

Active Travel Programme – St George’s Field Crossing

Summary

St George’s Field Car Park and the riverside path cycle route that links to it are situated south of Tower Street, and the York Castle Museum on the north. Currently, cyclists and pedestrians have no safe and direct way of crossing Tower Street from the car park. It is planned to develop the Castle Mills area around the museum, and the St George’s Field Car Park as part of the Castle Gateway project to create a cycle and walking route. This renders the need for a crossing over Tower Street more significant.

This report looks at options for providing a signal controlled crossing of the dual carriageway on Tower Street. The project looks to improve safety, amenity and accessibility for pedestrians and cyclists to the proposed City Centre route to riverside path route.

Options Review

Design A – Straight Across Toucan Crossing

Drawing CYC_TST-YK2458-P-001

This option introduces a straight across signal controlled Toucan crossing over Tower Street. This directly links the egress from the Castle Mill Development to the southern footway. The footway on the southern footway significantly narrows and without changes to the alignment would lead to unacceptable pedestrian and cyclist conflict. The alignment of the entrance to St George’s Field is changed to accommodate a widened footway. The shared use section is still narrow and would not cope with high volumes of pedestrians and cyclists satisfactorily.

In changing the entrance alignment to St George’s Field car park the designers have assessed the swept path of vehicles. Coaches would overhang the exit lane and due to this this option is seen as unfeasible.

See **Drawing CYC_TST-YK2458-P-001SPA**

Traffic modelling of the option has been undertaken and the results are shown in **Tables 1.1 and 1.2**. It is assumed that the proposed crossing and the Tower Street / Skeldergate Bridge signal-controlled junction would operate on the same cycle time to allow for co-ordination of each site and safe operation. This also allows for robust assessment over all options reviewed and a common base to assess the proposals.

The introduction of Design A would lead to increased delay to buses and general traffic on the inner ring road. However, the crossing is seen to operate within capacity, using the common cycle time with the junction, with only the Tower Street WB Lane 1 approach showing any point close to capacity – 86% degree of saturation during the PM peak. This is below practical reserve capacity of 90% and is seen as satisfactory.

Table 1.1 – Straight Across Crossing Modelling Results

AM PEAK	Base			Proposed		
	DoS	MMQ	Delay	DoS	MMQ	Delay
Skeldergate Bridge	89.8	21.6	33.5	89.8	21.6	33.5
Tower Street	89.0	15.5	50.5	89.0	15.5	45.7
Tower Steet Crossing EB (lane 1)	N/A			73.7	11.5	9.7
Tower Street Crossing EB (lane 2)	N/A			41.8	4.1	6.6
Tower Steet Crossing WB (lane 1)	N/A			74.4	15.0	12.7
Tower Street Crossing WB (lane 2)	N/A			41.3	5.4	7.2
Cycle Time (Sec)	84			84		
Delay (pcuHR)	19.79			27.07		
PRC (%)	0.2			0.2		
Average Route Delay per ped (s/Ped)	N/A			36.4		

Table 1.2 – Straight Across Crossing Modelling Results

PM PEAK	Base			Proposed		
	DoS	MMQ	Delay	DoS	MMQ	Delay
Skeldergate Bridge	78.8	17.2	25.8	78.8	17.2	25.8
Tower Street	79.3	13.8	40.5	79.3	13.8	36.4
Tower Steet Crossing EB (lane 1)	N/A			61.0	3.5	4.4
Tower Street Crossing EB (lane 2)	N/A			29.0	3.0	5.4
Tower Steet Crossing WB (lane 1)	N/A			86.0	24.6	17.7
Tower Street Crossing WB (lane 2)	N/A			37.0	4.9	6.3
Cycle Time (Sec)	96			96		
Delay (pcuHR)	13.74			21.33		
PRC (%)	13.5			4.7		
Average Route Delay per ped (s/Ped)	N/A			42.4		

Sharing a common cycle time with the junction does lead to some delay for users of the crossing. The average delay would be 36 seconds in the AM peak and 42 seconds in the PM peak. This is higher than desired but provides a significant benefit from the existing situation. Signal timings would be optimised on street to minimise the delay to pedestrians while balancing delay and queues to buses and motor vehicles.

