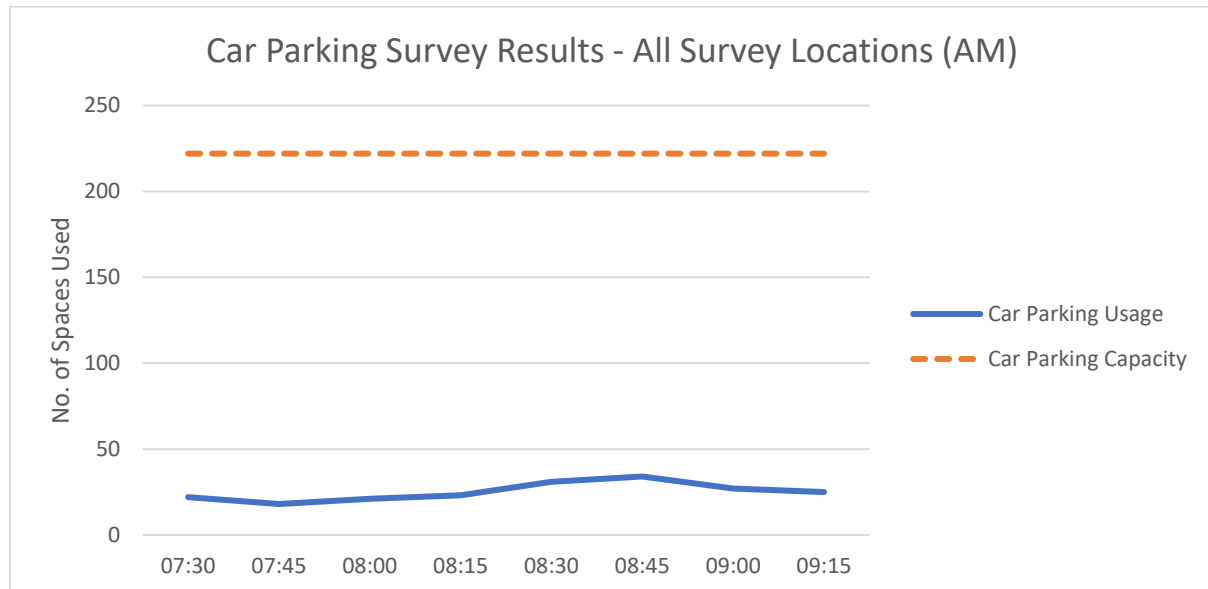


Figure 3.1: Car Parking Survey Results – All Survey locations (AM)

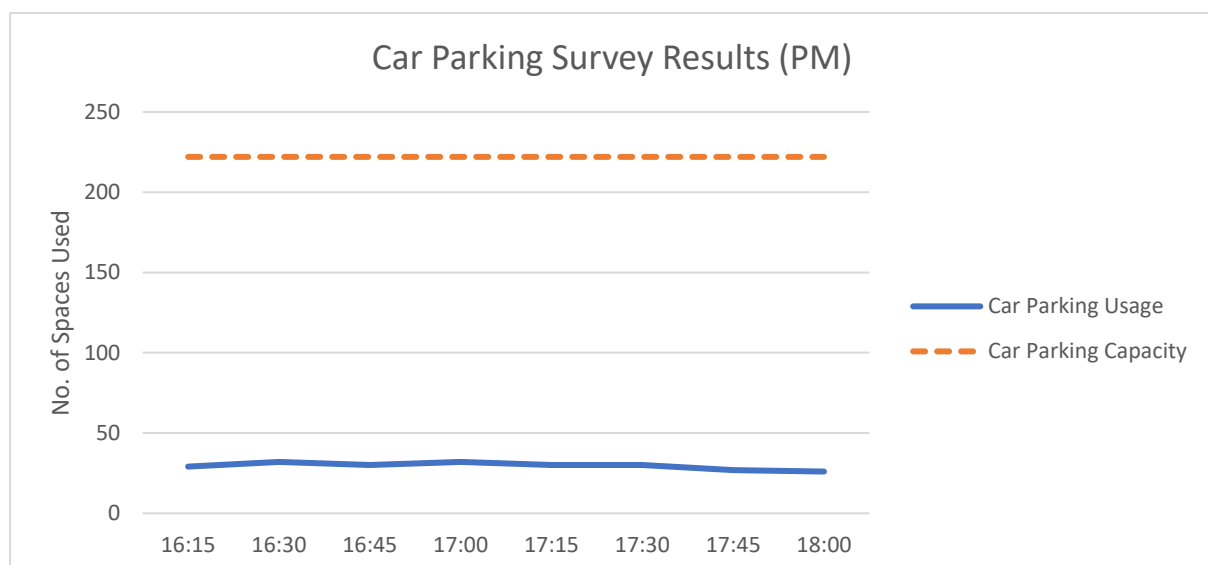


Figure 3.2: Car Parking Survey Results – All Survey locations (PM)

It can be seen that the surveyed on-street parking utilisation was far below the actual capacity, during both the AM and PM survey periods. The stress levels of each car parking zone was collated and analysed. The average parking stress observed during both the AM and PM surveys are shown in **Figure 3.3 (AM)** and **Figure 3.4 (PM)**.



Figure 3.3: Average Parking Stress During the AM Survey Period (07:30 – 09:30)



Figure 3.4: Average Parking Stress During the PM Survey Period (16:15 – 18:15)



The individual results for each street during the AM Survey Period is presented in **Table 3.1** below:

AM SURVEY PERIOD										
Road/Street	Percentage Occupied								Total Spaces	Average Stress
	07:30	07:45	08:00	08:15	08:30	08:45	09:00	09:15		
Delwood Close (W)	11%	11%	28%	28%	22%	17%	17%	17%	18	19%
Delwood Close (E)	17%	17%	17%	17%	17%	17%	22%	22%	18	18%
Brompton Court (W)	22%	6%	6%	17%	17%	17%	17%	17%	18	15%
Brompton Court (E)	6%	0%	0%	0%	0%	0%	0%	0%	18	1%
Brompton Grove (W)	12%	12%	12%	0%	12%	12%	12%	12%	17	10%
Brompton Grove(E)	0%	0%	0%	0%	0%	0%	0%	0%	17	0%
Brompton Lawn (W)	17%	17%	17%	22%	28%	22%	17%	11%	18	19%
Brompton Lawn (E)	11%	6%	6%	6%	6%	6%	6%	6%	18	6%
Brompton Green (W)	13%	13%	13%	13%	13%	6%	6%	6%	16	10%
Brompton Green (E)	0%	0%	0%	0%	0%	13%	6%	6%	16	3%
Roselawn Road (W)	0%	0%	0%	0%	0%	0%	0%	0%	8	0%
Roselawn Road (E)	25%	25%	25%	25%	25%	50%	50%	50%	8	34%
Roselawn Road (N)	6%	6%	6%	6%	6%	6%	6%	6%	16	6%
Roselawn Road (S)	0%	6%	6%	13%	50%	63%	25%	19%	16	23%

Table 3.1: AM Survey Period Results



The individual results for each street during the PM Survey Period is presented in **Table 3.2** below:

PM SURVEY PERIOD										
Road/Street	Percentage Occupied								Total Spaces	Average Stress
	16:15	16:30	16:45	17:00	17:15	17:30	17:45	18:00		
Delwood Close (W)	28%	28%	28%	28%	33%	33%	22%	22%	18	28%
Delwood Close (E)	17%	17%	17%	17%	17%	17%	11%	11%	18	15%
Brompton Court (W)	11%	11%	11%	11%	11%	11%	11%	11%	18	11%
Brompton Court (E)	11%	11%	11%	11%	11%	6%	6%	6%	18	9%
Brompton Grove (W)	6%	12%	18%	18%	18%	18%	18%	18%	17	15%
Brompton Grove(E)	0%	12%	6%	6%	6%	6%	6%	6%	17	6%
Brompton Lawn (W)	6%	6%	0%	0%	0%	0%	0%	0%	18	1%
Brompton Lawn (E)	6%	6%	6%	6%	6%	6%	6%	6%	18	6%
Brompton Green (W)	6%	13%	6%	13%	6%	6%	6%	6%	16	8%
Brompton Green (E)	0%	0%	6%	6%	6%	6%	6%	6%	16	5%
Roselawn Road (W)	25%	38%	13%	13%	25%	25%	25%	13%	8	22%
Roselawn Road (E)	75%	75%	63%	75%	50%	63%	75%	63%	8	67%
Roselawn Road (N)	19%	13%	13%	19%	13%	13%	13%	13%	16	14%
Roselawn Road (S)	13%	6%	19%	13%	13%	13%	6%	13%	16	12%

Table 3.2: PM Survey Period Results



3.1 Parking Survey Results Analysis

It is clear from the results and subsequent diagrams that the level of on-street parking remained minimal across the survey periods for all roads apart from the eastern side of Roselawn Road during the PM Period, where the average parking stress was 67%.

