

NORTH SOMERSET COUNCIL DECISION

DECISION OF: THE EXECUTIVE MEMBER FOR HIGHWAYS AND TRANSPORT



WITH ADVICE FROM: DIRECTOR OF PLACE

DECISION NO: 24/25 DP 188

SUBJECT: BUS SERVICE IMPROVEMENT PLAN (BSIP) INFRASTRUCTURE SCHEME AT LIME KILN ROUNDABOUT, A38

KEY DECISION: YES

REASON: The decision will result in the council incurring expenditure of over £500,000 and will be significant in terms of its effects on communities living or working in an area comprising two or more wards.

BACKGROUND:

Introduction

BSIP is a joint initiative between North Somerset Council (NSC), the West of England Combined Authority (WECA), the Department for Transport (DfT) and bus operators.

Our communities tell us they want more reliable, frequent and affordable bus services – and that’s what we’re working hard to deliver through improved junctions to offer better flow for all traffic which will result in more reliable services getting people where they need to be in a quicker and more efficient manner.

We want North Somerset communities to have a modern, efficient, reliable, and affordable public transport system they can enjoy for years to come. This includes providing more frequent bus services, low fare offers, new transport hubs – better connecting public transport services – along with improved walking and cycling facilities and new bus lanes.

We’re also aiming to deliver more affordable fares, such as the current £2 offer, along with upgraded bus stops and attractive new transport hubs offering a range of facilities including secure cycle parking, local information displays and electric charging points to benefit communities further.

At the same time, new cycling and pedestrian crossings along with dedicated bus lanes will help people move more efficiently across key North Somerset locations. This helps make buses the first public transport choice and more commercially sustainable in the longer-term, helping protect vital bus services in future.

Funding to spend on improving bus services through the government’s Bus Service Improvement Plan is available only for a short time, but its long-term legacy will be more reliable, efficient and frequent bus services, new electric buses which are better for the

environment and more financially-secure bus services fit for our growing population now and in the future.

Our bus priority schemes are designed to enhance and protect residents' bus services for years to come by:

- introducing dedicated bus lanes and intelligent traffic signals to give bus users priority in key areas, and at peak times. These changes help make bus services quicker, more reliable, and more affordable for residents – and more financially viable for bus operators to keep running
- better crossings and pavements for pedestrians, cyclists and others using lower-carbon forms of transport. This will improve the travel experience, encouraging more people to walk, wheel and cycle wherever possible and making it easier to get to bus stops in some locations
- creating attractive new transport hubs in communities and replacing or improving existing stops and shelters with the highest footfall – making the experience of waiting for, and making, travel connections better for residents.

Our targets across the West of England area are summarised in the following table:

Category	Target	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Target by 2025
Bus journey times	Reduce average bus journey times (minutes) on designated corridors by 2% by 2025 and by 10% by 2030	61	*63	No data	55	56	61	62
Bus punctuality	Achieve 95% of services running on time, defined as being no more than 1 minute early or 5 minutes late, by 2030. Target for 2024/25 is 82%	*77%	N/A	74%	71%	67%	72%	82%
Passenger growth	Return to pre-pandemic patronage levels by 2025 and grow patronage by at least 24% from that level by 2030	-	*70.2m	22.5m	46.8m	55.3m	63.7m	70m
Bus Passenger satisfaction	Increase bus passenger satisfaction to 89% for 2025 and 95% for 2030	85%	*86%	No data	No data	78%	79%	89%
Bus fleet de-carbonisation	By the end of 2023 all buses operating in the BSIP area will meet the Euro VI emission standard	No data	No data	48.2%	88.6%	96%	98%	100%
Bus fleet de-carbonisation	By 2030, at least 75% of the local fleet will be either zero-emission or ultra-low emission and by 2035 all buses will be zero-emission buses (ZEBs).	No data	No data	0%	0%	3.6%	6.6%	N/A

These targets will be monitored using the following methodology:

Level	Pre-monitoring	During works	Post monitoring
Scheme monitoring	<ul style="list-style-type: none"> • Bus journey times • Bus patronage • General traffic speeds • General journey time 	<ul style="list-style-type: none"> • Keep log of issues raised • Monitor alternative routes 	<ul style="list-style-type: none"> • Bus journey times • Bus patronage • General traffic speeds • General journey time
Corridor monitoring	<ul style="list-style-type: none"> • Bus journey times • Bus reliability • Bus patronage • General traffic speeds • General journey times 	<ul style="list-style-type: none"> • Monitor bus journey times during works on corridor 	<ul style="list-style-type: none"> • Bus journey times • Bus reliability • Bus patronage • General traffic speeds • General journey times

North Somerset monitoring	<ul style="list-style-type: none"> • Bus journey times • Bus patronage • On-time performance • Passenger satisfaction • Bus emission standards 	<ul style="list-style-type: none"> • Bus journey times • Bus patronage • Passenger satisfaction • Bus emission standards 	<ul style="list-style-type: none"> • Bus journey times • Bus patronage • On-time performance • Passenger satisfaction • Bus emission standards
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In order to meet these targets, the BSIP’s capital-funded infrastructure schemes are designed to work hand-in-hand with initiatives to improve passenger journeys, such as fare offers and more frequent services. These initiatives are funded through a separate BSIP grant of £57 million, which was jointly awarded to NSC and the West of England Combined Authority (WECA) to deliver in partnership. The BSIP is governed by an Enhanced Partnership between North Somerset, the Combined Authority, the other Highway Authorities in the West of England area, bus operators, and other key stakeholders. It is intended that, through the EP process, capital and revenue investment from NSC and WECA is met with comparable investment in improvements to services by the bus operators.

The indicative BSIP funding was subject to a final Department for Transport (DfT) outline review of the proposed schemes, which concluded in June 2022 and resulted in the confirmation of funding being granted in November 2022. With this confirmation of funding being later than anticipated, a change request was submitted and accepted by the DfT to extend the deadline for delivery of investment to October 2025. A further change request is now being prepared to request an extension of the deadline to March 2026.

In order to deliver North Somerset’s Bus Service Improvement Plan (BSIP) capital-funded infrastructure schemes, a variety of contractual arrangements are required. The initial schemes were delivered through the Council’s Term Service Contract. The remaining bus priority schemes are to be delivered through a Design and Build contract awarded to Alun Griffiths Contractors Ltd. The decision to award the contract was made by the October 2023 Executive Committee. The October 2023 decision requires a subsequent Executive Member decision at the design stage before commencing delivery of each scheme.

