

Project: Response to BRT Phase 2 report

Job 20-149
No:

Subject: Alternative Options Review

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Date: 5/11/2021

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Date: 5/11/2021

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Date: 9/11/2021

1.0 Introduction

1.1 In July 2021 the Department for infrastructure issued a consultation document on the alternative routes for the next phase of the Glider proposals in Belfast. We are in support of the aims of the project for the provision of a customer focused, high quality, integrated public transport system. We note that part of the criteria is to help sustain economic growth and contribute to social inclusion. As such, we support the view that the route needs to be viable, that it needs to contribute to society, but it also needs to take account of the economic conditions along the routes assessed. It needs to consider a number of alternatives rather than being restricted to assessment of only one preferred route.

1.2 This Technical note considers the assessment criteria that have been used by the Department and notes other factors that should be considered. It considers separately the options for the Northern Route and Southern Route. It offers an opinion on additional alternatives in the assessment.

1.3 In the Departments review the transfer of trips was an important part of the process when evaluating the social inclusion and the change from existing travel modes to more sustainable options. However, the transfer of trips has been dedicated on those transferring from existing public transport and sustainable options, it must emphasise the need to transfer trips from private car trips to ensure the maximum modal shift is achieved. To achieve this maximum shift the terminus of the proposed services needs careful consideration attract existing car users and offer them a more sustainable option for the final few miles of a journey.

1.4 This review will look in more detail at the G2 Extension and the additional options assessed to provide a connection to Belfast City Hospital and Queens University.

1.5 The existing road network contains constraints requiring improvement in any option. The constraints for the various routes must be considered and it is important that key constraints are identified as part of this early study. Some of these will require consideration of the introduction of infrastructure and some may require relocation of existing facilities.

1.6 Integration of the services into existing bus lanes and the introduction of new bus lanes will lead to issues with existing retail premises. These primarily relate to the extended operating hours of the bus lanes. The use of extended hours will prevent servicing of existing businesses and onstreet parking removed by the introduction of any of the options. We provide a discussion on the issues identified and put forward comments in relation to each option.

Technical Note

1.7 Servicing is a vital consideration for the survival of existing businesses along each route corridor. The study considers in more detail the constraints placed on businesses with the use of bus lanes along the various corridors assessed. The solution for providing improved servicing will remove existing car parking that already serves the businesses.

1.8 Further information is outlined in relation to the constraints that will be imposed upon existing businesses when considering the alternative options.

2.0 Assessment Criteria

2.1 As part of the consultation document for the Route Options, assessments were carried out to identify the routes that the Department deemed to be capable of delivering a scheme which fulfils the objectives of BRT2. These objectives were set out as:

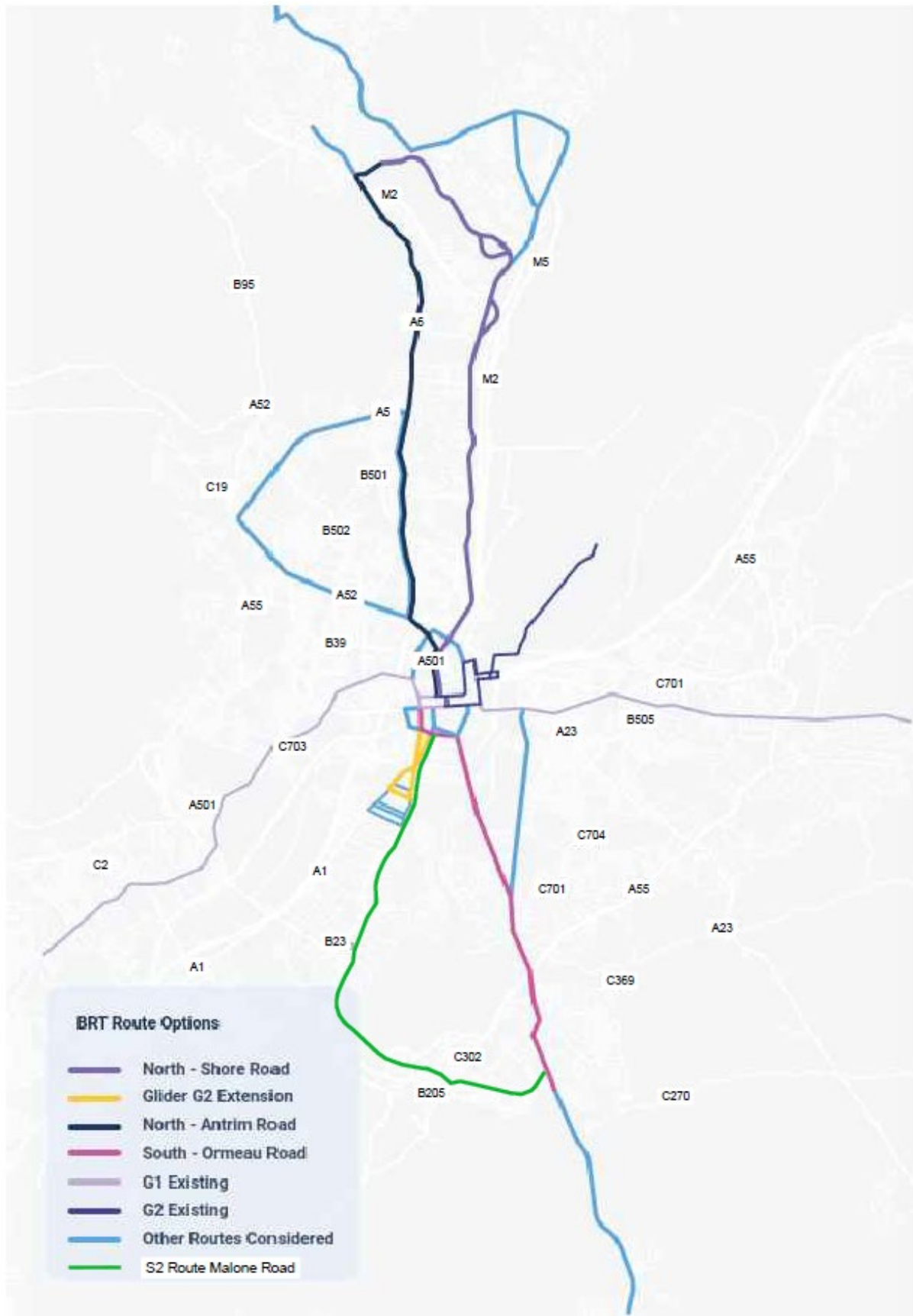
- Provide a safe, efficient and high-quality public transport service.
- Support sustainable economic growth and regeneration.
- Provide equality through enhanced accessibility; and
- Support social inclusion and the integration of communities.

2.2 In addition, it was seen as essential that the BRT2 routes are able to physically accommodate the priority bus lanes which will enable the BRT2 system to operate reliably. This resulted in a number of route options as set out in Figure 1, reproduced from page 15 of the document, with some additions discussed later.

