

# Traffic and Transport Assessment



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## Traffic and Transport Assessment

Proposed Waste Management Capacity Expansion, Millennium Business Park,  
Cappagh Road, Dublin 11

### Document Control Sheet

<b>Client:</b>	Starrus Eco-Holdings Ltd (SEHL) trading as Greenstar
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## Executive Summary

ORS have been commissioned by Starrus Eco Holdings Ltd (SEHL) trading as Greenstar to carry out a Traffic and Transport Assessment (TTA) for the proposed waste management capacity expansion at its existing facility in Ballycoolin, Dublin 11. This document forms part of the planning application and should be read in conjunction with all drawings, reports, specifications, and particulars associated with the planning application.

This TTA will examine existing and proposed traffic conditions and transport activity to determine the effects on the surrounding road network by the proposed warehouse/logistics unit development.

The expansion involves increases in the quantity of waste processed annually at the facility, which will increase traffic to and from the facility but will not require any construction works with the exception of negative air infrastructure or extension to the site area.

Following consultation with Fingal County Council as part of a separate planning application which has since been permitted (ABP Ref. 310332), it was agreed that this study should assess the cumulative impacts of this development on Cappagh Road. Furthermore, this traffic study has been carried out to revise the modelling of the Cappagh Road / Mitchelstown Road Roundabout to take account of the inspector's report under ABP-310332-21 on the nearby Panda Waste planning permission. It was requested that the roundabout should be remodelled to take into account the latest traffic situation that the junction is and will experience following findings from historic 2019 traffic data.

Existing traffic data has been used to enable an accurate assessment of the current conditions and predicted future conditions on Cappagh Road. ORS validated previous traffic counts carried out in March 2020 pre-pandemic for the proposed Panda expansion, FCC planning application reference SID/01/21 & ABP 310332. Traffic counts were factored up by the Traffic Infrastructure Ireland (TII) growth rates to bring them in line with the expected growth in traffic over the years. Fresh automatic junction turning counts (JTC) were also carried out on Thursday the 10<sup>th</sup> of November 2022, a normal weekday during school term, at the Cappagh Road / Mitchelstown Road Roundabout.

The traffic profile likely to be generated by the proposed increase in capacity was obtained from the existing traffic entering and departing the premises based on the traffic counts obtained in March 2020. The trip rate was then split through the junction in proportion to the existing traffic flows measured on the traffic counts.

The junctions were tested using the Transport Infrastructure Ireland (TII) approved software Junctions 9 for the base year 2023, 5-year and 15-year future design scenarios. Appropriate TII Traffic Growth Factors for Co. Dublin were applied to the traffic flows to ensure that the future growth on the road network has been considered in the analysis.

The Fingal County Council planning website was consulted to include any proposed developments in the area that will affect the road network in the vicinity of the proposed development subject to current planning application or permission not yet enacted.

Following the results of the traffic analysis and the trip generation associated with the proposed increase in capacity, it was observed that the additional traffic along the 6No. junctions in the vicinity of the site will not have a detrimental effect on the capacity of the junctions. The Cappagh Road / Mitchelstown Road Roundabout (site 5) and Cappagh Road / Ballycoolin Road (site 6) will experience capacity issues and delays in the futures years, however, the increase in traffic from the site will account for a maximum 2% of the junction capacity and the inclusion of the proposed increase in tonnage is not the reason for the capacity issues.

## 1 Introduction

The purpose of this Traffic and Transport Assessment (TTA) is to address the traffic and transport related issues that may arise in relation to a proposal by Starrus Eco-Holdings Ltd (SEHL) trading as Greenstar to increase the annual waste handling throughput at its existing facility in Ballycoolin, Dublin 11. The proposal includes increasing the waste handled at their facility in Millennium Business Park from 270,000 tonnes to 450,000 tonnes per annum.

This report will follow the principles set out in the TII Publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines' and will assess the impact the proposed warehouse, and the associated traffic flows, will have on the public road network in the vicinity of the site.

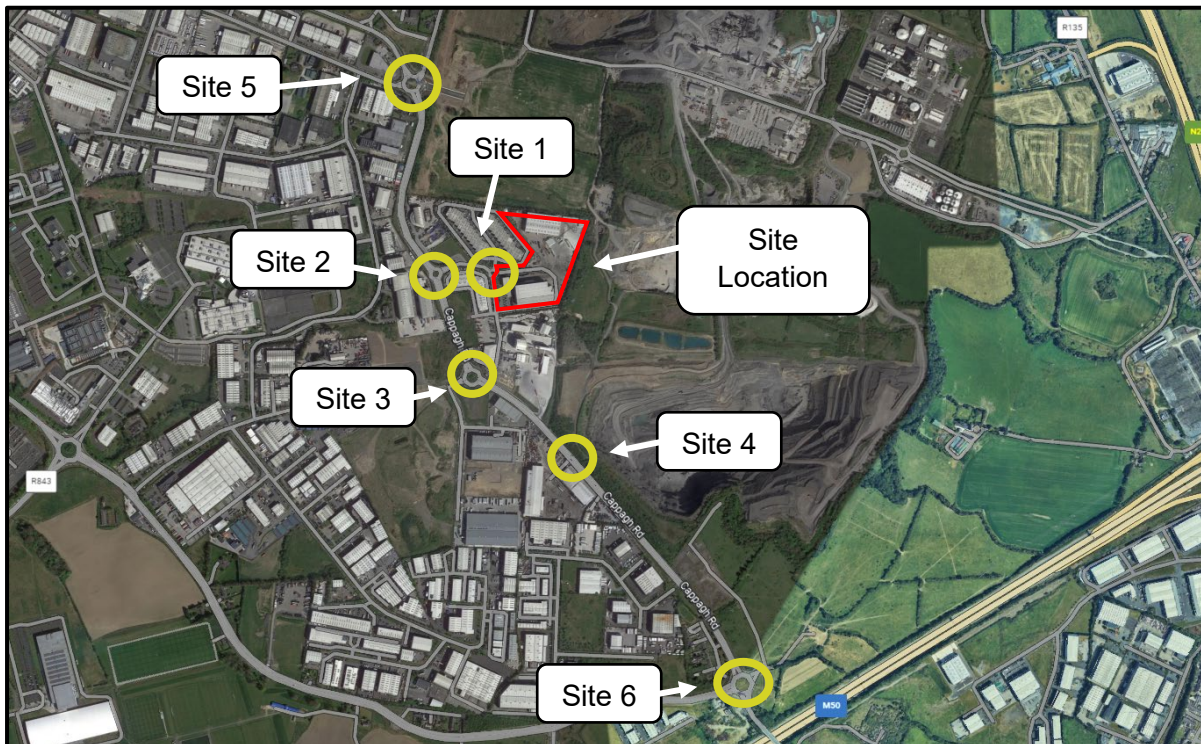
### 1.1 Objectives of this TTA

The objective of this report is to assess the impact the proposed increase in material handled by the facility will have on the surrounding road network, with the assessment focusing primarily on the Cappagh Road.

Following consultation with Fingal County Council, the following 6 junctions, shown in **Figure 1.1**, were selected for inclusion in this assessment:

- Site 1 – Roundabout access to the facility
- Site 2 – Millennium Business Park – Cappagh Road roundabout junction
- Site 3 – Huntstown Business Park – Cappagh Road roundabout junction
- Site 4 – Panda facility access road junction
- Site 5 – Cappagh Road – Mitchelstown Road roundabout junction
- Site 6 – Cappagh Road – Ballycoolin Road roundabout junction.





**Figure 1.1: Location of the Junction Analysed (Source: Google Earth)**

In summary, the objectives of this report are to assess:

- The prevailing traffic conditions on the public road network in the vicinity of the proposed development
- The potential effect on the surrounding road network due to the anticipated traffic generated by the proposed increase in capacity
- The pedestrian and cyclist connectivity in the vicinity of the site
- The parking requirements for the development.

## 1.2 Methodology

The TII Publication PE-PDV-02045 sets out the methodology to be followed in any given TTA. The methodology that will be used in this assessment follows the guidelines set in this document and can be outlined as follows:

- Traffic data used in this assessment were part of the planning application for the proposed increase in annual waste acceptance at Panda facility (Planning reference number SID/01/21 & SBP Ref. 310332). The 6No. locations traffic counts are from March 2020 pre-pandemic
- The historic traffic counts were factored up using appropriate TII Traffic Growth Factors for Co. Dublin and hence the use of this baseline date is considered acceptable
- Automatic junction turning counts (JTC) have been undertaken by IDASO on the 10<sup>th</sup> of November 2022 at the Cappagh Road / Mitchelstown Road roundabout, as requested in the inspector's report ABP-310332-21



- The traffic distribution splits on the public road network could be determined from the traffic counts and applied to the anticipated future generated traffic resulting from the proposed development.
- The predicted traffic to be generated by the facility was from the existing traffic entering and departing the premises based on the traffic counts obtained.
- The effect the proposed development will have on the road network was assessed against the TII threshold and it was found that sites 1 & 2 fall above the TII threshold and site 3, 4, 5& 6 did not fall above the threshold of 5% increase in traffic. However, all junctions were subject of a capacity analysis.
- The junction was modelled using the TII approved software *Junctions 9* (ARCADY & PICADY) for future design years using Central Sensitivity Growth Factors for Co. Dublin to obtain the existing and proposed traffic profiles at the junctions analysed for the base year, 5-year and 15 years after the completion of the development.

### **1.3 Liaison with Fingal County Council and Review of An Bord Pleanala Inspector Report ABP-310332-21**

ORS engaged with Fingal County Council, it was agreed that this study would focus on the cumulative impact of the proposed increase in tonnage at SEHL's Millennium Park facility along Cappagh Road, as described in Section 1.1.

Following the inspector's report ABP-310332-21, this traffic study has included updated review of the Cappagh Road / Mitchelstown Road Roundabout.

## 2 The Proposed Development

### 2.1 Development Site Location

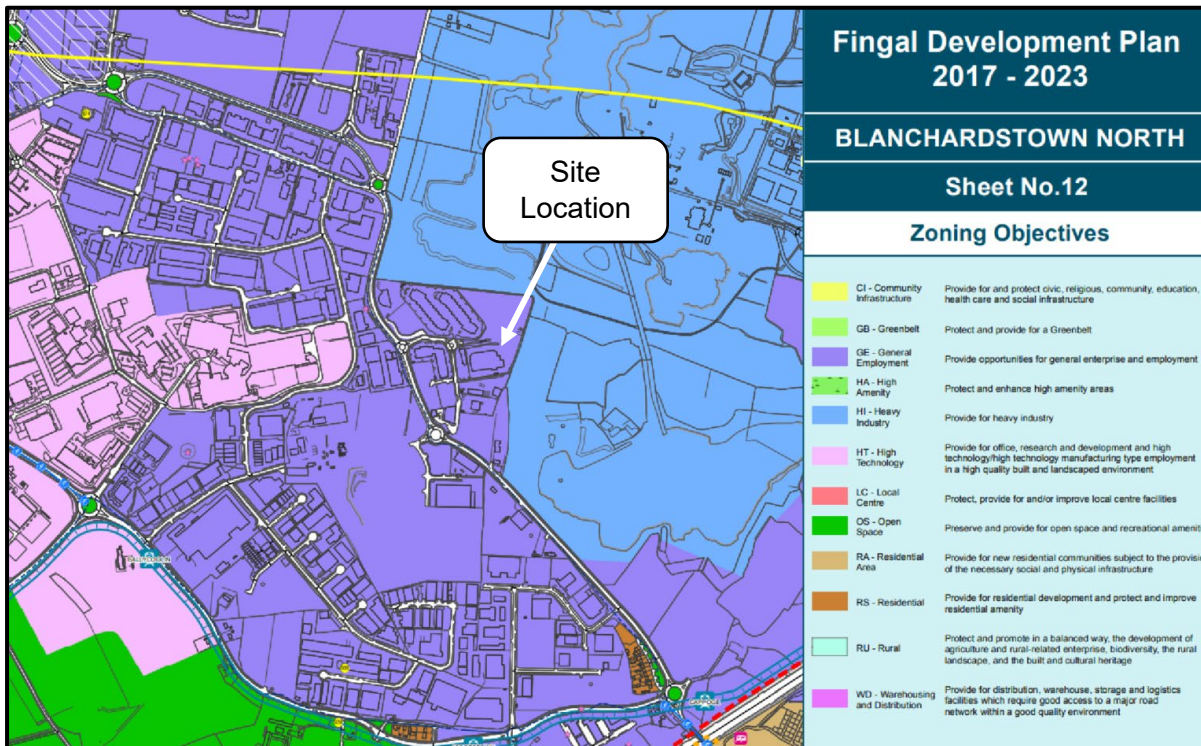
The site is located in Millennium Business Park in Ballycoolin, Finglas and is bounded by other existing commercial units and by the internal Business Park roadway to the west and south, and by Huntstown Quarry east and north. The site is accessed via Cappagh Road and the internal Business Park roadway. **Figure 2.1** shows the proposed site location in the Ballycoolin context.



**Figure 2.1: Site Location (Source: Google Earth)**

### 2.2 Existing Premises and Land Use

According to the Fingal County Development Plan 2017 – 2023 zoning objectives map, shown in **Figure 2.2**, the site is zoned as GE – General Employment. Sites zoned GE are to ‘provide opportunities for general enterprise and employment’.



**Figure 2.2: Blanchardstown North Zoning Objectives (Source: Fingal Development Plan 2017 - 2023)**

### 2.3 Description of the Proposed Development

The proposal put forward by Starrus Eco Holdings Ltd (SEHL) trading as Greenstar is to increase the annual waste intake limit at the facility. The subject site is located in Ballycoolin, and it is approximately 2.5ha.

The facility aims to increase material handling from 270,000 tonnes per annum to 450,000 tonnes per annum.

The site is equipped to manage this increase without additional construction works; therefore, the main impact of the proposed development will be the increase in traffic with the exception of negative air infrastructure associated with transporting the additional materials to and from the existing facilities along the local road network.

### 2.4 Accessibility and Parking

Starrus Eco Holdings Ltd (SEHL) trading as Greenstar is located in Millennium Business Park in Ballycoolin, within the Dublin 15 enterprise zone in the Blanchardstown area. The area has a high pedestrian and cyclist connectivity, with footpaths and cycleways on both sides of the road flanked by grass verges and designated pedestrian crossing points connecting both sides of the road.