Pause and review

In April, we paused the live programme of BSIP infrastructure projects such as roundabout updates, new bus lanes etc. in order to:

- assess completed schemes to monitor their effectiveness and learn any lessons to apply to future works;
- consider any changes we needed to make to our approach as a result of new Department for Transport guidance on bus priority (LTN1/24);
- continue to engage with communities and their representatives about the range of proposed schemes;
- gather further data and undertake testing in areas where this is needed in order to make a decision; and,
- set a new timeline for decisions for approval of remaining schemes to allow fuller consideration of each scheme and reduce scheme-related disruption to the local road network for residents.

The pause followed months of engagement with local communities on early proposals for schemes in Backwell, Clevedon, Rownham Hill, Lime Kiln, Churchill and Worle High Street – aimed at improving congestion, enhancing local travel experiences and creating infrastructure needed for now and in the future.

It means that, since April, the only new BSIP infrastructure project being delivered has been at Wood Hill, as part of the Congresbury congestion scheme.

Since the initiation of the pause and review work the assessment of the effectiveness of delivered schemes, 'lessons learned' from the delivery of the Brockley Coombe scheme, and review of DfT guidance LTN1/24 have been considered by the Council's Transport, Climate and Communities Scrutiny Panel. This has ensured the programme fully benefits from the review to enable us to carry on our learning for future schemes.

While the review is in its final stages, we are already drawing on the additional data and learning and are now in a position to start to bring for Executive decision some of the next infrastructure schemes within the programme. In addition, in the coming months we will:

- continue to engage with local communities and their representatives on the next schemes and transport hubs within the programme
- Develop policies against new national guidance to review at our next Transport, Climate and Communities Police and Scrutiny Panel in November 2024.

A38 Corridor

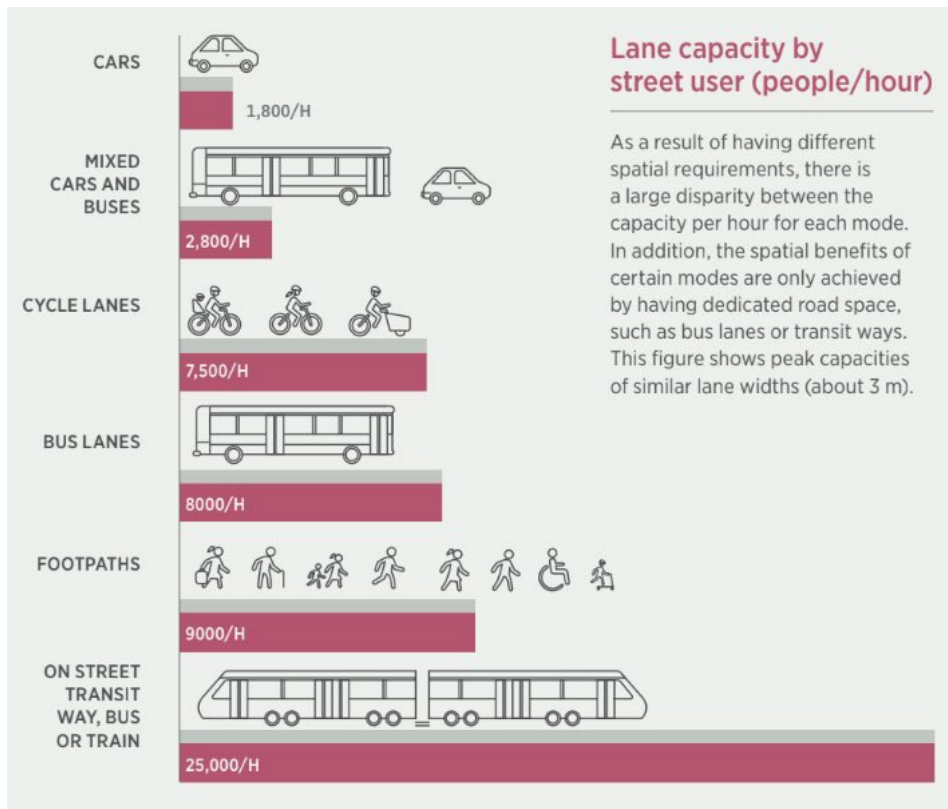
The A38 is a major arterial transport route running through North Somerset and serves Bristol Airport at Lulsgate. The A38 carries approximately 20,000 vehicles per day. The A38 commonly suffers from congestion in the morning and evening peak periods, and this is exacerbated in the summer months due to increased holiday traffic and can be significantly affected by displaced traffic from incidents affecting the M5 motorway or A370 corridors.

The volume of traffic using the A38 is likely to increase due to development both within North Somerset and elsewhere on the A38 corridor. The proposed expansion of Bristol International Airport to 12 million passengers per year (currently around 10 million) will also increase the number of people using this corridor.

The A38 is an important corridor for public transport. With public transport carrying over one million passengers to and from the airport each year, the benefits of delivering improved reliability, punctuality and faster journeys on this corridor would be considerable. The proposed airport expansion brings significant potential to increase the market share of buses and carry even more passengers. While most bus services run to and from Bristol, there have been new services introduced in recent years servicing the airport from other locations. Also, with other services serving local villages and the University of Bristol vet school there are numerous opportunities for bus services, both north and south of the airport to benefit from bus priority improvements.

Buses have the capacity to carry a large number of passengers within existing road space. On the A38, approximately 22,000 people are transported each day by 20,000 non-bus vehicles, whereas around 3,500-5,000 people are transported by about 200 buses per day.

Increasing the capacity of bus services using A38 is a key means of reducing the impact of future growth.



The A38 corridor is currently served by five scheduled bus routes with many more national services, a total of up to 16 buses an hour. The Airport operated A1 between Bristol and Bristol International Airport now has a frequency of one bus every 12 minutes, and patronage is over 100,000 per month and growing. Other services include the A4 between Bath and Bristol International Airport, the U2 between Bristol and the Bristol University veterinary school at Langford, National Express services between Cardiff and Bristol International Airport, and the Falcon service operates between Bristol and Plymouth.