The general parking stress levels across the morning survey period did not exceed 25% on the majority of the streets, with the exception of Roselawn Road. During the evening survey period, the results were generally similar, with the majority of streets experiencing low levels of on-street parking, apart from the eastern side of Roselawn Road.

On the surveyed streets, residents mostly parked off-street as majority of residents have 1 or 2 in-curtilage car parking spaces. The on-street parking was a mixture of overflow residential car parking, parents dropping their child to the nearby school, workmen in vans that did not fit in-curtilage, and short stay visitors to nearby houses.

There is a school (Saint Francis Xavier National School) within the vicinity of the survey zones, and it was observed that many parents were dropping their children off along the length of Delwood Road. However, Delwood Road itself was not part of this survey.



4 Conclusion and Recommendations

In conclusion, the existing streets experience minimal levels of informal on-street parking during the AM and PM Periods, with the exception of the eastern side of Roselawn Road. The full results of the 15 minute beats can be found in **Section 3 and Appendix A**.



Appendix A : Raw Parking Survey Data – 15 Minute Beats



































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Royal Canal Urban Greenway

Environmental Impact Assessment Report

Appendix 15.1 Site-Specific Resource and Waste Management Plan

October 2026





Trinity
Consultants

awnconsulting

Resource & Waste Management Plan

Project Title: The Royal Urban Greenway

CLIENT

Fingal
County
Council

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Disclaimer

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1. INTRODUCTION

AWN Consulting, a Trinity Consultants Team, has prepared this Construction and Demolition (C&D) Resource & Waste Management Plan (RWMP) on behalf of Fingal County Council (the Client) for the proposed Royal Canal Urban Greenway, a pedestrian and cycle route (approximately 8.1 km in length) (the Proposed Development), which will be constructed along and adjacent to the Royal Canal, extending eastwards from the Kildare County Boundary to the Old Navan Road (near the 12th Lock), where it will connect to the existing Ashtown Greenway (the site, comprising the lands within the proposed greenway corridor and associated work areas).

This plan provides information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with the current legal and industry standards including the *Waste Management Act 1996* (as amended) and associated Regulations ¹, *Environmental Protection Agency Act 1992* as amended ², *Litter Pollution Act 1997* (as amended) ³, the *National Waste Management Plan for a Circular Economy 2024 - 2030 (NWMPCE)* (2024) ⁴.

In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also provides appropriate measures in relation to the collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and / or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the Proposed Development and prescribes measures for the management of different waste streams. The RWMP should be viewed as a live document and will be regularly reviewed, updated and refined throughout the Proposed Development's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2. OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National level

The Irish Government issued a policy statement in September 1998, *Changing Our Ways*⁵, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2018).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled *Recycling of Construction and Demolition Waste*⁶ concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste. In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, *A Waste Action Plan for a Circular Economy*⁷ (*WAPCE*), replaces the previous national waste management plan, *"A Resource Opportunity"* (2012), and was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The *WAPCE* sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021)⁸ to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years. The latest version of the strategy, *Whole of Government Circular Economy Strategy 2026-2028: Accelerating Action* (2026)⁹, was issued in February 2026 and has, as its primary objective, the acceleration of Ireland's circular material use rate by two percentage points per year.

The *Circular Economy and Miscellaneous Provisions Act 2022*¹⁰ was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will work to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects* in November 2021¹¹. These guidelines replace the previous 2006 guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006¹². The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project,

including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- ▶ *Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;*
- ▶ *Design Teams roles and approach;*
- ▶ *Relevant EU, national and local waste policy, legislation and guidelines;*
- ▶ *Waste disposal/recycling of C&D wastes at the site;*
- ▶ *Provision of training for Resource Waste Manager (RM) and site crew;*
- ▶ *Details of proposed record keeping system;*
- ▶ *Details of waste audit procedures and plan; and*
- ▶ *Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.*

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a bespoke RWMP for developments. The new guidance classifies developments on a two-tiered system. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development, which require a simplified RWMP:

- ▶ *New residential development of less than 10 dwellings;*
- ▶ *Retrofit of 20 dwellings or less;*
- ▶ *New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250m²;*
- ▶ *Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m²; and*
- ▶ *Demolition projects generating in total less than 100m³ in volume of C&D waste.*

A development which exceeds one or more of these thresholds is classed as Tier-2 development.

The Proposed Development constitutes a new infrastructural development which exceeds the threshold of 1,250 m² in aggregate floor area (or equivalent development footprint), having regard to the overall length (approximately 8.1 km) and the scale of the proposed greenway corridor.

Other guidelines followed in the preparation of this report include *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*¹³ published by FÁS and the Construction Industry Federation in 2002 and the previous guidelines, *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The Proposed Development is located in the Local Authority area of Fingal County Council (FCC), in proximity to the boundary with Kildare County Council; however, waste management policy and planning requirements are governed by FCC for the purposes of the Proposed Development.

The *Eastern Midlands Region (EMR) Waste Management Plan 2015 – 2021*¹⁴, which was previously the applicable regional waste management plan in the FCC area, has been replaced at a national level (as of March 2024) by the *NWMPCE 2024 – 2030*, the national waste management plan for Ireland.

The *NWMPCE* does not dissolve the three regional waste areas. The *NWMPCE* establishes a national framework for waste management and sets an objective of achieving zero waste growth per person over the lifetime of the Plan, including waste from commercial activities and the construction and demolition

waste. The Plan promotes sustainable consumption, waste prevention, improved material capture, and circular economy principles.

The *NWMPCE* sets out the following targets relevant to the Proposed Development:

National Targets

- ▶ *1B. (Construction Materials) 12% Reduction in Construction & Demolition Waste Generated by 2030.*
- ▶ *3B. (Reuse Facilities) Provide for reuse at 10 Civic Amenity Sites, minimum.*

Municipal landfill charges in Ireland are weight-based, with costs approximately €140-160 per tonne, including an €85 per tonne landfill levy under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015* ¹⁵. In addition, the *Circular Economy (Waste Recovery Levy) Regulations 2024* ¹⁶ will apply a €10 per tonne levy to waste accepted for recovery, including backfilling.

At a local level, waste management is further guided by the *Fingal Development Plan 2023 – 2029* (2023) ¹⁷, which promotes sustainable waste management practices and a transition to the circular economy.

The Development Plan includes a number of policies and objectives of relevance to construction and demolition waste management:

- ▶ **Policy CAP25 – Circular Economy:** *Support the shift towards the circular economy approach as set out in the National Waste Policy for 2020–2025.*
- ▶ **Policy CAP26 – Waste Management Plans for Construction and Demolition Projects:** *Have regard to existing Best Practice Guidance on Waste Management Plans for Construction and Demolition Projects as well as any future updates to these Guidelines in order to ensure the consistent application of planning requirements.*
- ▶ **Objective DMS0241 – Construction and Demolition Waste Management Plan:** *Require that Construction and Demolition Waste Management Plans be submitted as part of any planning application for projects in excess of any of the following thresholds:*
 - *New residential development of 10 units or more.*
 - *New developments other than above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250 sqm.*
 - *Demolition / renovation / refurbishment projects generating in excess of 100m³ in volume of C&D waste.*
 - *Civil engineering projects in excess of 500m³ of waste materials used for development of works on the site.*
- ▶ **Policy IUP21 – Environmental Policy, Legislation and Guidance:** *Have regard to European Union, National and Regional waste and related environmental policy, legislation, guidance and codes of practice to improve management of material resources and wastes.*
- ▶ **Policy IUP22 – Transition From A Waste Economy Towards A Green Circular Economy:** *Support the principles of transition from a waste economy towards a green circular economy and implement good waste management and best practices to enable Fingal to become self-sufficient in terms of resource and waste management and to enhance employment and increase the value recovery and recirculation of resources, in accordance with the Whole of Government Circular Economy Strategy 2022.*
- ▶ **Objective IU028 – Eastern Midlands Region Waste Management Plan:** *Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015–2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.*
- ▶ **Objective IU030 – Hazardous Waste:** *Adhere to the recommendations of the National Hazardous Waste Management Plan 2014–2020 and any subsequent plan, and to co-operate with the EPA and*

other agencies in the planning, organisation and supervision of the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects. To continue to promote the use of clean technology and minimisation of hazardous waste production in all development within the County.

