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York Street Interchange

Placemaking & Active Travel Review

Annex A – Active Travel | Baseline Review (Stage 1)

October 2022

York Street Interchange

Active Travel Baseline Review

Department for Infrastructure

October 2022

Delivering a better world

Quality Information

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Revision	Revision date	Details	Authorized	Name	Position
1	09/07/21	Draft Issue	NB	N Brownbridge	Regional Director
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1. Introduction

1.1 Overview

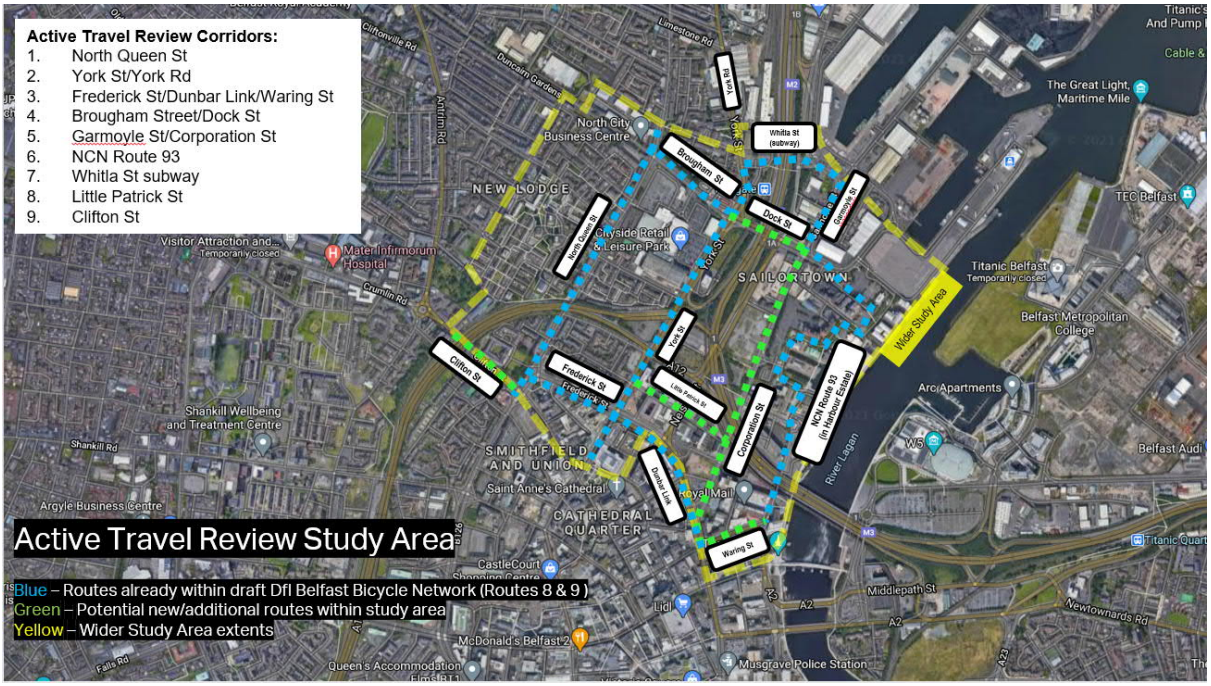
The aspiration is to develop a coherent active travel strategy and proposed infrastructure provision for the York Street Interchange (YSI) study area, focused on key corridors and aligned with maximising connectivity and placemaking opportunities. There is a requirement for the active travel strategy to consider the needs of both cyclists and pedestrians, including those with mobility impairments.

This is the first of a series of technical reports and is focused on summarising the findings of a **baseline review** of the existing provision for cyclists and pedestrians the including mobility impaired across the YSI study area.

1.2 Study Area

Nine key corridors have been identified for a baseline review of provision for active modes as shown and listed in **Figure 1** below. As indicated by the key, those routes coloured blue are identified within the Belfast Cycling Network (launched in June 2021), whilst the routes coloured green are potential new/additional active travel routes within the wider study area.

Figure 1 – Active Travel Review Corridors



1.3 Document Structure

This report is structured as follows:

- **Chapter 2** summarises the methodology adopted to undertake the active travel baseline review
- **Chapters 3-11** provide a summary of the baseline review key findings on all nine of the above corridors
- **Chapter 12** concludes with a summary of key findings and next steps.

Supporting technical appendices are referenced as appropriate.

2. Methodology

2.1 Overview

This chapter sets out the methodology adopted to undertake the active travel baseline review based on existing infrastructure provision for cyclists and pedestrians along the nine study corridors. The baseline assessment includes a mobility impaired audit to identify existing issues.

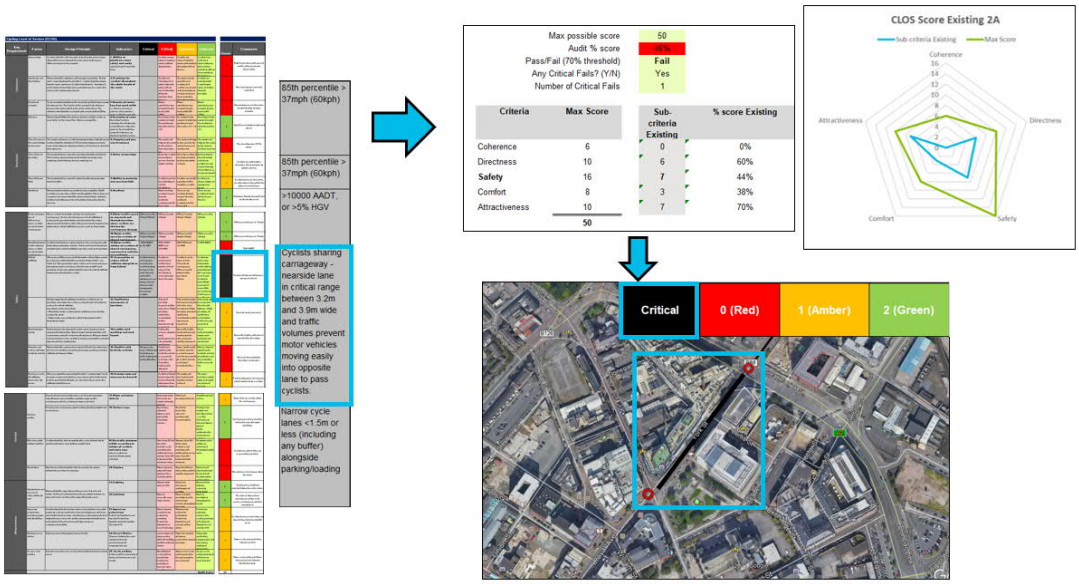
Local Transport Note (LTN) 1/20 launched in summer 2020 sets a measurable quality threshold to achieve when designing cycle schemes in Northern Ireland and England. The Cycling Level of Service (CLoS) tool and the Junction Assessment Tool (JAT) are the prescribed mechanisms introduced to set minimum quality criteria. Only schemes with a minimum score of 70% under the CLoS with no critical fails and no red-scoring turning movements under the JAT will generally be considered for funding. Where schemes are proposed for funding that do not meet these minimum criteria, local authorities will be required to justify their design choices. A first step in the process of developing an active travel strategy for the York Street Interchange study area is to undertake a baseline CLoS and JAT of the existing provision along the identified study corridors.

2.2 Cycle Level of Service

Appendix A in LTN 1/20 contains the CLoS framework. This comprises five key requirements (cohesion, directness, safety, comfort and attractiveness) and a total of 25 sub-criteria. Each sub-criteria is scored 0 (red), 1 (amber) or 2 (green) reflecting the level of provision, resulting in a maximum potential score of 50. Five of the 25 sub-criteria are classed as 'critical fails', with all five falling in the safety theme. Critical fails relate to inadequate width for cycling in mixed traffic lanes, or adjacent to parking/loading; excessive motor traffic volumes for cyclists to be mixed in with general traffic; and speeds of motor traffic >37mph.

Each of the nine study corridors were sub-divided into route sections reflecting changes in characteristics. A CLoS assessment was then undertaken for each route section link with scores for the existing provision summarised against maximum potential scores in both tabular and radar diagram form as exemplified in Figure 2 below. In this example, the total audit score for the existing layout was 46% which is below the 70% threshold. Because this link section also recorded a critical fail, the overall link was coloured black as also depicted below.

Figure 2 – CLoS Methodology Summary

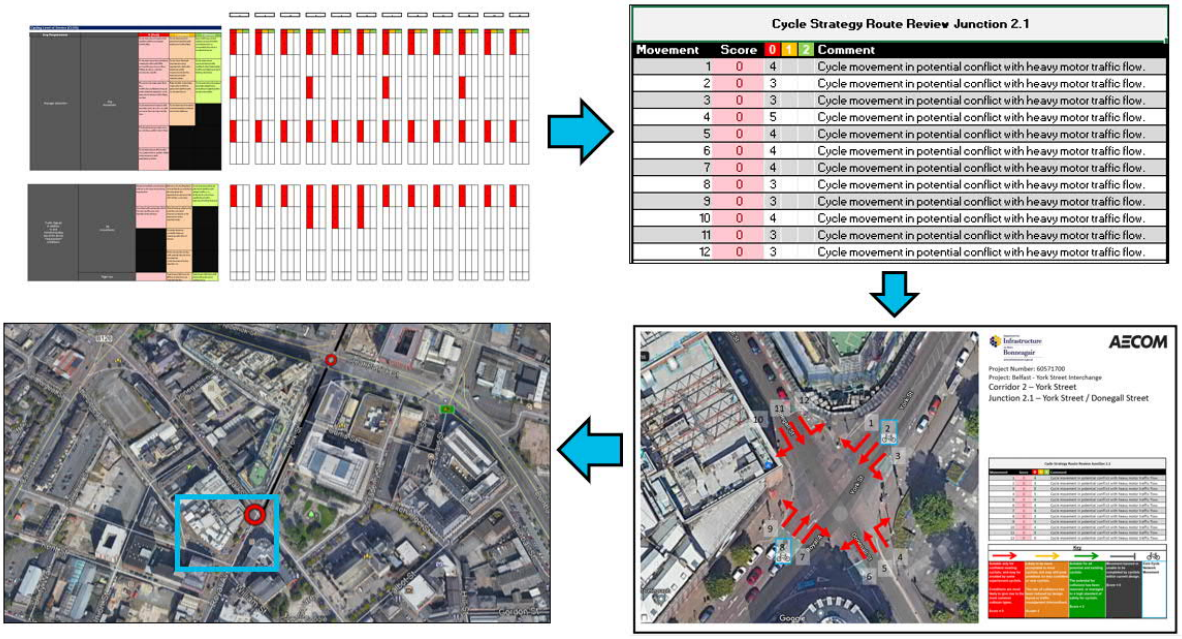


2.3 Junction Assessment

The Junction Assessment Tool (JAT) considers all potential cycle movements through a junction, represented graphically by colour-coding each movement red (0), amber (1) or green (2) reflecting the risk of collision for cyclists. Green is taken to mean suitable for all potential cyclists; red means suitable only for a minority of cyclists (and, even for them, it may be uncomfortable to make). Each major junction along the respective study

corridors has been scored using this methodology and depicted as below. In this example all turning movements have been categorised as red for cyclists, resulting in an overall red rating for the junction. Cycle movements that relate to the Belfast Bicycle Network routings are also specifically identified in blue for completeness.

Figure 3 – JAT Methodology Summary



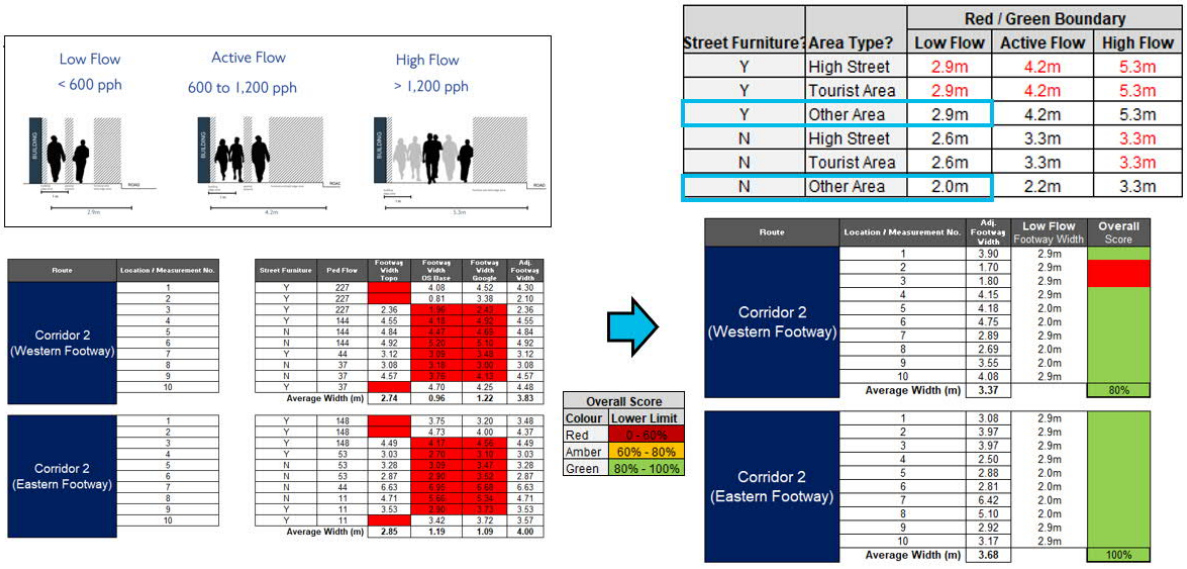
Cycle Strategy Route Review Junction 2.1

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

2.4 Pedestrian Comfort Levels

The Pedestrian Comfort Guidance for London (TfL, 2010) provides an assessment framework for acceptable levels of pedestrian comfort across different urban settings. This assessment is based on effective footway width and the volume of pedestrians with a combination of flow categorisation, presence of street furniture, and area type dictating the required footway width. Footway width and pedestrian flow were assessed at ten locations on each corridor and on footways on both sides of the road. Where >80% of the readings satisfied the required width for the pedestrian flow, this link was categorised as green. However, it is recognised that width alone does not capture the overall experience and quality of environment for pedestrians. As such the quantitative framework described above was supplemented with a qualitative review of the general pedestrian environment in terms of characteristics/ambience; access/connections; and surface quality/obstructions.

Figure 4 – Pedestrian Comfort Methodology Summary



Street Furniture?	Area Type?	Red / Green Boundary		
		Low Flow	Active Flow	High Flow
Y	High Street	2.9m	4.2m	5.3m
Y	Tourist Area	2.9m	4.2m	5.3m
Y	Other Area	2.9m	4.2m	5.3m
N	High Street	2.6m	3.3m	3.3m
N	Tourist Area	2.6m	3.3m	3.3m
N	Other Area	2.0m	2.2m	3.3m

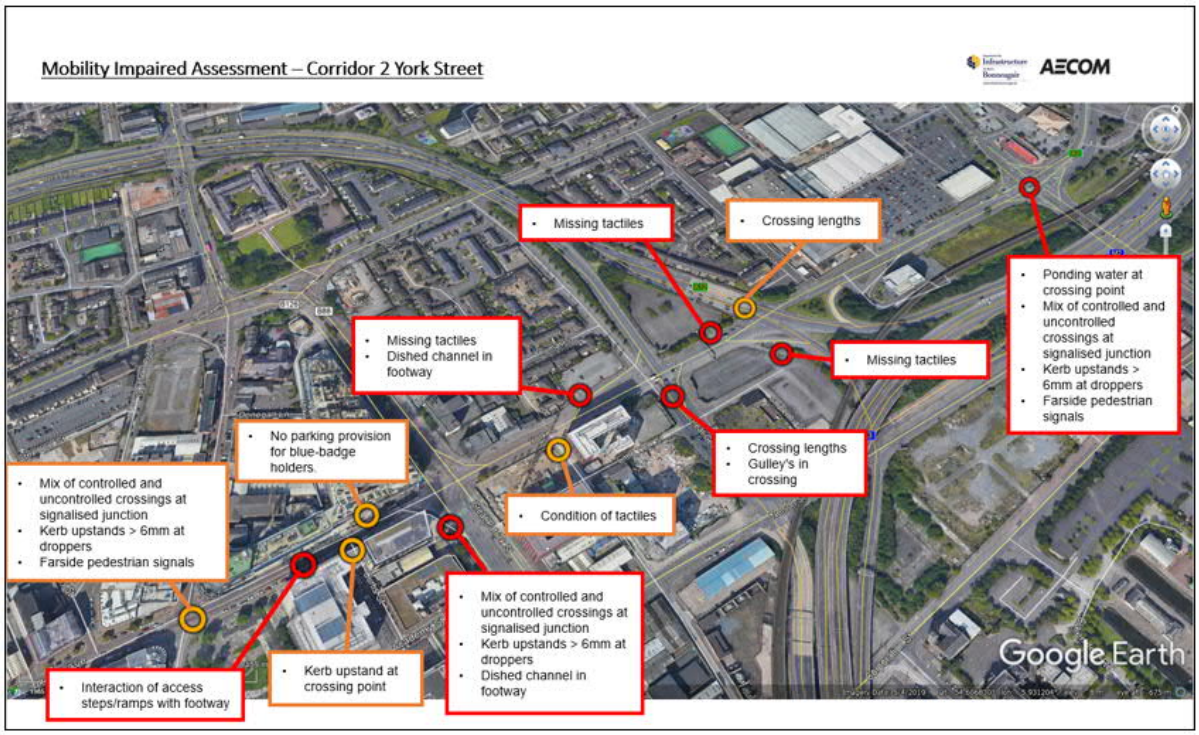
Overall Score	
Colour	Lower Limit
Red	0 - 80%
Amber	60% - 80%
Green	80% - 100%

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Footway Width	Overall Score
Corridor 2 (Western Footway)	1	3.90	2.9m	
	2	1.70	2.9m	
	3	1.80	2.9m	
	4	4.15	2.9m	
	5	4.18	2.0m	
	6	4.75	2.0m	
	7	2.89	2.9m	
	8	2.69	2.0m	
	9	3.55	2.0m	
	10	4.08	2.9m	
	Average Width (m)	3.37		80%
Corridor 2 (Eastern Footway)	1	3.08	2.9m	
	2	3.97	2.9m	
	3	3.97	2.9m	
	4	2.50	2.9m	
	5	2.88	2.0m	
	6	2.81	2.0m	
	7	6.42	2.0m	
	8	5.10	2.0m	
	9	2.92	2.9m	
	10	3.17	2.9m	
	Average Width (m)	3.68		100%

2.5 Mobility Impaired Audit

A mobility impaired specialist has been included within the project team to undertake a mobility impaired audit of each of the nine study corridors, identifying current issues as exemplified in the figure below.

Figure 5 – Mobility Impaired Audit: Example Summary Annotations



3. Corridor 1 | North Queen Street

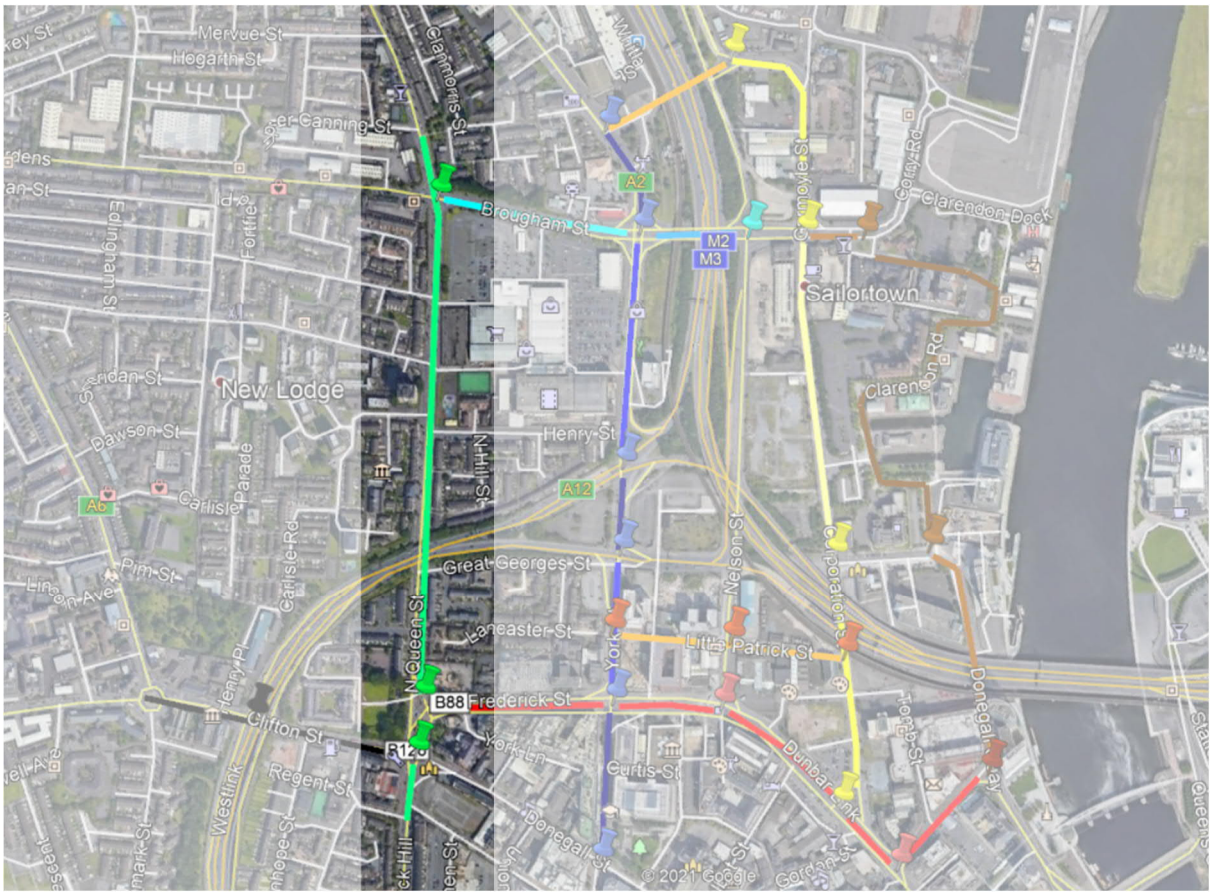
3.1 Overview

- **Extents -** Corridor one begins approximately 100m south of the Carrick Hill / Clifton Street junction, this short section leading up to the junction is identified as CLoS 1A. The remainder of the route covers the B126 North Queen Street, between its junction with the B88 Frederick Street and its junction with Brougham Street to the north; this section is included as CLoS 1B. The extent of the corridor is shown in Figure 6.
- **Characteristics -** The Carrick Hill / Clifton Street junction is a busy multilane intersection, connecting the A12 Westlink (via Clifton Street) to the B88 Frederick Street / A2 Dunbar Link to the east and the B126 North Queen Street to the north.

  The majority of the corridor covers the area north of this junction along B126 North Queen Street, which is characterised with a single lane in either direction, central hatching for right turners, residential frontage and residential parking alongside carriageway. Towards the north of the corridor, access to North Queen Street Play Centre and Yorkgate Shopping Centre is provided.
- **Footways -** Pedestrian footways are typically wide and tree lined on either side; however, cracks, and drainage channels within the footway result in an uneven surface and uncontrolled parking within the footway causes obstructions.

  One uncontrolled and two controlled mid-block pedestrian crossing facilities are provided along the corridor. Multistage crossings are also provided at major junctions.
- **Traffic Volumes / Speeds -** Motor traffic volumes are high, with approximately 14000 AADT; however, traffic speeds are moderate and typically have an 85th percentile speed of between 16-25mph.

Figure 6 – Corridor 1, North Queen Street.



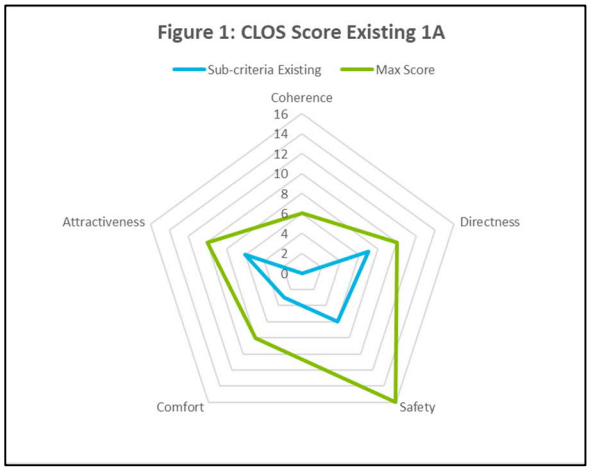
3.2 Cycle Level of Service Baseline Results

3.2.1 Section 1A

Section 1A encompasses a short 100m section of the carriageway leading up to the Carrick Hill / Clifton Street junction from the southern arm. The route is characterised by heavy motor vehicle traffic, with multiple running lanes in either direction leading to / from a busy intersection, providing no segregated cycle facilities or lead in lanes towards ASLs at the Carrick Hill / Clifton Street junction.

Section 1A has failed to meet the 70% threshold to pass the CLoS audit, scoring 44%. The section also features two critical fails. Critical fails are due to:

- An AADT of 14000 (above the critical fail threshold of 10000); and,
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	0	0%
Directness	10	7	70%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

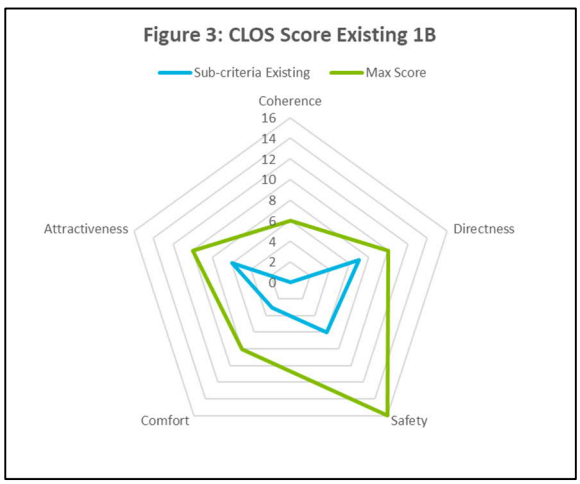
3.2.2 Section 1B

Section 1B covers the B126 North Queen Street, between its junction with the B88 Frederick Street and its junction with Brougham Street to the north.

This section is characterised with a single lane in either direction, central hatching for right turners and residential parking bays alongside carriageway.

Section 1B has failed to meet the 70% threshold to pass the CLoS audit, scoring 44%. The section also features two critical fails. Critical fails are due to:

- An AADT of 14000 (above the critical fail threshold of 10000); and,
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	0	0%
Directness	10	7	70%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

3.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Three existing junctions have been reviewed along corridor one, which are:

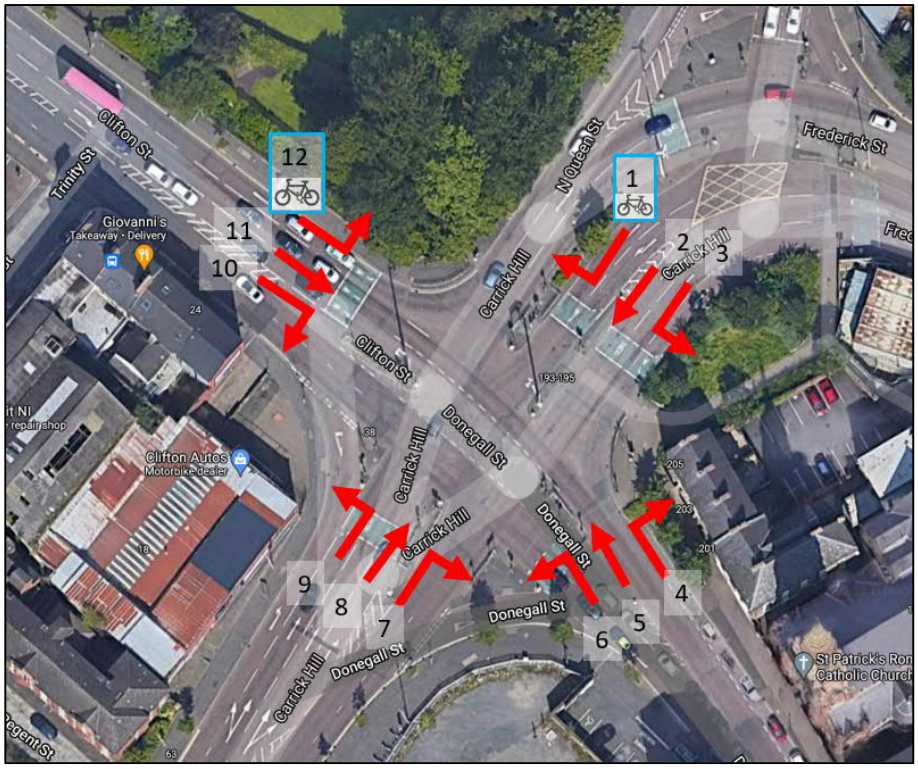
- Junction 1.1: B126 Carrick Hill / Clifton St;
- Junction 1.2 - B88 Carrick Hill / B126 N Queen Street; and
- Junction 1.3 - B126 N Queen St / Brougham Street.

In summary, all movements at each of the junctions assessed scored a red rating. This is due to a number of factors; however typically due to the following:

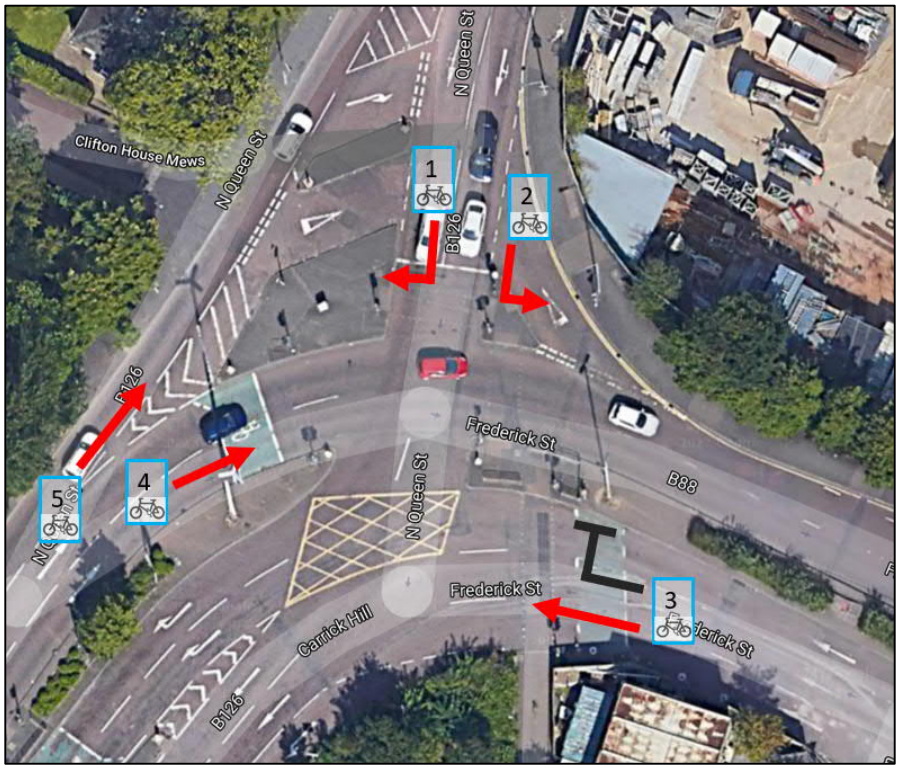
- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- ASLs are less than 5m deep;
- Several instances of unsignalised left turn lanes adjacent to signalised ahead lanes;
- Cyclists are required to move across more than one lane of traffic without protection; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor one, with further detailed information provided at **Appendix A**.