Focusing on the A1 service, the highway improvements that BSIP will deliver on the A38 at Barrow Gurney and Lime Kiln roundabout, as well as the traffic signal upgrades in various locations will deliver an operational cost reduction that should allow us to retain the current 12 min frequency. This only requires an average 1 min journey time reduction. The scheme at Barrow Gurney has been delivered and has already achieved a reduction journey time of between 15 and 38 seconds in the Airport bound direction with the greatest savings in the am peak. To date there has been no change in the Bristol bound direction, but further configuration of the traffic signals is scheduled which should deliver some modest benefits. With the improvements at Lime Kiln and the traffic signals along the route, the average 1 minute reduction should be exceeded.

Future plans, as set out in the June 2024 BSIP refresh, include a higher frequency of at least every 10 mins on the A1 route. To deliver this with the same vehicle resource a 4-minute journey time reduction would be required.

With increased housing growth planned at settlements along the A38 corridor and the opportunity for a faster corridor along the A38 from WsM opened up by the delivery of the

Banwell Bypass, the Council aims to encourage operators to put in place an additional commercial service along the WsM - Bristol A38 corridor.

As well as journey time savings, the bus priority measures are intended to provide improvements to journey reliability and punctuality.

Corridor Business Case Elements

To understand the effects of congestion on A38, bus and general traffic journey times were analysed between the Airport Tavern bus stop and The Pavilions bus stop (in Bristol) in both directions. This covers a 4.1-mile-long section of the A38. The analysis took into consideration four 4-week time periods in November 2022, June 2023, November 2023, and June 2024. The bus journey time and general traffic journey time for these time periods are displayed in Table 1 (bus journey time) and Table 2 (general traffic journey time) below.

Table 1: Bus journey times on A38 between Airport Tavern and The Pavilions bus stops

Bus journey times

Direction	Date	Time	Mean	25th percentile	75th percentile	Variability
Bristol-bound (4.1mi)	Nov-2022	8:00-9:00	08:26	07:43	09:06	01:23
		16:00-17:00	08:22	07:43	08:56	01:13
	Jun-2023	8:00-9:00	10:49	08:13	12:39	04:26
		16:00-17:00	11:25	09:36	13:18	03:42
	Nov-2023	8:00-9:00	08:50	07:47	09:24	01:37
		16:00-17:00	08:31	07:41	09:12	01:31
	Jun-2024	8:00-9:00	10:49	08:13	12:39	04:26
		16:00-17:00	11:25	09:36	13:18	03:42

Airport-bound (4.2mi)	Nov-2022	8:00-9:00	08:26	07:46	09:08	01:22
		16:00-17:00	09:19	08:25	09:47	01:22
	Jun-2023	8:00-9:00	08:37	07:58	09:10	01:12
		16:00-17:00	12:21	08:44	12:29	03:45
	Nov-2023	8:00-9:00	14:01	08:06	15:36	07:30
		16:00-17:00	18:25	08:44	25:08	16:24
	Jun-2024	8:00-9:00	08:12	07:43	09:17	01:34
		16:00-17:00	11:09	08:57	12:52	03:55

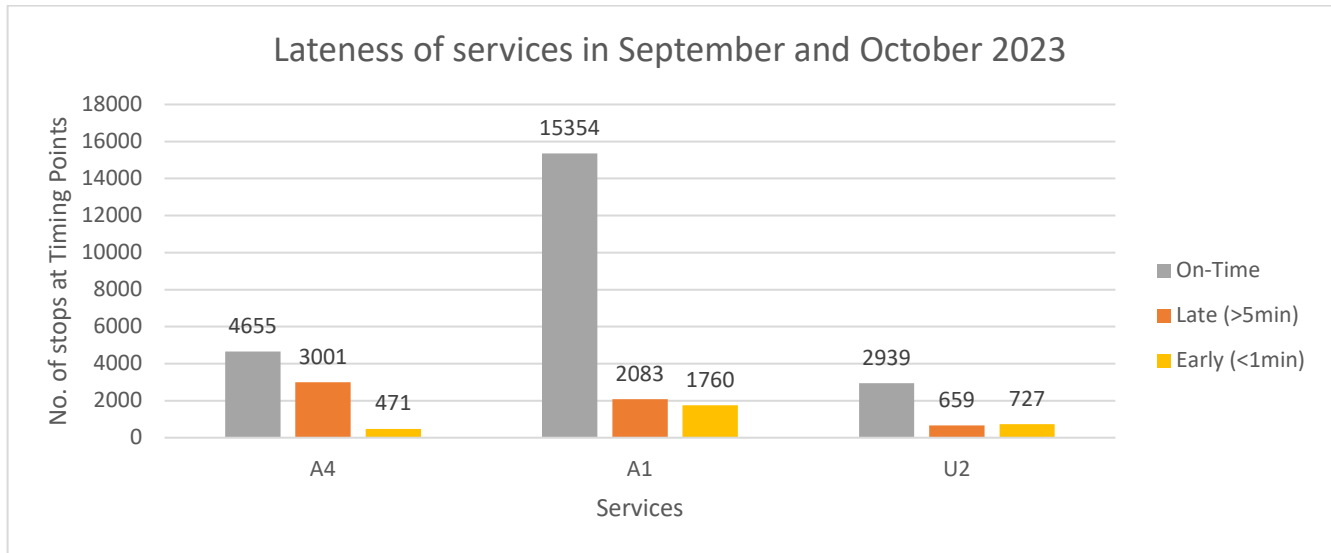
Bus journey times towards the Airport vary widely and experience a wide peak in the PM between 12PM – 5PM, where bus journey times can range from 9 minutes to 15 minutes.

Bus journey times travelling towards Bristol both a peak in the AM and PM, with a shorter PM peak between 4PM – 6PM, and an AM peak around 8-9AM. Peak journey times in this direction vary between 7 minutes and 13.5 minutes.

We have noted that there was a significant deterioration in bus journey times in November 2023, which is not reflected in the general traffic journey times. This may be due to long-term

road works which disproportionately affected buses, the extreme rainfall that month or other external factors.

The existing punctuality data for the affected services is below:



Over 40% of A4 buses and 20% of A1 buses are currently not punctual – this is considered a significant deterrent to people who might use these services.