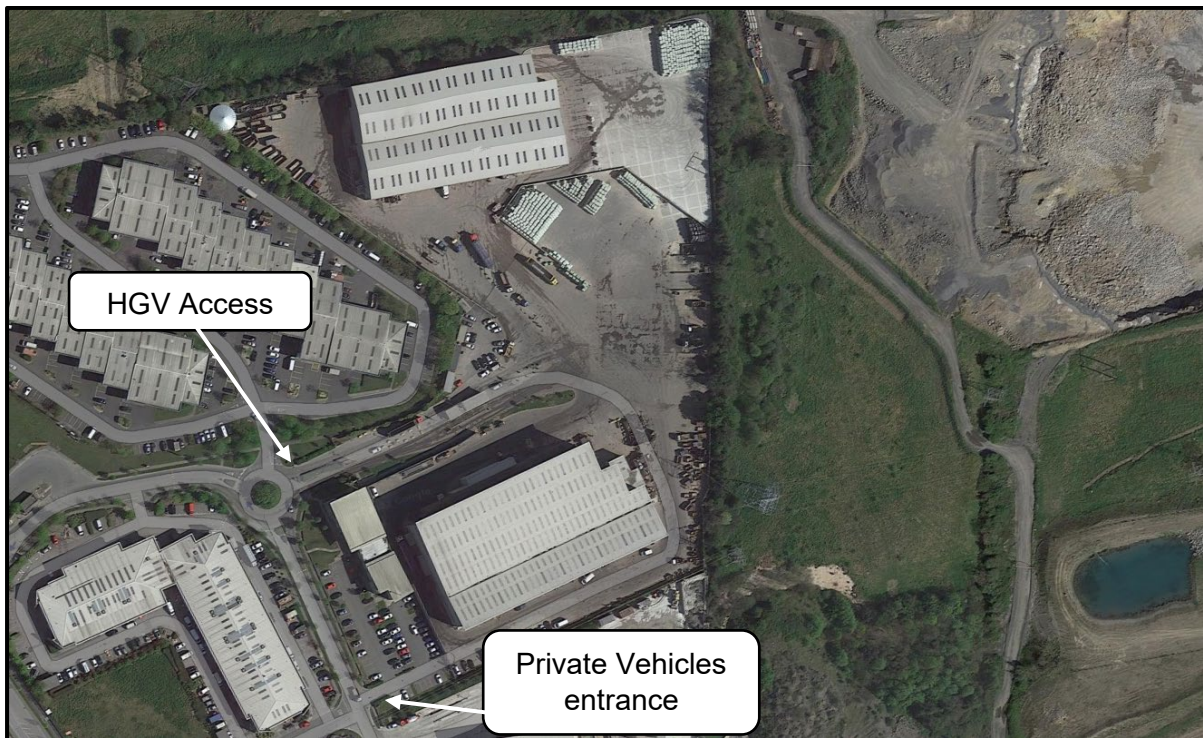


As can be noted in **Figure 2.1**, the site is situated to the west of the M50 motorway and to the south of the N2 national road which offers great connectivity to various locations in Dublin, within the county and across the country.

### 2.4.1 Site Access

All traffic associated with the facility travels along Cappagh Road, then turns into the business park access via the Millennium Park roundabout. Once within the park, traffic encounters an existing internal roundabout which traffic can take the 2<sup>nd</sup> or 3<sup>rd</sup> exit to access the site.

The HGV traffic solely accesses the site from the second exit where traffic will enter the site through a security gate gaining access to the site, storage, and circulation area. Within the site, all traffic follows the designated one-way system traffic management in place. Private vehicles can also benefit from the above entrance, however, the main access to the facility office is made through a priority T-junction to the southwest of the site, as indicated in **Figure 2.3** below.



**Figure 2.3:** Aerial view from the site (source: Google Earth)

### 2.4.2 Internal Road Layout

The main function of the internal road network is to provide a safe and efficient parking and circulatory system that reduces the potential for conflicting movements, which can comfortably accommodate the anticipated volume of arrivals and departures without presenting a safety risk and not having a negative effect on the road network that it connects to.

### 2.4.3 Servicing Arrangements

The internal road network is primarily designed to accommodate cars and HGVs, which are the main vehicle types that use the site. In addition, the site provides adequate provisions to facilitate the circulation and turning movements of emergency vehicles and bin collection vehicles.

The entrance of the facility is positioned in a way that facilitates minimal turning movements and provides appropriate visibility required.

### 3 Existing Conditions

#### 3.1 Existing Road Network

All traffic associated with the facility travels along Cappagh Road which provides access to the entrance of the Millennium Business Park. The facility is accessed off an internal road within the business park, a two-way road of approximately 9 metres in width. The road speed limit within the park is 15km/h.

Cappagh Road is located to the west of the site and is a single-lane carriageway with 2-way traffic and has the provision of a central shared lane to facilitate right and left turning movements. The road speed limit is 50km/h.

Site 1 – Roundabout access to the facility is a 4-arm roundabout located within the Millennium Business Park measuring approximately 30 metres in width. All roads are single-lane carriageways. The western arm is the sole access road to the business park.

Site 2 – Millennium Business / Cappagh Road Roundabout is a 3-arm roundabout measuring circa 35m in width. The 2No. arms along Cappagh road have 2-entry lanes and a ghost island. The roundabout is the sole entrance to Millennium Business Park.

Site 3 – Huntstown Business Par / Cappagh Road roundabout is a 3-arm roundabout located to the southwest of the site. The roundabout is approximately 49 metres wide with all arms having the provision of 2-entry lanes and a ghost island.

Site 4 – Cappagh Road access to the Panda facility is a priority T-junction. Cappagh Road in the proximity of the junction has a central right-turning lane to accommodate right-hand turn movements and prevent blocking of straight-on traffic. Cappagh road is approximately 9.9 metres wide at this junction.

Site 5 – Cappagh Road / Mitchelstown Road Roundabout is a 5-arm roundabout with an oval shape measuring approximately 51m and 58m each extend. Four of the five arms have 2-entry lanes. The roundabout is located to the northwest and presently only 4No. arms are in active usage, the fifth one is under construction and will provide access to Huntstown Estate.

Site 6 – Cappagh Road / Ballycoolin Road Roundabout is a 4-arm roundabout measuring circa 58 metres in width, with the fourth arm under construction. The roundabout is located to the south of the site and provides access to Finglas west.

The roads included in this assessment are existing roads in active usage and are part of a wider area; as such, their condition and suitability for purpose are not subject to assessment as part of this report. For visual details, please refer to **Figures 3.1 to 3.7**.





Figure 3.1: View of the Road Network in the Vicinity of the Development (Source: Google Earth)



Figure 3.2: Site 1: Roundabout access to the facility (source: Google Maps Street View)





**Figure 3.3: Site 2: Millennium Business Park – Cappagh Road roundabout (Source: Google Maps Street View)**



**Figure 3.4: Site 3: Huntstown Business Park – Cappagh Road roundabout (Source: Google Maps Street View)**



**Figure 3.5: Site 4: Cappagh Road access to Panda facility (Source: Google Maps Street View)**



**Figure 3.6: Site 5: Cappagh Road / Mitchelstown Road Roundabout (Source: Google Street View)**



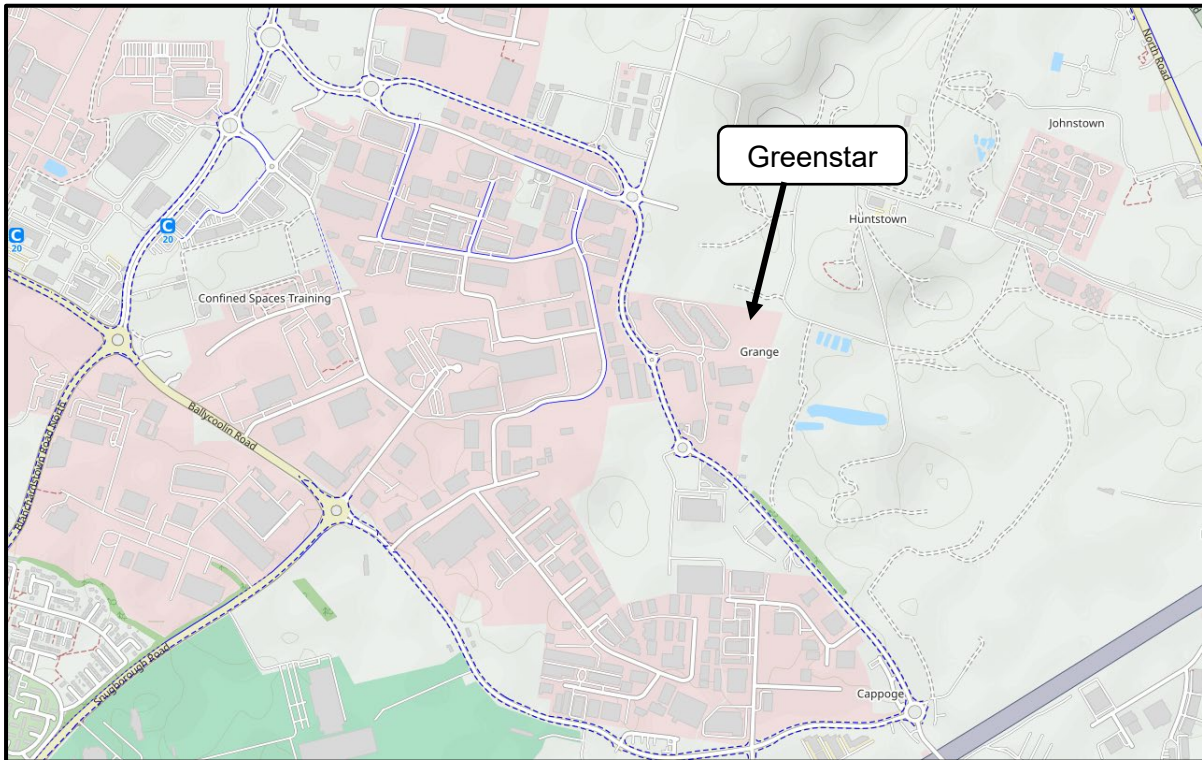


**Figure 3.7: Site 6: Cappagh Road – Ballycoolin Road roundabout (Source: Google Street View)**

### 3.2 Pedestrian and Cyclist Connectivity

The wider Blanchardstown 15 area is categorised as the largest commercial and residential centre within the metropolitan area of Fingal. Pedestrian and cyclist facilities are provided on all roads in the vicinity of the site and measure between 2-3 metres. The infrastructure is provided on both sides of the road, flanked by grass verges, to provide a buffer zone between pedestrians/cyclists and vehicles.

**Figure 3.8** shows in dashed blue the existing cycling infrastructure in the environs of the site. As can be seen, the main roads near the site have the provision of cycle lanes.



**Figure 3.8: Existing Cycle Infrastructure (Source: OpenStreetMap.org)**

### 3.3 Public Transport Provision

The closest bus stops are located within a 5-minute walking distance from facility, with routes to various locations across the Greater Dublin Area, as shown in **Figure 3.9**. **Table 3.1** summarises the routes and the weekday services of all services available near the site.

Regarding rail services, the closest train station to the site is the Castleknock station, approximately 6.9 km southwest of the site. The station offers the Dublin – Maynooth, Longford and M3 Parkway services, shown in navy in **Figure 3.10**, with a frequency of every 40 minutes during peak hours and every hour at non-peak times.



Figure 3.9: Bus Stops in the Vicinity of the Site (Source: TransporforIreland.ie)

## Dublin area rail and airport bus services



Figure 3.10: Existing Rail Network (Source: Irishrail.ie)

**Table 3.1 – Bus Services Available (Source: TFI)**

Route No.	Bus Operator	Direction	Weekday Services
N4	Dublin Bus	Point Village – Blanchardstown Shopping Centre	24 hours bus – every 10mins (day) every 30min (night)
38/38A/38B		Burlington Road – Damastown Drive	Every 20/30 mins
38B			Only during AM peak hours
40D		Parnell Street – Tyrrelstown	Every 30 mins
40E		Broombridge Luas – Tyrrelstown	Every 30 mins
220		Go Ahead Ireland	DCU – Lady’s Well Road
236	Blanchardstown Shopping Centre - Damastown		Only during AM and PM peak hours
238	Tyrrelstown – Lady’s Well Road		Every hour
802	Express Buss	O’Connell Street – Blanchardstown Corporate Park	Only during AM and PM peak hours

### 3.4 Proposed Transport Infrastructure

The Draft Fingal Development Plan 2023-2029 sets out in the objective CM02 the aim to ‘work with the NTA to develop mode share targets for the County to achieve and monitor a transition to more sustainable modes including walking, cycling and public transport, during the lifetime of this Plan’. The document also advocates the need for designing roads to include cycle infrastructure thus, improving the attractiveness of this sustainable means of transportation.

SEHL is located within an area that is assigned a zoning objective of “General Employment” according to the Fingal Development Plan 2017-2023 (FDP). The development plan maintains

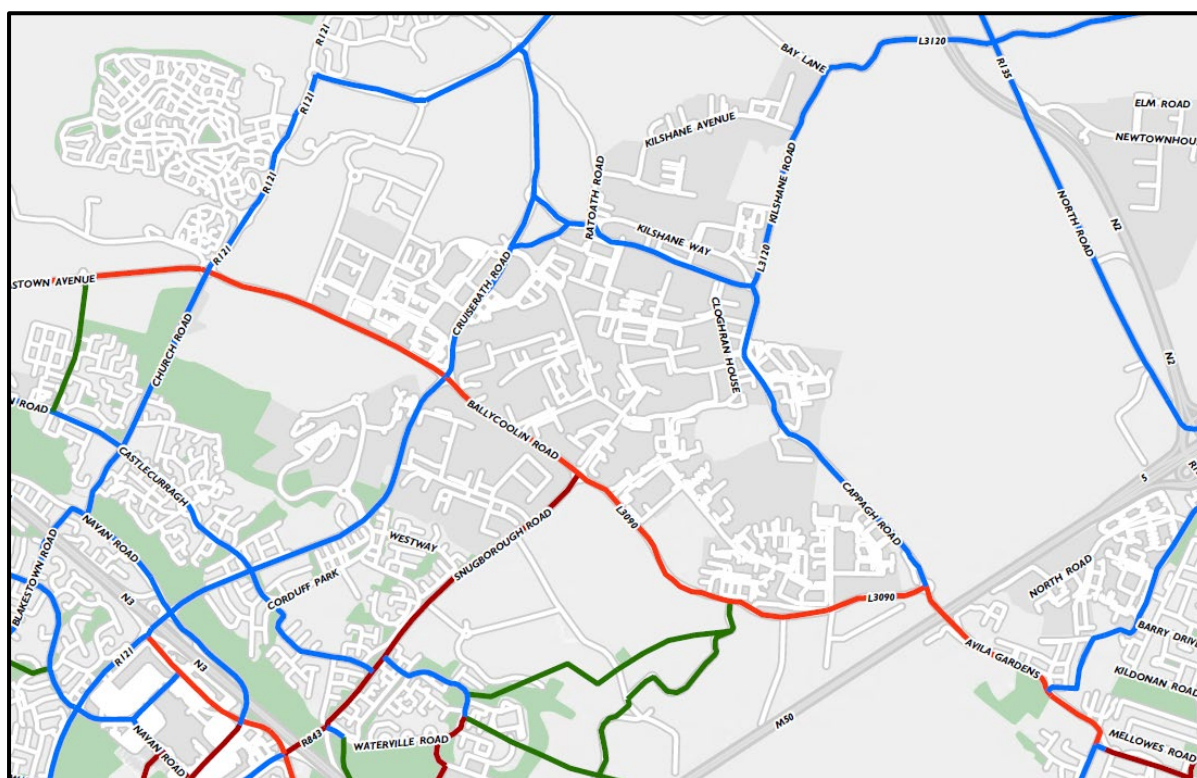


a high-level focus on the integration of land use, high quality and sustainable transport prioritising walking, cycling and public transport.

