Report

Traffic & Transport Assessment

Jacobs Island – Strategic Housing Development

Sweco Ireland

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1 Executive Summary

Sweco have been commissioned by Hibernia Star Limited to undertake a Traffic and Transport Assessment (TTA) for a proposed development on Jacobs Island, Cork. The TTA addresses the Strategic Housing Development (SHD) of 489 residential units and 4,500m^2 of offices that include a creche facility with the other development areas following in further applications. The report also sets out the anticipated full masterplan development for the area which may consist of the SHD (489 residential units and 4,500m^2 offices including creche) and an additional 10,500m^2 of offices and up to a 165 bed hotel. This TTA will form Part of an application to An Bord Pleanála under the Strategic Housing Development (SHD) process of the Planning and Development (Housing) and Residential Tenancies Act (2016).

This report describes the existing environment, future transport proposals, the current site accessibility for all modes of transport, describes the proposed development, estimates future trip generation and assesses the potential impact on the surrounding network.

1.1 Background

The proposed site is located within the south-eastern suburban area of Cork City, as defined in the Cork City Development Plan (2015 – 2021). The site is specifically zoned as 'Mixed Use Jacobs Island'. It also falls within the area covered by the Mahon Local Area (LAP) (2014). The site is strategically located between the N40, South Ring Road, and Lough Mahon. The site is proximate to major commercial and industrial hubs given its ideal location in relation to the City Centre. Hubs such as Mahon Point Shopping Centre, Mahon Point Retail Park and several major employers make the Mahon District Centre a thriving area within Cork City environs.

The Jacob's Island site currently has several phases of completed residential development, as well as planning permission for 413 apartments in 6 blocks, under the An Bord Pleanála Reference No. ABP-301991-18 (granted in Oct 2018), including the amendments comprising an increase in the number of units from 413 to 437 under the An Bord Pleanála Reference No. ABP-310378-21 (granted in Feb 2022).

This proposed SHD and masterplan address the remaining undeveloped lands on Jacobs Island, which tie in with the existing built and permitted context. This report focuses on the SHD application within the proposed masterplan.

The diagram indicates the ownership of the proposed site (Hibernia Star Ltd) and the surrounding lands on Jacobs Island.

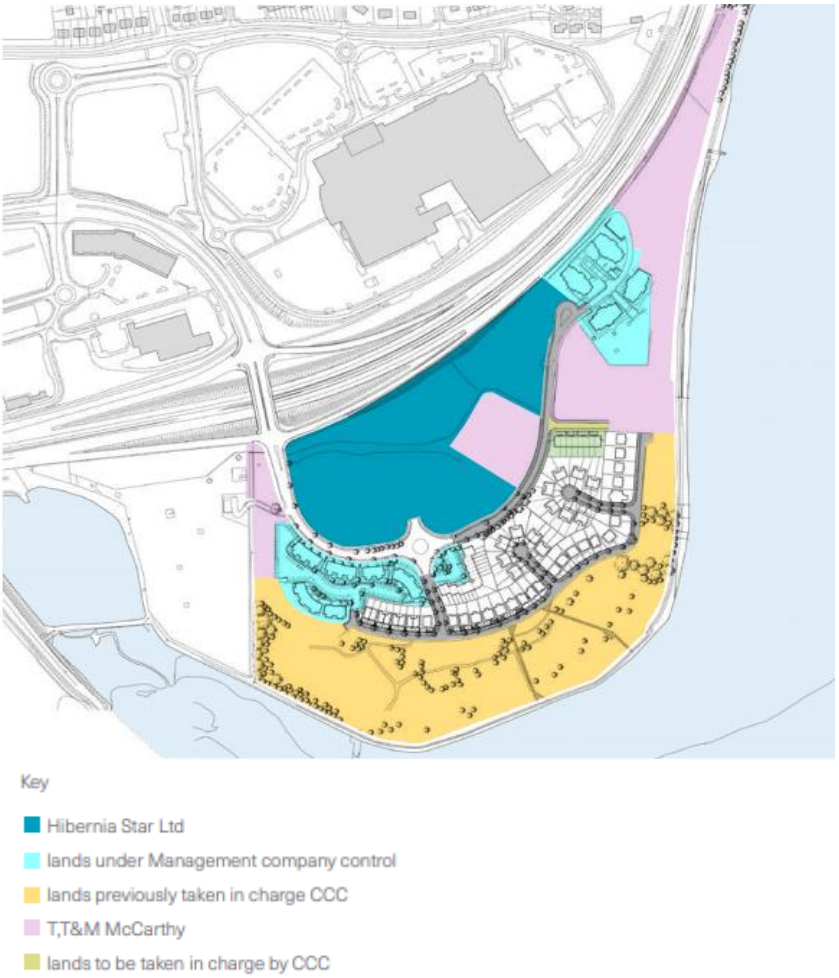


Figure 1 Jacob's Island Ownership Diagram

1.2 Planning Context

Development on Jacob's Island has its genesis in 1997 when its proposed development was subject to a competitive tender. The development of Jacob's Island and Mahon in general was identified by the City Council as a strategic development opportunity and, at the time of their sale, the Jacob's Island lands were identified as one of 4 Opportunity Sites in the Mahon area in the Cork City Development Plan Review 1998. Section 6.18 of the City Plan indicated that the objective of these sites was to; "...secure development which will regenerate the Mahon area in social and economic terms..." 23 tenders were submitted from development teams and the scheme proposed by McCarthy Developments Limited & O'Callaghan Properties was selected as the winning tender.

This design team were led by Skidmore, Owings and Merrill. The original design concept is outlined in the masterplan diagram and highlights mixed use development on both the north and south of the now N40. The implementation of the mixed use design concept was achieved through various planning applications submitted from 1999 onwards. This has resulted in the development of Mahon Point Shopping Centre, Mahon Retail Park, the residential community at Jacob's Island and the delivery of the Joe McHugh public park. The residential community on Jacob's Island is connected to the retail and employment opportunities in Mahon via high quality cycling, walking, public transport and road links as originally envisaged. This masterplan will focus on the lands on which the hotel, leisure centre, offices and trade centre were to be located within the original masterplan, which remain undeveloped.

Figure 2 Original Masterplan for Jacobs Island, 1999

1.3 Transport Planning Context

1.3.1 Cork City Development Plan 2015 – 2021

The proposed site location, within the overall Jacob's Island area, is presently zoned 'Mixed Use Jacob's Island' within the Cork City Development Plan 2015-2021. This is shown in dark green on the figure overleaf.

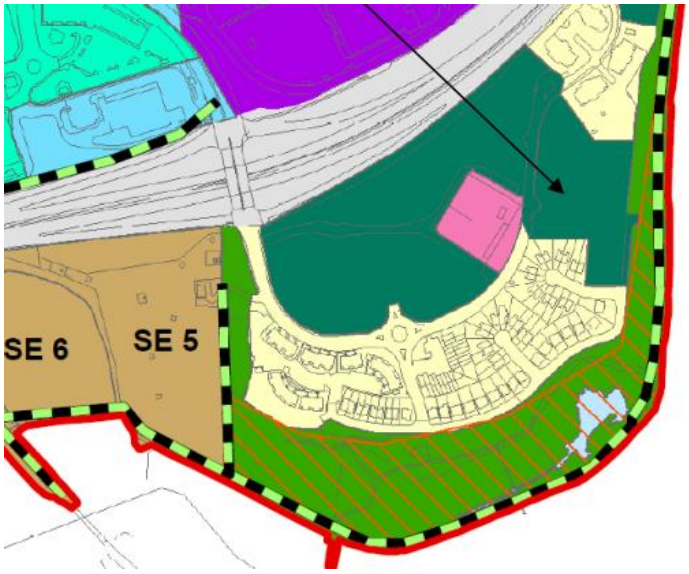


Figure 3 Cork City Development Plan (2015 – 2021) Zoning Map

1.3.2 Cork Metropolitan Area Transport Strategy

The National Transport Authority, in collaboration with Cork City Council, Cork County Council and Transport Infrastructure Ireland have developed a transport strategy for the Cork Metropolitan Area, to cover the period up to 2040. The Cork Metropolitan Area Transport Strategy (CMATS) addresses all transport modes and sets out a robust framework for the development of the necessary transport infrastructure and public transport services in the Cork Metropolitan Area over the lifetime of the plan.

Key elements of CMATS are a strategic east-west public transport corridor from Mahon to Ballincollig via the city centre; upgrade the pedestrian loop at Mahon; enhanced cycle routes and facilities and a long term plan for Light rail from Ballincollig to Mahon. All of these measures will create further opportunities for behaviour change and use of sustainable transport modes.

1.4 Scoping

Sweco held a scoping meeting in July 2021 with the Transport Department of Cork City Council. Sweco provided an overview of the site and the early draft approach to the assessment. These discussions established in principle:

- The proposed site is a sustainable transport site but the N40 does provide some severance;
- People trip rates would be used and benchmarked against other sites;
- Draft parking rates below the existing maximum guidance rates;
- A new traffic survey would be undertaken on Jacobs Island to understand the existing trends;
- Sweco showed the existing modal split for Cork City and we would need to add passengers to vehicle trips which seems fair;
- CCC were happy that traffic survey data from 2017 be used due to covid;
- CCC will be looking for junction models for year of opening, + 5 years and + 15 years;

- CCC want all the committed development in the area included and agree this list with them;
- CCC want the higher traffic flows pre covid to be used (Sweco will monitor long term counters and new guidance); and
- CCC requested that junctions on the Mahon link road be considered in the TTA.

2 Existing Environment

2.1 Site Location

The proposed development site is located off the internal road network within Jacobs Island. There will be a number of access points off the spine road in Jacobs Island.

Jacob's Island itself is a peninsula located to the South of the Mahon Interchange off the N40 dual-carriageway, and as such the site effectively a cul-de-sac, with no through route for public transport and traffic. The sole access point to the lands for vehicles is via the Mahon Interchange, whereas pedestrian and cyclists have multiple access/egress points to the lands from the Mahon interchange and from the east and west from the River Lee/Lough Mahon Waterfront Greenway.

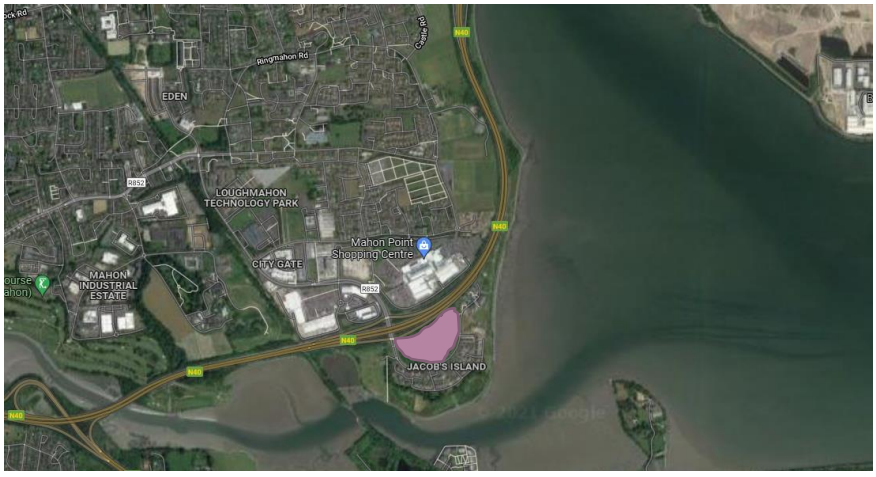


Figure 4 Site Location

2.2 Pedestrian Accessibility

2.2.1 General Pedestrian Accessibility

The area has excellent connections from the proposed development to the River Lee/Lough Mahon Waterfront Greenway and the Passage West Greenway, there are also existing pedestrian facilities for shorter trips by foot on the internal spine road within Jacob's Island and northwards to Mahon Point Shopping Centre, Mahon Retail Park and general employment centres on Mahon Link Road and Bessboro Business Park. Figure 5 below shows pedestrian accessibility between the proposed development and the wider Mahon area, including the locations of pedestrian crossings, off-road walkways and multiple access points to Mahon Point Shopping Centre.

Figure 5 Pedestrian Accessibility via Mahon Link Road

Figure 5 illustrates the multiple pedestrian connections into Mahon Point Shopping Centre, Mahon Retail Park, City Gate, etc. as follows:

- a walkway along the eastbound merge ramp (as shown in Figure 6 below);
- a ramp from the bus stop on the Mahon Link Road (as shown in Figure 7 below); and
- pedestrian access to Mahon Retail Park and City Gate at the vehicular entrance junction to Mahon Point Shopping Centre.

The blue connection to the River Lee/Lough Mahon Waterfront Greenway is currently of variable quality.

Figure 6 Pedestrian and Cycle Accessibility to Mahon Point Shopping Centre from Mahon Interchange

Figure 7 Pedestrian Accessibility to Mahon Point Shopping Centre from Mahon Link Road

Figure 5 also illustrates pedestrian accessibility to Mahon Point Retail Park and to the Passage West Greenway from the Mahon Interchange and from St. Michael's Drive. Signalised pedestrian crossings are in place at the Northern and Southern junctions of the Mahon Interchange, see figure below.

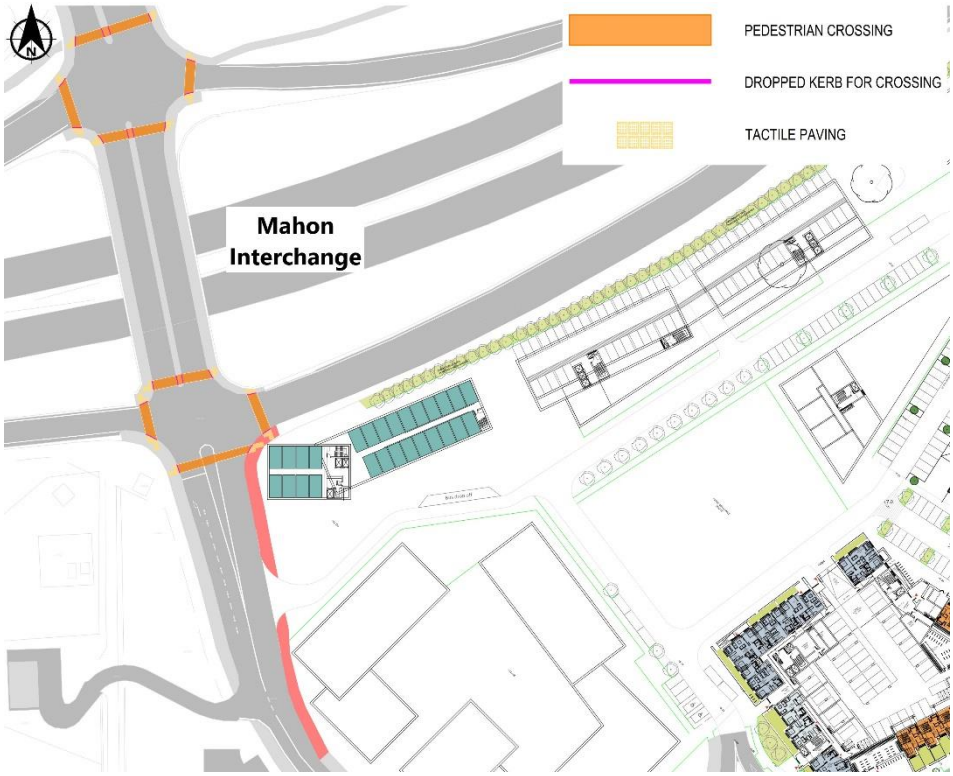


Figure 8 Pedestrian crossings at Mahon Interchange

Figure 9 and Figure 10 illustrate the existing footpath facilities between Jacob's Island and Mahon Link Road, including the existing crossing facilities at the Mahon Interchange, which link Jacob's Island with the Mahon Link Road and beyond to the Mahon Point Shopping Centre, Mahon Retail Park and the Lough Mahon Industrial Park. It is also possible to walk to the terminus of the 202, 202A and 212 bus routes which is located outside the northern entrance to Mahon Point Shopping Centre (this route is highlighted in Figure 22).

Figure 9 Existing Footpath facilities on Jacob's Island

Figure 10 Existing Pedestrian Crossing Signals at southern junction of Mahon Interchange

2.2.2 Internal facilities within Jacob's Island

Pedestrian footpaths are present on both sides of the internal roadway within Jacob's Island. The roadway leads to a roundabout junction, which is provided with zebra crossings on the major arms (i.e. 2 no. crossings on the main thoroughfare). The footpaths continue as far as the gated entrance to The Sanctuary (i.e. the existing apartment blocks on the eastern side of Jacob's Island). Inside this private entrance, the footpaths continue to the current end of the existing roadway.

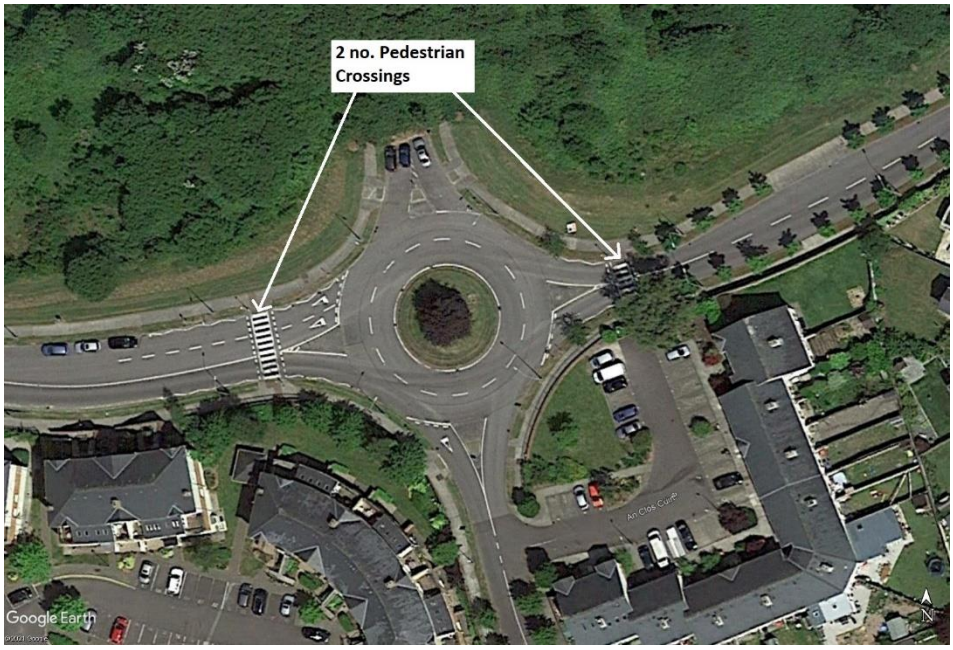


Figure 11 Roundabout Junction at Jacob's Island

Figure 12 to Figure 17 illustrate the existing pedestrian facilities at Jacob's Island with the Joe McHugh Park Mahon located to the south and River Lee/Lough Mahon Waterfront Greenway located along the southern and eastern perimeter of Jacob's Island. Due to the popularity of the walkway facility, direct access to and from the walkway exists at multiple locations on Jacob's Island, especially through the Joe McHugh Park Mahon, which its footways have variable quality and poor lighting in some spots. Taking into account the proposed site location, the suggested access to the greenway is located western of the park, as this is closer to the site, see Figure 12.

Figure 12 Suggested access to the River Lee/Lough Mahon Waterfront Greenway and access to the Passage West Greenway via the Lough Mahon Public Walkway

Figure 13 Existing Pedestrian Connectivity at Joe McHugh Park Mahon between the River Lee/Lough Mahon Waterfront Greenway and Jacob's Island

Figure 14 Footway at Joe McHugh Park Mahon

Figure 15 Footway at Joe McHugh Park Mahon

Figure 16 River Lee/Lough Mahon Waterfront Greenway at Jacob's Island

Figure 17 River Lee/Lough Mahon Waterfront Greenway at Jacob's Island

A 30-minute walking catchment of Jacob's Island is illustrated in Figure 18. It can be seen that Mahon Point Shopping Centre is within a 15-minute walk from the central portion of Jacob's Island, with City Gate within a 20-minute walk and Skehard Road within a 30-minute walk.

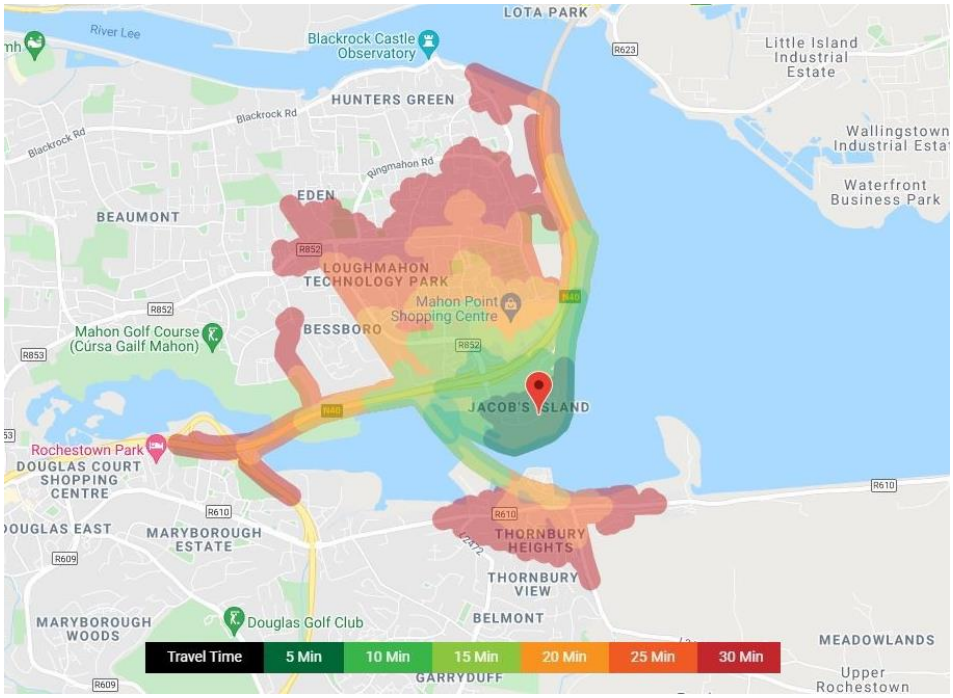


Figure 18 Walking catchment to/from Jacob's Island

2.3 Cyclist Accessibility

2.3.1 Existing Accessibility

The River Lee/Lough Mahon Waterfront Greenway forms part of the Jacob's Island site and is easily accessed, with multiple connections. This walkway links to the Passage West Greenway directly to the west, which is an A-rated cycle facility between Cork City and Passage West. Cycle tracks are provided on both sides of the Mahon Link Road from the Skehard Road to the Mahon Interchange, there is also advance cycle stop line on the Mahon Link Road at the vehicular entrance junction to Mahon Point Shopping Centre and Mahon Retail Park.

The existing cycling catchment to and from Jacob's Island is shown in Figure 19. It can be seen that Cork City Centre is within a 30-minute cycle from the central portion of Jacob's Island, primarily on a safe and dedicated greenway.

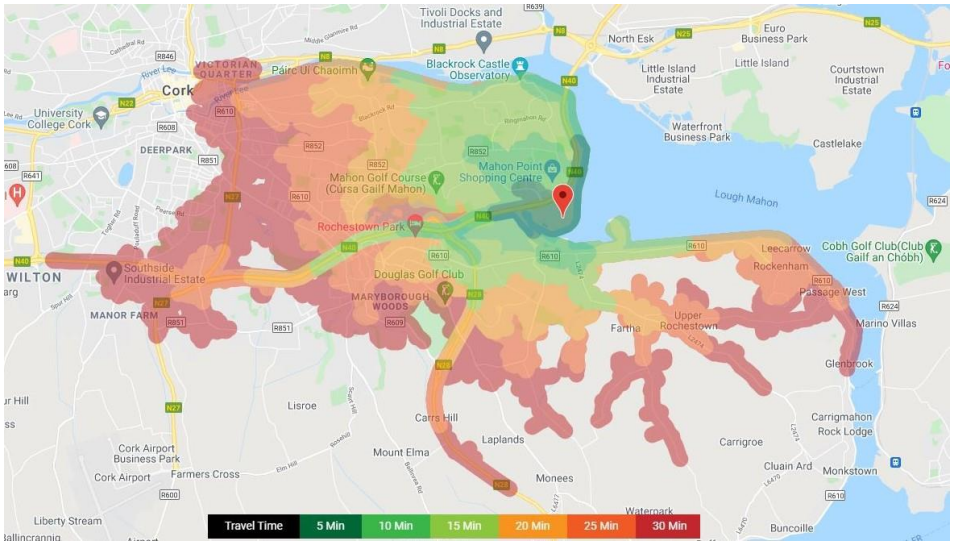


Figure 19 Cycling Catchment to/from Jacob's Island

2.3.1.1 Passage West Greenway and River Lee/Lough Mahon Waterfront Greenway

The Passage West Greenway lies to the west of the proposed site. This is a pedestrian and cycle facility implemented on the former Passage Railway line, and is very well-used for both leisure and for commuting to and from Cork City Centre.

The River Lee/Lough Mahon Waterfront Greenway routes along the southern and eastern coastal boundaries of Jacob's Island, connecting to the Passage West Greenway to the west, and continuing to Blackrock Castle to the north.

At present, there are four connections to the River Lee/Lough Mahon Waterfront Greenway from Jacob's Island, which in turn allows the Passage West Greenway line to be accessed easily. There is a ramped connection to the Passage West Greenway from the junction of the Mahon Link Road/St. Michael's Drive, in close proximity of the Mater Hospital. This ramped connection has been upgraded as part of the Passage Railway Greenway Improvement Scheme Phase 1. In addition, the Passage West Greenway is temporarily closed from the Skehard Ramp onto Skehard Road to the Blackrock Ramp at the Blackrock Bridge. This improvement scheme includes the installation of additional ramped connections, upgrade of existing connections and an upgrade proposal for the line itself to include widening, resurfacing, new CCTV, landscaping and incorporation of public lighting.

Figure 20 and Figure 21 below show this ramped connection. The facility is lit up with public lighting allowing more confidence to commuters wishing to use the facility after dark.

Figure 20 New Cycle Ramp access at junction of Mahon Link Road and St. Michael's Drive

Figure 21 New Cycle Ramp access at junction of Mahon Link Road and St. Michael's Drive

2.4 Public Transport Accessibility

2.4.1 Existing Accessibility

The proposed development site is located to the southeast of Cork City Centre. There are several bus routes which either route directly to the site or near the site, as detailed in Table 1. The routing as well as the bus stop locations are presented in Figure 22.

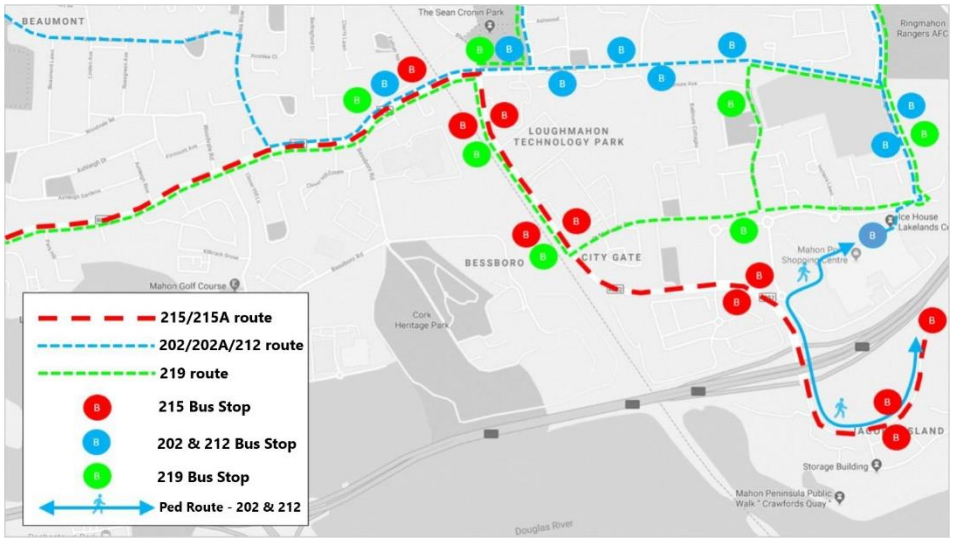


Figure 22 Public Transport Provision to the Mahon Area

Table 1 Bus Routes in Jacob's Ireland Vicinity

Number	Provider	Route	Frequency
202/202A	Bus Éireann	Apple Campus - Hollyhill - Kilmore Road/Harbour View Road - Merchants Quay - Skehard Road/Ringmahon Road - Mahon Point (Omniplex)	Every 10 mins (Combined)
212	Bus Éireann	Kent Rail Station - Clontarf Street - Centre Park Rd - Blackrock Villa - Mahon Point	Every 1 hour
215	Bus Éireann	Cloghroe - Blarney - Blackpool -St Patrick Street - Ballinlough - Mahon Point – Jacob's Island	Every 30 mins
215A	Bus Éireann	South Mall - Boreenmanna Road - Mahon Point – Jacob's Island	Every 30 mins
219	Bus Éireann	MTU (Southern Orbital) - CUH - Togher - Ballyphehane - Douglas - Mahon (City Gate)	Every 1 hour

It can be seen that the proposed development at Jacob's Island is currently served by the 215 and the 215A services, which currently operate at a 15-minute combined frequency. These services route directly into Jacob's Island and are provided with a dedicated bus turnaround area outside the existing Sanctuary development. This

turnaround area acts as the outbound terminus for these services and the bus stop has been upgraded to provide a high-quality, sheltered waiting area for passengers, as shown in Figure 23.

Figure 24 shows the two existing bus stops on both sides of the Jacob's Island internal spine road, served by the 215 and 215A bus routes, and which will be in close proximity to the proposed Neighbourhood Centre and associated residential units.

Figure 23 Existing Bus Terminus and Turnaround Area at The Sanctuary, Jacob's Island

Figure 24 Existing Bus Stops on Jacob's Island internal spine road

In addition, the 202/202A route, which currently operates at a 10-minute combined frequency, and the 212 route, which currently operates at a 1 hour frequency have

recently been enhanced and extended directly into Mahon Point Shopping Centre, to the northeast of the subject site, which places it at a convenient walking distance from Jacob's Island. The 219 Southern Orbital Route also serves the Mahon area along St. Michael's Drive and operates at a 1 hour frequency. These services as well as the walking route to the 202 terminus are illustrated in Figure 22.

The public transport catchment to and from Jacob's Island is illustrated in Figure 25 below. This includes travel from the site to the various parts of the city and suburbs. The city centre area is within a 30-minute travel time from Jacob's Island, whilst the major employment areas in Mahon are within a 10-minute travel time.

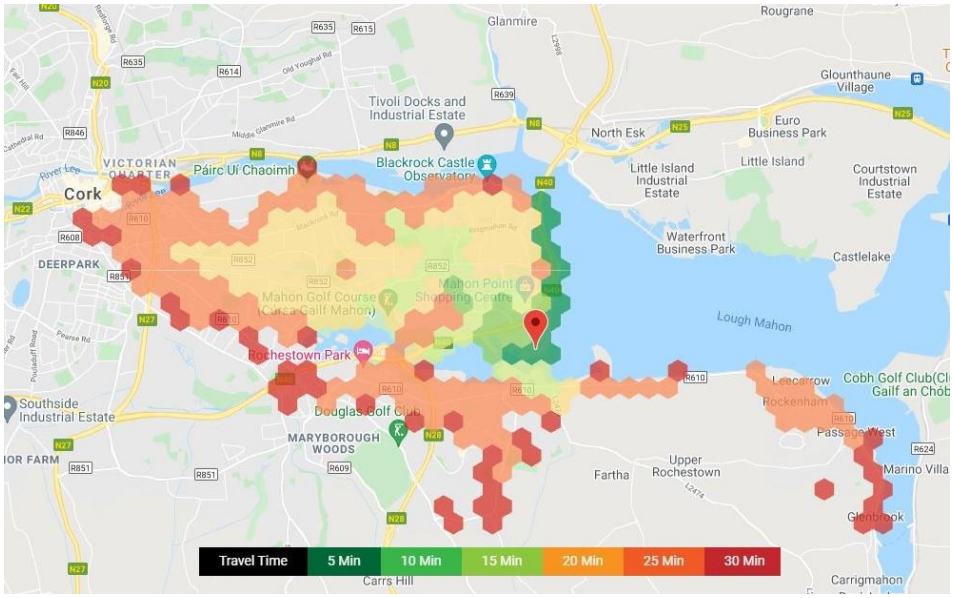


Figure 25 Public Transport Catchment to/from Jacob's Island

There are a number of significant improvement schemes in the Cork Metropolitan Area Transport Strategy (CMATS) 2040 that will significantly improve public transport service quality. These are discussed in Section 4.

2.5 Vehicular Accessibility

There are a number of local and national roads close to the site which are presented in Figure 26 and described below.