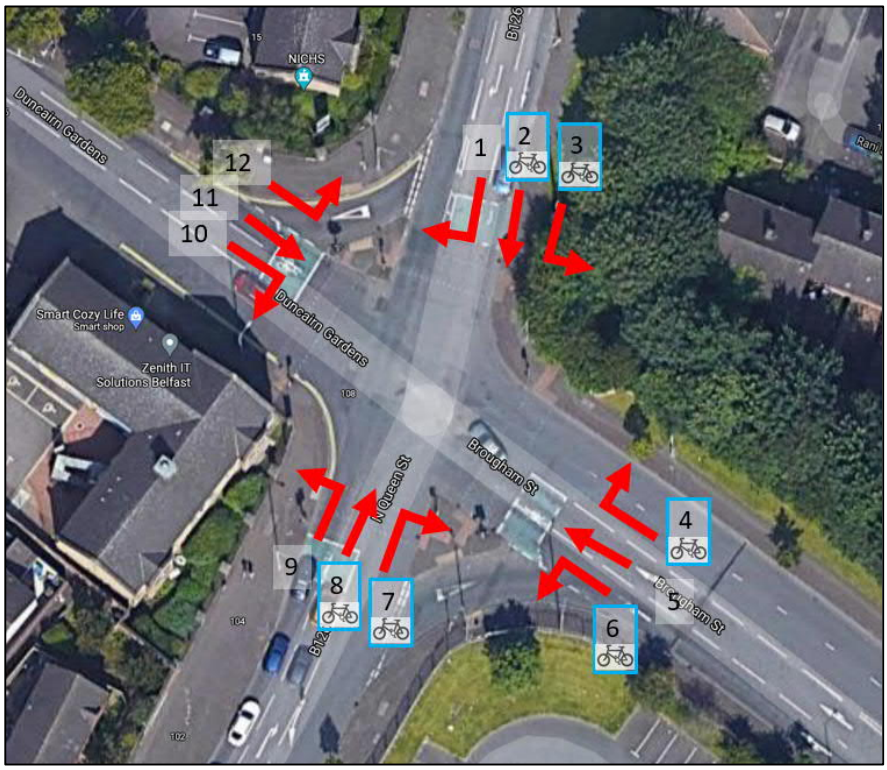
3.3.1 Junction 1.1



3.3.2 Junction 1.2

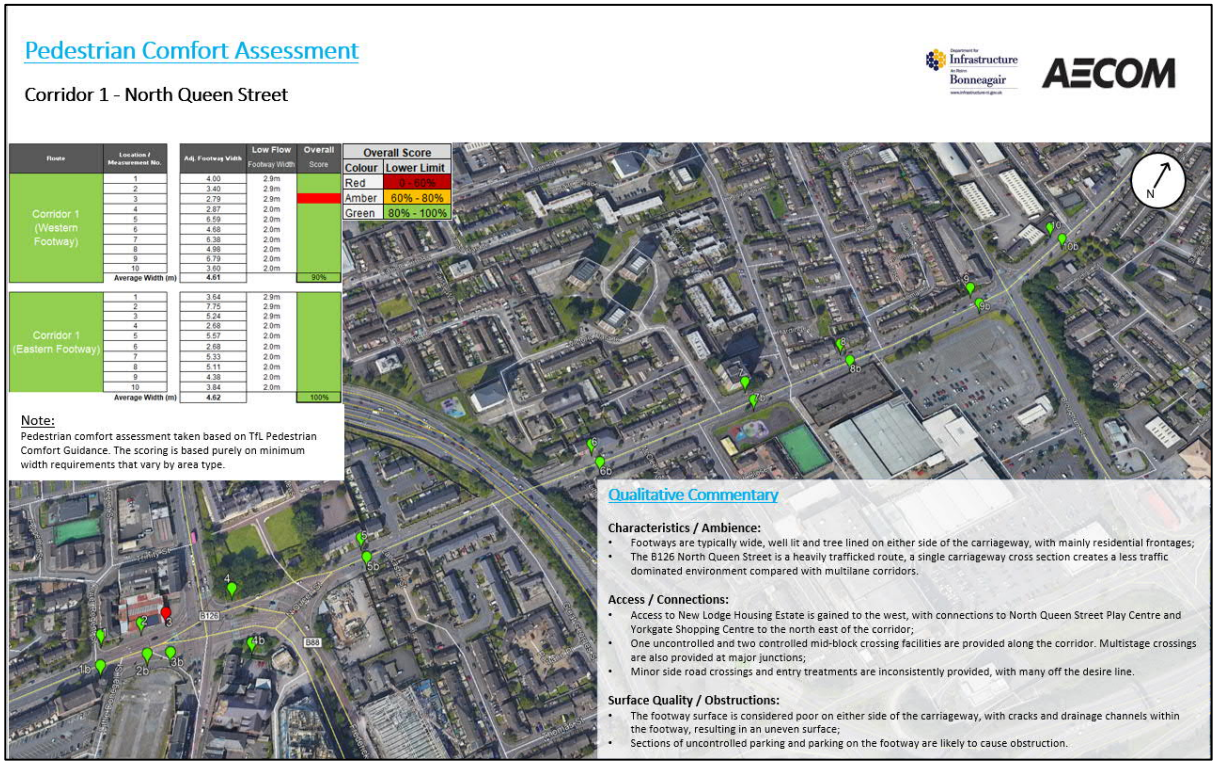


3.3.3 Junction 1.3



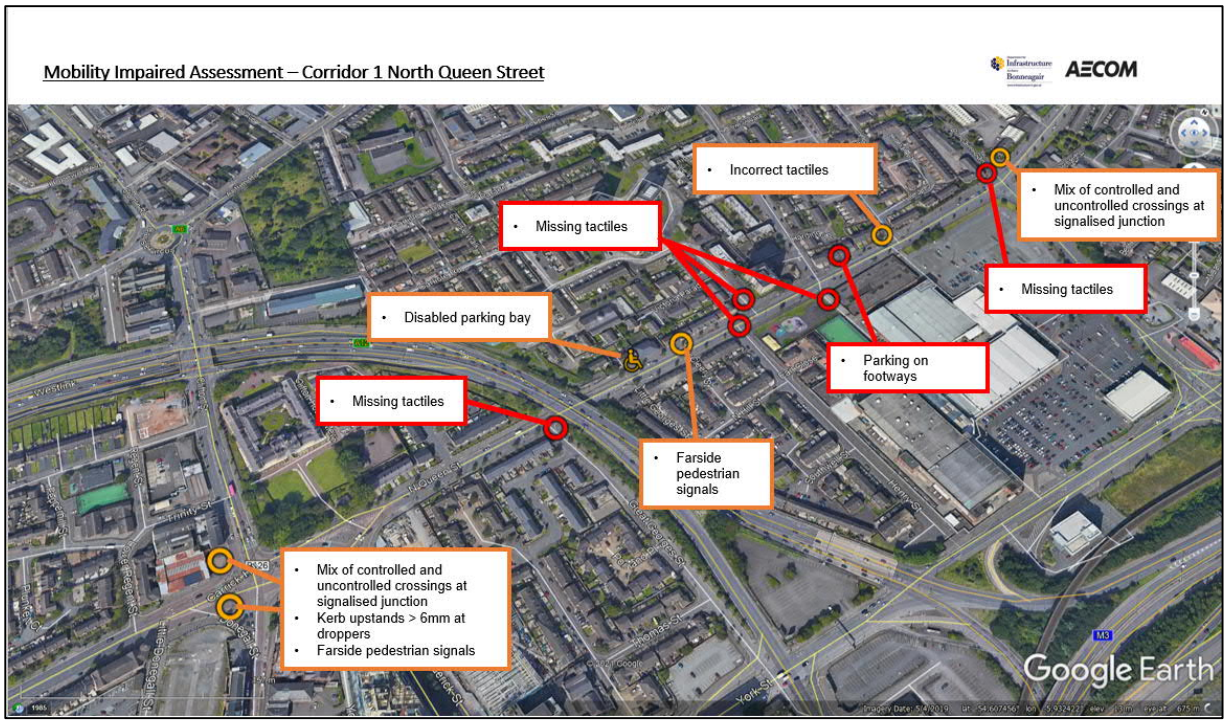
3.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor one are shown in the figure below.



3.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor one are shown in the figure below.



4. Corridor 2 | York Street

4.1 Overview

- **Extents -** Corridor two covers York Street, from the junction with Donegall Street at its southern extent; to its priority junction with Yorkgate Station car park to the north. The extent of the corridor is shown in Figure 7.
- **Characteristics -** Towards its southern extent, between Donegall Street and Great Patrick Street, York Street provides access to Ulster University, with a single lane in either direction and central hatching for right turns.

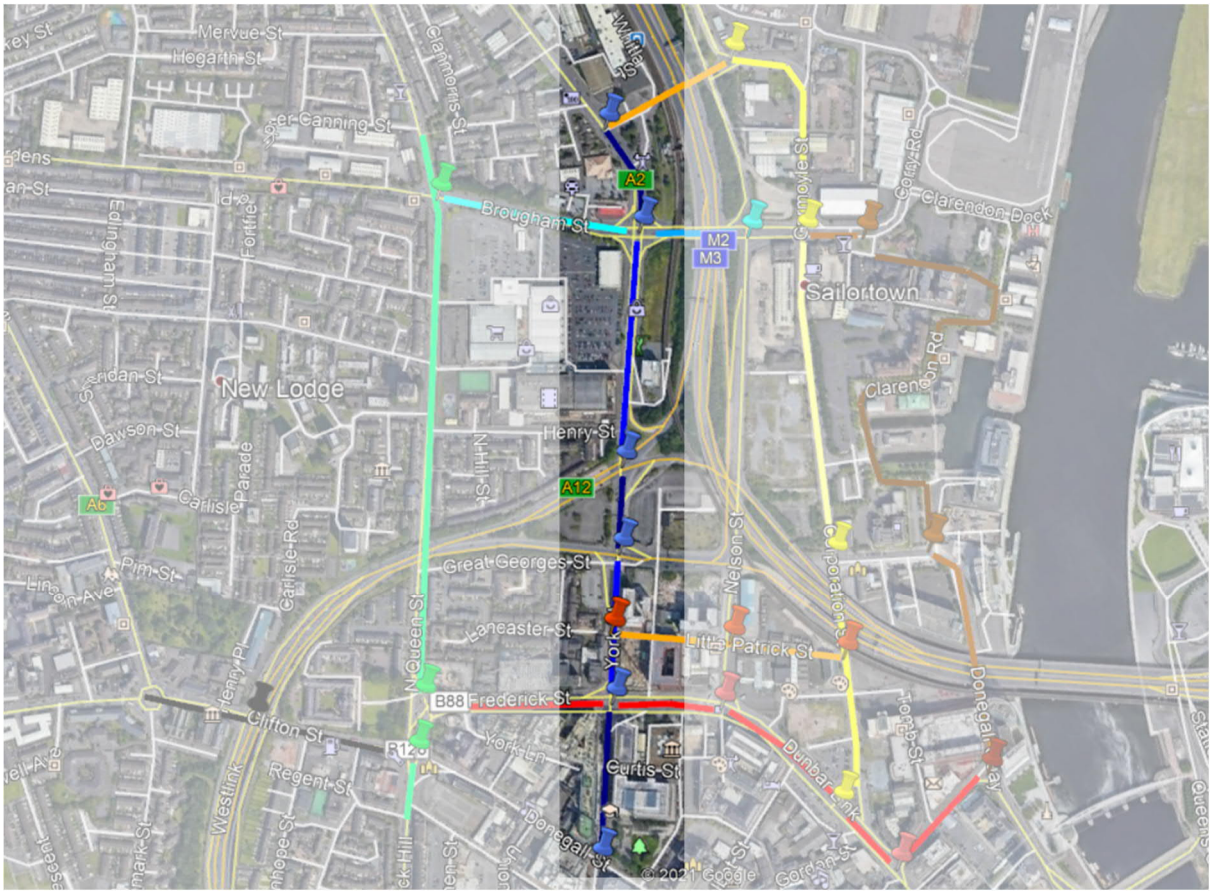
  North of Great Patrick Street, York Street continues one-way northbound as a five-lane carriageway, providing access to both the A12 Westlink and M3 Motorway via large multilane at-grade junctions.

  Beyond this point, York Street provides a dual lane northbound, flaring to four lanes at its junction with Dock Street; and gives access to Yorkgate Shopping Centre. Southbound in this location, only a single lane is provided, that leads to the M2 Motorway northbound.

  North of its junction with Brougham Street, York Street continues as the A2, providing a dual lane in either direction and running parallel to the M2 Motorway. No segregated or advisory cycle provision is provided along the route, with ASLs at junctions intermittently.
- **Footways –** Footways are typically wide and well lit; fronted by car parks, large retail and residential units. However, between the A12 and Dock Street junctions, the pedestrian environment is considered isolated due to limited frontage.

  Speed and volume of traffic does not provide a pleasant pedestrian environment along the majority of the route, with large intersections and multistage crossings facilities at regular intervals.
- **Traffic Volumes / Speeds -** Motor traffic volumes are extremely high, with AADT's between 14000 and 21000; however, traffic speeds are moderate with 85th percentile speeds between 16-25mph.

Figure 7 – Corridor 2, York Street.



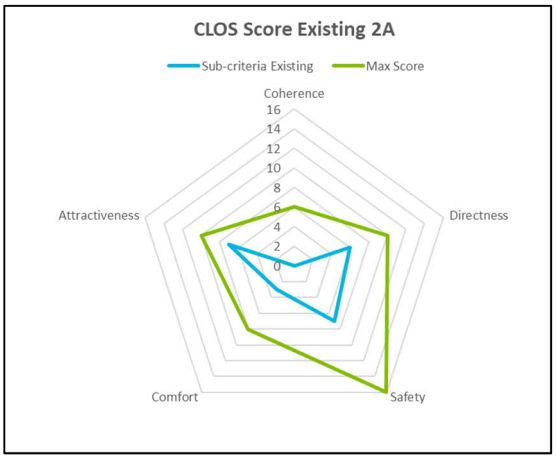
4.2 Cycle Level of Service baseline results

4.2.1 Section 2A

Section 2A covers the southern section of York Street, between Donegall Street and Great Patrick Street. The route is characterised by heavy motor vehicle traffic, with single running lanes in either direction and central hatching provided for right turns.

This section gives access to both Buoy Park and Ulster University, providing wide footways and a mid-block crossing; however, no advisory or segregated cycle facilities are provided.

Section 2A has failed to meet the 70% threshold to pass the CLoS audit, scoring 46% with one critical fail. The critical fail is due to cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	46%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	1

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**7**	44%
Comfort	8	3	38%
Attractiveness	10	7	70%
	50		

4.2.2 Section 2B

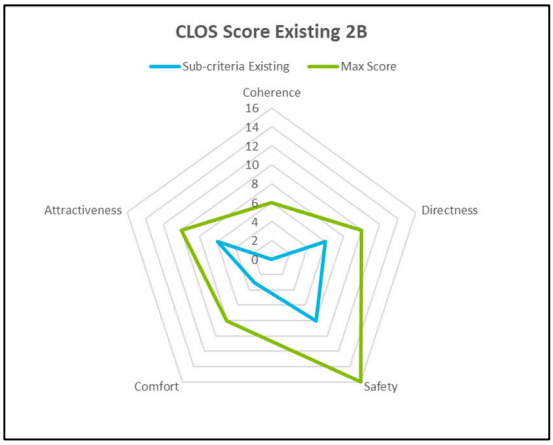
Section 2B covers York Street between its junction with the B88 Frederick Street /Great Patrick Street and its junction with the A12 Great Georges Street to the north.

This section is characterised with a high number of vehicular movements continuing ahead in a northbound direction to access both the M2 / M3 Motorways or turning left to access the A12 Great George Street.

York Street provides a one-way only northbound, five-lane carriageway within this section. No advisory or segregated cycle facilities are provided northbound or southbound via a contraflow lane.

Section 2B has failed to meet the 70% threshold to pass the CLoS audit, scoring 44% with two critical fails. Critical fails are due to:

- An AADT of 18700 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	46%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**8**	50%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

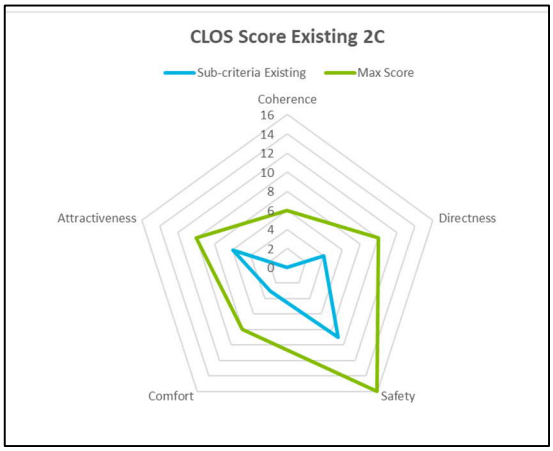
4.2.3 Section 2C

Section 2C covers York Street between its junction with the A12 Great Georges Street and A12 Westlink.

This section is characterised with a high number of vehicular movements accessing M2 / M3 Motorways, York Street provides a six-lane, one-way only northbound carriageway. Four of the vehicular lanes lead to the M2 / M3 motorway slip roads. No advisory or segregated cycle facilities are provided northbound or southbound via a contraflow lane.

Section 2C has failed to meet the 70% threshold to pass the CLoS audit, scoring 44% with two critical fails. Critical fails are due to:

- An AADT of 21271 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	4	40%
Safety	16	**9**	56%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

4.2.4 Section 2D

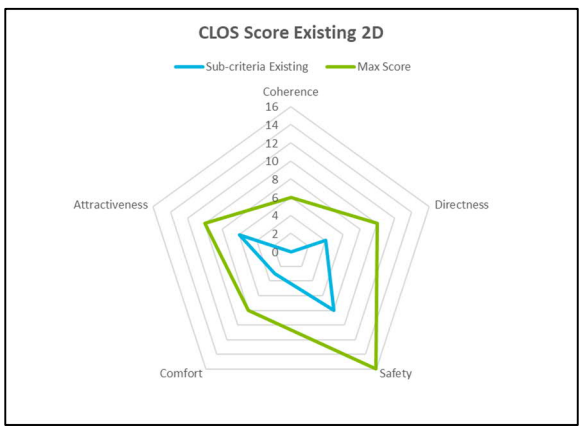
Section 2D covers York Street between its junction with the A12 Westlink and Brougham Street.

York Street provides a dual lane northbound, flaring to four at the junction with Brougham Street (with a single southbound lane leading to a motorway slip-road only). Access northbound to the Cityside Retail & Leisure Park northbound.

This section is also characterised with a high number of vehicular movements with no advisory or segregated cycle facilities provided in either direction.

Section 2D has failed to meet the 70% threshold to pass the CLoS audit, scoring 44% and two critical fails. Critical fails are due to:

- An AADT of 14258 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	4	40%
Safety	16	**8**	50%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

4.2.5 Section 2E

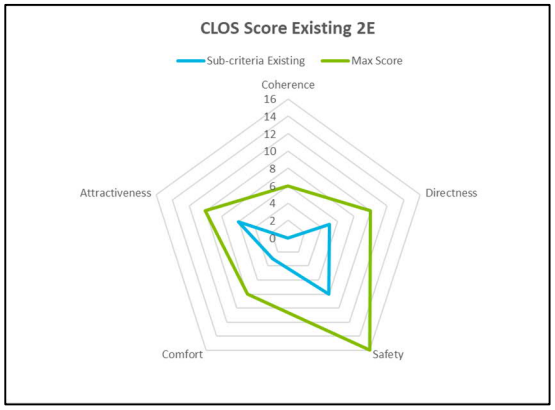
Section 2E covers York Street between its junction with Brougham Street and Yorkgate Station.

York Street provides a dual lane in either direction, with the southbound lane flaring to four lanes leading towards the Brougham Street junction. The junction with Yorkgate Station car park is priority controlled, with a right turn pocket for motor vehicles turning in, but no pedestrian or cycle provision.

This section is also characterised with a high number of vehicular movements with no advisory or segregated cycle facilities in either direction.

Section 2E has failed to meet the 70% threshold to pass the CLoS audit, scoring 44% and two critical fails. Critical fails are due to:

- An AADT of 15427 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	5	50%
Safety	16	**8**	50%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

4.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as as part of the Belfast Cycling Network. Seven existing junctions have been reviewed along corridor two, which are:

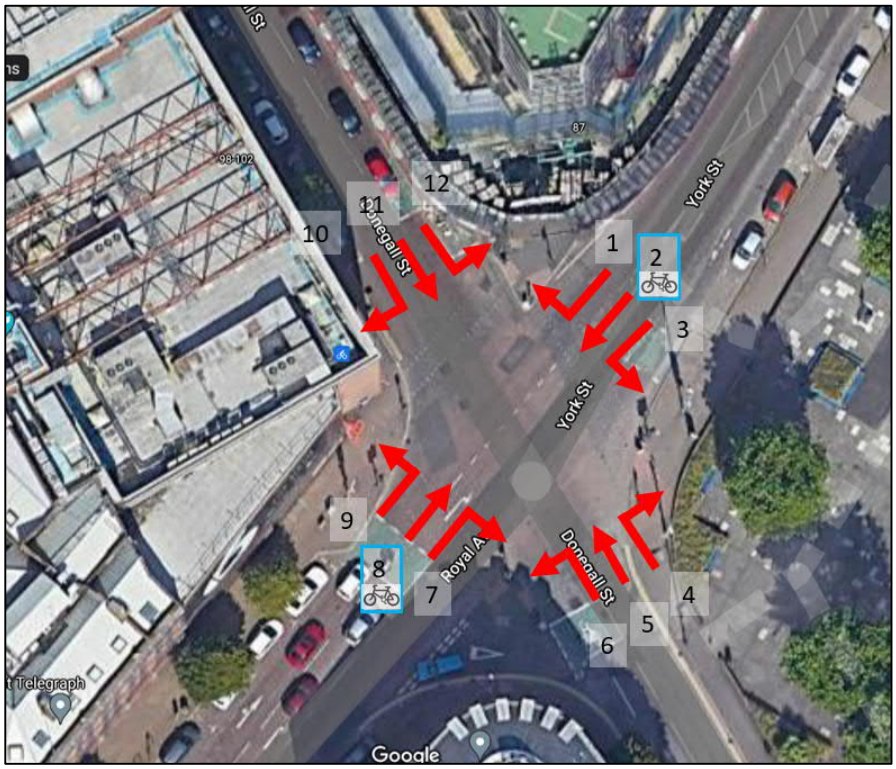
- Junction 2.1 – York Street / Donegall Street;
- Junction 2.2 – York Street / B88 Frederick Street;
- Junction 8.1 – York Street / Little Patrick Street;
- Junction 2.3 – York Street / A12 Great Georges Street;
- Junction 2.4 – York Street / A12 Westlink;
- Junction 2.5 – A2 York Street / Brougham Street; and
- Junction 2.6 – A2 York Street / Yorkgate Station.

In summary, all movements at each of the junctions assessed scored a red rating. This is due to a number of factors; however typically due to the following:

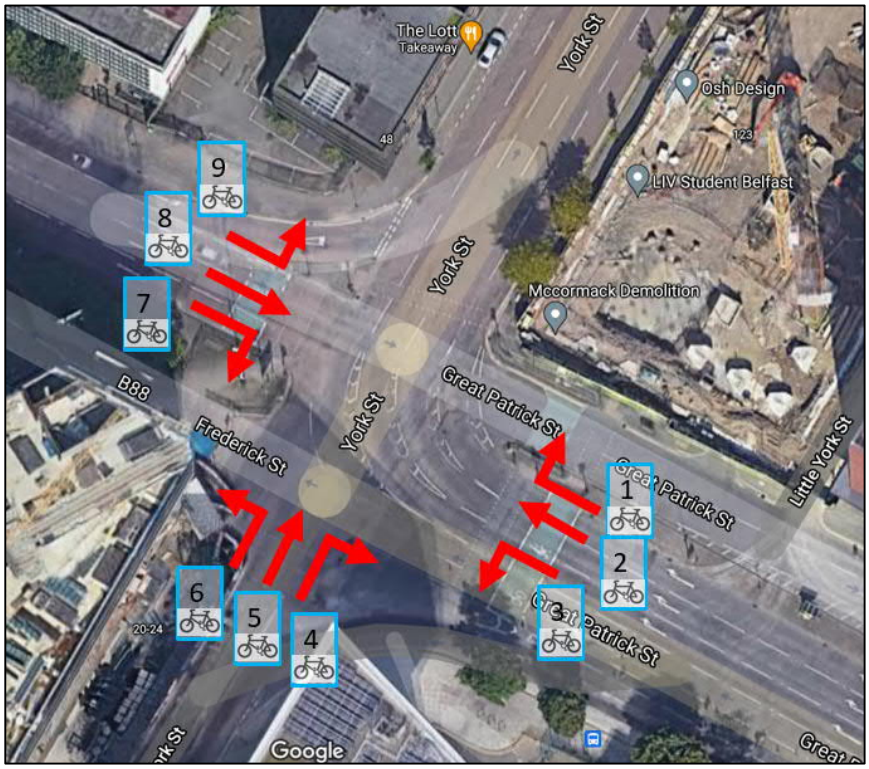
- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- ASLs are less than 5m deep;
- Several instances of unsignalised left turn lanes adjacent to signalised ahead lanes;
- Cyclists are required to move across more than one lane of traffic without protection; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor two, with further detailed information provided at **Appendix B**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

4.3.1 Junction 2.1 – York Street / Donegall Street;



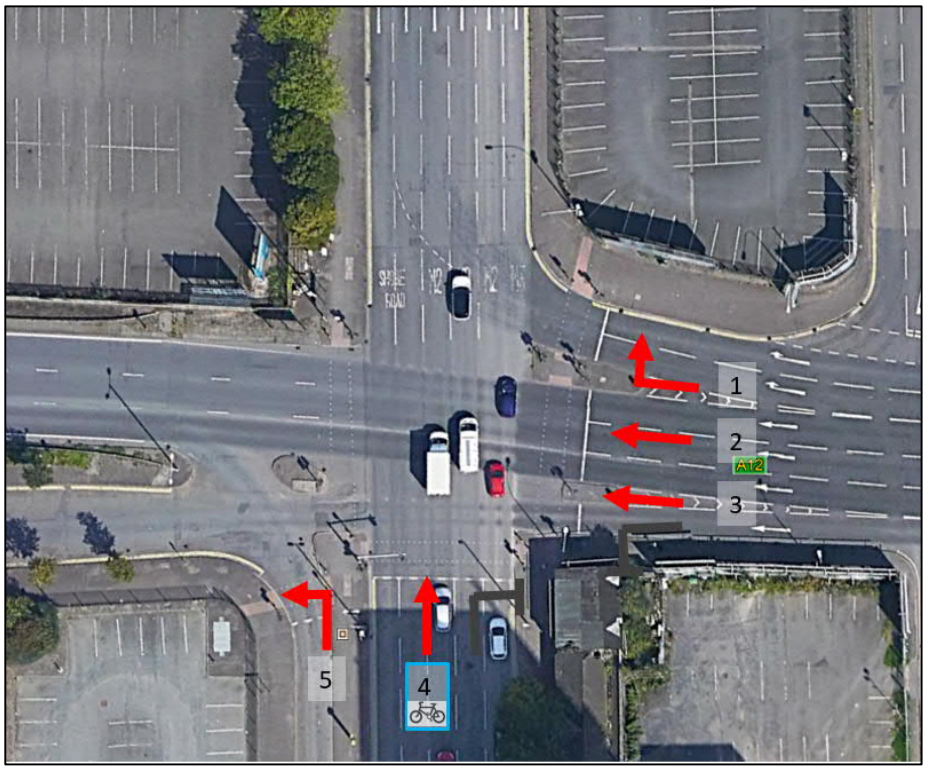
4.3.2 Junction 2.2 – York Street / B88 Frederick Street;



4.3.3 Junction 8.1 – York Street / Little Patrick Street;

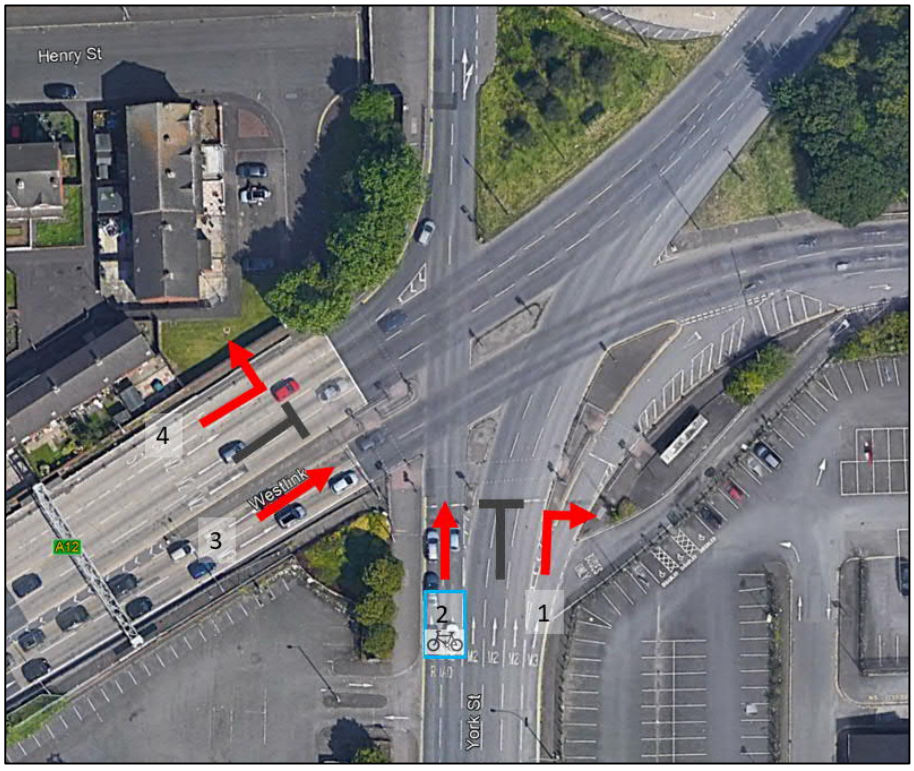
See Section 10.3.1

4.3.4 Junction 2.3 – York Street / A12 Great Georges Street;

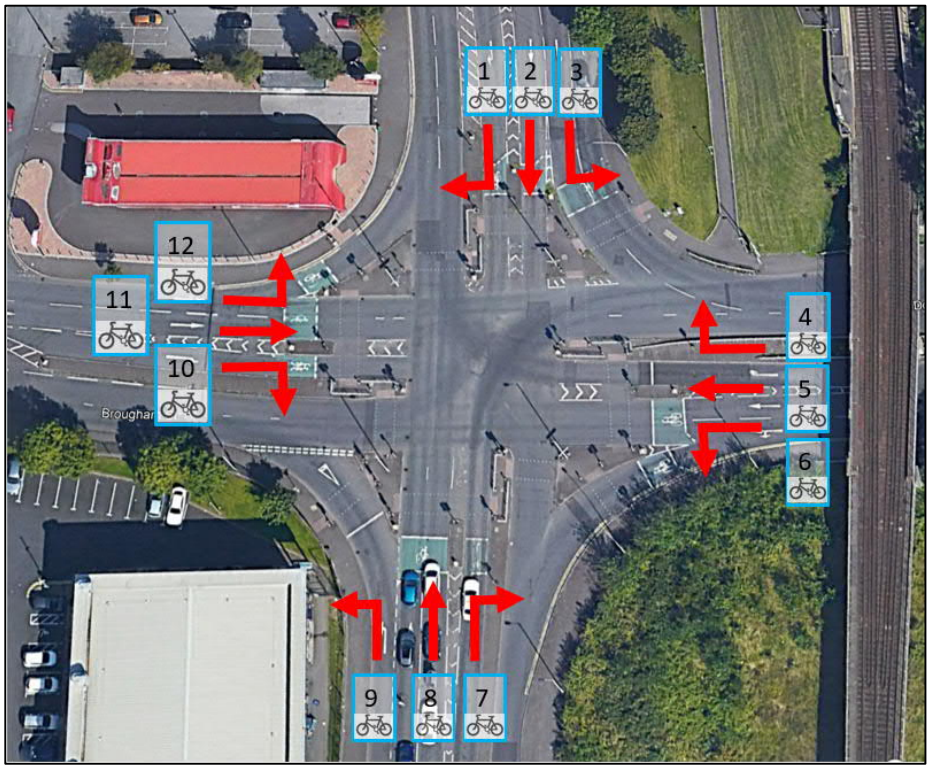


4.3.5 Junction 2.4 –York Street / A12 Westlink;

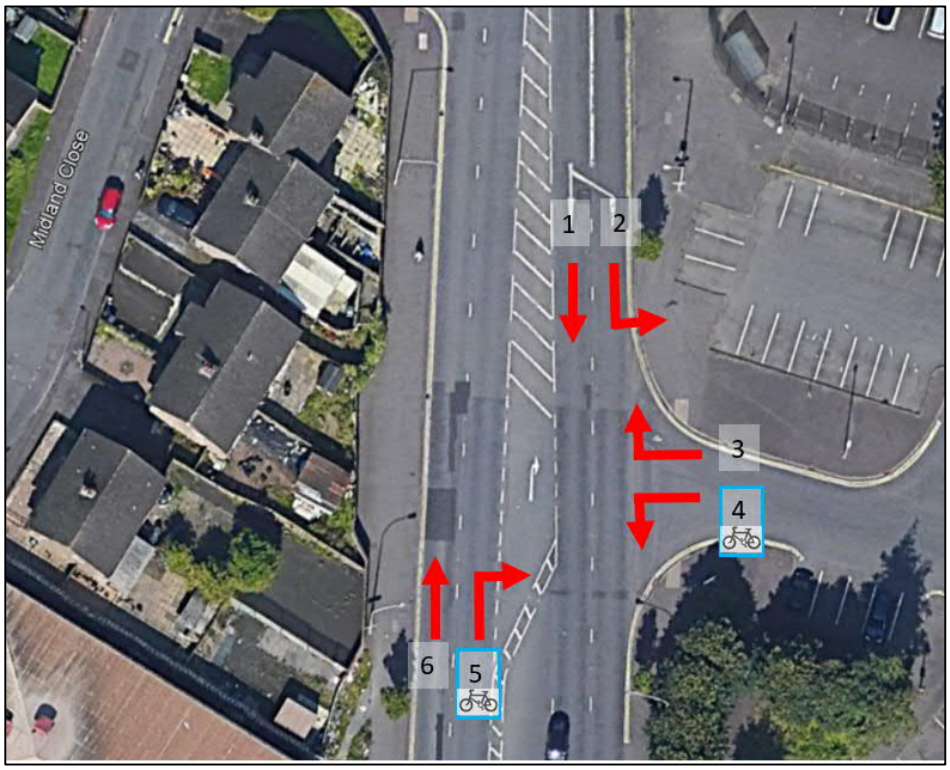
Note: Banned movements are those leading to the M2 / M3 Motorway slip roads.