Table 2: General traffic journey time on A38 between Airport Tavern and The Pavilions bus stops

General traffic journey times

Direction	Date	Time	Mean	25th percentile	75th percentile	Variability
Bristol-bound (4.1mi)	Nov-2022	8:00-9:00	07:21	06:51	07:40	00:49
		16:00-17:00	07:27	07:01	07:44	00:43
	Jun-2023	8:00-9:00	10:21	08:02	11:59	03:57
		16:00-17:00	10:34	08:34	12:10	03:36
	Nov-2023	8:00-9:00	08:41	07:31	09:15	01:44
		16:00-17:00	07:57	07:20	08:25	01:05
	Jun-2024	8:00-9:00	08:27	07:19	09:06	01:47
		16:00-17:00	10:25	08:31	11:35	03:04

Airport-bound (4.2mi)	Nov-2022	8:00-9:00	07:45	07:11	08:10	00:59
		16:00-17:00	08:15	07:35	08:42	01:07
	Jun-2023	8:00-9:00	08:16	07:33	08:50	01:17
		16:00-17:00	11:10	08:17	11:28	03:11
	Nov-2023	8:00-9:00	08:21	07:28	08:49	01:21
		16:00-17:00	08:28	07:45	08:42	00:57
	Jun-2024	8:00-9:00	08:07	07:26	08:34	01:08
		16:00-17:00	11:54	09:38	13:30	03:52

General traffic journey times towards the airport vary between 7 and 13 minutes in peak times, with general traffic journey times towards Bristol varying between 7 minutes and 12 minutes in peak times.

Traffic volumes have increased on the A38 by around 5% per year since the introduction of the Clean Air Zone in Bristol, to around 27,000 vehicles per day (in both directions).

In general, bus journey times in the Airport-bound direction are on average 2 minutes slower regardless of free-flowing or congested traffic (25th and 75th percentile journey times). Whereas in the Bristol-bound direction, the difference in free-flow traffic is around 1 minute (25th percentile), and in congestion around 2 minutes (75th percentile). Both bus and general traffic seem to be experiencing more delays in June compared to November, which may be due to the increased demand for travel towards Bristol Airport impacting the limited capacity of the A38.

Lime Kiln Roundabout bus priority scheme

This scheme is intended to help improve bus journey times, punctuality, passenger numbers and passenger satisfaction, and to contribute towards bus services achieving commercial sustainability on the A38 corridor.

Development of the design

Lime Kiln Roundabout was identified as a location on the A38 corridor where buses suffer delays, especially at peak times. Three options were considered for a bus priority scheme to address this problem:

- 1) A do minimum scheme to upgrade the traffic signals to incorporate bus priority.
- 2) Delivery of bus lanes on both the south and north A38 approaches to the roundabout and on the A4174 from Bath (there are already bus lanes on South Bristol Link). This would ensure that there were bus lanes on all four approaches to this roundabout. This option uses the existing carriageway.
- 3) As option 2 but the approaches to the Lime Kiln roundabout from the Airport and on the A4174 from Bath would be widened to incorporate the bus lanes. There is a land available to deliver these within the existing highway. This was determined to be the preferred option.

At the time, while the level of bus service on the A38 approaches was clear with the high frequency Airport flyer and other routes, the service on the A4174 toward Bath was relatively infrequent and so the value for money of making an intervention on this arm was going to need to be considered depending on the service pattern that emerged post-COVID.

Existing traffic data and delays to impact to bus services

Bus journey time and general traffic journey time data has been collected for four 4-week periods in November 2022 and 2023, and June 2023 and 2024. These periods provide data outside of school holidays and Christmas, and present different weather conditions for different times of the year. Data was collected between the two bus stops on the A38 on each side of the Lime Kiln roundabout: The Pavillions, Yanley Close and Yanley Lane. The

distance between these stops is about 0.7-0.8 miles. The journey times for both buses and general traffic are displayed in Table 3 (bus journey times) and Table 4 (general traffic journey times) below.

Table 3: Bus journey times between Yanley Close / Lane and The Pavilions

Bus journey times

Direction	Date	Time	Mean	Min	25th percentile	75th percentile	Variability
Bristol bound (0.7mi)	Nov-2022	8:00-9:00	02:08	01:23	01:50	02:21	00:31
		16:00-17:00	02:19	01:32	02:01	02:34	00:33
	Jun-2023	8:00-9:00	02:05	n/a*	01:47	02:25	00:38
		16:00-17:00	02:12	n/a*	01:56	02:31	00:35
	Nov-2023	8:00-9:00	02:03	n/a*	01:46	02:20	00:34
		16:00-17:00	02:09	n/a*	01:57	02:23	00:26
	Jun-2024	8:00-9:00	02:10	01:27	01:52	02:21	00:29
		16:00-17:00	02:15	01:33	01:59	02:27	00:28

(*Note: some minimum times are excluded due to errors in GPS data)

Churchill bound (0.8mi)	Nov-2022	8:00-9:00	02:20	01:30	01:57	02:40	00:43
		16:00-17:00	02:18	01:33	02:01	02:34	00:33
	Jun-2023	8:00-9:00	02:18	01:35	02:01	02:41	00:40
		16:00-17:00	02:29	01:30	02:07	02:48	00:41
	Nov-2023	8:00-9:00	02:18	01:30	01:58	02:37	00:39
		16:00-17:00	02:20	01:27	02:00	02:39	00:39
	Jun-2024	8:00-9:00	02:17	01:33	01:59	02:32	00:33
		16:00-17:00	02:22	01:30	01:57	02:45	00:48

Table 4: General traffic journey times between Yanley Close / Lane and The Pavilions

General traffic journey times

Direction	Date	Time	Mean	25th percentile	75th percentile	Variability
Bristol-bound (0.7mi)	Nov-2022	8:00-9:00	01:46	01:29	01:56	00:27
		16:00-17:00	01:48	01:33	01:58	00:25
	Jun-2023	8:00-9:00	01:52	01:33	02:03	00:30
		16:00-17:00	01:47	01:32	01:59	00:27
	Nov-2023	8:00-9:00	01:49	01:31	01:59	00:28
		16:00-17:00	01:46	01:32	01:57	00:25
	Jun-2024	8:00-9:00	01:45	01:30	01:55	00:25
		16:00-17:00	01:44	01:30	01:54	00:24

Churchill-bound (0.8mi)	Nov-2022	8:00-9:00	01:53	01:38	02:05	00:27
		16:00-17:00	01:58	01:41	02:10	00:29
	Jun-2023	8:00-9:00	01:51	01:37	02:03	00:26
		16:00-17:00	02:00	01:43	02:11	00:28

	Nov-2023	8:00-9:00	01:53	01:37	02:03	00:26
		16:00-17:00	01:57	01:41	02:10	00:29
	Jun-2024	8:00-9:00	01:51	01:35	02:02	00:27
		16:00-17:00	01:58	01:42	02:11	00:29

On average, the bus journey time across the Lime Kiln roundabout between Yanley Close and The Pavillions bus stops is around 2 minutes. Both directions experience similar delays in the AM and PM peak. The peak bus journey time is highest between 8-9am and 4-5pm, showing delays of around 30-45 seconds in each direction.