2.3 Within this report we have considered the route development in a northern half and a southern half. Looking first at the southern corridor a narrow route was taken along the Saintfield Road and only two options of (S1) Ormeau Road and (S1A) Ravenhill Road were assessed in detail. The route along Ravenhill Road was discounted by the Department as bus priority could not be provided along significant stretches of the Ravenhill Road without highway widening causing the loss of on street residential parking which would require third party land acquisition. It also discounted the part of the Ravenhill Road route as duplication would exist along the G1 route from Short Strand to the City Centre.

2.4 Within this review we add in an additional S2 and S3 route which are given an initial appraisal to determine if they are viable options that merit further consideration.

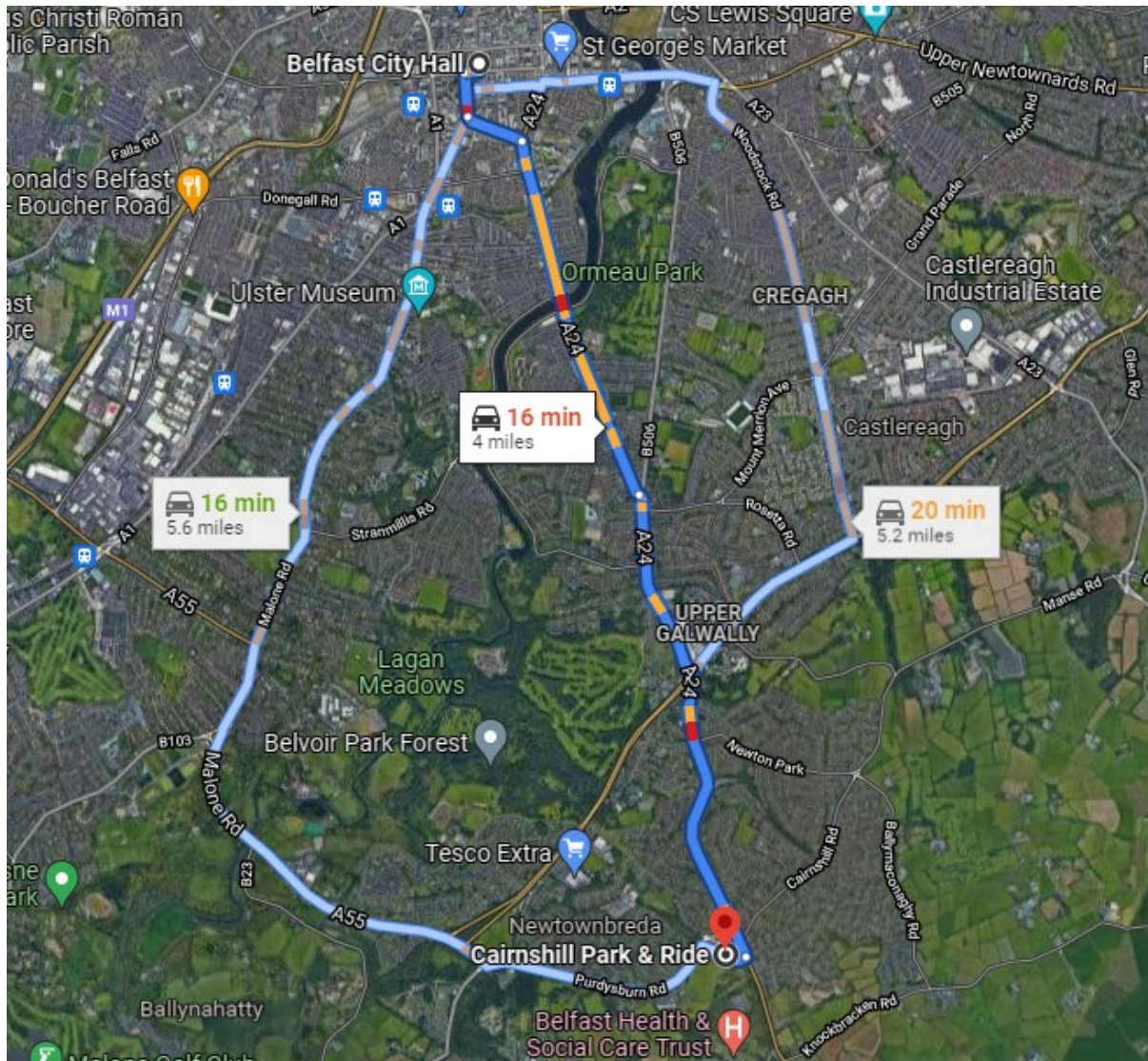
2.5 The northern route considers the Antrim Road and Shore Road as the two options with other routes discounted. We do not propose to add any additional options to the northern route.



Technical Note

3.0 Southern Route.

3.1 Section 2 of this note outlines the issues resulting from the use of Ravenhill Road as part of the preferred route to the city centre and that the Department had discounted it as a viable option. Figure 2 sets out two alternative southern routes that were not considered within the consultation document and each would provide a viable alternative to the use of the Ormeau Road, hereinafter referred to as S1. We refer to the alternative routes as Cregagh Road (S3) and Malone Road (S2).



Cregagh Road Route S3

3.2 Route S3 would equate to a 5.2-mile journey which would extend from the Cairnshill Park and Ride along the Saintfield Road to Forestside. From here it travels along the A55 to Cregagh Road and Woodstock Road before joining the Newtownards Road. This allows a connection for the south of the city to Lanyon Place train station as well as a connection to City Hall. The normal off-peak journey time would be 20 minutes, slightly longer than the 16min for the main elements of the S1 Ormeau Road route.

3.3 The route along Cregagh Road would have four lanes in each direction near the A55 but would narrow to a width of circa 8.5m until it reaches the Cregagh roundabout. From the roundabout to Newtownards Road the Cregagh Road widens to circa 11.9m and already contains a bus lane in each direction.



3.4 The Cregagh Road does revert back to a wide single lane carriageway with one lane in each direction, together with a cycle lane in each direction.