The above policy and legislative framework informs the approach to waste prevention, reuse, recycling and recovery adopted within this RWMP.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the Proposed Development are:

- ▶ *Waste Management Act 1996* (as amended);
- ▶ *Environmental Protection Agency Act 1992* (as amended);
- ▶ *Litter Pollution Act 1997* (as amended);
- ▶ *Planning and Development Act 2000* (as amended)¹⁸; and
- ▶ *Circular Economy and Miscellaneous Provisions Act 2022*.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended and subsequent Irish legislation, is the principle of "Duty of Care". This implies that the waste producer is responsible for waste from the time it is generated through until its authorised recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to transport waste to authorised facilities. Following on from this is the concept of "Polluter Pays" whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal / recovery / recycling of waste).

It is therefore imperative that the Developer and its appointed contractors ensure that all waste management activities are carried out in a legally compliant manner, including waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle / recover / dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit and Registration) Regulations 2007 as amended* or a Waste Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and / or disposed of at the specified site.

All waste arising from the Proposed Development will be managed in accordance with the above legislative requirements.

3. DESIGN APPROACH

The Client and the Design Team have integrated the EPA (2021) *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects* guidelines into the design process, including design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post construction. Further details on these design principles can be found within the aforementioned guidance document.

The Design Team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The following sections have been the focal point of the design process and material selections and will continue to be analysed and investigated throughout the design process and during material selection.

As noted in the EPA guidelines, the approaches presented are based on international principles of optimising resources and reducing waste on demolition and construction projects generally through:

- ▶ *Prevention;*
- ▶ *Reuse;*
- ▶ *Recycling;*
- ▶ *Green Procurement Principles;*
- ▶ *Off-Site Construction;*
- ▶ *Materials Optimisation; and*
- ▶ *Flexibility and Deconstruction.*

3.1 Designing For Prevention, Reuse and Recycling

At the outset and during project feasibility and evaluation, the Client and Design Team considered:

- ▶ Establishing the potential for reuse of any site-won materials, including excavated soils and stone, aggregate and vegetation;
- ▶ The potential for minimising demolition works and retaining existing structures where feasible;
- ▶ Avoidance of impacts on existing habitats, trees and canal infrastructure through route alignment and design, thereby minimising site clearance and the generation of C&D waste; and
- ▶ Enabling the optimum recovery and reuse of materials generated on site, particularly earthworks materials for embankments and landscaping.

3.2 Designing for Green Procurement

Waste prevention and minimisation at the pre-procurement stage have been discussed and will be further detailed in this section. The Design Team will:

- ▶ Discuss proposed design solutions to reduce waste generation at source;
- ▶ Encourage innovation in tenders and incentivise competition to recognise sustainable approaches;
- ▶ Engage with the Main Contractor and subcontractors / suppliers to explore options for reduced packaging and material efficiency, including:
 - Adoption of 'Just-in-Time' delivery strategies; and
 - Implementation of ordering procedures that avoid excessive material waste.

Green procurement principles will extend from the planning stage into detailed design and tender stage and will remain an ongoing part of the long-term design and selection process.

3.3 Designing for Off-Site Construction

The use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). While the Proposed Development is primarily a linear infrastructure project, opportunities for off-site construction have been considered, including:

- ▶ Use of pre-cast elements such as bridge components, retaining structures and boardwalk sections, reducing in-situ waste generation;
- ▶ Use of prefabricated drainage and ancillary components to minimise on-site construction waste; and
- ▶ Designing elements to maximise quality control and reduce material wastage during installation.

3.4 Designing for Materials Optimisation During Construction

To ensure sufficient use of resources, the design has sought to optimise material usage and reduce waste generation during construction. Key measures include:

- ▶ Maximising the reuse of site-won materials, particularly excavated soils and aggregates within the Proposed Development;
- ▶ Investigating the use of standardised material sizes to minimise offcuts; and
- ▶ Promoting the use of durable and fit-for-purpose materials to reduce maintenance and replacement requirements.

3.5 Designing for Flexibility and Deconstruction

Design flexibility has been considered to ensure that, where possible, materials can be recovered and reused at the end of their lifecycle. For the Proposed Development, this includes:

- ▶ Selection of materials that are durable, recyclable and suitable for long-term outdoor infrastructure use;
- ▶ Consideration of how elements such as boardwalks, bridges and ancillary structures can be maintained, repaired or replaced with minimal waste generation; and
- ▶ Strategies for how materials can be recovered effectively during:
 - Maintenance and refurbishment activities; and
 - Disassembly and deconstruction at end of life.

4. DESCRIPTION OF THE PROPOSED DEVELOPMENT

4.1 Location, Size and Scale of the Proposed Development

The Proposed Development comprises the construction of the Royal Canal Urban Greenway, an approximately 8.1 km pedestrian and cycle route extending from the Kildare County Boundary to the Old Navan Road (near the 12th Lock), connecting to the existing Ashtown Greenway.

The scheme is located along and adjacent to the Royal Canal and is divided into three sections with varying rural, suburban and urban characteristics.

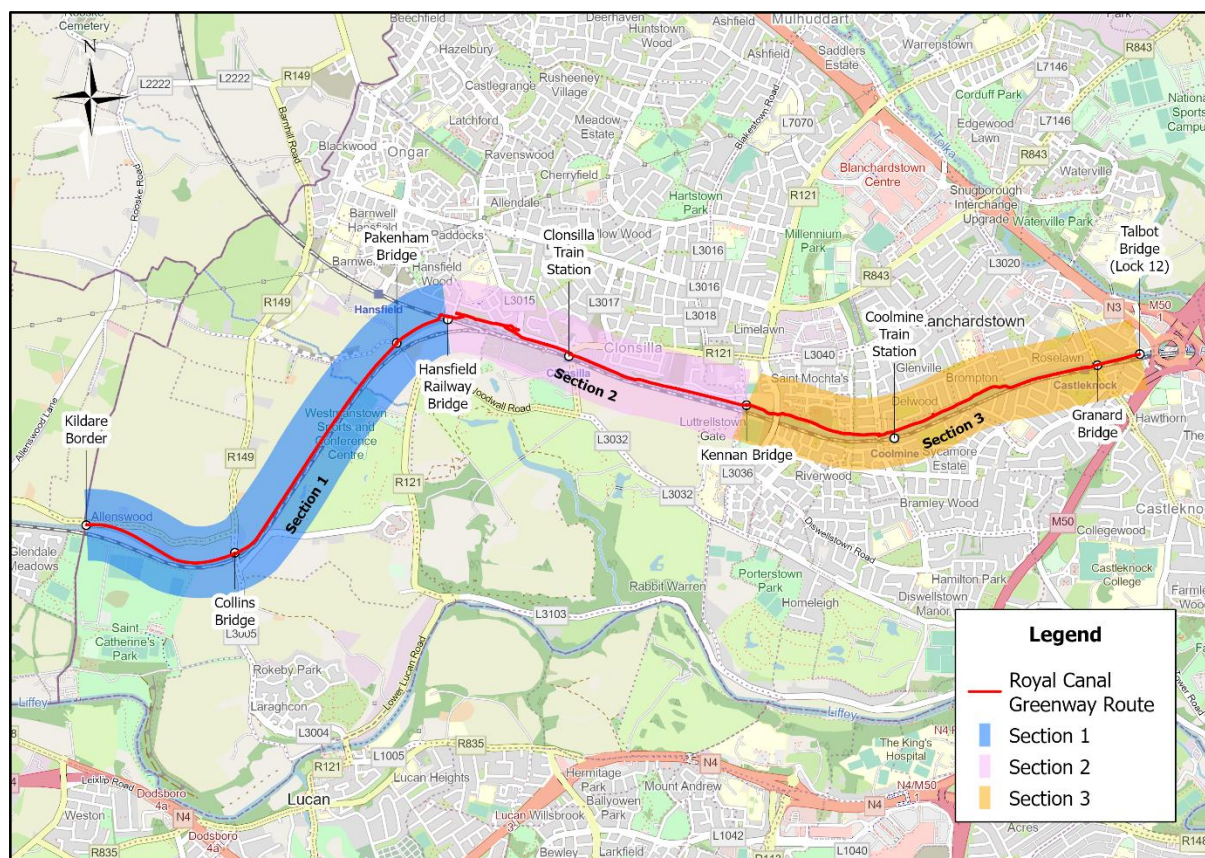
The Proposed Development includes the construction of a greenway along existing towpaths and offline sections, comprising unbound and bituminous surfacing, as well as sections of in-situ concrete and elevated boardwalk.