### 3.4.1 Proposed Pedestrian and Cyclist Infrastructure

The Draft Greater Dublin Area Cycle Network Plan, published in 2021, proposes to expand the urban cycle network to provide new connections between towns in the rural areas of the GDA. The network plan includes primary radial and secondary routes, shown in red and blue, respectively, in **Figure 3.11**. As part of the proposal, it is intended to integrate a cycle lane along Ballycoolin Road, to the south of the site, which is one of the main roads within the Blanchardstown Corporate area. The Draft FDP 2023-2029 documents as policy and objectives to support initiatives towards modal shifts.

The new routes and enhancements, such as Tolka Valley Greenway and secondary routes represent an excellent opportunity to provide a safe and attractive cycle route linking the proposed development to the surroundings.



**Figure 3.11: Blanchardstown Area Cycle Network (Source: NTA)**

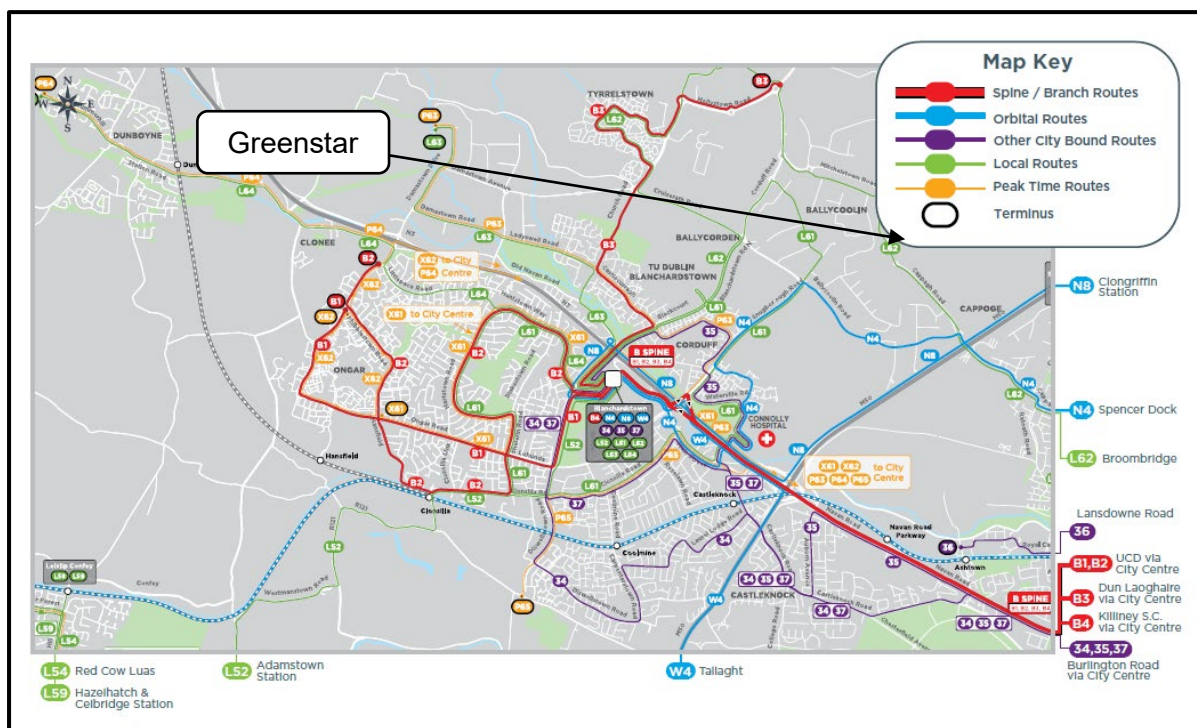
### 3.4.2 Proposed Public Transport Provision

BusConnects Dublin is a major investment programme to improve public transport. It aims to overhaul the current bus system in Dublin through a 10-year programme of integrated actions to deliver a more efficient, reliable, and better bus system for more people.



The BusConnects project aims to build a new network of bus corridors to make journeys faster and more reliable, create a new network of cycle lanes and redesign the Dublin Area bus network to provide a more efficient network with high-frequency spines, new orbital routes and increased services.

The proposed services for the Blanchardstown area are shown in **Figure 3.12**.



**Figure 3.12: Dublin City Area bus routes under the proposed ‘BusConnects’ Programme (Source: Busconnects.ie)**

The Greater Dublin Area Transport Strategy 2022 – 2024 outlines 2No. major proposals regarding rail transportation in the Greater Dublin Area, the MetroLink and DART+ West.

The proposed MetroLink will connect Swords to the Charlemont in 25 minutes and will have the capacity for 20,000 passengers per hour and will provide a key interchange with other transport modes at several locations. The project was submitted to planning application late 2022.

‘DART+ West’ has elected a preferred route and it is under public consultation. The project seeks to significantly increase rail capacity on the Maynooth and M3 Parkway to city centre rail corridors. The proposals aim to increase from 6No. trains per hour per direction to 12 trains per hour and the passenger capacity is due to increase from 5,000 to 13,200 passengers per hour when the project is concluded.

**Figure 3.13** shows the existing and proposed rail services in the Greater Dublin Area.

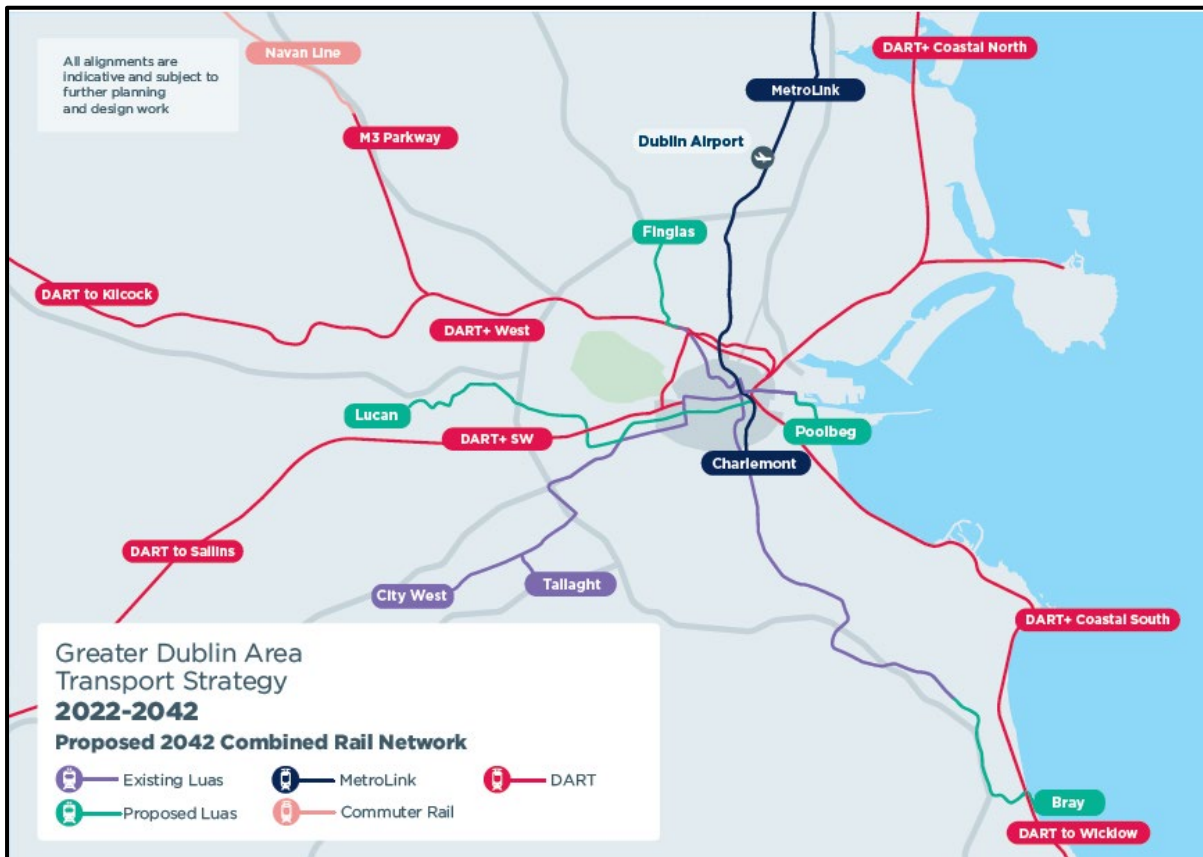


Figure 3.13: Existing and Proposed Rail Network (Source: GDA Transport Strategy)

### 3.5 Existing Traffic Flows

As stated previously, this traffic assessment will make use of the traffic counts obtained in 11<sup>th</sup> of March 2020 pre-pandemic as part of the planning application REF: SID/01/21 and ABP Ref. 310332. The traffic counts were carried out during a 24-hours period and encompass all movements at the 6No. junctions described in **Section 1.1**.

From the traffic data, it could be observed that the morning peak period occur between 08:00 to 09:15 in the morning period and 16:45 to 17:45 in the evening period in sites 2, 3, 4 5 and 6, whereas in site 1 the morning peak occur between 11:45 to 12:45 and 12:45 to 13:30 in the PM peak. **Figures 3.14** and **3.15** show the traffic obtained at the junctions on the day of the counts during peak hours and **Table 3.2** summarises the AM and PM traffic flows.

<b>Table 3.2 – March 2020 Traffic Counts</b>		
<b>Junction</b>	<b>Peak Time</b>	
	<b>AM</b>	<b>PM</b>
Site 1	380.6	334.4
Site 2	930.5	1113.4
Site 3	759.6	883.4
Site 4	685.7	814.2
Site 5	1535	1776.7
Site 6	1566.4	1651.8

In addition, fresh traffic counts were undertaken at the Cappagh Road/ Mitchelstown Road Roundabout to enable the remodelling of the site 5 to account for the latest traffic scenarios along the roundabout. Junction turning counts (JTC) were then obtained on a Thursday the 10<sup>th</sup> of November 2022 by a third-party company named IDASO. The traffic counts were carried out during a 12-hour period from 07:00 AM to 07:00 PM and encompass all movements at the junctions. The traffic counts cover movements of pedal cycles, cars, taxis, buses, LGVs and HGVs and the final number of traffic is presented in Passenger Car Unit (PCU). PCU is the impact that a mode of transport has on traffic compared to a single car, e.g., a private car represents 1 PCU whereas an HGV represents 2.3 PCUs.

From the traffic counts obtained in 2022, it could be observed that the morning peak period occur between 07:30 to 08:30 in the morning period and 16:15 to 17:15 in the evening period. The maximum PCU observed in the AM peak was 1776.6 and in the PM, the peak was 1646.4.

<b>Table 3.3 – November 2022 Traffic Counts</b>		
<b>Junction</b>	<b>Peak Time</b>	
	<b>07:30 – 08:30</b>	<b>16:15 – 17:15</b>
Ste 5 - Cappagh Road / Mitchelstown Road Roundabout	1776.6	1646.4