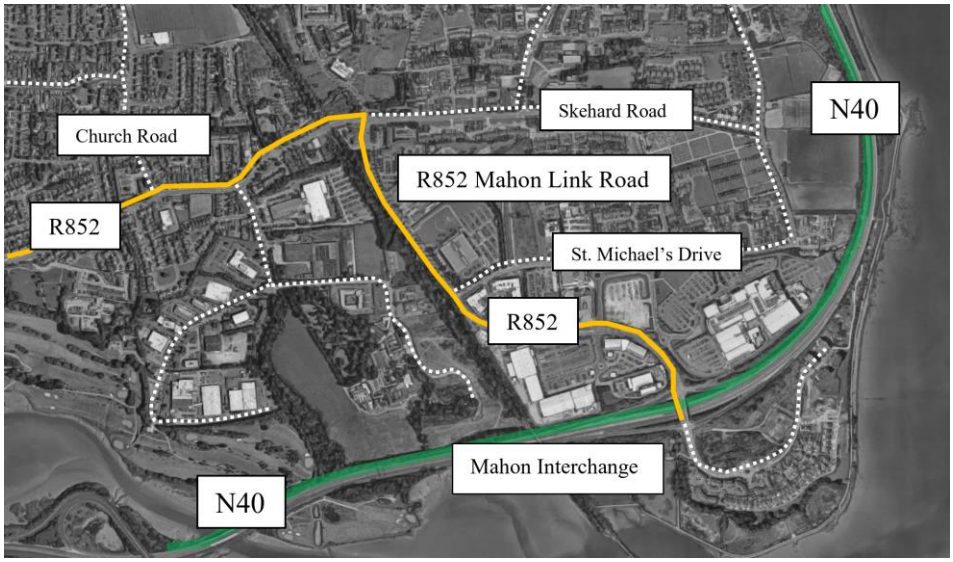


Figure 26 Local Road Network

N40: The N40 is a national dual carriageway route that connects the N22 from Killarney to the N28 to Carrigaline and the N25 to Waterford. Access and egress from the N40 to the proposed site can be made directly via the Mahon Interchange. The Dunkettle (Refer to Section 4.5) interchange is currently undergoing an upgrade and should assist with managing the flows on the N40 and through the Jack Lynch Tunnel.

R852: The R852 (Mahon Link Road) connects the N40 at the Mahon Interchange with the Skehard Road, with two lanes in both directions from the interchange to the vehicular entrance junction to Mahon Point Shopping Centre and Mahon Retail Park (widening locally to multiple lanes in both directions on the junctions between the interchange and St. Michael's Drive). This road reduces to a standard single-lane carriageway after the junction with St. Michael's Drive and provides on-road cycle facilities for the majority of the route and pedestrian footpaths.

Skehard Road: This is a single-lane carriageway which links Mahon to the city centre via the Boreenmanna Road (with localised widening to provide turning lanes at various junctions). An off-street cycle facility is provided along the southern side of the road. Pedestrian footpaths are provided on both sides of the road. Skehard Road Improvement Scheme Phase 3 has been completed in December 2021, which has upgraded the existing Skehard Road from Church Road to Mahon Link Road, including junction upgrade at Bessborough, refer to Section 2.5.1 for further details.

St. Michael's Drive: This local road is a single carriageway road that provides access to City Gate and residential developments, and also facilitates public transport access to Mahon Point shopping centre. Pedestrian footpaths are present on both the north and south sides of the road.

Church Road: Church Road links the R852 to Blackrock Road and is characterised as providing access to residential properties along its length. Church Road is a single-lane carriageway in each direction with pedestrian footpaths on both sides of the road.

A 30-minute driving catchment to and from the proposed development is illustrated in Figure 27. It can be seen that the city centre area is within a 15-minute travel time from Jacob's Island. Surrounding Cork Metropolitan Towns such as Midleton is within 20-minute travel time and Cobh and Blarney are within 25-minute travel time.

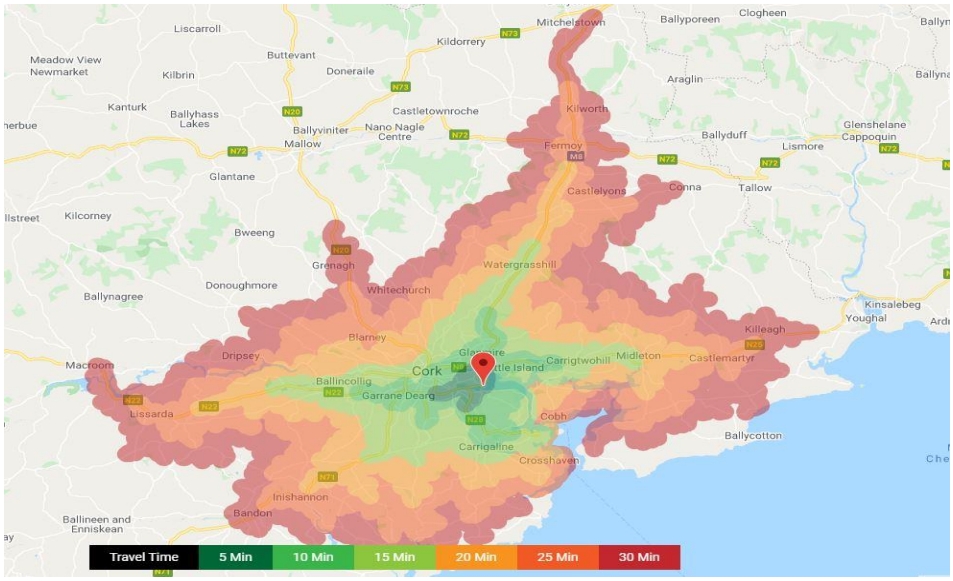


Figure 27 Vehicular Catchment

2.5.1 Skehard Road Improvement Scheme

Phase 1 of the Skehard Road Improvement Scheme (constructed in 2013) included improvements from the Well Road and Churchyard Lane as far as the junction with Park Hill.

Phase 2 (completed in December 2018) of the scheme included further improvements along Skehard Road between Park Hill and the junction with the Mahon Link Road, including improved pedestrian, cyclist and public transport facilities and an upgrade of the junction with Church Road (at Supervalu). In addition, Phase 2 involved the upgrade of the junction of the Skehard Road and Mahon Link Road.

At the Skehard Road/Mahon Link Road junction, the Phase 2 works included localised widening to implement an eastbound bus lane through the junction and to provide two right-turning lanes from Skehard Road to the Mahon Link Road, as well as dedicated bus priority and improved cycle priority on the Mahon Link Road itself, with northbound and southbound bus lanes proposed on the Mahon Link Road in the vicinity of the junction with Skehard Road.

The section of Skehard Road between Church Road and the Mahon Link Road was included as part of Phase 3, construction phase commenced in December 2020 and has been completed in December 2021. An eastbound bus lane and an enhanced westbound cycle lane were proposed as part of the scheme on Skehard Road. Phase 3 also included further improvements to pedestrian, cyclist and public transport facilities from Church Road to the junction with the Mahon Link Road, and upgrades to the junction with Bessboro Road.

As part of Phase 3, the junction of Skehard Road/Bessboro Road has been upgraded to provide a westbound on-road cycle lane, and an eastbound bus lane through the junction, as well as improved pedestrian crossing facilities at the junction itself. See Figure 28, Figure 29 and Figure 30 below for the junction upgrade layouts at the Skehard Road/Church Road, Skehard Road/Bessboro Road and Skehard Road/Mahon Link Road junctions, respectively.

Figure 28 Skehard Road/Church Road Proposed Junction Upgrade Layout

Figure 29 Skehard Road/Bessboro Road Proposed Junction Upgrade Layout

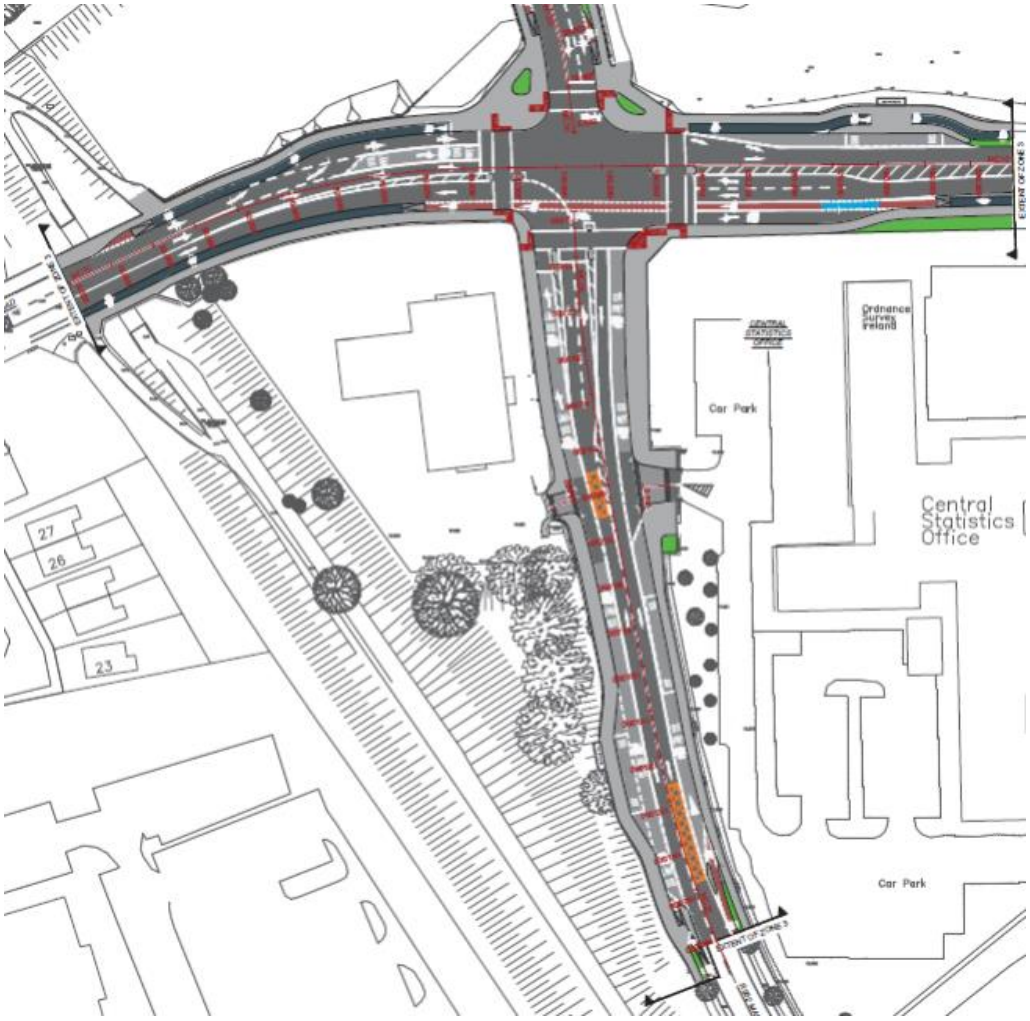


Figure 30 Skehard Road/Mahon Link Road Proposed Junction Upgrade Layout

These improvement works provide enhanced facilities for all road users but with particular benefits for pedestrians, cyclists and public transport users while providing, in as much as possible, for the efficient movement of vehicular traffic. Current bus journey times and reliability are being enhanced by identifying main areas of delay for bus journeys and expanding the existing bus lane infrastructure and the addition of bus priority control measures. Figure 31 and Figure 32 illustrate the new bus lane on Skehard Road after completion of the works.

Figure 31 New bus lane on Skehard Road

Figure 32 New bus lane on Skehard Road

2.6 Existing Mode Share

Figure 33 highlights the Cork City and Suburbs Mode Share, as obtained from the 2016 census. As can be seen in Figure 33, car driver and passenger accounts for 63%, with walking accounting for 21%, public transport for 9% and cycling for 3%.

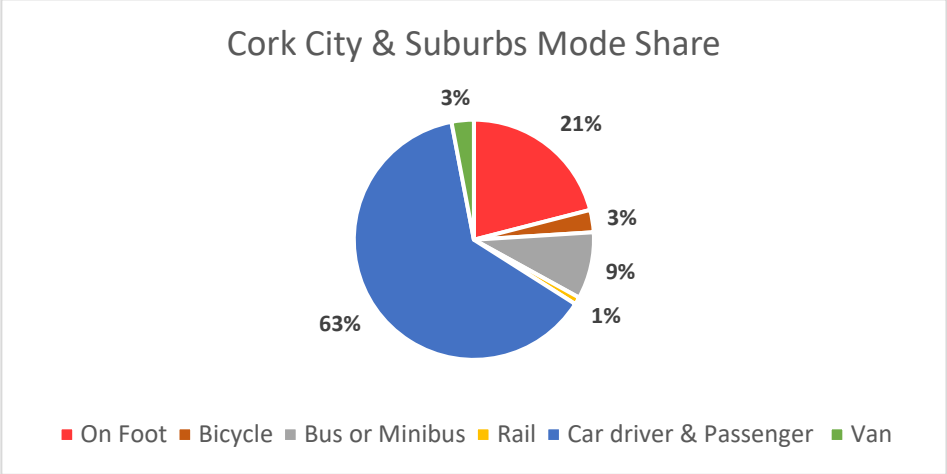


Figure 33 Cork City & Suburbs Mode Share

Since 2016 there have been continued improvements in public transport, cycling and walking infrastructure to contribute to a more sustainable modal split.

3 Existing Traffic Patterns

Previous traffic surveys had been undertaken by an independent traffic survey company IDASO in June 2017. These were discussed with CCC during the scoping meeting and deemed to be acceptable for use in assessing the traffic impact for the proposed development. The surveys were undertaken at a number of junctions in the site vicinity, as follows:

1. Mahon Interchange (southern junction);
2. Mahon Interchange (northern junction);
3. Mahon Point Shopping Centre/Mahon Link Road;
4. St. Michael's Drive/Mahon Link Road; and
5. Mahon Link Road/Skehard Road.

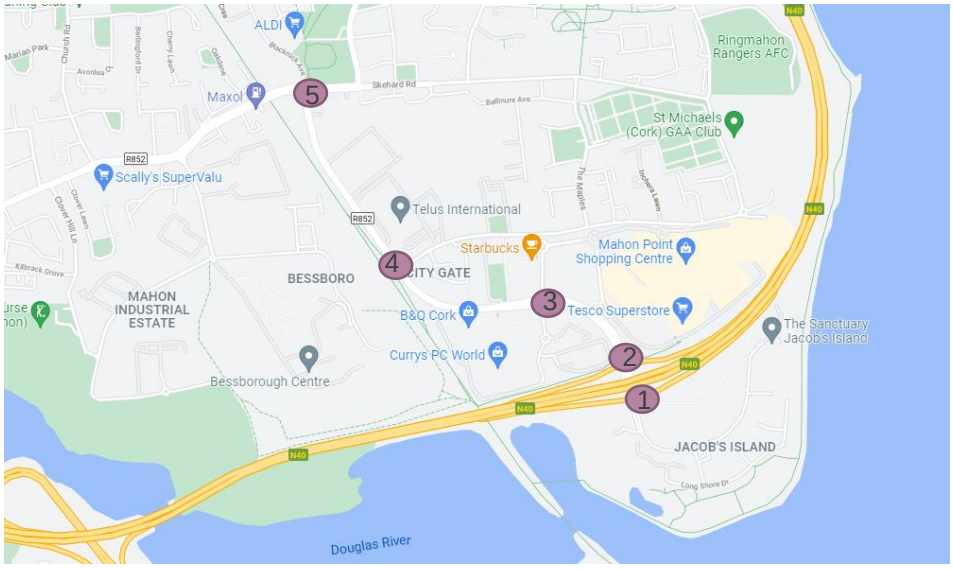


Figure 34 Traffic survey locations

3.1.1.1 *Existing Queue Lengths*

The existing queue lengths have been considered the queue lengths identified in the traffic survey from June 2017 on the five junctions listed above. See the maximum queue lengths on the Northern and Southern Mahon Interchange Junctions below.

Table 2: Mahon Interchange Queue Lengths

Approach Arm	Queue Length - Morning Peak			Queue Length - Evening Peak		
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3
	North Interchange					
Mahon Link Road	6	17	13	8	45	45

Approach Arm	Queue Length - Morning Peak			Queue Length - Evening Peak		
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3
EB Slip Road Off N40	27	22	1	15	10	5
Overbridge	17	9	-	9	7	-
EB Slip Road Onto N40	0	0	-	0	0	-
	South Interchange					
Overbridge	3	5	-	6	5	-
WB Slip Road Onto N40	0	0	-	0	0	-
Jacob's Island	4	5	-	3	5	-
WB Slip Road Off N40	22	25	-	15	15	-

3.2 TII Long Term Counter

TII have two long term counters on the N40 at either side of the Mahon interchange. These have been reviewed from 2017 to 2021. Traffic flows have dropped in 2020 and 2021 due to the covid pandemic. This has introduced the opportunity for many people to work from home and created a hybrid working solution. The ADT flows can be seen in the tables below. We have also reviewed the average daily flow for September 2021 and these flows are getting closer to the previous levels in 2017 of 61,470 on N40 between Jack Lynch Tunnel and Mahon Jun South Ring Road and 65,770 on N40 west of Mahon Interchange, between Mahon and Bloomfield Interchange.

Table 3 N40 between Jack Lynch Tunnel and Mahon Jun South Ring Road

Year	ADT	% HGV
2021	52,560	5.7%
2020	51,710	5.7%
2019	67,640	4.5%
2018	67,010	4.5%
2017	66,690	4.3%

Table 4 N40 west of Mahon Interchange, between Mahon and Bloomfield Interchange

	ADT	% HGV
2021	55,750	5.2%
2020	54,930	5.3%
2019	71,700	4.1%
2018	71,080	4.0%
2017	70,940	3.9%

3.3 Jacobs Island Traffic Surveys

Local traffic counters were placed at two locations on Jacobs Island in two different period of time, from the 3rd Sept to the 30th Sept 2021 and from the 1st Feb 2022 to the 21st Feb 2022. Some covid restrictions were still in place but many people have returned to work with schools and universities fully open. An additional traffic survey has been undertaken between 25th April and 15th May 2022 in order to obtain a traffic survey with no effects of covid restrictions.

Location 1 (ATC1) is at the entrance to Jacobs Island and location 2 (ATC2) by the Sanctuary apartments. The Sanctuary apartments were chosen as the proposed development is a mix of apartments. These locations can be seen in Figure 35.

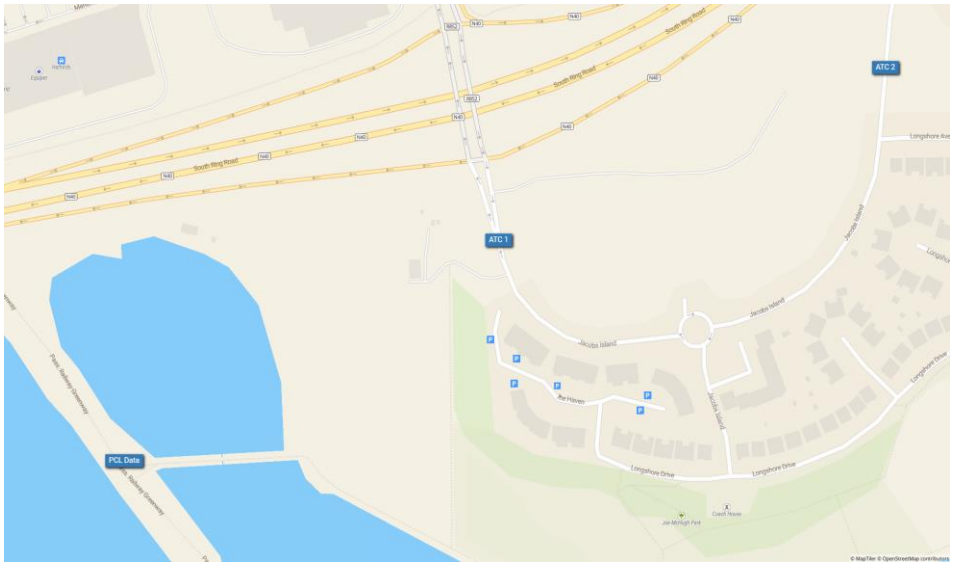


Figure 35 Local traffic survey locations

3.3.1 Traffic Survey – September 2021

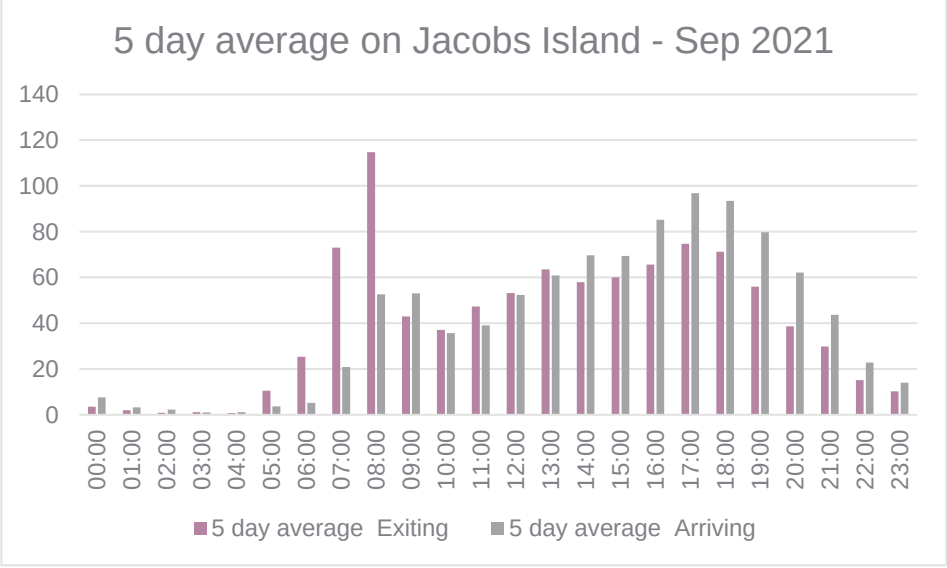


Figure 36 Average daily profile exiting and arriving on Jacobs Island (Sep 2021)

The average number of vehicles leaving Jacobs Island in the AM peak is 117 and returning in the PM peak is 97 vehicles. This is a relatively low number of vehicles considering the number of parking spaces available on the island.

The average no. of vehicles leaving the Sanctuary apartments in the AM peak is 39 vehicles and 42 returning in the PM Peak. The daily profile from Location 2 can be seen in Figure 37.

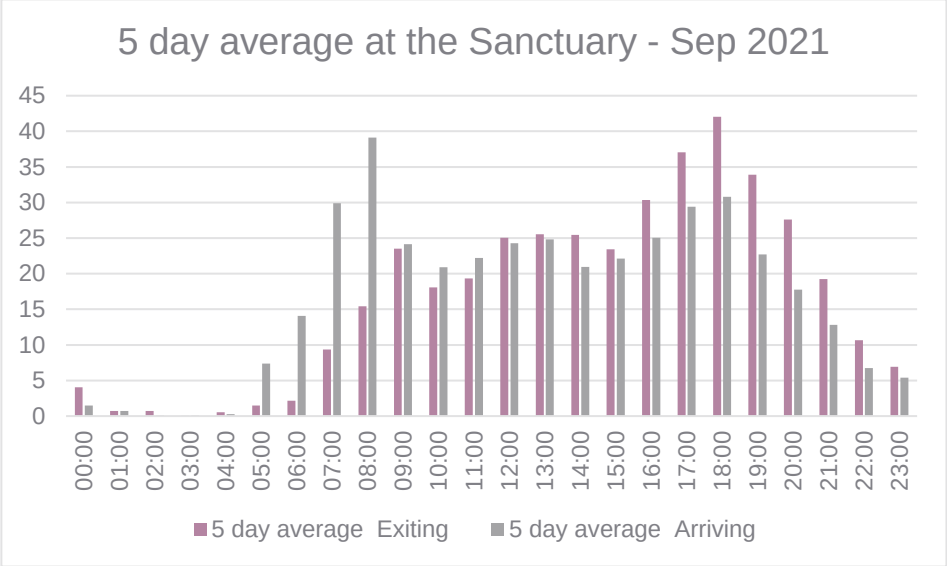


Figure 37 Average daily profile exiting and arriving at the Sanctuary (Sep 2021)

3.3.2 Traffic Survey – February 2022

It is noted that the traffic survey from Feb 2022 obtained results significantly similar to the survey from Sep 2021 as can be seen in the daily profiles from both locations (ATC1 and ATC2) illustrated in Figure 38 and Figure 39, respectively.

The average number of vehicles leaving Jacobs Island in the AM peak is 111 and returning in the PM peak is 99 vehicles. As mentioned previously, this is a relatively low number of vehicles considering the number of parking spaces available on the island.

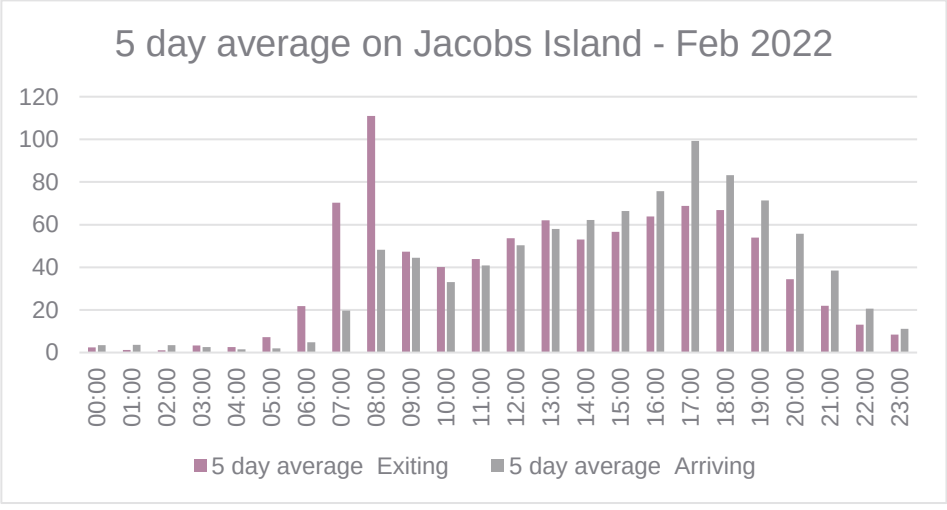


Figure 38 Average daily profile exiting and arriving on Jacobs Island (Feb 2022)

The average no. of vehicles leaving the Sanctuary apartments in the AM peak is 37 vehicles and 35 returning in the PM Peak. The daily profile from ATC2 is illustrated in Figure 39.

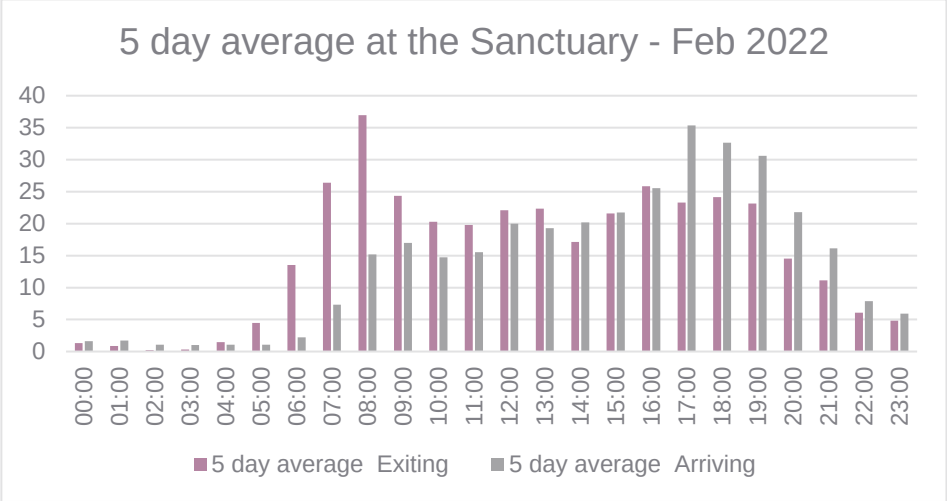


Figure 39 Average daily profile exiting and arriving at the Sanctuary (Feb 2022)

3.3.2.1.1 Traffic Survey – April-May 2022

It is noted that the traffic survey undertaken between April and May 2022 acquired results significantly similar to the surveys from Sep 2021 and Feb 2022 as can be seen in the daily profiles from both locations (ATC1 and ATC2) illustrated in Figure 40 and Figure 41, respectively.

The average number of vehicles leaving Jacob's Island in the AM peak is 119 and returning in the PM peak is 105 vehicles. As mentioned previously, this is a relatively low number of vehicles considering the number of parking spaces available on the island.

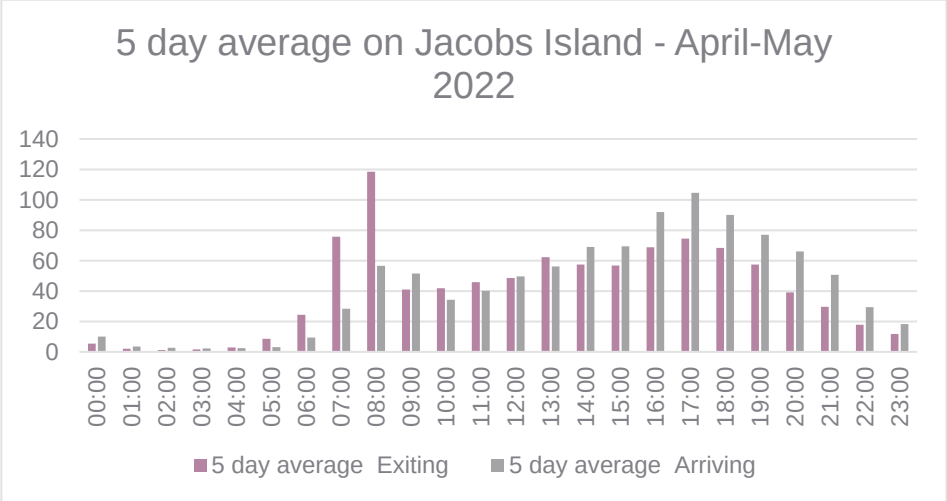


Figure 40 Average daily profile exiting and arriving on Jacobs Island (Apr-May 2022)

The average no. of vehicles leaving the Sanctuary apartments in the AM peak is 37 vehicles and 38 returning in the PM Peak. The daily profile from ATC2 is illustrated in Figure 41.

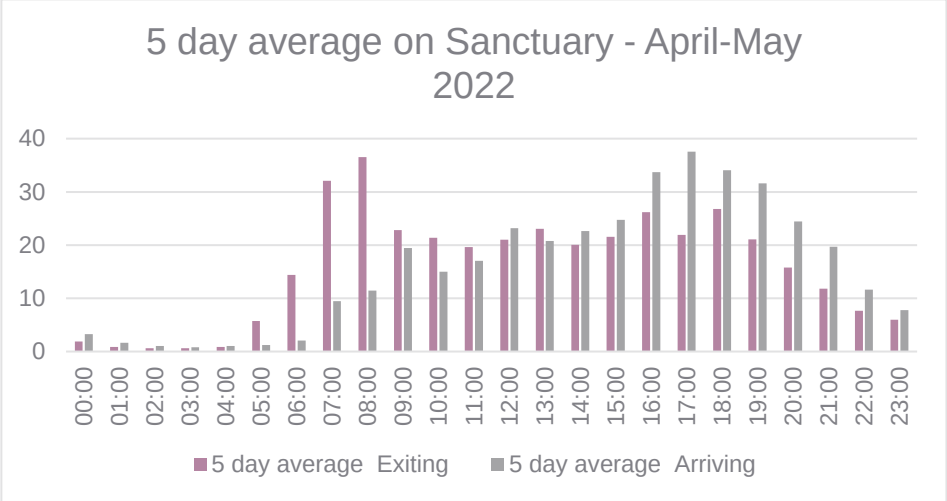


Figure 41 Average daily profile exiting and arriving at the Sanctuary (Apr-May 2022)

3.4 Existing Car Parking

There are currently a range of residential parking available of Jacobs Island, this can be seen in the table below. The Sanctuary apartments are the only area that is managed by a management company with APCOA managing the car park. This currently operates successfully.

Table 5 Existing Residential and Parking Numbers

	No. of residential units	Parking No.
The Sanctuary Jacobs Island	184	241
The Haven	78	116
The Courtyard	18	23
4/5 Bed semis/detached	63	126
TOTAL	343	506

3.5 Existing Modal Split

The local traffic survey data and the existing available parking spaces on site have been assessed to understand the vehicle usage in the AM and PM peak periods. The table below shows that a low % of vehicles move during the peak periods. This may be due to the range of other modes easily available on the island such as bus, cycle and walk with car usage more for leisure and weekend purposes. The numbers outlined in table below have been obtained from the latest traffic survey carried out in Jacob's Island between 25th April and 15th May 2022 as detailed in Section 3.3.2.1.1.

Table 6 Current Vehicle Usage During the Peak Periods

	No. of parking spaces	AM Peak departing	PM Peak Arriving	AM Peak % veh of available	PM Peak % veh of available
The Sanctuary Jacobs Island	241	37	38	15%	16%
Total on Jacobs Island	506	119	105	24%	21%

4 Future Transport Proposals

4.1 Cork Metropolitan Area Transport Strategy (CMATS) 2040

The Cork Metropolitan Area Transport Strategy (CMATS) 2040, published in February 2020, has been developed by the National Transport Authority (NTA) in collaboration with Transport Infrastructure Ireland (TII), Cork City Council and Cork County Council.

A key principle for CMATS is to reduce dependency on the private car within the CMA, while increasing the appeal of sustainable transport options. Another fundamental principle of the Strategy is to support the future growth of the CMA through the supply of an efficient transport network. Supporting measures have an important role to play in providing a future transport network that matches up to these principles.