Figure 4 – Cregagh Road

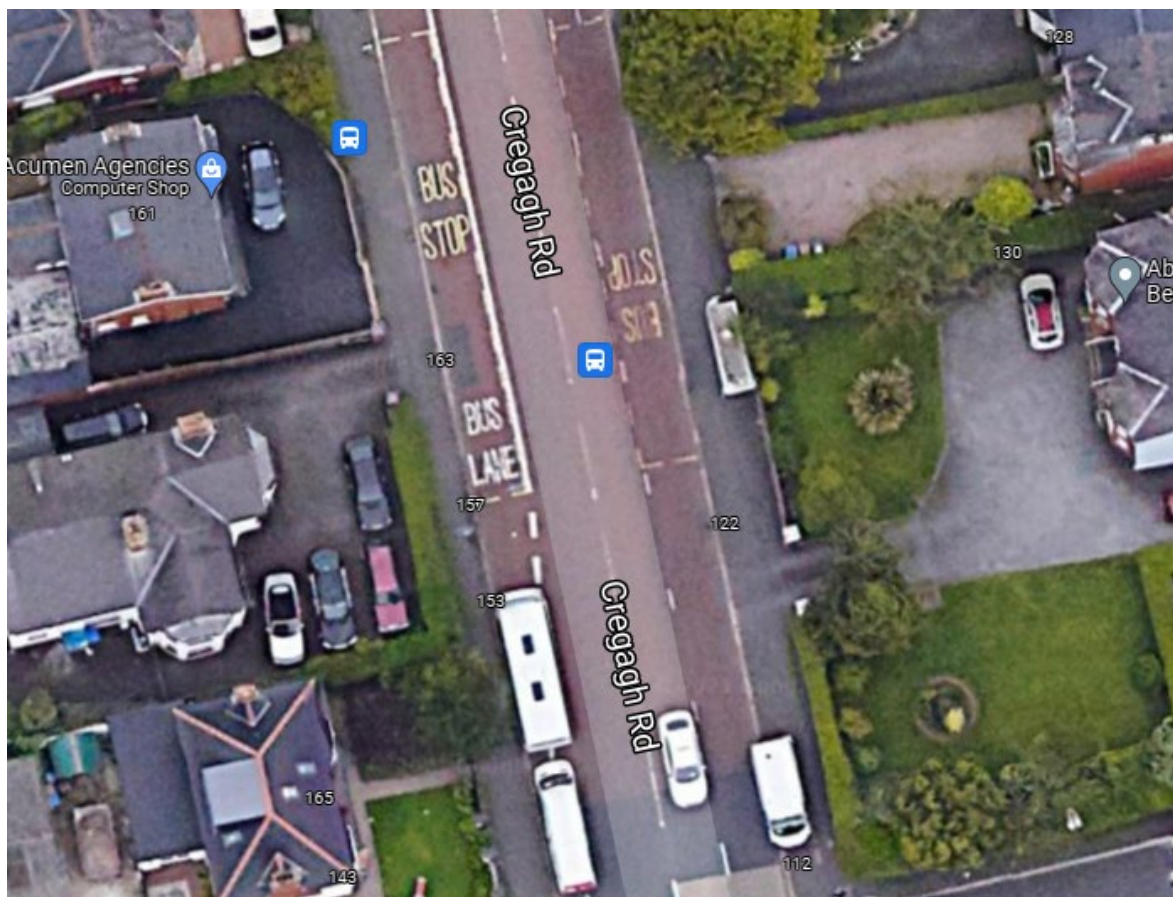


Figure 5 – Bus lanes on Cregagh Road



Figure 6. Carriageway on northern section of Woodstock Road.