The Proposed Development comprises:

- ▶ Construction of the greenway route which contains the following pavements / surfacing:
 - Section 1 – unbound surface (width 2-3m) from Kildare County Border to Hansfield Railway Bridge (Ch. 0 – 3200m);
 - Section 2 – bituminous surface (3-4m width) for the majority of the section, with the exception of pre-cast concrete cantilevered boardwalk from approx. Ch. 4140 – 4540;
 - Section 3 - bituminous surface (4m width) for the majority of the section, in-situ concrete surfacing and portions of raised boardwalk due to local topography.
- ▶ Construction of embankments and retaining structures along certain sections of the route where the topography requires stabilisation;
- ▶ Toucan Signalised Crossings (no. 3) and zebra crossings (no. 1) are proposed at road crossing along the scheme;
- ▶ Lighting will not be provided on the western section of the scheme. Lighting will be provided from Hansfield to 12th Lock (Ch. 3200m – 8100m). The lighting design will be designed in line with best practice and will be sensitive to ecology such as bats, birds and other mammals;
- ▶ To prevent the greenway overlooking the back gardens of the residents of Delwood Park and for security reasons, the ground level of the greenway is proposed to be lowered to match, or be lower than, the existing ground level of the adjacent back gardens and a 2m high timber palisade fence provided, with an anti-climb wire mesh fence (Ch. 6200 – 6800);
- ▶ Installation of the Quarry Bridge (30m single span composite steel beam and concrete deck bridge) which spans a steep section of historic quarry on the northern bank of the Royal Canal (Ch. +6500m);
- ▶ Site investigations to be carried out within the red line boundary, additional to what has been carried out to date, where necessary to inform detailed design, potentially including (but not limited to) confirmation of geotechnical characteristics in relation to foundation design through boreholes, and locating of existing utilities in relation to drainage and utility designs through GPR surveys and / or slit trenches;
- ▶ The 2m high fence line to be maintained along the southern side of the greenway along the Brompton green area. To provide further privacy to the Brompton residents, planting and railings will be provided on the Brompton side of the greenway through the Brompton green area;
- ▶ Construction of the Landmark Bridge (Steel bridge) which will traverse the canal (at Ch. 7100-7200). The steel bridge will be approximately 185m in length and will have a maximum single span of 30m;
- ▶ Construction of an underpass is proposed in Section 3 beneath Castleknock Road on the southern side of Granard Bridge (Ch. +7770);

- ▶ A Pocket Park is proposed at Hansfield, south of the St. Joseph's residential development. The park will have a wildflower meadow, native hedgerow, embankment slide, informal play area and picnic area with tables and benches etc.;
- ▶ Demolition of two houses and ancillary structures on approach to Hansfield Road (Ch. 3650 to 3800) facilitate the routing of the proposed scheme and Pocket Park; and
- ▶ To compensate for the removal of trees, hedgerows and vegetation along the proposed route, a variety of native / naturalised species have been selected to enhance and increase woodland cover as part of the Proposed Development's Landscape Plan.

The location of the site is presented in Figure 4.1, while the site layout plan is Figure 4.2.



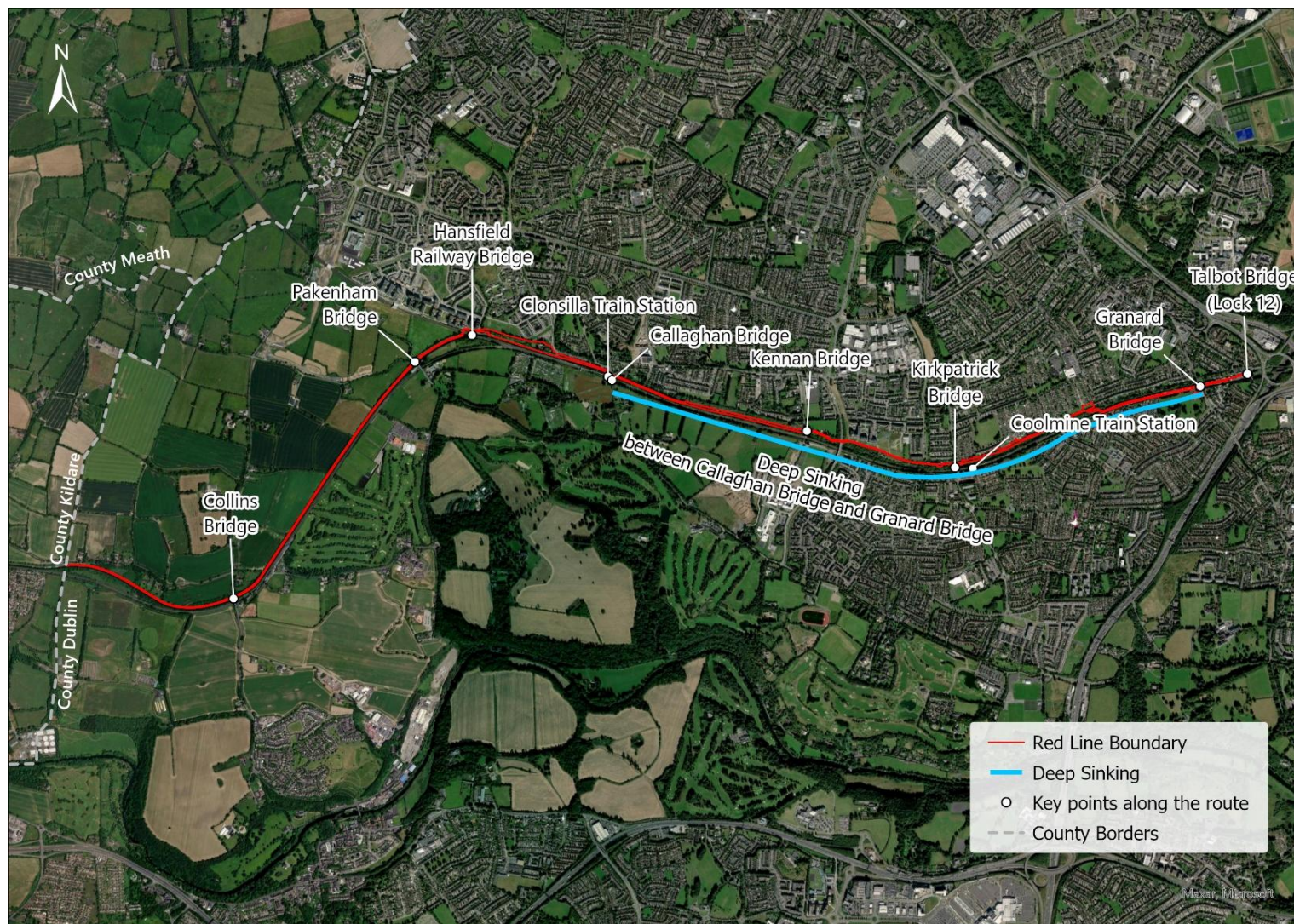


Figure 4.2 Proposed Development Layout

4.2 Details of the Non-Hazardous Wastes to be Produced

There will be waste materials generated from the demolition of two residential properties and associated ancillary structures on approach to Hansfield Road. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated (e.g., plasterboard on timber ceiling joists, steel embedded in concrete, etc).