4.1.1 Bus Connects

Bus Connects is the National Transport Authority's (NTA) programme to greatly improve bus services in Irish cities. Bus Connects is contained within the Government's National Development Plan 2021-2030 and the Climate Action Plan 2019. The Draft New Bus Network have been published in November 2021 and will assist in realising the ambition of the Cork Metropolitan Area Transport Strategy 2040 to significantly increase public transport use. The Cork Metropolitan Area is growing and the redesign of the bus network – routes, frequencies and timetables – will deliver a better bus system for the current and future needs of the city.

This programme includes nine measures which will transform Cork bus system, illustrated below.

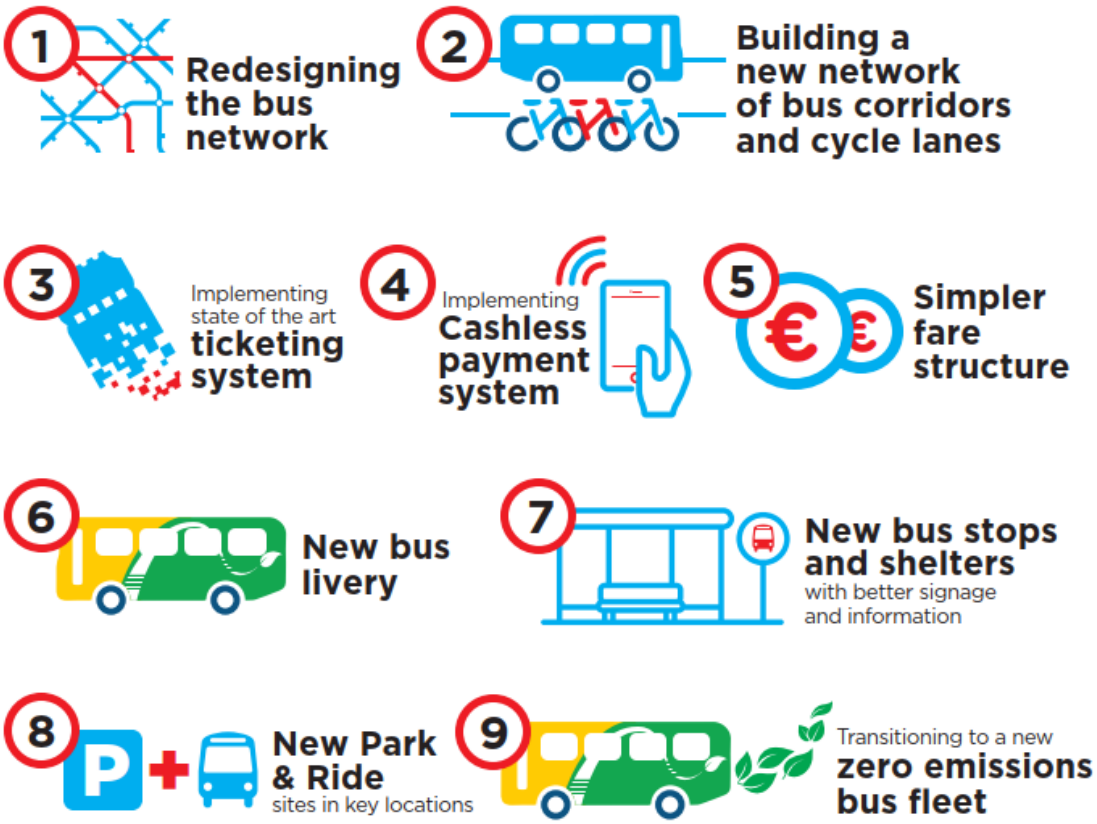


Figure 42 Measures to improve the Cork Bus System (Source: Draft New Bus Network)

The Draft New Bus Network is a complete redesign of the Cork bus network. Every route is proposed to change. This programme will provide the following benefits:

- An increase of over one third in bus services in Cork;
- A new frequent network that paves the way for Luas (Light rail system which is a long-term objective for the CMATS);
- Shorter waits and more direct routes for many people;
- Simpler network and schedules;
- Additional services at weekends;
- The average resident will have access to 17% more jobs under the new network;
- Young people's access to school places will increase by 17% and their access to jobs by 18%, with the revised bus system; and
- More residents of the City and County will be on the public transport network.

Simplified fares will be provided which means that this fare will cover all bus and rail trips started within 90 minutes, there will be no need to pay extra to change between bus to another bus, or from bus to rail, including the future Luas system. The new network will have all new route numbers and will be implemented starting in 2023 and 2024. Jacobs Island vicinity will be served by the following routes:

Table 7 New Bus Routes in Jacobs Island Vicinity

No.	From	Via	To
1A	Ballincollig, Castle Road	Ballincollig Main Street - Model Farm Road (MTU) - College Road (UCC) - St. Patrick's Street - City Hall - Boreenmanna Road - Skehard Road	Mahon Point Shopping Centre
1B	Ovens (Dell EMC)	Ballincollig Main Street - Model Farm Road (MTU) - College Road (UCC) - St. Patrick's Street - City Hall - Boreenmanna Road - Skehard Road	Mahon Point Shopping Centre
9	Jacobs Island	Mahon Point Shopping Centre - Skehard Road - Beaumont Drive - Centre Park Road - Bus Station	Kent Station
11	Mahon Point Shopping Centre	Ringmahon Road - Saint Luke's Home - Blackrock - Blackrock Road - Bus Station - Kent Station - MacCurtain Street - Blackpool Shopping Centre - Fairfield Avenue - Upper Fairhill - Parklands Drive	Farranree
14	Cork University Hospital	Summerstown Road - Clashduv Road - Tramore Road - Black Ash Park and Ride - South Ring - Douglas Village Shopping Centre - Well Road - Skehard Road - Mahon Point Shopping Centre	Little Island

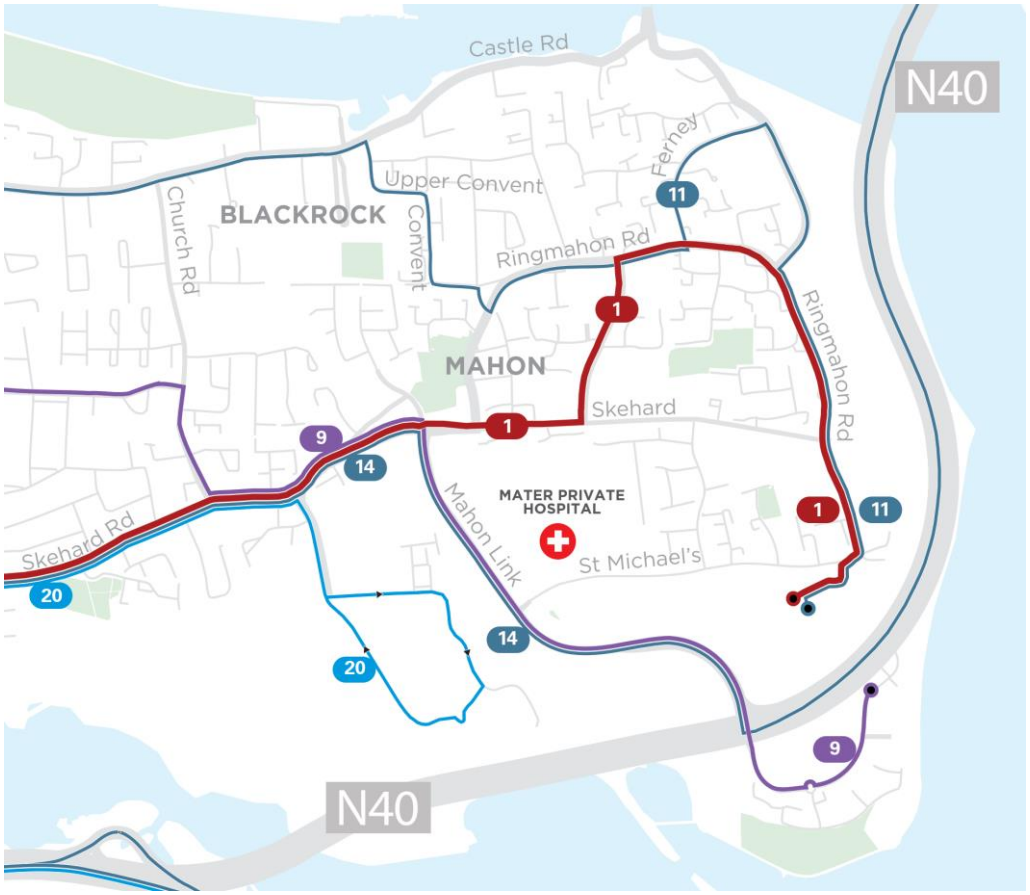


Figure 43 New Bus Routes in Jacobs Island Vicinity (Source: Draft New Bus Network)

The proposed development at Jacobs Island will be directly served by bus route 9 operating at a 20-minute frequency. Bus service 11, which will operate at a 30-minute frequency, 1A and 1B, which will operate at a 20-minute frequency each resulting in a 10-minute combined frequency, route directly to Mahon Point Shopping Centre in close proximity of the proposed development. The bus service 14 routes from Mahon Link Road to Little Island through N40 and is in the vicinity of the proposed site, this route will operate at a 30-minute frequency.

The Sustainable Transport Corridors Report published in April 2022 is part of the Bus Connects Cork and highlights that improvements to pedestrian and cycle route facilities for the Mahon area are also included within Bus Connects. This report identifies the corridors that are needed to make the bus system operate efficiently, reliably and punctually, together with the cycling facilities required to enable more people to move out of their cars and onto bicycles. Corridor J, from Mahon to City, is a 7.6km long route that will facilitate walking and cycling in the Mahon and Jacobs Island area. Included within the proposals is a new pedestrian and cycling bridges to be built on either side of the N40 overbridge at Jacob's Island, see the figure below.

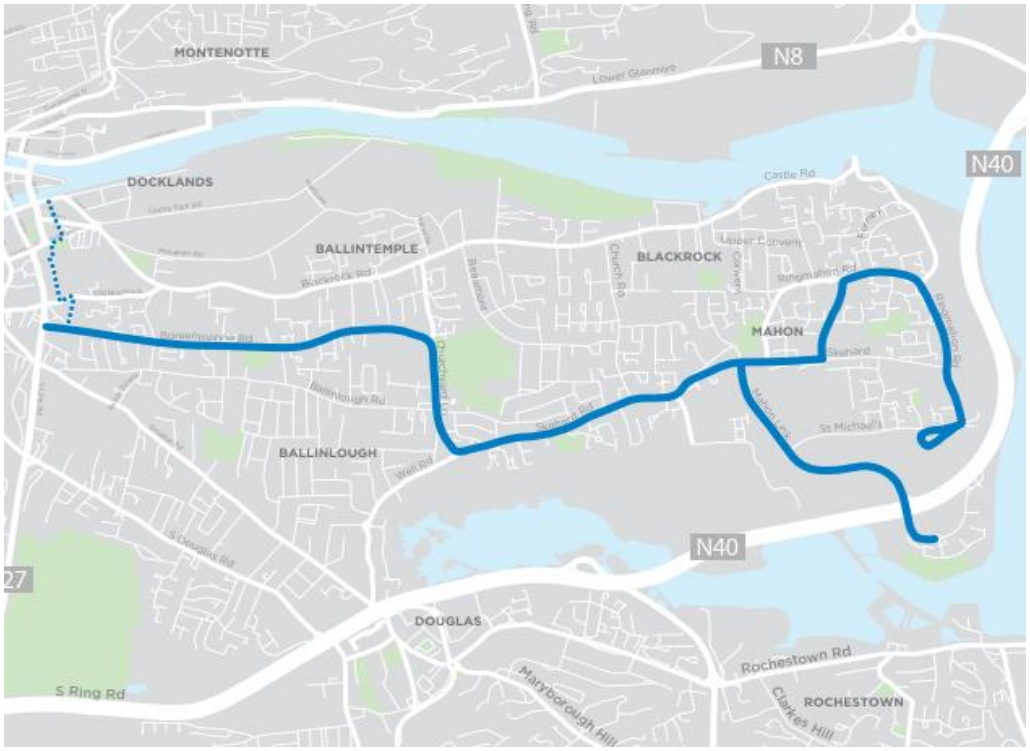


Figure 44 Mahon to City Cycle Route and cycle and pedestrian bridges either side of N40 bridge (Source: Sustainable Transport Corridors Report 2022)

4.1.2 East-West Corridor: Light Rail Transit (LRT)

The development of an East-West Public Transport Corridor, from Mahon in the east to Ballincollig in the west, has been a long-term objective for the CMATS. Following detailed analysis of projected travel demand within the CMA, this Strategy has determined that the East-West Corridor is best served through the provision of a new Light Rail Transit (LRT) tram system. The LRT will be preceded by a high-frequency bus service between Mahon and Ballincollig. This will be delivered in the short-term to underpin higher development densities along the corridor including the regeneration of the Cork City Docks.

The following locations are required to be within the catchment area of the future light-rail system:

- Ballincollig;
- The proposed Cork Science and Innovation Park (CSIP);
- Cork Institute of Technology (CIT) / Current Munster Technological University (MTU);
- Cork University Hospital (CUH);
- University College Cork (UCC);
- Cork City Centre;
- Kent Station / Cork North Docklands;
- Cork South Docklands; and
- Mahon.

Figure 45 and Figure 46 illustrate the East-West Corridor route and the Public Transport Network presented in the Cork Metropolitan Area Transport Strategy 2040.

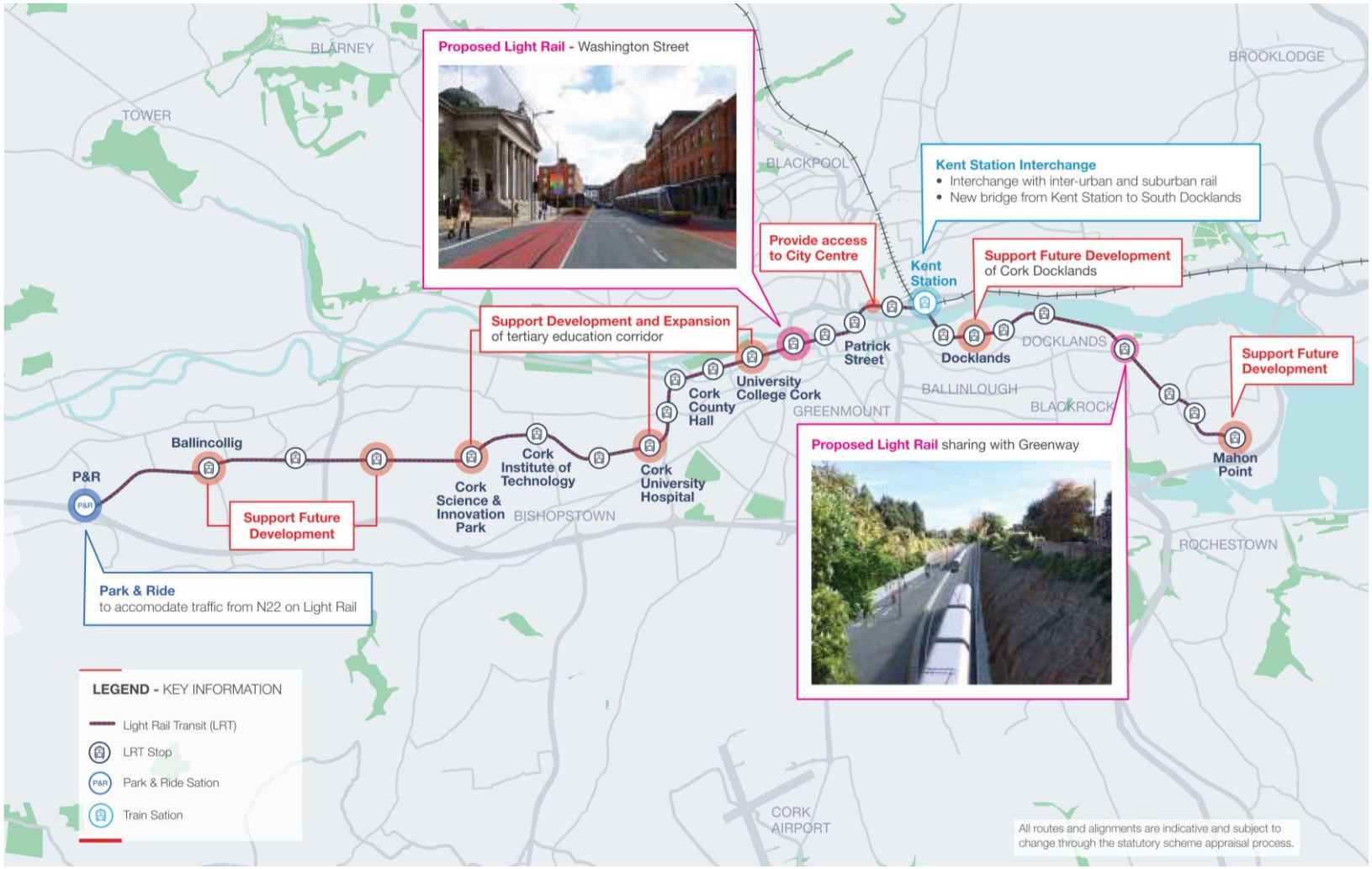


Figure 45 East-West Public Transport Corridor Route (Source: CMATS)

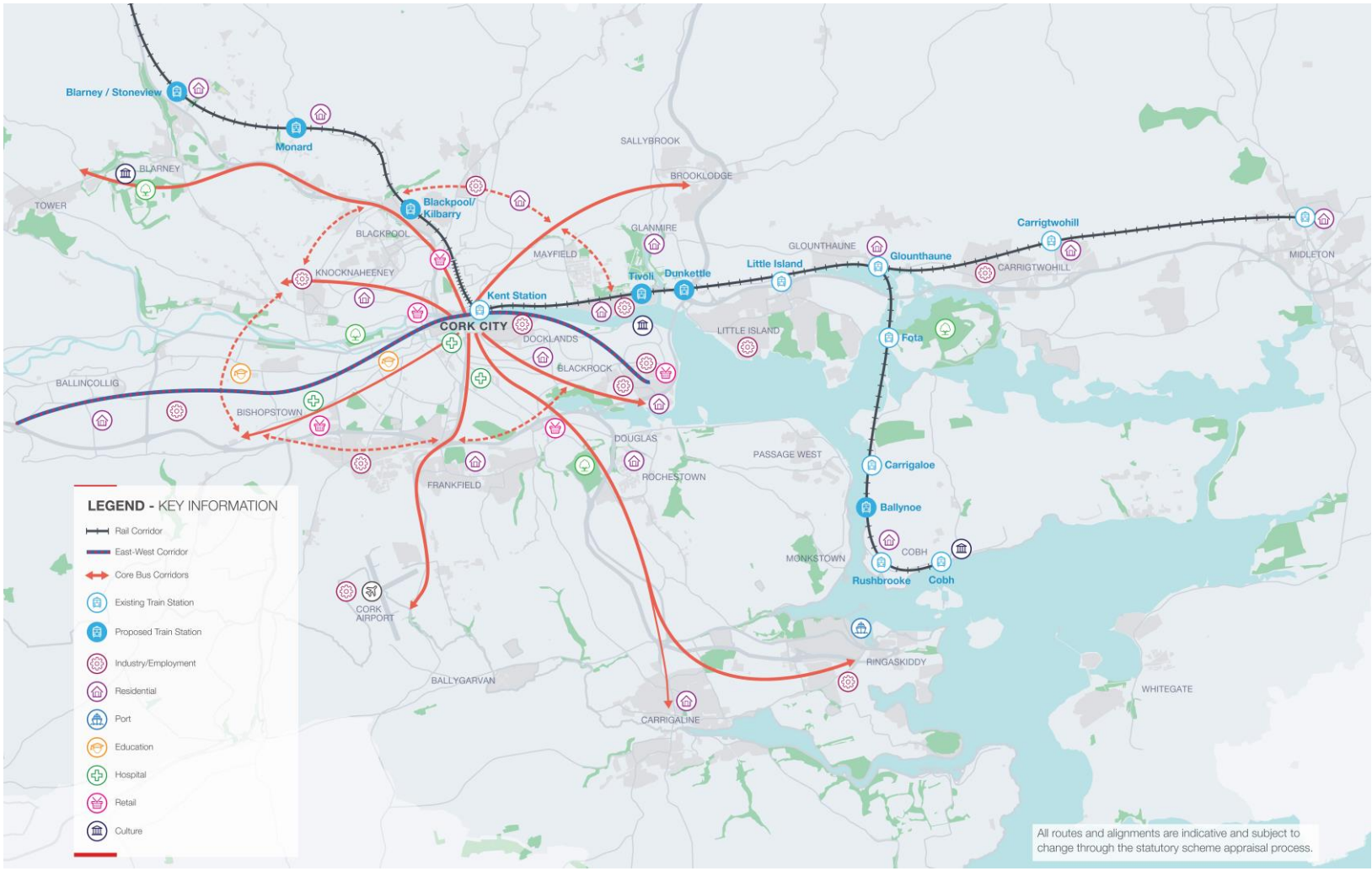


Figure 46 Public Transport Network (Source: CMATS)

4.2 Public Transport

As part of a previous application for apartments adjacent the Sanctuary development (granted in Oct 2018 under An Bord Pleanála Ref. ABP 301991-18), an additional bus lane has been constructed on the Mahon Link Road to aid public transport in the area as seen in Figure 47 below.

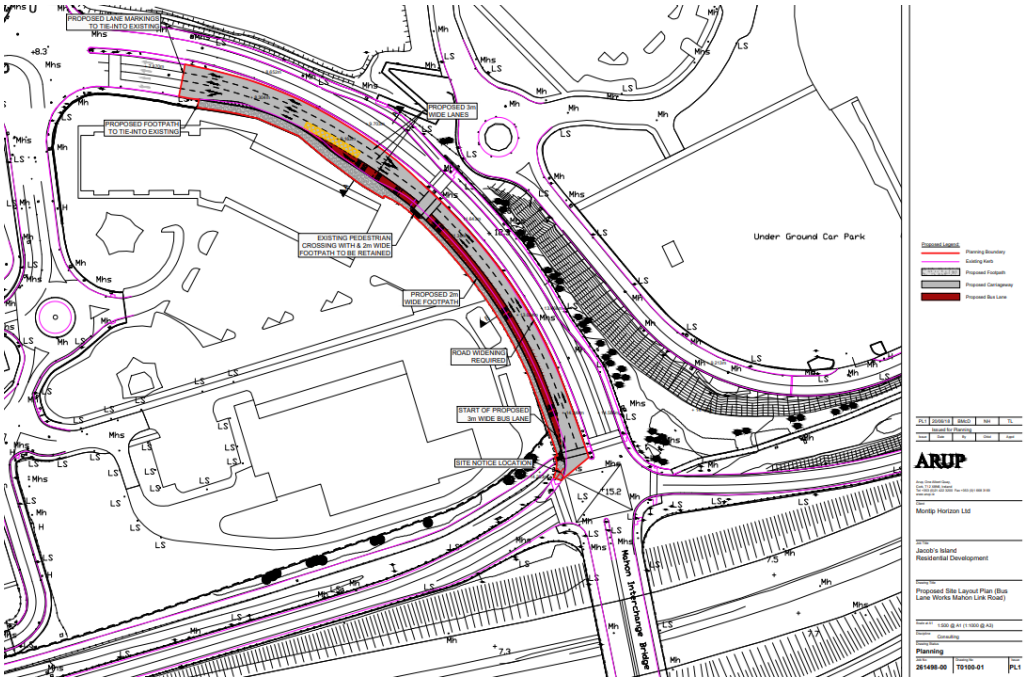


Figure 47 Additional bus lane on the Mahon Link Road

In addition, additional 2 way bus lanes have been proposed on the Mahon Link Road by the City Gate Plaza development which consists of 154,000 sq ft of Office & Retail Space. This development is under CCC Ref. 1838036 and is currently under construction. See additional bus lane illustrated in figure below.

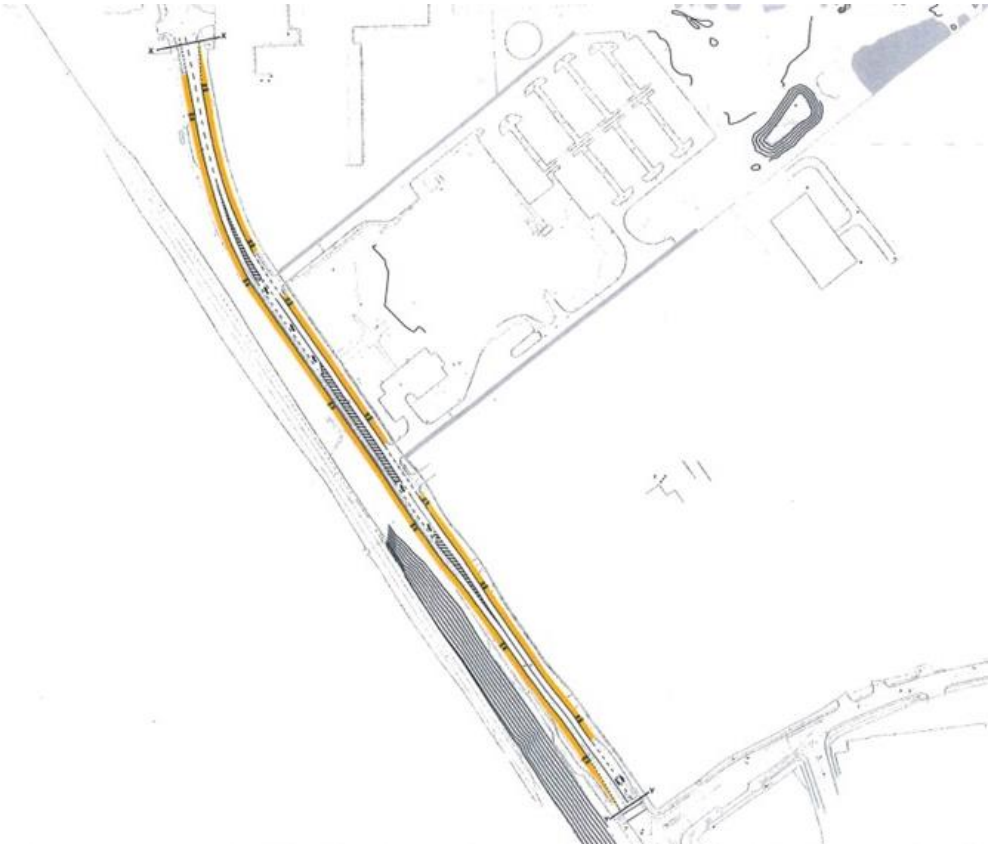


Figure 48 Additional 2 way bus lanes on the Mahon Link Road proposed by the City Gate Plaza Development

4.3 Walking

Much of the focus areas for improvement identified in the Cork Walking Strategy 2013-2018 remain relevant and have been adapted on the CMATS. The Walking Strategy identified a number of Strategic Routes that coincided where the City's employment and education areas overlap. These routes were linked with public transport services to identify areas where investment in pedestrian infrastructure would deliver most benefits to modal shift.

Two Strategic Routes are located in Mahon. These routes, including their purpose and upgrade proposals, are set out below:

- Ringmahon Road - upgrade the pedestrian loop at Mahon that serves the local community, links to the amenity routes and also to the Skehard Road towards Douglas; and
- Skehard Road - provide a strong east-west link from Mahon to both the City Centre and Douglas via the Boreenmanna Road and Well Road respectively.

4.4 Cycling

4.4.1 Cork Metropolitan Area Transport Strategy (CMATS) 2040

The Cork Metropolitan Cycle Network Plan, finalised and published in January 2017, envisages a network of primary, secondary and greenway cycle routes for the south-eastern portion of Cork City, including the existing Passage West Greenway. The 2017 Metropolitan Cycle Plan is the starting point for the CMATS Cycle Network. The CMATS have largely retained and updated the routes outlined in the 2017 Cycle Network Plan to include new primary routes. The cycling proposals for the site environs are illustrated in Figure 49.

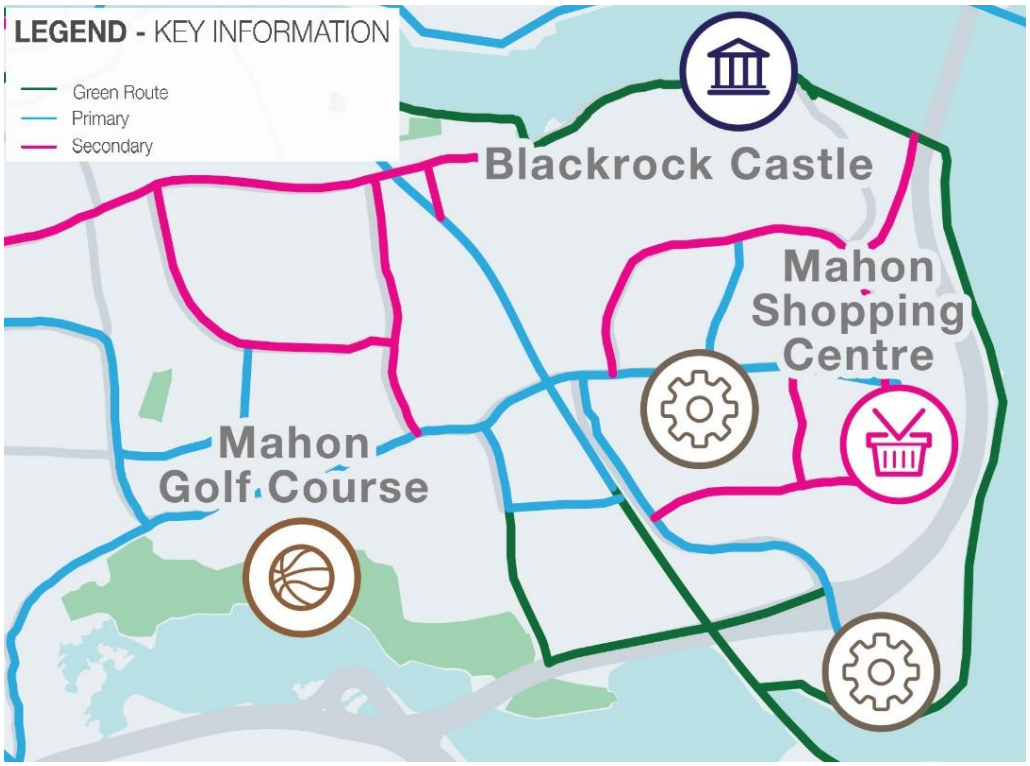


Figure 49 Cork Metropolitan Area Cycle Network Map (Source: CMATS)

Primary routes have been designated as such because they experience the highest level of demand. Primary routes are typically direct and provide medium-long radial connections to key destinations across the CMA. These routes are supplemented by secondary and feeder routes which may provide access to residential catchments.

The secondary route network provides connections from residential areas and areas of employment to the primary network. They comprise of a combination of off-road cycle routes, cycle lanes, shared bus and cycle lanes and traffic-calmed roads. They often run parallel to primary routes, providing an alternative link.

Greenway routes comprise of traffic free or low-trafficked routes and typically comprise of re-purposed derelict railway lines, routes through parks or alongside rivers. Access to greenways can be supported through filtered permeability from residential or other built up areas.

As outlined in the Cycle Network Plan, primary cycle corridors are proposed within Bessboro and along the Skehard Road, ultimately connecting with the Mahon Link Road at the junction with Skehard Road.

The cycle corridors shown along the Mahon Link Road in Figure 49 above show that the proposed route is to extend into Jacob's Island itself (via the Mahon Interchange). The River Lee/Lough Mahon Waterfront Greenway and Passage West Greenway line are both greenway networks, except the section of the Passage West Greenway from the ramped connection at the junction of the Mahon Link Road/St. Michael's Drive to Pairc Ui Caoimh.

As indicated in Section 2.3.1, there are existing on-road cycle facilities on the Mahon Link Road, from the northern arm of the Mahon Interchange, through the junctions at Mahon Point Shopping Centre and St. Michael's Drive and north to the junction with Skehard Road. On Skehard Road, there are existing cycle facilities present along the southern side of the route as it passes the junction with the Mahon Link Road (and a limited length of cycle lane present on the northern side of Skehard Road).

The proposals in the Cork Metropolitan Area Cycle Network Plan will supplement the existing cycle connectivity to the site, and will ensure that cycling access to and from Jacob's Island remains a viable alternative to the private motor car.

4.4.2 Passage Railway Greenway Improvement Scheme

The Passage Railway Greenway Improvement Scheme has the objective to improve and upgrade the existing Passage West Greenway. Phase 1 of this scheme is currently under construction in order to provide significantly improved facilities for cyclists and pedestrians along the Passage West Greenway from Pairc Uí Chaoimh to Mahon, including the installation of additional ramped connections, upgrade of existing connections and an upgrade proposal for the line itself to include widening, resurfacing, new CCTV, landscaping and incorporation of public lighting.

Phase 2 of this scheme aims to improve and upgrade of the existing Passage West Greenway from Mahon towards Passage West. This comprises the enhancement of safety of the greenway, improvement of access and connectivity with the areas around the greenway including the scope for developing the car parking, lighting, security and public realm facilities at key locations along the route. Planning process is commencing in mid-2022 and construction phase to follow.

4.4.3 Mahon Cycle Route Scheme

The Mahon Cycle Route Scheme aims to deliver a high quality, safe, coherent, direct and attractive pedestrian and cyclist network along Ringmahon Road, Skehard Road, Avenue de Rennes, Ringmahon Link Road and Castle Road, in addition to providing an off-road link to the adjacent Blackrock - Passage West Greenway at Ballinsheen Road. Detailed design and construction phase are expected to commence in 2022. This scheme is located to the north of Jacob's Island, see below.