For general traffic, the journey time on the same stretch of road at the same time of day, takes around 1 minute and 50 seconds, while in the peaks it takes between 2 minutes (AM peak) and 2 minutes and 10 seconds (PM peak).

Concept development

Of the three original options referenced earlier in the report, the third option was selected as the preferred option for inclusion in the original BSIP submission as it offered the greatest potential benefit. However, following further development work and modelling of the roundabout traffic flows, the bus lane on the A4174 Colliters Way southern arm was removed from the proposal as the modelling showed that it did not benefit traffic flows or journey times.

This option was then developed into an initial concept during 2022 and 2023 and was reviewed by the Executive Member for Highways and the Transport, Climate and Communities Policy and Scrutiny Panel in July 2023. This initial concept was then used for engagement with members, parish councils, stakeholders and members of the public in spring 2024.

The initial concept design has been reviewed by the appointed design consultants and has been amended to reflect feedback from various consultation exercises. This is summarised in the Consultation section of this report.

Through consultation with local residents, the landowners of the farm adjacent to the A38 on the southern side of the roundabout raised safety concerns regarding their access onto the A38 and how their farm vehicles and other vehicles access and egress from the property due to a high numbers of manoeuvres in and out of their property This has been addressed as part of the design process.

Following the engagement process, the designs have evolved to include a more holistic approach focusing on walking, wheeling and cycling. This also led to the review of connectivity through and around the junction resulting in an improvement of the crossing facilities on Colliters Way eastern arm.

The northbound bus lane was slightly shortened as it conflicted with the farm access, however we have extended the southbound bus lane to improve journey times to the airport.

The scheme design has now reached a high degree of maturity. A final concept design is appended to this report. Its key features are:

- 140m metres of bus lanes to provide bus priority on the A38.

- Bus gates and smart signals.
- Improve walking and wheeling crossing facilities on Colliters Way eastern arm.
- Enhanced facilities for walking and cycling.
- Improved right turn facility and signing for farm access.

Benefits realisation

The final concept design has been tested to understand its impact to bus journey times and general traffic.

For the purposes of this analysis, we will use the example of a bus travelling towards the airport, between The Pavilions and Yanley Close bus stops, during the AM peak period. GPS data shows that existing journey times and delays are similar in both directions and during both peak periods and it is therefore assumed that the benefits from this example are representative for the Bristol-bound direction and in the PM peak.

The proposed changes will benefit bus services in two ways:

- The bus lanes will allow buses to pass queues – this will only save time when the junction is busy
- The traffic signals will use GPS data to change their sequencing to give priority to buses using the bus lanes – this will help journey times at all times of day.

The concept design includes bus lanes of 70 metres length on both A38 Bridgwater Road approaches to Lime Kiln Roundabout. At an assumed 20mph, buses will take approximately 8 seconds to travel along each bus lane as opposed to queueing for access to the roundabout. In a traffic queue, the same distance would take 31 seconds at 5mph. The difference equates to a 23 second time saving from each bus lane at busy times. However, the bus lanes' key benefit is in providing buses with direct access to the bus gates which will be controlled by intelligent traffic signals linked to bus GPS tracker data.

The data provided at Table 3 shows bus journey time in the peak periods recorded from GPS tracker data. Off-peak, mean journey times are similar to the peak periods at around 135 seconds. The typical minimum off-peak bus journey time is 82 seconds. The difference between the minimum and mean delay at quiet times is due to most buses having to wait for the traffic signals to go through their cycle before being given a green light. That typical delay – 53 seconds - demonstrates the potential to find useful journey time savings through the junction, even at quiet times.

It is expected that effective implementation of bus priority signals using GPS tracker data to anticipate the arrival of a bus will allow this delay to be reduced significantly – to zero for many buses. For the purposes of this analysis, the reduction in delay has been assumed to be 43 seconds – acknowledging that a delay will still be experienced by some services.

The combined effect of the bus lanes and bus priority traffic signals are collated in the following table.

Table 5: Expected bus journey time benefits

	Journey time change (seconds, mean)	
	Off-peak	Peak
Benefit from 70m bus lane passing queuing traffic @ 20mph	0	-23
Benefit from bus priority signals and bus gate	-43	-43
TOTAL (one direction):	-43	-66
TOTAL (round-trip):	-86	-132

In summary, it is expected that the changes will create significant journey time savings for bus services. This equates to large cumulative benefits given the prevalence of services using this corridor (13-16 buses/hour). There will also be benefits to buses using Colliters Way from the improvements to the traffic signals.

It is expected that the changes will also provide increased service reliability and punctuality by reducing the variability of journey times through the junction.

The existing junction and BSIP concept design have been junction capacity tested in order to understand the changes in junction performance which are likely to occur as a result of this scheme. The junctions have been assessed using an industry-standard modelling tool (LinSig) to understand the impact on junction capacity, queuing, and the average amount of delay experienced by vehicles passing through the junction.