There will also be topsoil, Made Ground and natural cohesive soils excavated to facilitate the construction of the greenway, including earthworks, embankments and structures. Based on the ground investigation carried out by Ground Investigations Ireland Ltd. (GII), the subsurface materials primarily comprise Made Ground overlying firm to stiff cohesive deposits (sandy gravelly clay), with occasional cobbles, boulders and fragments of anthropogenic material (e.g., brick, concrete, glass and plastic).

Based on a preliminary cut and fill assessment carried out by DBFL Consulting Engineers Ltd. (DBFL), the Project Engineers, the total volume of material to be excavated is estimated to be approximately c. 14,776 m³.

It is currently envisaged that approximately c. 11,899 m³ of suitable excavated material will be reused on-site for fill and engineering purposes, including stabilised material. The remaining volume of approximately c. 2,880 m³ of excavated material will be removed off-site, due to limited reuse opportunities and subject to material classification and suitability for reuse, recovery or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete, plastics, metals and packaging materials generated. There may also be excess concrete during construction which will need to be managed appropriately. Plastic and cardboard waste from packaging and supply of materials will also be generated. The Main Contractor will be required to ensure that oversupply of materials is kept to a minimum and that opportunities for reuse and recycling of suitable materials are maximised.

Waste will also be generated from demolition and construction workers, including organic / food waste, dry mixed recyclables (wastepaper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site during the construction phase. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

A Ground Investigation Report has been prepared for the Proposed Development by GII (2020), based on the site investigations carried out between February and June 2020. The intrusive investigation comprised trial pits, boreholes, in-situ testing and laboratory analysis to determine the geotechnical and environmental characteristics of the underlying soils.

The investigation identified that the site is generally underlain by Made Ground overlying natural cohesive deposits (sandy gravelly clay), with occasional cobbles and boulders. The Made Ground was noted to contain some anthropogenic inclusions, including fragments of concrete, brick, glass, wood and plastic.

Environmental and chemical testing undertaken as part of the ground investigation indicates that the soils across the site are predominantly non-hazardous, with near neutral pH and low sulphate concentrations.

Based on the available information, it is anticipated that the majority of excavated soils will be suitable for classification as non-hazardous waste and managed accordingly. These materials are expected to be classified under LoW Code 17 05 04 (soil and stones other than those containing hazardous substances).

While no widespread contamination was identified during the ground investigation, the presence of Made Ground containing anthropogenic materials indicates that there is potential for small, localised areas of contamination to be encountered during excavation works.

Where potentially contaminated material is encountered, it will be segregated from clean / inert material, and subject to testing and classification in accordance with the EPA publication entitled *Waste Classification: List of Waste and Determining if Waste is Hazardous or Non-Hazardous*¹⁹ using the *HazWasteOnline* application (or similar approved classification method). The material will then be classified as inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*²⁰, which establishes the criteria for the acceptance of waste at landfills.

No asbestos-containing materials (ACMs) were identified within the soils during the ground investigation. However, in the unlikely event that ACMs are found within the excavated material, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*²¹ and the *Best Practice Guidance for Handling Asbestos* (2023)²². All asbestos will be taken to a suitably licensed or permitted facility.

In the event that previously unidentified contaminated soil or waste material is encountered during the construction phase, the Main Contractor will notify FCC and provide a Hazardous / Contaminated Soil Management Plan, to include estimated quantities, description of location, any relevant mitigation, destination for disposal / treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, including storage tanks and all draw-off points, will be bunded and located within a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any significant fuel / oil waste generated at the site.

If refueling or accidental spills occur on-site small associated waste volumes will be generated from their cleanup, with the proposed mitigation this will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

4.3.3 Invasive Plant Species

Invasive plant species were identified during ecological surveys undertaken by JBA Consulting Ireland Ltd. and specialist ecological subconsultants between 2022 and 2026.

These surveys recorded the presence of invasive floral species at a number of locations along the proposed scheme, particularly within disturbed, riparian and edge habitats adjacent to the Royal Canal.

The presence and distribution of invasive species have been mapped and are presented within the Biodiversity Chapter of this EIAR. While the extent of infestation varies along the route, these species are considered to represent a potential source of contamination where soils are disturbed during construction activities.

In order to prevent the spread of invasive species, all works will be carried out in accordance with best practice guidance, including the *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads* (NRA, 2010), and relevant legislative requirements under the Wildlife Acts 1976–2021 (as amended).

Where invasive plant species are encountered, contaminated soils will be appropriately managed, segregated and either treated on-site or removed off-site to suitably authorised facilities. Strict biosecurity measures will be implemented during excavation, handling, storage and transport of materials to prevent further spread within or beyond the site boundary.

An Invasive Species Management Plan (ISMP) has been prepared and is being submitted with this planning application. The ISMP includes measures for the treatment, control and management of invasive species identified within the Proposed Development corridor. The measures outlined in the ISMP will be implemented during the construction phase and maintained, as required, during the operational phase until appropriate control or eradication has been achieved.

4.3.4 Asbestos

Pre-Demolition Asbestos Surveys will be carried out prior to the commencement of the demolition works on the residential properties to identify the presence of any ACMs.

If any ACMs are identified, their removal will be carried out by a suitably qualified contractor and ACMs will only be removed from site by a suitably permitted / licenced waste contractor, in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010* and the *Best Practice Guidance for Handling Asbestos* (2023). All material will be taken to a suitably licensed or permitted facility.

4.3.5 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate, clearly labelled, receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated during C&D activities or temporary site offices. This waste, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5. ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a suitably qualified Resource Manager (RM) with expertise in waste and resource management to implement the RWMP should be appointed. The RM role may be undertaken by a number of individuals over the lifecycle of the Proposed Development; however, the role will be assigned to a suitably qualified person within the Planning / Design / Contracting Team, who is technically competent and appropriately trained.

The RM will be responsible for ensuring that the objectives and measures within the Project RWMP are complied with and will be assigned the requisite authority to meet the objectives and obligations of the RWMP. The role will include conducting waste checks / audits and promoting construction methodologies that facilitate the maximum reuse and / or recycling of materials.

5.1 Role of the Client

The Client is responsible for establishing the aims and the performance targets for the Proposed Development.

- ▶ The Client has commissioned the preparation and submission of this RWMP as part of the design stage and planning submission;
- ▶ The Client is to commission the preparation and submission of an updated RWMP as part of the demolition and construction tendering process;
- ▶ The Client will ensure that the RWMP is agreed on and submitted to the local authority and their agreement obtained prior to commencement of works on site; and
- ▶ The Client will request the end-of-project RWMP from the Main Contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team (or Design Team), comprising architects, consultants, quantity surveyors and engineers, is responsible for:

- ▶ Drafting and maintaining the RWMP through the design, planning and procurement phases of the Proposed Development;
- ▶ Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP;
- ▶ Including details and estimated quantities of all projected waste streams with the support of environmental consultants / scientists. This will also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- ▶ Managing and valuing the demolition work with the support of quantity surveyors;
- ▶ Handing over of the RWMP to the appointed Main Contractor upon commencement of construction of the Proposed Development, in a similar fashion to how the safety file is handed over to the Main Contractor; and
- ▶ Working with the Main Contractor as required to meet the performance targets for the Proposed Development.

5.3 Role of the Contractor

The demolition and construction contractors have not yet been appointed for this RWMP. However, once selected they will have major roles to fulfil. They will be responsible for:

- ▶ Preparing, implementing and reviewing the (including pre-demolition) RWMP throughout the construction phase (including the management of all suppliers and sub-contractors) as per the requirements of the EPA guidelines;
- ▶ Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- ▶ Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- ▶ Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- ▶ Considering the use of a mobile-crusher to crush concrete for temporary reuse on-site during demolition / construction, where practicable, thereby reducing the amount of heavy goods vehicle (HGV) movements;
- ▶ Applying for the appropriate waste permit to crush concrete on-site;
- ▶ Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- ▶ End-of-waste and by-product notifications addressed with the EPA where required;
- ▶ Clarification of any other statutory waste management obligations, which could include on-site processing;
- ▶ Full records of all resources (both wastes and other resources) will be maintained for the duration of the Proposed Development; and
- ▶ Preparing a RWMP Implementation Review Report at project handover.