4.3.6 Junction 2.5 – A2 York Street / Brougham Street;

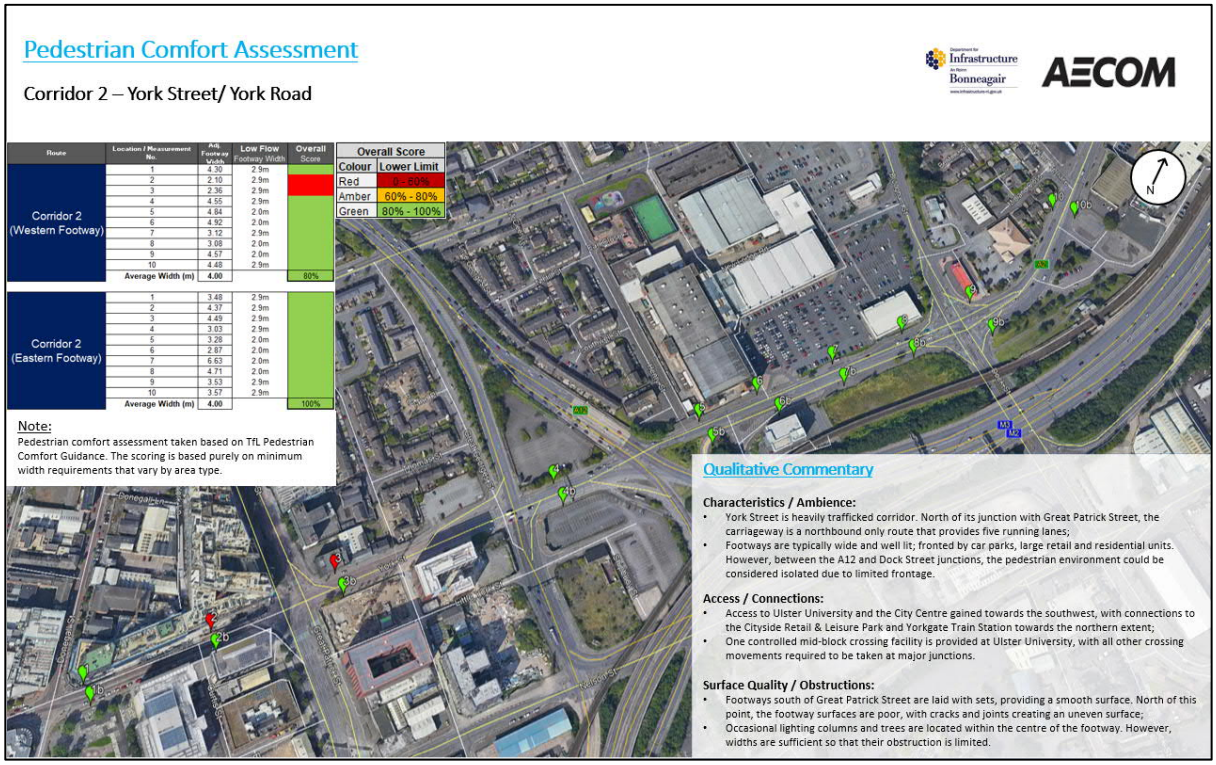


4.3.7 Junction 2.6 – A2 York Street / Yorkgate Station.



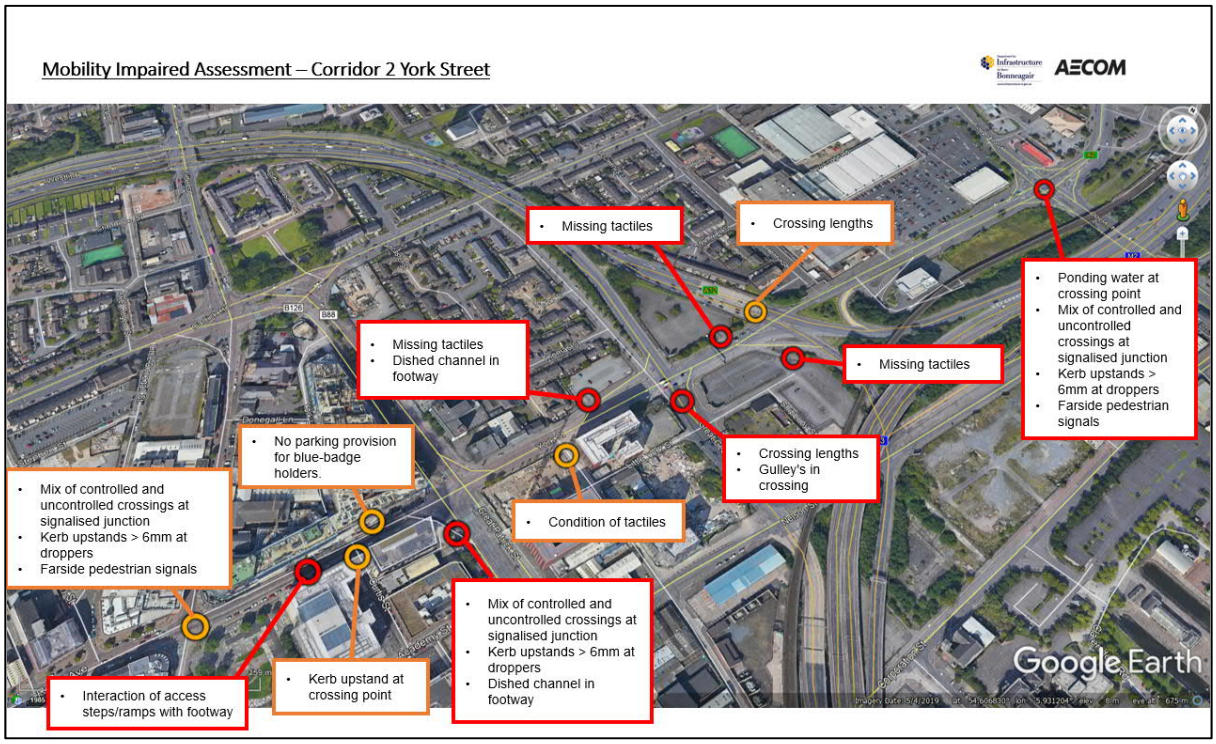
4.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor two are shown in the figure below.



4.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor two are shown in the figure below.



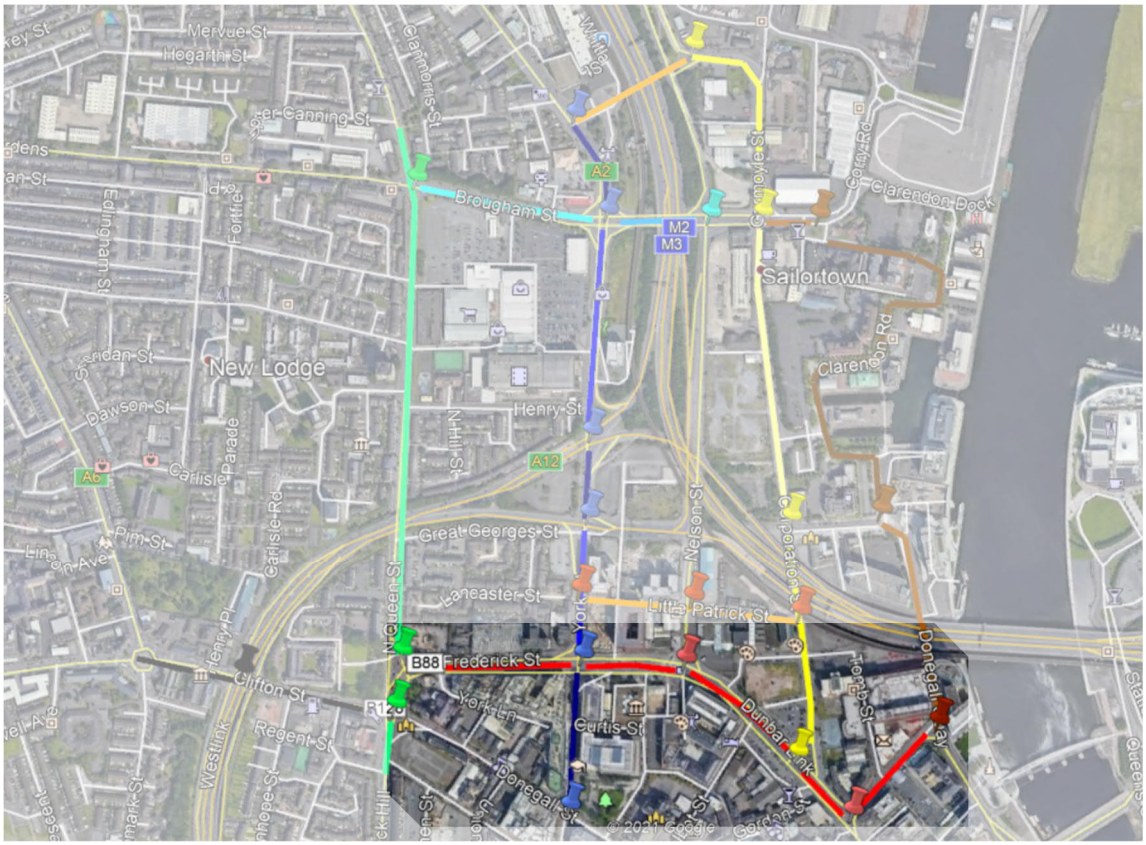
5. Corridor 3 | Fredrick Street / Dunbar Link / Waring Street

5.1 Overview

- **Extents -** Corridor three covers the northern section of the 'Belfast Inner Ring', encompassing Fredrick Street, Dunbar Link and Waring Street, between the B88 Frederick Streets / B126 Queen Street junction at its western extent; to the A2 Waring Street / Donegall Quay priority junction at its eastern extent. The corridor is shown in Figure 8.
- **Characteristics -** The corridor is very heavily trafficked and provides multiple vehicle lanes in either direction. Towards its western extent, the route features a dual lane westbound and three running lanes eastbound, with a large tree lined central reserve that includes some parking and gaps for uncontrolled pedestrian crossing. Beyond this point, between its junctions with York Street and Waring Street, up to five lanes westbound and three eastbound are provided, with a varying width central reserve used only for traffic signs and multistage pedestrian crossings at junctions.

  The route then continues with three lanes of traffic in an eastbound only direction, as the A2 Waring Street / Albert Square, between its junctions with Victoria Street and Albert Square. This section provides access both across the River Lagan via a highway bridge, which then links to the M3 Motorway to the east; or, alternatively southbound via Oxford Street which forms the eastern section of the 'Inner Ring'. No segregated or advisory cycle provision is provided along the route, with ASLs provided at only some junctions.
- **Footways –** The northern footway is considered wide, whereas the southern footway is considered moderately wide. Pedestrian only crossing facilities are provided at major junctions, with no mid-block facilities. The speed and volume of traffic does not provide a pleasant pedestrian environment along the majority of the route, with the road causing a major north / south severance.
- **Traffic Volumes / Speeds -** Motor traffic volumes are extremely high, with between 10752 and 23024 AADT; however, traffic speeds are moderate with 85th percentile speeds typically between 10-20mph due to the frequency of signalised junctions.

Figure 8 – Corridor 3, Fredrick Street / Dunbar Link / Waring Street.



5.2 Cycle Level of Service baseline results

5.2.1 Section 3A

Section 3A covers the western extent of the B88 Frederick Street, between North Queen Street and York Street. The route is characterised by heavy motor vehicle traffic, featuring a dual lane westbound and three running lanes eastbound, with a large tree lined central reserve that includes some parking and gaps for uncontrolled pedestrian crossing.

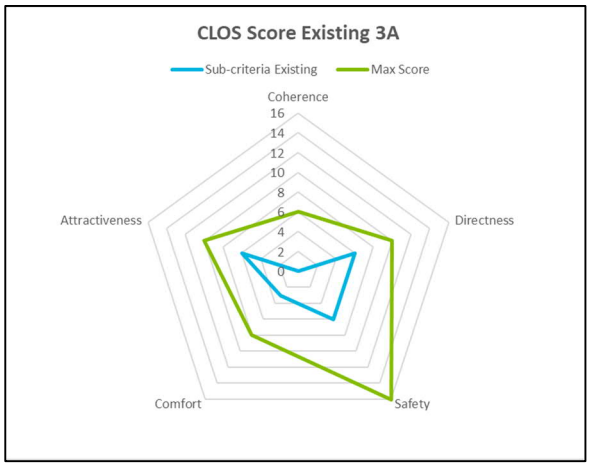
This section provides access to the A12 Westlink via Clifton Street westbound and the A2 Great Patrick Street / York Street eastbound.

The carriageway is fronted by tall office buildings to the south and a multi-storey car park to the north. Multistage pedestrian only crossings are provided at major junctions.

No advisory or segregated cycle facilities are provided along this section or lead in lanes for ASLs at the either the B126 North Queen Street or York Street junctions.

Section 3A has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with two critical fails. The critical fails are due to:

- An AADT of 10752 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

5.2.2 Section 3B

Section 3B covers the A2 Great Patrick Street, between its junctions with Nelson Street and York Street. The route is characterised by heavy motor vehicle traffic, featuring a dual lane eastbound, five running lanes westbound and a central reserve approximately 2m wide.

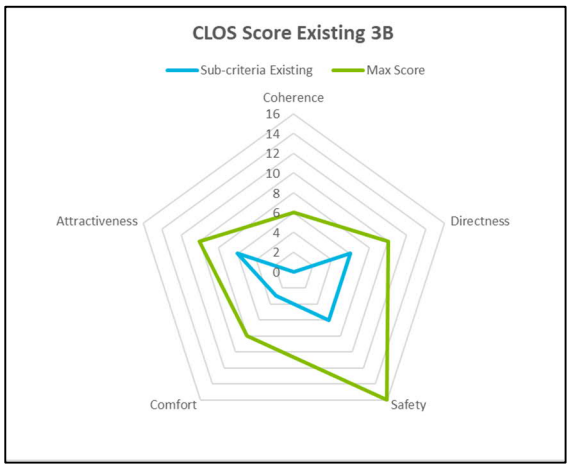
This section provides access to the A12 Westlink via Clifton Street westbound and the A2 Great Patrick Street / York Street eastbound.

Wide footways are provided on the northern side of the carriageway, with a moderate width tree lined footway provided on the southern side of the carriageway, fronted by multi-story office buildings to the south and north.

Multistage pedestrian only crossings are provided at its junctions either side. No advisory or segregated cycle facilities are provided along this section or lead in lanes towards ASLs at the either the Nelson Street and York Street junctions.

Section 3B has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with two critical fails. The critical fails are due to:

- An AADT of 22089 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

5.2.3 Section 3C

Section 3C covers the A2 Dunbar Link, between its junctions with Nelson Street and Corporation Street, running in a north / south alignment. The route is characterised by heavy motor vehicle traffic, featuring three lanes southbound and a dual lane, flaring to three lanes northbound, with a large a central reserve.

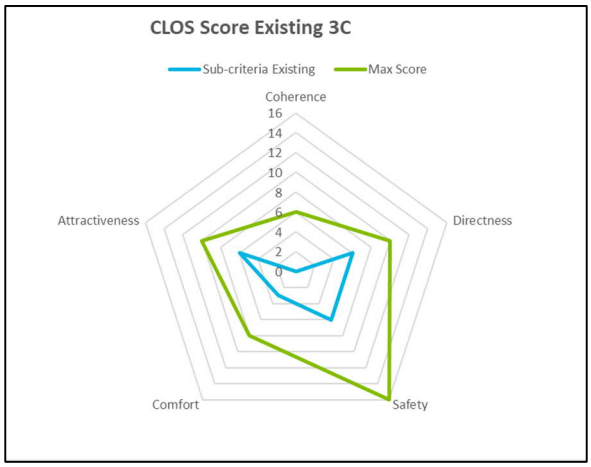
This section provides access to the A12 Westlink via York Street northbound and the A2 Albert Square / Waring Street and Corporation Street southbound.

Moderate width, tree lined footways are provided on either side of the carriageway, overlooked by a hotel to the northeast of the section and car parks on either side to the south. Multistage pedestrian only crossings are provided at both the Nelson Street and Corporation Street junctions.

No advisory or segregated cycle facilities are provided along this section or lead in lanes for ASLs at the either the Nelson Street junction. ASLs are not provided at the Corporation Street junction.

Section 3C has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with two critical fails. The critical fails are due to:

- An AADT of 20453 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

5.2.4 Section 3D

Section 3D covers the A2 Dunbar Link, between its junctions with Corporation Street and Waring Street. The route is characterised by heavy motor vehicle traffic, featuring three lanes southbound and a dual lane, flaring to four lanes northbound; a central reserve is also provided, approximately 2.5m wide.

This section provides access to the A12 Westlink via York Street and Corporation Street northbound and the A2 Albert Square / Waring Street to the east for southbound movements. The A2 Victoria Street that forms the southern arm provides five running lanes in a northbound only direction.

A moderate width, tree lined footway is provided to the west of the carriageway and a wider paved footway is provided to the east; both overlooked by office buildings.

Multistage pedestrian only crossings are provided at its junctions either side. No advisory or segregated cycle facilities are provided along this section or ASLs at the either junction.

Section 3C has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with two critical fails. The critical fails are due to:

- An AADT of 23024 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).

Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

5.2.5 Section 3E

Section 3E covers the A2 Waring Street / Albert Square between its junctions with Victoria Street and Albert Square. The route is heavily trafficked; however, is one-way in an eastbound direction, featuring three lanes of traffic.

This section provides access southbound across the River Lagan, linking to M3 Motorway to the east, or Oxford Street / East Bridge Street to the south.

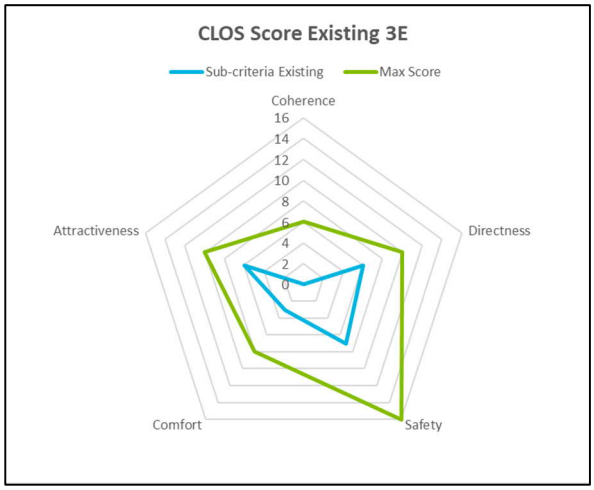
Moderate width footways are provided either side of the carriageway, with a wide grass verge running adjacent to the southern footway.

This section is overlooked by both office and residential buildings, a multistage pedestrian crossing is provided at its junction with Victoria Street; whereas, only an uncontrolled crossing of the minor arm is provided at the Albert Square junction.

No advisory or segregated cycle facilities are provided along this section in an east / west alignment; however, NCN 93 runs in a north / south alignment along the eastern footway at the Albert Square junction. No further connections are provided to alternative routes from NCN 93.

Section 3E has failed to meet the 70% threshold to pass the CLoS audit, scoring 44% with two critical fails. The critical fails are due to:

- An AADT of 23024 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**7**	44%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

5.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Six existing junctions have been reviewed along corridor three, which are:

- Junction 1.2 – B88 Carrick Hill / B126 North Queen Street
- Junction 2.2 – York Street / B88 Frederick Street;
- Junction 3.3 – Great Patrick Street / Nelson Street;
- Junction 5.1 – A1 Dunbar Link / Corporation Street;
- Junction 3.5 – A2 Dunbar Link / Waring Street; and
- Junction 6.1 – Albert Square / Donegal Quay.

In summary, two movements, associated with NCN 93 at the Albert Square / Donegal Quay junction scored a green rating, due to the existing cycleway been separated physically from motor traffic and also from pedestrians by a white line marking. All other movements, at all other junctions scored a red rating, this is due to a number of factors; however typically due to the following:

- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- ASLs are less than 5m deep;
- Instances of unsignalised left turn lanes adjacent to signalised ahead lanes;
- Cyclists are required to move across more than one lane of traffic without protection; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor three, with further detailed information provided at **Appendix C**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

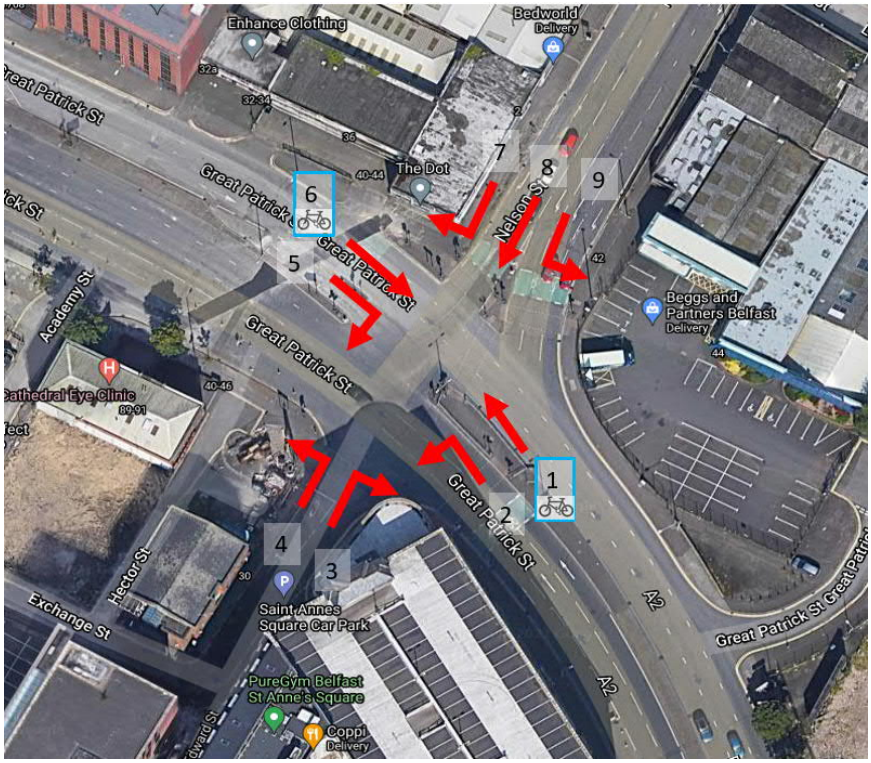
5.3.1 Junction 1.2 – B88 Carrick Hill / B126 North Queen Street

See Section 3.3.2

5.3.2 Junction 2.2 – York Street / B88 Frederick Street

See Section 4.3.2

5.3.3 Junction 3.3 – Great Patrick Street / Nelson Street

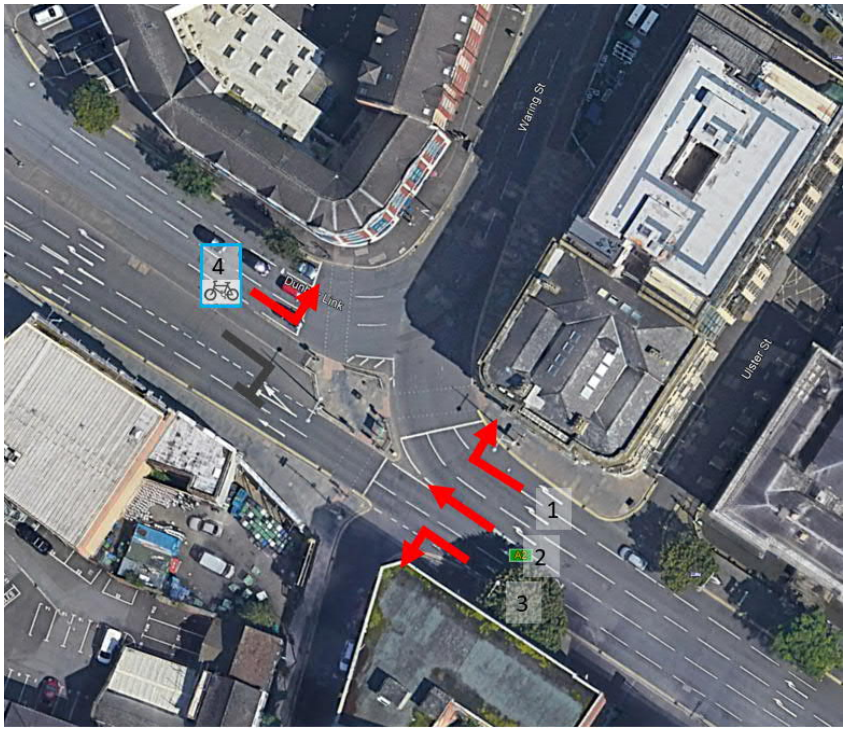


5.3.4 Junction 5.1 – A1 Dunbar Link / Corporation Street

See Section 7.3.1

5.3.5 Junction 3.5 – A2 Dunbar Link / Waring Street

Note: Banned right turn from Dunbar Link Eastbound (left turn only) to minor arm southbound for all traffic.

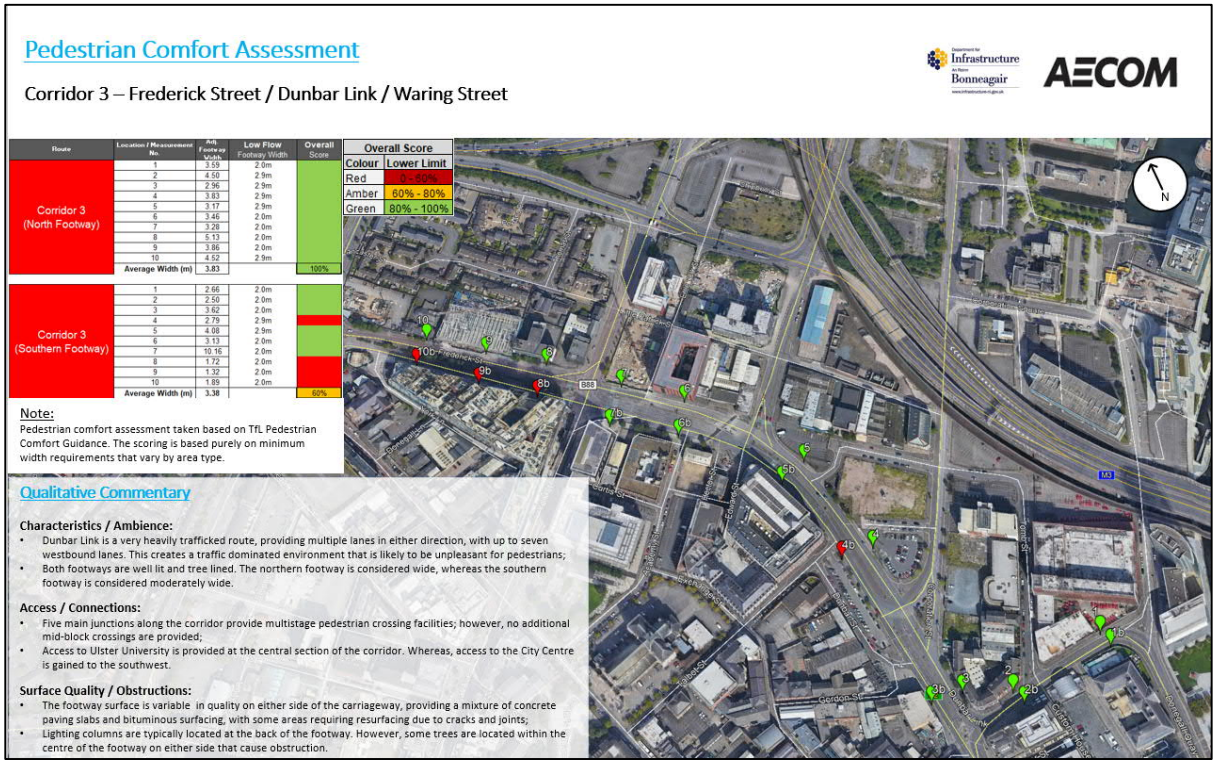


5.3.6 Junction 6.1 – Albert Square / Donegall Quay

See Section 8.3.1

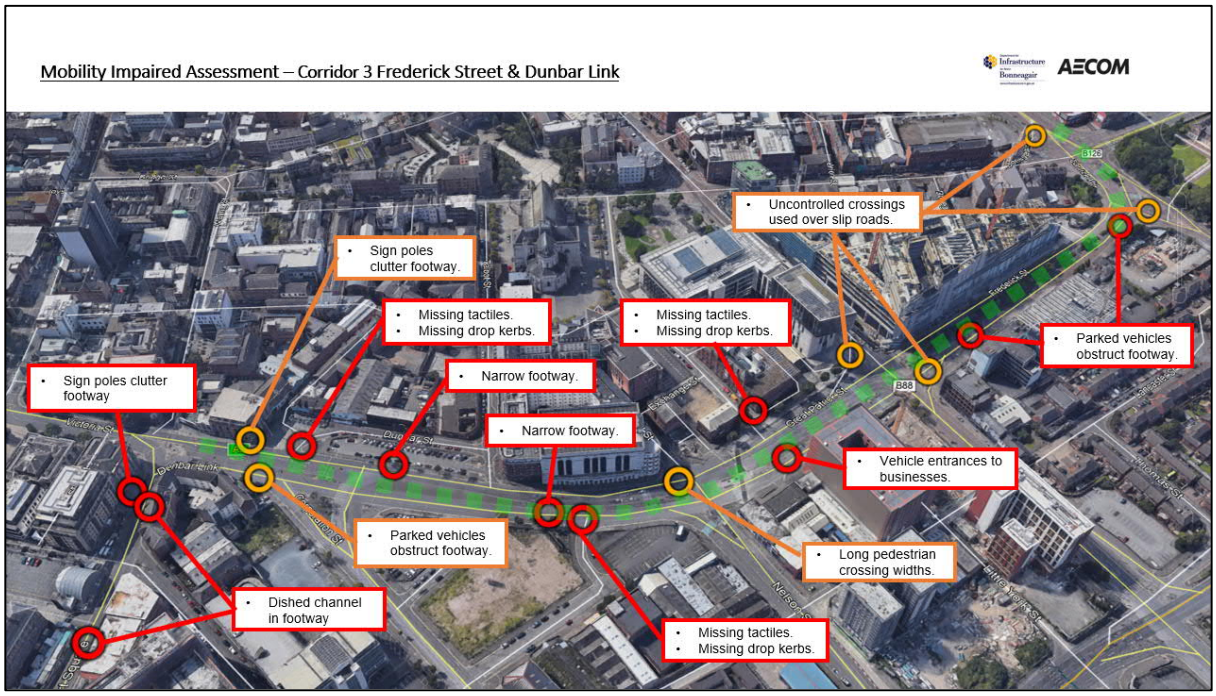
5.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor three are shown in the figure below.