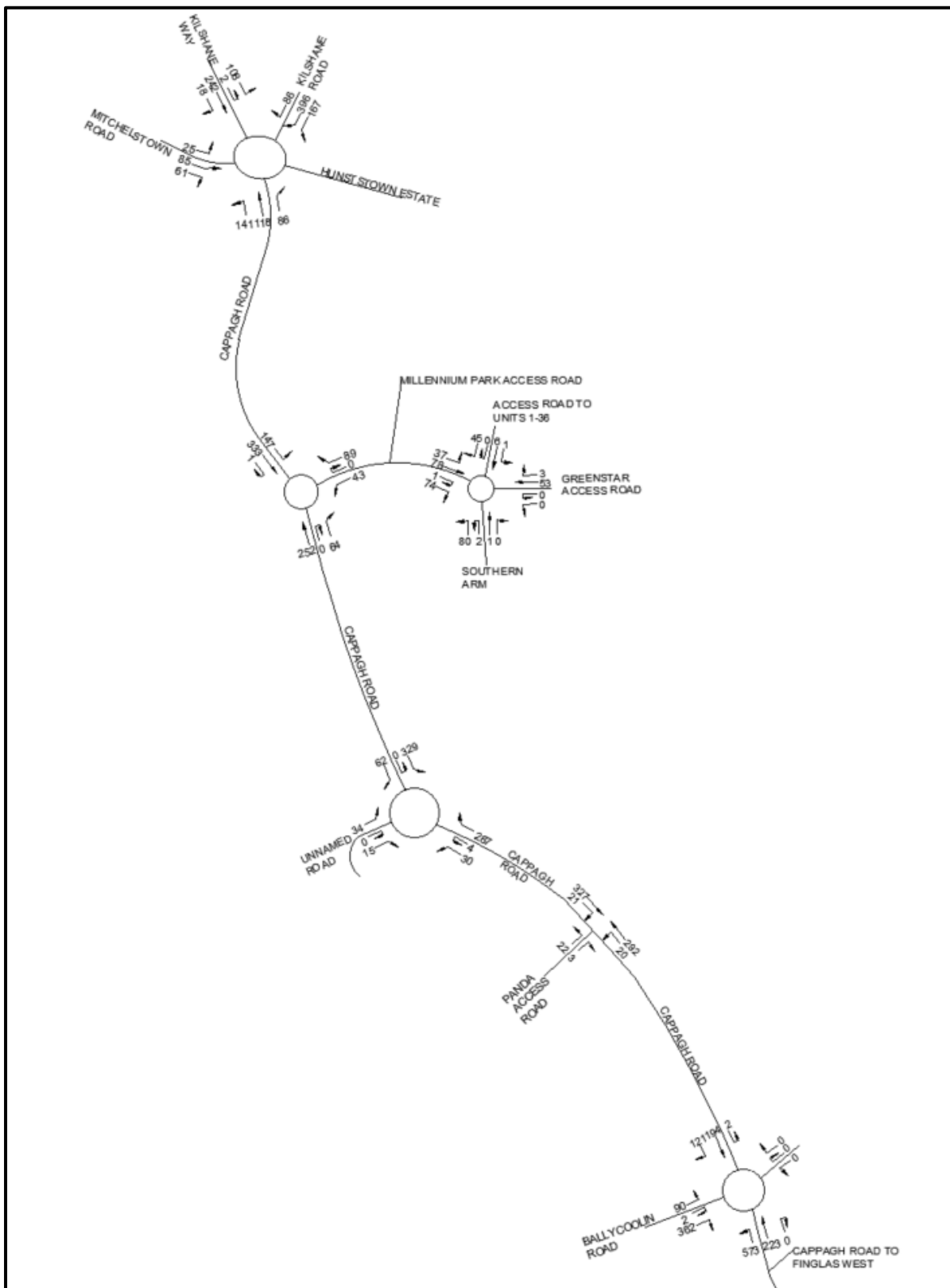


Figure 3.14: AM March 2020 Traffic Flows

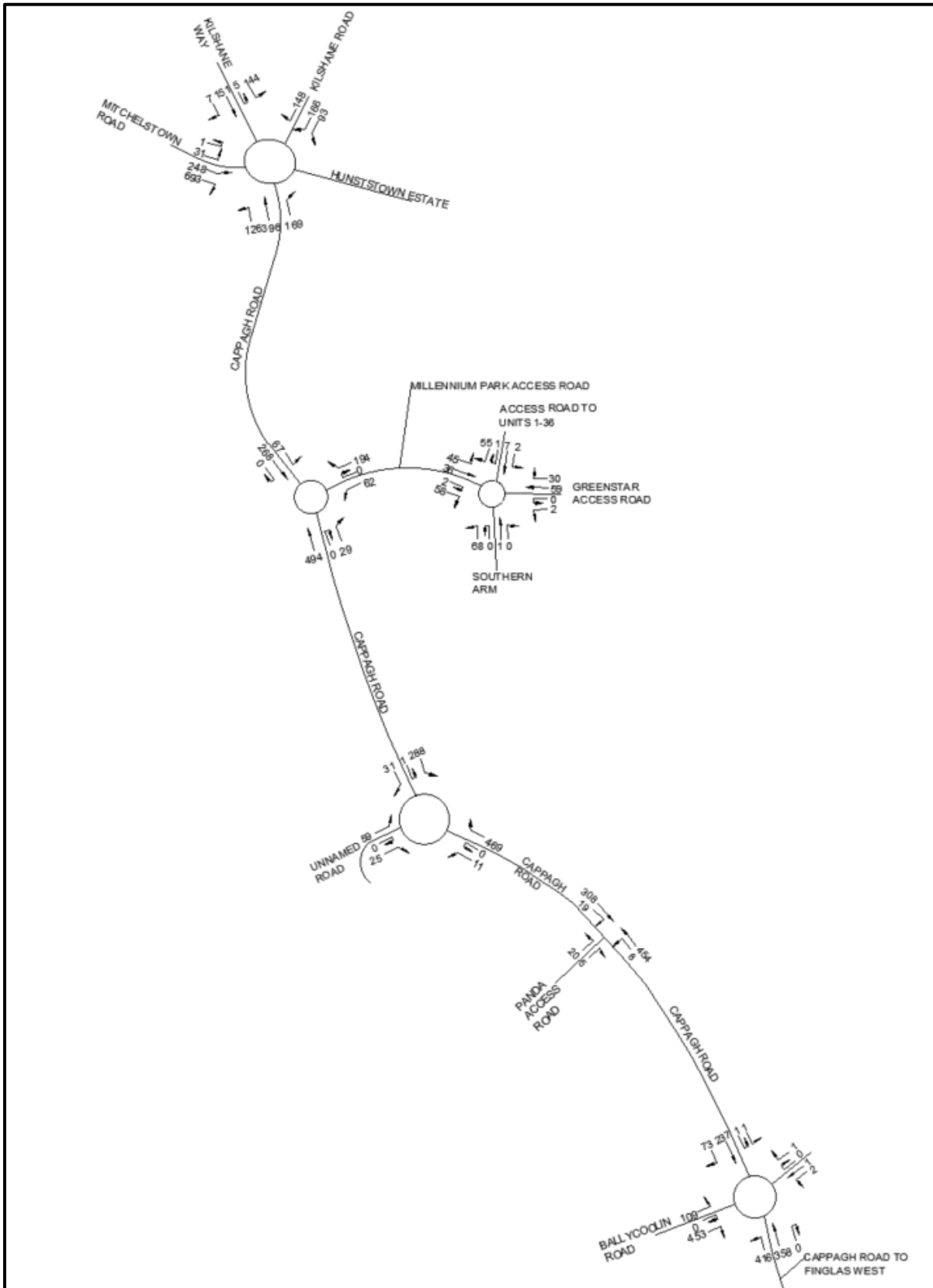


Figure 3.15: PM March 2020 Traffic Flows

### 3.6 Seasonal Adjustment

As stated previously, automatic traffic counts were undertaken in March 2020 and November 2022. Predicted traffic data from 2020 were assessed against 2022 traffic counts to make any necessary adjustments to the traffic counts obtained, to account for seasonal discrepancies along the road network in the vicinity of the site.

Traffic data at site 5 - Cappagh Road / Mitchelstown Road Roundabout was obtained for the year of 2020 and 2022, prior to and after the COVID-19 pandemic. It was found that the traffic data in 2022 is higher than the predicted 2022 traffic from 2020 figures in the AM peak, therefore, an adjustment factor of 1.11 will be applied to the traffic count data to ensure the data obtained will represent a worst-case scenario in the analysis.

For the remodelling of site 5, an adjustment factor of 1.1 will be applied to the 2022 traffic counts to account for the lower traffic flows than predicted 2022 traffic.

Table 3.2 – Comparative Data				
Site Location	2020 Traffic counts	Predicted 2022	2022 Traffic Counts	Comparison
AM	1535	1586	1776.6	11% below 2022 traffic counts
PM	1776.7	1835	1646.4	10% below 2022 projected

### 3.7 Traffic Collisions Data in the Vicinity of the Site

Data on road collisions near the existing development is outlined in **Figure 3.16**. As can be observed, no incidents of any kind have been recorded in the vicinity.

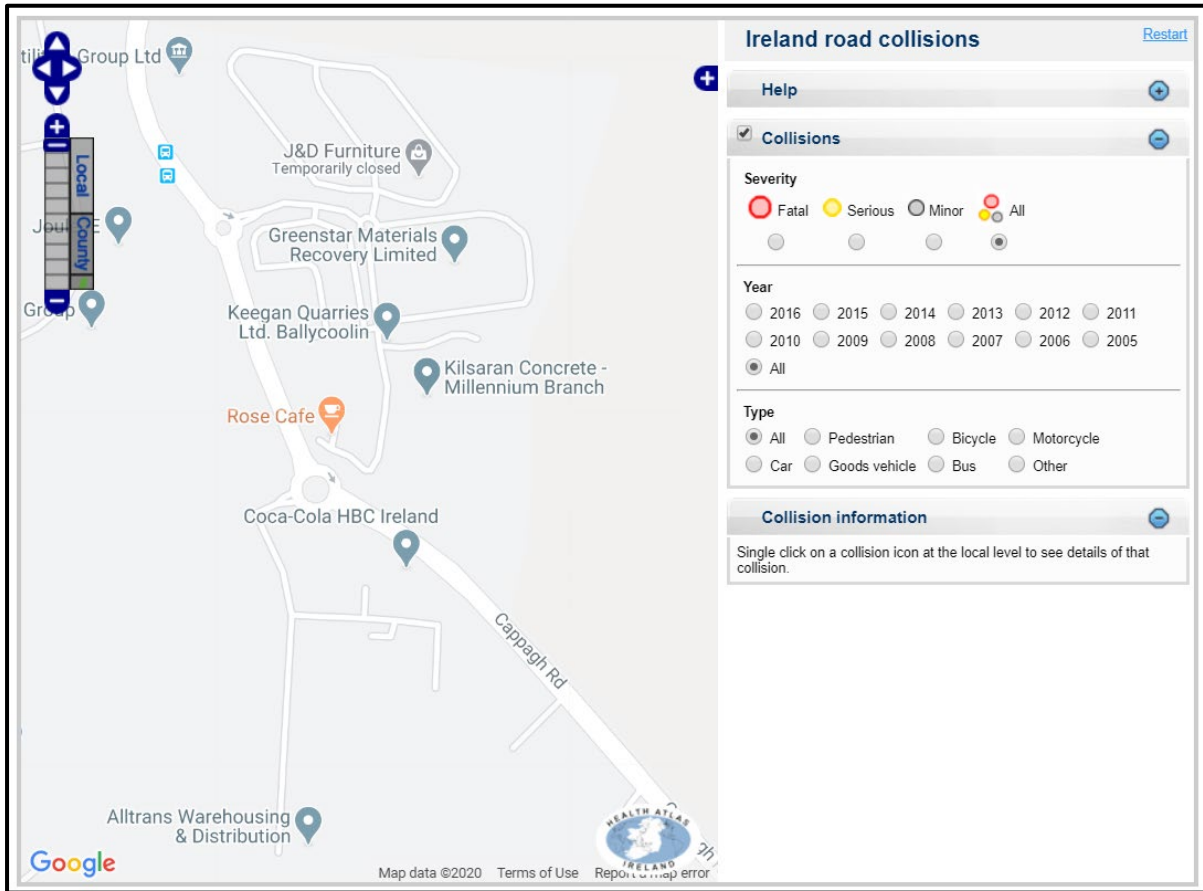


Figure 3.16: Road Collision Data in the Vicinity of the Proposed Development (Source: RSA.ie)



## 4 Trip Generation, Distribution, and Impact on the Road Network

In order to obtain a trip rate for the proposed development following expansion, the existing traffic entering and departing the premises was assessed based on the traffic counts obtained, and additional traffic was calculated based on comparison of expanded waste volumes versus current waste volumes.

No growth factor was applied on top of 2020 traffic counts as traffic to and from Starrus Eco Holdings Limited (SEHL) trading as Greenstar is established. The extracted portion of the traffic data accounts for traffic to and from the facility and it did not follow the growth expected in the road network.

### 4.1 Traffic Generation and Distribution Slips

As aforementioned ORS validated traffic counts part of the planning application SID/01/21 & ABP Ref. 310332, with traffic counts carried out in 6No. junctions in March 2020. The site access road junction was one of the 6No. locations. Traffic data at this junction enable the assessment of entering and departing traffic flows from the site.

To determine the worst-case scenario for traffic generation for the site expansion, the existing traffic counts were reviewed, and hourly traffic peaks identified. Morning peak occurred between 8am and 9:15am with the evening peak recorded to be between 4:45pm and 5:45pm.

At site 1, the total traffic through the access roundabout over 24 hours was 3883 PCU, with 587 PCU arriving at the site and 603 PCU departing. Peak hourly traffic occurred between 11:45 and 12:45pm, with 381 PCU recorded through the roundabout and 135 PCU recorded travelling to and from development. However, traffic to and from the facility between 8:15am and 9:15am was lower, at 86 PCU, while between 4:45pm and 5:45pm this figure fell to 57 PCU, as shown in **Table 4.1** below.

Additional traffic due to the expansion was calculated based on existing traffic figures multiplied by 0.67, since this facility will be expanded from 270,000 tonnes to 450,000 tonnes per annum, an increase of 67%, as illustrated in **Table 4.1** below. This traffic was split through other junctions as per existing traffic splits at these junctions.

**Table 4.1 – March 2020 Traffic Counts at Facility Access Junction**

Time Range	Existing traffic			Expansion traffic			
	Total PCU	Departure	Arrivals	Total PCU	Departures	Arrival	Total PCU
00 to 01	1.5	0	0	0	0	0	0
01 to 02	1.5	0	1.5	1.5	0	1	1
02 to 03	19	8	6	14	5.4	4	9.4
03 to 04	12.1	5.3	4.8	10.1	3.6	3.2	6.8
04 to 05	34.8	9.1	4.8	13.9	6.1	3.2	9.3
05 to 06	79	18.8	17.8	36.6	12.6	11.9	24.5
06 to 07	204.5	38.2	41.5	79.7	25.6	27.8	53.4
07 to 08	204.7	46.6	30.9	77.5	31.2	20.7	51.9
08 to 09	286	36	59.1	95.1	24.1	39.6	63.7
09 to 10	301.2	48	39.1	87.1	32.2	26.2	58.4
10 to 11	320	59.5	60.4	119.9	39.9	40.5	80.3
11 to 12	291.7	47.9	52.1	100	32.1	34.9	67
12 to 13	323	48.4	72.9	121.3	32.4	48.8	81.3
13 to 14	265.4	64.8	30.5	95.3	43.4	20.4	63.9
14 to 15	268.4	62.2	57.9	120.1	41.7	38.8	80.5
15 to 16	250	31.8	42.8	74.6	21.3	28.7	50
16 to 17	202.4	33.4	34.2	67.6	22.4	22.9	45.3
17 to 18	164.6	26.1	19.2	45.6	17.5	13.1	30.6
18 to 19	70.6	8.6	9.5	18.1	5.8	6.4	12.1
19 to 20	42.5	6.9	4.6	11.5	4.6	3.1	7.7
20 to 21	10.2	2	3	5	1.3	2	3.4
21 to 22	4.5	1	0	1	0.7	0	0.7
22 to 23	6.3	0	0	0	0	0	0
23 to 00	6.9	0	0	0	0	0	0

#### 4.1.1 Total Traffic Generated from the Site

Based on the traffic count obtained from planning application SID/01/21 & ABP Ref. 310332 and the traffic splits established from traffic flows, the traffic to and from Greenstar is shown in **Table 4.2** below.