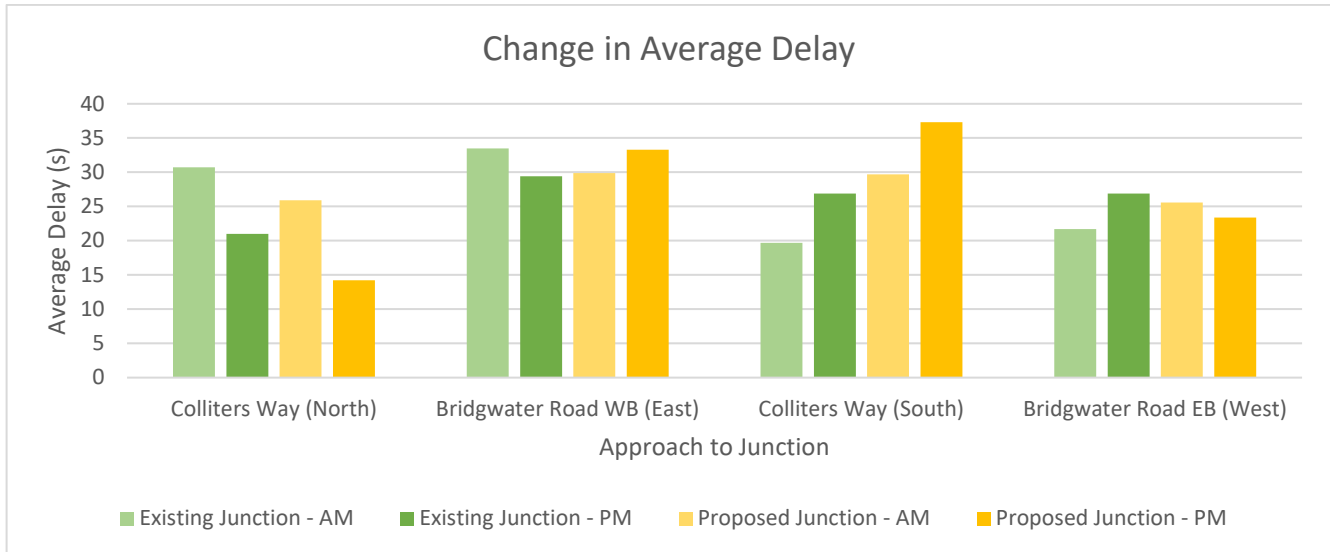
The assessment of the BSIP scheme identifies how the junction is likely to operate in the future, including the operation of the traffic lights, additional bus gates and pedestrian crossings. This includes an overhaul of the existing traffic signal specification to incorporate the additional bus gates which would not be possible utilising the existing apparatus.

Traffic data from October 2018 has been used to inform the assessment. Information has been collated from a Junction Turning Count survey which tells us the number and type of vehicles turning through the junction (e.g. cars, buses, HGVs etc.) all of which has all been accounted for within the model. 2018 data has been used owing to the fact that this data was readily available to NSC at the commencement of the project, and also because traffic flows between 2020 and 2022 will have been influenced by the effects of the COVID-19 pandemic. This is a proportionate approach, given the purpose of the modelling exercise is to test the implications of the proposed BSIP scheme in comparison with the existing layout.

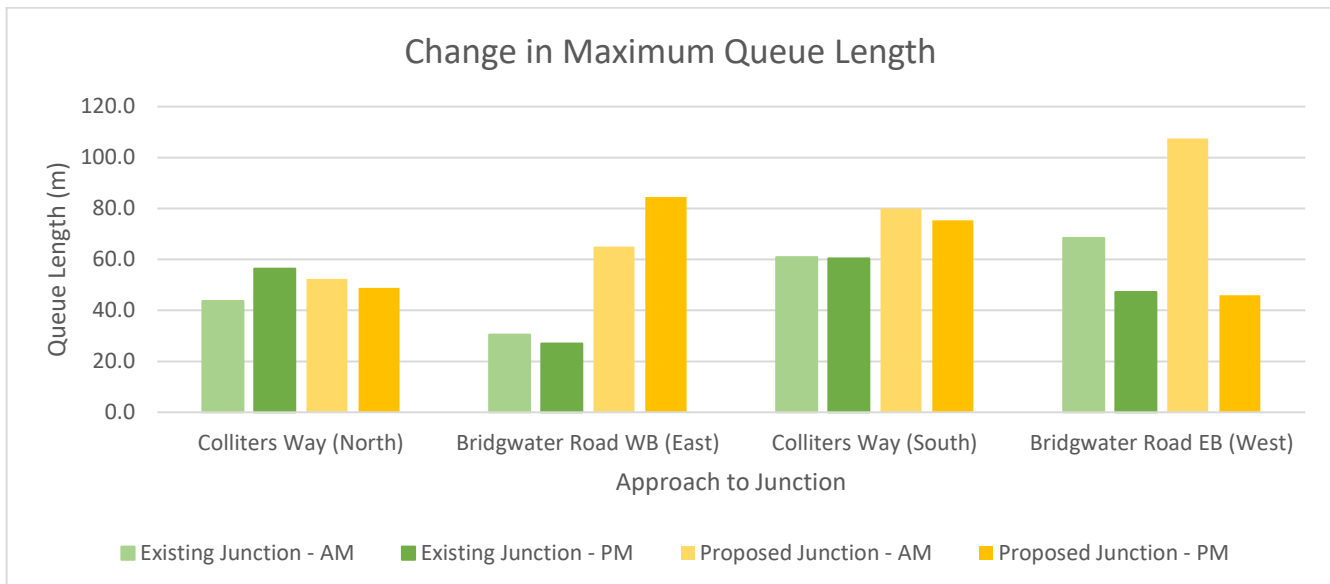
The modelling assessment demonstrates that the existing junction operates well within capacity, and will continue to do so with the BSIP design in place. As shown in the graphs below, in the typical day worst case scenario, there will be small increases in maximum queue lengths and average delays on the arms where it is proposed to introduce a bus gate, summarised as follows:

- A38 Bridgwater Road SW has a queue increase by 40m (7 vehicles) in the morning peak;
- A38 Bridgwater Road NE has a queue increase of 35m (6 vehicles) in the morning peak and 60m (10 vehicles) in the evening peak;

- Colliters Way SE has a queue increase of 20m (4 vehicles) during the morning and evening peak; and
- The Colliters Way NW arm of the junction currently has a bus gate which means that the BSIP scheme layout has a minimal impact on its operation.



Notes: 1) Results are the worst-case across lanes on each approach arm.
 2) Results are based on the 'without mode shift' traffic flows and therefore represent a worst-case in terms of junction performance.



Notes: 1) Results are the worst-case across lanes on each approach arm.
 2) Results are based on the 'without mode shift' traffic flows and therefore represent a worst-case in terms of junction performance.

The modelling confirms that there are no capacity constraints on any of the arms and that queues would be expected to clear within dedicated green light time. This means that driver delays arising from queues are minimised and that queues will not “stack” upon each other throughout the peak periods.

