
EXECUTIVE SUMMARY

The A2 is part of the strategic road network and provides a link between the two urban centres of Belfast and Carrickfergus, before continuing northwards to Larne. The A2 presently carries some 26,000 vehicles per day north of Greenisland rising to some 35,000 vehicles a day south of Greenisland. The 2.5km length of the A2 Shore Road at Greenisland is a 2-lane road within a route that otherwise has at least 4 lanes and is a source of delays, particularly at peak times, not least to bus services. It is regarded as a bottleneck in the strategic road network, the report figure SAR1/1.1 shows its location. Design standards would indicate that 4 lanes are required to cope with existing and future traffic flows.

Since the 1970's there have been plans to improve this section of the A2 and there have been a number of previous exercises to progress the scheme through the statutory procedures. The most recent occasion was in the early 90's when an Environmental Statement and Vesting Order were prepared and published but never fully completed.

The Regional Transportation Strategy (RTS), published in 2002, confirms the need to address bottlenecks on the strategic highway network as one of its priorities and the A2 at Greenisland is illustrated as one such scheme. A route for on-line widening is protected within the current Belfast Metropolitan Area Plan (BMAP) 2015 and the A2 Shore Road Greenisland scheme is now included in the Roads Service Major Works Preparation Pool.

It is considered that the scheme will generate a good deal of public interest, particularly among those whose properties may be directly affected. For that reason Roads Service held a preliminary public consultation exercise at the start of the scheme development to explain the actual process that would be followed to develop proposals for the A2 and advise of the likely time scale.

The A2 at Greenisland is fronted on both sides by residential properties. The carriageway is up to 9m wide and footways are variable and not existing in places. It is parallel with the Belfast Lough on the east side, separated by high value residential properties. Adjacent housing, housing estates, the University of Ulster Campus and Belfast High School lie to the east side though there are some areas of agricultural land beyond the immediate housing that are regarded as 'green wedges' in the BMAP. The only alternative parallel route is the B90, which lies around 2km inland.

This report presents the findings of the stage 1 scheme assessment in accordance with Standard *TD 37/93 Scheme Assessment Reporting* of the Design Manual for Roads and Bridges (DMRB). A range of 8 strategies to determine a suitable solution has been examined and these are illustrated in the report figure SAR1/3.1. Some (6No.) were discounted after an initial assessment and the remaining (2No.) strategies were examined in more detail. The former group are as follows.

Strategy S1 The B90 Corridor Improvements examined the dualling of the B90 single carriageway road. A new dual carriageway connection could readily be made to the southern edge of Carrickfergus in line with local policy improvements. Parts of the B90 could be dualled by the addition of a second carriageway but a new bypass would be needed at the western edge of Greenisland to avoid the established housing area. A 2.5km length of second carriageway would be required through established areas of Newtownabbey if a link was taken to the M2 motorway.

Even without the dualling of the last mentioned section, the cost would be approximately £49m (all costs include 44% for optimism bias). The indications are that there would be no significant transfer of traffic from the A2 due to the increased distance and improving this secondary (non-strategic) route in particular at the M2 junction, which has its own congestion problems, would not accord with the Belfast Metropolitan Transport Plan. This strategy was not therefore taken further.

Strategy S2 New Road Railway Corridor examined whether a new road could be provided along the existing Belfast to Larne railway corridor as a way of retaining environmental impact in an existing transport corridor. Replacing the railway with a new road would be against the RTS as improvements are sought for both roads and railways, therefore a new road would be located alongside the railway. A link could be made at the Carrickfergus end as with strategy S1 and in open ground as far as Greenisland. However beyond that there would be significant areas of demolition of established areas through Greenisland and Jordanstown, especially if it was linked directly to the end of M5 motorway. Otherwise a shorter route would link it to the A2 at Whiteabbey via Three Mile Water Valley, a Site of Local Nature Conservation Importance (SLNCI), and even that reduced length would have a cost of approximately £80m.