5.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor three are shown in the figure below.



6. Corridor 4 | Brougham Street / Dock Street

6.1 Overview

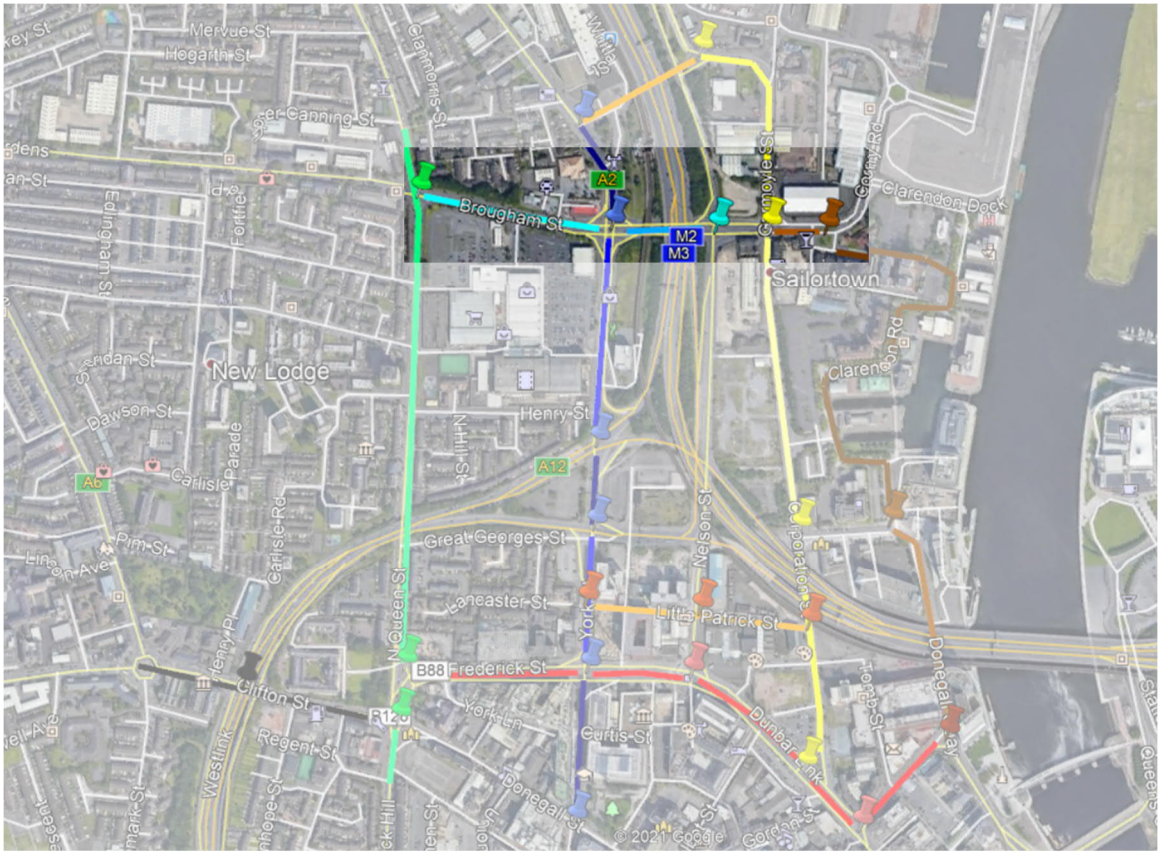
- **Extents -** Corridor four covers Brougham Street and Dock Street, from the junction with B126 North Queen Street at its western extent; to its junction priority junction with Princes Dock Street at its eastern extent. The corridor is shown in Figure 9.
- **Characteristics -** Brougham Street, between its junctions with North Queen Street and York Street is a heavily trafficked route, featuring dual lanes in either direction, with no central reserve.

  East of its junction with York Street, the route continues to be heavily trafficked, featuring dual lanes that flare to three in either direction. As the route passes under the M3 motorway the route features a central reserve containing overpass pier columns protected by VRS.

  East of the underpass, the route continues eastbound through two signalised intersections of Nelson Street and Garmoyle Street. The corridor then ends at Princes Dock Street prior to the Harbour Estate entrance. No segregated or advisory cycle provision is provided along the corridor, with ASLs provided at only the B126 North Queen Street and A2 York Street junctions.

  However, at its very eastern extent, the NCN Route 93 runs in a north / south alignment between Princes Dock Street and Garmolye Street, which provides two-way cycle track segregated from traffic.
- **Footways -** Pedestrian footways are of an adequate width along the corridor, with pedestrian only crossing facilities provided at major junctions. The speed and volume of traffic does not provide a pleasant pedestrian or cycle environment, particularly where the route passes under the M3 Motorway, which is poorly lit, and traffic dominated. Footways provide access to retail units to the north and south that form part of the Cityside Retail & Leisure Park, with Yorkgate Train Station also accessed via the Dock Street junction.
- **Traffic Volumes / Speeds -** Motor traffic volumes are extremely high, with between 13791 and 16596 AADT; however, traffic speeds are low with 85th percentile speeds of 10mph due to the number of signalised junctions.

Figure 9 – Corridor 4, Brougham Street / Dock Street.



6.2 Cycle Level of Service baseline results

6.2.1 Section 4A

Section 4A covers Brougham Street, between its junctions with North Queen Street and York Street. The route is characterised by heavy motor vehicle traffic, featuring dual lanes in either direction, with no central reserve.

Moderate width, tree lined footways are provided on either side of the carriageway; the route is fronted to the north by a fence protecting wooded residential back gardens and to the south by the Cityside Retail & Leisure Park Car Park.

Multistage pedestrian only crossings are provided at junctions. No advisory or segregated cycle facilities are provided along this section or lead in lanes towards ASLs at the either the B126 North Queen Street or York Street junctions.

Section 4A has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with two critical fails. The critical fail is due to:

- An AADT of 13791 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).

Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

6.2.2 Section 4B

Section 4B covers Dock Street, between its junctions with York Street and Nelson Street. The route is characterised by heavy motor vehicle traffic, featuring dual lanes that flare to three lanes in either direction, with a central reserve and VRS that protects the M3 overpass piers.

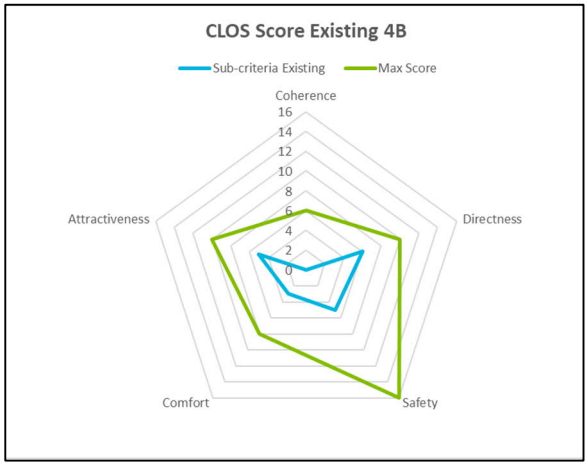
This section provides access to the A2 York Street / B126 North Queen Street westbound and Dock Street / Nelson Street eastbound.

A moderate width footway is provided on either side of the carriageway. However, the underpass is traffic dominated, noisy and poorly lit, creating an unwelcoming environment from a pedestrian or cycle perspective.

Multistage pedestrian only crossings are provided at junctions. No advisory or segregated cycle facilities are provided along this section or lead in lanes towards ASLs at the either the York Street junction; ASLs are not provided at the Nelson Street junction.

Section 4B has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with two critical fails. The critical fail is due to:

- An AADT of 13791 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	38%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	5	31%
Comfort	8	3	38%
Attractiveness	10	5	50%
	50		

6.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Five existing junctions have been reviewed along corridor four, which are:

- Junction 1.3 – B126 North Queen Street / Brougham Street;
- Junction 2.5 – A2 York Street / Brougham Street; and
- Junction 4.3 – Dock Street / Nelson Street;
- Junction 5.3 – Garmoyle Street / Dock Street;
- Junction 6.3 – Princes Dock Street / Dock Street

In summary, three movements, two at Garmoyle Street / Dock Street and one at both Princes Dock Street / Dock Street are classed as amber, these movements are associated with NCN 93 and are undertaken using an off-carriageway cycle track separated from pedestrians by white thermoplastic line. However, not all movements associated with the NCN 93 route scored an amber, due to insufficient crossing provision of dual-carriageway Dock Street.

All other junction movements scored a red rating, this is due to a number of factors; however typically due to the following:

- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- ASLs are less than 5m deep;
- Instances of unsignalised left turn lanes adjacent to signalised ahead lanes;
- Cyclists are required to move across more than one lane of traffic without protection; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor four, with further detailed information provided at **Appendix D**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

6.3.1 Junction 1.3 – B126 North Queen Street / Brougham Street

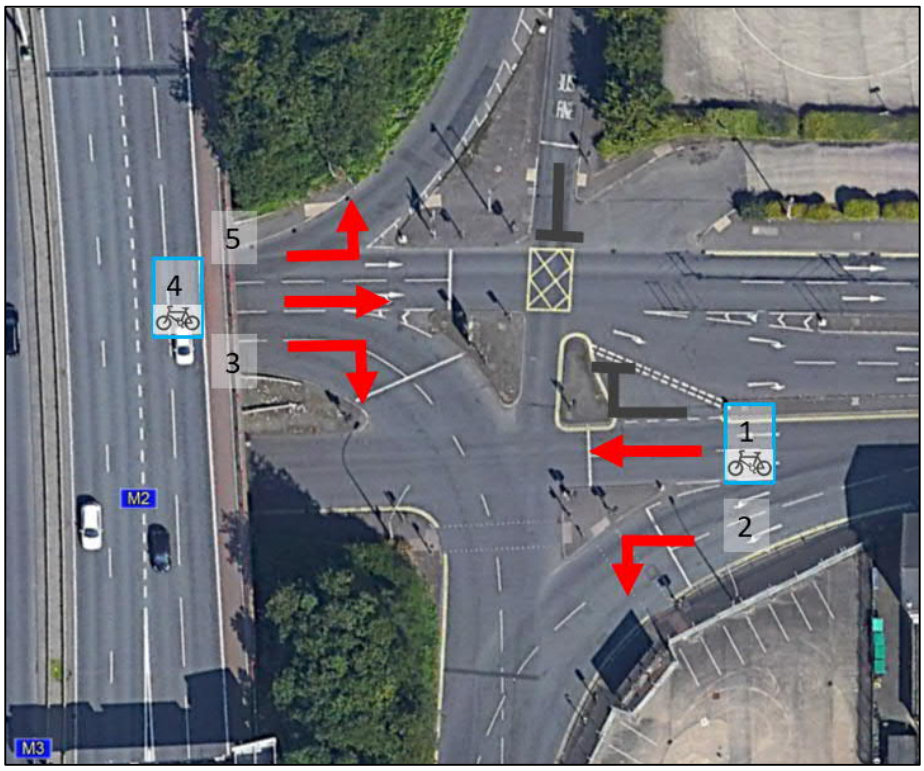
See Section 3.3.3

6.3.2 Junction 2.5 – A2 York Street / Brougham Street

See Section 4.3.6

6.3.3 Junction 4.3 –Dock Street / Nelson Street

Note: Bus lane southbound does not permit cyclists.



6.3.4 Junction 5.3 – Garmoyle Street / Dock Street

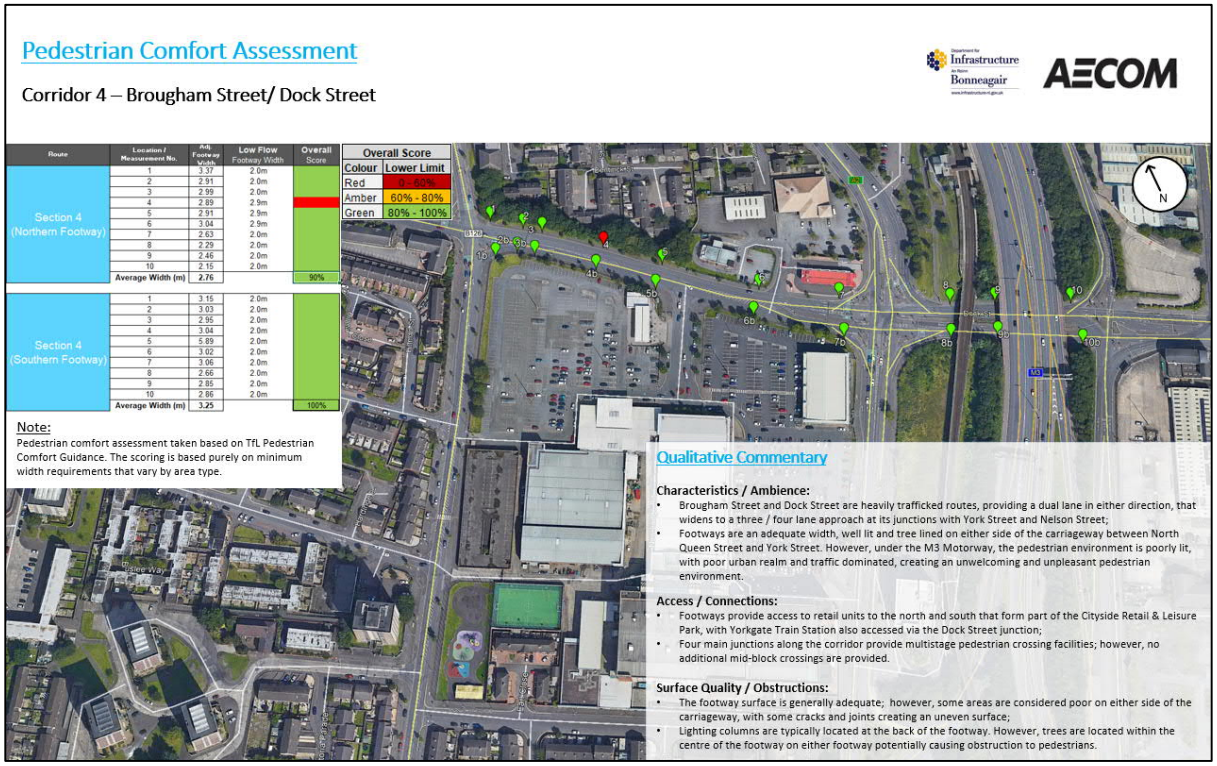
See Section 7.3.4

6.3.5 Junction 6.3 – Princes Dock Street / Dock Street

See Section 8.3.3

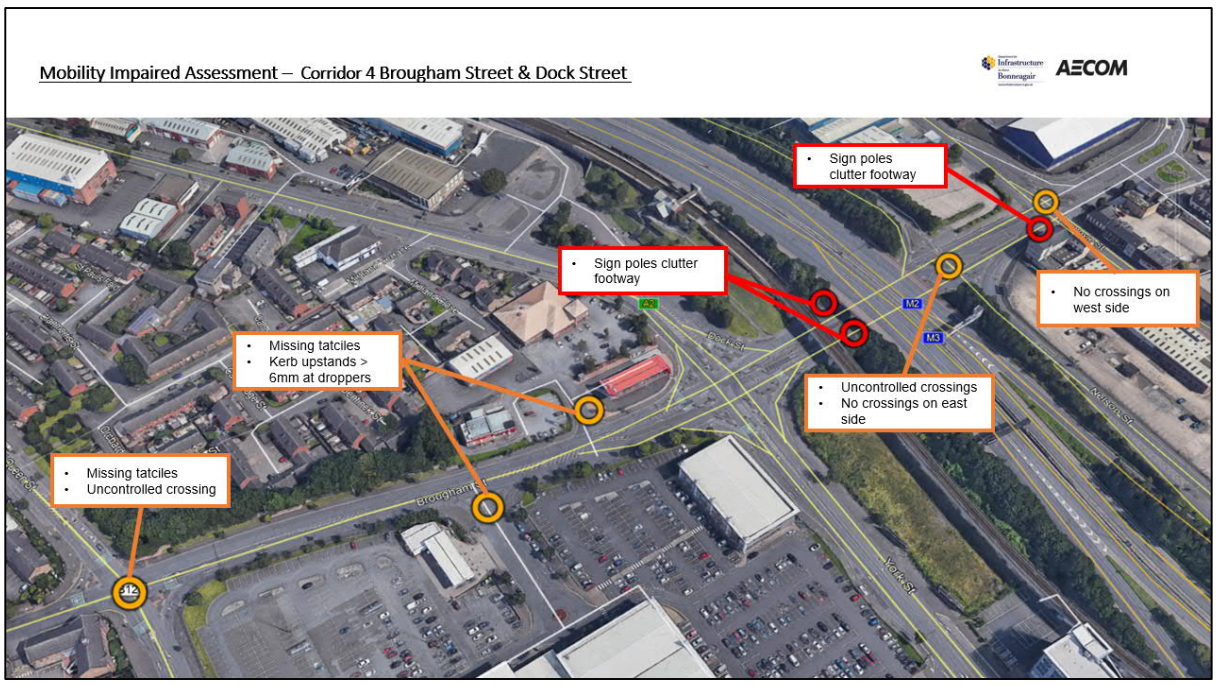
6.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor four are shown in the figure below.



6.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor four are shown in the figure below.



7. Corridor 5 | Garmoyle St / Corporation St

7.1 Overview

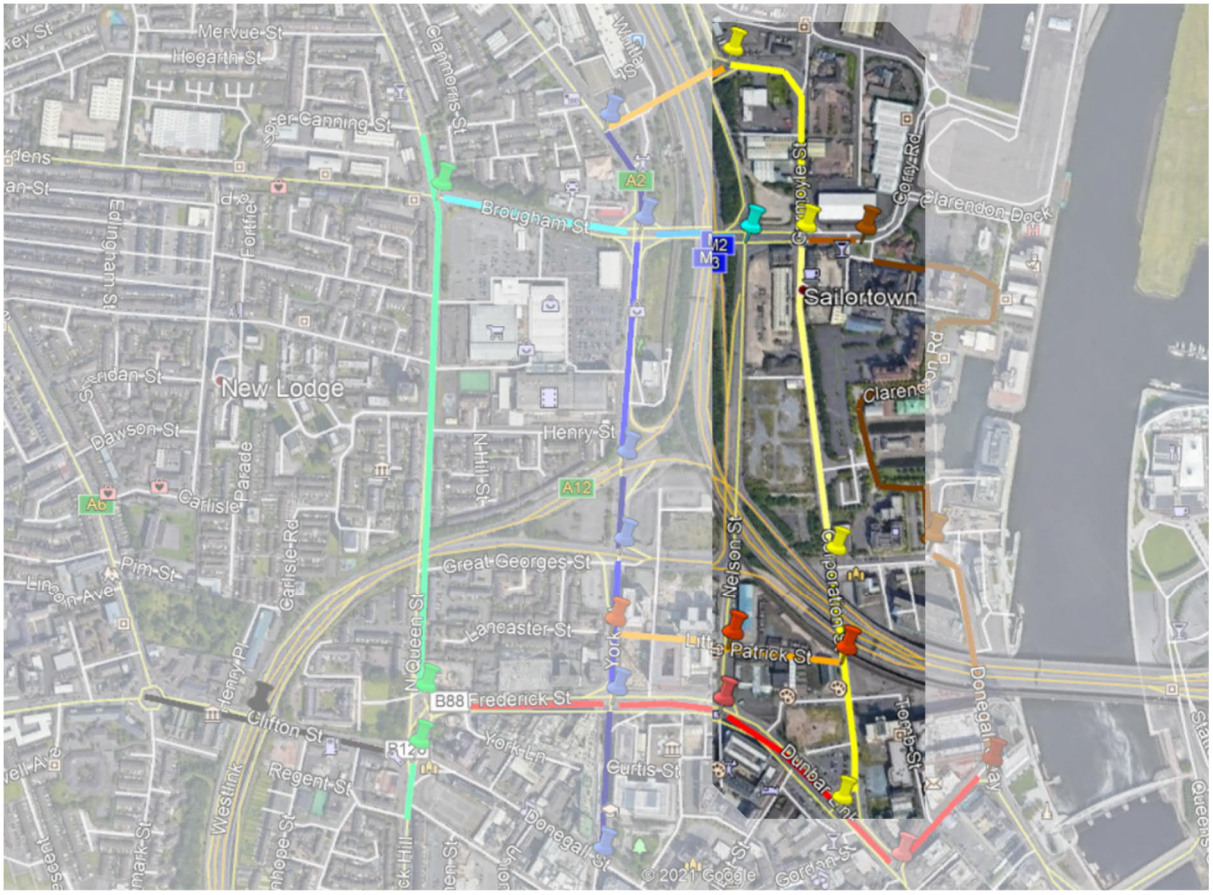
- **Extents -** Corridor five covers Garmoyle Street and Corporation Street, from the junction with A2 Dunbar Link at its southern extent; to its mid-block Toucan crossing at the Whitla Street Subway. The corridor is shown in Figure 10.
- **Characteristics -** The southern section of the corridor is characterised by heavy motor vehicle traffic, featuring dual lanes in either direction, running in a north / south alignment.

  To the south the route connects to the 'Belfast Inner Ring'. To the north the route connects to Sailortown Quay for general traffic but continues to Dock Street as a bus / cycle only route. The southern section of corridor is fronted by several car parks and industrial / office units on either side. The M3 Motorway and railway line overpass, which creates an isolated and unwelcome pedestrian / cycle environment. The section north of Dock Street is also characterised with heavy motor vehicle traffic, providing a one-way southbound three-lane highway that flares to five lanes at its junction with Dock Street and is also fronted by industrial units.
- **Footways -** Moderate footway widths are provided, that are tree lined on either side; however, on the eastern footway trees and lighting columns are placed in such a way as to create obstacles within the footway.

  At the northern section of the corridor, the eastern footway forms NCN 93 and has been divided between pedestrians and cycles using a white thermoplastic line. Signposts, trees and lighting columns create obstacles within both the narrow footway and cycle track.

  A shared use section and mid-block toucan crossing is provided within the northern section of the corridor. At all other major junctions, including Dock Street, pedestrian only crossings are provided.
- **Traffic Volumes / Speeds -** Motor traffic volumes are very high, with between 9584 and 17881 AADT. At the southern extent of the corridor, Corporation Street has an 85th percentile speed of 11mph due to frequent signalised junctions; whereas, towards the northern extent of the corridor, 85th percentile speeds are approximately 33mph.

Figure 10 – Corridor 5, Garmoyle St / Corporation St



7.2 Cycle Level of Service baseline results

7.2.1 Section 5A

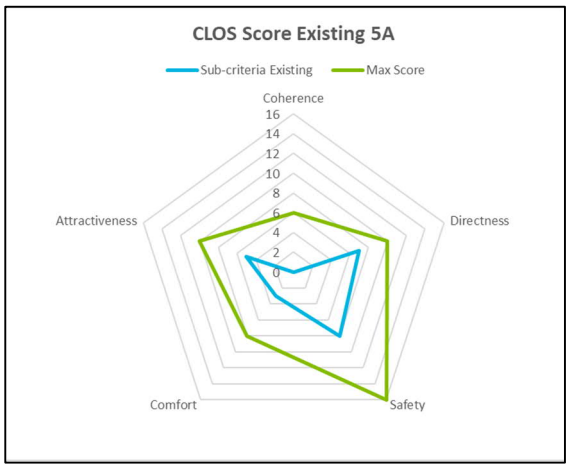
Section 5A covers Corporation Street between its junctions with the A2 Dunbar Link and Corporation Square. The route is characterised by heavy motor vehicle traffic, featuring dual lanes in either direction, running in a north / south alignment. To the south the route connects to the 'Belfast Inner Ring', whereas to the north the route connects to Corporation Square; or, continues on for another 125m before connecting to Sailortown Quay for general traffic and continuing as a bus / cycle only route.

This section of the corridor is fronted by several car parks and industrial / office units either side. Towards the northern extent of the section, the M3 Motorway overpasses, creating an isolated and unwelcome pedestrian / cycle environment with limited passive surveillance.

A moderate width, tree lined footway is provided either side of the carriageway. No mid-block pedestrian crossings are provided. Multistage pedestrian only crossings are provided at its junction with the A2 Dunbar Link to the south and straight across pedestrian crossings are provided at the junction with Corporation Square to the north. However, no cycle crossings or advisory / segregated cycle facilities are provided along this section.

Section 5A has failed to meet the 70% threshold to pass the CLoS audit, scoring 46% and one critical fail. The critical fail is due to:

- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	46%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	1

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	0	0%
Directness	10	7	70%
Safety	16	**8**	50%
Comfort	8	3	38%
Attractiveness	10	5	50%
	50		

7.2.2 Section 5B

Section 5B covers Corporation Street between its junctions with Corporation Square and Dock Street. This section is characterised by heavy motor vehicle traffic and 85th percentile speeds of approximately 30mph.

This section features a dual lane southbound; however, northbound from the Corporation Square junction, a single lane continues for approximately 125m before general traffic is forced to turn right at a bus gate and route towards Sailortown Quay, Corporation Street then continues northbound as a single bus and cycle lane.

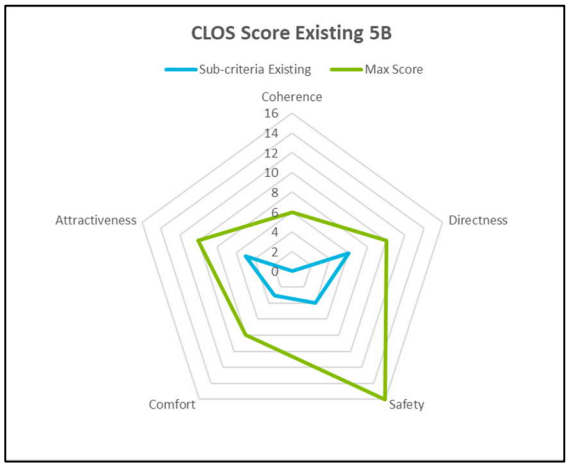
This section of the corridor is fronted by car parks, industrial units and derelict land, giving limited passive surveillance. A moderate width, tree lined footway is provided on either side of the carriageway; however, trees and lighting columns within the eastern footway create obstacles.

Straight across pedestrian only crossings are provided at its junction with Corporation Square and a multistage pedestrian only crossing is provided at its junction with Dock Street. However, no cycle crossings or advisory / segregated cycle facilities are provided for southbound movements.

No cycle connections to / from Corporation Street are provided at the Dock Street junction, with cyclists travelling northbound within the bus lane left stranded and forced to turn left into the busy Dock Street / Nelson Street junction with no onward provision.

Section 5B has failed to meet the 70% threshold to pass the CLoS audit, scoring 36% with two critical fails. The critical fail is due to:

- An AADT of 11804 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	36%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**4**	25%
Comfort	8	3	38%
Attractiveness	10	5	50%
	50		

7.2.3 Section 5C

Section 5C covers Garmoyle Street, between its junctions with Dock Street and its mid-block crossing towards the Whitla Street Subway.

This section is characterised by heavy motor vehicle traffic and provides three-lanes one way southbound, flaring to five at its junction with Dock Street.

This section is fronted by industrial units and a fire station to the east and a large brick walled industrial unit to the west. A moderate width, tree lined footway is provided on the western side of the carriageway.

The eastern footway forms NCN 93 and has been divided using a thermoplastic while line into both a below minimum standard footway and a minimum standard two-way cycle track; signposts, trees and lighting columns create obstacles within both the footway and cycle track.

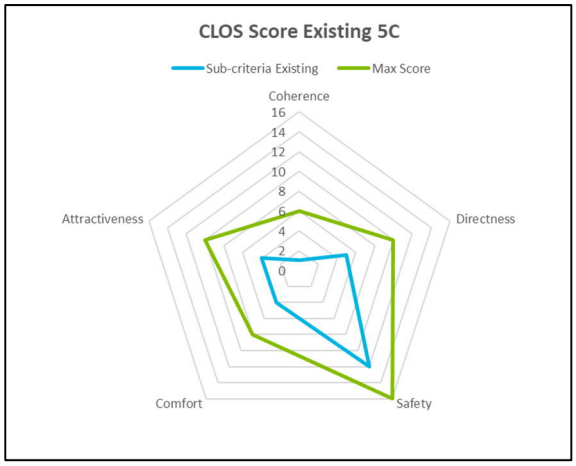
A shared use section and mid-block toucan crossing is provided at the northern extent of the route, towards the Whitla Street Subway.

At the Dock Street junction, a multistage pedestrian only crossing is provided, with cyclists entering into shared space, but with no cycle crossing facilities or connection to Corporation Street.

The following results are assessed on the linear cycle provision allowing cyclists to be separated from general traffic, not the connections to and from the facility at junctions which are considered poor.

Section 5C has failed to meet the 70% threshold to pass the CLoS audit, scoring 52% with no critical fails. The fail is due to a number of factors, including:

- No dedicated connection to adjacent routes e.g. Garmoyle Street / Corporation Street to the south or Dock Street to the west; and
- Cycle and pedestrian facilities are narrow with no vertical separation and obstacles blocking the route.