The scheme will bring wider improvements and benefits, including:

- The capacity assessment suggests that there is residual capacity at the junction (based on the 2018 flows), meaning that the junction is likely to be able to accommodate additional traffic in future, for example that arising as a result of the draft NSC Local Plan.
- Improved active travel facilities. Currently, signal-controlled pedestrian crossings are available on Colliters Way SE and A38 Bridgwater Road NE. The proposed scheme provides signalled crossings on all arms of the junction apart from A38 South West arm to enable suitable crossing for all users.
- Placemaking benefits. Landscaping opportunities are available within the roundabout circulatory and on the periphery of each arm of the junction.
- Maintenance benefits - updated traffic signals and some fresh road surfaces will reduce future maintenance liabilities.

The scheme is demonstrated to result in a significant improvement to bus movements at this location. The prioritisation of bus movements results in a slight increase in queuing and average delays for general traffic compared to the existing operation of the junction.

In conclusion, analysis shows that the recommended design will yield significant benefits in terms of journey time improvements for local bus services. It is also expected that the changes will reduce journey time variations, leading to better punctuality and greater customer confidence. The impact of the changes to general traffic is not considered significant.

Delivery Programme

The next steps are the continuation of preliminary and detailed design processes, before review of the contractor's target cost in January / February 2025. Statutory consultation to make the necessary Traffic Regulation Orders will take place through December and January. We expect the works to commence on site in March 2025 and to be completed in July 2025.

DECISION:

To approve the design for of Lime Kiln roundabout BSIP scheme, and to authorise officers to proceed with the implementation of the BSIP capital improvement scheme at A38 Lime Kiln Roundabout.

REASONS:

To realise the journey time and reliability improvements necessary to ensure the commercial sustainability of local bus routes.

OPTIONS CONSIDERED:

1. The 'do minimal' adjust signals option is not recommended because it will not yield significant benefits without the bus lanes and bus gates.
2. The on-carriageway bus lanes without widening would remove one or more lanes from each arm and have a detrimental effect on general capacity of the junction.
3. The widening of the carriageway was preferred as it improved capacity and reduced journey times for buses.

FINANCIAL IMPLICATIONS:

The October 2023 Executive Committee decision has authorised the award of the design and delivery phases of the project to Alun Griffiths, to a total value of £15.4M. Therefore, no financial decision is required at this stage.

Costs

Exact scheme costs are unknown at this stage, but are estimated to be £2.25 million, which is within the overall available budget for the BSIP schemes. This includes all design work and surveys required for various aspects of the scheme such as drainage, Statutory Undertakers Apparatus and environmental mitigations. Costs will be charged to KDT150 project code BSIP004.

Funding

In May 2022 the Department for Transport (DfT) awarded North Somerset Council (NSC) an indicative £47.8 million in capital funding, to spend wholly on bus infrastructure schemes within North Somerset.

LEGAL POWERS AND IMPLICATIONS

The Highways Act 1980 provides the council with the necessary powers to make changes to the public highway.

The Road Traffic Regulation Act 1984 provides the council with the necessary powers to implement bus lanes and other traffic restrictions on the public highway. This is achieved by making Traffic Regulation Orders, for which there is a defined statutory process.

The Traffic Management Act 2004 provides the council with the powers to enforce bus lanes and related restrictions.

CLIMATE CHANGE AND ENVIRONMENTAL IMPLICATIONS

The wider BSIP programme, including the bus priority scheme discussed in this report, will contribute to the reliability and attractiveness of the public transport network, with the aim of reducing car journeys within North Somerset and beyond.

The BSIP has ambitious targets to:

- Reduce bus journey times by 2% by 2025 and by 10% by 2030;
- Achieve 95% of services running on time, defined as being no more than 1 minute early or 5 minutes late, by 2030;
- Return to pre-pandemic patronage levels by 2025 and grow patronage by at least 24% from that level by 2030;
- Increase passenger satisfaction to 89% for 2025 and 95% for 2030;
- Aim for all buses to be zero emission by 2030.

The Lime Kiln Roundabout scheme will contribute towards achieving these targets, supporting a sustainable bus network and encouraging modal shift from private cars to public

transport which will contribute towards the council's climate change and environmental objectives.

CONSULTATION

There have been various stages of consultation on the BSIP programme and on its specific schemes. For the Lime Kiln Roundabout scheme, the consultations have been frequent and with a number of stakeholders. These included Ward and Executive Members, T&PCs, bus operators and the general public.

In 2024 there has been a briefing with the local ward Member with Executive Member on 31 January which was a constructive meeting where councillors were able to ask questions and put forward points from their community. Actions from this meeting included additional data and information to be shared on the scheme. The engagement continued with a Parish briefing with both Long Ashton Parish on 5 February and Winford Parish 12 February, neither had any objections to the scheme.

Taking forward feedback from the Ward and Parish briefings, an online consultation was created for the general public, which was live between from 9 February to 22 March. Each of the 140 responses were discussed and considered to form a basis of the revised concept designs, particularly from a more local level. This has been summarised at the link: [Engagement Summary](#). This was uploaded onto BSIP website on the 10 July 2024 and shared locally through Ward members and the Bus Times newsletter.

Other ward members had also taken an interest in this scheme and there was a briefing with Blagdon and Churchill ward member on the 17 July, which was constructive, and the member felt well informed and understood the reasoning behind the scheme by the end of the briefing.

In December 2023 the scheme design was shared with First Bus who were supportive of the proposals.

Below there is a summary of the comments raised across the online consultation and briefings and how these have been considered by the project team.

Common or significant issues raised and officer responses

Source	Detail	Action taken
Local resident	Pedestrian desire line on southern arm of junction is not provided for in the design.	Officers have undertaken CCTV monitoring and concluded that there is no evidence of pedestrian movements on the A38, nor is there an evident reason for users to cross there. The existing uncontrolled crossing link on the Colliters Way south arm will be reviewed and signalised if possible, to improve cycling and walking on the roundabout. All other arms have controlled pedestrian facilities.
Local residents	Scheme will not benefit local bus services and will cause congestion and delays for other road users	Following feedback from the public and additional modelling work, an original proposal for a new bus lane on Colliters Way south has been removed from the design.
Farm land owner	Concerns proposals will impact on exiting and entering local farms as visibility will be reduced.	Improve right turn facility and signing around farm access to allow farm vehicles to enter and egress in a safer manner.
Farm land owner	Concerns over vehicles using the hatch within the right turn facility when traffic is queuing at the roundabout.	Looking at physical measures and alterations to the right turn facility to stop vehicles make unsafe manoeuvres at the roundabout to improve safety.
Local residents	Concerns over excessive speed on the A38 northbound leading to increased risk of collision and conflict with private farm access.	Vehicle speeds and behaviour will be surveyed and speed limits in the area will be reviewed in line with the data received.
Local Business	Proposed works and site compound may have negative effect on business for local food trader within the layby of the A38 north.	Site compound and traffic management requirements will be reviewed under the Construction Management Plan between NSC and the appointed contractor. We will endeavour to reduce the impact on the local business as a much as practicable.