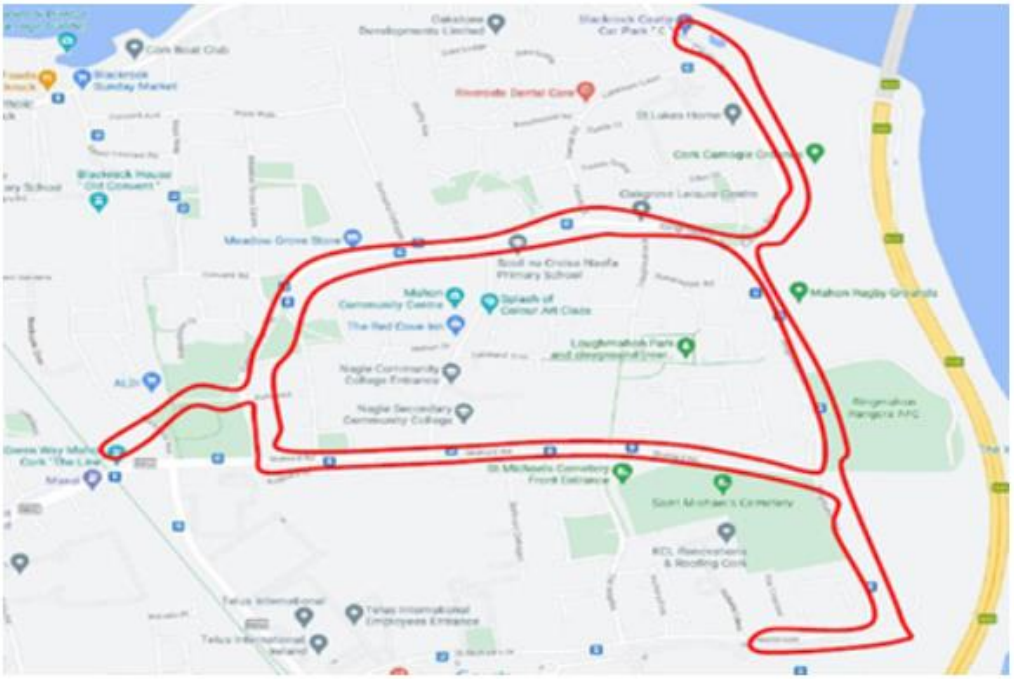


Figure 50: Mahon Cycle Route Scheme Location (Source: Cork City Council)

4.5 Dunkettle Interchange

The Dunkettle Interchange is located approximately 6km to the east of Cork City, north of Jack Lynch Tunnel. TII has proposed a reconfiguration of the existing Dunkettle Interchange to a free flowing interchange, in so far as practicable. That is to say, traffic will not come into conflict with opposing traffic movements either by yielding or stopping at traffic signals, as is the case with the existing interchange.

Dunkettle Interchange is located circa.2.6km to the northeast of the Jacob's Island/ N40 interchange. It is expected that the improvements at the Dunkettle Interchange will reduce congestion and improve journey times along this section of the N40.

5 Proposed Development

5.1 SHD Development Proposals

The development site is located at Jacob's Island, to the south of Cork City Centre. A site plan was provided by OMP which is provided in Appendix A.

The development proposals considered within this Traffic and Transport Assessment focus primarily on the SHD application, which consists of the following:

- 489 residential units (block 11, 13, 14 & 15); and
- 4,500m^2 GFA of office units (block 12) including a creche (block 13).

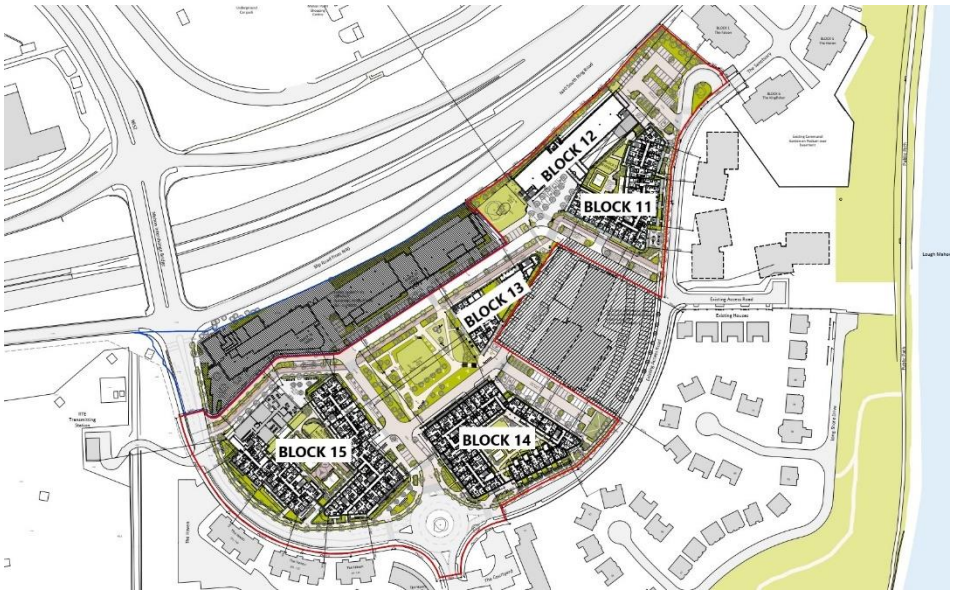


Figure 51 Site Plan

The residential units are proposed to be formed by a combination of studio apartments, and 1 or 2 bed apartments.

5.2 Anticipated Full Masterplan

The anticipated full masterplan proposals may consist of the following:

- 489 residential units;
- 15,000m^2 GFA of office units;
- 165 bed hotel; and
- Creche.

This TTA is focused on the SHD application only, however, provides an indicative insight as to the feasibility and long-term traffic impacts of the full masterplan. Additional planning applications would be required to deliver the anticipated full masterplan proposals and application.

5.3 Pedestrian and Cycle Access

Pedestrian and cycle access to the site is proposed to be taken via the existing Jacob's Island Road junction, located to the east of the site. Figure 52 highlights the

proposed pedestrian and cyclist through routes and desire lines of the site. In line with DMURS there will be separate active travel routes through the site segregated from traffic along the main routes parallel to the liner park with some of the more minor routes having a shared use function.

Figure 52 Proposed pedestrian and cyclist accesses

A potential future pedestrian and cycle connection from the proposed development to the River Lee/Lough Mahon Waterfront Greenway is located to the west of the proposed site. This connection is currently of variable quality and could be upgraded with some resurfacing works and cutting back of vegetation to make it a more attract route. A proposed new crossing could be development to facilitate this connection. Discussion with Cork City Council (CCC) would be required.

5.4 Vehicle Access

Vehicle access to the site will be taken via the existing Jacob's Island Road network. The site can be accessed via the signalised junction with the Mahon Interchange at the N40 to the west of the site. Figure 53 below highlights the proposed road hierarchy through routes within the site.

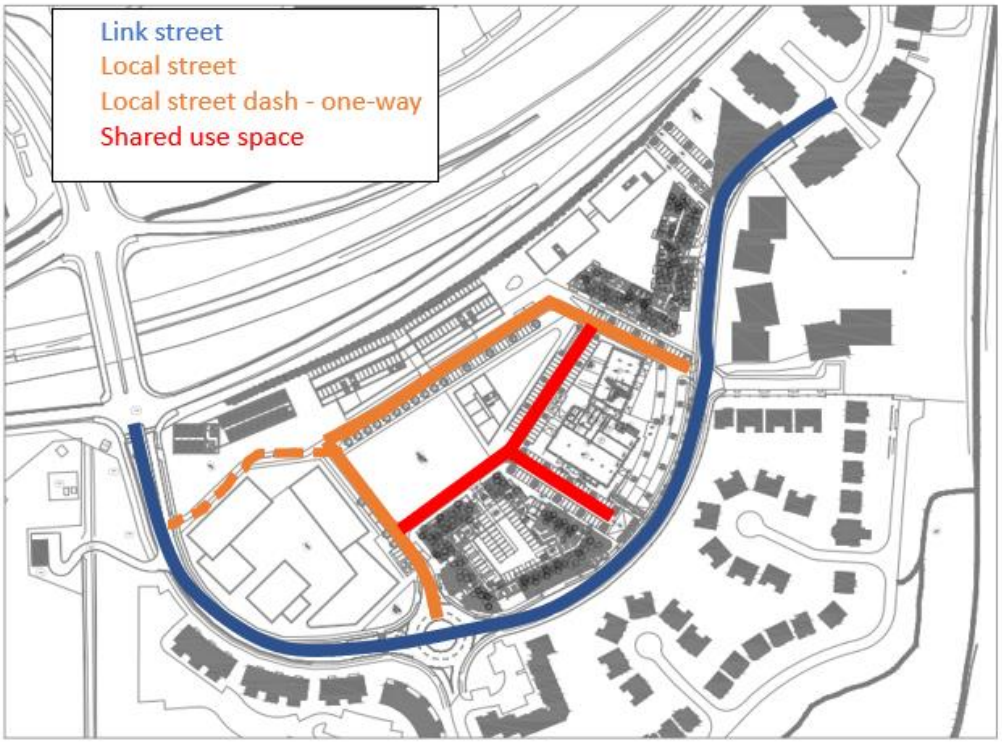


Figure 53 Proposed road hierarchy through the site

6 Car Parking

6.1 Car Park Guidelines

The Draft Cork City Council City Development Plan 2022-2028 presents maximum car parking requirements that proposed developments can provide. The development site falls within 'zone 2' of Cork, and the standards outlined are maximum parking requirements.

Table 8 below outlines the parking requirements for the various aspects of the site, with Table 9 highlighting the proposed parking for the SHD development.

Table 8 Draft Cork City Development Plan 2022, car park standards

Draft Cork City Development Plan Parking Standards 2022-2028	
Land Use	***Zone 3 Standards***
Office	1 space per 150sqm
Hotel	1 space per 2 rooms
Creche	1 space per 6 students
Residential (1-2 bedroom)	1 space per unit
Disabled Parking	5% of total car parking spaces
Motorcycle Parking	1 space per 10 car parking spaces
Electric vehicle parking	1 space per 5 car parking spaces

Table 9 Draft Car Park for SHD

Draft Development Car Park Spaces SHD			
Land Use	**Unit/ sqm**	**Maximum Parking**	**Proposed Parking**
Office	4,500 sqm	30	69
Creche	1 space per 6 students	8	6
Residential (1-2 bedroom)	489 units	489	246
Car Club Spaces	-	-	6
Total Parking Spaces		**527**	**327**

Draft Development Car Park Spaces SHD			
Land Use	**Unit/ sqm**	**Maximum Parking**	**Proposed Parking**
Disabled Parking		27	19
Motorcycle Parking		53	34
Electric vehicle parking		106	54

As can be seen in Table 9, the proposed car park spaces for the office facilities are higher than the maximum, however, the proposed car park spaces for the other facilities are considerably lower than the maximum. Therefore, the total proposed car park spaces are also considerably lower than the maximum for the development as outlined by the Development Plan standards. The parking outlined above for the creche is expected to be sufficient as it is expected that the majority of the residential catchment of Jacob's Island will use the creche, and there will be linked trips to the creche and also a high amount of walking and cycling locally. The lower car parking numbers show the developers commitment to a sustainable development.

Table 10 Parking numbers for the anticipated full masterplan

Estimated Development Car Park Spaces Full Masterplan			
Land Use	***Unit/ sqm***	***Maximum Parking***	***Proposed Parking***
Office	15,000 sqm	100	172
Hotel	165 rooms	83	98
Creche	1 space per 6 students	8	6
Residential (1-2 bedroom)	489 units	489	246
Car Club Spaces	-	-	6
Total Parking Spaces		**680**	**528**
Disabled Parking		34	29
Motorcycle Parking		68	55
Electric vehicle parking		136	76

7 Cycle Parking

7.1 Cycle Park Guidelines

The Draft Cork City Development Plan and the Design Standards for New Apartments (2020) recommend bicycle parking requirements for developments of various land uses. Table 11 below outlines the parking requirements for the various aspects of the site, with Table 12 highlighting the proposed cycle parking for the development.

Table 11 Draft Cork City Development Plan 2022, cycle parking requirements

Draft Cork City Development Plan Cycling Standards 2022-2028	
Land Use	***Zone 3 Standards***
Office	1 space per 150sqm
Hotel (bedrooms)	1 space per 10 rooms
Hotel (restaurant / café / bar)	1 space per 200sqm
Creche	1 space per 25 children
Compliance with Guidelines for New Apartments (2020)	
Residential (1-2 bedroom)	1 space per bedroom
Visitor	1 space per 2 residential units

7.2 Development Proposals

Table 12 Proposed cycle parking provision for the SHD development

Draft Cork City Development Plan Cycling Standards 2022-2028		
Land Use	***Zone 3 Standards***	***Proposed***
Office	28	80
Creche	3	4
Design Standards for New Apartments 2020		
Residential (1-2 bedroom)	819	819
Visitor Spaces	245	245
Total Parking Spaces	**1095**	**1148**

Table 13 Proposed cycle parking provision for the full masterplan development

Draft Cork City Development Plan Cycling Standards 2022-2028		
Land Use	***Zone 3 Standards***	***Proposed***
Office	100	196
Hotel	22	42
Creche	3	4
Design Standards for New Apartments 2020		
Residential (1-2 bedroom)	819	819
Visitor Spaces	245	245
Total Parking Spaces	**1189**	**1306**

As can be seen in Table 12 and
Table **13**, there is more than adequate cycle parking provision included within the development proposals. In addition, 245 cycle parking spaces are proposed for visitor parking set out around the site.

The cycle parking is proposed to be secure and sheltered, and located within close proximity of the residential blocks and be well lit.

8 Mobility Management

8.1 Mobility Management Plan

Mobility management plans (MMP) for developments have the potential to help achieve more sustainable communities by improving accessibility and travel choice.

This MMP should be considered as guidance and an available resource which identifies objectives and measures aimed at improving sustainability and choice. The effectiveness of the MMP will be increased if adopted by a resident's group or committee. The benefits of a MMP can be summarised as follows:

- Reducing the need for car use and carbon emissions;
- Education with respect to sustainable travel;
- Improve accessibility and travel choice for reaching local facilities and amenities;
- Complement nearby existing Travel Plans;
- Achieving a more attractive and safer development by reducing car use;
- Increasing marketability of the development as more households seek to change their travel behaviour;
- Improving the health of residents; and
- Improve knowledge of residents in relation to travel routes and locations of facilities.

The proposed development will have a management company who will make available the necessary travel information for residents on how to access a number of key destinations within and surrounding the Cork City.

The aim of the measures of a MMP would be to minimise single-occupancy car-based travel and to encourage residents and visitors to use more sustainable modes of travel such as walking, cycling, public transport and car sharing.

A Mobility Management Plan for the development has been created to accompany this TTA.

9 Transport Assessment

9.1 Introduction

This chapter describes the methodology used to assess the impact of the traffic generated by the development at Jacob's Island on the local road network. Based on the guidance within Transport Infrastructure Ireland's (TII) Traffic and Transport Assessment Guidelines (2014).

The Traffic Impact Assessment (TIA) methodology and technical parameters were discussed with the Council during scoping. The following Chapter outlines the traffic assessment associated with the SHD in the first instance, and then the full masterplan.

All traffic flow diagrams associated with the tested scenarios are provided in Appendix B of the report.

As discussed with Cork City Council (CCC) during scoping, the following junctions were considered in the initial scope of the assessment:

- Blackrock Avenue/ Mahon Link Road / Skehard Road;
- Mahon Link Road/ St Michael's Drive;
- Mahon Link Road/ Shopping Centre Access; and
- Mahon Interchange (North and South); and
- Jacob's Island Access.

9.2 Modeling Scenarios

Through discussions held with Cork City Council during scoping, the following scenarios have been agreed to be included within the modelling:

- Opening year – 2024;
- Opening year + 5 years – 2029; and
- Opening year +15 years – 2039.

The opening year 2024 and 2029 is tested with the SHD development. For the scenario year of 2039, this will be tested with the anticipated vehicular traffic associated with the full masterplan proposals (correct as of October 2021). Any modelling is indicative as the full masterplan may be subject to change. The modelling results and assumptions for the estimated full masterplan are preliminary and final counts will be confirmed at the application stage.

9.3 Base Traffic Flows

The base traffic flows detailed in Section 3 include classified traffic surveys undertaken in June 2017 over a three-hour morning period (07:00-10:00) and three-hour evening period (16:00-19:00), by IDASO, at a number of junctions in the vicinity of the site. They are as follows:

1. Mahon Interchange (southern junction);
2. Mahon Interchange (northern junction);
3. Mahon Point Shopping Centre/Mahon Link Road;
4. St. Michael's Drive/ Mahon Link Road; and
5. Mahon Link Road/ Skehard Road.

These locations are shown in Figure 34 in Chapter 3.

Table 14 below outlines the AM and PM peak hour two-way traffic flows extracted from the base 2017 data. The flows are presented in PCUs.

Table 14 2017 base link flows on the local road network

Road	AM Peak (08:00-09:00)	PM Peak (16:30-17:30)
Mahon Interchange – Westbound off-ramp	714	457
Mahon Interchange – Eastbound on-ramp	297	870
Mahon Interchange – Eastbound off-ramp	1,147	683
Mahon Interchange – Westbound on-ramp	359	1,202
Jacob's Island Access Road	179	163
Mahon Link Road – east of Shopping Centre	2,526	3,124
Mahon Link Road – west of Shopping Centre	1,913	1,933
Mahon Link Road – south of St Michael's Drive	1,847	1,912
Mahon Link Road –north of St Michael's Drive	1,492	1,442
Skehard Road – east of Mahon Link Road	759	789
Skehard Road – west of Mahon Link Road	1,556	1,451

Table 14 outlines that the highest link flows in the AM and PM peak hours is on the Mahon Link Road, east of the shopping centre. The table highlights the tidal nature between the morning and evening peak at the Mahon Interchange from the N40 with a difference of 433 PCU's arriving in the morning via the eastbound off-ramp in comparison to the westbound off-ramp (1,147-714).

9.4 Traffic Generation

In order to establish the level of traffic likely to be generated by the development, trip rates from the TRICS database were used. The people trip rates and corresponding trip generation are shown in Table 15 and Table 16 respectively.

People trip rates have been used for the residential and office aspects of the development, with reference to vehicle trip rates for the hotel. The creche is to service the people of Jacobs Island so will be passby trips. As the available surveys on the TRICS database were filtered to accurately reflect the site, there was limited people trip rate information available for the hotel, therefore vehicle trip rates have been used instead. All trip rates have been compared against other Irish sites available, and against comparable cities within Ireland and the UK. The traffic counters that were put in place on Jacobs Island during Sept 2021 and Feb 2022 also showed low levels of vehicle movements in the peak hour (Section 3.3 – 3.5).

9.4.1 Trip Rates

Table 15 People and vehicle trip rates

Land Use	Unit	Weekday AM Peak (08:00-09:00)		Weekday PM Peak (17:00-18:00)	
Residential – flats privately owned (People trip rate)	Per Dwelling	Arrivals	Depart	Arrivals	Depart
		0.105	0.362	0.41	0.248
Office (People trip rate)	Per 100sqm	1.628	0.14	0.093	1.419
Hotel (veh trip rates)	Per 1 Bedroom	0.131	0.181	0.154	0.143

It should be noted that the peak time for hotel trips doesn't align with the residential and office peak times, however, the hotel trips have been included within the commuter peak time. There are no trip rates or trip generation associated with the creche, as it is expected that all vehicle trips to it will be linked to other aspects of the site. This could consist of vehicles arriving to employment on site i.e. hotel or office, or internal movements from residents on Jacob's Island walking and cycling.

9.4.2 SHD Traffic Generation

Table 16 People Trip Generation for the SHD

Land Use	Unit	Weekday AM Peak (08:00-09:00)		Weekday PM Peak (17:00-18:00)	
People Trip Generation					
Residential – flats privately owned	Per Dwelling – 489 units	Arrivals	Depart	Arrivals	Depart
		53	181	205	124
Office	Per 100sqm – 4,500 sqm	73	6	4	64

9.4.3 Anticipated Full Masterplan Traffic Generation

Table 17 below outlines the people and vehicle trip generation using the trip rates outlined in Table 16.

Table 17 People and vehicle trip generation

Land Use	Unit	Weekday AM Peak (08:00-09:00)		Weekday PM Peak (17:00-18:00)	
People Trip Generation					
Residential – flats privately owned	Per Dwelling – 489 units	Arrivals	Depart	Arrivals	Depart
		53	181	205	124
Office	Per 100sqm – 15,000 sqm	244	21	14	213
Vehicle Trip Generation					
Hotel	Per 1 Bedroom – 165 beds	26	36	31	29

9.4.4 Mode Share

Figure 54 highlights the proposed mode share for the Jacob's Island development. In comparison to the existing Cork City and suburbs mode share outlined in Chapter 2, car driver and passenger has been reduced by 5%, and active and sustainable travel including on foot, by bike and public transport has increased from 33% to 39%. This is also supported by the low number of vehicles currently leaving Jacobs Island as set out in Section 3.3.

The proposed modal split is applied to the people trip rates to get the vehicle numbers. The vehicle numbers are also limited by the low levels of parking available at the proposed site.

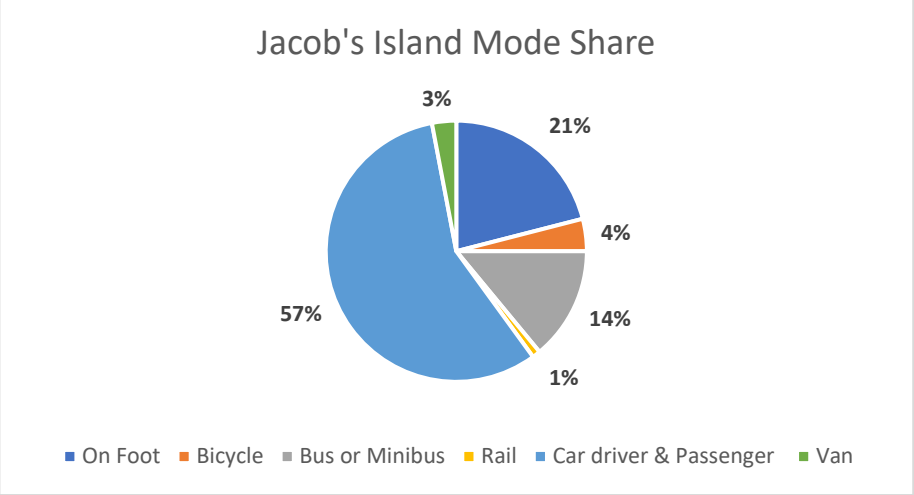


Figure 54 Proposed Development Mode Share

Table 18 People and vehicle trip generation for SHD Development
Note, minor discrepancies due to rounding

Mode	Mode Share (%)	Morning Peak		Evening Peak	
		Arr	Dep	Arr	Dep
Car Driver & Passenger	57%	72	107	178	119
On Foot	21%	26	39	66	44
Bus or Minibus	14%	18	26	44	29
Bicycle	4%	5	7	13	8
Van	3%	4	6	9	6
Rail	1%	1	2	3	2
Total Trips	**100%**	**126**	**187**	**313**	**209**

Table 19 below highlights the total vehicle trip generation expected for the SHD application.

Table 19 SHD Vehicle Trip Generation
Note, minor discrepancies due to rounding

	Weekday AM Peak (08:00-09:00)		Weekday PM Peak (17:00-18:00)	
Total Vehicle Trips	Arrivals	Departures	Arrivals	Departures
	75	112	188	126

Table 19 outlines that there is expected to be 188 two-way vehicle trips in the morning peak and 313 two-way vehicle trips in the evening peak associated with the SHD development.

Table 20 below highlights the total vehicle trip generation expected for the anticipated full masterplan application.

Table 20 Anticipated Masterplan vehicle trip generation

	Weekday AM Peak (08:00-09:00)		Weekday PM Peak (17:00-18:00)	
Total Vehicle Trips	Arrivals	Departures	Arrivals	Departures
	205	159	164	233

Table 20 outlines that there is expected to be 364 two-way vehicle trips in the morning peak and 397 two-way vehicle trips in the evening peak associated with the full masterplan development.

9.5 Traffic Distribution

The generated traffic has been distributed onto the surrounding road network based on the origin/destination to work data obtained from 2016 Census POWSCAR data. Figure 55 outlines the distribution of traffic on the surrounding road network.

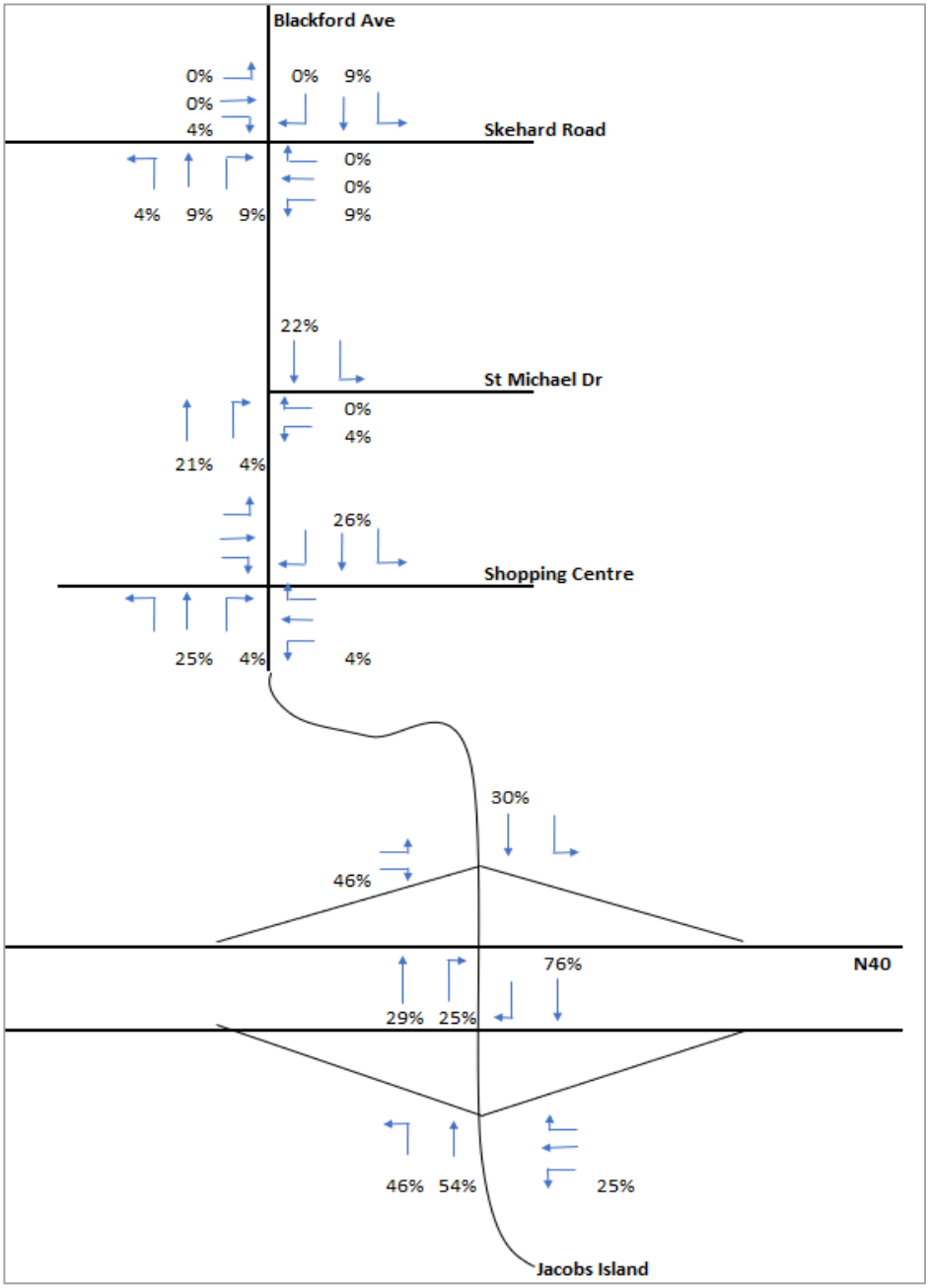


Figure 55 Development traffic distribution

Figure 55 highlights the traffic distribution for the AM and PM peak period.

9.6 Traffic Growth

For all years the base + committed and base + committed + development will be included within the junction modelling. Medium traffic growth has been assigned to the 2017 base traffic for the future scenarios using the TII Project Appraisal Guidelines (PAG) for link based traffic growth forecasting for the Cork City area. Table 21 outlines the growth rates that have been used in the junction assessment.

Table 21 TII Annual Growth Rate

Region	Medium Growth			
	2013-2030		2030-2050	
Vehicle Category	Light Vehicle (LV)	Heavy Vehicle (HV)	Light Vehicle (LV)	Heavy Vehicle (HV)
Cork City	1.0102	1.023	1.0012	1.0176

9.7 Committed Development

As a result of scoping discussions with the Transportation Department of Cork City Council, a number of developments in the Mahon area that have planning permission in place (that has not yet expired) have been incorporated into the Transport Assessment undertaken in this TTA report as 'committed' developments. The committed development applications are outlined below.

- Former Motorola Site (TP 09/33673 – by O'Flynn Construction) 4 storey office building – Ref. 09/33673 not built according to google earth (expired 25/04/2019). Note CCC Ref. 19/38875 scheme which includes the 09/33673 site.
- Residential Development at Eden, Blackrock, Cork (TP 16/37233 & PL 28.249400 by Pierse Developments) of 141 units.
- Residential Development at Bessboro, Mahon, Cork (TP 17/37349 by Murphy Transport Ltd.) 35 units – Outline permission granted will need a subsequent application before it can be constructed.
- Jacobs Island 413 apartments and neighbourhood centre (granted in Oct 2018), permitted under An Bord Pleanála Ref. ABP 301991-18 (by Montip Horizon Ltd), also note amendment (granted in Feb 2022) for an increase in apartments from 413 to 437 no. under An Bord Pleanála Ref. ABP 310378-21.
- Bessboro warehouse holdings – 135 residential units (granted Feb 2019) - (permitted under CCC Ref. 1837820, ABP Ref 302784-18).

9.8 Threshold Analysis

A threshold analysis was undertaken on all junctions across the study area. This analysis compares the base + committed traffic flows against the base + proposed development traffic flows. It is normal practice that any junction with a predicted 5% increase due to a proposed development would be modelled and tested. The threshold assessment is outlined in Table 22 for the 2024 SHD development and Table 23 for the 2039 anticipated full masterplan development threshold assessment.

9.8.1 2024 Threshold Analysis

Table 22 2024 SHD Threshold Analysis

Road	2024 Base		Development			
	AM	PM	AM	% Change	PM	% Change
Skehard Road/ BlackRock Ave/ Mahon Link Road	2076	2093	77	4%	80	4%
St Michael Drive/ Mahon Link Road	2141	2190	55	3%	87	4%
Shopping Centre/ Mahon Link Road	2958	3886	70	2%	103	3%
Northern N40 Interchange	2933	3637	151	5%	243	7%
Southern N40 Interchange	1227	1985	98	8%	215	11%
Jacob's Island Access	295	152	142	48%	149	98%

9.8.2 2039 Threshold Analysis

Table 23 2039 Masterplan Threshold Analysis

Road	**2039 Base**		**Development**			
	AM	**PM**	**AM**	**% Change**	**PM**	**% Change**
Skehard Road/ BlackRock Ave/ Mahon Link Road	2229	2248	77	3%	84	4%
St Michael Drive/ Mahon Link Road	2300	2178	90	4%	97	4%
Shopping Centre/ Mahon Link Road	3178	4174	102	3%	115	3%
Northern N40 Interchange	3154	3887	233	7%	241	6%

Road	2039 Base		Development			
	AM	PM	AM	% Change	PM	% Change
Southern N40 Interchange	1318	2127	202	15%	158	7%
Jacob's Island Access	306	158	151	49%	226	143%

The threshold analysis results outlined in Table 22 and Table 23 for the 2024 and 2039 scenarios, respectively, highlight that only the North and South Mahon Interchange junctions and the Jacob's Island Access require to be included within the junction assessment.

9.9 Junction Assessment

Analysis of the performance of the junctions were undertaken using the JCT Consultancy Ltd software LinSig v.3, with the results of the analysis presented in terms of percentage degree of saturation (DoS%) with the corresponding predicted mean maximum queue (MMQ). The Practical Reserve Capacity (PRC) is presented within the results. The PRC is calculated from the maximum degree of saturation on a link and is a measure of how much additional traffic could pass through the junction while maintaining a maximum degree of saturation of 90% on all links.

9.10 Scenario Results

Table 24 to Table 29 outlines the junction modelling results for the 2024, 2029 and 2039 scenarios for the morning and evening peaks. These are also illustrated in Figure 56, Figure 57 and Figure 58.