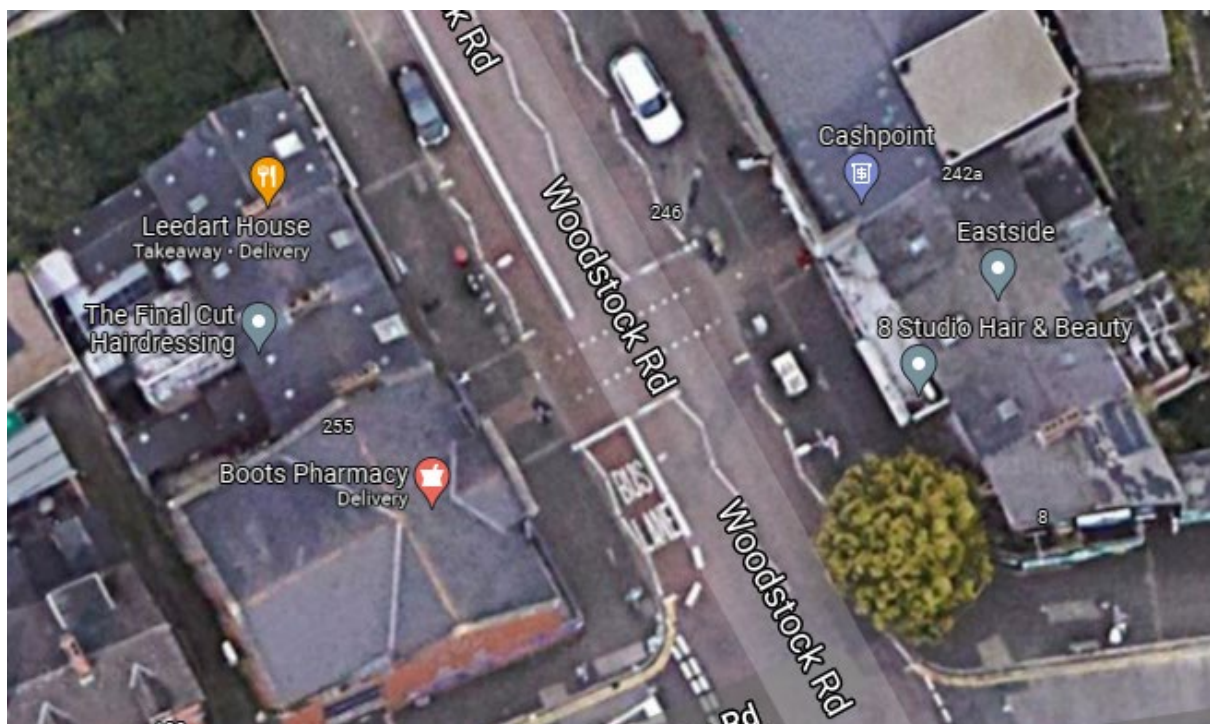


Figure 7 – Bus Lane on Woodstock Road

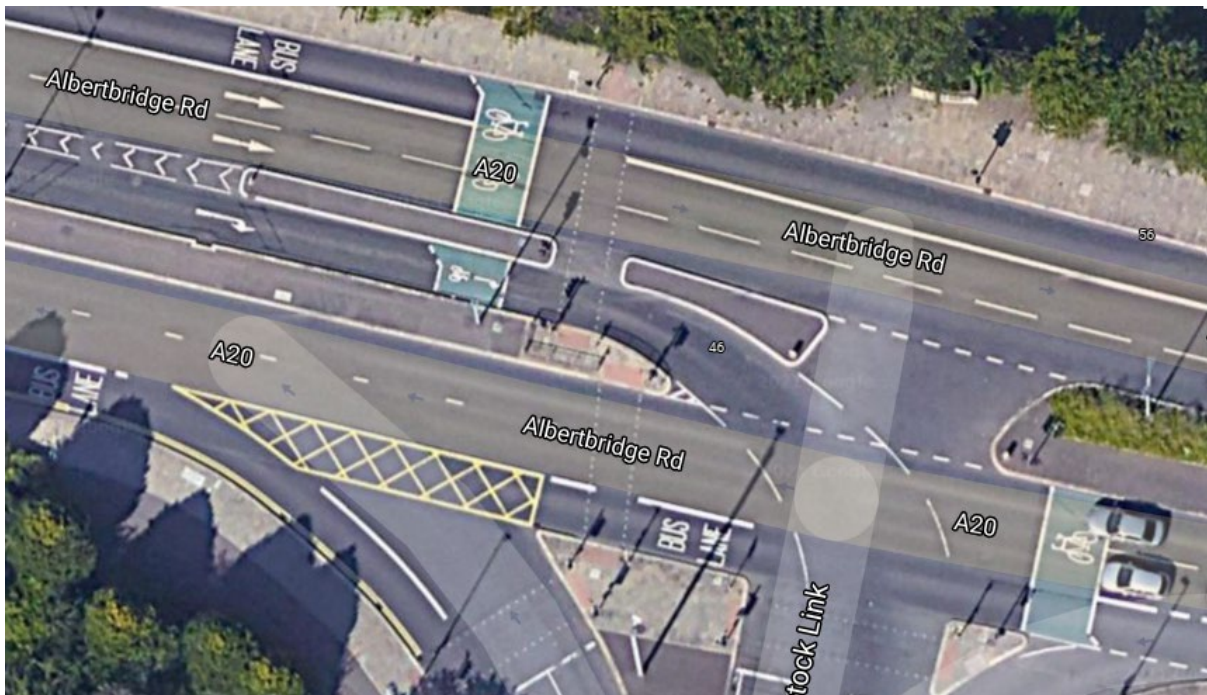


Figure 8 – Albertbridge road / Woodstock Road junction.

3.5 As part of the assessment of this route a number of issues have been considered:

- Road geometry and layouts. The majority of the route can accommodate the introduction of a bus lane with minor amendments to the footways and parking bays along the route. However, circa 900m of the route along Cregagh Road to the roundabout would have insufficient width to accommodate a bus lane in each direction. Consideration is given to the use of a bus lane inbound only, to allow for the morning peak period with buses travelling into town. To achieve a bus lane in the opposite direction land vesting would be required. This would result in the loss of private garden space and for this reason the option is unlikely to be viable in the short term.
- Traffic flows – The flows along the Woodstock and Cregagh Road could be accommodated in the diversion of traffic to Ravenhill Road, or Castlereagh Road accommodating the needs of those who wish to retain use of the private car.
- Parking – There are some onstreet car parking situations along Cregagh Road and Woodstock Road, and these would require to be accommodated.
- Adjacent land use – The main elements of the use along Cregagh and Woodstock Roads are residential and business use. There would be some impact upon the car parking on street.
- Along the lower section of Newtownards Road to Albertbridge Road the route would pick up the existing G1 route.
- With the loss in residential car parking, the narrow road widths, inability to have long lengths of dedicated bus lane this is unlikely to form a viable option.

4.0 Southern Route S2, Malone Road

4.1 The second alternative to the use of Ormeau Road considers the route of Purdysburn Road and Malone Road to Queens University and on to City Hall. The advantage of this route is that it potentially incorporates the G2 service past Queens University and can be detoured to the City Hospital rather than extending the existing G1 route. As such it forms a viable alternative that merits consideration.

4.2 The typical free flow journey time is noted as 16 minutes which is the same as that recorded for the Ormeau corridor.



Figure 9 Purdysburn Road – two lanes exist



Figure 11 – circa 20m land corridor along parts of Purdysburn Road.

S2 Initial Assessment

4.3 The initial Purdysburn Road section of the route would have restricted width as it currently operates as a single lane in each direction with a hatched centre lane forming right turn lanes at several locations. The route from Cairnshill Park and Ride to Aldersgate Road is circa 9.5m in width but the land to the south is bounded by the park and ride and the former reservoir lands. It would require purchase of land if this was to be widened to provide a bus lane. Some of this land is in the control of the Department as part of the park and ride. Circa, 280m of road length exists from the park and ride to Alderwood Hill and would require widening if a dedicated bus lane was to be provided. This widening would remove the existing right turn lanes. Alternatively, to the widening, an option can be introduced where the Glider would operate on street without a bus lane over this short length, similar to the approach to the A55 from Newtownards Road.

4.4 From Alderwood Hill to Milltown Road the route consists of 1.3km of a 9.5m wide carriageway but the road corridor is circa 16-20m in places with landscaping to the rear of the footway and a hatched out central lane over much of the length. This would allow for a bus lane in one direction but widening would be required to facilitate the lane in the opposite direction.

4.5 Once at Milltown Road the carriageway already consists of two lanes in each direction. None of these currently operate as a bus lane over the length of 2.4km to the House of Sport roundabout. This roundabout already operates with signal control at peak times.



4.6 From the House of Sport roundabout the service can travel along the Malone Road. The Malone Road currently accommodates the Metro service number 8 and the Ulsterbus nr 93. There are bus stops and shelters but no bus lanes along the A55 or B23 until Adelaide Park where an into town bus lane already exists as far as Sans Souci Park.



4.7 There is little car parking along this route until the section past Wellington Park hotel to Queen's University. However, night-time visits show that there is little overnight parking along this main route.





4.8 From Shaftsbury Square to the Europa Hotel and the proposed transport hub, a bus lane is developed on the into town side of the carriageway and a corresponding facility can be developed on the Dublin Road out of town journey.





4.9 The initial stage of the Departments Route Options Assessment was to undertake a high-level assessment of a long list of route options. This allowed unpromising options to be discarded at an early stage however S2 and S3 did not feature in this assessment. The S3 route via Woodstock Road is unlikely to be a viable alternative as it would disrupt onstreet parking for residents along Cregagh Road and Woodstock Road and would duplicate part of the journey along the Newtownards Road and Albertbridge Road.

4.10 However, the majority of the length of the S2 Malone Road option does not contain onstreet overnight parking and already consists of four lanes in each direction. The exception is Purdysburn Road where some amendments can be made to introduce localised bus lanes to facilitate a route to the park and ride. It is a viable route. Further comments are made on S2 in the following sections in response to other potential issues for each route.