Max possible score	50
Audit % score	52%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	1	17%
Directness	10	5	50%
Safety	16	**12**	75%
Comfort	8	4	50%
Attractiveness	10	4	40%
	50		

7.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Five existing junctions have been reviewed along corridor five, which are:

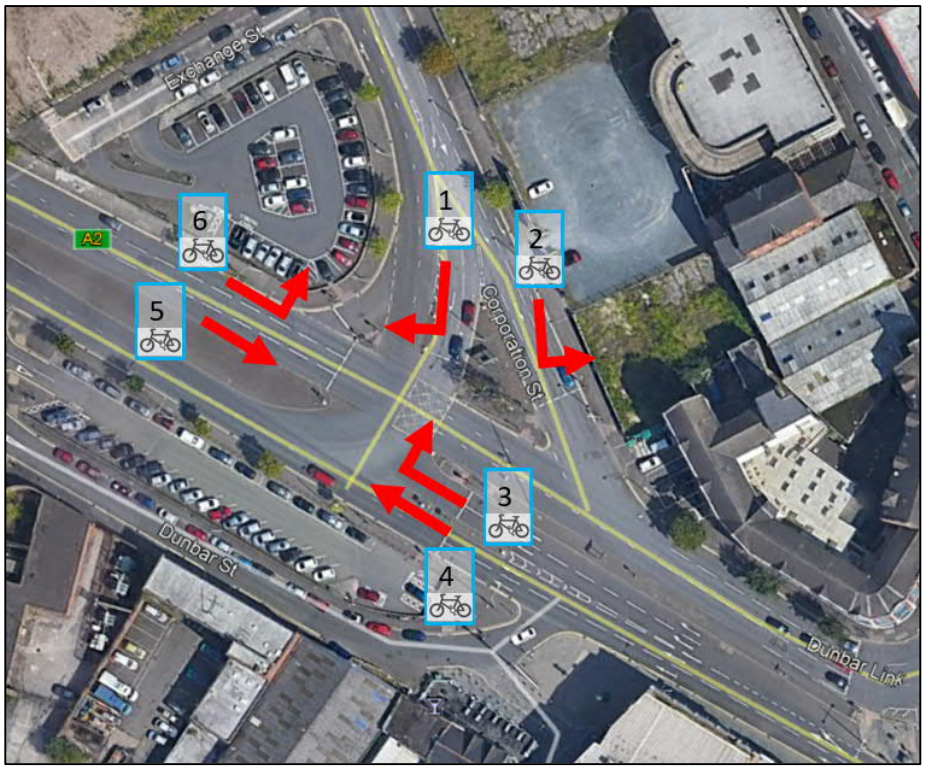
- Junction 5.1 – A1 Dunbar Link / Corporation Street
- Junction 5.2 – Corporation Street / Corporation Square;
- Junction 8.3 – Corporation Street / Little Patrick Street;
- Junction 5.3 – Garmoyle Street / Dock Street; and
- Junction 5.4 – Duncrue Street / Whitla Subway

In summary, two movements, associated with NCN 93 at the Garmoyle Street / Dock Street junction scored an amber rating, due to the existing cycle movement separated physically from motor traffic and also segregated from pedestrians by a white thermoplastic line marking. All other movements, at all other junctions scored a red rating, this is due to a number of factors; however typically due to the following:

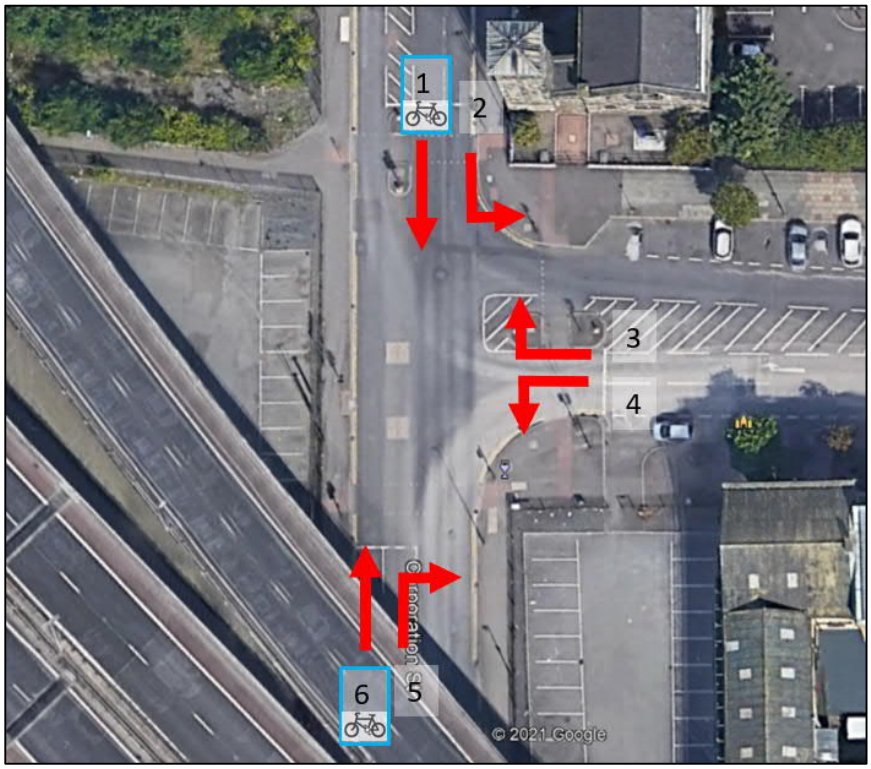
- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- Instances of unsignalised left turn lanes adjacent to signalised ahead lanes;
- Cyclists are required to move across more than one lane of traffic without protection; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor five, with further detailed information provided at **Appendix E**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

7.3.1 Junction 5.1 – A1 Dunbar Link / Corporation Street



7.3.2 Junction 5.2 – Corporation Street / Corporation Square

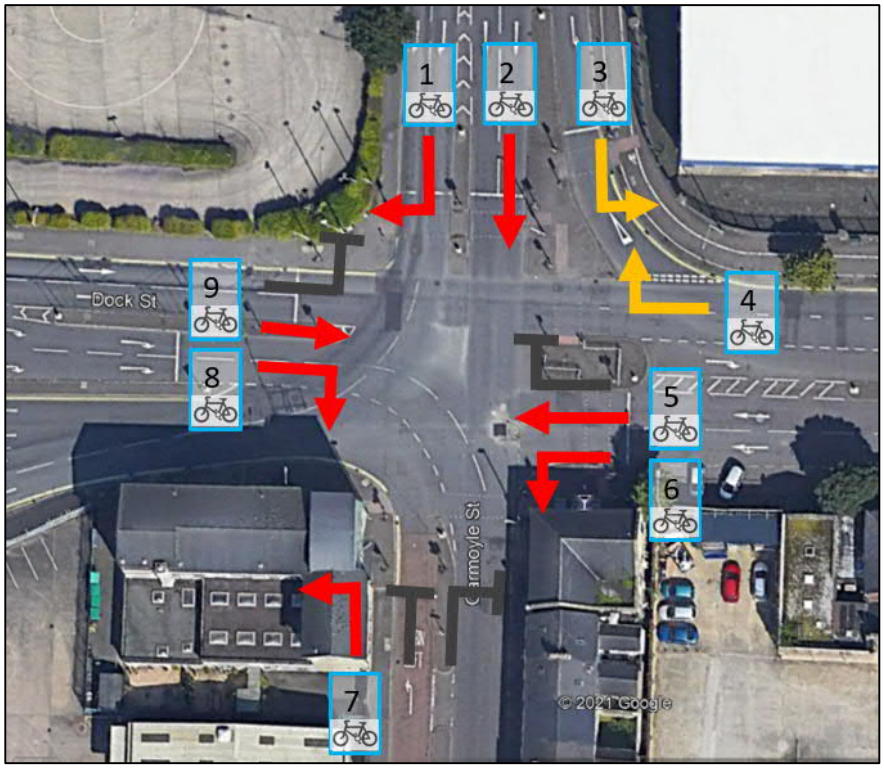


7.3.3 Junction 8.3 – Corporation Street / Little Patrick Street

See Section 10.3.3

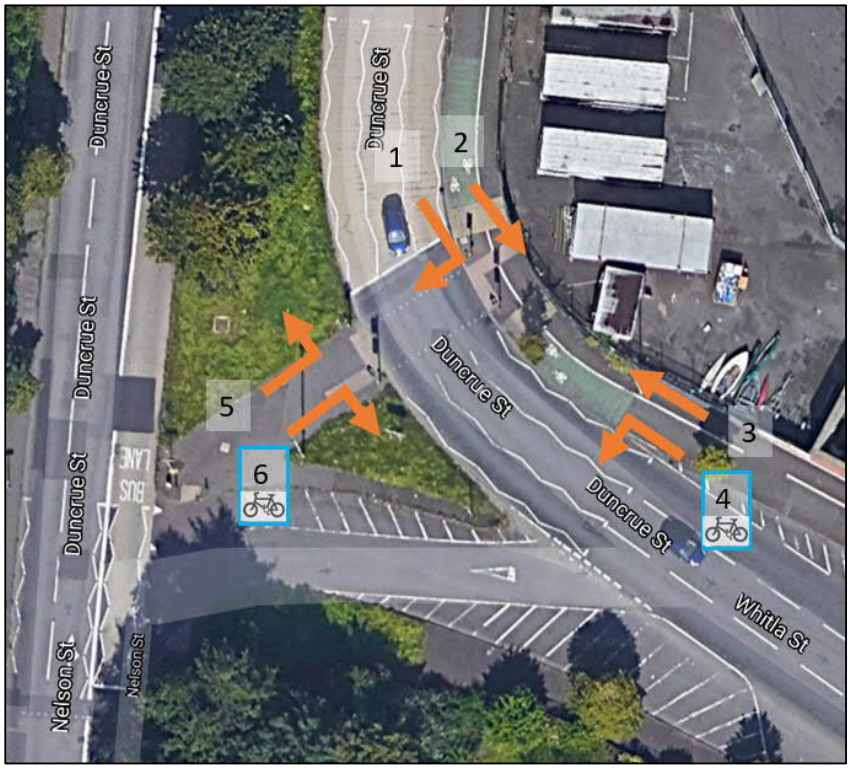
7.3.4 Junction 5.3 – Garmoyle Street / Dock Street

Note: Cycle movements 3 and 4 assumed to follow two-way cycle track to the northeast of the junction.



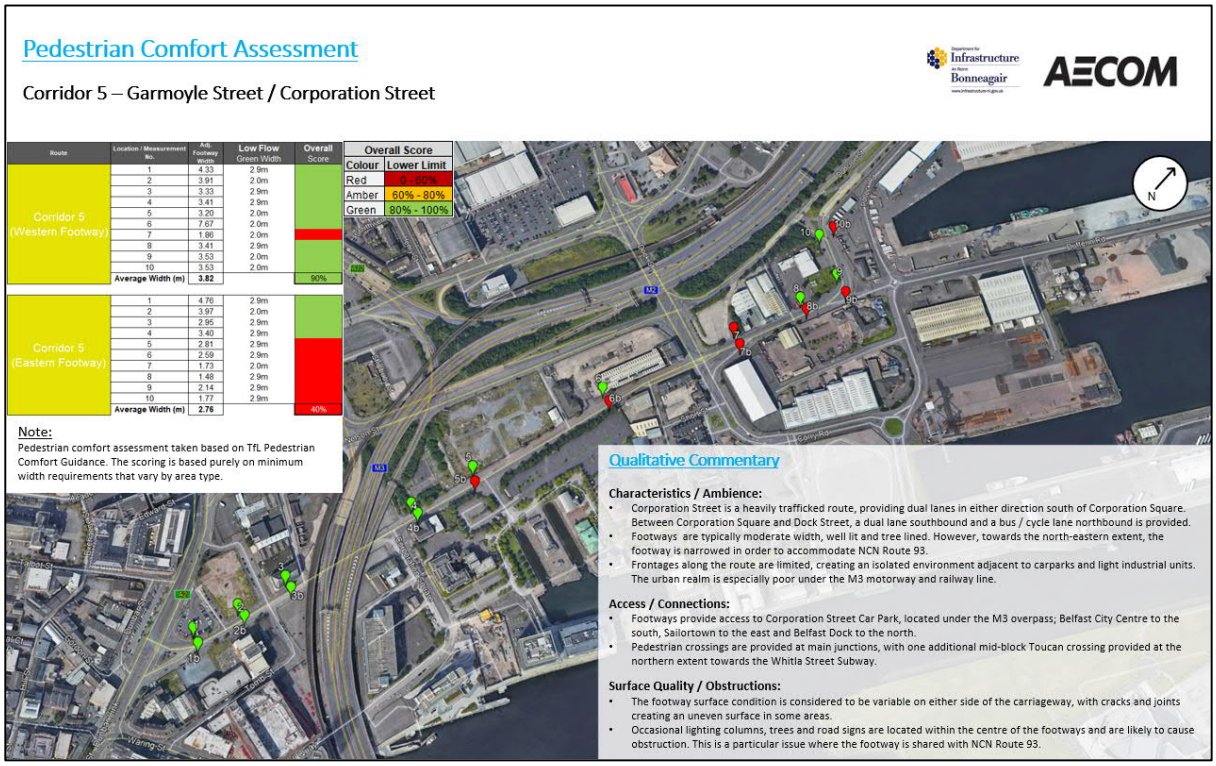
7.3.5 Junction 5.4 – Duncrue Street / Whitla Subway

Note: NB cycle movements assumed to follow cycle crossing through junction.



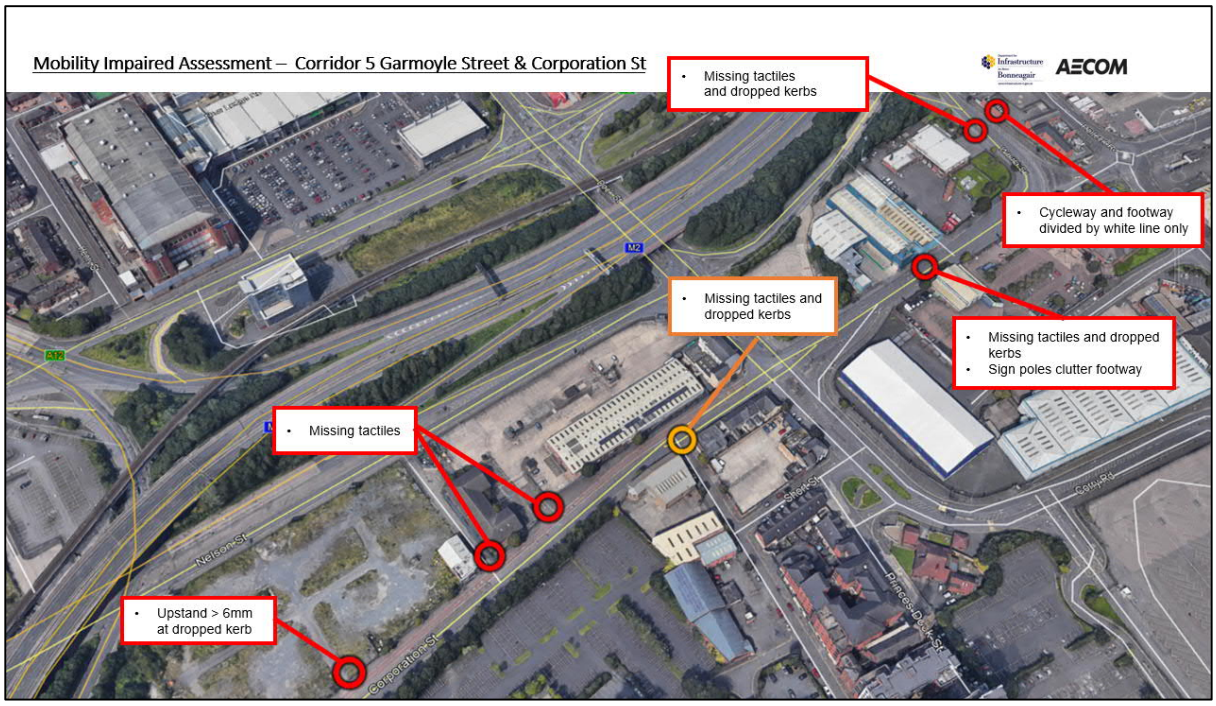
7.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor five are shown in the figure below.



7.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor five are shown in the figure below.



8. Corridor 6 | NCN Route 93

8.1 Overview

- **Extents -** Corridor six covers NCN Route 93, between its junctions with the A2 Albert Square to the south and Garmoyle Street to the north. The extent of the corridor is shown in Figure 7.
- **Characteristics -** The southern section of the route is fronted by multi-storey office units, a multi-storey car park and hotel, providing a single lane in either direction and intermittent on-street parking. The eastern footway forms NCN-93; however, no cycle crossings facilities are provided at the Albert Square junction, with tactile paving of the uncontrolled pedestrian crossing of the minor arm encroaching into the cycle lane.

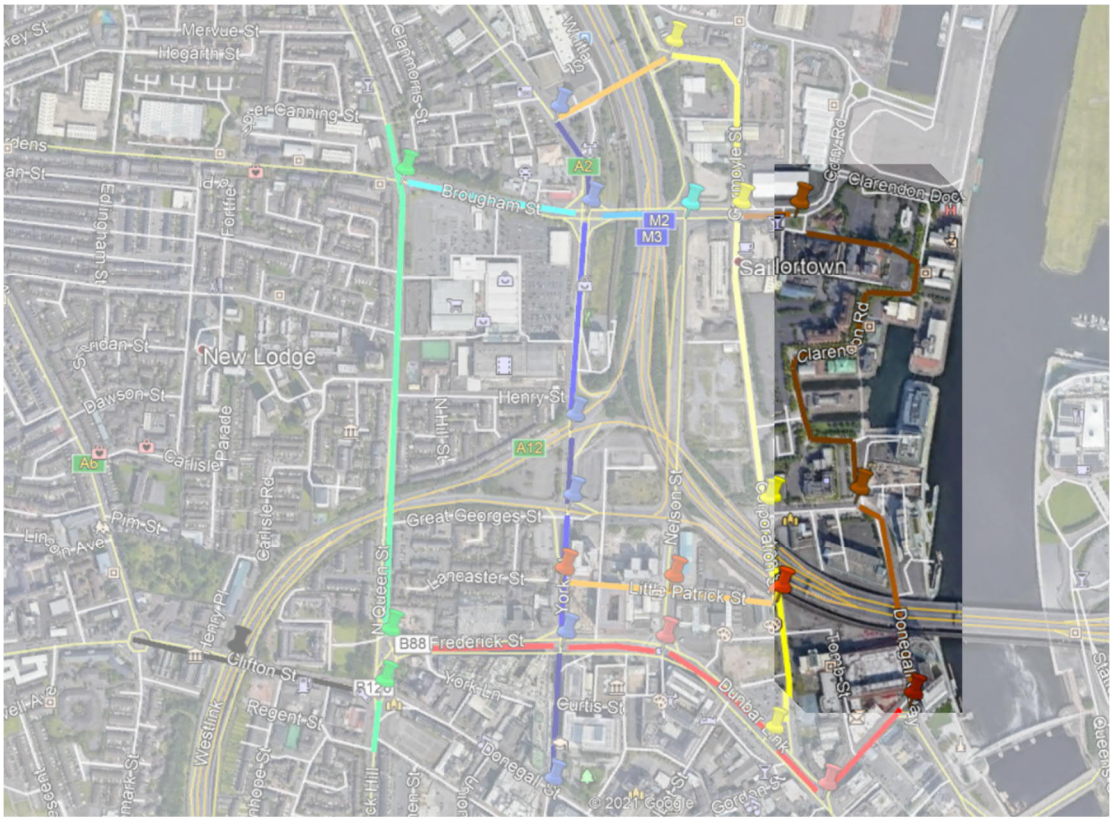
  Cyclists are given priority across the Calredon Road junction; however, are led onto shared space with no clear direction of the on-going route. The central section, between its junctions with Corporation Square and Dock Street is characterised by an on-street, meandering moderately trafficked route, that runs in a roughly north / south alignment and provides access to offices located along the Sailortown Quay.

  The final section covers Dock Street between its junctions with Princes Dock Street and Garmoyle Street, this section characterised by moderately trafficked dual carriageway in either direction, providing access to the Harbour Estate to the northeast.
- **Footways –** Between Albert Square and Clarendon Road, a wide footway is provided to the west of the carriageway; with the eastern footway narrower and in part forming NCN Route 93. Within this section, the M3 Motorway and railways line overpass, creating an isolated atmosphere, with limited passive surveillance.

  Footways along Clarendon Road are wide and tree lined, creating a pleasant and desirable public realm.

  The northern footway of Dock Street then forms NCN Route 93, with the footway divided using white line segregation.
- **Traffic Volumes / Speeds -** Motor traffic volumes are moderate, with between 3389 and 4207 AADT. Along the whole corridor the 85th percentile speed is approximately 33mph.

Figure 11 – Corridor 6, NCN Route 93



8.2 Cycle Level of Service baseline results

8.2.1 Section 6A

Section 6A covers the NCN Route 93 along Donegall Quay, between its junctions with the A2 Albert Square and Clarendon Road. The route is characterised by moderate motor vehicular traffic, featuring a single lane in either direction in a north / south alignment. Parking is provided along the western footway at the southern extent and along the eastern footway at the northern extent.

This section of the corridor is fronted by multi-storey office units on either side at its southern extent and a multi-storey car park and hotel at its northern extent. Midway, the M3 Motorway overpasses, which creates an isolated atmosphere with limited passive surveillance.

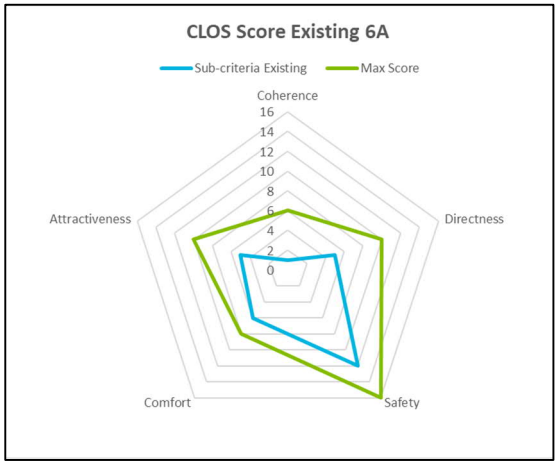
A wide footway is provided to the west of the carriageway; with the eastern footway in part forming NCN Route 93 and divided into both moderate width footway and a minimum standard two-way cycle track using white line segregation. Towards its northern extent, the route becomes a mixture of entirely segregated from the footway / motor traffic, to on-footway but separated through white line segregation and then also sections of shared space. At side roads, cyclists are not given priority, with shared space crossings of minor arms.

No cycle crossings facilities are provided at the Albert Square junction. An uncontrolled pedestrian crossing facility are provided over the minor arm but has been constructed so that tactiles encroach within the cycle lane.

Cyclists are forced to enter shared space with no priority across the Hotel access junction; however, are given priority across the Calredon Road junction but are then led onto shared space with no clear direction of on-going route.

Section 6B has failed to meet the 70% threshold to pass the CLoS audit, scoring 58% with no critical fails. The critical fail is due to:

- Cyclists are not given priority at the majority side road junctions;
- The cycle lane is narrow at points with no vertical separation from pedestrians;
- A lack of continuity and connections to alternative routes.



Max possible score	50
Audit % score	58%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Existing
Coherence	6	1	17%
Directness	10	5	50%
Safety	16	**12**	75%
Comfort	8	6	75%
Attractiveness	10	5	50%
	50		

8.2.2 Section 6B

Section 6B covers the NCN Route 93 along Clarendon Road, between its junctions with Corporation Square and Dock Street. The route is characterised by a meandering moderately trafficked road, that runs in a roughly north / south alignment and provides access to offices located within Sailortown Quay.

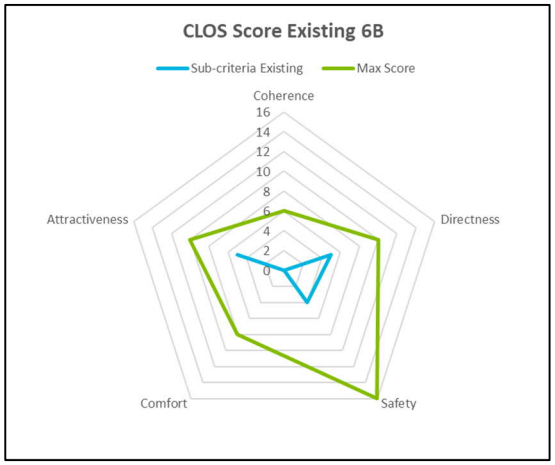
A narrow carriageway with the centre line removed and a single lane in either direction is provided, which is lined with bollards and trees. Parking for offices is provided alongside the carriageway and in car parks that form minor arms. The carriageway is paved with sets, whilst the footways are moderate, creating an aesthetically pleasing public realm environment.

The carriageway forms the onward section of NCN Route 93 towards its connection with Princes Dock Street, linked by a shared surface. Whilst the route is promoted as a quiet route, traffic flows indicate there are moderate levels of vehicular traffic, at around 3389 AADT and potential traffic speeds of approximately 30mph.

Heritage sets provide an uneven surface for cyclists, whilst historical railway tracks along Princes Dock Street and parked vehicles cause risk of collision or injury. A lack of signage and tactile used to define the route may also lead to confusion and clarity of provision.

Section 6B has failed to meet the 70% threshold to pass the CLoS audit, scoring 28% with no critical fails. The critical fail is due to:

- Cyclists are mixed with traffic in a moderately trafficked environment;
- Inadequate signage is provided to delineate the route;
- Shared space is not defined by tactile paving, which may lead to collisions with pedestrians;
- Heritage sets create an uneven surface for cyclists.



Max possible score	50
Audit % score	28%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	5	50%
Safety	16	**4**	25%
Comfort	8	0	0%
Attractiveness	10	5	50%
	50		

8.2.3 Section 6C

Section 6C covers Dock Street between its junctions with Princes Dock Street and Garmoyle Street.

This section characterised by moderately trafficked dual carriageway in either direction, providing access to the Harbour Estate to the northeast.

This section of the corridor is fronted by an industrial unit to the north and residential properties and shops to the south.

A moderate width footway is provided on the southern side of the carriageway. The northern footway forms NCN Route 93 and is divided into both a below minimum standard footway and a minimum standard two-way cycle track using white line segregation, with lighting columns creating obstacles within the cycle track.

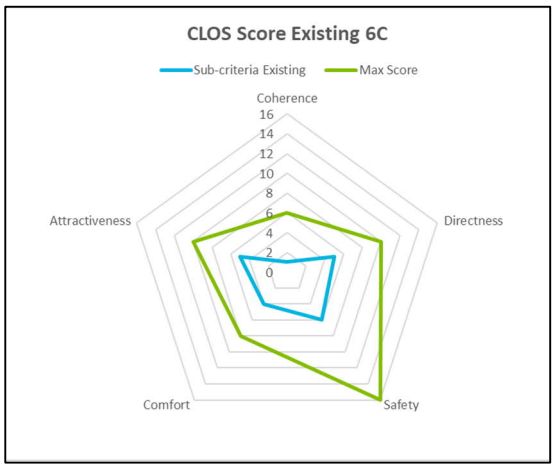
In order to connect to / from Princes Dock Street, a shared space is provided, which lacks tactile paving and requires cyclists and pedestrians to seek gaps in traffic in order to continue along the route.

Cyclist and pedestrians are also required to enter a shared space at the junction with Garmoyle Street, with no tactile paving to indicate this transition and only pedestrians permitted to cross at the junction.

The following results are assessed on the linear cycle provision allowing cyclists to be separate from general traffic, not the connections across its junctions which are considered poor.

Section 6C has failed to meet the 70% threshold to pass the CLoS audit, scoring 42% with no critical fails. The fail is due to a number of factors, including:

- No dedicated connection to adjacent routes e.g. Garmoyle Street / Corporation Street to the south or Dock Street to the west; and
- Cycle and pedestrian facilities are narrow with no vertical separation and obstacles blocking the route;
- Lack of tactile paving and sections of shared space.



Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	1	17%
Directness	10	5	50%
Safety	16	**6**	38%
Comfort	8	4	50%
Attractiveness	10	5	50%
	50		

8.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Three existing junctions have been reviewed along corridor six, which are:

- Junction 6.1 – Albert Square / Donegal Quay
- Junction 6.2 – Donegal Quay / Clarendon Way; and
- Junction 6.3 – Princes Dock Street / Dock Street.

In summary, two movements, associated with NCN 93 at the Albert Square / Donegal Quay junction scored a green rating, due to the existing cycle movement separated physically from motor traffic and also from pedestrians by white line markings. Five movements at the Donegal Quay / Clarendon Way and one movements at the Princes Dock Street / Dock Street junction scored an amber,

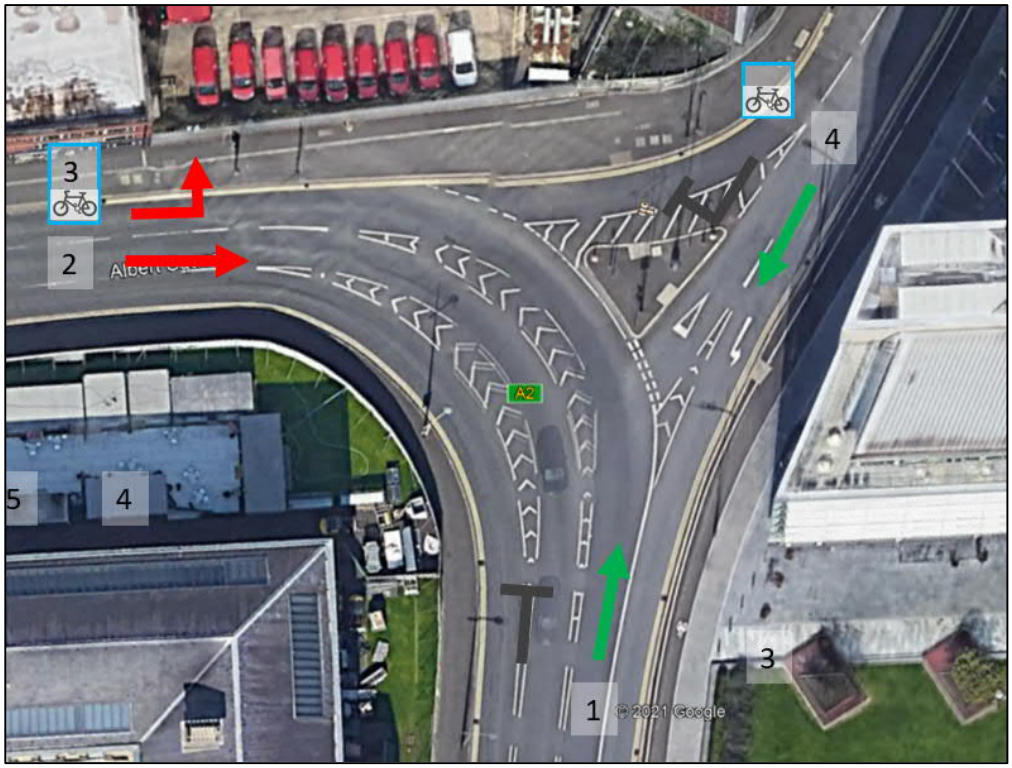
All other movements, at all other junctions scored a red rating, this is due to a number of factors; however typically due to the following:

- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- Cycle movements affected by very poor surfaces;
- Junction corner radius ≥9m at priority junctions, risking collisions with vehicles taking left turns taken at speed; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

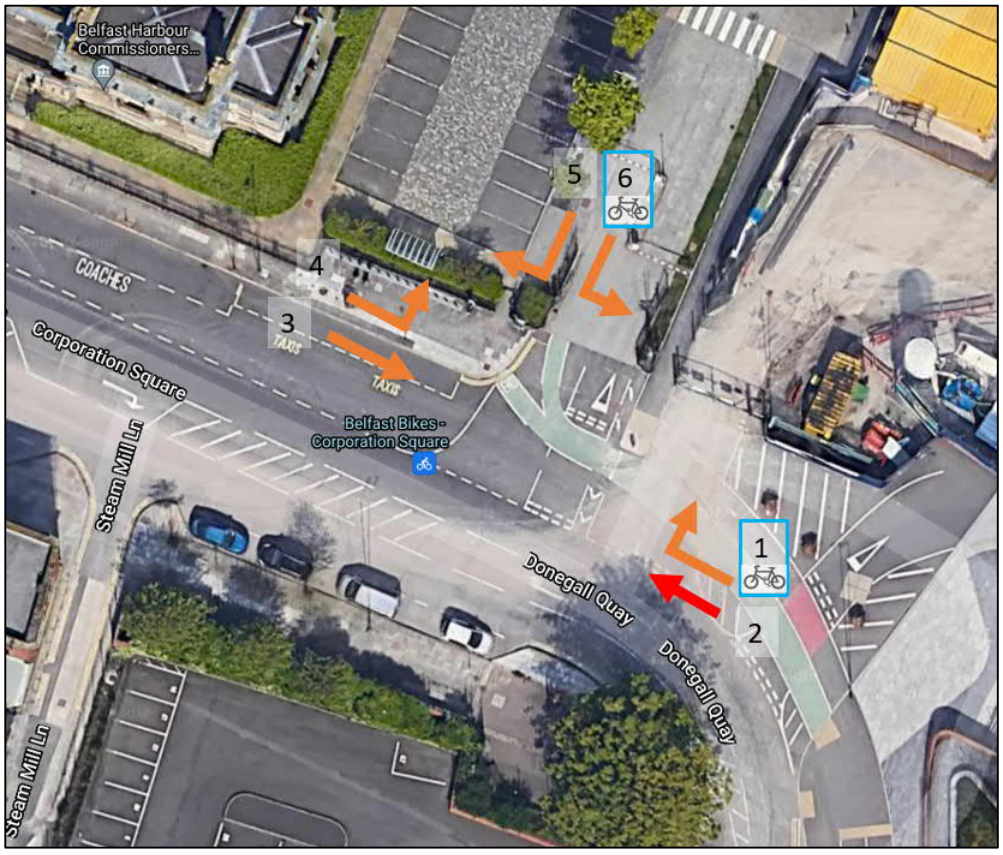
The following sections show each junction assessed along corridor six, with further detailed information provided at **Appendix F**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

8.3.1 Junction 6.1 – Albert Square / Donegal Quay

Note: No cycle provision linking westbound for cyclists from NCN 93.