6. KEY MATERIALS AND QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set, and this information will be updated for these targets once these targets have been confirmed by the Client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully reused, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that will be used to set targets include (as per guidelines):

- ▶ *Weight (tonnes) or Volume (m³) of waste generated per construction value;*
- ▶ *Weight (tonnes) or Volume (m³) of waste generated per construction floor area (m²);*
- ▶ *Fraction of resource reused on site;*
- ▶ *Fraction of resource notified as by-product;*
- ▶ *Fraction of waste segregated at source before being sent off-site for recycling/recovery; and*
- ▶ *Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.*

6.2 Main Construction and Demolition Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are presented in Table 6.1, along with the corresponding List of Waste (LoW) codes (2018) for each waste type.

Table 6.1 Typical Waste Types Generated and LoW codes (Individual Waste Types may Contain Hazardous Substances)

Waste Material	LoW Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

* Individual waste type may contain hazardous substances

6.3 Demolition Waste Generation

The Proposed Development involves the demolition of two residential properties and associated ancillary structures on approach to Hansfield Road, with a total Gross Floor Area (GFA) of approximately 670 sqm.

All demolition materials will be segregated on-site and directed towards reuse / recovery / recycling, where practicable, with disposal utilized only as a last resort, in accordance with the waste hierarchy. The estimated demolition waste quantities and associated predicted reuse, recycling / recovery and disposal rates are shown in Table 6.2.

Table 6.2 Estimated off-site Reuse, Recycle and Disposal Rates for Demolition Waste

Waste Type	Tonnes	Reuse/Recover		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	36.2	0	0.0	85	30.8	15	5.4
Concrete, Bricks, Tiles, Ceramics	205.0	85	174.3	5	10.3	10	20.5
Plasterboard	16.1	30	4.8	60	9.6	10	1.6
Asphalts	4.0	25	1.0	70	2.8	5	0.2
Metals	60.3	5	3.0	80	48.2	15	9.0
Slate	32.2	0	0.0	85	27.3	15	4.8
Timber	48.2	10	4.8	60	28.9	30	14.5
Total	402.0		187.9		158.0		56.1

6.4 Construction Waste Generation

Table 6.3 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports* ²³ and the joint EPA and Galway-May Institute of Technology (GMIT) study ²⁴.

Table 6.3 Waste Materials Generated on a Typical Irish Construction Site

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	100

However, it should be noted that the waste breakdown presented in Table 6.3 is based primarily on traditional building projects and is not fully representative of linear infrastructure developments such as the Proposed Development.

Accordingly, the construction waste estimates for the Proposed Development have been derived using standard waste generation methodologies, adjusted to reflect the infrastructure nature of the works. In particular, increased proportions of concrete, asphalt and aggregates have been assumed, while building-specific materials (e.g. plasterboard) have been excluded.

The construction works include approximately 8,021 m² of unbound surface, 15,323 m² of bitumen bound surface, and 3,800 m² of concrete structures (boardwalks and bridges), which inform the anticipated material types and associated waste streams.

Table 6.4 presents an estimate of construction waste generation for the Proposed Development (excluding excavated materials), based on an adjusted waste generation rate and modified waste composition appropriate for infrastructure projects.

Table 6.4 Predicted On and Off-Site Reuse, Recycle and Disposal Rates for Construction Waste (Excluding Excavated Materials)

Waste Type	Tonnes	Reuse		Recycle / Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Concrete	169.7	30	50.9	65	110.3	5	8.5
Asphalt	135.7	20	27.1	75	101.8	5	6.8
Aggregates	135.7	40	54.3	50	67.9	10	13.6
Metals	67.9	5	3.4	90	61.1	5	3.4
Timber	33.9	20	6.8	60	20.4	20	6.8
Packaging / Other	67.9	10	6.8	70	47.5	20	13.6
Mixed Residual	33.9	0	0.0	0	0.0	100	33.9
Total	644.7		149.3		408.9		86.5

These estimates are based on an overall construction area of approximately 27,144 m² and an adjusted waste generation factor appropriate for infrastructure projects, reflecting the absence of internal fit-out and finishing works typically associated with building developments.

Notwithstanding the above estimates, the primary construction-related waste stream associated with the Proposed Development will comprise excavated materials generated during earthworks.

Based on a preliminary cut and fill assessment carried out by DBFL Consulting Engineers Ltd., the total volume of material to be excavated is estimated to be approximately c. 14,776 m³.

It is currently envisaged that approximately c. 11,899 m³ of suitable excavated material will be reused on-site for fill and engineering purposes, including stabilised material. The remaining volume of approximately c. 2,880 m³ of excavated material will be removed off-site due to limited reuse opportunities and subject to material classification and suitability for reuse, recovery or disposal.

Excavated materials will comprise topsoil, Made Ground and natural cohesive soils, consistent with the findings of the ground investigation. These materials will be managed in accordance with the waste hierarchy, with reuse on-site prioritised where practicable.

The construction waste streams identified in Table 6.4 reflect the anticipated materials arising from the Proposed Development and include:

- ▶ Surplus aggregates and sub-base materials associated with unbound and bitumen bound surfaces;
- ▶ Asphalt waste from surfacing works;
- ▶ Concrete waste from construction of boardwalks and bridge structures;
- ▶ Metals (including reinforcement and fixings);
- ▶ Timber from temporary works (e.g., formwork);
- ▶ Packaging waste (plastic and cardboard); and
- ▶ Mixed non-recyclable construction waste.

These materials will be segregated at source where practicable and managed in accordance with the waste hierarchy, with reuse and recycling prioritised over disposal.

It should be noted that final waste quantities will be dependent on detailed design and construction methodologies and may be subject to change during the construction process.

In addition to the non-hazardous construction wastes described above, limited quantities of hazardous waste may be generated during the construction phase. These may include contaminated soils (if encountered), fuel- and oil-contaminated materials arising from spill response activities, asbestos-containing materials (if identified during demolition works), waste paints, adhesives, batteries, WEEE and other hazardous substances associated with site activities. Invasive non-native plant material and any associated contaminated soils requiring off-site management may also arise. Quantities cannot be accurately predicted at this stage; however, all such materials will be managed separately from non-hazardous wastes and handled in accordance with relevant waste legislation, the project ISMP and site-specific management procedures.

6.5 Proposed Resource and Waste Management Options

Waste materials generated will be segregated on-site, where it is practicable. Where the on-site segregation of certain waste types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source, where feasible. All waste receptacles leaving the site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dublin region and wider Leinster area that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

National End-of-Waste Decision EoW-N001/2023 (Regulation 28) published by the EPA in September 2023, establishes criteria determining when recycled aggregate resulting from a recovery operation ceases to be waste. Material from this Proposed Development will be investigated to see if it can cease to be waste under the requirements of the National End of Waste Criteria for Aggregates.

During demolition and construction, some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off-site in their work vehicles (which are not designed for the carriage of waste). However, such sub-contractors will be required to ensure that the receiving facility holds the appropriate COR, permit or licence.

Written records will be maintained by the contractor(s), detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contractors who collect waste from the site and COR / permit / licence for the receiving waste facility for all waste removed off-site for appropriate reuse, recycling, recovery and / or disposal.

Dedicated bunded storage containers will be provided for hazardous wastes which may arise, such as batteries, paints, oils, chemicals, if required.

The anticipated management of the main waste streams is outlined as follows:

Topsoil, Made Ground and Natural Soils

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and,

least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

When material is removed off-site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 27 of the European Communities (Waste Directive) Regulations 2011, as amended, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste and Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

Any nearby sites requiring clean fill / capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Regulation 27. Similarly, if any soils / stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Regulation 27. Regulation 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / recovery / disposal of the material will be carried out in accordance with the Waste Framework Directive (Directive 2008/98/EC), the *Waste Management Act 1996* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit and Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it is anticipated that it will not be crushed on site. Any excavated rock is expected to be removed off-site for appropriate reuse, recovery and / or disposal. If bedrock is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from FCC.