**Table 4.2 – Expected Trip Rates from the Proposed Expansion**

Time Range	Arrivals	Departures	Total
08:00-09:00	40	24	64
16:00-17:00	18	13	31

## 4.2 Cumulative Impact

As part of this Traffic Assessment, to assess the existing and expected traffic along the road network in the vicinity of the facility, the Fingal County Council planning website was consulted to include all committed developments in the area.

According to the Fingal County Council planning website, there are 11No. committed developments in the vicinity of the site, as described in **Table 4.3**. As the developments mentioned below are still under planning process or under construction, the proposed traffic profile to be generated were not contained in the traffic counts. Therefore, this Traffic Assessment has included the expected traffic flows in the future year scenarios in the junction modelling to ensure a robust assessment of the future condition of the road network.

**Table 4.3 – Committed Developments Adjacent to the Site**

Planning Reference	Decision Type	Description	Traffic Generation	
			AM	PM
FW20A/0149	Granted Permission	Construction of a warehouse/light industrial unit at Unit 736	56	46
FW21A/0111	Granted Permission	Permission for a HGV Parking and Tanker Washing Facility	31	32
FW18A/0194	Granted Permission	The construction of 4 no. light industrial units with ancillary offices totalling 1,881m <sup>2</sup>	8	6
FW17A/0152 / FW17A/0012	Granted Permission	Increase in permitted intake and construction of a fifth arm at Cappagh Road / Mitchelstown Road	143	143
SID/01/21	Approved By An Bord Pleanala	Proposed to increase the annual waste acceptance rate from 250,000 tonnes to 450,000 tonnes at Panda facility	51	41
FW20A/0190 FW21A/0112	Granted Permission	Construction of a warehouse distribution facility building at Unit 638	49	58
FW21A/0146 FW22A/0142	Granted Permission	Construction of 1No. warehouse/logistics unit at Site A (Unit 900)	48	41
FW20A/0102	Granted Permission	Construction of a warehouse/light industrial unit at Unit 637	68	81
FW22A/0038	Granted Permission	Construction of a Warehouse/Logistics unit at Plot 3	58	45
FW22A/0066	Granted Permission	Construction of a high technology manufacturing unit at Site A (Unit 901)	98	102
FW22A/0156	Application Registered	Construction of 6No. warehouses/logistics units at Mooretown	119	117

### 4.3 Future Year Traffic Growth

Transport Infrastructure Ireland (TII) issues a range of forecasts: low growth, central growth and high growth. The implementation of policies relating to the National Sustainable Mobility Policy will act as a deterrent to high growth in car-based travel. Low growth factors are however likely to be equally unrealistic at present, therefore, this assessment has used central growth factors, which was extracted from the TII Publication PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, published in October 2021, outlined in **Tables 4.4 to 4.7** below.

The data used is for the Dublin Metropolitan Area from 2016 to 2050 and is for light goods vehicles (LGV) and heavy goods vehicles (HGV).

<b>Table 4.4 – Development Location Information</b>	
Location of Development	Dublin
Sensitivity Area	Central
Year of Traffic Counts	2020
Year of Assessment	2023
Year of Development Construction	2025

<b>Table 4.5 – TII Annual Growth Rates (Central Growth) For Co. Dublin</b>		
Year	LGV	HGV
2016 – 2030	1.0162	1.0295
2030 – 2040	1.0051	1.0136
2040 – 2050	1.0044	1.0162

<b>Table 4.6 – Growth Factors for Future Design Years</b>					
	Counts 2020	Year of Assessment 2023	Assumed year of completion 2025	Completion +5	Completion +10
LGV	1.00	1.049	1.084	1.174	1.236
HGV	1.00	1.091	1.156	1.337	1.468

<b>Table 4.7 – Growth Factors for Future Design Years</b>					
	Counts 2022	Year of Assessment 2023	Assumed year of completion 2025	Completion +5	Completion +10
LGV	1.00	1.016	1.049	1.137	1.197
HGV	1.00	1.030	1.091	1.262	1.385

#### 4.4 Traffic Impact Assessment

Based on traffic counts obtained at the roundabout, the travel distribution could be established, and the traffic generated by the increase in the annual waste handling throughput at the existing facility will follow the same trend.

As the proposed expansion is expected to be fully operational in 2025, the projected 2025 traffic flows could be calculated using TII's Central Growth Factor for Co. Dublin. Based on the traffic levels expected for 2025, the committed developments in the area and the predicted traffic to and from the site, the impact on the junction could be determined, as shown in **Table 4.9**. **Figures 4.1 to 4.4** show the proportion and the traffic associated with the site during the AM and PM periods.

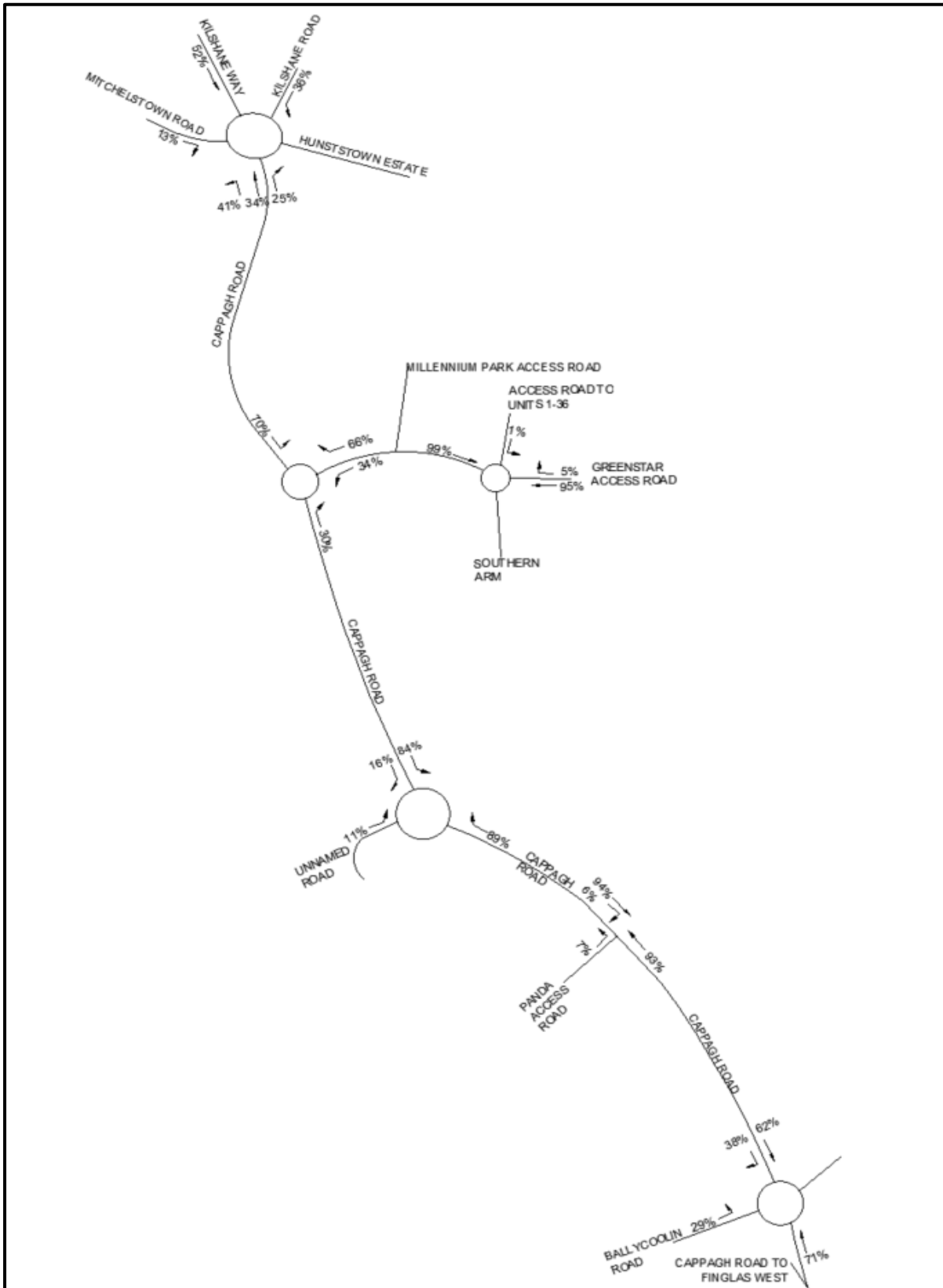


Figure 4.1: Proportion of Traffic Splits at the Junctions Analysed for AM peak



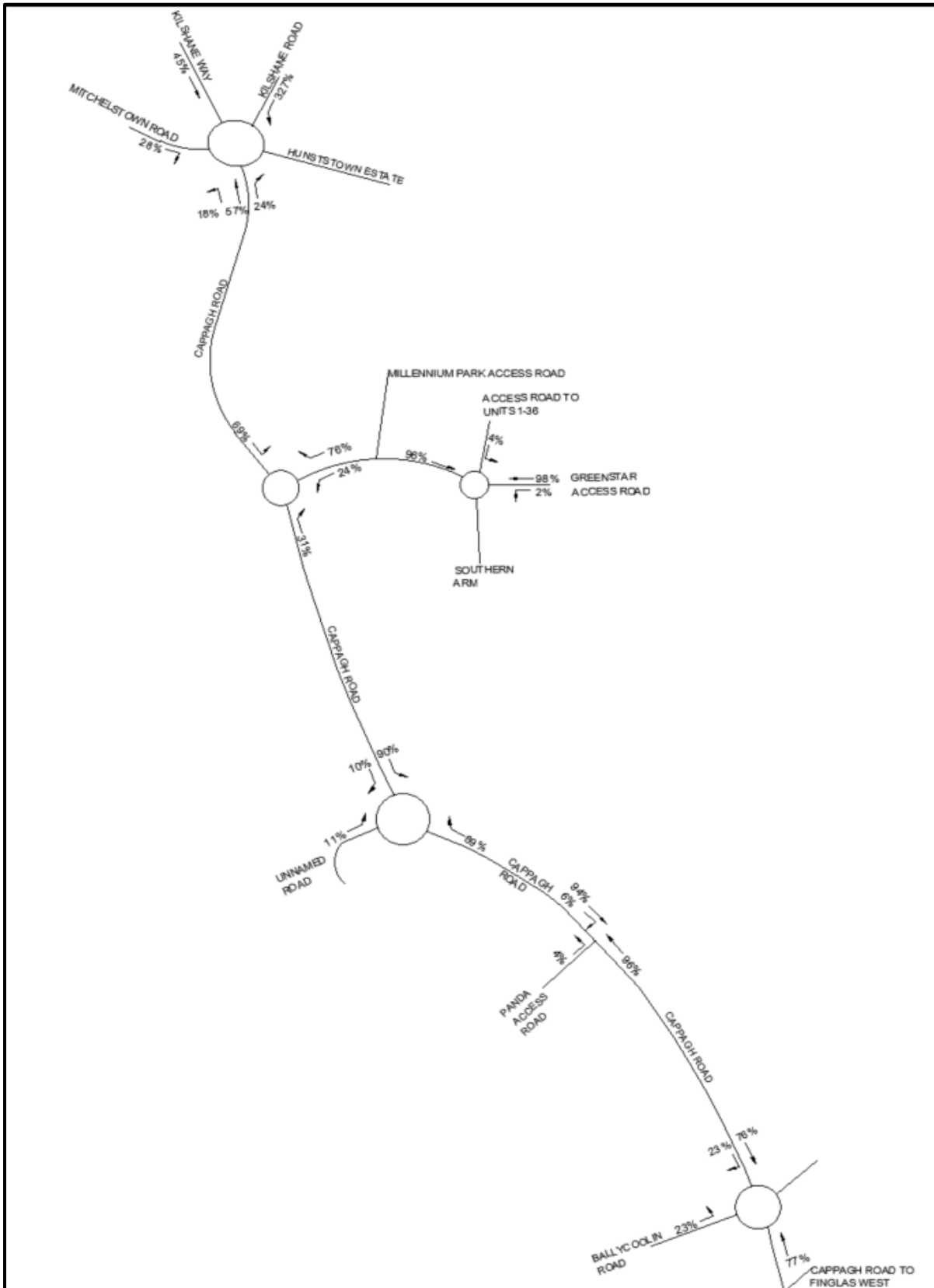


Figure 4.2: Proportion of Traffic Splits at the Junctions Analysed for PM peak

#### 4.4.1 Traffic and Transport Assessment Guidelines

The Fingal Development Plan 2017 – 2023, in objective DMS128, requires a Traffic Assessment to be provided where new developments will have a significant effect on travel demand and the capacity of the surrounding transport network.

The TII Publication PE-PDV-02045 Traffic and Transport Assessment Guidelines, published in May 2014, recommends that junction modelling should be carried out where new traffic exceeds 5% of existing flows if congestion already exists and if traffic generated by the development exceeds 10% where no traffic congestion is present. **Table 4.7** below provides the thresholds for a TTA, and as can be seen, two conditions were met for the proposed expansion.

<b>Table 4.7 – Traffic Management Guidelines Thresholds for Transport Assessments (TII)</b>	
YES	Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
YES	Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive
N/A	Residential development in excess of 200 dwellings
N/A	Retail and leisure development in excess of 100m <sup>2</sup>
N/A	Office, education and hospital development in excess of 2,500m <sup>2</sup>
N/A	Industrial development in excess of 5,000m <sup>2</sup>
NO	Distribution and warehousing in excess of 10,000m <sup>2</sup>

From future traffic projection, it was observed that only Sites 1 & 2 fall above the TII threshold of 5% in junctions where congestion is assumed to exist and 10% increase in traffic on the adjoining road. Although Site 1 - Roundabout Access to the facility experiences no congestion, the traffic generated by the development under simple analyses indicated that the roundabout will exceed the 10% threshold as a result of the low utilisation of the subject junction. The remaining junctions will experience a maximum increase in traffic of 2%. The expected increase in traffic is illustrated in **Table 4.8**.