9.10.1 2024 Base + Committed

Table 24 2024 Base + committed morning and evening results

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
	North Interchange					
Mahon Link – Inside	4.5	27	44.3%	35.2	211	88.8%
Mahon Link - Outside	5.8	35	22.6%	32.2	193	75.2%
EB Off Slip – Inside	20.7	124	64.1%	14.7	88	51.7%
EB Off Slip - Outside	23.1	139	68.0%	7.3	44	51.7%

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
Interchange - Inside	7.6	46	64.9%	13.6	82	87.5%
Interchange - Outside	7.5	45	67.5%	14.5	87	88.6%
PRC	32.4%			1.4%		
	South Interchange					
Interchange - Inside	3.9	23	37.9%	7.8	47	69.8%
Interchange - Outside	4.2	25	37.8%	7.7	46	69.6%
WB Off Slip – Inside	14.6	88	55.2%	12.1	73	66.5%
WB Off Slip - Outside	14.5	87	55.2%	11.9	71	65.7%
Jacob's Island - LT	3.9	23	30.0%	2.8	17	41.5%
Jacob's Island - Ahead	7.7	46	55.0%	4.8	29	64.7%
PRC	63.1%			29%		

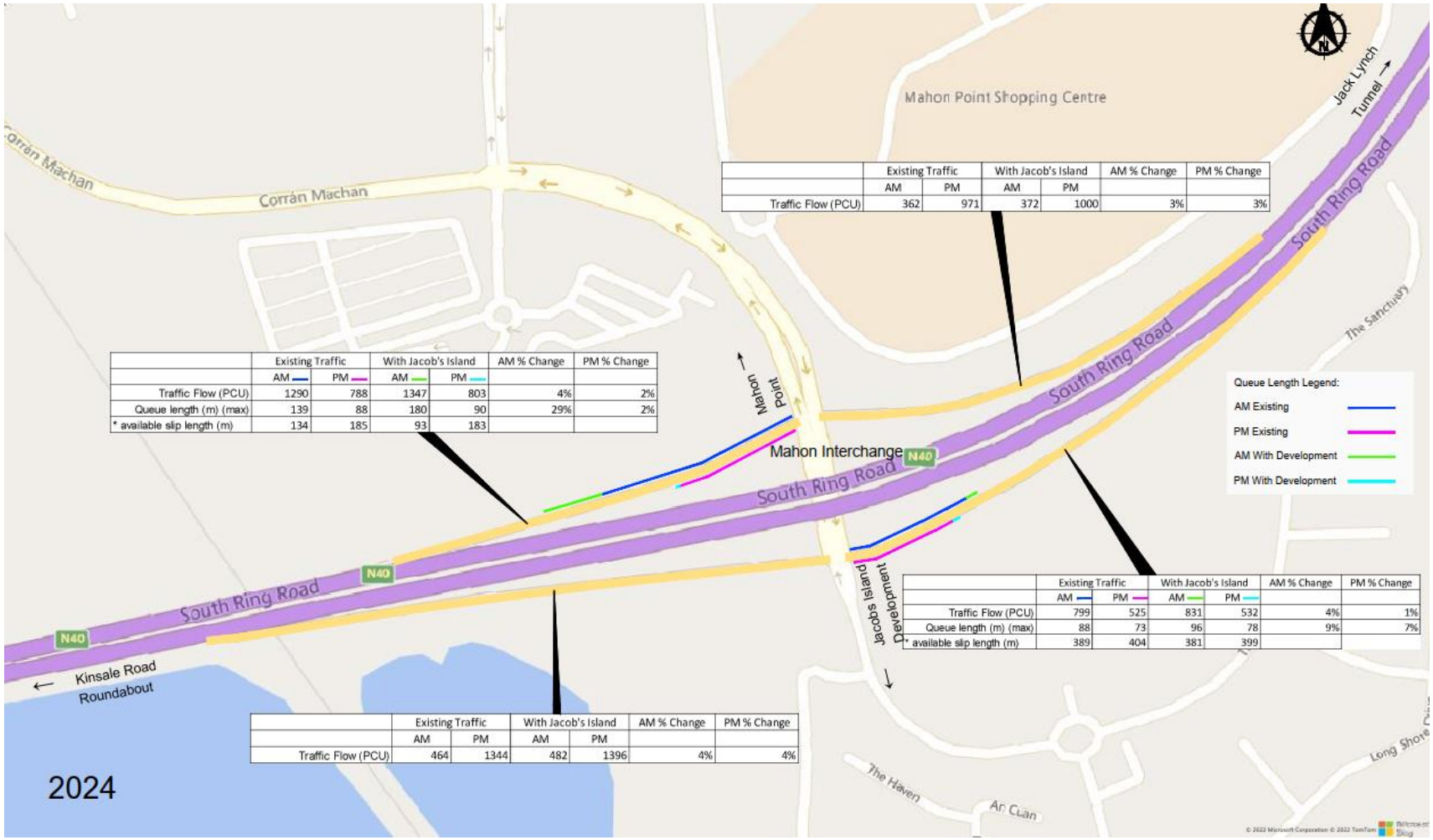
9.10.2 2024 Base + Committed + SHD Development (based on isolated junction modelling)

Table 25 2024 Base + committed + SHD development morning and evening results

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
	North Interchange					
Mahon Link – Inside	7.0	42	27.2%	43.5	258	89.8%
Mahon Link - Outside	6.7	42	49%	43.9	264	95.4%
EB Off Slip – Inside	21.4	126	66.7%	15.6	96	52.4%

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
EB Off Slip - Outside	23.7	180	66.9%	15.4	90	52.4%
Interchange - Inside	8.8	54	68.2%	18.4	108	95.2%
Interchange - Outside	8.3	48	70.3%	19.3	114	95.8%
PRC	28.1%			-6.4%		
	South Interchange					
Interchange - Inside	4.3	24	48.6%	19.2	114	81.0%
Interchange - Outside	4.3	24	50.0%	22.6	138	80.9%
WB Off Slip – Inside	15.2	96	57.9%	13.3	78	75.5%
WB Off Slip - Outside	15.4	90	58.1%	13.3	78	75.5%
Jacob's Island - LT	7	42	43.1%	9.1	54	60.0%
Jacob's Island - Ahead	10.6	66	61.6%	5.9	36	81.1%
PRC	47.2%			11%		

As can be seen in Table 25 and Figure 56 there is a minimal increase in queuing on the eastbound in the evening peak and westbound off-slip in both the morning in evening peaks, a considerable increase can be seen on the eastbound in the morning peak. These are a result of the additional vehicle trips associated with the SHD development traffic.



	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	362	971	372	1000	3%	3%

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	1290	788	1347	803	4%	2%
Queue length (m) (max)	139	88	180	90	29%	2%
* available slip length (m)	134	185	93	183		

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	799	525	831	532	4%	1%
Queue length (m) (max)	88	73	96	78	9%	7%
* available slip length (m)	389	404	381	399		

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	464	1344	482	1396	4%	4%

Figure 56: Mahon Interchange Model 2024

9.10.3 2029 Base + Committed

Table 26 2029 Base + committed morning and evening results

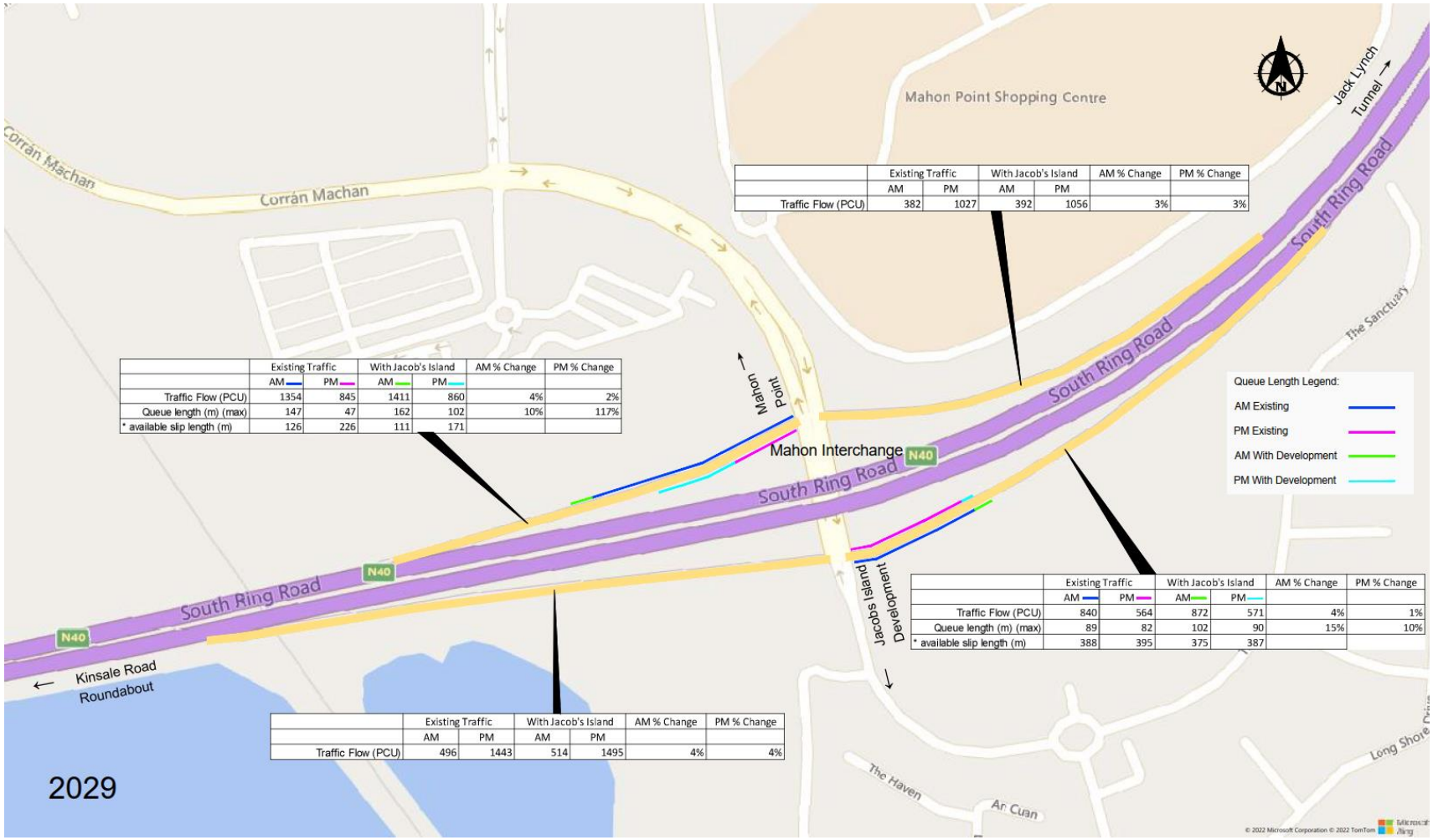
Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
	North Interchange					
Mahon Link – Inside	5.2	31	46.8%	42.3	254	92.0%
Mahon Link - Outside	6.9	41	26.3%	41.4	248	84.5%
EB Off Slip – Inside	21.9	131	67.1%	16.8	101	56.1%
EB Off Slip - Outside	24.5	147	69.8%	7.8	47	56.1%
Interchange - Inside	7.8	47	68.4%	14.4	86	89.3%
Interchange - Outside	7.6	46	69.2%	15.8	95	91.3%
PRC	28.9%			-2.3%		
	South Interchange					
Interchange - Inside	3.4	20	39.5%	8.2	49	74.1%
Interchange - Outside	3.6	22	40.0%	8.7	52	74.3%
WB Off Slip – Inside	14.8	89	58.1%	13.6	82	71.0%
WB Off Slip - Outside	14.7	88	58.0%	13.6	82	71.0%
Jacob's Island - LT	4.9	29	36.1%	3.1	19	44.9%
Jacob's Island - Ahead	8.1	49	56.7%	5.4	32	70.7%
PRC	55%			21.1%		

9.10.4 2029 Base + Committed + SHD Development (based on isolated junction modelling)

Table 27 2029 Base + committed + SHD development morning and evening results

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
	North Interchange					
Mahon Link – Inside	7.8	48	29.2%	59	360	98%
Mahon Link - Outside	7.8	48	51.4%	64.6	390	99.8%
EB Off Slip – Inside	23.5	144	70.3%	16	102	56.6%
EB Off Slip - Outside	25.8	162	73%	15	90	97.2%
Interchange - Inside	9.1	54	71.4%	26.2	156	99.2%
Interchange - Outside	9.8	60	73.4%	27.6	162	99.7%
PRC	22.7%			-10.9%		
	South Interchange					
Interchange - Inside	4.8	30	50.7%	25.4	150	85.2%
Interchange - Outside	5.7	36	51.4%	28	168	86.1%
WB Off Slip – Inside	16.3	102	59.8%	15.1	90	81%
WB Off Slip - Outside	16.5	96	59.9%	14.8	90	80.2%
Jacob's Island - LT	7.3	42	46.9%	9.8	60	62.8%
Jacob's Island - Ahead	11.3	66	66.9%	6	36	85.5%
PRC	34.5%			4.5%		

As can be seen in Table 27 and Figure 57 there is a minimal increase in queuing on the eastbound in the morning peak and westbound off-slip in both the morning in evening peaks, a considerable increase can be seen on the eastbound in the evening peak. These are a result of the additional vehicle trips associated with the SHD development traffic.



	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	382	1027	392	1056	3%	3%

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	1354	845	1411	860	4%	2%
Queue length (m) (max)	147	47	162	102	10%	117%
* available slip length (m)	126	226	111	171		

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	840	564	872	571	4%	1%
Queue length (m) (max)	89	82	102	90	15%	10%
* available slip length (m)	388	395	375	387		

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	496	1443	514	1495	4%	4%

Figure 57: Mahon Interchange Model 2029

9.10.5 2039 Base + Committed

Table 28 2039 Base + committed morning and evening results

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
	North Interchange					
Mahon Link – Inside	5.3	32	48.2%	40.4	242	91.3%
Mahon Link - Outside	6.7	40	26.0%	42	252	84.9%
EB Off Slip – Inside	22.5	135	69.3%	16.4	98	56.1%
EB Off Slip - Outside	25	150	70.9%	7.9	47	56.1%
Interchange - Inside	7.9	47	68.9%	14.6	88	90.4%
Interchange - Outside	7.7	46	71.0%	15.5	93	90.8%
PRC	26.8%			-1.5%		
	South Interchange					
Interchange - Inside	3.4	20	40.5%	9.5	57	74.0%
Interchange - Outside	3.5	21	40.7%	8	48	75.2%
WB Off Slip – Inside	15.5	93	57.4%	13.7	82	70.1%
WB Off Slip - Outside	15.4	92	57.3%	13.5	81	69.6%
Jacob's Island - LT	4.9	29	37.6%	3	18	44.9%
Jacob's Island - Ahead	8.3	50	59.0%	5.4	32	70.7%
PRC	52.5%			19.7%		

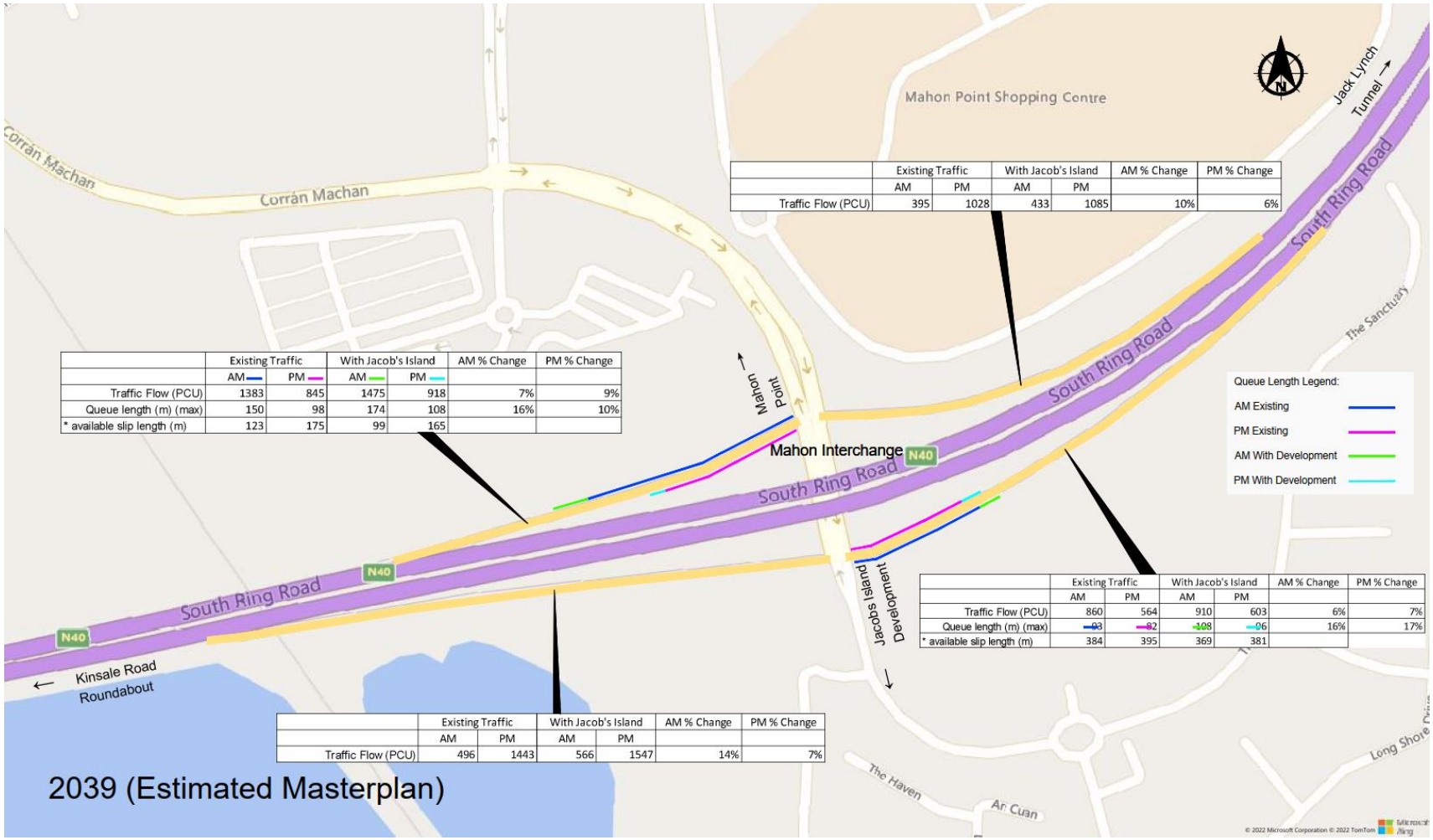
9.10.6 2039 Base + Committed + Estimated Full Masterplan Development

Table 29 2039 Base + committed + estimated full masterplan morning and evening results

Approach Arm	Morning Peak			Evening Peak		
	MMQ	Queue length (m)	Deg Sat %	MMQ	Queue length (m)	Deg Sat %
	North Interchange					
Mahon Link – Inside	8.5	51	56.1%	65.1	391	99.6%
Mahon Link - Outside	8.7	52	34.3%	62.1	373	98.1%
EB Off Slip – Inside	24.7	148	72.0%	17.5	108	56.9%
EB Off Slip - Outside	27.9	174	76.4%	17.5	105	56.9%
Interchange - Inside	10.2	61	74.7%	23.2	139	98.2%
Interchange - Outside	8.7	52	76.4%	24.2	145	98.5%
PRC	17.7%			-10.6%		
	South Interchange					
Interchange - Inside	6.5	39	57.9%	24.8	149	58.7%
Interchange - Outside	5.7	34	54.8%	24	144	58.1%
WB Off Slip – Inside	18.1	108	66.9%	14.7	96	81.5%
WB Off Slip - Outside	18.1	109	66.9%	14.8	89	81.8%
Jacob's Island - LT	7.7	46	46.4%	6.1	37	62.8%
Jacob's Island - Ahead	11.6	70	65.5%	9.9	59	85.3%
PRC	34.6%			5.1%		

As can be seen in Table 29 and Figure 58 there is a minimal increase in queuing on the eastbound and westbound off bound slip in both the morning in evening peaks as

a result of the additional vehicle trips associated with the estimated full masterplan development traffic.



	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	395	1028	433	1085	10%	6%

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	1383	845	1475	918	7%	9%
Queue length (m) (max)	150	98	174	108	16%	10%
* available slip length (m)	123	175	99	165		

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	860	564	910	603	6%	7%
Queue length (m) (max)	~~93~~	~~82~~	~~109~~	~~96~~	16%	17%
* available slip length (m)	384	395	369	381		

	Existing Traffic		With Jacob's Island		AM % Change	PM % Change
	AM	PM	AM	PM		
Traffic Flow (PCU)	496	1443	566	1547	14%	7%

Figure 58: Mahon Interchange Model 2039

9.11 Summary

The N40 Mahon Interchange continues to operate with reserve capacity available in all scenarios with the additional SHD and estimated masterplan traffic. Predicted queuing does not impact the N40 itself and can be accommodated within the slip lane lengths available for both the eastbound and westbound off-slips.

For 2024, the SHD development results in an additional 8 PCU's on the eastbound off-slip during the evening peak and no significant increase in queuing in the morning peak.

The most notable increase in queue length is on the Mahon Link where an increase of 11 PCU's is noted in the evening peak in 2024 and an increase of 23 PCU's in the evening peak in 2029. It is recommended to undertake discussions with the Council in advance of the full masterplan development to perform a review of the signal operations of both junctions. It is likely that this queuing could be reduced by linking the 2 signalised junctions, or by improving the stages or run time.

10 Summary & Conclusion

10.1 Summary

Sweco was commissioned by Hibernia Star Limited to prepare a Traffic and Transport Assessment in support of a planning application for a Strategic Housing Development (SHD) at Jacob's Island, south of Cork City Centre. The proposals include 489 residential units and 4,500m^2 of offices that include a creche facility with the other development areas following in further applications.

The site is strategically located on the edge of Lough Mahon and enjoys excellent walking, cycling and public transport links to the adjacent Mahon District Centre and Cork City Centre. Within a 20 minute walk of the site Mahon Shopping Centre and Retail Park can be reached, and within a 30 minute cycle journey (c.8km), areas of Cork City Centre and Upper Rochestown. The existing residential community at Jacob's Island is supported by quality public realm, urban amenities and connectivity to Mahon and Cork City Centre.

The scope and the technical parameters for the TTA were discussed with transport representatives at the Council. A Mobility Management Plan has also been provided to accompany the TTA, with the aim to support sustainable travel patterns. The site is very well connected in terms of access to existing walking, cycling and public transport facilities.

The predicted travel demands for the proposed development were established through reference to the TRICS database and the 2016 Census data sets including travel to work for the Mahon area. Means of active and sustainable travel to and from the site are expected to increase in comparison to the available 2016 census data with means of active and sustainable travel including on foot, by bike and public transport has increased from 33% to 39%.

A Traffic Impact Assessment was undertaken using industry standard modelling packages (Linsig) to assess the impact that the generated traffic will have on the local road network. The Transport Assessment highlighted the following key points regarding the local road network:

- The percentage increase in traffic is sub-threshold at three of the five junctions that have been assessed as part of the TTA as per TII's Transport Assessment Guidelines;
- The maximum increase at the junctions to the north of the Mahon Interchange is noted on the Skehard Road/ Mahon Road/ Blackrock Avenue junction and St Michael /Mahon Road junction, of 4% in the 2024 scenario;
- For 2024, the SHD development results in an additional 8 PCU's on the eastbound off slip during the evening peak and no significant increase in queuing in the morning peak; and
- The most notable increase in queue length is on the Mahon Link where an increase of 11 PCU's is noted in the evening peak in 2024 and an increase of 23 PCU's in the evening peak in 2029. This could be mitigated by linking the Mahon Interchange and Retail Park signalised junctions, or through a review of their signal operation and run time.

10.2 Conclusion

The proposed development at Jacob's Island is compliant with all local and national planning policies including the Mahon Local Area Plan 2014, the Cork City Development Plan 2015-2021 and Draft Cork City Development Plan 2022.

The site is well integrated with the existing walking, cycling and public transport facilities to encourage sustainable travel to and from the site. The proposed cycle parking provision exceeds that of the recommended guidelines, to further encourage cycling to and from the site. A Mobility Management Plan will accompany the Traffic and Transport Assessment to further detail the travel options available at the site, in particular, means of active travel.

The results of the traffic assessment highlight that the main impact of the proposed development is on the north and south Mahon Interchange junctions. The greatest impact can be noted at the Mahon Link Road in both the morning and evening peaks where an increase of 23 PCU's is noted.

It should be noted that the projected opening year for the development in 2024, by which point several mitigations measures close to the site will have been provided including the north-bound bus lane which will have been provided as part of the adjacent permitted scheme (ABP 301991-18) being delivered by the previous Montip Horizon Ltd developer. A more up-to-date census will have been undertaken, and it is expected that the mode share for private car for Jacob's Island will be a reduction in comparison to the 2016 census as a result of the impact of COVID-19 and working from home, as well as the outlined mitigation measures.

The reduced level of parking proposed for the development is therefore considered adequate to support the development given its key location to active and sustainable travel facilities.

Appendix A – Indicative Site Layout

Site Layout Plan (Level G3)

- Site Boundary
- Lands in the Ownership of Applicant / Future Development Boundary
- Indicates outline of blocks permitted by planning permission S146B-ABP-301991-18ABP-301991-18 (not yet built)

For existing Finished Floor Levels and Topographical Contour Levels, Please refer to Existing Site Survey Drawing No.: 1730D-OMP-00-SX-DR-A-1001

OS MAP REF: 6429-02; 6384-22; 6429-01; 6384-21
ITM Centre Point Co-ordinate: X, Y = 542704, 570060
ORDNANCE SURVEY IRELAND LICENSE No. CYAL50241973
EXTRACTION DATE: 12 MAY 2017
CLIP EXTENT / AREA OF INTEREST (AOI):
LLX,LLY = 572538,569937
LRX,LRY = 572870,569937
ULX,ULY = 572538,570183
URX,URY = 572870,570183
COPYRIGHT ORDNANCE SURVEY IRELAND AND GOVERNMENT OF IRELAND

All dimensions in millimeters
All levels (in metres) are related to Malin Head Datum

Revision Description	Date	Rev. No.	Issued by
Amendments to parking layouts and landscaping.	29-04-2022	P13	SV
Amendments to block layouts and landscaping. Draft SHD issue.	21-04-2022	P12	SV
Amendments to block layouts. Car club spaces indicated. Landscape detail to be updated.	01-04-2022	P11	CC
Amendments to block layouts	27-02-2022	P10	CC
Further amendment. Block 10 pedestrian links.	01-02-2022	P9	CC
Amendments for Block 10 pedestrian links.	01-02-2022	P8	CC
Amendments to B15, B11 and B16, verge added to pedestrian paths	10-12-2021	P7	SV
For ABP Pre App Submission Draft	15-10-2021	P6	SK
Updates for Client info	14-10-2021	P5	CC
Graphics updated	07-10-2021	P4	SV
General amendments to layouts	07-10-2021	P3	SV

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Project No.:	1730D	**Scale @ A0:**	1:500
Project Lead:	CK	**Date Printed:**	29-04-2022
Drawn By:	SV	**Current Rev.:**	P13
Model No.:	1730D-OMP-00-SPG3-DR-A-1000		
Purpose:	S2		

Project: Jacob's Island Masterplan
Location: Jacob's Island, Mahon, Cork
Client: Hibernia Star Ltd.

Drawing Title: Site Layout Plan (Level G3)
Drawing No.: 1730D-OMP-00-SPG3-DR-A-1000

Suitability - Checked By - Date

Appendix B – Traffic Flow Diagrams

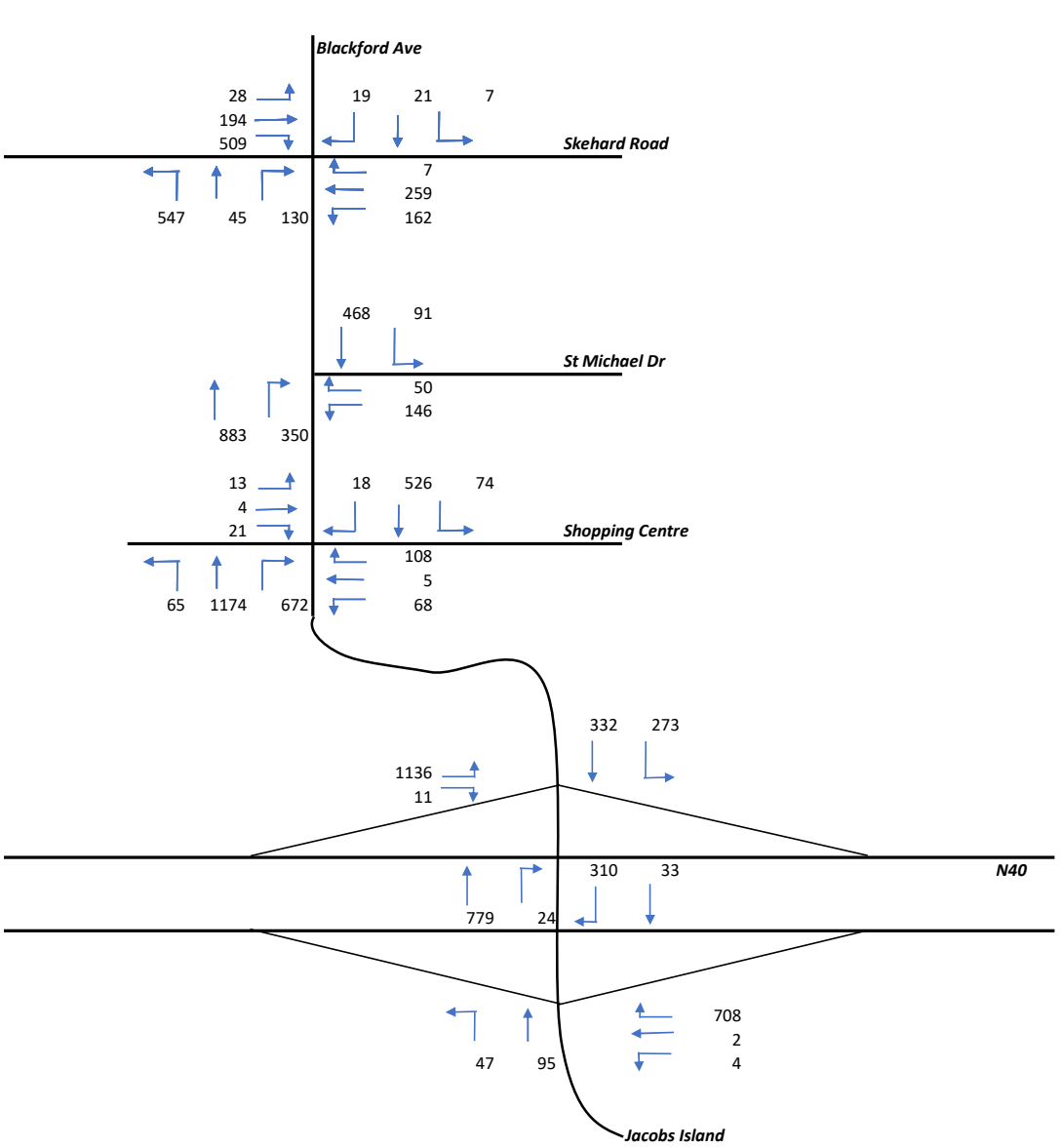

Figure 5.1	Project:	Jacob's Island TTA		SWECO
2017 AM Base	Client:	Hibernia Star Limited	Date:	Mar-22

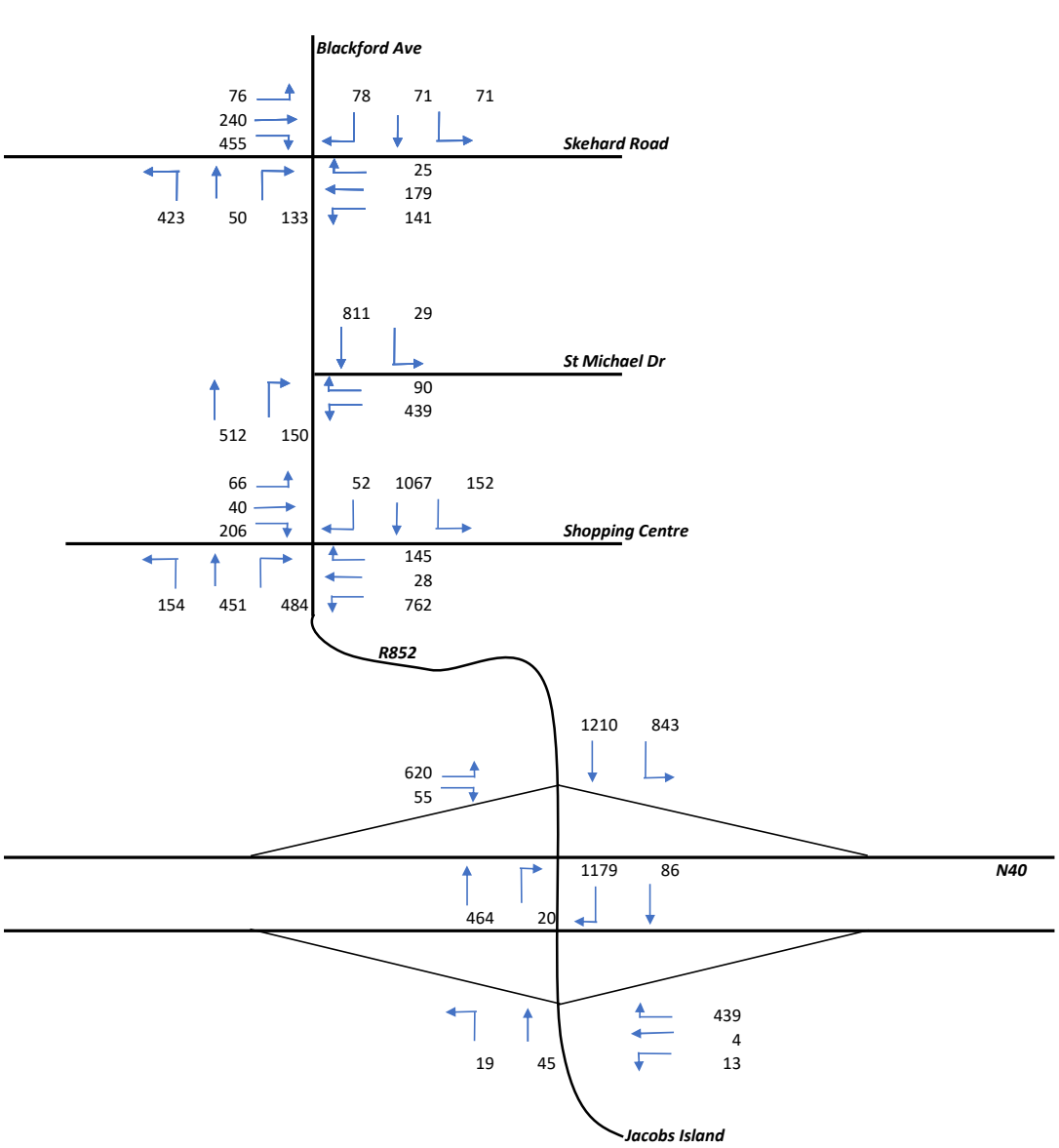

Figure 5.2	Project:	Jacob's Island TTA		SWECO
2017 PM Base	Client:	Hibernia Star Limited	Date:	Mar-22