Fundamentally this option is limited as it leads to conflict between large vehicles turning in and out of St George's Field car park. It also does not provide acceptable facilities for cyclists without the delivery of the Castle Mills and St George's Field ongoing connections. The route is currently some years off delivery. The footway is too narrow to acceptably share between cyclists and pedestrians even under relatively low flows.

In the future with the Castle Mills bridge and link to the north and a suitable solution to link the crossing with the riverside path through the St George's Field car park this becomes an indispensable route for cyclists. However, until these links are in place there is no acceptable provision for cyclists able to be provided.

A budgetary estimate of **£164,100** is required for this option.

Design A is rejected due to coach swept path and limited onwards cycle provision.

Design B – Staggered Toucan Crossing

This option introduces a staggered signal controlled Toucan crossing over Tower Street. The central island is 4m wide allowing space for cyclists to manoeuvre. However, cyclists and pedestrians would incur longer delays crossing the busy section of the inner ring road and would have to wait on the central island to cross as large volumes of traffic pass either side of them.

The eastbound carriageway from the Tower Street / Skeldergate Bridge is reduced to 1 lane. This would likely lead to increase traffic delay especially in the AM peak period for eastbound buses and general traffic.

The footway on the southern footway significantly narrows and without changes to the alignment would lead to unacceptable pedestrian and cyclist conflict. The alignment of the entrance to St George's Field is changed to accommodate a widened footway. The shared use section is still narrow and would not cope with high volumes of pedestrians and cyclists satisfactorily.

In changing the entrance alignment to St George's Field car park the designers have assessed the swept path of vehicles. Coaches would overhang the exit lane and due to this this option is seen as unfeasible.

Furthermore, without the suitable cycle route linkages this option does not provide sufficient facilities to safely accommodate cyclists. This is as per the issues raised with Design A.

The traffic modelling shows delays to pedestrians / cyclists crossing would be increased on average and pedestrians / cyclist would be required to wait within the central reservoir. This would provide a poor environment for active mode users which would not be in line with best practice.

The modelling also shows that in the AM peak the Eastbound approach, now reduced to a single lane, would incur significant addition delay to buses and general traffic and be at capacity.

Table 2.1 – Staggered Crossing Modelling Results – AM Peak

AM PEAK	Base			Proposed		
	DoS	MMQ	Delay	DoS	MMQ	Delay
Skeldergate Bridge	89.8	21.6	33.5	87.9	26.2	35.2
Tower Street	89.0	15.5	50.5	86.1	18.3	50.1
Tower Steet Crossing EB (lane 1)	N/A			94.1	22.7	21.1
Tower Steet Crossing WB (lane 1)	N/A			65.4	12.6	7.8
Tower Street Crossing WB (lane 2)	N/A			36.3	4.6	4.7
Cycle Time (Sec)	84			112		
Delay (pcuHR)	19.79			32.08		
PRC (%)	0.2			-4.5		
Average Route Delay per ped (s/Ped)	N/A			94.5		

Table 2.2 - Staggered Crossing Modelling Results – PM Peak

PM PEAK	Base			Proposed		
	DoS	MMQ	Delay	DoS	MMQ	Delay
Skeldergate Bridge	78.8	17.2	25.8	78.8	17.2	25.8
Tower Street	79.3	13.8	40.5	79.3	13.8	38.0
Tower Steet Crossing EB (lane 1)	N/A			61.0	3.5	7.1
Tower Steet Crossing WB (lane 1)	N/A			82.6	21.4	13.7
Tower Street Crossing WB (lane 2)	N/A			35.5	4.3	5.2
Cycle Time (Sec)	96			96		
Delay (pcuHR)	13.74			20.92		
PRC (%)	13.5			9.0		
Average Route Delay per ped (s/Ped)	N/A			78.2		

A budgetary estimate of **£197,600** is required for this option.