**Table 4.8 – Traffic Impact on the Nearby Junctions**

Junction	2025 Traffic		Traffic from Development		Increase in Traffic		TII Threshold of 5%	
	AM	PM	AM	PM	AM	PM	AM	PM
Site 1 – Roundabout Access to the facility	439	351	64	31	14%	9%	Above	Above
Site 2 – Millennium Business Park/ Cappagh Road Roundabout	1248	1391	64	31	5%	2%	Above	Below
Site 3 – Huntstown Business Park / Cappagh Road Roundabout	1051	1150	19	8	2%	1%	Below	Below
Site 4 – Cappagh Road / Panda Access T-junction	965	1077	19	8	2%	1%	Below	Below
Site 5 – Cappagh Road / Mitchelstown Road Roundabout	2099	2276	45	23	2%	1%	Below	Below
Site 6 – Cappagh Road / Ballycoolin Road Roundabout	1982	1956	19	8	1%	0.5%	Below	Below

## 5 Capacity Analysis

### 5.1 Capacity Analysis Introduction

Capacity assessments were undertaken at the 6No. junctions along Cappagh Road, shown in **Figure 5.1**, to demonstrate that the proposed increase in the annual waste handling throughput at the existing facility will not adversely impact the functionality of the existing junctions, and as requested in the inspector's report ABP-310332-21 to demonstrate the latest traffic situation at the roundabout. The performance of the junction during the AM and PM peak hours was assessed using ARCADY software for roundabouts and PICADY software for priority T-junctions for the following design years:

- 2023, the base year
- 2025, the planned year of the expansion conclusion
- 2030, 5 years after the conclusion
- 2040, 15-year future design scenario.

**Figure 5.1** shows the location of the proposed developments and the junctions in which traffic simulations were undertaken in order to obtain Ratio Flow Capacity (RFC) and the queue levels to determine if the junction will cater for the predicted level of traffic by the site when it becomes operational.

The Ratio of Flow to Capacity (RFC) describes the capacity of each approach to the junction and determines if the junction will cater for the predicted level of traffic. An RFC below 0.85 (85%) implies that an approach road is operating satisfactorily well within capacity; between 0.85 to 1.0 RFC means the approach operates well within capacity but at less optimal efficiency; and an RFC above 1.0 means that demand and capacity are equal and no further traffic can progress through the junction.

The queue levels are presented in Passenger Car Unit (PCU) and quantify the total number of vehicles queueing on each arm.



**Figure 5.1: Location of Junctions Analysed (Source: Google Earth)**

## 5.2 Traffic Impacts of the Proposed Development on the Local Road Network

As stated in Section 3.5 above, traffic counts were undertaken in March 2020 pre-pandemic at the 6No. junctions in the vicinity of the site and fresh traffic counts were undertaken in November 2022 at Site 5. Central traffic growth rates for Co. Dublin, specified in the TII's Publication PE-PAG-02017 of October 2021, were applied to existing background traffic only and were not applied to the development traffic, since it is limited by development size.

The capacity assessment was modelled for three different scenarios:

- Base-year: 2023 traffic flows modelled according to traffic counts obtained in 2020 and factored up using TII Traffic Growth Rates with seasonal adjustment factor of 1.11 applied in the AM peak.
- Do-nothing: modelled without the intervention of the proposed developments. For this analysis, the traffic counts were factored up using TII's Growth Factor for the design years 2025, 2030 and 2040. The committed developments mentioned in Section 4.2 were added to this analysis.
- Do-something: the impact of the traffic generated by the development were added to the design years 2025, 2030 and 2040. This analysis will enable the comparison with the 'Do-nothing' scenario.

It is worth mentioning that sites 1, 2, 3 & 4 were factored up using growth factors for Dublin Metropolitan Area High Sensitivity Factor for HGV's to obtain a conservative overview for future design years. Sites 5 and 6 showed indications of capacity issues under the



conservative assessment and therefore were modelled using the more accurate approach, using TII’s Dublin Metropolitan Area Central Sensitivity Factors for cars.

### 5.2.1 Site 1 – Roundabout Access to the facility

In the following analysis of the Roundabout access to the facility, the site was accessed for the AM and PM peak and the arms were labelled as follow:

- Arm A: Access Road to Byrne Lifts
- Arm B: Access Road to Starrus Eco Holdings (SEHL) trading as Greenstar
- Arm C: Access Road to Keegan Quarries
- Arm D: Access Road to Cappagh Road



**Figure 5.1: Roundabout access to the facility arm names (Source: Google Earth)**

From the 2020 traffic counts data, it was observed that the Roundabout access to the facility has a 24-hour daily traffic volume of over 3,800 vehicles recorded and as stated in section 4.4.1 the expected increase in traffic from the proposed expansion falls above the TII threshold of 5% increase in traffic, due to the low utilisation of the junction. From traffic data, it was observed that 99% of traffic entering the site comes from the Cappagh Road / Millennium Park roundabout and 95% of traffic exits the site towards the subject roundabout in the morning period. When looking at the evening period, 95% of traffic comes from the roundabout and 98% leaves the site towards the roundabout.

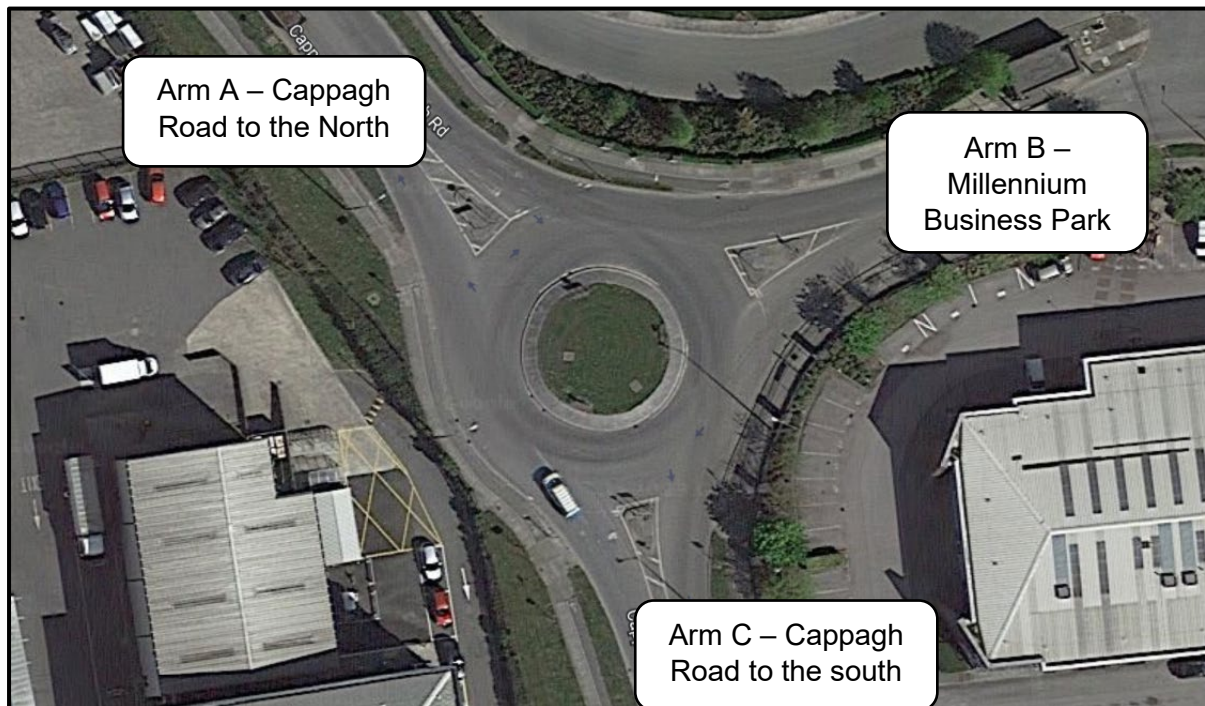
**Table 5.1** shows that for the current year in analysis 7, the junction will operate well below the theoretical capacity of 0.85 RFC. The access route into and out of the facility will be operating satisfactorily within capacity in the long term. There is an increase of 0.06 (6%) in RFC in Arm D – Access Road to Cappagh Road – in the morning period, and 0.02 (2%) RFC in Arm B – Access Road to the facility in the evening period. The inclusion of the proposed development is considered to have a minimal effect on the road network.

<b>Table 5.1 – ARCADY Results for Roundabout access to the facility</b>					
Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + covid factor in AM peak</b>	A	0.1	0.09	0.1	0.09
	B	0.1	0.09	0.1	0.09
	C	0.2	0.13	0.1	0.10
	D	0.5	0.29	0.3	0.21
<b>2 – 2025, do-nothing</b>	A	0.1	0.09	0.1	0.10
	B	0.1	0.10	0.1	0.10
	C	0.2	0.14	0.1	0.10
	D	0.5	0.31	0.3	0.22
<b>3 – 2025, do-something</b>	A	0.1	0.10	0.1	0.10
	B	0.2	0.13	0.2	0.12
	C	0.2	0.14	0.1	0.10
	D	0.6	0.36	0.4	0.24
<b>4 – 2030, do-nothing</b>	A	0.1	0.11	0.1	0.12
	B	0.1	0.12	0.1	0.11
	C	0.2	0.16	0.2	0.12
	D	0.6	0.36	0.4	0.26
<b>5 – 2030, do-something</b>	A	0.1	0.11	0.1	0.12
	B	0.2	0.15	0.2	0.14
	C	0.2	0.16	0.2	0.12
	D	0.8	0.41	0.4	0.28
<b>6 – 2040, do-nothing</b>	A	0.2	0.12	0.2	0.13
	B	0.2	0.13	0.2	0.13
	C	0.2	0.18	0.2	0.13
	D	0.7	0.39	0.4	0.29
<b>7 – 2040, do-something</b>	A	0.2	0.13	0.2	0.13
	B	0.2	0.16	0.2	0.15
	C	0.2	0.18	0.2	0.14
	D	0.9	0.45	0.5	0.30

### 5.2.2 Site 2 – Millennium Business Park / Cappagh Road Roundabout

In the following analysis of the Millennium Business Park / Cappagh Road Roundabout, the site was accessed for the AM and PM peak and the arms were labelled as follow:

- Arm A: Cappagh Road to the North
- Arm B: Millennium Business Park
- Arm C: Cappagh Road to the South



**Figure 5.2: Millennium Business Park – Cappagh Road roundabout names (Source: Google Earth)**

As can be seen in **Table 5.2** below, the Millennium Park access roundabout will still function below its capacity for the future year of 2040 15-year after the development conclusion where the roundabout will experience a maximum RFC of 0.74 (74%) in Arm A – Cappagh Road North – in the morning period.

The junction recorded a 24-hour traffic volume of over 11,200 vehicles in March 2020 pre-pandemic. The expected increase in traffic from the proposed expansion in the junction accounts for only 5% increase in traffic in peak times, which can be deemed minimal and does not result in any traffic issues at the junction.

**Table 5.2 – ARCADY Results for Millennium Business Park / Cappagh Road Roundabout**

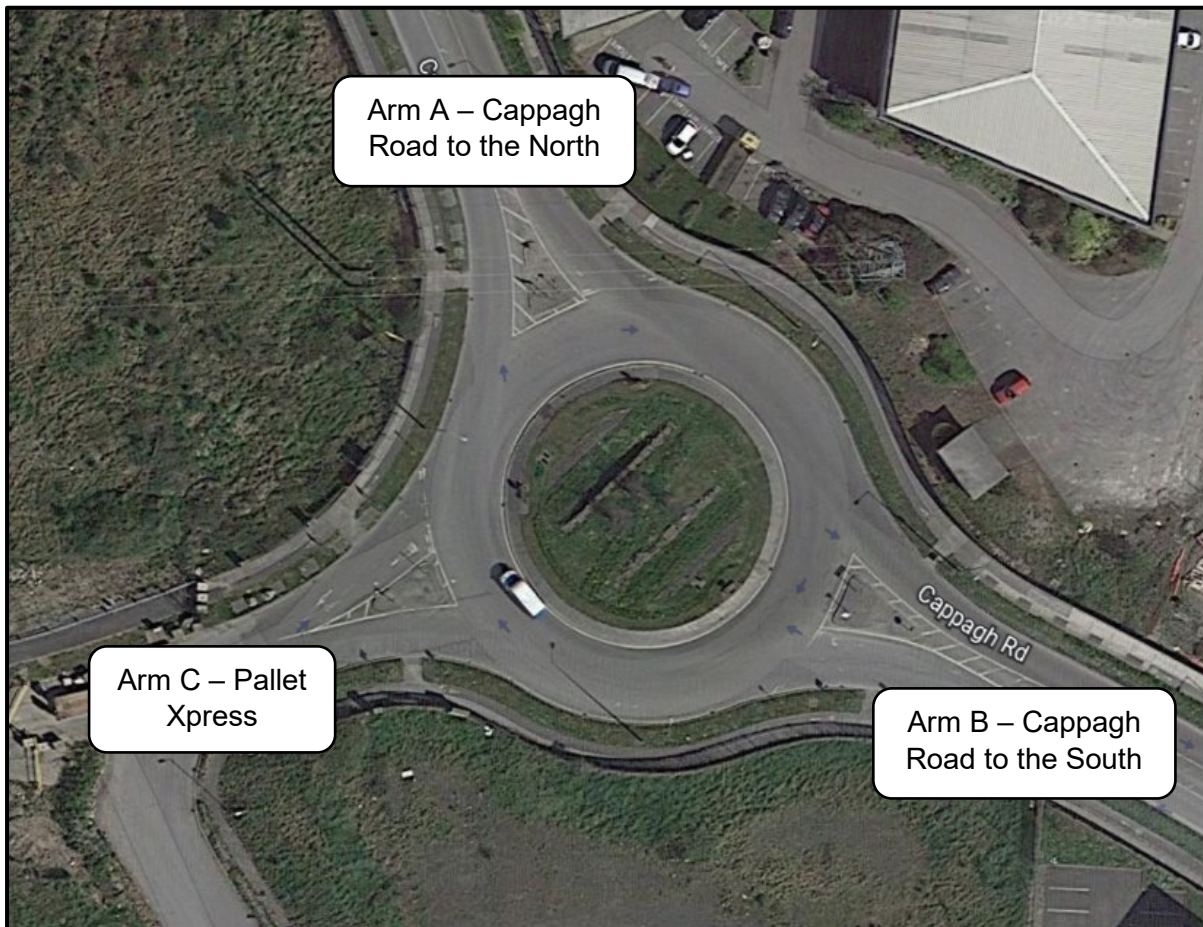
Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + seasonal adjustment in AM peak</b>	A	0.9	0.46	0.4	0.28
	B	0.4	0.26	0.8	0.42
	C	0.5	0.30	1.0	0.47
<b>2 – 2025, do-nothing</b>	A	1.5	0.57	0.8	0.42
	B	0.5	0.31	1.1	0.51
	C	0.6	0.37	1.3	0.55
<b>3 – 2025, do-something</b>	A	1.6	0.60	0.8	0.43
	B	0.6	0.36	1.3	0.54
	C	0.7	0.38	1.4	0.56
<b>4 – 2030, do-nothing</b>	A	2.1	0.65	1.0	0.47
	B	0.7	0.38	1.7	0.61
	C	0.8	0.42	1.9	0.64
<b>5 – 2030, do-something</b>	A	2.3	0.68	1.0	0.48
	B	0.8	0.43	1.9	0.64
	C	0.8	0.44	2.0	0.65
<b>6 – 2040, do-nothing</b>	A	2.7	0.71	1.1	0.50
	B	0.9	0.44	2.4	0.69
	C	0.9	0.46	2.6	0.71
<b>7 – 2040, do-something</b>	A	3.1	0.74	1.1	0.51
	B	1.0	0.49	2.7	0.72
	C	1.0	0.47	2.7	0.72

### 5.2.3 Site 3 – Huntstown Business Park / Cappagh Road Roundabout

In the following analysis of the Huntstown Business Park / Cappagh Road Roundabout, the site was accessed for the AM and PM peak and the arms were labelled as follows:

- Arm A: Cappagh Road to the North
- Arm B: Cappagh Road to the South
- Arm C: Pallet Xpress





**Figure 5.3: Huntstown Business Park – Cappagh Road roundabout names (Source: Google Earth)**

**Table 5.3** below shows the traffic modelling results for the Huntstown Business Park / Cappagh Road Roundabout located southwest of the facility. The roundabout has a 24-hour daily traffic volume of over 8,700 vehicles recorded and falls below the TII Threshold of 5% increase in traffic.