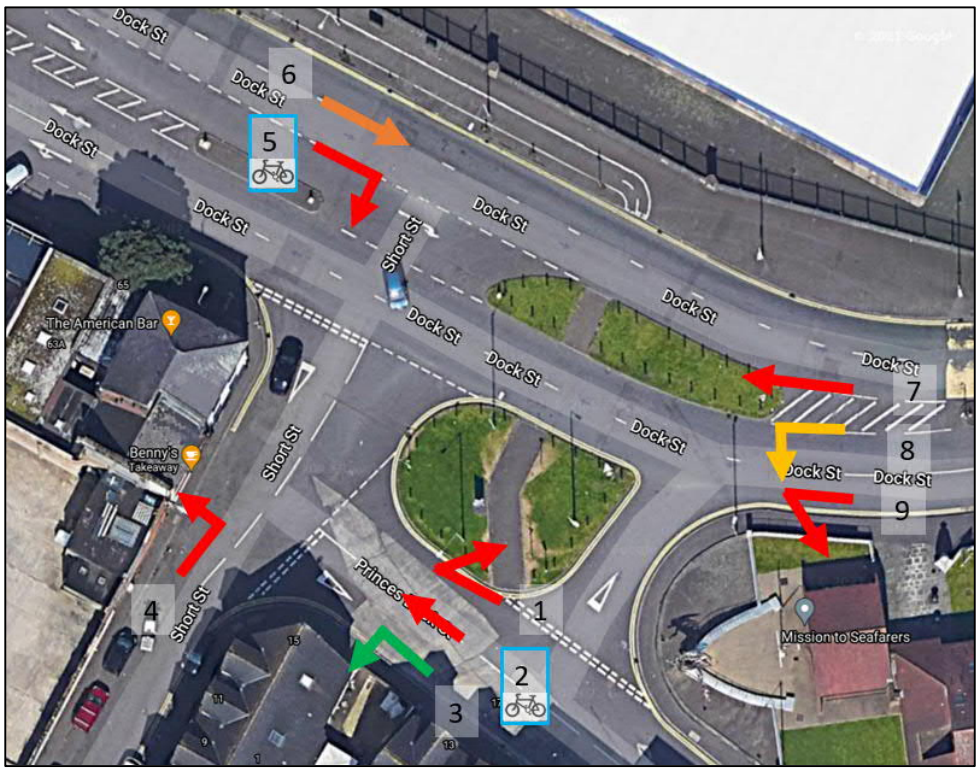


8.3.2 Junction 6.2 – Donegal Quay / Clarendon Way



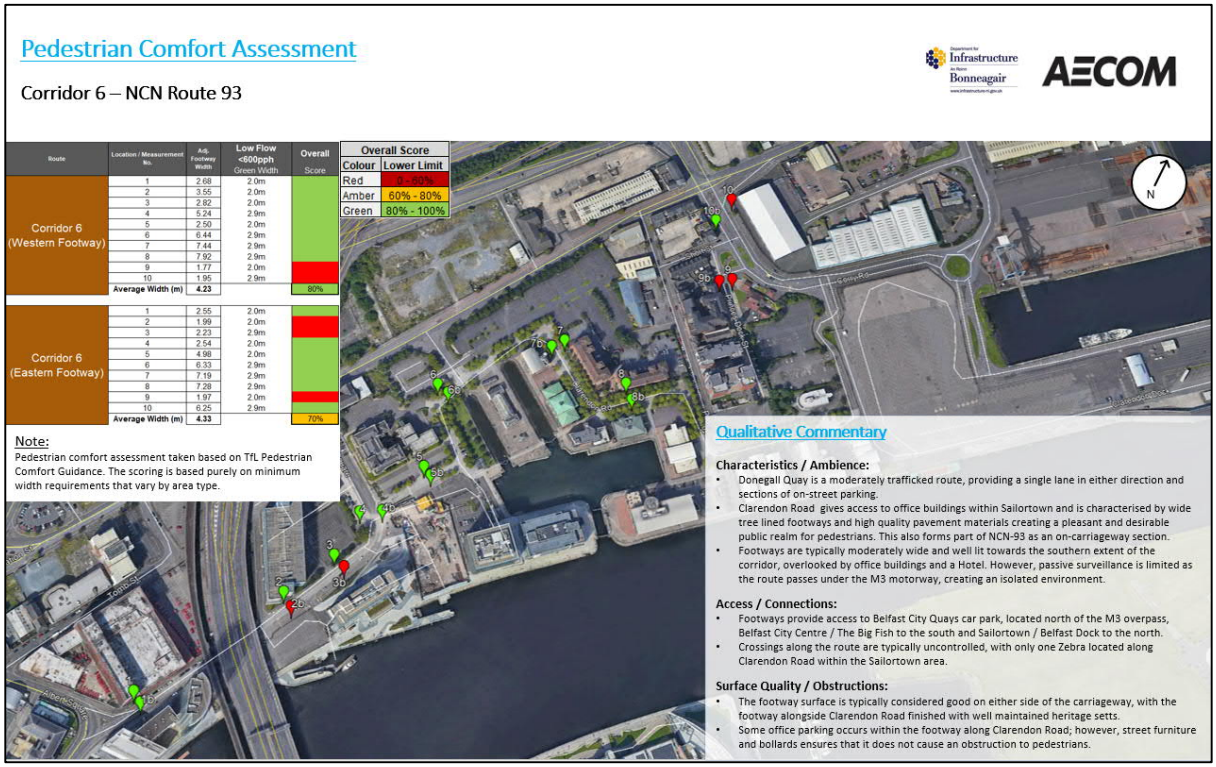
8.3.3 Junction 6.3 – Princes Dock Street / Dock Street

Note: NB cycle movements 5 and 2 assumed to follow cycle crossing through junction.



8.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor six are shown in the figure below.



8.5 Mobility Impaired Audit baseline results

A Mobility Impaired Audit has not been undertaken for corridor six.

9. Corridor 7 | Whitla Street Subway

9.1 Overview

- **Extents -** Corridor 7 covers the Whitla Street Subway and its connections between the junctions with the A2 Dock Street and Duncrue Street. The extent of the corridor is shown in Figure 12.
- **Characteristics –** The footways are typically wide to the west of the Subway, but a pinch point across the Nelson Street slip road to east of the subway should be noted.

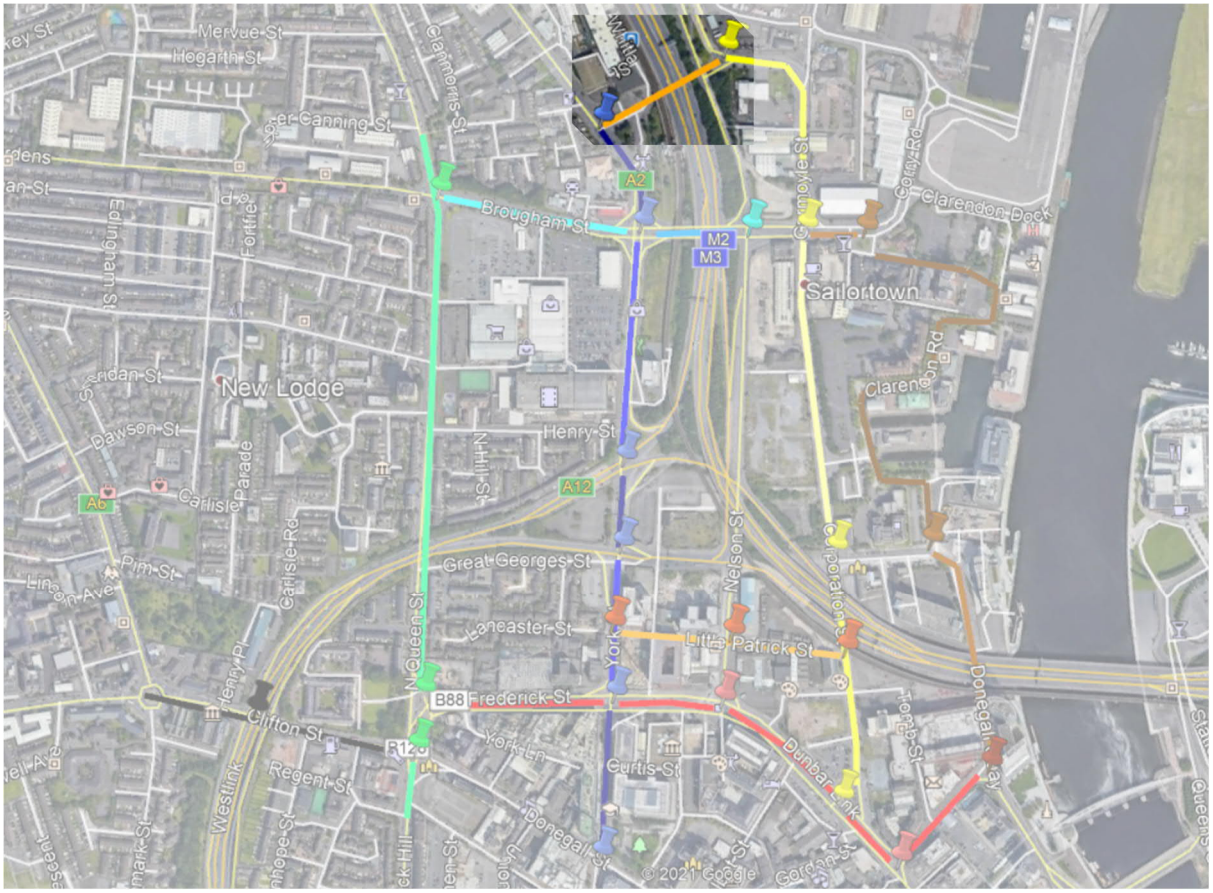
  Poor lighting, graffiti, a lack of passive surveillance and overgrown vegetation create an unwelcoming pedestrian environment in and around the Whitla Street Subway.

  The subway connects York Street and Duncrue Street, giving access to Yorkgate Train Station and linking to NCN93.
- **Footways –** The subway connects York Street and Duncrue Street, giving access to Yorkgate Train Station and linking to NCN 93 that runs in a north / south alignment along Whitla / Duncrue Street. The footway within the Subway is wide; however, is shared with pedestrians with no segregation or clear signage / tactile paving.

  Two toucan crossing facilities are provided linking NCN-93 to the subway; however, pedestrians and cyclists have to cross uncontrolled across the one-way link to Whitla Street east. Here, joints and cracks within the footway create an uneven surface. The footway surface is within the subway is also considered poor, with cracked sets and vegetation growth.

  There is no clear provision for pedestrian or cycle crossings to the west however there is a signal-controlled crossing to the west over Nelson Street / Duncrue Street.
- **Traffic Volumes / Speeds -** No speed or traffic data available as corridor 7 is a pedestrian only subway. Traffic volumes and speeds on the western side of the subway are assumed to be low

Figure 12 – Corridor 7, Whitla Street Subway



9.2 Cycle Level of Service baseline results

9.2.1 Section 7A

Section 7A covers the Whitla Street Subway and its connections between the junctions with the A2 Dock Street and Duncrue Street.

The route is a mix of on-carriageway provision from A2 Dock Street, through the Yorkgate Station Car Park and into the Whitla Street Subway. The subway itself is shared between pedestrians and cycles.

At present, the route does not provide sufficient signage or tactile paving to indicate a shared use footway or signify the continuation of the route through the subway. In addition, the subway has graffiti / vandalism and is poorly lit, creating an unwelcoming pedestrian or cycle environment.

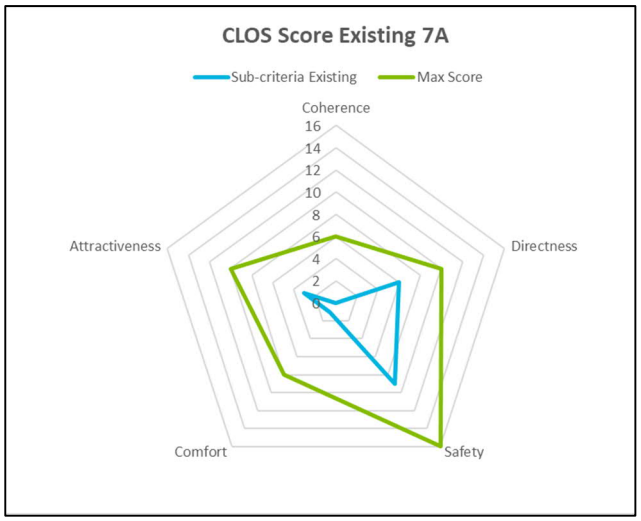
At the eastern extent of the subway, the entrance appears to be overgrown with vegetation, here a toucan crossing facility is provided to cross Nelson Street, which is a dual carriageway northbound.

Travelling eastbound, cyclists and pedestrians cross a slip road of Nelson Street using an uncontrolled crossing featuring a raised table. A narrow-shared space provided on the southern footway.

Shared space on the northern side of the raised table then leads to another toucan facility, that connects to / from the NCN Route 93. NCN Route 93 runs in a north / south alignment along the eastern footway of Duncrue Street / Whitla Street with pedestrians and cyclists separated using a thermoplastic whileline..

Section 7A has failed to meet the 70% threshold to pass the CLoS audit, scoring 38% and no critical fails. The result is due to a number of factors; however typically due to the following:

- Subway section is typically isolated, overgrown at the eastern entrance and painted with graffiti;
- No existing cycle signage along the route; and
- Lack of tactile paving and sections of shared space footway.



Max possible score	50
Audit % score	38%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	1

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	9	56%
Comfort	8	1	13%
Attractiveness	10	3	30%
	50		

9.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Two existing junctions have been reviewed along corridor seven, which are:

- Junction 2.6 - A2 York Road / Whitla Street Subway; and
- Junction 5.4 - Duncrue Street / Whitla Subway.

In summary, all movements, associated with the A2 York Rd / Whitla Street Subway junction scored a red rating. Whereas, all other movements associated with the Duncrue St / Whitla Subway scored an amber rating.

The red rating associated with the the A2 York Rd / Whitla Street Subway was

- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- No physical refuge in the centre of the major road for right turns;
- Junction corner radius ≥9m;
- Cyclists are required to move across more than one lane of traffic without protection; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor seven, with further detailed information provided at **Appendix G**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

9.3.1 Junction 2.6 – A2 York Road / Whitla Street Subway

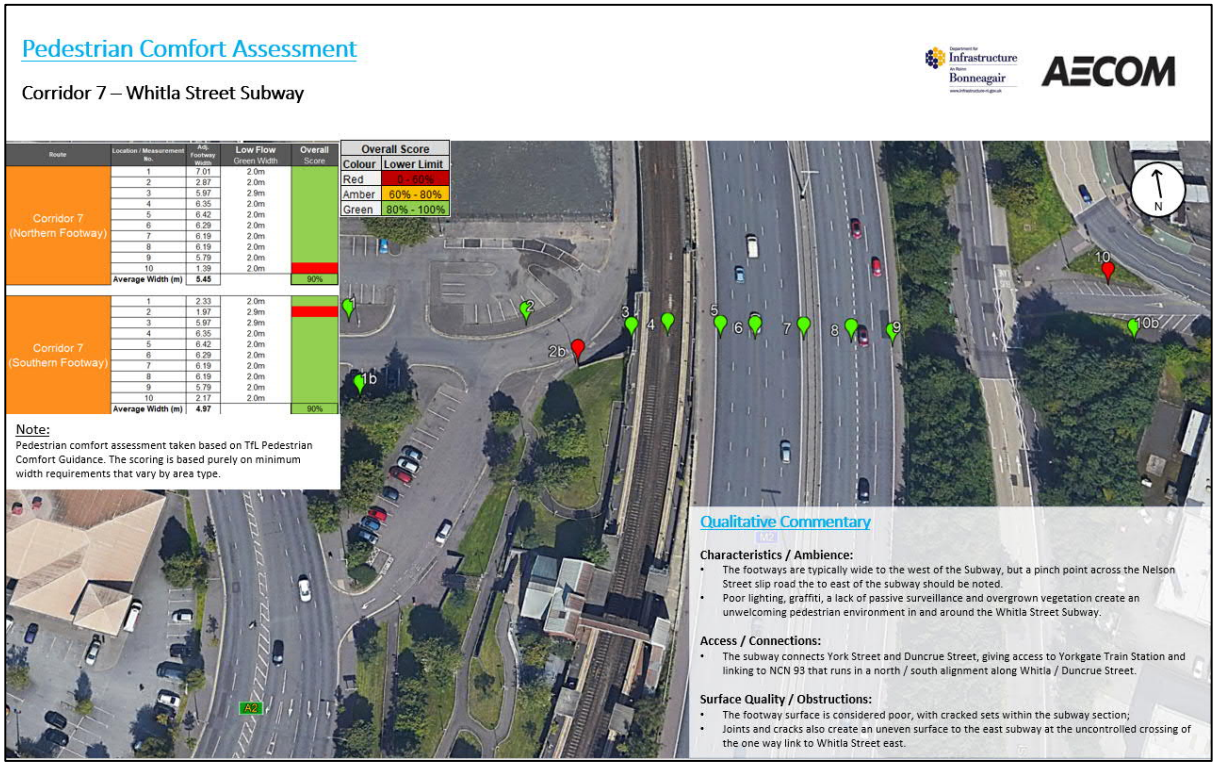
See Section 4.3.7

9.3.2 Junction 5.4 – Duncrue Street / Whitla Subway

See Section 7.3.5

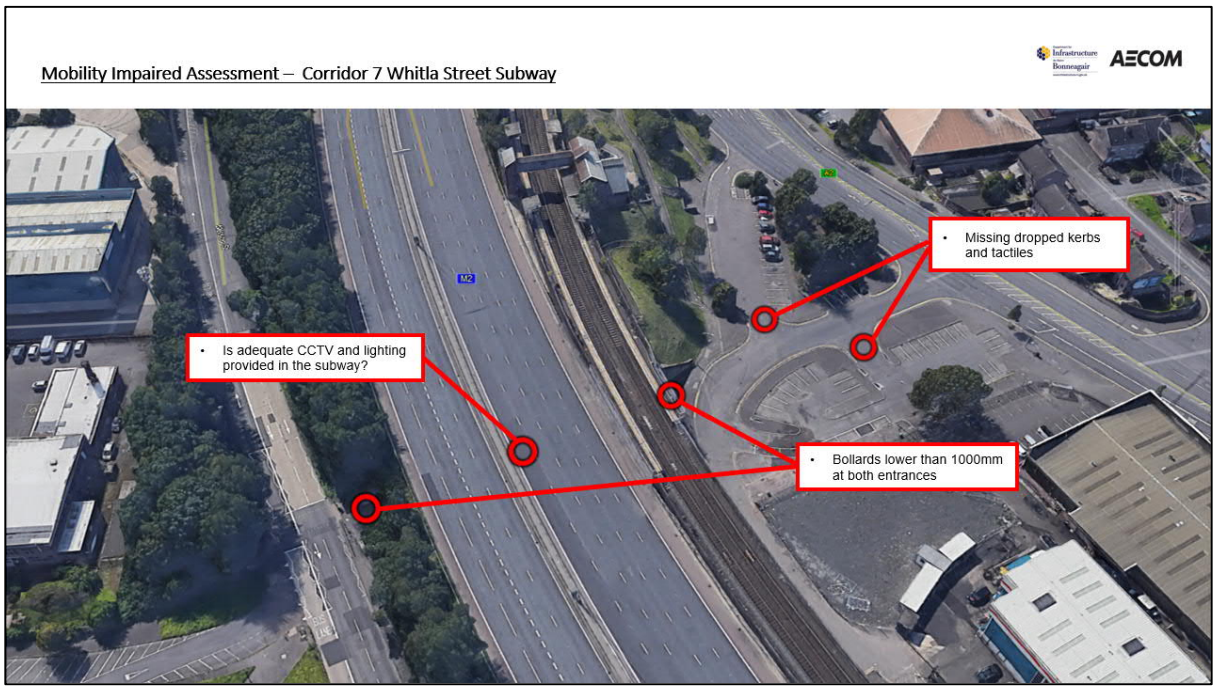
9.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor seven are shown in the figure below.



9.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor seven are shown in the figure below.



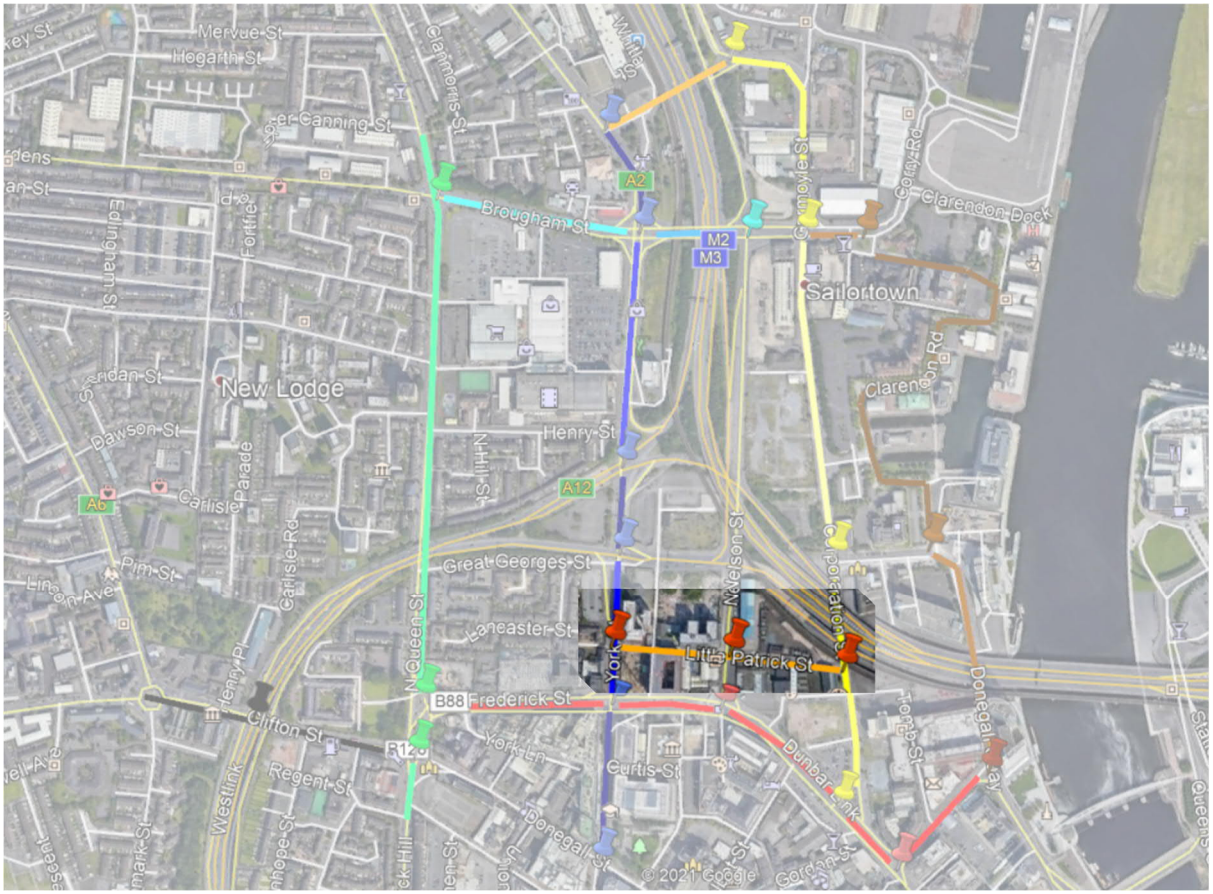
10. Corridor 8 | Little Patrick Street

10.1 Overview

- **Extents -** Corridor 8 covers Little Patrick Street, the its junctions with the York Street and Corporation Street. The extent of the corridor is shown in Figure 13.
- **Characteristics -** Due to the backstreet nature of Little Patrick Street, it is not an appealing route for pedestrians and cyclists. Tall multi-storey buildings overshadow the carriageway on either side, making the environment feel enclosed and reducing the quality of urban realm.

  Industrial units to the east of Nelson Street appear to have regular deliveries that load and unload on to the footway and block the carriageway.
- **Footways –** Footways are a narrow to moderate width and poorly lit. The majority of the footway surface is considered poor, with cracks and joints resulting in an uneven surface. Parking and deliveries undertaken on the footway also cause a major obstruction blocking the entire footway in places.
- **Traffic Volumes / Speeds -** Motor traffic volumes are moderate, with 6545 AADT. Along the whole corridor the 85th percentile speed is approximately 11mph.

Figure 13 – Corridor 8, Little Patrick Street



10.2 Cycle Level of Service baseline results

10.2.1 Section 8A

Corridor 8 covers the Little Patrick Street and its connections between the junctions with the York Street and Corporation Street.

The route is a narrow back street, that is overlooked by high rise residential properties between its junction with York Street and Nelson Street. Whereas the route is fronted by industrial units between Nelson Street and Corporation Street.

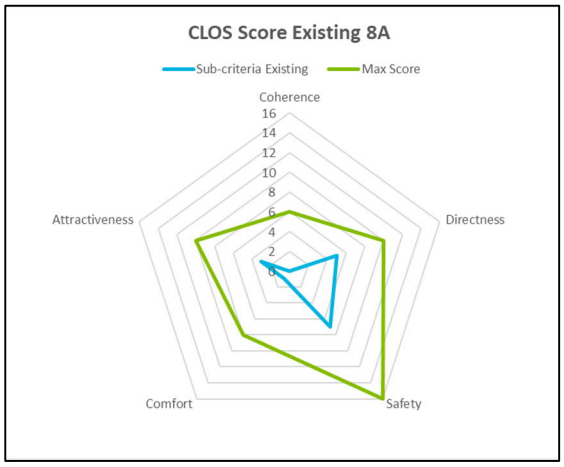
A narrow carriageway is provided, with the centre line removed and a single lane in either direction. The carriageway is poorly maintained with cracks and joints creating an uneven surface for cyclist. Whilst footways are moderate in width, on-street parking on either side blocks the whole footway in places.

In addition, the route feels enclosed, has signs of vandalism and has infrequent street lighting along the carriageway creating an unwelcoming pedestrian / cycle environment.

Neither York Street, Nelson Street nor Corporation Street provide pedestrian or cycle crossings, severing Little Patrick Street along its length. Nelson Street forms a major severance east / west, with four lanes of southbound traffic. As such, cyclists currently have to find gaps in heavy traffic flows and cross four lanes to continue their journey along Little Patrick Street.

Section 8A has failed to meet the 70% threshold to pass the CLoS audit, scoring 32% with no critical fails. The result is due to a number of factors; however typically due to the following:

- Little Patrick Street feels isolated, unwelcome and has signs of vandalism;
- No existing cycle signage along the route; and
- Poor surface quality;
- Cyclists are forced to find gaps at junctions with particularly high traffic volumes.



Max possible score	50
Audit % score	34%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	5	50%
Safety	16	**8**	50%
Comfort	8	1	13%
Attractiveness	10	3	30%
	50		

10.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Three existing junctions have been reviewed along corridor eight, which are:

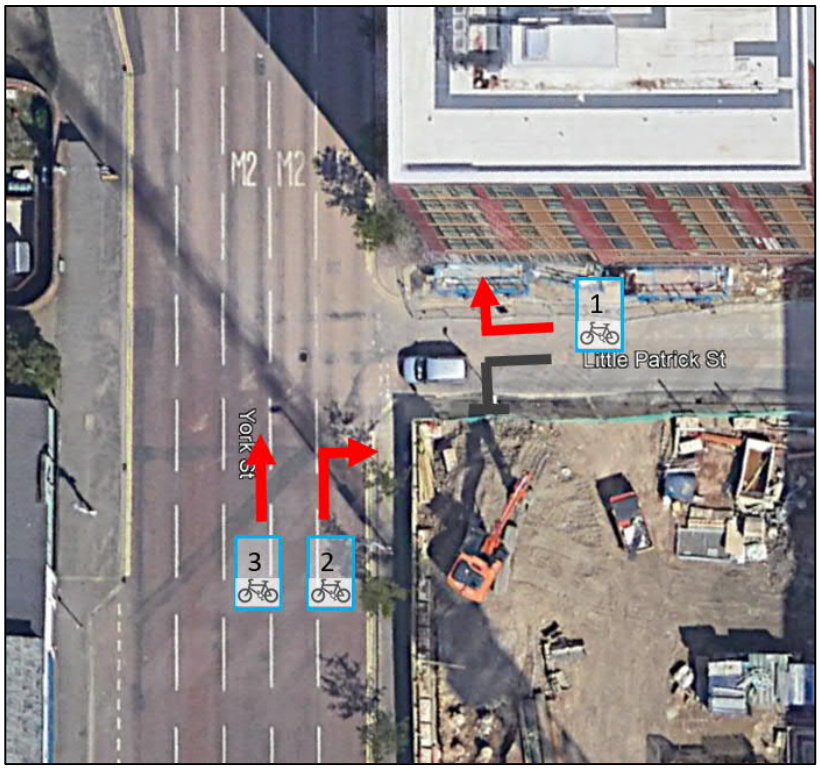
- Junction 8.1 – York Street / Little Patrick Street
- Junction 8.2 – Nelson Street / Little Patrick Street; and
- Junction 8.3 – Corporation Street / Little Patrick Street.