Design B – Rejected due to coach swept path, capacity constraints and negative impact of pedestrians / cycle crossing route.

Design C – Signal Control

This option signal controls the entire junction of Tower Street / St George’s Field Car Park access and introduces straight across signal controlled Toucan crossings over Tower Street and St George’s Field Car Park. This directly links the egress from the Castle Mill Development to the southern footway and onwards. The footway on the southern footway significantly narrows and without changes to the alignment would lead to unacceptable pedestrian and cyclist conflict. The alignment of the entrance to St George’s Field is changed to accommodate a widened footway with traffic signals installed on the exit to St George’s Field to allow the swept path of vehicles to be accommodated. A signal-controlled pedestrian crossing facility is also provided over the access to St George’s Field Car Park.

Safety concerns have been raised by the designers due to the sloped access over the flood wall and potential for rear shunt type collisions due to the likely queuing and compromised forward visibility. Furthermore, the accesses to the Foss Basin and Yorkshire Water pumping station need to be accommodated within the alignment. These are achieved by the alignment is not ideal.

The footway on the southern footway significantly narrows and without changes to the alignment would lead to unacceptable pedestrian and cyclist conflict. The alignment of the entrance to St George’s Field is changed to accommodate a widened footway. The shared use section is still narrow and would not cope with high volumes of pedestrians and cyclists satisfactorily.

Table 3.1 – Traffic Signal Controlled Junction Modelling Results – AM Peak

AM PEAK	Base			Proposed		
	DoS	MMQ	Delay	DoS	MMQ	Delay
Skeldergate Bridge	89.8	21.6	33.5	89.3	23.8	34.8
Tower Street	89.0	15.5	50.5	86.8	16.4	39.8
Tower Steet Crossing EB (lane 1)	N/A			67.1	12.7	13.2
Tower Steet Crossing EB (lane 2)	N/A			67.1	12.7	13.2
Tower Steet Crossing WB (lane 1)	N/A			91.6	27.2	34.8
Tower Street Crossing WB (lane 2)	N/A			48.0	8.1	13.2
Car Park Access	N/A			12.0	0.5	56.1
Cycle Time (Sec)	84			96		
Delay (pcuHR)	19.79			34.83		
PRC (%)	0.2			-1.8		
Average Route Delay per ped (s/Ped)	N/A			30.7		

Table 3.2 - Traffic Signal Controlled Junction Modelling Results – PM Peak

PM PEAK	Base			Proposed		
	DoS	MMQ	Delay	DoS	MMQ	Delay
Skeldergate Bridge	78.8	17.2	25.8	76.6	20.3	27.8
Tower Street	79.3	13.8	40.5	78.9	18.2	47.2
Tower Steet Crossing EB (lane 1)	N/A			65.9	5.6	9.1
Tower Steet Crossing EB (lane 2)	N/A			31.8	4.8	6.0
Tower Steet Crossing WB (lane 1)	N/A			98.7	51.1	60.6
Tower Street Crossing WB (lane 2)	N/A			40.1	7.4	10.3
Car Park Access	N/A			19.7	0.8	74.0
Cycle Time (Sec)	96			120		
Delay (pcuHR)	13.74			37.85		
PRC (%)	13.5			-9.7		
Average Route Delay per ped (s/Ped)	N/A			42.4		

Modelling results show that this option would lead to significant delay on Tower Street and operate at capacity. Long cycle times would be required that would lead to greater than preferred pedestrian delay times, however, these would be in line with Design A straight across crossing results.

The PM peak would see the greatest impact on bus / general traffic queues and delays. This option is seen as not having sufficient benefits to be progressed further.