The roundabout, for the projected the future year of 2040, will still function below its theoretical capacity of 0.85 (85%) RFC, recording a maximum RFC of 0.73 in arm B – Cappagh Road to the south in the evening peak. The incorporation of the additional traffic related to the development expansion at the roundabout will have a negligible impact on the overall traffic observed in the road network.



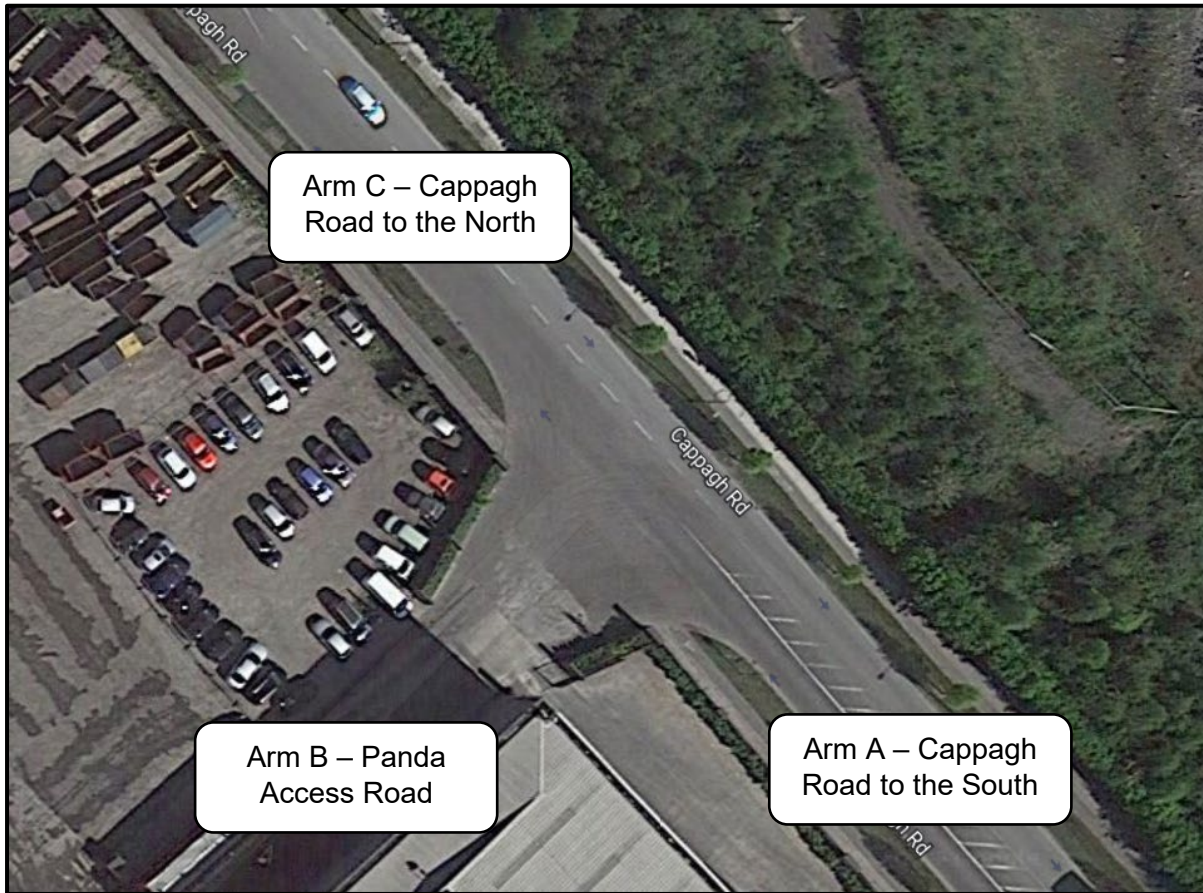
**Table 5.3 – ARCADY Results for Huntstown Business Park / Cappagh Road Roundabout**

Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + seasonal adjustment in AM peak</b>	A	0.8	0.42	0.5	0.31
	B	0.6	0.37	1.0	0.49
	C	0.1	0.07	0.1	0.11
<b>2 – 2025, do-nothing</b>	A	1.3	0.54	1.1	0.51
	B	0.9	0.46	1.9	0.64
	C	0.1	0.07	0.2	0.15
<b>3 – 2025, do-something</b>	A	1.3	0.55	1.1	0.51
	B	1.0	0.47	2.0	0.65
	C	0.1	0.07	0.2	0.15
<b>4 – 2030, do-nothing</b>	A	1.7	0.61	1.2	0.52
	B	1.2	0.53	2.2	0.67
	C	0.1	0.09	0.2	0.16
<b>5 – 2030, do-something</b>	A	1.8	0.62	1.2	0.53
	B	1.3	0.54	2.2	0.67
	C	0.1	0.09	0.2	0.16
<b>6 – 2040, do-nothing</b>	A	2.1	0.66	1.4	0.56
	B	1.5	0.57	2.9	0.73
	C	0.1	0.10	0.2	0.18
<b>7 – 2040, do-something</b>	A	2.2	0.67	1.4	0.56
	B	1.5	0.59	2.9	0.73
	C	0.1	0.10	0.2	0.18

**5.2.4 Site 4 – Cappagh Road access to Panda facility Priority T-junction**

In the following analysis of the Cappagh Road access to Panda facility priority T-junction, the site was accessed for the AM and PM peak and the arms were labelled as follow:

- Arm A: Cappagh Road to the South
- Arm B: Panda Access
- Arm C: Cappagh Road to the North



**Figure 5.4: Cappagh Road access to Panda facility names (Source: Google Earth)**

As can be seen in **Table 5.4** below, the junction is well below capacity for the 2040 design year with the additional traffic from site expansion. The maximum RFC found was 0.13 on Stream B-AC in the evening peak. It can be concluded that the priority T-junction off Cappagh Road will perform satisfactorily in the projected future years.

**Table 5.4 – PICADY Results for Cappagh Road access to Panda facility Priority T-junction**

Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + seasonal adjustment in AM peak</b>	B-AC	0.1	0.06	0.1	0.06
	C-B	0.1	0.05	0.0	0.04
<b>2 – 2025, do-nothing</b>	B-AC	0.1	0.09	0.1	0.10
	C-B	0.1	0.08	0.1	0.05
<b>3 – 2025, do-something</b>	B-AC	0.1	0.09	0.1	0.10
	C-B	0.1	0.08	0.1	0.05
<b>4 – 2030, do-nothing</b>	B-AC	0.1	0.10	0.1	0.11
	C-B	0.1	0.09	0.1	0.06
<b>5 – 2030, do-something</b>	B-AC	0.1	0.10	0.1	0.11
	C-B	0.1	0.09	0.1	0.06
<b>6 – 2040, do-nothing</b>	B-AC	0.1	0.11	0.1	0.13
	C-B	0.1	0.09	0.1	0.07
<b>7 – 2040, do-something</b>	B-AC	0.1	0.11	0.1	0.13
	C-B	0.1	0.09	0.1	0.07

### 5.2.5 Site 5 – Cappagh Road / Mitchelstown Roundabout

In the following analysis of the Cappagh Road / Mitchelstown Road roundabout, the junction was assessed for AM and PM peak periods and the arms were labelled as follows:

- Arm 1: Kilshane Way
- Arm 2: Kilshane Road
- Arm 3: Huntstown Estate
- Arm 4: Cappagh Road
- Arm 5: Mitchelstown Road.



**Figure 5.5: Cappagh Road / Mitchelstown Road roundabout arm names (Source: Google Earth)**

From the 2020 traffic counts data, it was observed that the Cappagh Road / Mitchelstown Road roundabout has a 12-hour daily traffic volume of over 17,500 vehicles recorded and as stated in section 4.4.1 the expected increase in traffic from the proposed expansion falls below the TII threshold of 5% increase in traffic.



**Table 5.5 – ARCADY Results for Cappagh Road / Mitchelstown Road Roundabout**

Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + seasonal adjustment in AM peak</b>	1	0.5	0.30	0.4	0.25
	2	2.9	0.73	0.7	0.39
	3	0.0	0.00	0.0	0.00
	4	0.5	0.31	0.1	0.50
	5	0.2	0.16	0.7	0.40
<b>2 – 2025, do-nothing</b>	1	0.8	0.41	0.9	0.41
	2	8.1	0.89	1.0	0.47
	3	0.1	0.03	0.2	0.09
	4	0.7	0.38	1.6	0.58
	5	0.3	0.21	1.1	0.48
<b>3 – 2025, do-something</b>	1	0.9	0.42	0.9	0.42
	2	9.5	0.91	1.0	0.47
	3	0.1	0.03	0.2	0.09
	4	0.8	0.40	1.7	0.59
	5	0.3	0.21	1.1	0.49
<b>4 – 2030, do-nothing</b>	1	0.9	0.44	1.0	0.44
	2	18.3	0.98	1.2	0.51
	3	0.1	0.04	0.2	0.10
	4	0.8	0.42	1.9	0.63
	5	0.3	0.22	1.3	0.54
<b>5 – 2030 do-something</b>	1	1.0	0.45	1.1	0.45
	2	22.9	1.00	1.2	0.51
	3	0.1	0.4	0.2	0.10
	4	0.9	0.43	2.0	0.64
	5	0.3	0.23	1.4	0.55
<b>6 – 2040, do-nothing</b>	1	1.0	0.46	1.1	0.47
	2	35.2	1.04	1.3	0.54
	3	0.1	0.04	0.2	0.10
	4	0.9	0.44	2.3	0.67
	5	0.4	0.23	1.6	0.58
<b>7 – 2040, do-something</b>	1	1.1	0.47	1.1	0.47
	2	43.1	1.06	1.3	0.54
	3	0.1	0.04	0.2	0.10
	4	1.0	0.45	2.4	0.68
	5	0.4	0.24	1.6	0.59



As can be seen in **Table 5.5** above, the roundabout is currently operating within capacity with a maximum RFC of 0.73 in Arm 2 – Kilshane Road in the morning period. For the future years of 2025 and 2030, the junction is shown to function at capacity without the proposed site expansion operational.

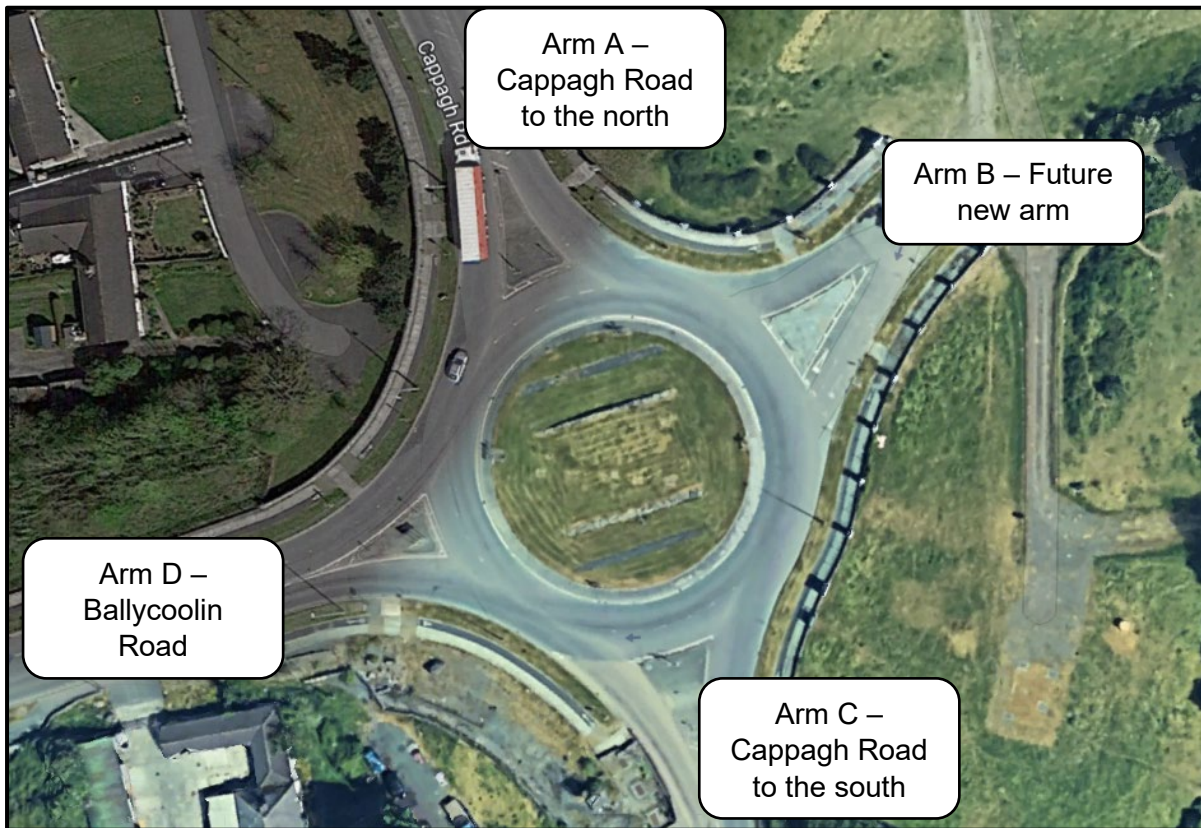
In analysis 6 – the future year 2040 15-year after the assumed conclusion of works and without the proposed site operational, the roundabout in the morning period presents an RFC of 1.04 (104%) in arm 2 with 35.2 PCU queue length. With the proposed traffic from the development added to analysis 7, there is an increase in RFC of 0.02 in arm 2. The effect on the junction is considered to be minimal and does not result in any significant traffic issues at the junction.