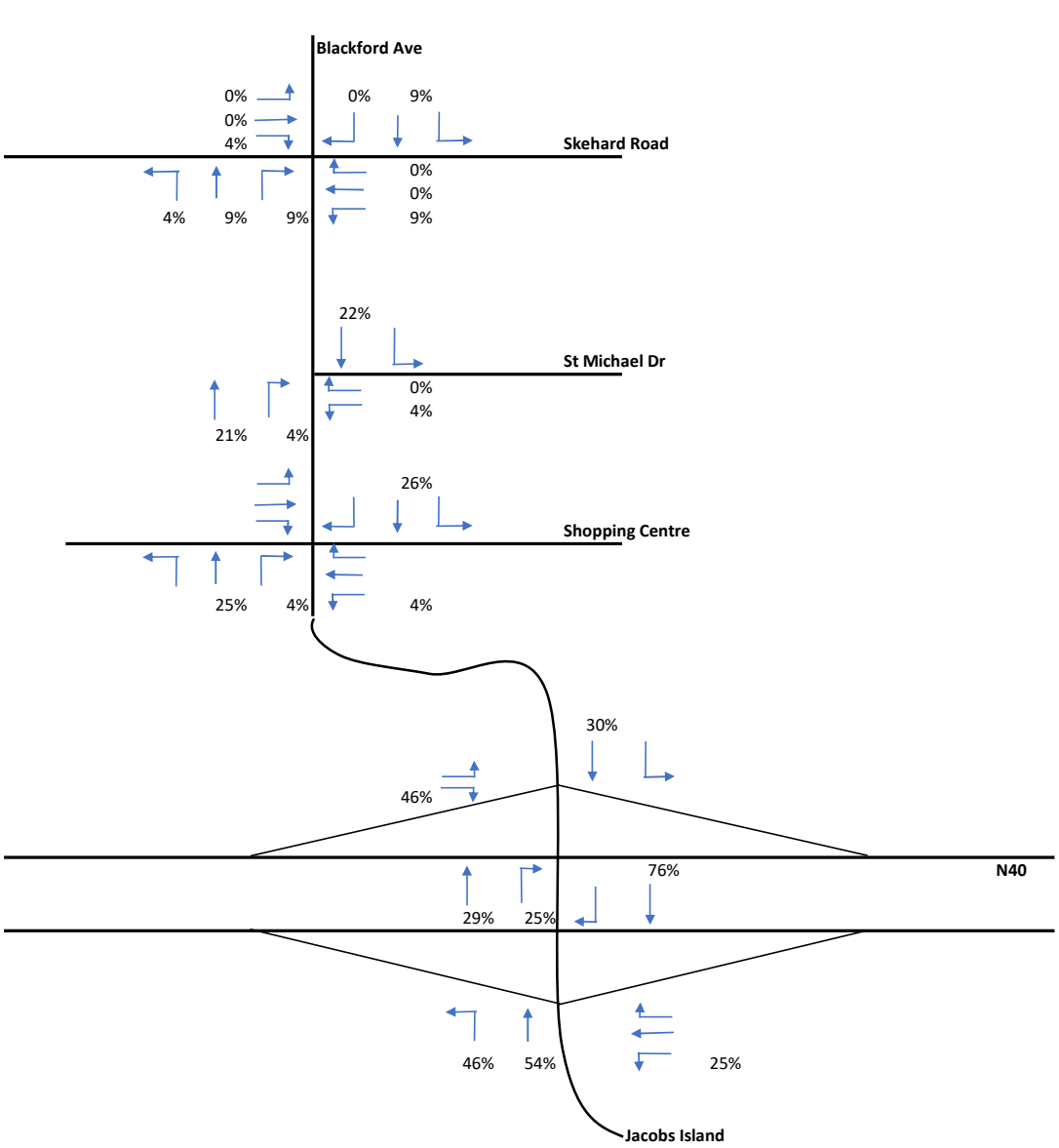

Figure 5.3	Project:	Jacob's Island TTA		SWECO
Development Distribution	Client:	Hibernia Star Limited	Date: Mar-22	

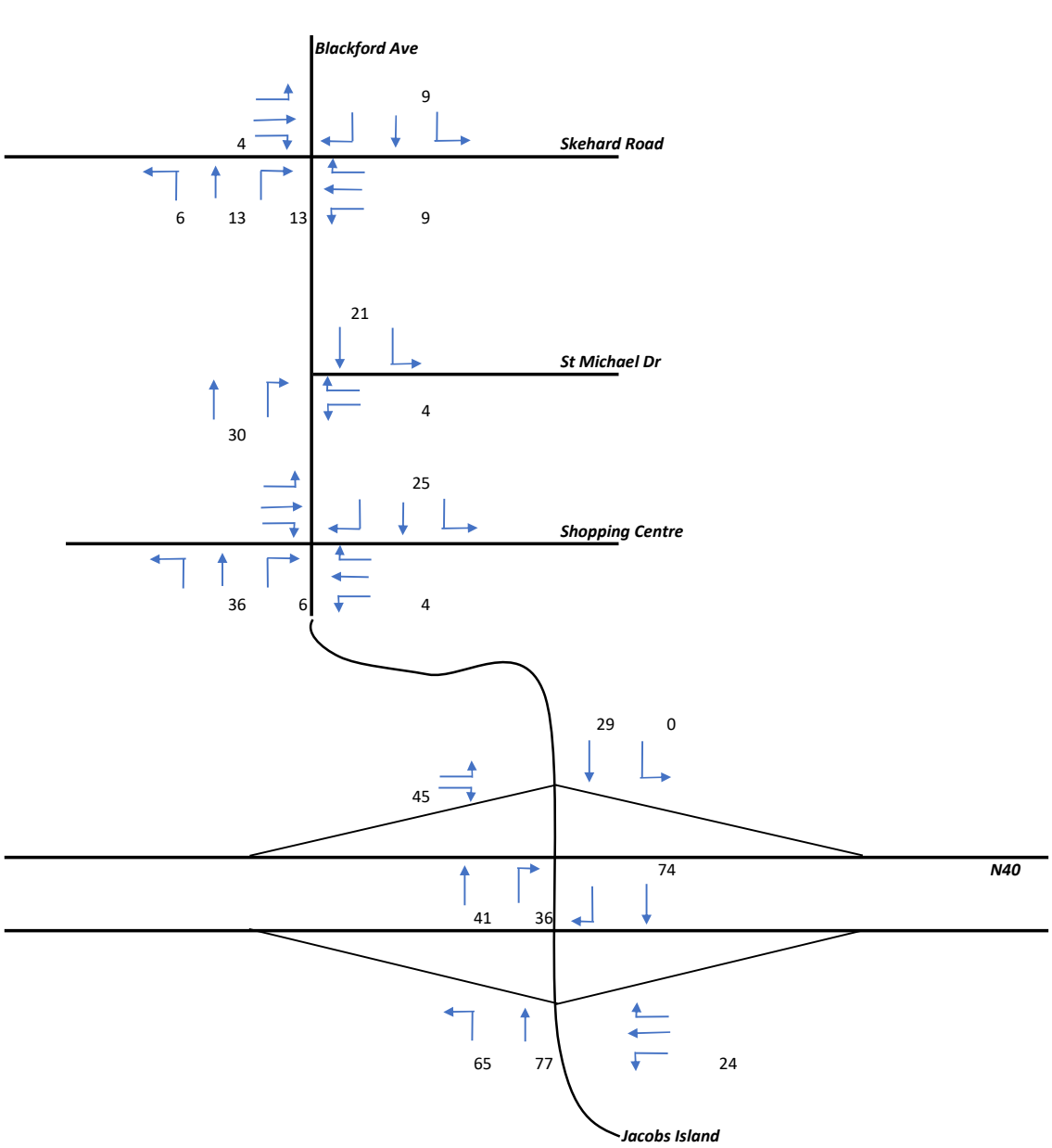

Figure 5.4	Project:	Jacob's Island TTA		SWECO
SHD AM Traffic	Client:	Hibernia Star Limited	Date:	Mar-22

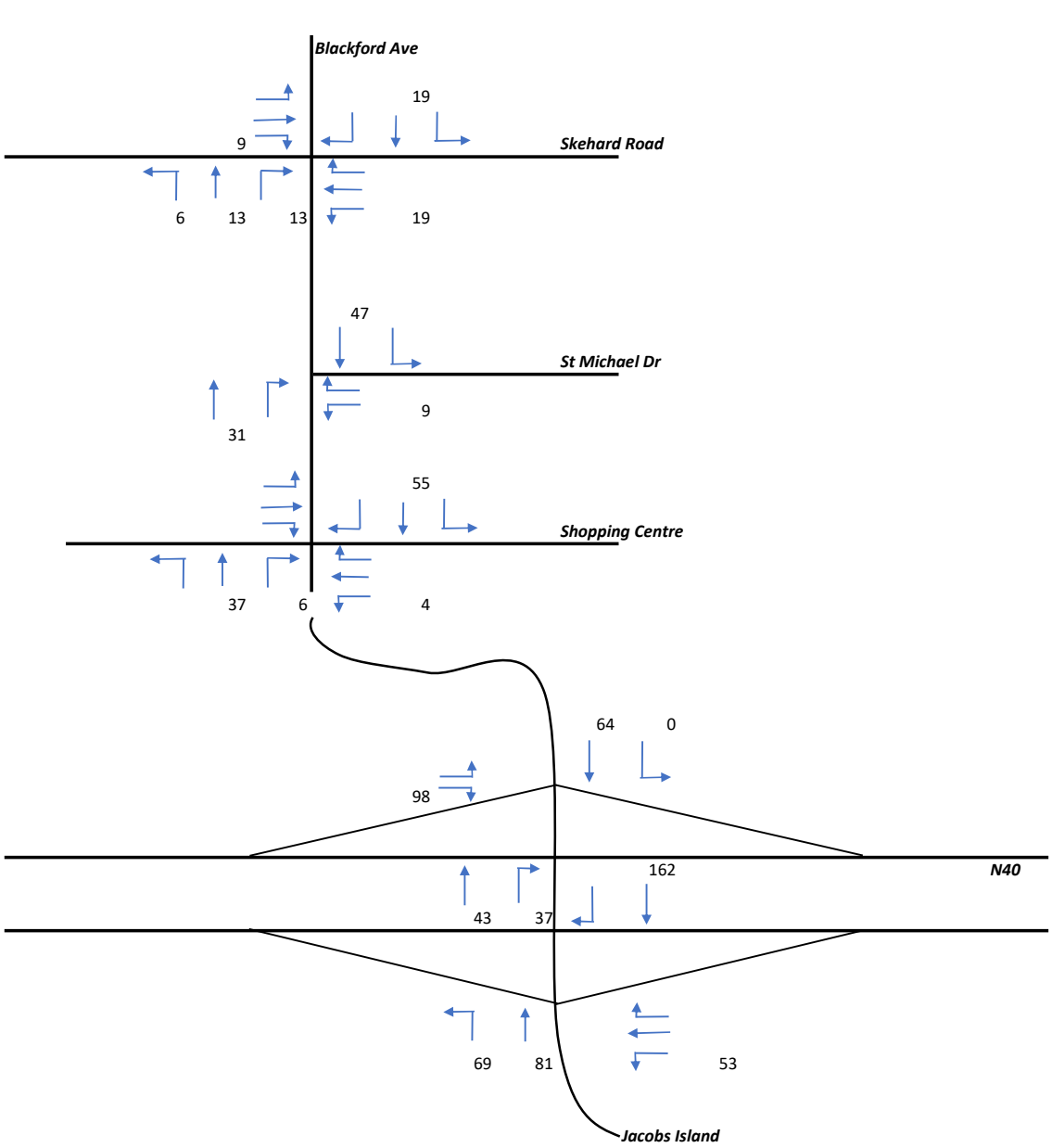

Figure 5.5	Project:	Jacob's Island TTA		SWECO
SHD PM Traffic	Client:	Hibernia Star Limited	Date: Mar-22	

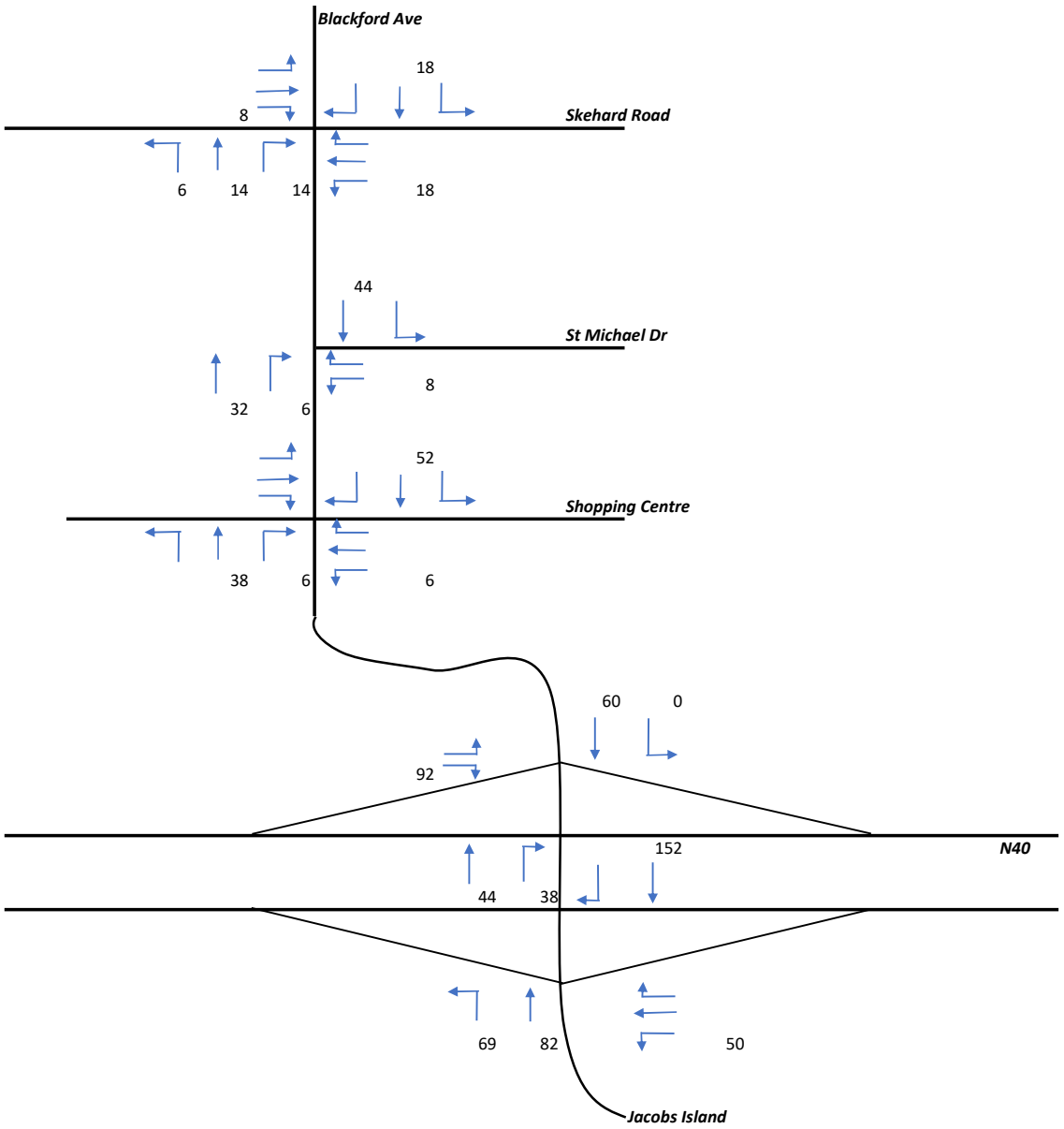

Figure 5.6	Project:	Jacob's Island TTA		SWECO
AM Masterplan Development Traffic	Client:	Hibernia Star Limited	Date: Mar-22	

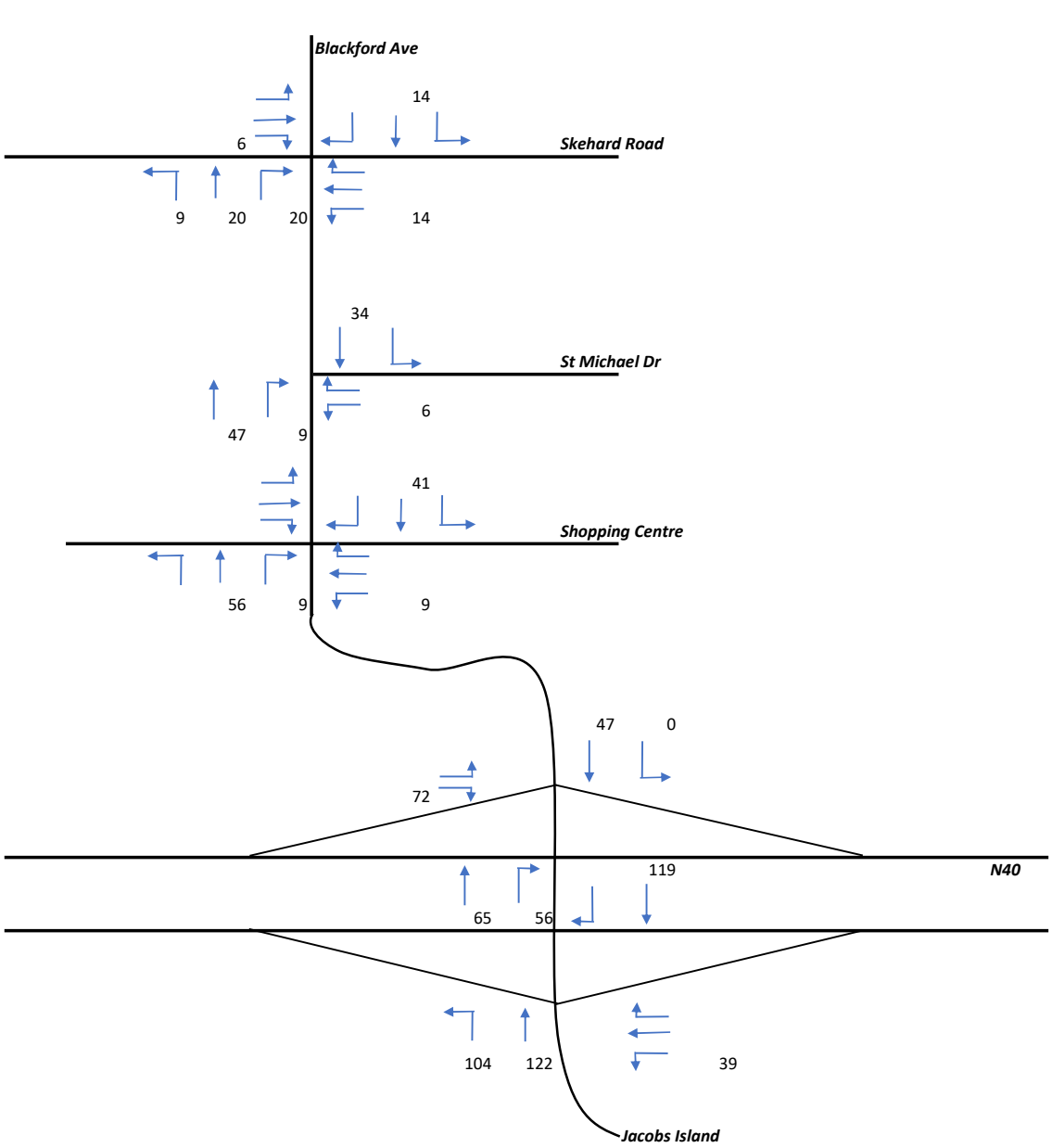

Figure 5.7	Project:	Jacob's Island TTA		SWECO
PM Masterplan Development Traffic	Client:	Hibernia Star Limited	Date:	Mar-22

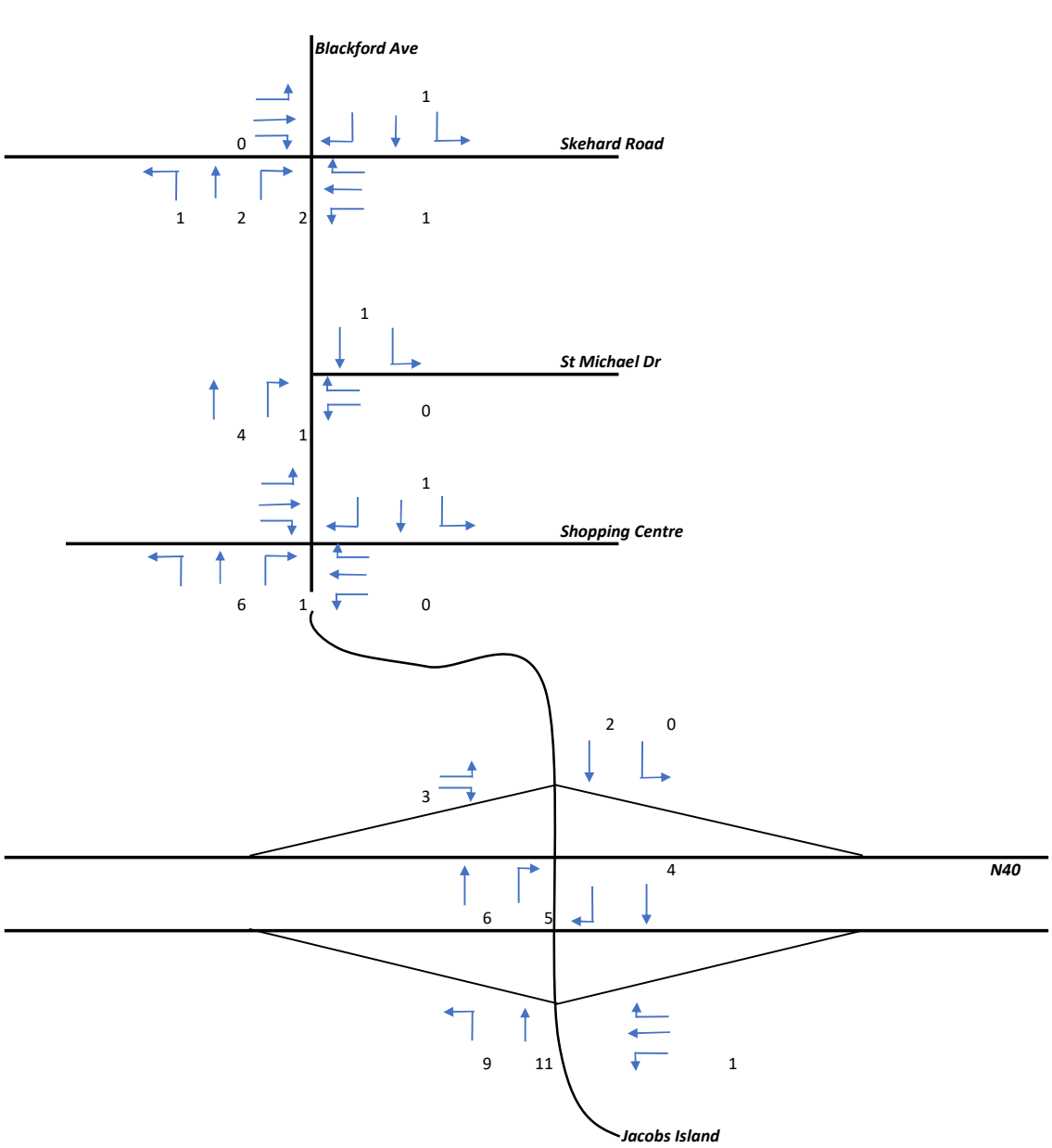

Figure 5.8	Project:	Jacob's Island TTA		SWECO
Committed Development AM	Client:	Hibernia Star Limited	Date:	Mar-22

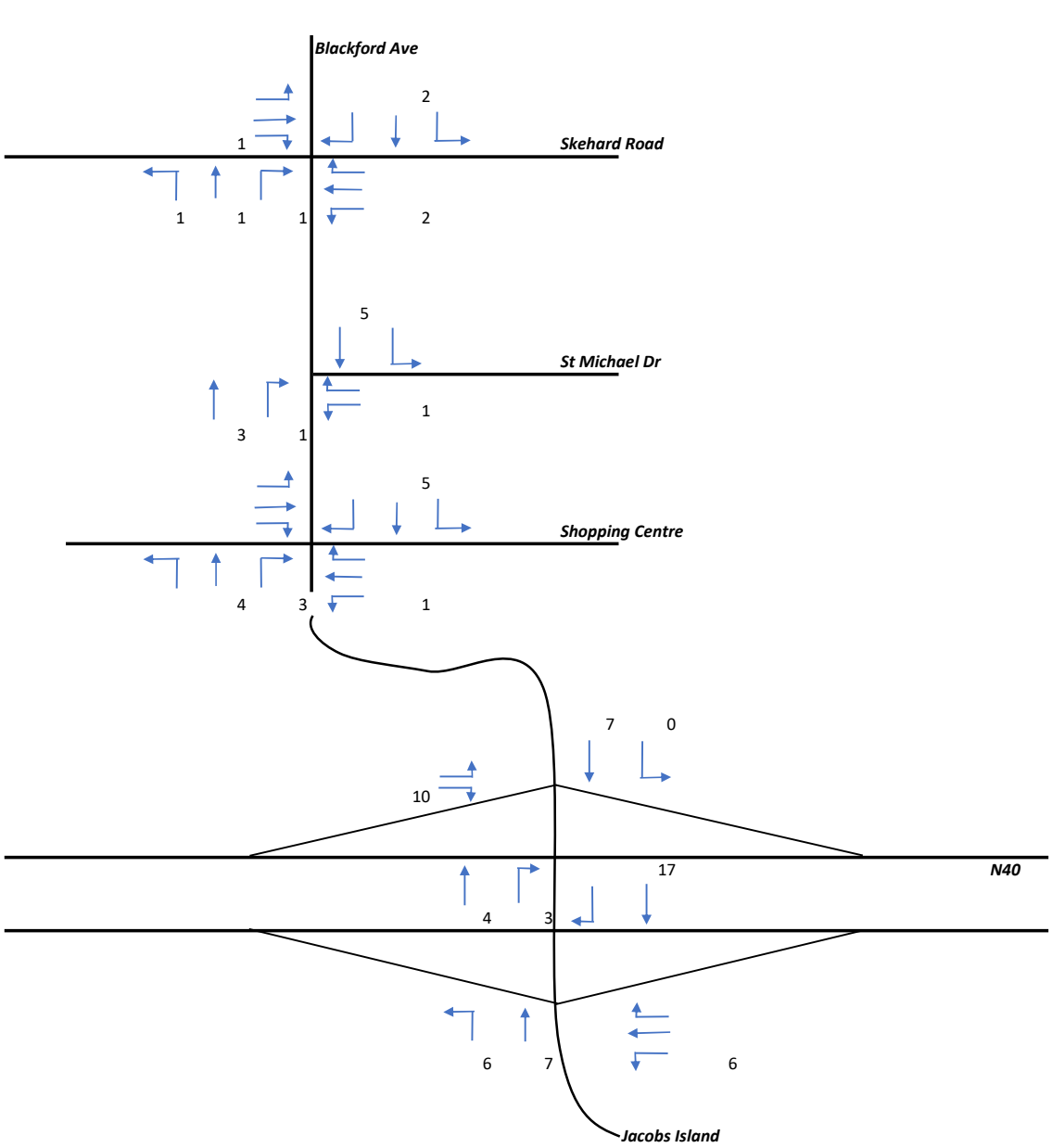

Figure 5.9	Project:	Jacob's Island TTA		SWECO
Committed Development PM	Client:	Hibernia Star Limited	Date:	Mar-22

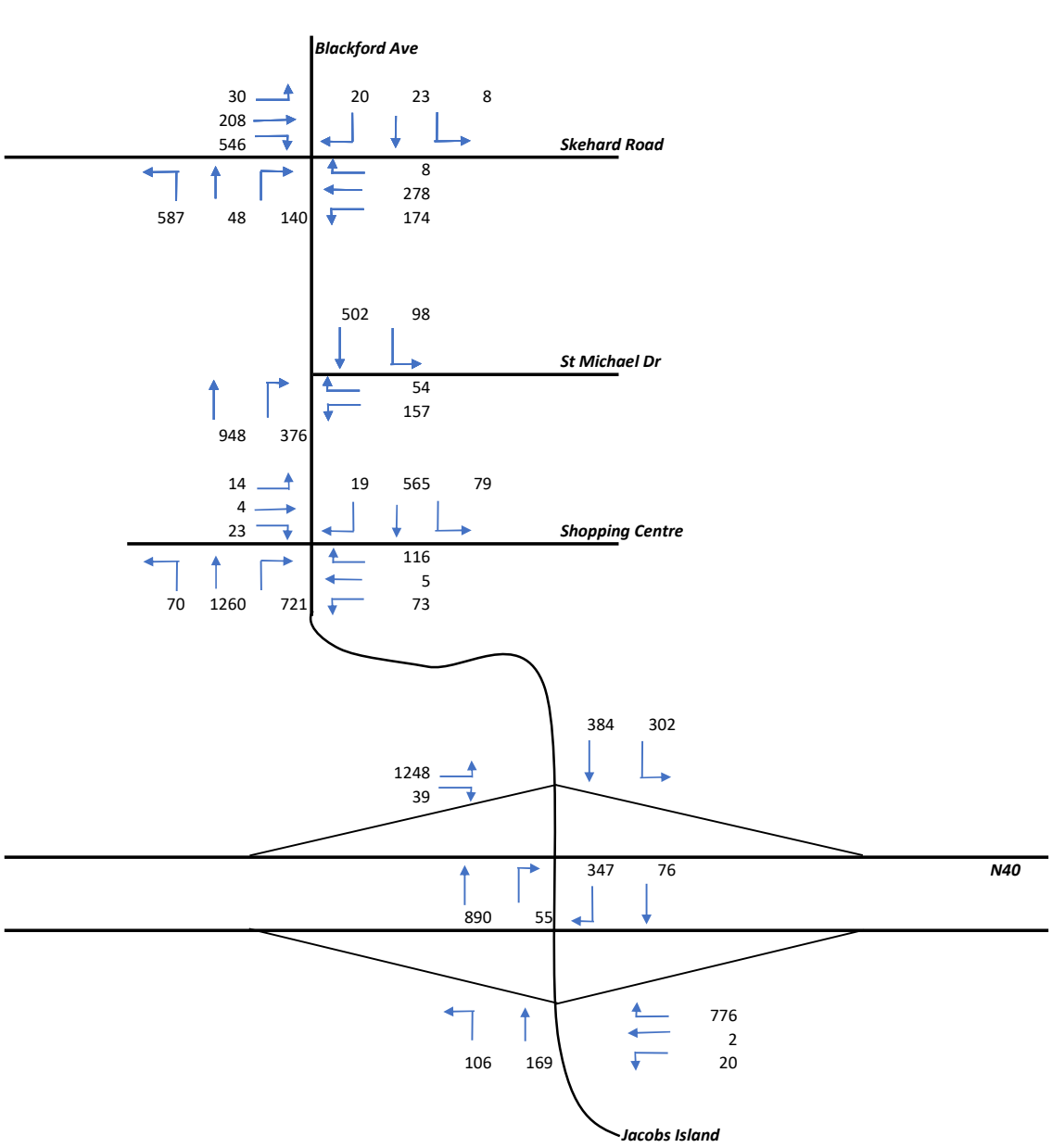

Figure 5.10	Project:	Jacob's Island TTA		SWECO
2024 AM Base	Client:	Hibernia Star Limited	Date:	Mar-22