Technical Note

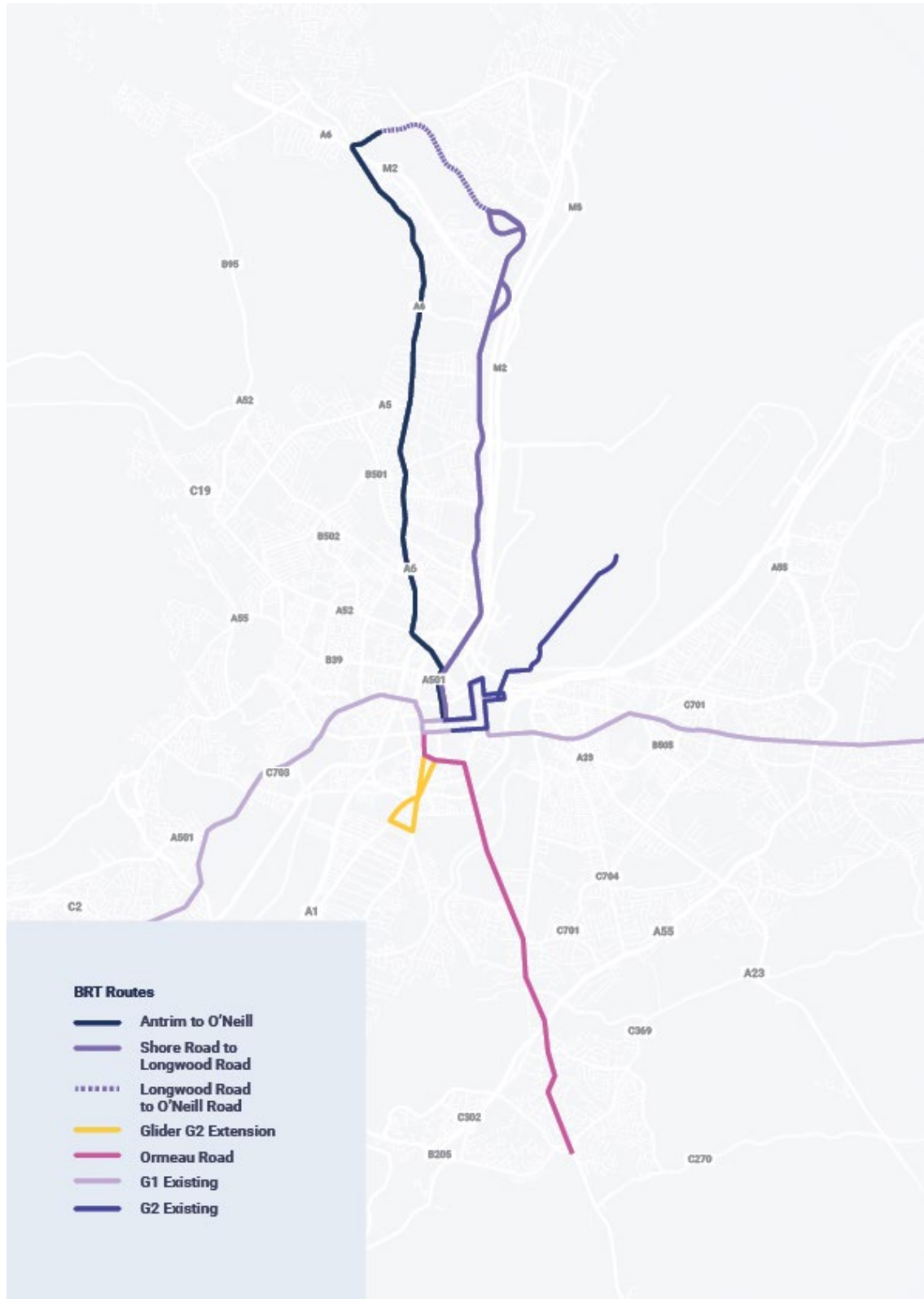
Detailed Assessment of S2 Malone Road route

4.11 After discounting the Cregagh route a more detailed assessment was undertaken for the most promising route options of S1 (Ormeau Road) and S2 (Malone Road). The key issues that were assessed in order to refine the viable route options were as follows:

Issue	Ormeau	Malone
suitability of the route to provide priority lanes for the BRT2 service	4 lanes available over length	5.2 miles, of which 4.3 miles are already two lanes
impact of the route on public transport journey times and reliability	Positive over 2.8 miles but negative over the 1.2 miles along business frontage at Ormeau Road	Positive over 4.3 miles but neutral over the 0.9 miles along Purdysburn Road
transfer of private car trips	Bus lanes already exist so minimal disruption to traffic other than where bus priority measures are introduced.	Two lanes of traffic will be removed from Milltown Road and Malone Road. There is no viable alternative route at peak times for this traffic unless it transfers to Glider.
accessibility of the route to key locations of employment, healthcare, leisure, commerce and regeneration	Serves Ormeau Businesses, connects to residential areas of Cairnshill, Newton Park, Knockbreda, Ormeau to Forestside and City Centre	Serves Hydebank, Crowne Plaza Hotel, Leisure facilities at Cooke, with residential areas at Cairnshill, Newtownbreda, Belvoir, Milltown, Malone, Stranmillis, Holylands with Belfast City Hospital, Queens University to the city centre. A 500m walk also picks up Taughmonagh.
value for money	Existing road has 4 lanes so would not require significant widening.	Some works would be required to Purdysburn Road to widen the road. This would add some additional cost.
the practical feasibility of implementing the route	Would result in loss of onstreet parking at businesses along the Ormeau Road	Would result in a new public transport lane along the Milltown Road and Malone Road. Some delay at Purdysburn Road if bus lane not introduced.
the practical feasibility of implementing the route	Requires businesses on Ormeau Road to be capable of servicing and parking	No notable businesses along road frontage with less restrictions. Would have a short section in traffic if no widening on Purdysburn Road.
encourage more people to transfer from private car to public transport	Uses a corridor with good existing public transport. Can connect to new Lagan footbridge.	Opens up a new corridor to public transport and offers potential for larger modal shift. Passes the new Belfast Transport Hub

Table 1 – Comparison of S1 and S2 routes

5.0 Northern Routes



Technical Note

5.1 The published report considers two potential Northern Routes via the Antrim Road (N1) and via the Shore Road (N2). Other options were considered as part of the northern connection, but these were discounted for various reasons as set in the Departments report.

5.2 The Northern Route 1 along Antrim Road runs from the existing G1/G2 network at Belfast City Hall to Donegall Place - Royal Avenue - Donegall Street - Clifton Street - Carlisle Circus Roundabout- Antrim Road - Proposed Park & Ride/Interchange facility on O'Neill Road.

5.3 From the City Centre, this option enhances access along Antrim Road, with extended and upgraded bus lanes. The upper sections of Antrim Road narrow locally to two lanes and three lanes in places. The connection to O'Neills Road is currently two lanes with no bus priority measures. A Park & Ride/Interchange location is proposed on O'Neill Road to facilitate those who wish to use their car for part of their journey and access an interchange to a local bus service/active travel. The O'Neills Road will be a viable terminus for the service.

5.4 The Department reported that the required level of bus priority can be achieved within the existing highway boundary for the majority of route, but the two lanes section of Antrim Road will require some works.



Figure 19 – Typical lower Antrim Road Section



Northern Route N2 – Shore Road

5.5 The N2 route considered the use of the Shore Road to O'Neill Road. This option runs along Donegall Place- Royal Avenue - York Street – York Road - Shore Road - Longwood Road - Proposed Park & Ride/Interchange location at O'Neill Road. We contend that the route should extend to the O'Neill Road Park and ride facility.