When looking at Arms 1, 3, 4 & 5, the above analysis indicated that the remaining arms would operate well within capacity for the future designed year of 2040, presenting a maximum RFC of 0.68 (68%) in Arm 4 – Cappagh Road in the evening period. The impact of the expansion to the Starrus Eco Holdings Limited (SEHL) trading as Greenstar is deemed negligible at the subject junction and the site will not adversely impact the road network.

#### **5.2.6 Site 6 – Cappagh Road / Ballycoolin Road Roundabout**

In the following analysis of the Cappagh Road / Ballycoolin Road Roundabout, the site was accessed for the AM and PM peak and the arms were labelled as follow:

- Arm A: Cappagh Road to the North
- Arm B: Future new arm
- Arm C: Cappagh Road to the South
- Arm D: Ballycoolin Road



**Figure 5.6: Cappagh Road – Ballycoolin Road roundabout arm names (Source: Google Earth)**

From March 2020 pre-pandemic traffic counts, the Cappagh Road / Ballycoolin Road roundabout has a 12-hour daily traffic volume of over 17,600 vehicles recorded and as stated in section 4.4.1 the expected increase in traffic from the proposed expansion falls below the TII threshold of 5% increase in traffic.

As can be seen in **Table 5.6** below, the subject roundabout is functioning below its theoretical capacity 0.85 in RFC. For the projected future year of 2025 and 2030 without the additional traffic from the site expansion, Arm C – Cappagh Road to the south is operating at capacity in the morning period, whereas Arms A, B & D function well below capacity.

In analysis 6, for the future year 2040 and without the expected traffic from the development expansion, the junction will function below capacity for the PM period with an RFC of 0.86, and above capacity during the morning period, reaching a maximum RFC of 1.02 (102%) on the stream C – Cappagh Road to the South. With the proposed site traffic added to analysis 7, the effect on the capacity of the junction is very minimal, as the facility will only add a maximum of 27No. vehicles in both the morning period and evening period at the subject junction. Therefore, the impact of proposed traffic generated from the extension to the facility is considered minimal and the proposal will not adversely impact the road network.

**Table 5.6 – ARCADY Results for Cappagh Road / Ballycoolin Road Roundabout**

Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + seasonal adjustment in AM peak</b>	A	0.6	0.36	0.5	0.33
	B	0.0	0.00	0.0	0.00
	C	4.1	0.79	2.2	0.67
	D	0.8	0.41	1.0	0.48
<b>2 – 2025, do-nothing</b>	A	1.0	0.48	1.1	0.50
	B	0.0	0.00	0.0	0.00
	C	7.4	0.88	3.3	0.75
	D	0.9	0.45	1.2	0.53
<b>3 – 2025, do-something</b>	A	1.0	0.49	1.1	0.51
	B	0.0	0.00	0.0	0.00
	C	8.0	0.89	3.3	0.76
	D	0.9	0.45	1.2	0.53
<b>4 – 2030, do-nothing</b>	A	1.2	0.52	1.3	0.54
	B	0.0	0.00	0.0	0.00
	C	15.4	0.96	4.7	0.82
	D	1.0	0.49	1.5	0.58
<b>5 – 2030, do-something</b>	A	1.2	0.53	1.3	0.55
	B	0.0	0.00	0.0	0.00
	C	17.2	0.97	4.7	0.82
	D	1.1	0.49	1.5	0.58
<b>6 – 2040, do-nothing</b>	A	1.3	0.55	1.5	0.57
	B	0.0	0.00	0.0	0.00
	C	29.4	1.01	6.2	0.86
	D	1.2	0.52	1.7	0.62
<b>7 – 2040, do-something</b>	A	1.4	0.56	1.5	0.58
	B	0.0	0.00	0.0	0.00
	C	33.1	1.02	6.3	0.86
	D	1.2	0.52	1.7	0.62

### 5.3 Remodeling of Cappagh Road / Mitchelstown Roundabout – 2022 Traffic Counts

As mentioned previously this additional capacity assessment was conducted based on the inspector's report under ABP-310332-21 for the proposed Panda expansion, planning application reference SID/01/21 & ABP Ref. 310332.

Up-to-date traffic counts and remodelling were conducted on site 5 to take into account the latest traffic situation that the Cappagh Road / Mitchelstown Roundabout is and will experience following findings from historic 2019 traffic data. The capacity assessment was modelled for three different scenarios:

- Base-year: 2023 traffic flows modelled according to traffic counts obtained in November 2022 and factored up using TII Traffic Growth Rates with seasonal adjustment factor of 1.1 applied.
- Do-nothing: modelled without the intervention of the proposed developments. For this analysis, the traffic counts were factored up using TII's Growth Factor for the design years 2025, 2030 and 2040. The committed developments mentioned in Section 4.2 were added to this analysis.
- Do-something: the impact of the traffic generated by the site were added to the design years 2025, 2030 and 2040. This analysis will enable the comparison with the 'Do-nothing' scenario.

In the following analysis of the Cappagh Road / Mitchelstown Road roundabout, the junction was assessed for AM and PM peak periods and the arms were labelled as follows:

- Arm 1: Kilshane Way
- Arm 2: Kilshane Road
- Arm 3: Huntstown Estate
- Arm 4: Cappagh Road
- Arm 5: Mitchelstown Road.





**Figure 5.7: Cappagh Road / Mitchelstown Road roundabout arm names (Source: Google Earth)**

**Table 5.7** overleaf shows the results of the analysis of the junction modelled using ARCADY software for roundabouts.



**Table 5.7 – ARCADY Results for Cappagh Road / Mitchelstown Road Roundabout**

Analysis	Arm	AM		PM	
		Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
<b>1 – 2023, base year + seasonal adjustment</b>	1	0.6	0.31	0.6	0.35
	2	3.8	0.76	0.5	0.33
	3	0.0	0.00	0.0	0.00
	4	0.6	0.29	0.8	0.43
	5	0.3	0.17	0.6	0.37
<b>2 – 2025, do-nothing</b>	1	1.0	0.43	1.4	0.52
	2	12.2	0.93	0.8	0.40
	3	0.1	0.03	0.2	0.09
	4	0.8	0.37	1.2	0.50
	5	0.4	0.21	0.9	0.44
<b>3 – 2025, do-something</b>	1	1.1	0.44	1.4	0.53
	2	14.7	0.95	0.8	0.41
	3	0.1	0.03	0.2	0.09
	4	0.9	0.38	1.2	0.51
	5	0.4	0.21	0.9	0.44
<b>4 – 2030, do-nothing</b>	1	1.2	0.46	1.4	0.57
	2	30.5	1.02	0.9	0.44
	3	0.1	0.04	0.2	0.10
	4	1.0	0.40	1.3	0.55
	5	0.5	0.22	0.9	0.48
<b>5 – 2030, do-something</b>	1	1.1	0.47	1.7	0.57
	2	36.0	1.04	0.9	0.45
	3	0.1	0.04	0.2	0.10
	4	0.8	0.41	1.4	0.56
	5	0.3	0.23	1.1	0.49
<b>6 – 2040, do-nothing</b>	1	1.3	0.48	1.8	0.60
	2	54.4	1.08	1.0	0.47
	3	0.1	0.04	0.2	0.10
	4	1.0	0.42	1.6	0.58
	5	0.5	0.24	1.2	0.52
<b>7 – 2040, do-something</b>	1	1.3	0.49	1.9	0.60
	2	63.7	1.10	1.0	0.47
	3	0.1	0.04	0.2	0.10
	4	1.1	0.43	1.6	0.59
	5	0.5	0.24	1.2	0.52

The Cappagh Road / Mitchelstown Road roundabout has a 12-hour daily traffic volume of over 16,000 vehicles recorded in the November 2022 traffic counts.

For analysis 1, the roundabout was modelled under current geometry parameters and for the remaining analysis, the addition of Arm 3 was considered, which is the proposed access to Huntstown Estate.

Based on the assumptions stated above and the use of Central Growth Factors for Dublin Metropolitan Area, **Table 5.7** shows the junction modelling results for the Cappagh Road / Mitchelstown Road roundabout for the current year, the proposed year of conclusion, 2025, and future years with and without the inclusion of the proposed expansion.

**Table 5.7** shows that for the current year in analysis 1, the junction is operating below the theoretical capacity of 0.85 RFC for both morning and evening periods, with the maximum RFC of 0.76 (76%) in the AM peak in Arm 2 – Kilshane Road. In analysis 2, considering that all committed developments mentioned in Section 4.2 are concluded and operational, the maximum RFC observed at the junction is 0.93 (93%) also in Arm 2. The inclusion of the proposed development in analysis 3 increases the capacity at the junction to a maximum of 0.02 (2%) RFC, which is considered to be negligible.

In analysis 6, for the future year 2040, with the committed developments concluded and without the proposed increase in tonnage from SEHL, the junction is observed to be operating above capacity in the morning period, with a maximum queue of 54.4 PCU and RFC of 1.08 (108%) in Arm 2 – Kilshane Road, whereas when looking at the evening period all arms of the roundabout are shown to be operating satisfactorily well within capacity.

As mentioned previously, the proposed expansion to the site will only add 95No. vehicles in both morning and evening peak times at the subject roundabout, which correspond to an increase of only 2% in the current traffic flows along the junction, which is deemed to be negligible. The inclusion of the proposed works will not result in any significant traffic issues at the junction as the junction will already operate above capacity as shown in **Table 5.7** above.

## 6 Conclusions

The main conclusions of this study are summarised as follows:

- This TTA report was conducted to accompany the planning application for the proposed increase to the annual waste handling throughput at the Starrus Eco Holdings Limited (SEHL) trading as Greenstar in Ballycoolin, Dublin 11. The proposal includes increasing the waste handled at their existing facility in Millennium Business Park from 270,000 tonnes to 450,000 tonnes per annum.
- The expansions involve increases in the quantity of waste processed annually at the existing facility, which will increase traffic to and from the facility but will not require any construction works with exception of negative air infrastructure or site expansion.
- The key junctions identified by ORS in consultation with Fingal County Council were subject to capacity analysis to examine the potential levels generated from the proposed expansion and the existing road network.
- It was calculated the traffic impact on 6No. junctions in the vicinity of the proposed development in order to estimate the traffic impact that the development will have in the neighbouring junctions. The analysis found that the TII threshold of 5% of additional traffic where congestion exists and 10% increase in traffic on the adjoining road was met by 2No. out of 6No. junctions. However, the 6No. junctions described in the assessment were assessed to obtain information regarding the capacity of the junctions and how the proposed development will affect the functionality of them and the neighbouring road network.
- The traffic splits in the examined junctions could be calculated from the traffic counts and it is expected that the traffic from the proposed increase in tonnage to SEHL unit will follow the same trend. The trip generation from the development was assessed from historic traffic data undertaken at the entrance of the facility and factored up with the proposed additional proportion. The data was then added to *Junctions 9* software to ascertain the traffic impact the development will have on the surrounding road network.
- The junctions were examined using *Junctions 9* (ARCADY and PICADY) software for the AM and the PM peak conditions under conservative future projections and Central background Traffic Growth for Co. Dublin for the considered year of opening, 2025, 5-years and 15-years after development conclusion.
- From a transportation planning perspective, the proposed increase to the annual waste handling throughput at the existing facility, will not be a significant traffic generator, with a maximum traffic volume added to the roundabout of 95No. vehicles in both AM and PM peak periods and will not adversely impact the future operational capacity of the road network in the vicinity of the roundabout. The Cappagh Road / Mitchelstown Road Roundabout (site 5) and Cappagh Road / Ballycoolin Road (site 6) will experience capacity

issues and delays in future years, however, the increase in traffic from the site will account for a maximum 2% of the junction capacity and the inclusion of the proposed increase in tonnage is not the reason for the capacity issues.

- Fresh traffic counts were undertaken at site 5 – Cappagh Road / Mitchelstown Road Roundabout to remodel the roundabout taking into account the latest traffic situation that the junction is and will experience, following findings from historic 2019 traffic data.
- Following reassessment of site 5, the roundabout will experience capacity issues and delays in the future design years along Arm 2 – Kilshane Road, however, the inclusion of the additional traffic from the proposal will not be the cause of capacity issues. The proposed increase in tonnage increases the capacity of the roundabout by only 2%, which can be deemed minimal compared to the daily traffic flows observed at the Cappagh Road / Mitchelstown Road Roundabout. When comparing modelling from the historic traffic data and fresh traffic counts, the roundabout is shown to follow same trends for future years.
- In transportation engineering terms, the proposed expansions put forward by the design team will not be a significant traffic generator and will not adversely impact on the operation of the regional road to which they connect. Any capacity issues identified are pre-existing and require attention irrespective of the proposed expansions, which will have minimal impact.
- Future planned infrastructure improvements including additional BusConnects routes and the new MetroLink planned in the area will reduce private vehicular journeys in the vicinity of the site in future years. Increasing adoption of flexible working hours and remote working options are also likely to further reduce the number of vehicles accessing the area at peak times.

## Appendix A – Traffic Data

*Traffic data available upon request.*



## Appendix B – TRICS Data

*TRICS data available upon request.*

## Appendix C – Junctions 9 Modelling Data

*Junctions 9 data available upon request.*