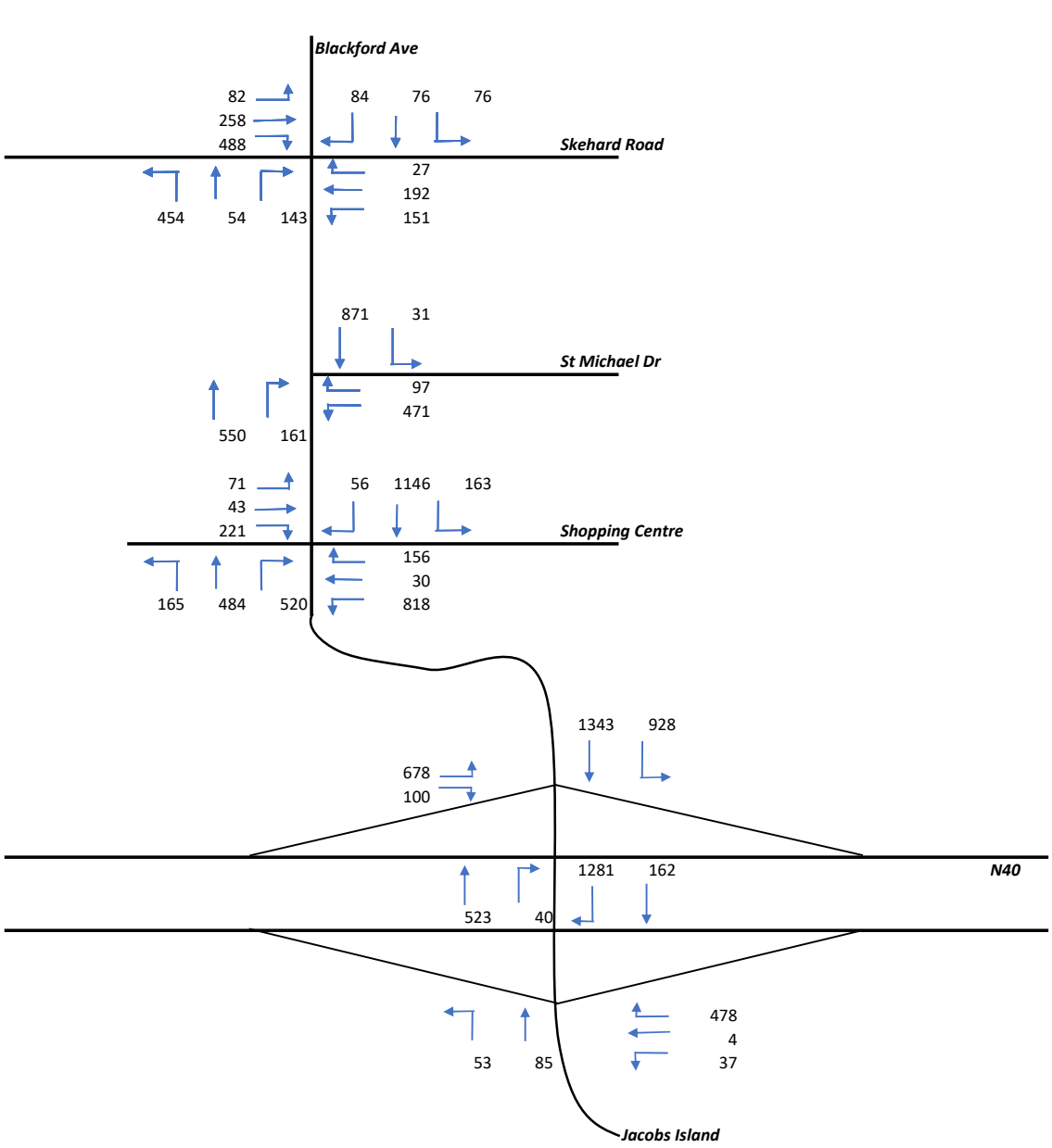

Figure 5.11	Project:	Jacob's Island TTA		SWECO
2024 PM Base	Client:	Hibernia Star Limited	Date:	Mar-22

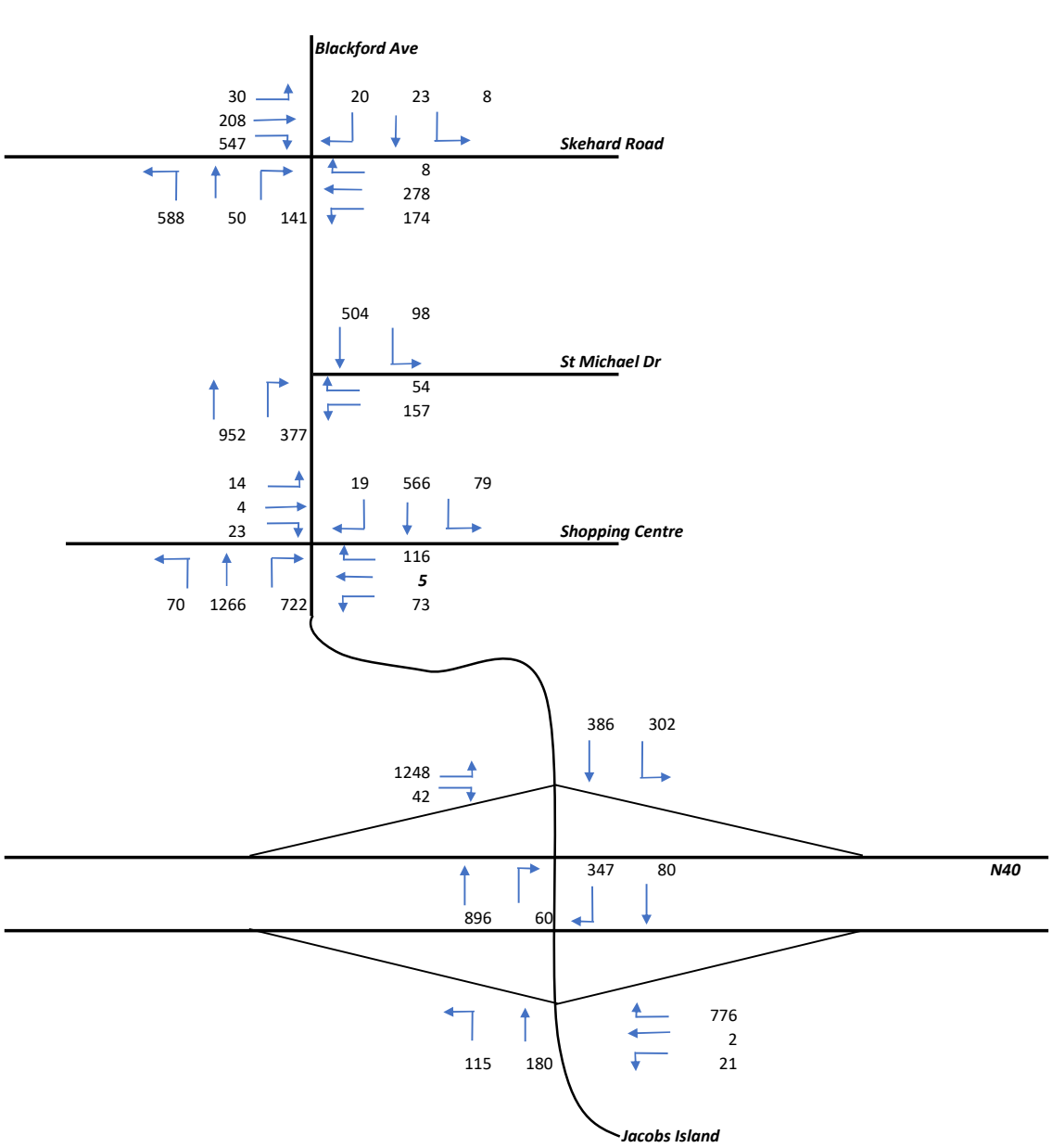

Figure 5.12	Project:	Jacob's Island TTA		SWECO
2024 PM Base + Committed Development	Client:	Hibernia Star Limited	Date:	Mar-22

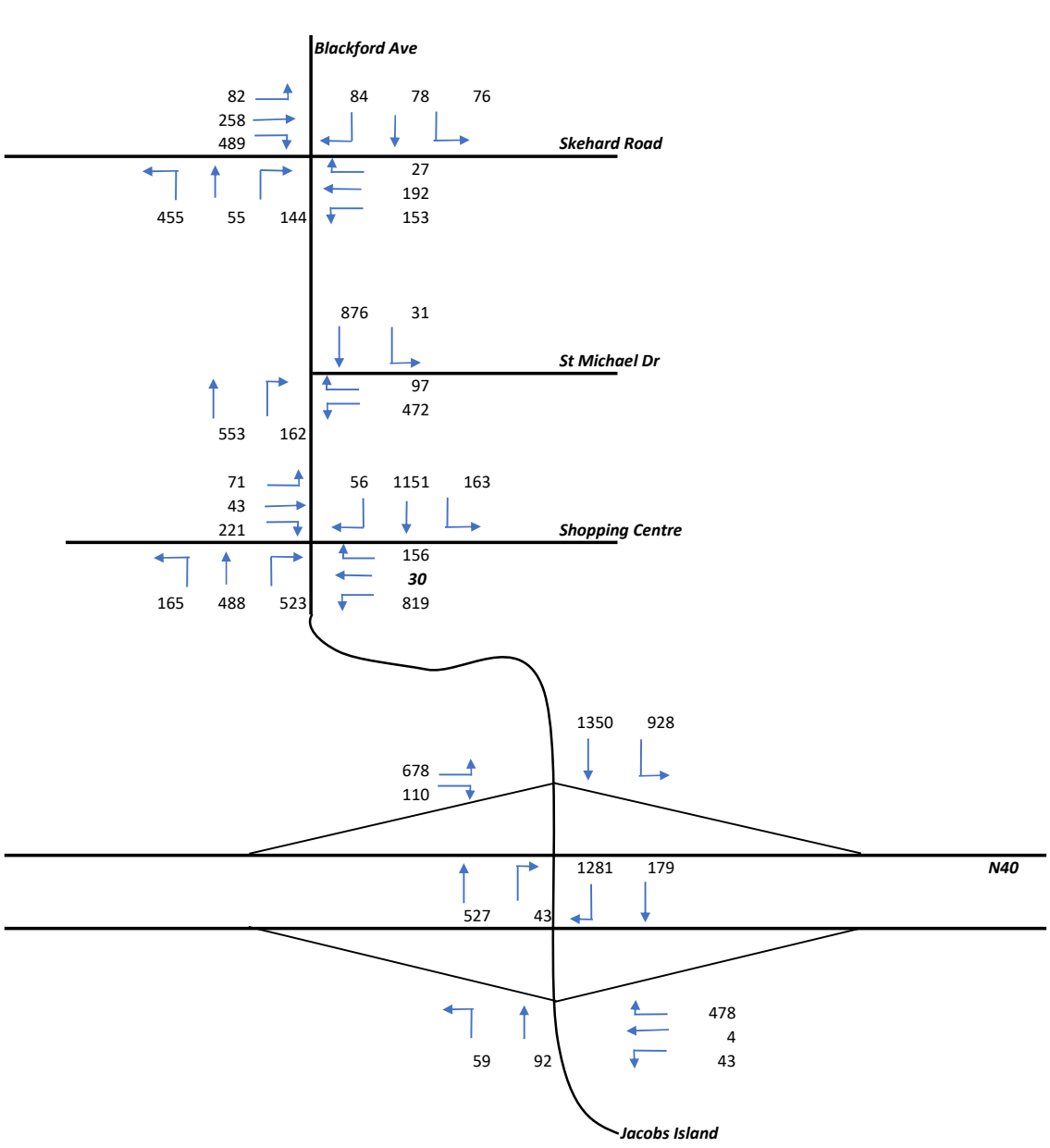

Figure 5.13	Project:	Jacob's Island TTA		SWECO
2024 PM Base + Committed Development	Client:	Hibernia Star Limited	Date:	Mar-22

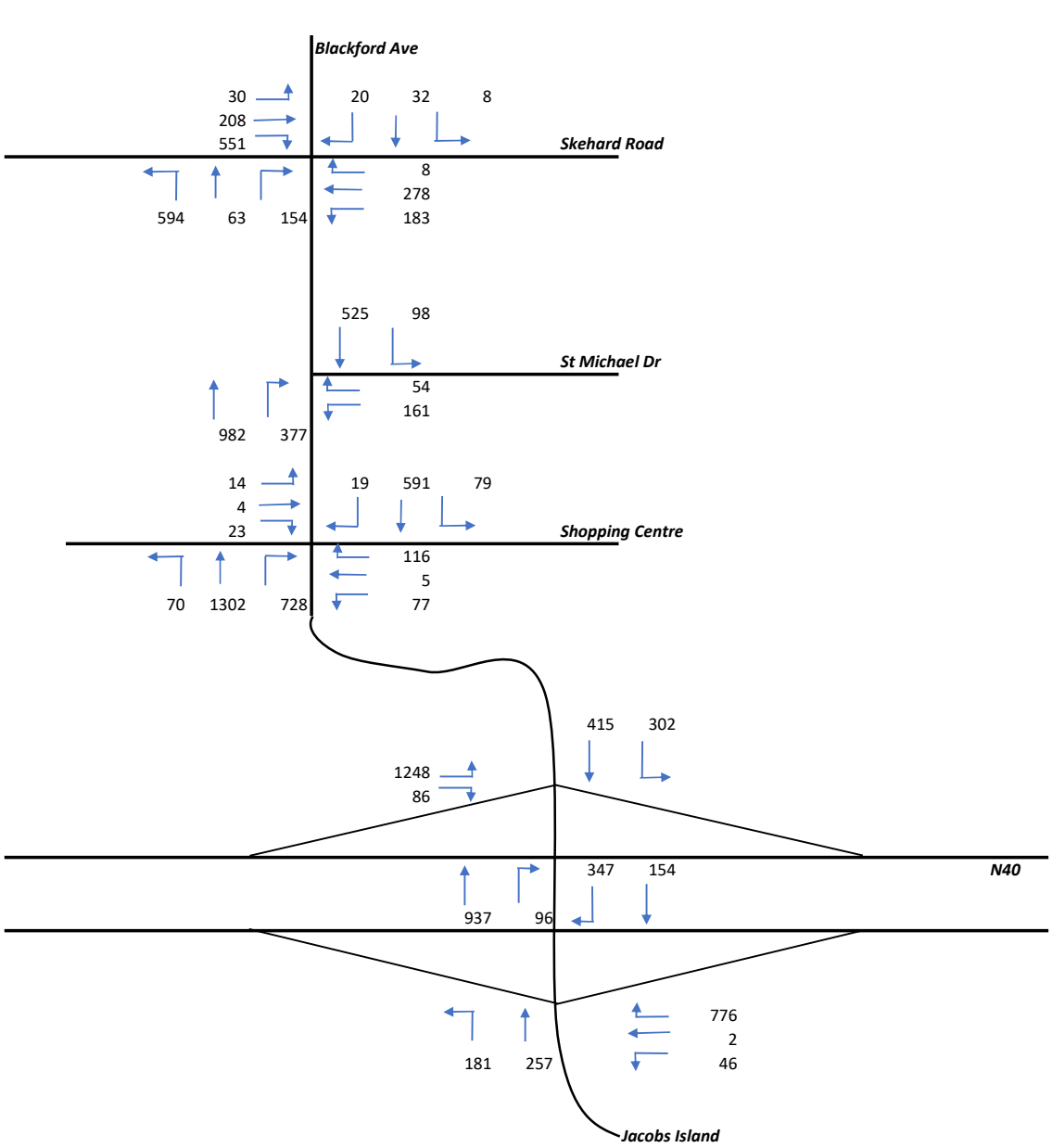

Figure 5.14	Project:	Jacob's Island TTA		SWECO
2024 AM + Com Dev + SHD	Client:	Hibernia Star Limited	Date: Mar-22	

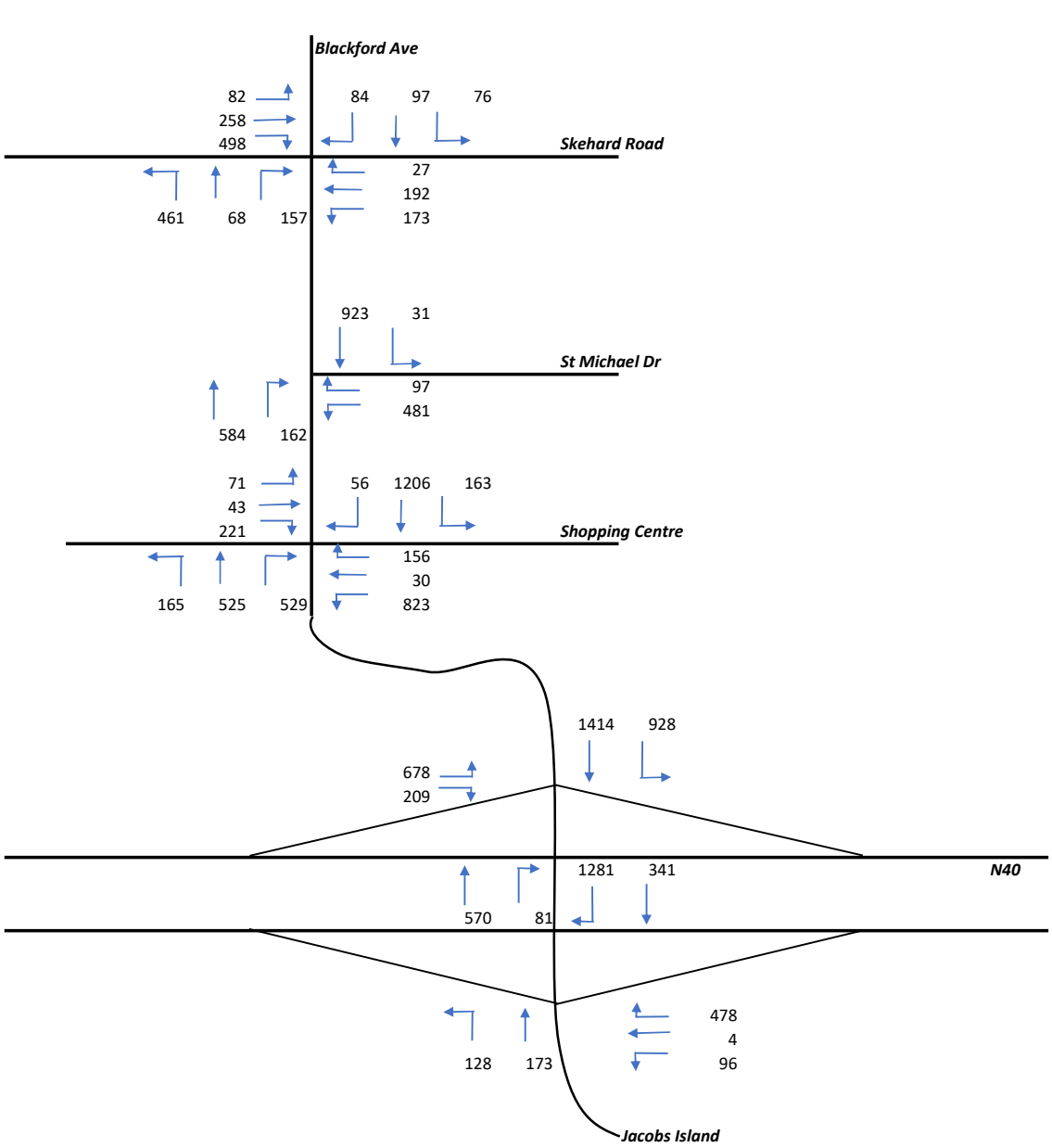

Figure 5.15	Project:	Jacob's Island TTA		SWECO
2024 PM + Com Dev + SHD	Client:	Hibernia Star Limited	Date:	Mar-22

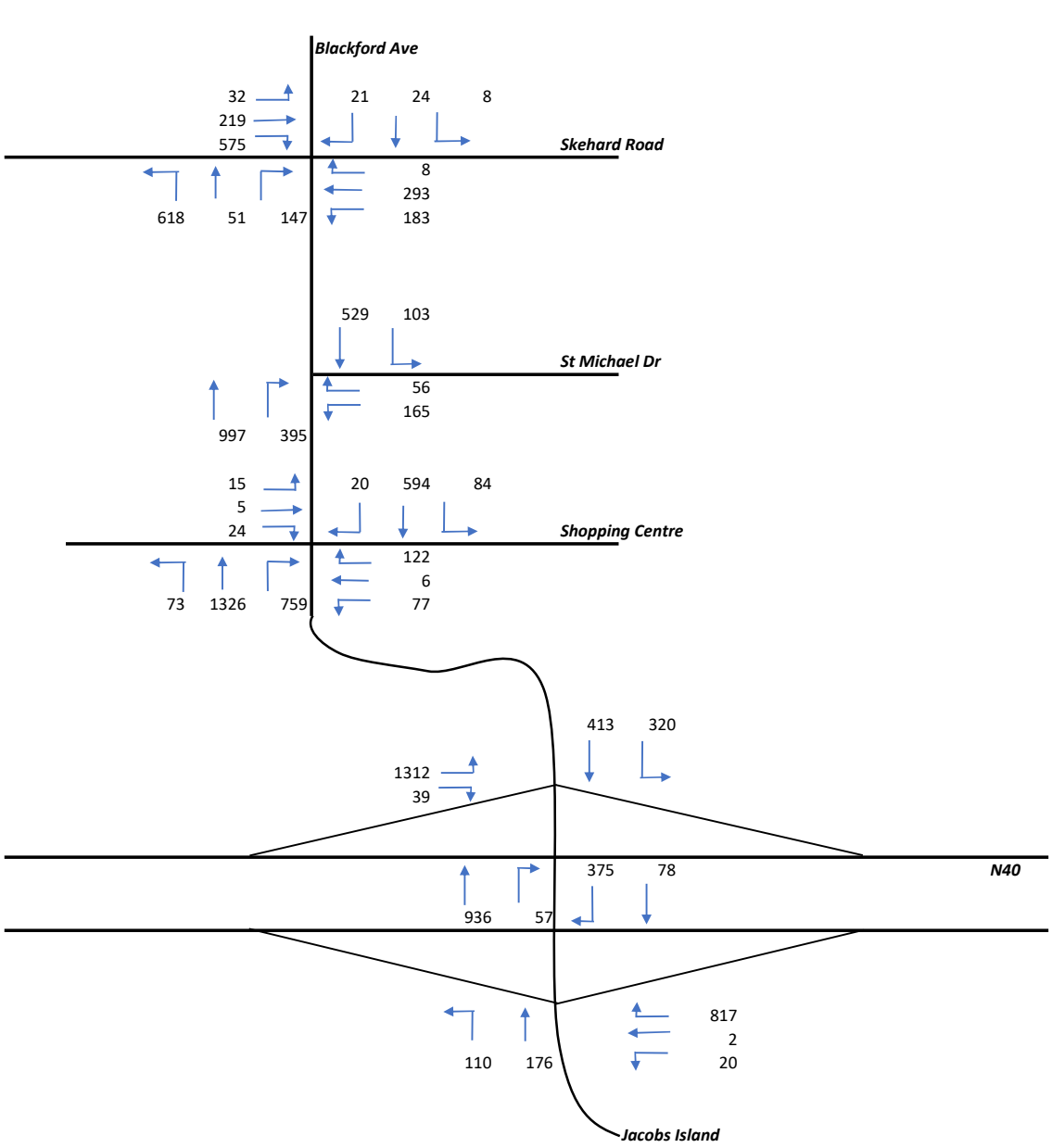

Figure 5.16	Project:	Jacob's Island TTA		SWECO
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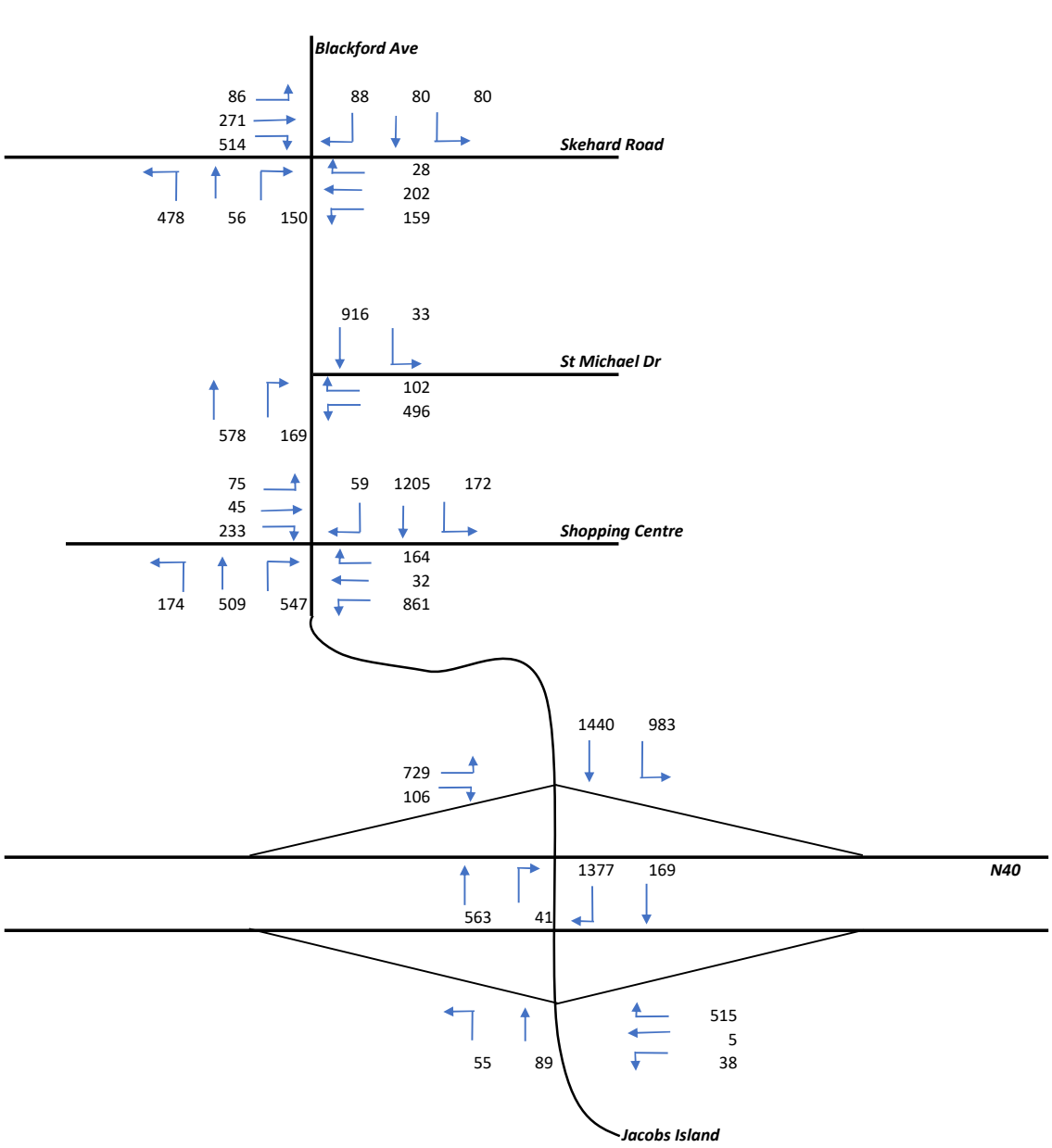

Figure 5.17	Project:	Jacob's Island TTA		SWECO
2029 Base PM	Client:	Hibernia Star Limited	Date:	Mar-22

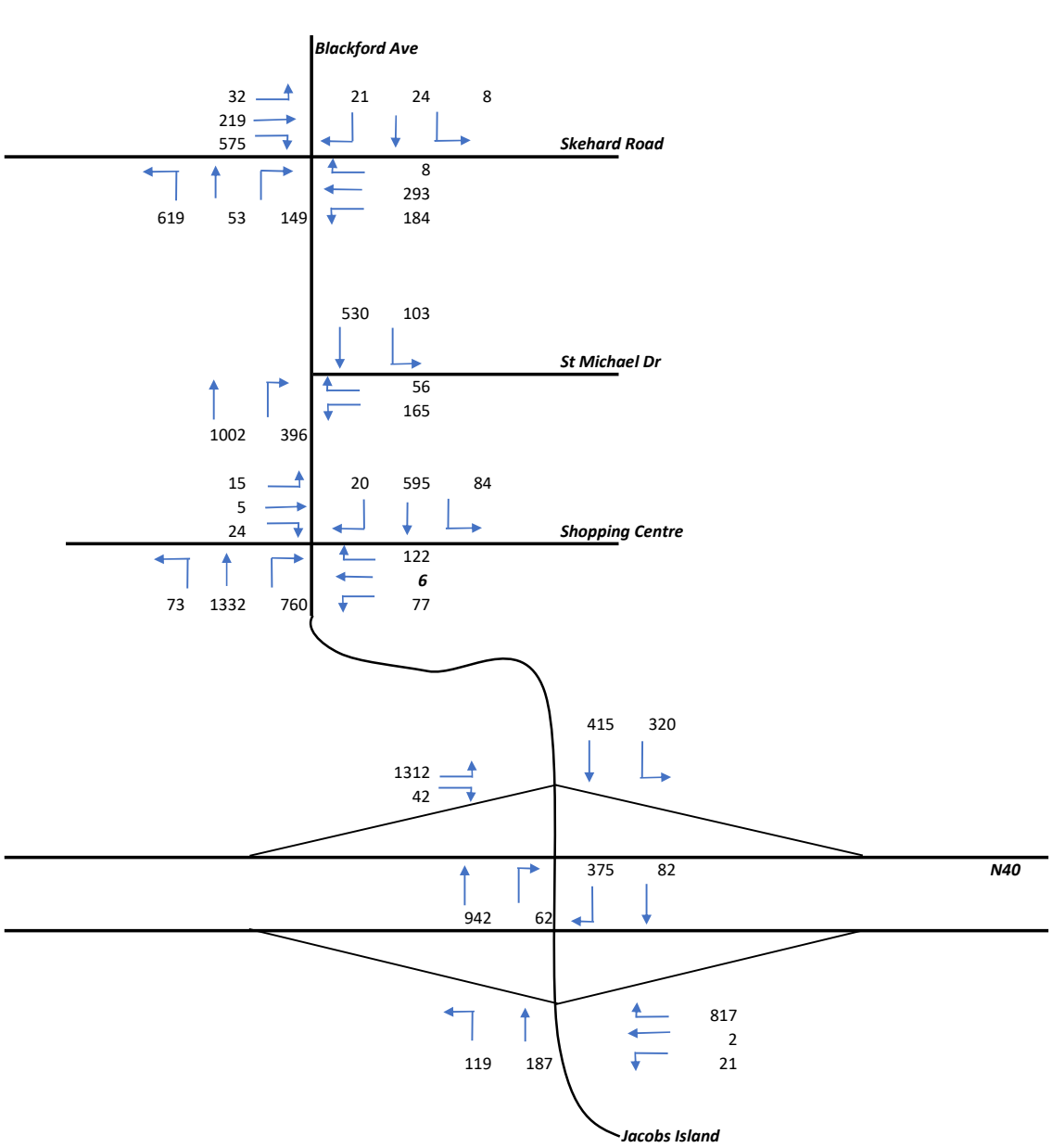

Figure 5.18	Project:	Jacob's Island TTA		SWECO
2029 AM Base + Committed Development	Client:	Hibernia Star Limited	Date:	Mar-22

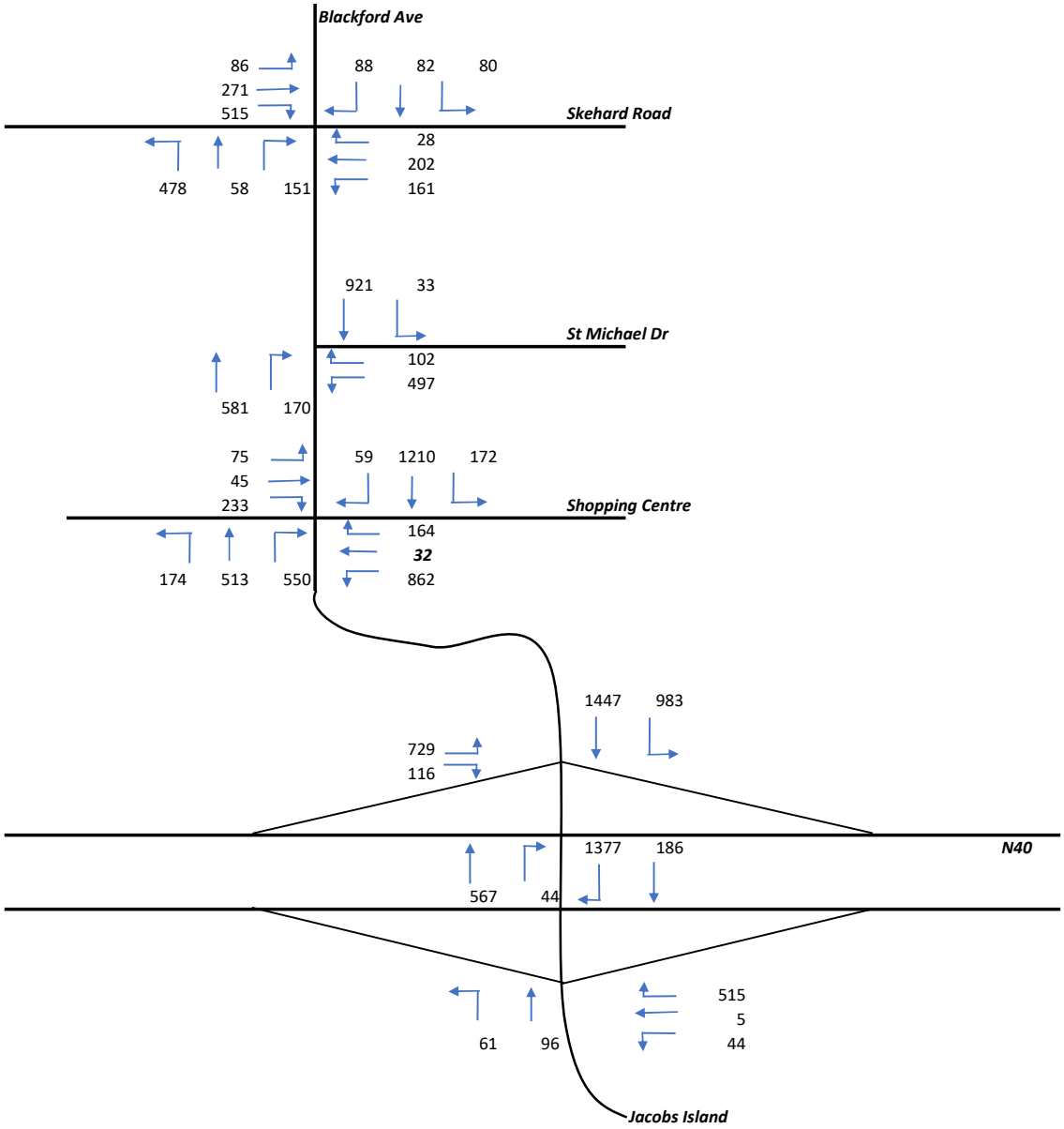

Figure 5.19	Project:	Jacob's Island TTA			SWECO
2029 PM Base + Committed Development	Client:	Hibernia Star Limited	Date:	Mar-22	