5.6 The proposed route is to enhance Shore Road, with extended and upgraded bus lanes. It is reported that the required level of bus priority can be achieved within the existing highway boundary for the majority of the route with new bus lanes between Longwood Road and O'Neill Road. Again, this is already a quality bus corridor and will be viable due to the transfer of trips from the existing bus services.

5.7 This route would enhance access to Ulster University, Cityside Retail Park, Abbey Centre, Longwood Retail Park, Seaview Stadium, Grove Leisure Centre, Valley Leisure Centre as well as commercial premises along Church Road.

5.8 The alternative route discounted in the report follows the above route as far as Longwood Road with a new park and ride at Longwood Retail Park. This would result in a shorter bus journey but means that traffic which may transfer at the Longwood Road Park and ride will already have travelled most of the journey and will exit at the M2/M5 junction. This would allow for picking up more long distant commuting traffic rather than the local commuters. We agree that the route should extend to O'Neill's Road.



Figure 22 – Lower York Street





Technical Note

Table 2 - Comparison of Northern Routes.

	N1 – Antrim Road	N2 – Shore Road
suitability of the route to provide priority lanes for the BRT2 service	C 6 miles, 20-minute drive time. 4 lanes exist at Antrim Road approach to Carlisle Circus, but a number of residential properties use lower Antrim Road for parking. Upper Antrim Road narrows to three lanes and locally to two lanes in places so will require management or widening. Connection to O’Neills Road is currently two lanes, one in each direction. Servicing for businesses needs to be taken into account.	C6.5 miles, with a circa 20-minute journey time. The lower Shore Road narrows to two and three lanes in places and will require reallocation of parking space and widening. Majority of route is already four lanes but those areas that are not will require displacement of parking and servicing. Appears to be a lower population served along the route than N1. Design removes a number of right turn lanes.
impact of the route on public transport journey times and reliability	Replaces an existing quality bus corridor. Reliable journey times.	Replaces a quality Bus Corridor.
Transfer of car trips	Bus lanes already exist so minimal transfer of cars to alternative routes.	Bus lanes already exist so minimal transfer if cars to alternative routes. We note the M5 becomes an alternative traffic route.
accessibility of the route to key locations of employment, healthcare, leisure, commerce and regeneration	Enhances access to Mater Hospital, Belfast Castle, Waterworks Park, Belfast Zoo, educational facilities and residential areas.	Serves Yorkgate Train Station and ties in with Interchange scheme, passes Crusader’s football ground, Grove health centre, Abbeycentre retail park and should extend to O’Neils Road Park and Ride.
value for money	Will require road widening works.	Some works would be required to York Road to widen the road. This would add some additional cost.
the practical feasibility of implementing the route	Would result in loss of onstreet parking at businesses and residential properties along the Antrim Road	Would result in loss of onstreet parking at businesses and residential properties along the York Road
the practical feasibility of implementing the route	Requires businesses on Antrim Road to be capable of servicing and parking	Requires businesses and residential properties on York Road to be capable of servicing and parking
encourage more people to transfer from private car to public transport	Uses a corridor with good existing public transport	Uses a corridor with good existing public transport

5.9 In summary both routes are similar in length and journey time. Journey time reliability will be similar along both the Northern Routes. For future use the Antrim Road is likely to serve a slightly higher population as the Shore Road is constrained to the East by the M5 motorway and would have a slightly smaller catchment area.

Technical Note

5.10 The Shore Road route uses York Road as part of its route. It would appear that more parking will be displaced from this route than the Antrim Road route. The main benefit to the Shore Road is a link to Ulster University, this can also be satisfied by the Antrim Road route.

5.11 In both Northern Route examples there is a need to ensure that existing businesses have ample opportunity to carry out servicing and deliveries to the existing properties. In both cases the routes should extend to the proposed Park and Ride at O'Neills Road to ensure that the route can maximise the transfer of trips from private car.

5.12 The connection near the Mater Hospital would provide a benefit to the N1 Antrim Road route making it accessible to most of the Glider network.

5.13 In summary the Antrim Road route would be preferable.

6.0 Glider G2 Extension

6.1 The report considers the provision of access to Queens University and Belfast City Hospital proposing an extension to the existing Glider service. The proposed circulatory option runs from the existing G2 network at Howard Street - Great Victoria Street - Bruce Street - Dublin Road - University Road, then connects with the Lisburn Road via Elmwood Avenue and back to the City Centre via Lisburn Road and Great Victoria Street.

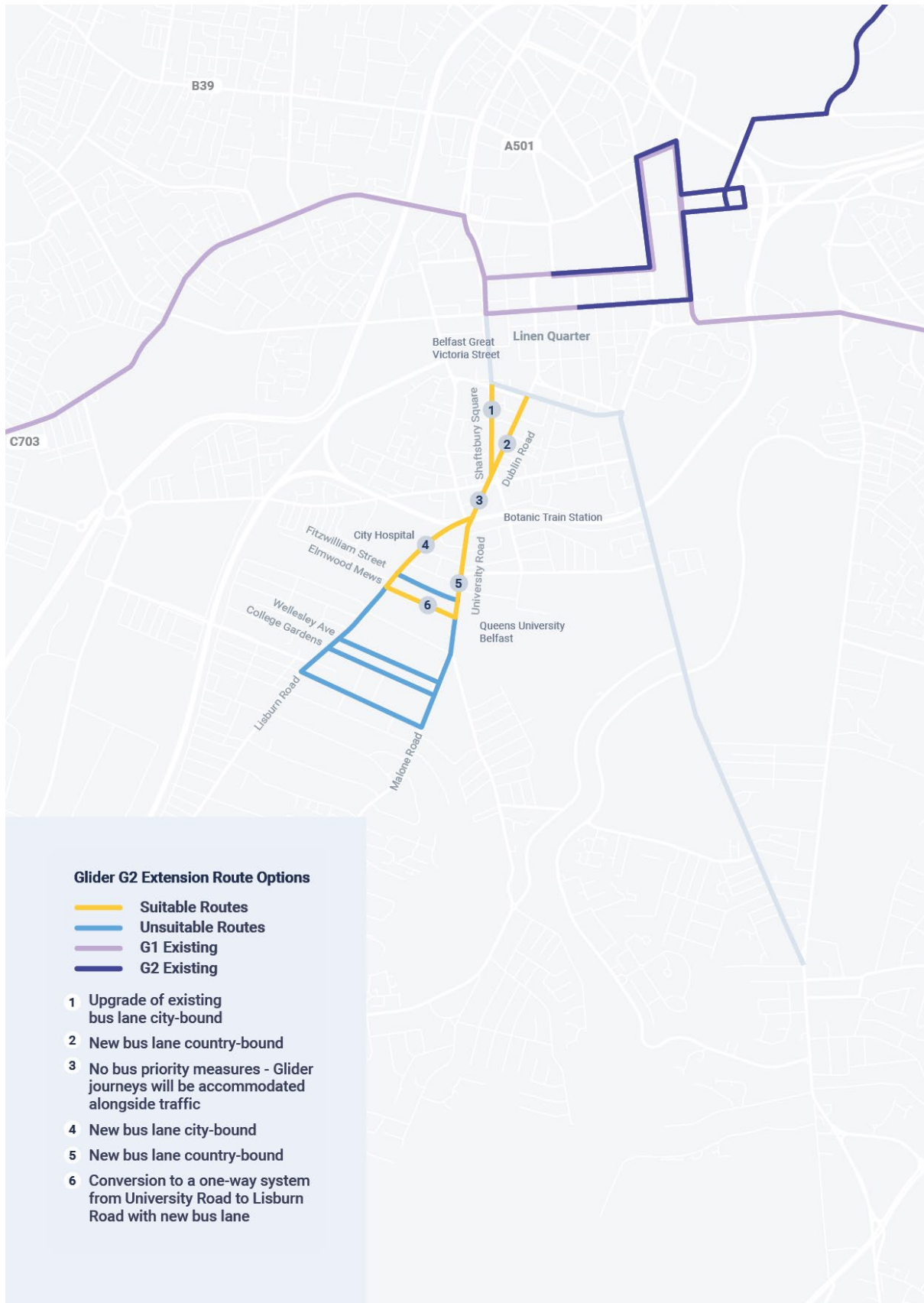
6.2 This route forms an extension to the existing G2 service which extends to the Titanic Quarter via the City Centre network. This would be a useful extension to the Titanic route making it a more viable service and would connect Odyssey, Titanic quarter to Queens and the City Hospital without the need to transfer to another service. Patrons could also use this as a route to city hall and transfer to one of the other routes.