The route would have high cost and significant adverse environmental impacts, not least in the properties directly affected in established areas. This strategy was not therefore taken further.

Strategy S3 Public Transport Improvements would aim to relieve the A2 of traffic by attracting more people onto public transport. However, the RTS proposes that improvements to road and rail are seen as complementary and that the initial priority is to remove bottlenecks from the strategic road network. At a practical level, bus services along the A2 are constrained by the congestion at Greenisland and there is no room to provide bus-only-lanes, therefore no transfer of motorists could be expected to buses. Improvement of the A2 would provide opportunities for faster bus services and better passenger facilities at bus stops.

The Belfast to Larne railway line was not in service during this examination due to infrastructure improvements, and measured passenger usage figures were not available. Using best estimates from the Belfast Transportation Model, doubling the use of the railway would only reduce peak period flows by around 200 vehicles per hour and that would not in itself solve the problems on the A2. This strategy was not therefore taken further as a solution to the A2 congestion.

Strategy S4 A2 / B90 Links was examined following comments from the public that better links between the A2 and the B90 would help the situation. It was considered that new links would certainly provide opportunities to relieve conditions on Jordanstown Road, Station Road Greenisland and Troopers Lane. They may also provide opportunities to reduce journey lengths, for example by creating a more direct access to the university campus via a link to the B90, and thereby reducing some flows on the A2. However, the immediate need is essentially for additional lanes on the A2 route and this strategy would not provide that and was not therefore taken further as a solution to the A2 congestion.

Strategy S6 Upgrade Junctions Only was examined to determine whether the problems lie with the limitations of the junctions and whether a scheme of junction improvements would be adequate. It was found that even if junctions were improved, the existing lengths of Shore Road between the junctions were not adequate to carry the existing traffic flows and they would not be able to carry sufficient traffic to utilise any improved capacity at junctions, now or in the future. Furthermore, improving the junctions alone would require significant acquisition of residential properties and was not therefore a way of avoiding property impact. This strategy was not therefore taken further.

Strategy S8 New Road Coastal Corridor would aim to relieve Shore Road within Greenisland by provision of a new parallel road within the Belfast Lough. A new dual carriageway road could be provided to replace the 2-lane section of the A2 at an approximate cost of £33m to £45m depending on whether it was along the shore line or further out in deeper water. It would provide a good traffic engineering solution as it would, by definition, have junctions only at each end.

It would however have significant deliverability problems. Property would be required at the north end to link back to the A2. Some of the remaining properties have moorings and there would be an expectation of boat access to the lough and there would be loss of amenity (view across the lough). In terms of integration with other policies and in particular those for the environment it is almost certainly not deliverable as a result of the environmental impacts on the Belfast Lough Special Protection Area habitat (overwintering birds), a Ramsar Site and Areas of Special Scientific Interest. This strategy was not therefore taken further.

The initial assessment also suggested that two other strategies could have potential as a solution to the bottleneck and they were examined in more detail. These are as follows.

Strategy S5 New Road Inland Corridor examined the potential for a new road inland of the A2 Shore Road. Although at this stage of scheme preparation it was too early to express a design of such a route, a particular route was drawn up in order to illustrate the likely costs and issues in more detail than in other strategies.

Shore Avenue, the existing access to the university, could be widened to a dual carriageway from its existing junction on the A2 as the start of an inland route. A new junction would be provided at the university to give a new access to the university and to turn the new road in a northerly direction. It would run through the edge of the university campus and across the playing fields of Belfast High School and across open land to Greenisland. It could then run through largely open space within the housing areas of Greenisland in a deep cutting to minimise severance and then continue across open land to rejoin the A2 at the existing dual carriageway at Seapark beside the former factory site.

On the above basis, the cost of the strategy was found to be approximately £48m. In three areas, at the University of Ulster, the section through Greenisland and the factory site at Seapark, land and compensation issues would pose major risks to cost and deliverability. This is specially the case in terms of the severance that an inland route could cause at Greenisland and dealing with utilities at Greenisland.