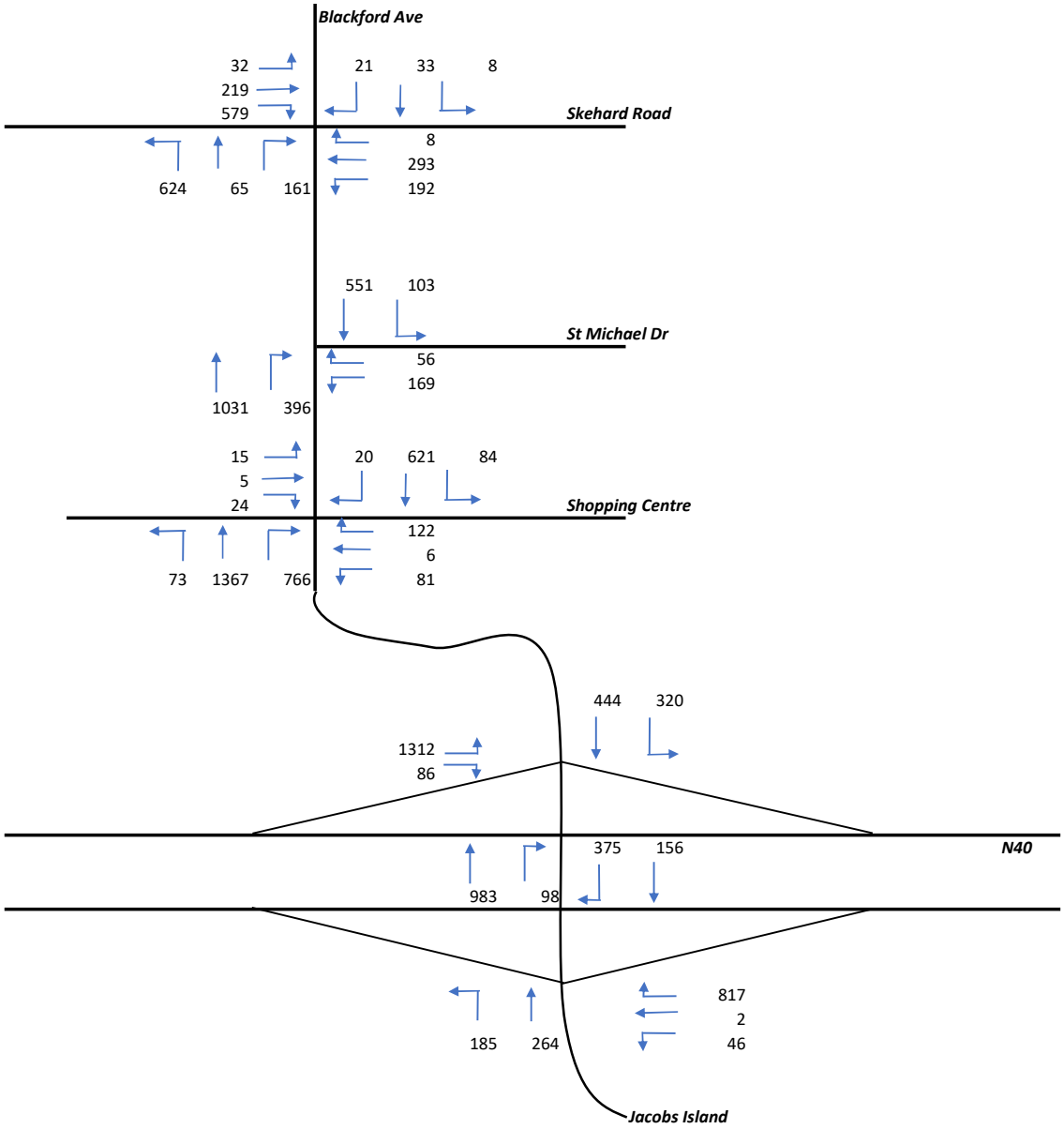

Figure 5.20	Project:	Jacob's Island TTA		SWECO
2029 Base AM + Com Dev + SHD	Client:	Hibernia Star Limited	Date: Mar-22	

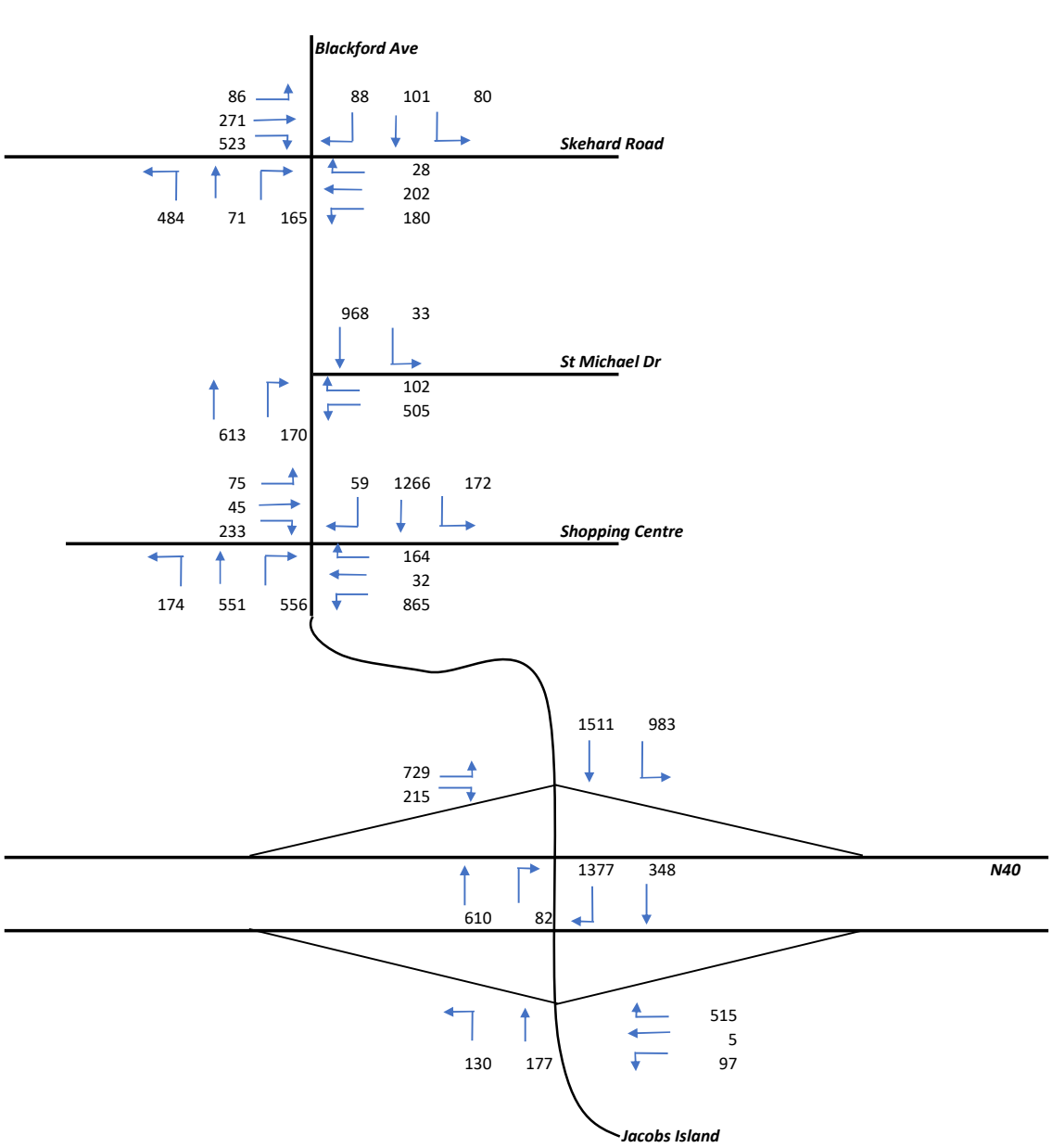

Figure 5.21	Project:	Jacob's Island TTA		SWECO
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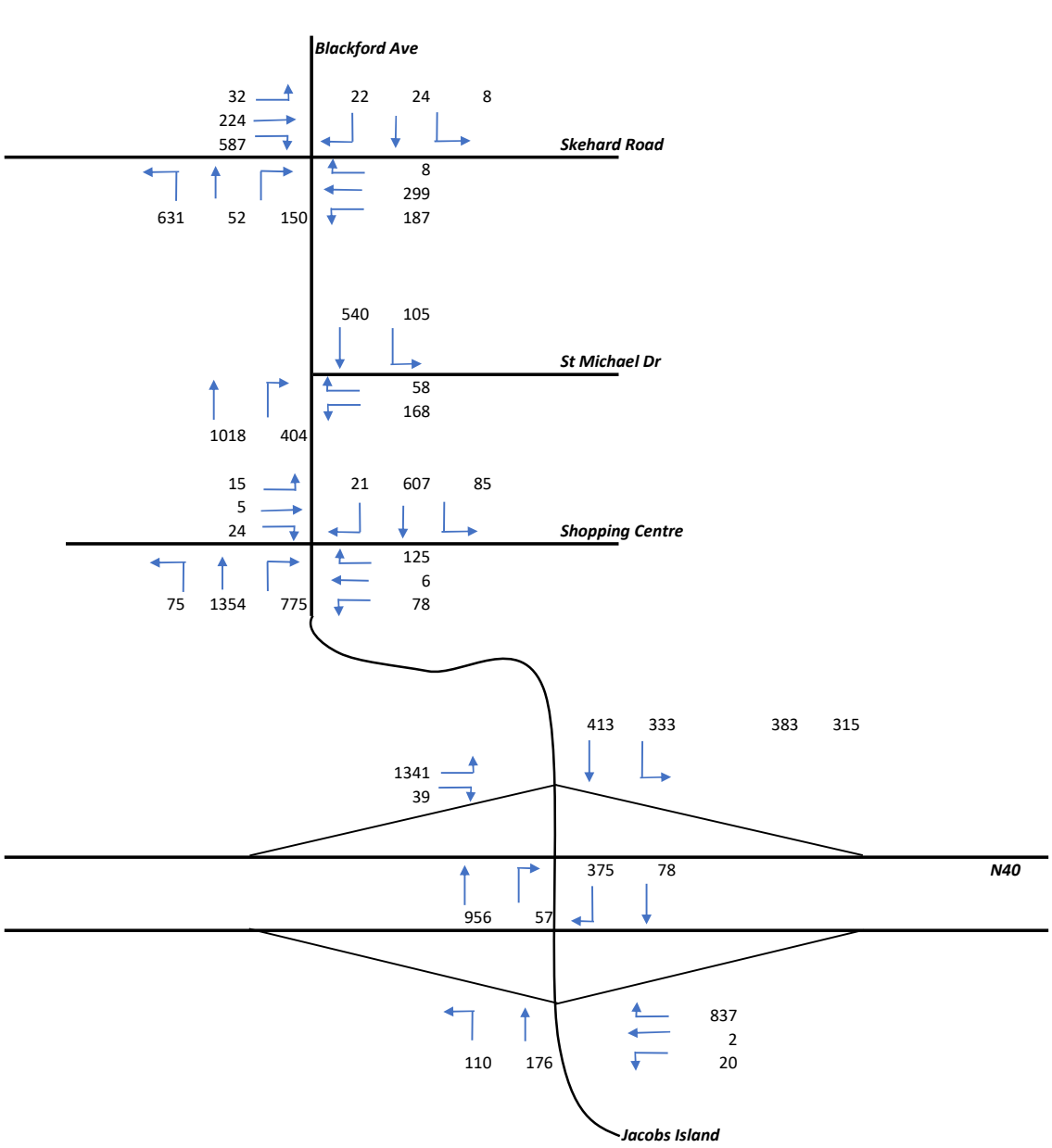

Figure 5.22	Project:	Jacob's Island TTA		SWECO
2039 Base AM	Client:	Hibernia Star Limited	Date:	Mar-22

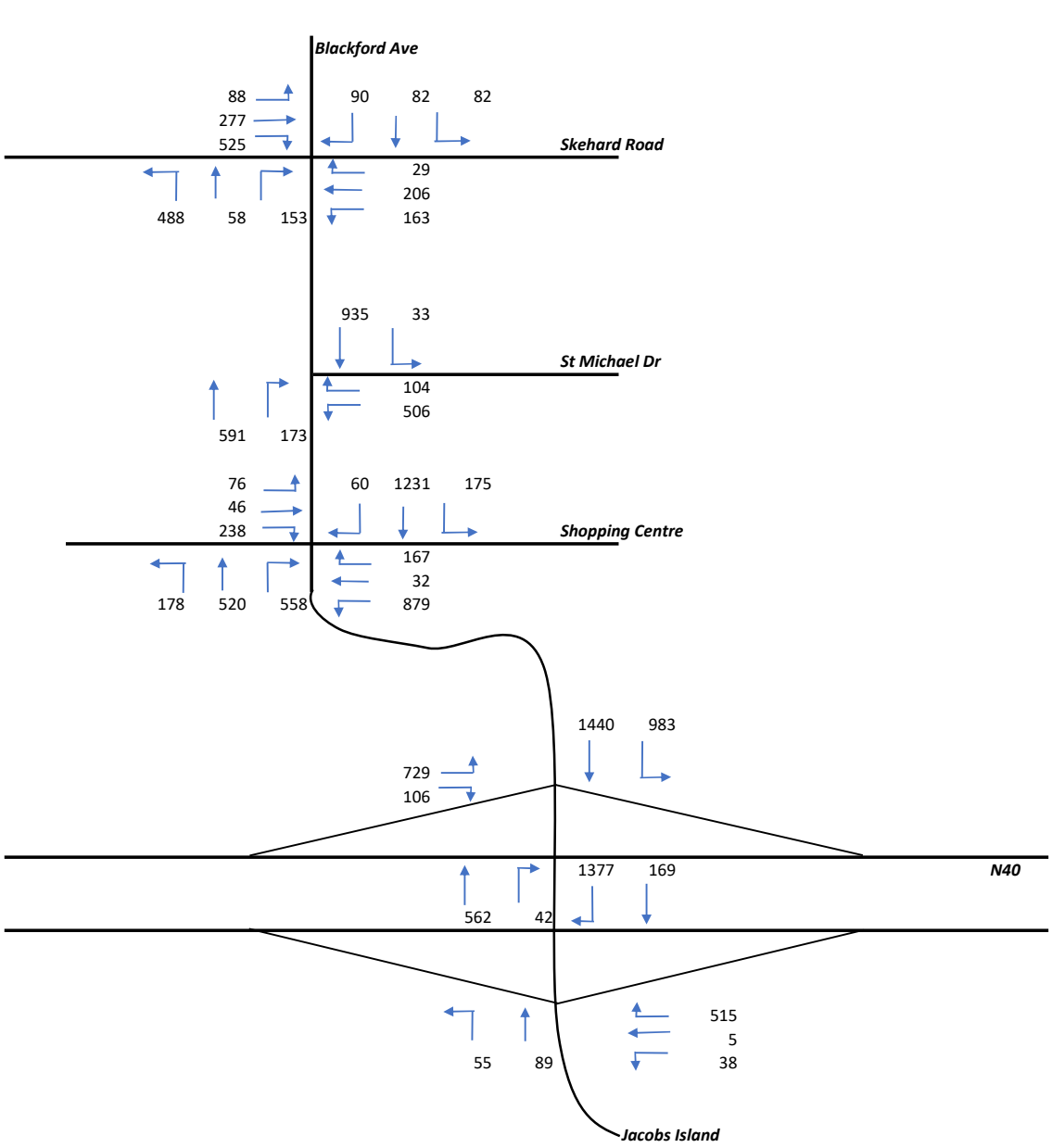

Figure 5.23	Project:	Jacob's Island TTA		SWECO
2039 Base AM	Client:	Hibernia Star Limited	Date:	Mar-22

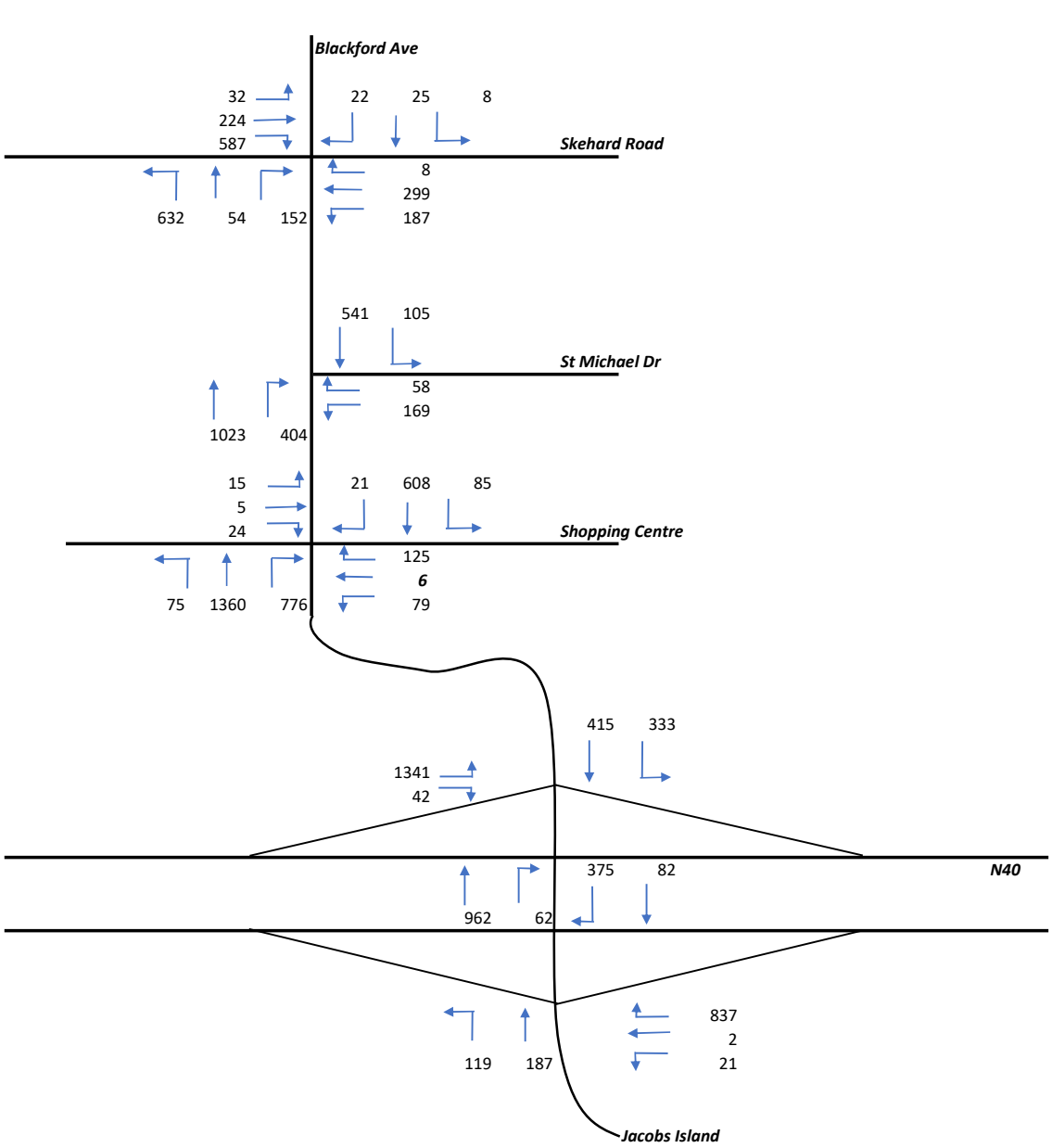

Figure 5.24	Project:	Jacob's Island TTA		SWECO
2039 Base AM + Committed Development	Client:	Hibernia Star Limited	Date:	Mar-22

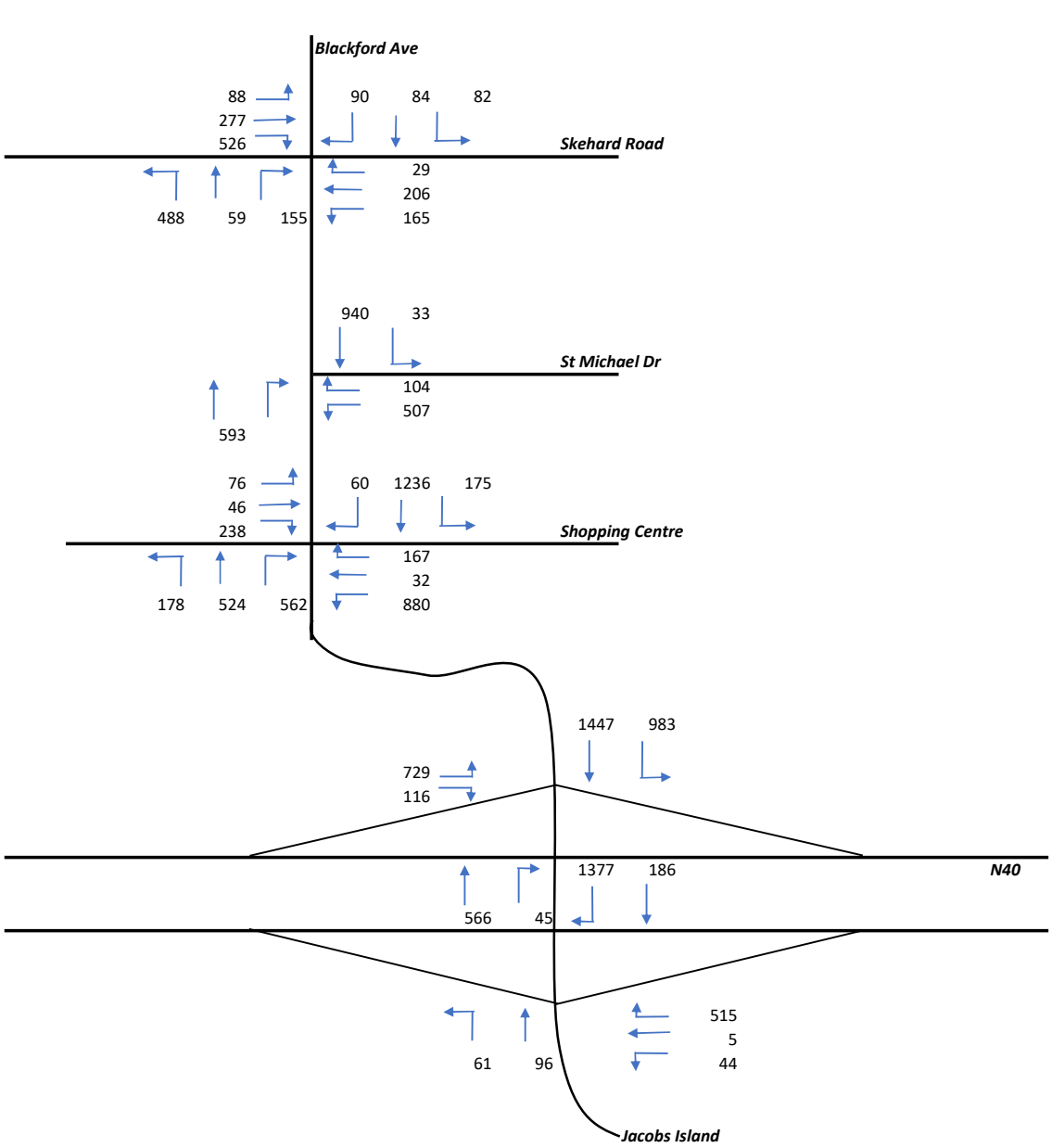

Figure 5.25	Project:	Jacob's Island TTA			SWECO
2039 Base PM + Committed Development	Client:	Hibernia Star Limited	Date:	Mar-22	

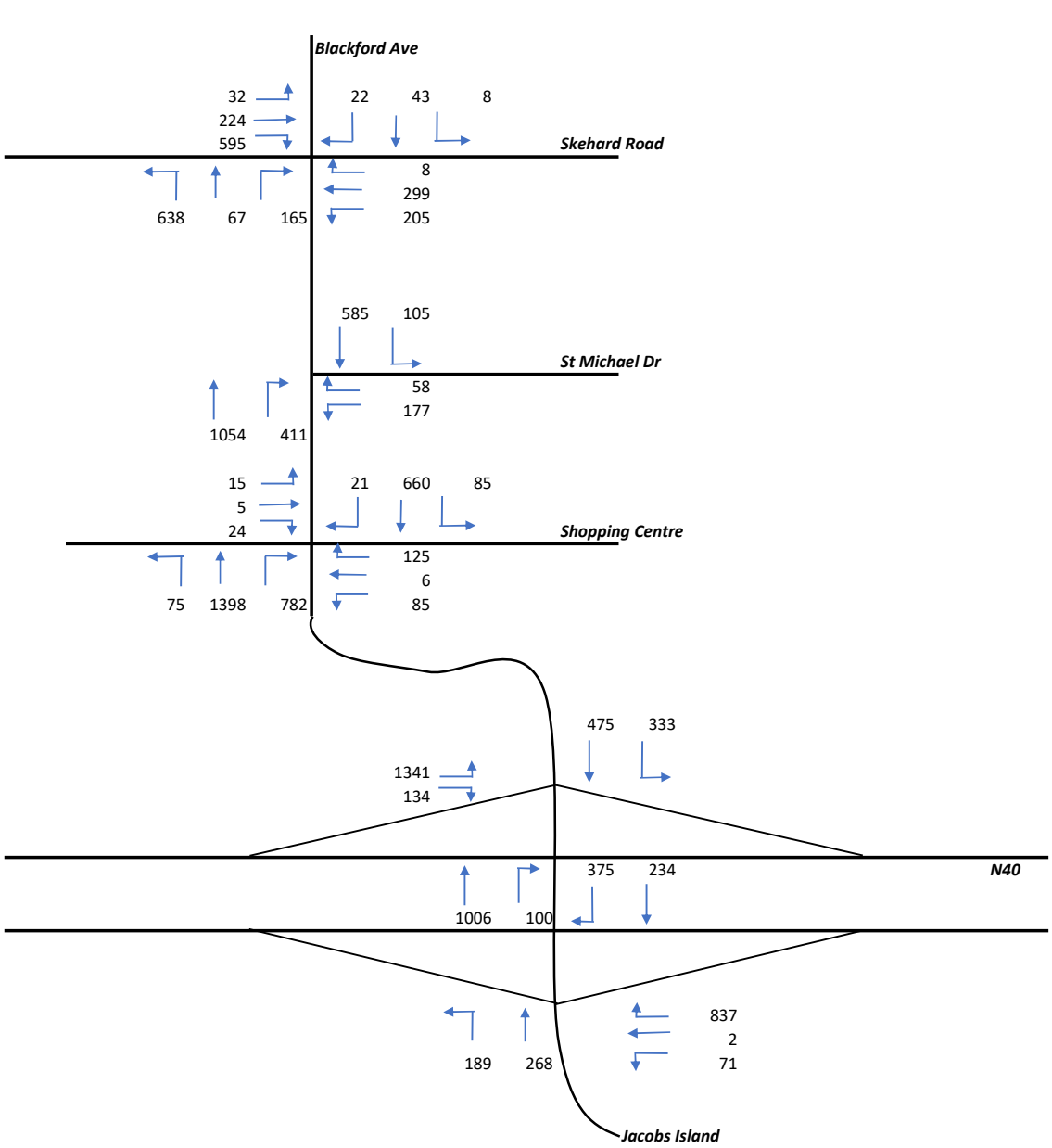

Figure 5.26	Project:	Jacob's Island TTA			SWECO
2039 Base AM + Com Dev + Estimated Masterplan	Client:	Hibernia Star Limited	Date:	Mar-22	

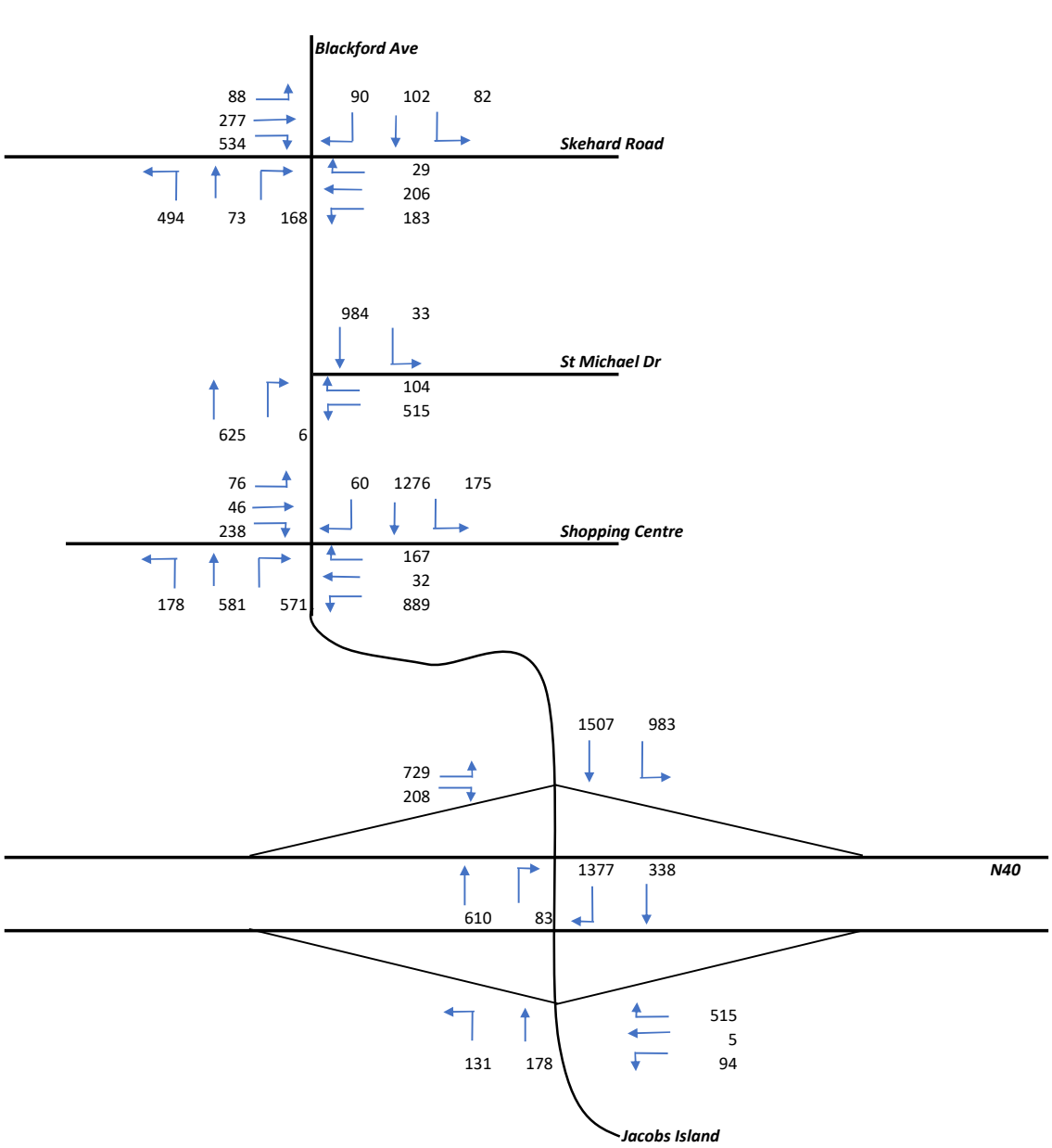

Figure 5.27	Project:	Jacob's Island TTA		SWECO
2039 Base PM + Com Dev + Estimated Masterplan	Client:	Hibernia Star Limited	Date:	Mar-22