6.3 The Departments proposal facilitates significant priority for BRT2 using the existing roads and will enhance accessibility to Queen's University and Belfast City Hospital as well as serving the communities of Sandy Row, Donegall Pass, Botanic and Holylands. We agree that of the connecting routes Elmwood Avenue is the most appropriate route to be converted to one-way operation in the direction of Lisburn Road with the existing on-street parking retained.

6.4 It is noted that this proposal of a oneway system mirrors the existing system along College Gardens and means that any traffic from Stranmillis that currently uses Elmwood Avenue will be displaced to either Eglantine Avenue or Fitzwilliam Street as the local alternatives. The use of Fitzwilliam Street will lead to an increase in right turners on the single lane of Lisburn Road and is likely to lead to queue back to the lights at Belfast City Hospital. Currently right turners into Elmwood Avenue are facilitated with use of the inside lane, especially when the traffic lights are red. Such a facility does not exist at Fitzwilliam Street.

6.5 We would welcome the extension of the G2 Glider Route as a dedicated service between Queens University / City Hospital and Titanic. This short route would maximise travel between the University and Belfast Met and offers connectivity to the other Glider Routes. It could also stop at the Belfast Transport Hub maximising the interconnectivity of all public transport services. The dedicated link between the educational and business communities would ensure that the east-West and North-South links can contribute to the wider commuter traffic leaving the G2 extension to facilitate the local trips.

6.5 As an alternative to the extension to the G2 route it is possible that the S2 Malone Road route could also be diverted along Elmwood Avenue to pick up this service, returning along University Road. Such a link would reduce the need to provide a separate G2 extension but may not be the most optimum solution.



7.0 Transfer of trips

7.1 Part of the review is based on the transfer of trips from other modes of travel to more sustainable modes. Each of the proposed routes in the Departments report concentrate on the use of existing quality bus corridors. This was similar to the previous use of the Quality Bus Corridor along the Newtownards Road and there is no doubt that the use of the Glider will increase the patronage by providing a further enhanced service along these quality corridors.

7.2 The S2 Malone option opens up a new corridor with the potential to pick up a connection between the enlarged Cairnshill Park and Ride to the Belfast Transport Hub and on to City Centre. There is currently no dedicated route along this corridor but a potential to introduce car users to public transport and achieve a modal shift over and above the existing public transport use.

7.3 The S2 route will enhance connectivity from the edges of the south of Belfast where significant housing development is taking place at Primrose Hill, Ballymaconaghy, Mealough Road, the former Belvoir Hospital and from the existing housing at Newton Park, Newtownbreda, Malone, Holylands (west), Queens University and Belfast City Hospital. It will connect to the North and through the O'Neill Road Park and Ride offers accessibility to Hightown Road housing, Whiteabbey and Glengormley.

7.4 The transfer of trips will be maximised on the use of an existing Quality Bus Corridor such as S1 however, the introduction of a new quality bus route along S2 would open up the service to new trips. Both options would achieve the transfer of trips.

8.0 Constraints

8.1 As part of the routes proposed there are a number of constraints associated with each route and these need to be accommodated within the design.

8.2 For Route S1 and S2 along Ormeau Road the detail of the Dublin Road approach needs to be considered. The temporary Covid cycle lane / Social distancing arrangement acts as an obstruction to the movement of traffic. Every time a bus stops along the existing route it blocks the straight-ahead traffic causing tail backs to the Bruce Street / University Road / Great Victoria Street junction which obstructs the bus movements.

8.3 With a dedicated Glider lane replacing the coned off lane on Dublin Road, the glider can stop while allowing one lane to continue to flow. Such a facility would help alleviate the congestion at the Bruce Street junction and accommodate easier bus movements through this junction. It would also maintain the cycle lane as cyclists can use the bus lane.

8.4 The introduction of a new Bus only contraflow lane at Bruce Street will provide an enhancement to the public transport journey times and is welcomed as it will serve both S1, S2 and the potential G2 extension contributing to a more reliable journey time. More detail is required as to how this would be achieved.

S1 – Ormeau Road specific constraints

8.5 The signalisation of the Ormeau Road / Ravenhill Road roundabout needs to be carefully considered to accommodate the movements at Carolan Road. The use of signals here can be prioritised to provide public transport priority but they also need to provide a pedestrian crossing facility.

8.6 New servicing arrangements must be put in place to accommodate the existing businesses along the Ormeau Road to ensure that the existing businesses can continue to provide servicing during normal opening hours.

S2 – Malone Road route.

8.7 The route would require new bus priority measures to be introduced on Milltown Road, Malone Road and Purdysburn Road. Amendments would be required to the part time signals at the House of Sport roundabout to give bus priority to the movements throughout the day.

8.8 If the Ormeau Road is considered as the southern approach, it is necessary to highlight the constraints along the road. It would be beneficial to identify the preferred locations of halts so that this minimises the loss of onstreet car parking along this corridor.