The strategy appears relatively good in terms of accessibility and safety in that traffic would be taken from a road with multiple accesses (existing A2) to a new road with access limited to a small number of junctions. Bus services would continue to use a quieter Shore Road. On a practical level, the dogleg at the southern end would make the by-pass less attractive to motorists than the existing road, which would therefore require restrictions. This aspect of the strategy would have to be addressed further.

Its economic and environmental performance would depend on the precise horizontal and vertical alignment selected. Severance would be reduced by the deep cutting at Greenisland but if cut and cover replacement of open space was also required, costs would rise. As a new road it would introduce noise and air quality issues where there is relatively little at present. There would be less than 10 dwellings demolished but 5 commercial/business buildings would be required, including a care home.

On balance, it is considered that this strategy warranted further examination.

Strategy S7 Existing Road Improvements examined the case for widening the A2 Shore Road on-line. The previous scheme of the early 1990s was looked at but that was found to have inadequate width of traffic lanes to cope with existing and future traffic flows. It would have permitted traffic to continue to turn right into and out of the numerous private accesses across

increased traffic flows so there were significant doubts as to its adequacy in operation and its safety and the concept of on-line widening was developed further.

A major issue with this strategy is the impact on property, i.e. on the reduction of gardens and the demolition of dwellings, therefore the width of the widened road would be crucial. The aim would be to provide 4 lanes (2 lanes in each direction) for moving traffic but it was found that to be adequate the road should be either a dual carriageway with no interruption from right turning vehicles at private accesses, or have a fifth central lane for turning traffic. There is also an expectation that wider pedestrian footways and safe cycle facilities should be an essential element of any improvements. The potential whole width of the road would be of the order of 20m if only a 4-lanes carriageway were provided and 23m if an extra lane or central reserve was added.

Buildability was also a major concern as there would be no effective alternative route for traffic during construction. Works can be significantly simplified if the widening is restricted to one side only rather than varying from one side to the other. Widening on the lough side only would present considerable difficulty as in parts the land falls away very steeply from the road and widening by 8-10m would exacerbate that problem. Therefore widening on the landward side only was illustrated and compared to widening on both sides as a best fit.

A matrix of 4 costs was prepared for 20m and 23m widths and for widening on both sides or on one side only. The 4 costs ranged between approximately £34m and £42m. Where widening was to one side only, land acquisition accounted for over half of the cost. The potential demolition of properties ranged from 12 to 37 though this was an estimate only as the actual numbers could only be gained from more detailed design, and in addition, many gardens would be reduced. The total number of properties affected would be lower if works were on one side of the road only.

Noise and air quality issues would require careful attention but any increase in adverse effect would be relatively small given existing conditions. Shore Road has a recognised townscape value, due in part to the mature trees along the route. It would be inevitable that many trees would have to be felled to create the additional road space and measures would be required to replace as many as possible. Widening to one side only would reduce that impact.

This strategy has the advantage that it directly addresses the problem within the existing road corridor and, because the route has been protected, is perhaps the solution most expected by stakeholders. However, it could be the most complex to construct and would almost certainly have the greatest impact on residential property. It could have substantial adverse environmental impacts in relation to the built environment and could be less favourable than Strategy S5 in terms of safety, both during construction and in use unless a dual carriageway is adopted.

On balance, it is considered that this strategy warranted further examination.

Recommendation

It is considered that the two strategies S5 New Road – Inland Corridor and S7 Existing Road Corridor Improvements have potential as solutions to the bottleneck problem. Traffic management (buildability), services and land and compensation are all major risks that cannot be quantified or mitigated without more design work and it is recommended that the strategies are taken forward for more detailed assessment. The Stage 2 assessment will be focussed on identifying the preferred scheme option in each corridor, concentrating in detail on the key risk areas identified above.