Silt and Sludge

During the construction phase, silt and petrochemical interception will be carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off-site.

Concrete Blocks, Bricks, Tiles and Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and will be recycled, where possible. If concrete is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from FCC.

Asphalt

Asphalt materials generated during surfacing works will be segregated and, where practicable, reused or recycled at appropriately authorised facilities.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues, etc., will be disposed of in a separate skip and recycled off-site.

Metal

Metals will be segregated, where practical, and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard and Glass

These materials are expected to arise primarily from demolition activities rather than construction of the greenway and will be segregated and recycled where practicable.

Waste Electrical and Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling.

Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off-site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team (see Section 10.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Asbestos Containing Materials

Any asbestos or ACM found on-site will be removed by a suitably competent contractor and disposed of as asbestos waste before the construction works begin. All asbestos removal work or encapsulation work must be carried out in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*.

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and / or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. All hazardous wastes will be stored in designated, secure and appropriately bunded areas to minimise risks to human health and the environment. Hazardous waste will be recovered, where possible, and otherwise disposed of appropriately.

On-Site Crushing

It is currently not envisaged that the crushing of waste materials will occur on-site. However, if the crushing of material is to be undertaken, a mobile waste facility permit will first be obtained from FCC and the destination of the accepting waste facility or if an application under regulation 28 will be made using National End-of-Waste Decision EoW-N001/2023, will be supplied to the FCC waste unit.

Invasive Species

An ISMP has been prepared and is being submitted with this planning application.

Areas affected by invasive species will be clearly identified and segregated where required. Works within or adjacent to infested areas will be undertaken in accordance with the ISMP and relevant best practice guidance to prevent the spread of invasive species. Biosecurity measures will include:

- ▶ Delineation of invasive species exclusion zones;
- ▶ Toolbox talks and staff awareness training;
- ▶ Cleaning and inspection of plant and machinery before leaving affected areas;
- ▶ Segregation and appropriate storage of invasive species-contaminated soils and vegetation;
- ▶ Tracking and documentation of any contaminated materials removed off-site; and
- ▶ Disposal or treatment of invasive species material at appropriately authorised facilities where required.

Any invasive plant material, including roots, rhizomes, stems, seeds and associated contaminated soils, will be handled in accordance with the ISMP and relevant legislation to prevent accidental spread within or beyond the site. Regular monitoring and inspections will be undertaken in accordance with the ISMP throughout the construction phase.

It should be noted that, until a Main Contractor has been appointed, it is not possible to identify the final destinations for all waste streams that may arise from the Proposed Development. Prior to the commencement of construction and the removal of any waste off-site, details of the proposed destinations for each waste stream, including any invasive species-contaminated materials requiring off-site treatment or disposal, will be provided to FCC by the project team.

6.6 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the Main Contractor, either by a weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project RM (see Section 10.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the Waste Framework Directive (Directive 2008/98/EC), the *Waste Management Act 1996* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit and Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 10.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR / permit or EPA Waste Licence for that site will be provided to the nominated project Waste Manager (see Section 10.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from Dublin City Council (as the relevant authority on behalf of all Local Authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on-site.

7. ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

7.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

7.2 Recycling

Salvageable metals will earn a rebate, which can be offset against the costs of collection and transportation of the skips.

Clean, uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated waste, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated waste, such as timber, from a site than mixed waste.

7.3 Disposal

Municipal landfill charges in Ireland are based on the weight of waste disposed. Charges are approximately €140 - €160 per tonne of waste which includes an €85 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations*. The *Circular Economy (Waste Recovery Levy)* will also incur a levy of €10 per tonne for waste accepted for recovery. This will include backfilling at authorised recovery sites and at municipal waste landfills.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc., is also used as fill / capping material, wherever possible.

8. DEMOLITION PROCEDURES

The demolition phase will involve the demolition of two residential properties and associated ancillary structures on approach to Hansfield Road. The demolition works are identified in the planning drawings submitted as part of the planning application for the Proposed Development. A detailed demolition method statement, including safety procedures, will be prepared by the appointed demolition contractor. However, in general, the following sequence of works should be followed during the demolition stage:

Waste Reduction Assessment

- ▶ Preparation of a pre-demolition audit detailing resource recovery best practice, i.e. deconstruction and disassembly where feasible and practicable. The demolition audit will be informed by the *EU Guidelines for the Waste Audits Before Demolition and Renovation Works of Buildings* (2018)²⁵;
- ▶ Investigate the reduction and recycling potential of deconstructed components, elements and materials within the new build where it is in compliance with functionality, regulatory and performance requirements. The reuse and recycling of deconstructed components, elements and materials will be carried out in compliance with relevant requirements relating to by-product, end-of-waste and waste data reporting;
- ▶ Reuse of suitable material will be undertaken in compliance with relevant regulatory requirements, including by-product, and end-of-waste provisions where applicable; and
- ▶ A specific audit for potentially hazardous material (asbestos, polychlorinated biphenyls (PCBs), persistent organic pollutants (POPs), etc.) and document procedures for removal of same prior to main demolition works will be undertaken.

Check for Hazards

Prior to commencing works, buildings and structures to be demolished will be checked for any likely hazards including asbestos, ACMs, electrical power lines or cables, gas reticulation systems, telecommunications, unsafe structures and fire / explosion hazards, e.g. combustible dust, chemical hazards, oil, fuels and contamination.

Removal of Components

All hazardous materials will be removed first. All components from within the buildings that can be salvaged will be removed next. This will primarily be comprise metals; however, may also include timber, doors, windows, wiring and ducting, where suitable for reuse or recycling.

Excavation of Services, Demolition of Walls and Concrete

Services will be removed from the ground, and the breakdown of walls will be carried out once all salvageable or reusable materials have been removed. Finally, any existing foundations and hard standing areas will be excavated and removed.

Reuse

Reuse (Most preferred): Wherever feasible, materials and components will be identified for direct reuse on-site or off-site without reprocessing. This includes salvaging items such as historic masonry, structural steel, timber, doors, windows and other reusable components, where practicable.

Where reuse on-site is not feasible, suitable materials may be transferred off-site for reuse at appropriately authorised facilities or through salvage and recovery operators.

Reuse avoids the environmental impacts associated with both waste processing and the manufacture of new materials and will therefore be prioritised. Opportunities for reuse will be maximised through appropriate demolition planning and segregation of materials.

The demolition contractor will be required to keep track of all materials removed from the site. Records will be maintained through dockets, receipts and logs. The information will then be analysed to ensure that the targeted waste management approach has been implemented and that environmental impacts are minimised. A reporting schedule will be maintained using an appropriate data management system to ensure all waste data is recorded and available for review.

The future Main Contractor engaged to execute the works will also be consulted on storage and protection options for any salvaged items. A designated storage area will be provide, including external storage for robust materials and a suitable covered or enclosed area for materials requiring protection.

A member of the construction team will be appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of Proposed Development

9. TRAINING PROVISIONS

A member of the demolition and construction team will be appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of Proposed Development.

9.1 Resource Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site.

The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the Waste Manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

9.2 Site Crew Training

Training of site crew in relation to waste is the responsibility of the RM and, as such, a waste training program will be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

10. TRACKING AND TRACING / RECORD KEEPING

Records will be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on site.

A waste tracking log will be used to track each waste movement from the site. On exit from the site, the waste collection vehicle driver will stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or Waste Transfer Form (WTF) for hazardous waste) for the waste load collected. At this time, the security personnel will complete and sign the Waste Tracking Register with the following information:

- ▶ Date;
- ▶ Time;
- ▶ Waste Contractor;
- ▶ Company waste contractor appointed by, e.g. contractor or subcontractor name;
- ▶ Collection Permit No.;
- ▶ Vehicle Reg.;
- ▶ Driver Name;
- ▶ Docket No.;
- ▶ Waste Type;
- ▶ LoW; and
- ▶ Weight/Quantity.

The waste vehicle will be checked by security personnel or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the FCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the Main Contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licenses will be maintained on site at all times and will be periodically reviewed by the RM. Subcontractors who have engaged their own waste contractors, will provide the Main Contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

11. OUTLINE WASTE AUDIT PROCEDURE

11.1 Responsibility for Waste Audit

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phase of the Proposed Development. Contact details for the nominated RM will be provided to the FCC Waste Regulation Unit after the Main Contractor is appointed and prior to any material being removed from site.