In summary, all movements at each of the junctions assessed scored a red rating. This is due to a number of factors; however typically due to the following:

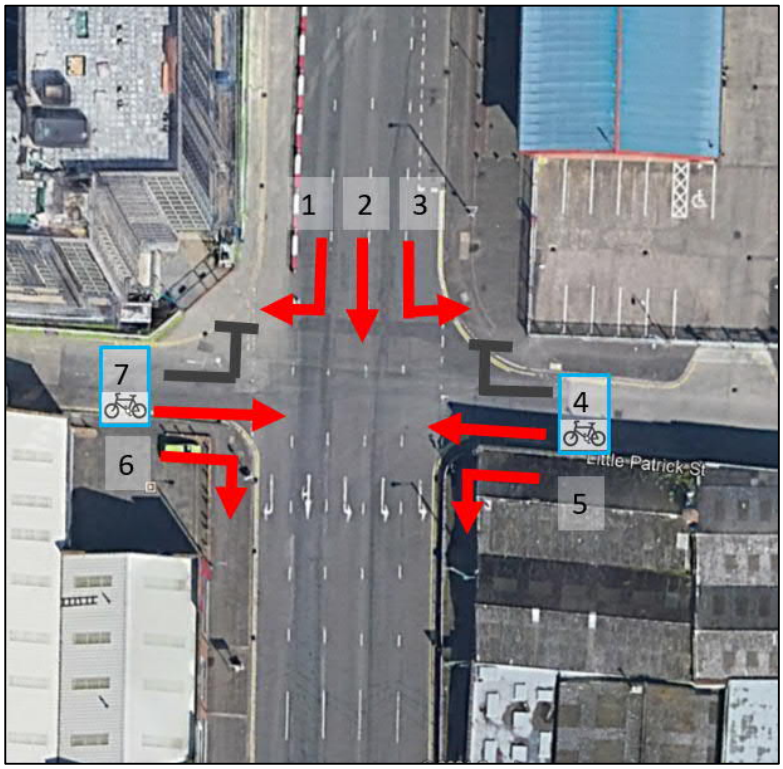
- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- Cyclists are required to move across more than one lane of traffic without protection;
- Cycle movement affected by very poor surface; and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor eight, with further detailed information provided at **Appendix H**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

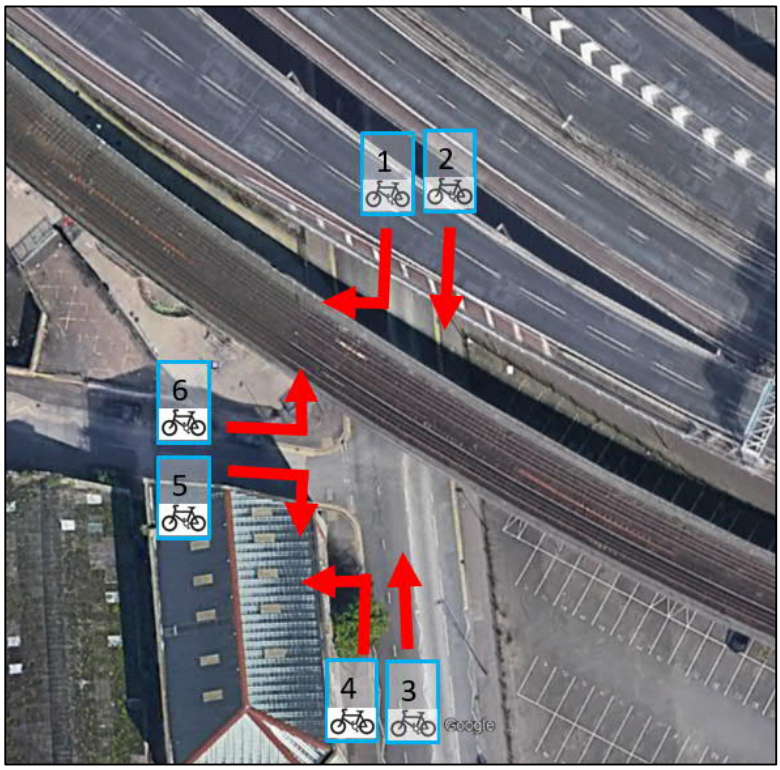
10.3.1 Junction 8.1 – York Street / Little Patrick Street



10.3.2 Junction 8.2 – Nelson Street / Little Patrick Street

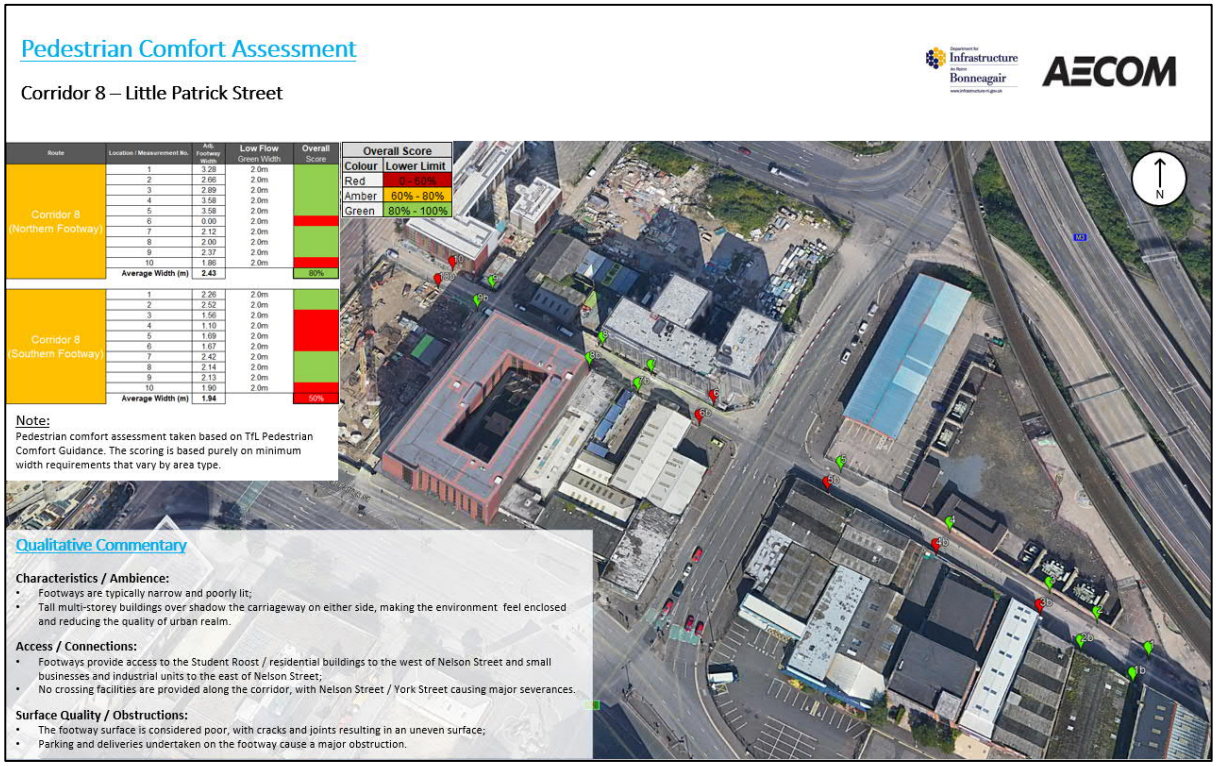


10.3.3 Junction 8.3 – Corporation Street / Little Patrick Street



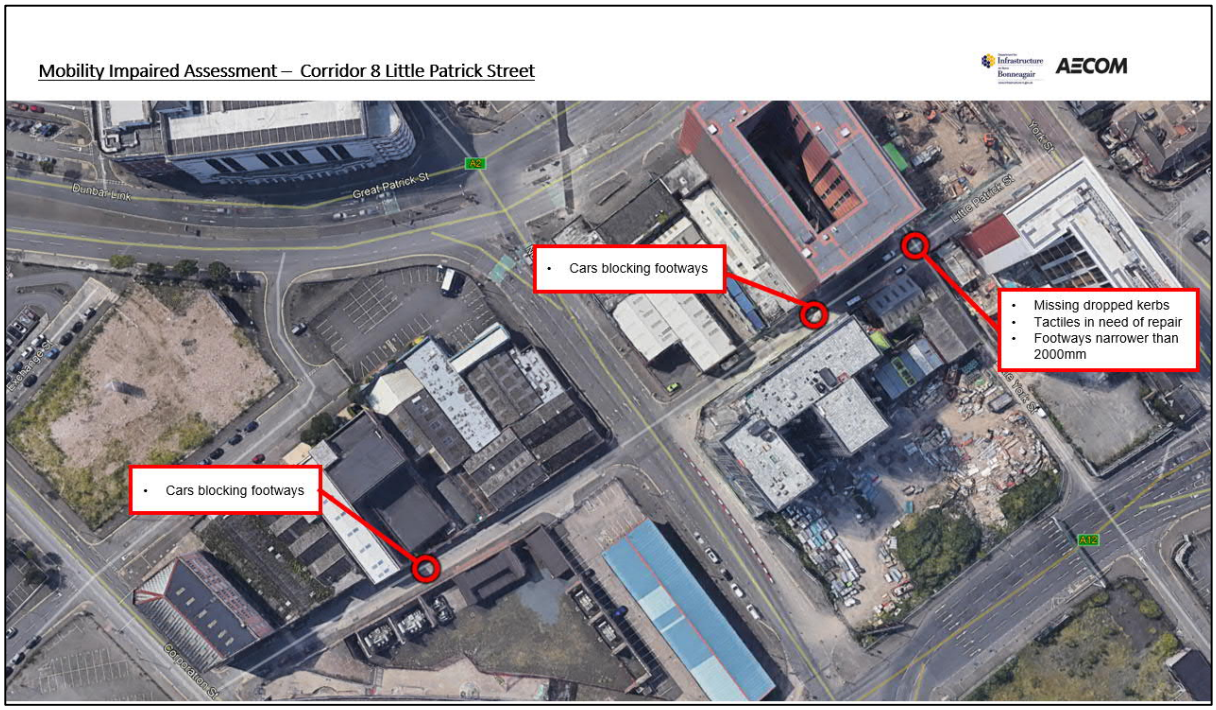
10.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor eight are shown in the figure below.



10.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor eight are shown in the figure below.

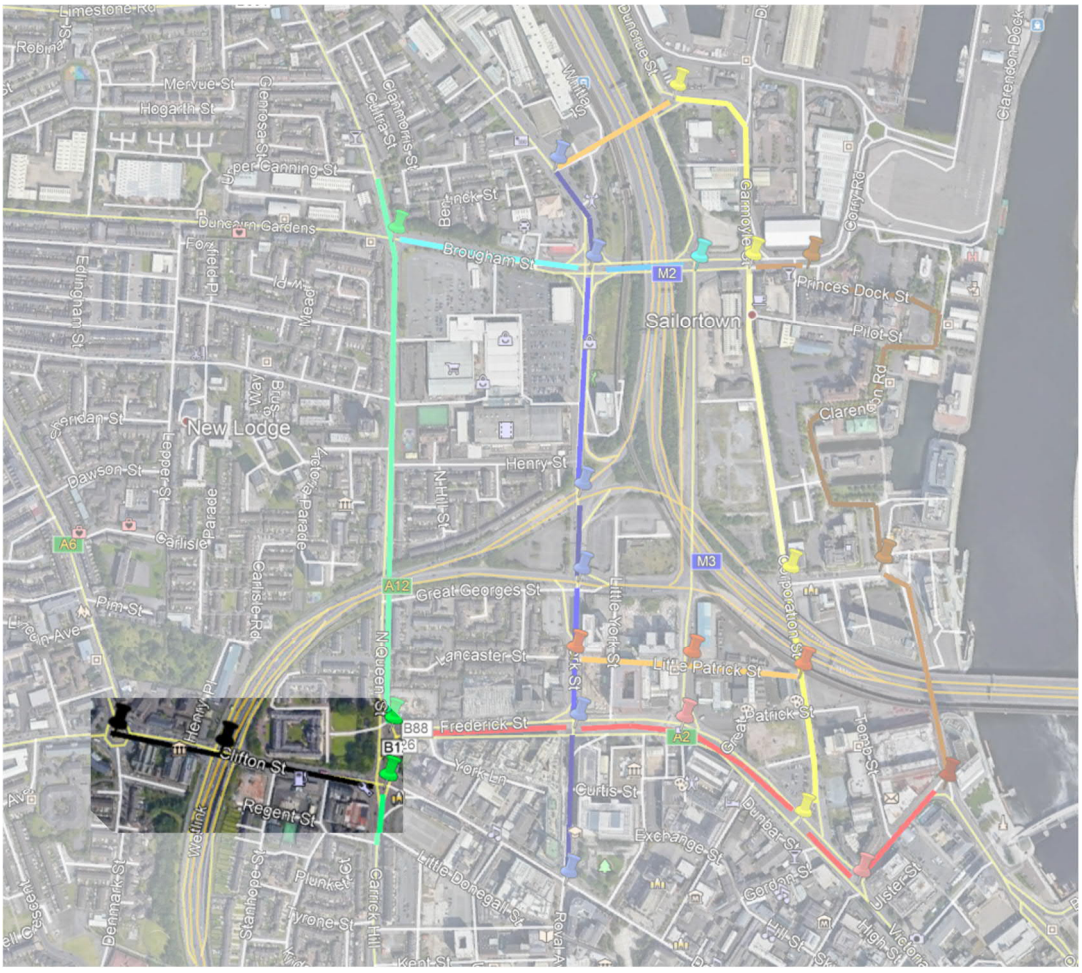


11. Corridor 9 | Clifton Street

11.1 Overview

- **Extents -** Corridor 9 covers Clifton Street and its connections between 'Carlisle Circus' roundabout to the west and its signalised junction with Carrick Hill to the east. The extent of the corridor is shown in Figure 14.
- **Characteristics –** Clifton Street is a heavily trafficked route, providing dual lanes in either direction. Clifton Street connects residential areas to the west of the A12 Westlink to the City Centre to the east, whilst also providing access to the A12 Westlink within the centre of the corridor. Controlled crossing facilities are provided at the Carrick Hill and A12 Westlink junctions, with a mid-block zebra crossing facility provided at Carlisle Circus.
- **Footways –** Footways are typically of moderate width, well-lit and tree lined on either side of the carriageway. The footway surface is considered poor on either side of the carriageway, with numerous cracks and joints creating an uneven surface. Lighting columns are typically located at the back of the footway. However, occasional trees and road signs are located within the centre of the footways and are likely to cause obstruction.
- **Traffic Volumes / Speeds -** Motor traffic volumes are extremely high, with between 14258 and 30270 AADT. 85th percentile speeds vary from 7mph at the east of the corridor to 11mph at the west, both low due to frequent signalised junctions..

Figure 14 – Corridor 9, Clifton Street



11.2 Cycle Level of Service baseline results

11.2.1 Section 9A

Section 9A covers Clifton Street and its connections between 'Carlisle Circus' roundabout to the west and its signalised junction with Carrick Hill to the east. Clifton Street gives access to the A12 Westlink within the centre of the route; however, this link is not permitted to cyclists.

The route is characterised by heavy motor vehicle traffic, featuring a dual lane in either direction that flare to three lanes when required for right turning movements.

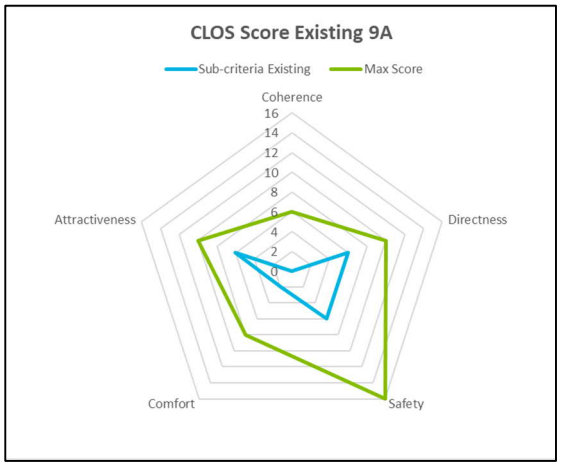
This section provides a link to / from the A12 Westlink and the 'Belfast Inner Ring' to the east.

Moderate width tree lined footways are provided on either side of the carriageway, with the carriageway overlooked by residential properties and businesses on either side. Multistage pedestrian only crossings are provided at its junction Carrick Hill; with a Zebra crossing provided on approach to the Carlisle Circus roundabout.

No advisory or segregated cycle facilities are provided along this section or lead in lanes towards ASLs at the Carrick Hill junction. ASLs are also not provided at the A12 Westlink junction.

Section 9A has failed to meet the 70% threshold to pass the CLoS audit, scoring 40% with two critical fails. The critical fails are due to:

- An AADT of 14258 (above the critical fail threshold of 10000); and
- Cyclists sharing the carriageway nearside lane, which is within critical range of between 3.2m and 3.9m wide (measured from aerial imagery, topographical survey required for confirmation).



Max possible score	50
Audit % score	40%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	2	25%
Attractiveness	10	6	60%
	50		

11.3 Junction Assessment baseline results

The JAT has assessed all movements at junctions where the nine core cycle corridors cross or intersect.

Key cycle movements are also highlighted on the plans, that identify principle cycle movements that are expected to be focused on as part of the Belfast Cycling Network. Three existing junctions have been reviewed along corridor nine, which are:

- Junction 1.1 – B126 Carrick Hill / Clifton Street;
- Junction 9.2 – A12 Westlink / Clifton Street; and
- Junction 9.3 – Carlisle Circus.

In summary, all movements at each of the junctions assessed scored a red rating. This is due to a number of factors; however typically due to the following:

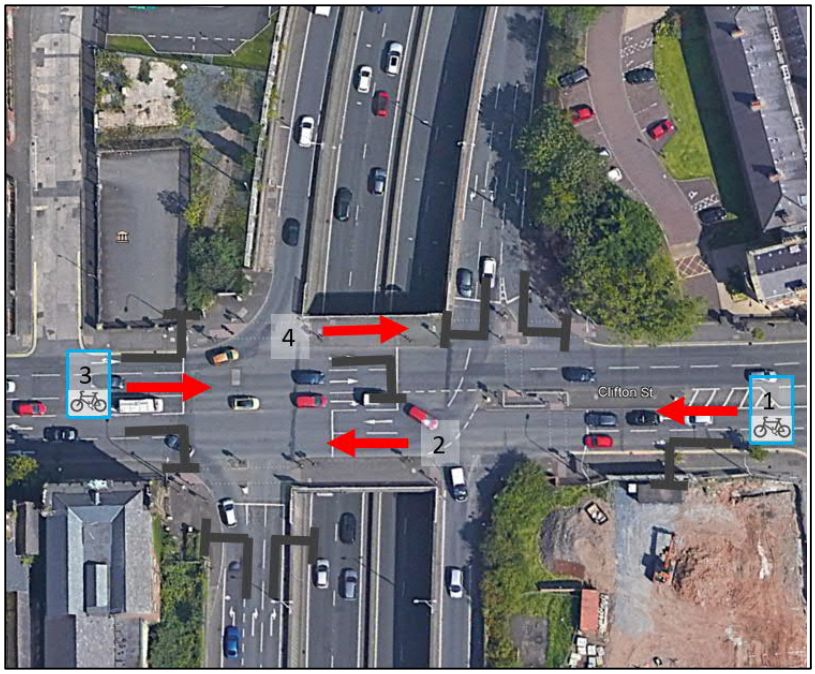
- Cycle movements are not segregated from traffic, with cyclists in potential conflict with heavy traffic flows;
- Cyclists are required to move across more than one lane of traffic without protection;
- ASLs are less than 5m deep (B126 Carrick Hill / Clifton Street junction);
- Instances of unsignalised left turn lanes adjacent to signalised ahead lanes (B126 Carrick Hill / Clifton Street junction); and
- Lane widths are between 3.2 - 3.9m, putting cyclists at risk of collision from overtaking vehicles.

The following sections show each junction assessed along corridor nine, with further detailed information provided at **Appendix I**. Where junctions appear in more than one corridor, the relevant section is referenced to avoid duplication of results.

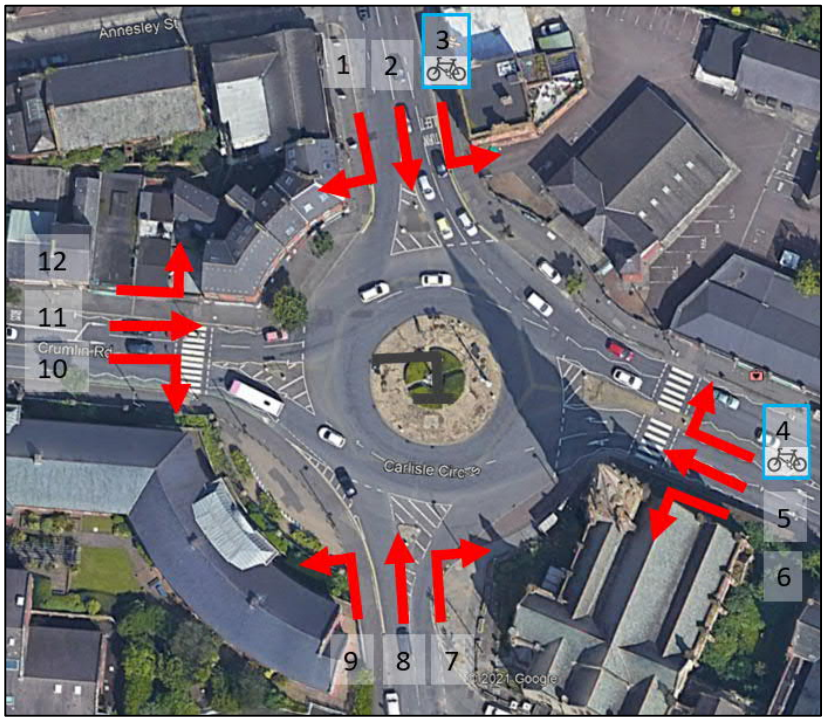
11.3.1 Junction 1.1 – B126 Carrick Hill / Clifton Street

See Section 3.3.1

11.3.2 Junction 9.2 – A12 Westlink / Clifton Street

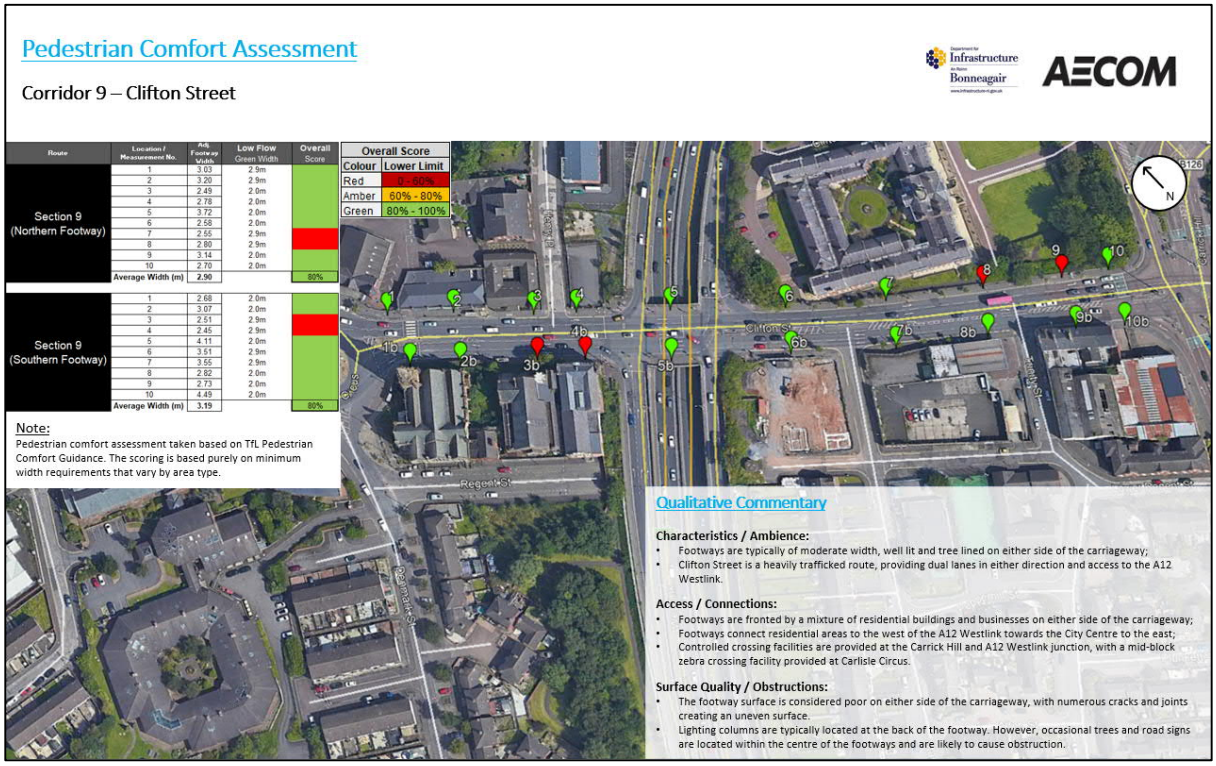


11.3.3 Junction 9.3 – Carlisle Circus



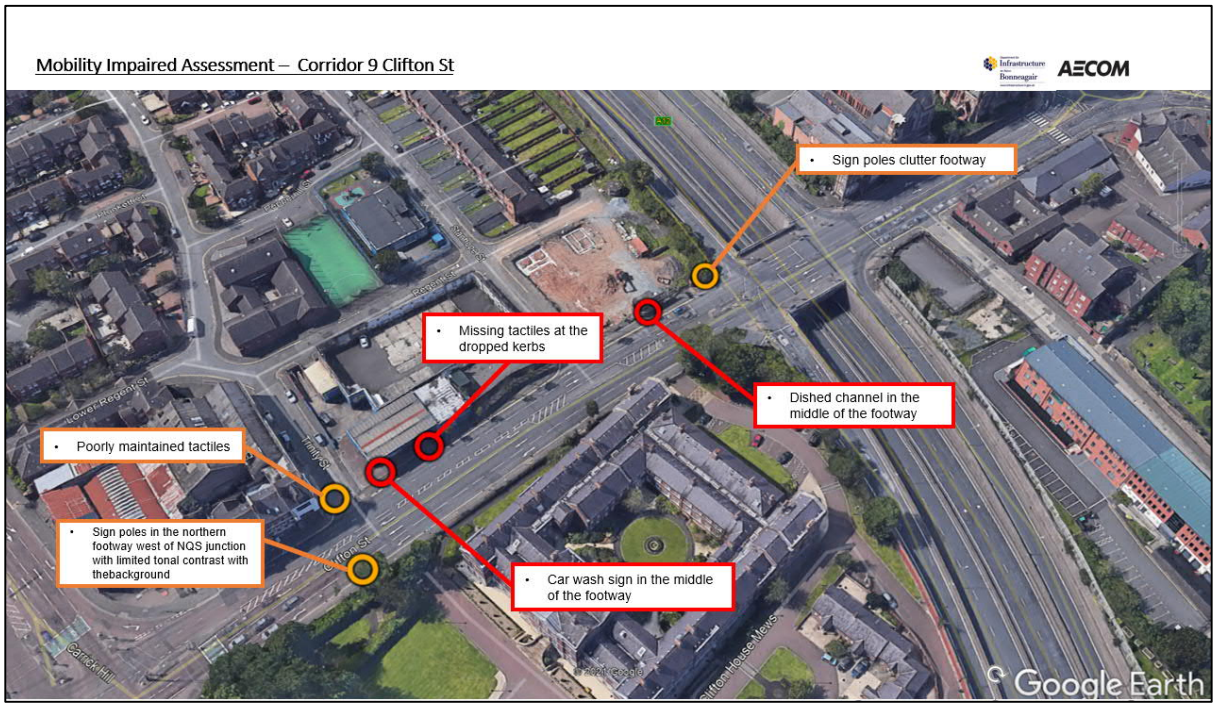
11.4 Pedestrian Comfort Levels baseline results

Results of the Pedestrian Comfort Level baseline assessment and qualitative commentary regarding the pedestrian environment for corridor nine are shown in the figure below.



11.5 Mobility Impaired Audit baseline results

Results of the Mobility Impaired Audit assessment of the baseline for corridor nine are shown in the figure below.



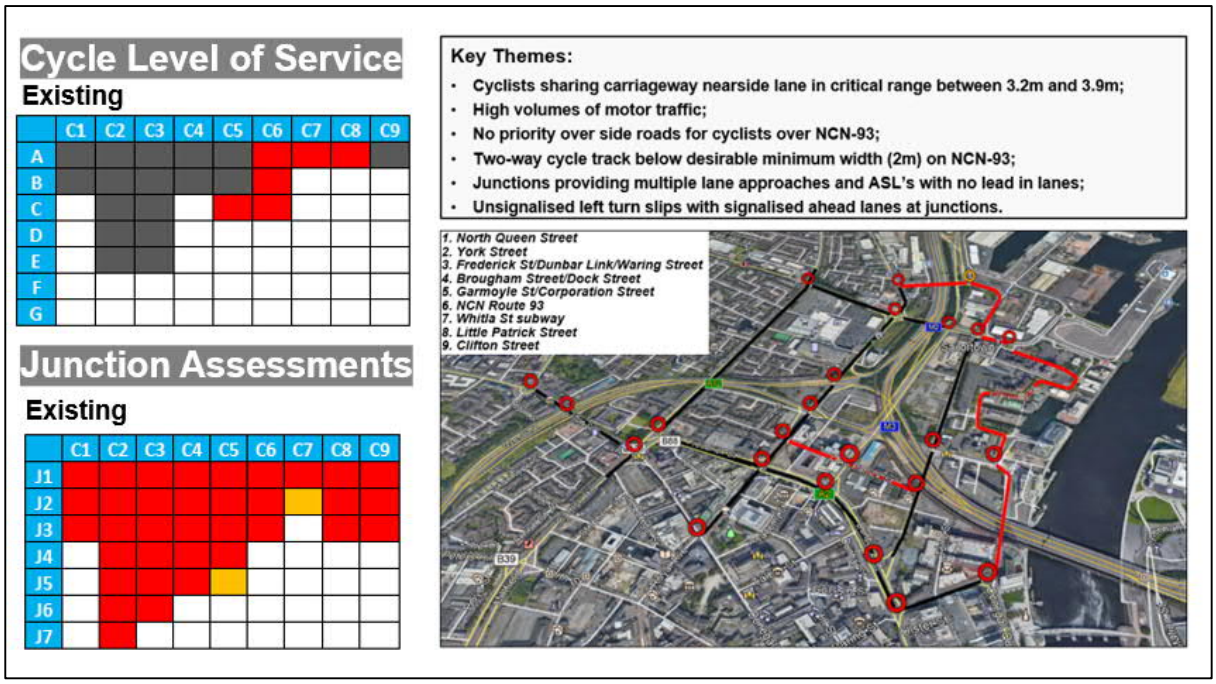
12. Summary & Next Steps

12.1 Summary

Cycling

Key findings of the baseline assessment of nine study corridors by section (A-E) and by major junctions are summarised in Figure 15 below along with key themes. Six of the nine study corridors recorded at least one critical fail (coloured black), with the other three corridors classified as red. A total of 24 junctions, acknowledging some junction locations are included twice where two corridors intersect, were assessed using the Junction Assessment Tool. Baseline results of existing provision indicated that 23 out of the 24 junctions reviewed classified as red whereby the lowest scoring movement at the junction was suitable only for confident existing cyclists.