8.9 The Grosvenor Road / Great Victoria Street junction has a problem of traffic exiting the Grosvenor Road during the intergreen and blocking the existing yellow box. The signal timings need linked to the next junction or have a queue loop provided so that the traffic lights stop a few seconds earlier to ensure that the yellow box is not blocked. The blocking of the yellow box restricts the straight-ahead movement on Great Victoria Street holding up the public transport services unnecessarily.

9.0 Parking

9.1 S1 Route – consideration has to be given to the enforcement of the control of car parking along the Ormeau Road corridor. Currently this is based on a one-hour limit along the laybys, but this leads to high levels of double parking on the inside lane during busier trading times. As part of the Glider proposals consideration has to be given to where these parked vehicles are relocated to. There is also an issue of the enforcement of the parking restrictions to ensure that these spaces turnover on a regular basis to avoid the need to double park on the road. There are no such issues arising from the S2 route.

N1 & N2 routes

9.2 A similar situation is evident along the northern routes particularly along lower York Road and the lower Antrim Road. There is a need for parking for some businesses and for residential properties that currently park on street.

Technical Note

10.0 Bus Lane Times

10.1 Parts of the Glider network operate on a 12-hour bus lane whereas other areas such as Lower Ormeau already operate for only 2.5 hours during the morning peak. To ensure the viability of the new route it is essential that the journey time is guaranteed as this ensures the level of service is achieved and that the timetable is met. To achieve this DFI will want to maximise the restrictions on the operating times of the bus lanes.

10.2 The use of a 12-hour bus lane along the S1 Ormeau corridor and the N1 & N2 routes will lead to difficulties in serving some of the frontage units on to the routes. The timings of the bus lanes will be critical for the operation of local businesses and further consultation is required.

11.0 Servicing

11.1 The ability to service the existing retail outlets along the corridor is an essential criterion to the route selection. Initial data from the Ormeau Road retailers identified over 300 deliveries per week to just 7 operators as surveyed. This highlights a need to maintain servicing along the preferred corridors for these operators who cannot receive deliveries before 7am due to noise restrictions.

11.2 The use of a bus lane is heavily controlled and service drivers must not normally cross the white line meaning that servicing is not normally permitted from within the bus lane. You are only temporarily permitted to cross the line to avoid an obstruction or when you need to allow an ambulance to pass. It is permitted to cross a lane to reach a service area, however servicing is not one of the permitted actions from an actual operational bus lane. The absence of a service area will cause significant issues to the traders along Ormeau Road as in some areas a dedicated parking or servicing bay is not available for servicing.

11.3 The use of the existing car parking laybys can be converted to a service layby with appropriate restricted parking hours to ensure that vehicles can safely service the existing properties. This has the negative impact of removing parked cars from the existing retail units and consideration has to be given to providing available onstreet parking in the immediate area to relocate these parked vehicles.

Technical Note

12.0 Conclusions

12.1 This technical note has reviewed the main contents of the options for the new North-South Glider Route. We welcome the introduction of a new north-south route as it will help to reduce reliance upon the private car and encourage more sustainable travel options.

12.2 In the review of the options it is important that each of the routes terminate at a park and ride facility. This must be provided to ensure that commuters from beyond the Glider catchment area are picked up and can avail of the improved service. We note that O'Neill's Road in the north would be the preferred location as it will serve the Newtownabbey and Glengormley areas leaving the existing Templepatrick PnR to serve the wider commuters. In the south Cairnshill Park and Ride will be the preferred location to pick up trips from Carryduff and the new housing areas to south Belfast.

12.3 The report has reviewed the options that exist for the southern approach routes, and we note that only one main route along the Saintfield Road corridor was assessed in detail. The Ormeau Road (S1) corridor does provide a link from Cairnshill Park and Ride to the City Centre and links with the existing services. It will most likely replace the existing bus services along the Ormeau Road in a similar way to those on Newtownards Road with the G1 route. Ravenhill Road was discounted as an option.

12.4 This report considered two additional options for the southern route and provided a review of an S2 route along the Malone Road and an S3 route along Creagh Road / Woodstock Road. The use of S3 is not a viable alternative and has also been discounted. Commentary is provided on the Malone Road route S2 as it does provide a viable alternative to the S1 Ormeau Road Route.

12.5 Use of the Malone Road would most likely involve a route along Purdysburn Road from the park and ride at Cairnshill to Milltown Road to Malone Road to Belfast City Centre. This is not an existing quality bus corridor and offers a new public transport option to those that currently commute via other means. Most roads along S2, with the exception of Purdysburn Road, already have four existing lanes and lend themselves to the use of a new bus lane for Glider operations.

12.6 The removal of a general traffic lane and replacement with a Glider lane would discourage car drivers and contribute to encouraging more of an uptake of the service. There is no alternative traffic route for the two lanes that would be lost, and this would force transfer to the Glider but would lead to increased congestion.

12.7 The use of the S2 proposal would have the potential to provide the connectivity to the Queens University and Belfast City Hospital. Notwithstanding that the Ormeau Road S1 corridor would provide the shortest route, the most direct connection and would allow for transfer of trips from the existing bus routes. It would be the preferred route to the City Centre.

12.8 The Departments preferred route to provide connectivity to Queen's University and Belfast City Hospital would be to extend the G2 extension. Given the ardent desire line of Queens University and Belfast City Hospital we agree that this should form the basis of a hub for an extended service. The connection to the Titanic route is a reasonable approach. The route from Queens to Titanic would allow for transfer from other G1 and G3 services from the other routes. The dedicated route would ensure that the North South route is not

congested with users of Queens and the Hospital ensuring that there is an even spread of users over the three different routes.

12.9 The northern routes along Antrim Road and Shore Road have also been reviewed. Both provide a benefit to each local community by providing improved public transport. However, we note that in both the Northern Options the route replaces an existing Quality Bus corridor. In both Lower Antrim Road and York Road there are existing residential properties fronting the road and work must explore the relocation of some parking to ensure that adequate facilities are retained.

12.10 The Antrim Road route would be preferable to the Shore Road. The route must include Donegall Place and Royal Avenue to ensure connectivity to the new Ulster University Campus. The route along Antrim Road allows for connectivity to Mater Hospital and provides for access to a wider catchment. It must terminate at a park and ride facility to maximise the transfer of trips. Like the Ormeau Road the lower Antrim Road will have to accommodate servicing and onstreet car parking for existing businesses. These need considered in more detail at the next stage.

12.11 Servicing of existing businesses is a major issue for the routes along the S1 (Ormeau Road) and N1 (Antrim Road). The use of a bus lane is heavily controlled, and drivers must not normally cross the white line meaning that servicing is not normally permitted from within the bus lane. This will cause significant issues to the traders along Ormeau Road as in some areas a dedicated parking or servicing bay is not available for servicing. The existing parking laybys can be converted to a service layby at certain times of the day, but the car parking displaced from these areas has to be provided in other locations. Perhaps consideration has to be given to controlled spaces at the edge of the residential streets such as happens at Botanic.