A budgetary estimate of **£238,100** is required for this option.

Design C is rejected due to capacity constraint of the signal controlled junction and the road safety concerns due to forward visibility exiting the car park.

Design D – Land Take to southwest corner site

This option introduces a straight across signal controlled Toucan crossing over Tower Street. This directly links the egress from the Castle Mill Development to the southern footway. The footway on the southern footway is widened to allow for significant additional space and acceptable provision for shared use cycle / pedestrian facilities. The land take into third party land assumes that the existing building on the site would be demolished and the footway levels raised to suitably accommodate the cycle / pedestrian facilities. The purchase of third-party land is outside of the scope of this commission but may be an option that could be pursued under the wider Castle Gateway plans. The ability to utilise this land to provide a wide shared use pedestrian / cyclist footway is seen as a beneficial and likely to unlock the potential for a higher quality pedestrian / cyclist link.

Modelling results for this option are as Design A and reference should be made to **Tables 1.1** and **Tables 2.1**.

A budgetary estimate of **£194,400** is required for this option. The budgetary estimate does not include for land purchase, demolition of building or utility diversions related to the third-party land.

Design D is rejected as part of this commission due to the requirement of third-party land purchase. It is recommended that this option should be investigated further under the wider Castle Gateway plans.

Design E – Realignment of St George's Field Access

This option introduces a straight across signal controlled Toucan crossing over Tower Street. This directly links the egress from the Castle Mill Development to the southern footway. The footway on the southern footway significantly narrows and without changes to the alignment would lead to unacceptable pedestrian and cyclist conflict. The alignment of the entrance to St George's Field is changed to accommodate a widened footway. The shared use section is still narrow and would not cope with high volumes of pedestrians and cyclists satisfactorily.

To allow for vehicles to safely turn out of St George's Field the alignment of the junction is realigned into land outside of the highway boundary. This is outside of the scope of this project and as such rejected as an acceptable solution. If it was taken forward it would likely have a higher cost due to the additional civil engineer works and likely utility diversions.

Modelling results for this option are as Option A and reference should be made to **Tables 1.1** and **Tables 1.2**.

A budgetary estimate of **£271,900** is required for this option. The budgetary estimate does not include for land purchase or utility diversions related to the third-party land.

Design E is rejected as part of this commission due to the requirement of third-party land purchase and the limited benefits to cyclist facilities.

Design F – Straight Across Pedestrian Crossing

This option introduces a straight across signal controlled pedestrian crossing over Tower Street. It does not provide facilities for cyclists but would be appropriately wide so it could be converted into a toucan crossing as part of works to create the cycle link from the Riverside path to Castle Mills as part of the Castle Gateway project. The creation of this cycle route is still several years away but significant benefits for pedestrians could be realised in the years prior to the cycle route fully opening by constructing a pedestrian only crossing

The crossing would provide benefit to pedestrians providing them with a safe and accessible crossing over Tower Street. It would create a crossing point over a busy section of the York Inner Ring Road and reduce severance for pedestrians along this route.

Modelling results for this option are as Design A and reference should be made to **Tables 1.1** and **Tables 1.2**.

A budgetary estimate of **£145,100** is required for this option.

Recommendations

It is recommended that **Design F** is progressed initially with it designed and implemented to allow for upgrade to a Toucan crossing facility once the cycle routes from Castle Mills and St George's Field are completed.

Currently no viable solution is possible within the bounds of the design brief to deliver a dual use cyclist / pedestrian crossing because of lack of cyclist infrastructure on either side of Tower Street.

Implementation of the pedestrian crossing will have positive benefits to pedestrians looking to cross this busy section of road, improving safety, reducing pedestrian delay and re-leaving severance. However, it will lead to increases in delay to bus and general traffic journey time and, although operation would be within network capacity, this will be a balance between provision of pedestrian delay and bus / general traffic operation.