11.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site will be undertaken mid-way through the demolition and construction phase of the Proposed Development.

If waste movements are not accounted for, the reasons for this will be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery / reuse / recycling targets for the site. Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling / reuse / recovery figures for the Proposed Development.

11.3 Pest Management

A pest control operator will be appointed as required to manage pest onsite during the C&D phases of the Proposed Development. Organic and food waste generated by staff will not be stored in open skips, but in closed waste receptacles. Any waste receptacles will be carefully managed to prevent leaks, odours and pest problems.

12. CONSULTATION WITH RELEVANT BODIES

12.1 Local Authority

Once construction contractors have been appointed and have appointed waste contractors, and prior to removal of any C&D waste materials off-site, details of the proposed destination of each waste stream will be provided to the FCC Waste Regulation Unit.

FCC will also be consulted, as required, throughout the demolition, excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

12.2 Recycling / Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations / permits / licenses are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling / reclamation, the means by which the wastes will be collected and transported off-site, and the recycling / reclamation process each material will undergo off-site.

13. SUMMARY AND CONCLUSION

Adherence to this plan will also ensure that waste management during the demolition and construction phases at the Proposed Development is carried out in accordance with the requirements in the EPA's *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects* and the FCC Waste Bye-Laws ²⁶ and the *NWMPCE*.

Waste contractors have not yet been appointed; therefore, Waste Collection Permits and Waste Facility details are not currently available. These will be provided to FCC prior to commencement of works and before any waste leaves the site, ensuring full compliance with planning conditions and legislative requirements.

14. REFERENCES

1. Waste Management Act 1996 (as amended).
2. Environmental Protection Agency Act 1992 (as amended).
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) (as amended).
4. Regional Waste Management Planning Offices, *The National Waste Management Plan for a Circular Economy 2024 – 2030* (2024).
5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste*.
7. Department of Communications, Climate Action and Environment (DCCAE), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
8. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less'* (2021).
9. Department of Climate, Energy and the Environment (DCEE), *Whole of Government Circular Economy Strategy 2026-2028: Accelerating Action* (2026).
10. Circular Economy and Miscellaneous Provisions Act 2022.
11. Environmental Protection Agency (EPA) *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects* (2021).
12. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
13. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and site Managers* (2002).
14. Eastern -Midlands Region Waste Management Office *Eastern-Midlands Region Waste Management Plan 2015–2021* (2015).
15. Waste Management (Landfill Levy) Regulations 2015 (as amended).
16. Circular Economy (Waste Recovery Levy) Regulations 2024.
17. Fingal County Council (FCC), *Fingal County Development Plan 2023 – 2029* (2023).
18. Planning and Development Act 2000 (S.I. No. 30 of 2000) (as amended).
19. EPA, *Waste Classification – List of Waste and Determining if Waste is Hazardous or Non-Hazardous* (2018).
20. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
21. The *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*.
22. Local Government Ireland, *Best Practice Guidance for Handling Asbestos* (2023).
23. Environmental Protection Agency (EPA), National Waste Database Reports 1998 – 2020 and the Circular Economy and National Waste Database Report 2021 – 2022.
24. EPA and Galway-Mayo Institute of Technology (GMIT), *EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned* (2015).
25. European Commission *Guidelines for Waste Audits Before Demolition and Renovation Works of Buildings* (2018).
26. FCC, *Fingal County Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-Laws 2020* (2020).

APPENDIX A. WASTE FACILITIES IN THE DUBLIN AREA

A full list of currently licensed waste facilities that can potentially be used for this development can be found on the National Waste Collection Permit Office Website - <https://facilityregister.nwcpo.ie/>.

Authorisation Reference	Name	Trading As	Address
WFP-DC-20-0054-01	Shanowen Plant Hire Ltd - Mobile Plant		Various Sites Various Sites Various Sites
WFP-DC-20-0053-01	Loftus Demolition & Recycling Ltd - Mobile PLant		Various Sites Various Sites Various Sites Various Sites
WFP-DC-20-0055-01	Padraig Thornton Waste Disposal Ltd	Thornton's Recycling	Unit S3A Henry Road Park West Business Park Dublin 12
WFP-DC-09-0015-03	Chevron Environmental Ltd	Electronic Recycling	Unit 20 Jamestown Business Park Jamestown Road Finglas D11 X2HN
WFP-DC-11-0023-03	Padraig Thornton Waste Disposal Ltd (PTWDL)	Thornton's Recycling	Unit 6 S3B Henry Road Park West Business Park D12 KT91
COR-DC-21-0010-01	Fridge Spares Wholesale Ltd		Unit 15, Blackwater Road Dublin Industrial Estate Glasnevin Dublin 11 D11 YK26
WFP-DC-11-0022-03	Dawnlane Limited	Mullen Scrap	31 & 32 Upper Clanbrassil Street Dublin 8 D08 XY92
WFP-DC-11-0025-03	Rehab Enterprises Limited	Rehab Recycle	The Rehab Building Kylemore Road Ballyfermot Dublin 10 D10 Y443
WFP-DC-11-0027-03	Tom Murphy Recovery & Towing Services Ltd		Block 4, Unit 24 Port Tunnel Business Park Clonsaugh Industrial Estate Dublin 17
WFP-DC-22-0059-01	Derek Beahan Limited	Derek Beahan Recovery	Unit 7 Concorde Industrial Estate Naas Road Dublin 12 D12 YD30
COR-DC-22-0011-01	Soaktech Limited		Unit 16, Butterly Business Park Kilmore Road Artane Dublin 5, D05 X079
WFP-DC-22-0060-01	Edward O'Reilly	E.O'Reilly Recycling	92E Fairview Strand Ballybough Dublin 3
WFP-DC-10-0021-04	Padraig Thornton Waste Disposal Ltd	Thornton's Recycling	Unit 51 Henry Road Park West Business Park Dublin 12 D12 FH68
WFP-DC-11-0028-03	Mitchell Taylor (Exports) Limited	MT oils	The Old Brewery Newmarket Dublin 8 D08 FPF6
WFP-DC-18-0045-02	J. Ryan Haulage Limited - Mobile Plant		Former Bailey Gibson Site 326- 328 South Circular Road Dublin 8 D08 N8X6

Authorisation Reference	<u>Name</u>	<u>Trading As</u>	<u>Address</u>
<u>WFP-DC-10-0018-03</u>	Summerhill Spares Limited		Unit 3 Newtown Industrial Estate Malahide Road Coolock Dublin 17 D17 VY80
<u>WFP-DC-10-0020-03</u>	Everyday Waste & Skiphire	All Away Recycling	84E Pigeon House Road Ringsend Dublin 4 D04 R7N0
<u>WFP-DC-23-0061-01</u>	Wills Bros Limited		Terminal 4 North Lands, Dublin Port (bounded by Bond Road, Tolka Quay Road & Promenade Road) Dublin 1
<u>WFP-DC-24-0062-01</u>	Tinnelly Group	John Tinnelly & Sons Ireland Limited	Unit 5B, Unit 5H Fingal Bay Business Park Co. Dublin K32 NY57
<u>WFP-DC-24-0063-01</u>	Micks Recycling Limited	Micks Skips	Unit 3a Ballyboggan Business Centre Glasnevin Dublin 11
<u>WFP-DC-19-0048-02</u>	Sunflower Recycling Company (Limited by Guarantee)		Shamrock Terrace Five Lamps, North Strand Dublin 1 D01 DX67
<u>WFP-DC-08-0002-04</u>	G & T McGoverns Ltd		2-4, 9 & 12 Prices Lane Rear 31 Ranelagh Road Ranelagh Dublin 6
<u>WFP-DC-22-0056-01 (T)</u>	Dembachel Ltd.		Kylemore Business Park 2 Kylemore Way Inchicore Dublin 8
<u>WFP-DC-25-0064-01</u>	Martin Services (Industrial) Ltd		Unit 10/11 Bluebell Business Park Bluebell, Old Naas Road Dublin 12 D12 W995