Summary of future/remaining engagement

The design changes to the junction have been directly shaped by community engagement and discussion on the early proposal. Future engagement will include a press release highlighting areas that have been directly changed thanks to the feedback on initial proposals which have played a vital role in the scheme's evolution.

A TRO will also go out to the public to allow further engagement on the altered concept designs.

All of the plans and news will be shared through the council's bus newsletter, website and social media.

RISK MANAGEMENT

There is effective project and programme management led by officers with support by an external consultancy to aid in both design and contract management.

There is an agreed internal governance to oversee decision making which includes regular reporting through appropriate boards.

A Quantified Risk Assessment has been prepared for the scheme which will be reviewed at key milestones throughout both the design and build process. The QRA will be reviewed and updated on completion of the preliminary design. The risk register is a live document for the duration of the programme.

Key Risks

The following risks were identified as key risks in the initial risk workshop:

1. **Statutory Undertakers Apparatus (SU's)** - As with all construction projects, the location of buried services and the potential need to divert or protect those during works present a key risk during the initial stages. This risk is being managed by engaging with the SU's at an early stage and where possible designing out any significant works.
2. **Journey time delays, complaints, disruption during works** - This risk will be managed by careful planning during the pre-construction phase and mitigated during the construction of the works.
3. **Drainage and Culvert** – The location, condition and suitability of existing drainage (particularly an existing culvert) is a key risk. This risk will be managed at all stages of the scheme, throughout design and construction. This risk will be managed through investigation, CCTV and cleansing which will mitigate any significant issues associated with these works.

EQUALITY IMPLICATIONS

Have you undertaken an Equality Impact Assessment? Yes

The assessment shows there are positive or neutral outcomes for this scheme for all users, albeit with low or negligible levels of impact across the various groups. Mostly it will aid the disabled, people on low incomes, and either young or older age groups as it helps improve public transport viability.

CORPORATE IMPLICATIONS

The North Somerset Council Corporate Plan 2024-28 includes key commitments to:

- Deliver the Climate Emergency Strategy and action plan and progress towards net zero by 2030.
- Deliver large-scale projects that improve the infrastructure and sustainability of North Somerset.

- Continue to invest in our highways and transport network to connect places and communities.
- Deliver on public transport improvements and support more cycling and walking across North Somerset to help decarbonise travel.

This includes *'offering transport choices that make the most of our infrastructure and provide opportunities for better use of public transport'*.

Regionally, the Council are a member authority of the Western Gateway Sub-national Transport Body (STB) and have recently adopted our Strategic Transport Plan 2024-2050. This firmly sets out the wider region's commitment to action on the essential decarbonisation of our transport networks with one of the five overarching principles being 'Decarbonisation and Air Quality' and sets the target to achieve a shift of 17% of current vehicle kilometres to be shifted to sustainable modes.

Sub-regionally, as part of the West of England, the Council's overarching transport strategy is the Joint Local Transport Plan 4 (JLTP4), that clearly states the direction of travel for decarbonising our transport network:

- 'To transform our region, we will need to be flexible, agile and brave in our approach to the climate emergency'.
- One of the five key objectives is to 'Take action against climate change and address poor air quality'
- The Plan recognises the need to 'provide transformational alternatives' to car driving
- The sub-region will 'consider ways to manage demand possibly through congestion charging, emissions charging and workplace parking levy-type schemes'.

More specifically for public transport, the plan commits to:

- Reinventing public transport through mass transit, smart ticketing and making it more user friendly, convenient, safe, direct and attractive linking key destinations to enable everyone to use it.
- Rethinking how we use our existing transport corridors including reallocating more road space to buses, pedestrians and cyclists.
- Demand management measures to influence travel choice and raise revenue to reinvest in alternatives.
- First and last mile type solutions to provide a linked-up transport network.

The emerging North Somerset Local Plan continues the strong policy-led approach to transport decarbonisation through its sustainable transport strategy, by proposing development in locations where sites will be required to reduce the need to travel, reduce car dependency and provide more options to get around.

The emerging North Somerset Local Plan proposes to allocate a parcel of land south of A38 Bridgwater Road and east of A4174 South Bristol Link Road (Colliters Way) for residential development. This site is well placed to benefit from enhanced bus priority and therefore better overall bus services as a result of the A38 Lime Kiln roundabout bus priority scheme.

Although not a proposed allocation, the Council are responding to a pre-application request for a potentially nationally significant employment site south of A370 Long Ashton Bypass

and west of A4174 Colliters Way. Given the close proximity to existing public transport services and the Bristol conurbation, bus priority in the vicinity of this location, regardless of whether the site comes forward, is essential to avoiding a congested transport network on such strategic bus and general transport corridors.

As of the end of July 2024, the newly elected national government have written to local planning authorities across the country to urge them to build more houses to reduce the national shortage, including within Green Belt land if no other appropriate locations can be identified. For North Somerset, consideration for residential and/or employment development to meet the additional mandatory housing targets that are proposed to be reintroduced, with a significant uplift for North Somerset's housing targets. Future proofing our bus network for bus priority to avoid congestion would be a sensible investment in light of this.

APPENDICES

Scheme concept plan.

BACKGROUND PAPERS

[Report to The Executive – 20th October 2021 - Update on the Development of a Joint Bus Service Improvement Plan \(BSIP\) with the West of England Combined Authority and Bus Operators](#)

[Report to The Executive – 22nd June 2022 – North Somerset Bus Service Improvement Plan](#)

[Executive Committee – 18th October 2023 - Bus Service Improvement Plan \(BSIP\) - Contract Award of Design and Build Contractor](#)

SIGNATORIES:

DECISION MAKER(S):

Signed:  Executive Member for Highways and Transport

Date: 6 September 2024

WITH ADVICE FROM:

Signed:  Director of Place

Date: 6 September 2024

Appendix – Scheme concept plan