Figure 15 – Summary of key findings of existing network audit from a cycling perspective



Walking & Mobility Impaired

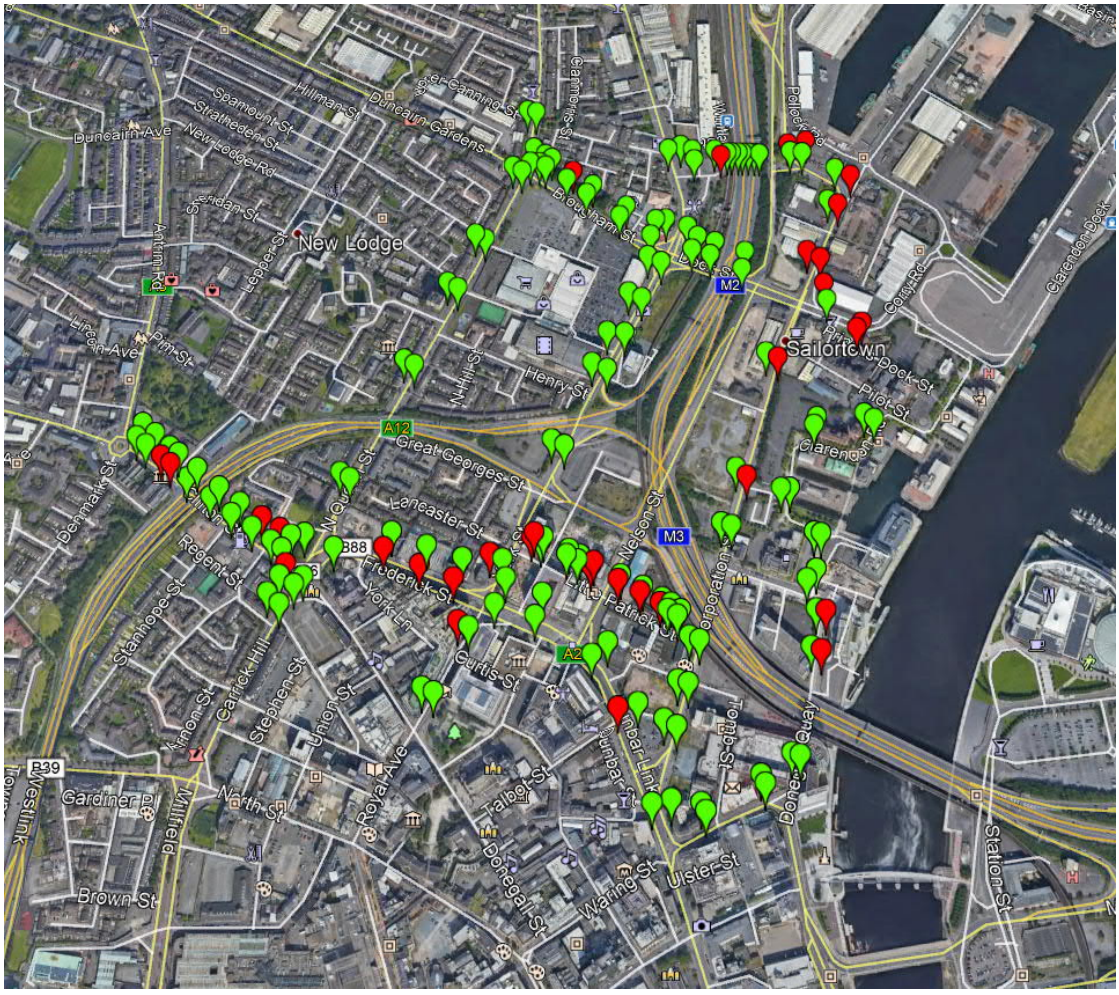
A summary of the Baseline Pedestrian Comfort Assessment results from a footway width versus pedestrian flow perspective are summarised in Figure 16 overleaf. The majority of locations are categorised as green where there is sufficient footway width for *existing* pedestrian flows. However, this is recognised to be only a partial representation of the existing provision for pedestrians, including those with mobility impairments, with a summary of key themes and issues identified as:

- Footways are typically wide, well-lit and tree lined within the study area;
- Footway surfaces are typically poor within the study area and in need of resurfacing. Cracks, joints, defects and drainage channels within the footway result in uneven surfaces;
- Occasional lighting columns, trees and road signs are located within the centre of the footways and are likely to cause obstruction. This is a particular issue where the footway is shared with NCN Route 93;
- Where footways are located under the M3 motorway and railway line; or within Whitla Street Subway, frontages are limited, creating an isolated environment, with poor urban realm and limited passive surveillance;

- There are a mix of controlled and uncontrolled crossings at signalised junctions creating a difficult environment for mobility impaired user, in particular where a mixture of controlled and uncontrolled crossing movements are required on a single junction arm;
- Frequent incorrect or missing tactile paving is present at crossing locations or areas of shared footway; this could be potentially confusing and dangerous for people with vision impairments; and
- Kerb upstands are frequently greater than 6mm on dropped kerbs, which is likely to pose a problem for disabled people, particularly wheelchair users.

It is also recognised the future pedestrian flows are projected to be significantly higher on several of the study corridors reflecting planned land use changes. These increased pedestrian flows need to be taken into account when considering proposed scheme options.

Figure 16 - Summary of pedestrian comfort assessment findings for the existing network



12.2 Next Steps

Following this baseline review, the next steps for Active Travel are as follows:

- Work with and feed into the ongoing spatial analysis work undertaken by the AECOM Placemaking team to ensure key active travel routes are incorporated within the study area and to identify the key issues and opportunities for connecting people to places.
- Undertake a joint Placemaking / Active Travel review of the existing York Street Interchange scheme design.
- Develop preliminary recommendations to enhance the existing scheme proposals from a placemaking and active travel perspective and undertake a second iteration LTN 1/20 assessment and pedestrian/mobility impaired audit/review of the updated scheme proposals.
- Client workshop and presentation of key findings.

APPENDICES

Appendix A – Corridor 1 | North Queen Street

A.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60521700
Scheme	Belfast - York Street Interchange
Location	Corridor 1 - North Queen Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

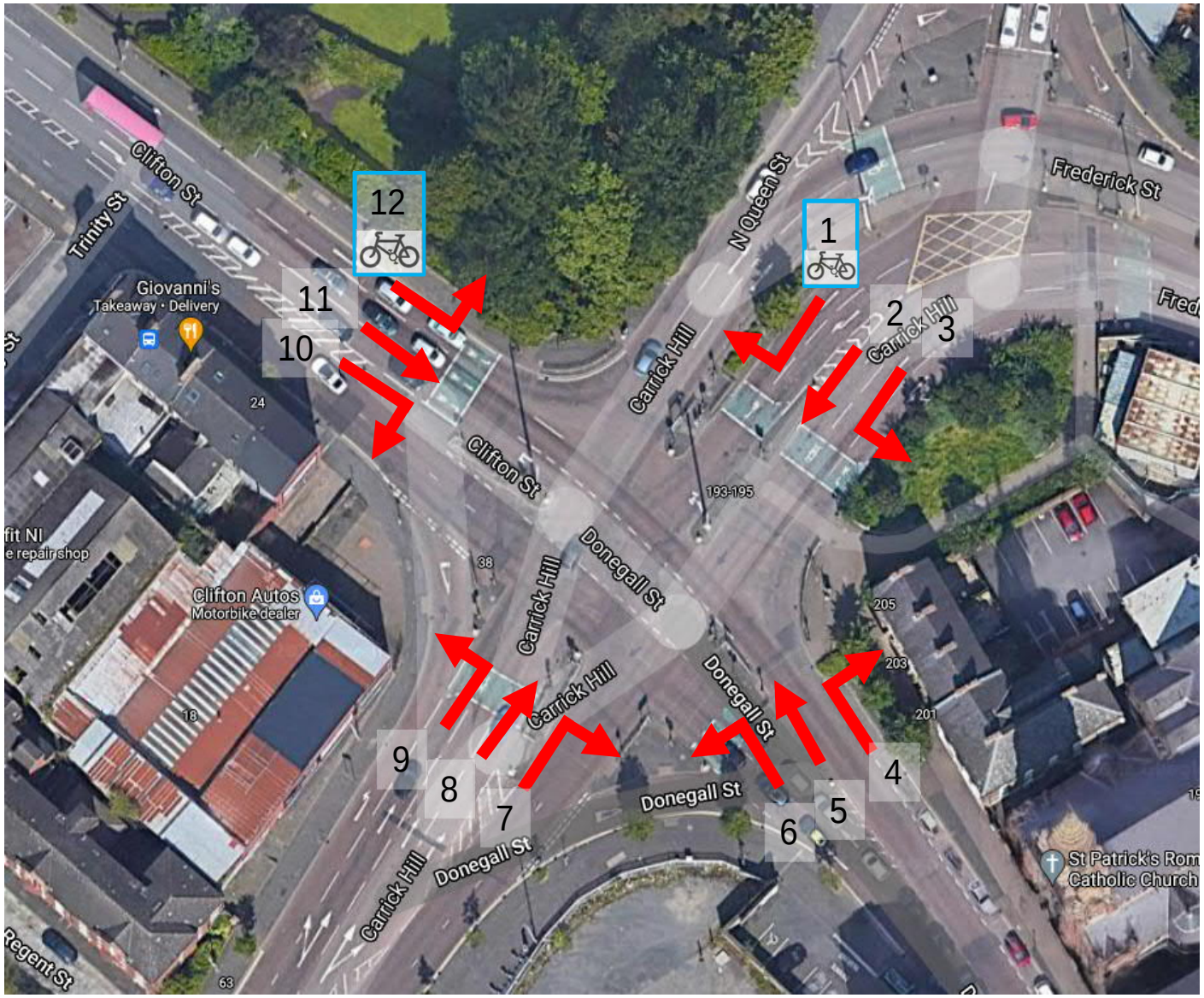
AECOM

							Section	Existing 1A		Existing 1B	
Cycling Level of Service (CLOS)											
Key Requirement	**Factor**	**Design Principle**	**Indicators**	**Critical**	**0 (Red)**	**1 (Amber)**	**2 (Green)**	**Score**	**Comments**	**Score**	**Comments**
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Right turns from dual carriageway offering unsafe connection.	0	Hatching along the majority of route may give some safety for right turning cyclists, but not considered sufficient.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of	**3.Density of routes based on mesh width** i.e. distances between primary and secondary		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	North Queen Street is both straight and direct	2	North Queen Street is both straight and direct
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more	The number of stops or give ways on the route is between 2 and 4	The number of stops or give ways on the route is less than	1	Four junctions over 893m route.	1	Four junctions over 893m route.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore delay is similar to motor vehicles	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.	1	Wide single lane with hatching; allowing a cyclists to overtake slow vehicles / cyclists.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in	There are no sections of route steeper than the gradients recommended in	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 16 mph	1	85th percentile speed = 21 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 16 mph	2	85th percentile speed = 16 mph
	Avoid high motor traffic volumes where cyclists are sharing the	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	c	14000 AADT	c	14000 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	c	Measured from aerial imagery, assumed critical.	c	Measured from aerial imagery, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	Numerous untreated side roads, with potential for high levels of traffic accessing B126.	0	Numerous untreated side roads, with potential for high levels of traffic accessing B126.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Clear road markings, however not text provided for directions.	2	Clear road markings
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Parking alongside carriageway, which could entrap cyclists.	1	Parking alongside carriageway, which could entrap a cyclists.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some minor defects within carriageway surface.	1	Some defects, pot holes near New Lodge Rd.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.	0	Cyclists are with traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional	1	Some wayfinding and cycle signage needed.	1	Some wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	22		22	

	Existing 1A	Existing 1B
Max possible score	50	50
Audit % score	44%	44%
Pass/Fail (70% threshold)	**Fail**	**Fail**
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	2	2

Criteria	Max Score	Sub-criteria Existing	%score Existing	Sub-criteria Existing	%score Existing
Coherence	6	0	0%	0	0%
Directness	10	7	70%	7	70%
Safety	16	**6**	38%	**6**	38%
Comfort	8	3	38%	3	38%
Attractiveness	10	6	60%	6	60%
	50				

A.2 Junction Assessment baseline results



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AECOM

Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 1 – North Queen Street

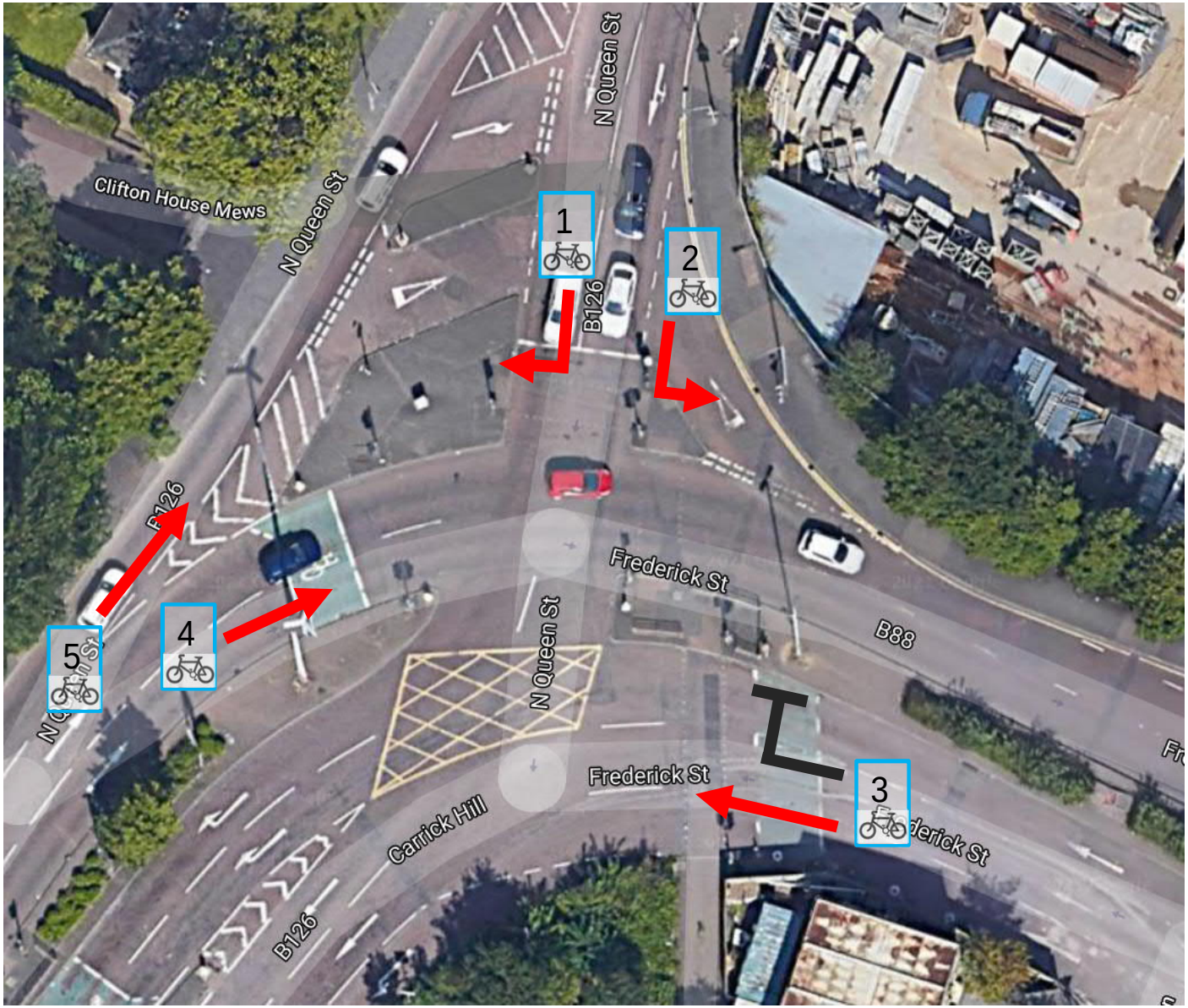
Junction 1.1: B126 Carrick Hill / Clifton St

Cycle Strategy Route Review Junction 1.1

Movement	Score	0	1	2	Comment
1	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
2	0			3	Cycle movement in potential conflict with heavy motor traffic flow.
3	0			3	Cycle movement in potential conflict with heavy motor traffic flow.
4	0			5	Cycle movement in potential conflict with heavy motor traffic flow.
5	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
6	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
7	0			5	Cycle movement in potential conflict with heavy motor traffic flow.
8	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
9	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
10	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
11	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
12	0			3	Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 1 – North Queen Street

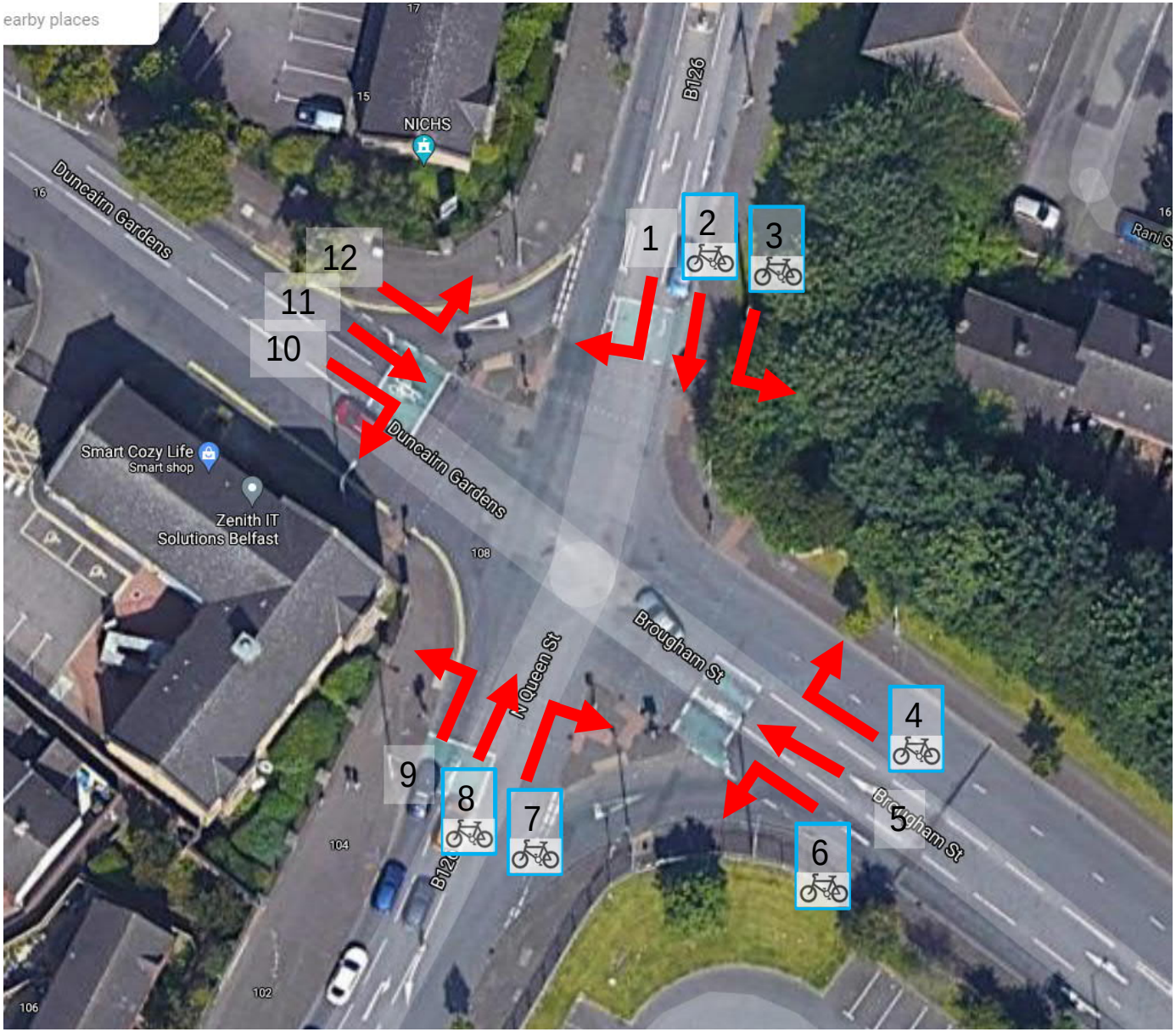
Junction 1.2 - B88 Carrick Hill / B126 N Queen S

Cycle Strategy Route Review Junction 1.2

Movement	Score	0	1	2	Comment
1	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 1 – North Queen Street

Junction 1.3 - B126 N Queen St / Brougham St

Cycle Strategy Route Review Junction 1.3

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	4			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

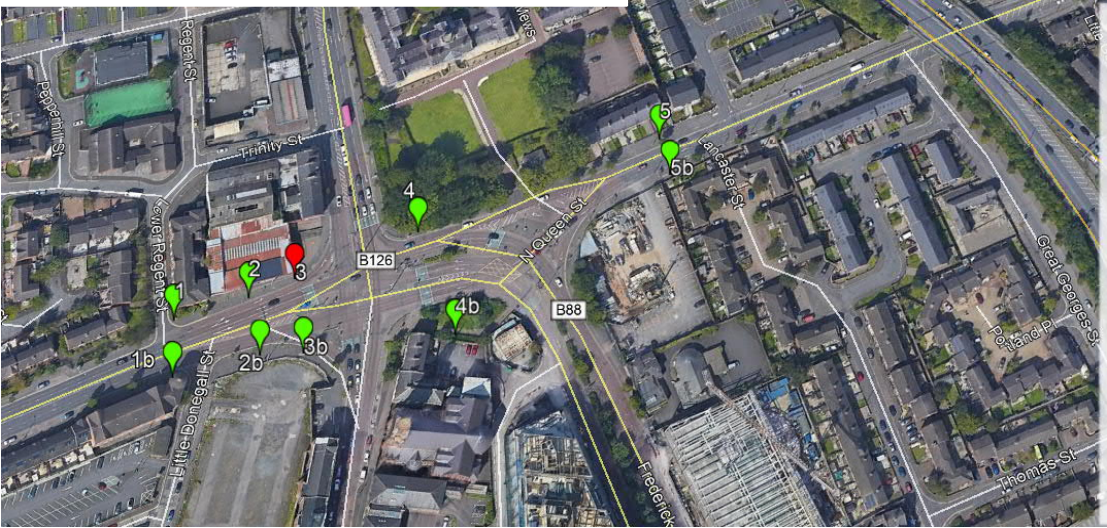
A.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

Corridor 1 - North Queen Street

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Footway Width	Overall Score
Corridor 1 (Western Footway)	1	4.00	2.9m	
	2	3.40	2.9m	
	3	2.79	2.9m	
	4	2.87	2.0m	
	5	6.59	2.0m	
	6	4.68	2.0m	
	7	6.38	2.0m	
	8	4.98	2.0m	
	9	6.79	2.0m	
	10	3.60	2.0m	
	Average Width (m)	4.61		90%
Corridor 1 (Eastern Footway)	1	3.64	2.9m	
	2	7.75	2.9m	
	3	5.24	2.9m	
	4	2.68	2.0m	
	5	5.57	2.0m	
	6	2.68	2.0m	
	7	5.33	2.0m	
	8	5.11	2.0m	
	9	4.38	2.0m	
	10	3.84	2.0m	
	Average Width (m)	4.62		100%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%



Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.

Qualitative Commentary

Characteristics / Ambience:

- Footways are typically wide, well lit and tree lined on either side of the carriageway, with mainly residential frontages;
- The B126 North Queen Street is a heavily trafficked route, a single carriageway cross section creates a less traffic dominated environment compared with multilane corridors.

Access / Connections:

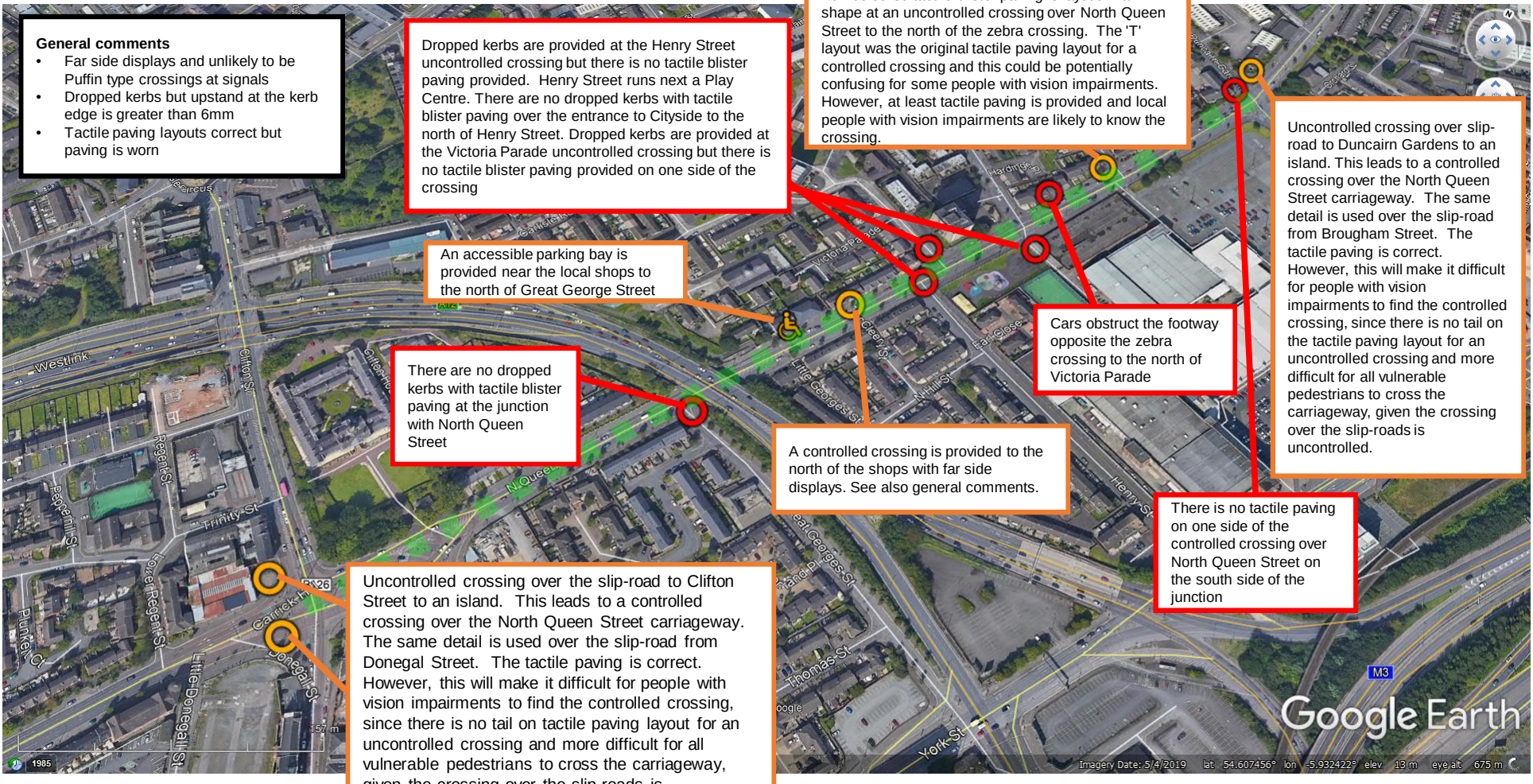
- Access to New Lodge Housing Estate is gained to the west, with connections to North Queen Street Play Centre and Yorkgate Shopping Centre to the north east of the corridor;
- One uncontrolled and two controlled mid-block crossing facilities are provided along the corridor. Multistage crossings are also provided at major junctions;
- Minor side road crossings and entry treatments are inconsistently provided, with many off the desire line.

Surface Quality / Obstructions:

- The footway surface is considered poor on either side of the carriageway, with cracks and drainage channels within the footway, resulting in an uneven surface;
- Sections of uncontrolled parking and parking on the footway are likely to cause obstruction.

A.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 1 North Queen Street



Appendix B – Corridor 2 | York Street

B.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 2 - York Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing 2A Score	Existing 2A Comments	Existing 2B Score	Existing 2B Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Right turns taken with general traffic, offering unsafe connections.	0	Four lane carriageway, dangerous for a cyclists to manoeuvre or connect to adjacent routes.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	York Street is both straight and direct.	2	York Street is both straight and direct.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more	The number of stops or give ways on the route is between 2 and 4	The number of stops or give ways on the route is less than	0	Five junctions over 987m route.'	0	Five junctions over 987m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic; therefore, delay is similar to motor vehicles.	1	Cyclists are with traffic; therefore, delay is similar to motor vehicles.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 11 mph	2	85th percentile speed = 7 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 11 mph	2	85th percentile speed = 7 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	0	7246 AADT	c	18700 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	c	Measured from aerial imagery, assumed critical.	c	Measured from aerial imagery, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	1	One side road, untreated.	1	One side road, untreated.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible, with no text provided for directions.	2	Clear road markings
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Parking alongside carriageway, which could entrap a cyclists.	1	Parking alongside carriageway and tree planting, which could entrap a cyclists.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some defects, cracks within the carriageway.	1	Some defects, cracks where slot cuts have been undertaken.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional	1	Some cycle and wayfinding signage needed.	1	Some cycle and wayfinding signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	1	Some cycle parking at Ulster University in the form of Sheffield stands.	0	Currently no cycle parking provided.
							Audit Score	23		23	

	Existing 2A	Existing 2B
Max possible score	50	50
Audit % score	46%	46%
Pass/Fail (70% threshold)	Fail	Fail
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	1	2

Criteria	Max Score	Sub-criteria Existing	%score Existing	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%	0	0%
Directness	10	6	60%	6	60%
Safety	16	**7**	44%	**8**	50%
Comfort	8	3	38%	3	38%
Attractiveness	10	7	70%	6	60%
	50				

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 2 - York Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

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Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing 2C Score	Existing 2C Comments	Existing 2D Score	Existing 2D Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Six lane carriageway, dangerous for a cyclists to manoeuvre or connect to adjacent routes.	0	Multiple ahead lanes in either direction and right turns taken with traffic.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	0	York Street is one-way at this section. As such, cycle connections southbound have to be taken elsewhere on the network.	0	York Street is essentially one-way at this section for cyclists, with the southbound connection leading to a motorway slip road.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more	The number of stops or give ways on the route is between 2 and 4	The number of stops or give ways on the route is less than	0	Five junctions over 987m route.'	0	Five junctions over 987m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic; therefore, delay is similar to motor vehicles.	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in	There are no sections of route steeper than the gradients recommended in	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 7 mph	2	85th percentile speed = 14 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 7 mph	2	85th percentile speed = 14 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	C	21271 AADT	C	14258 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	C	Measured from google, assumed critical.	C	Measured from google, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	1	One side road, untreated.	1	One side road either side of the carriageway, untreated.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	2	Clear road markings	1	Generally legible, with no text provided for directions.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	2	No parking alongside carriageway, limited street furniture	2	Limited street furniture or clutter, no parking alongside carriageway.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major	Minor and occasional defects	Smooth high grip surface	1	Some minor defects, cracks and surface course degradation.	1	Some defects, including patches where surface course has been removed.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with heavy traffic, no segregation provided.	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit	Route is lit to highway standards	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional	1	Some cycle and wayfinding signage needed.	1	Some cycle and wayfinding signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	22		21	

	Existing 2C	Existing 2D
Max possible score	50	50
Audit % score	44%	42%
Pass/Fail (70% threshold)	Fail	Fail
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	2	2

Criteria	Max Score	Sub-criteria Existing	%score Proposed	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%	0	0%
Directness	10	4	40%	4	40%
Safety	16	**9**	56%	**8**	50%
Comfort	8	3	38%	3	38%
Attractiveness	10	6	60%	6	60%
	50				

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 2 - York Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

	Existing 2E

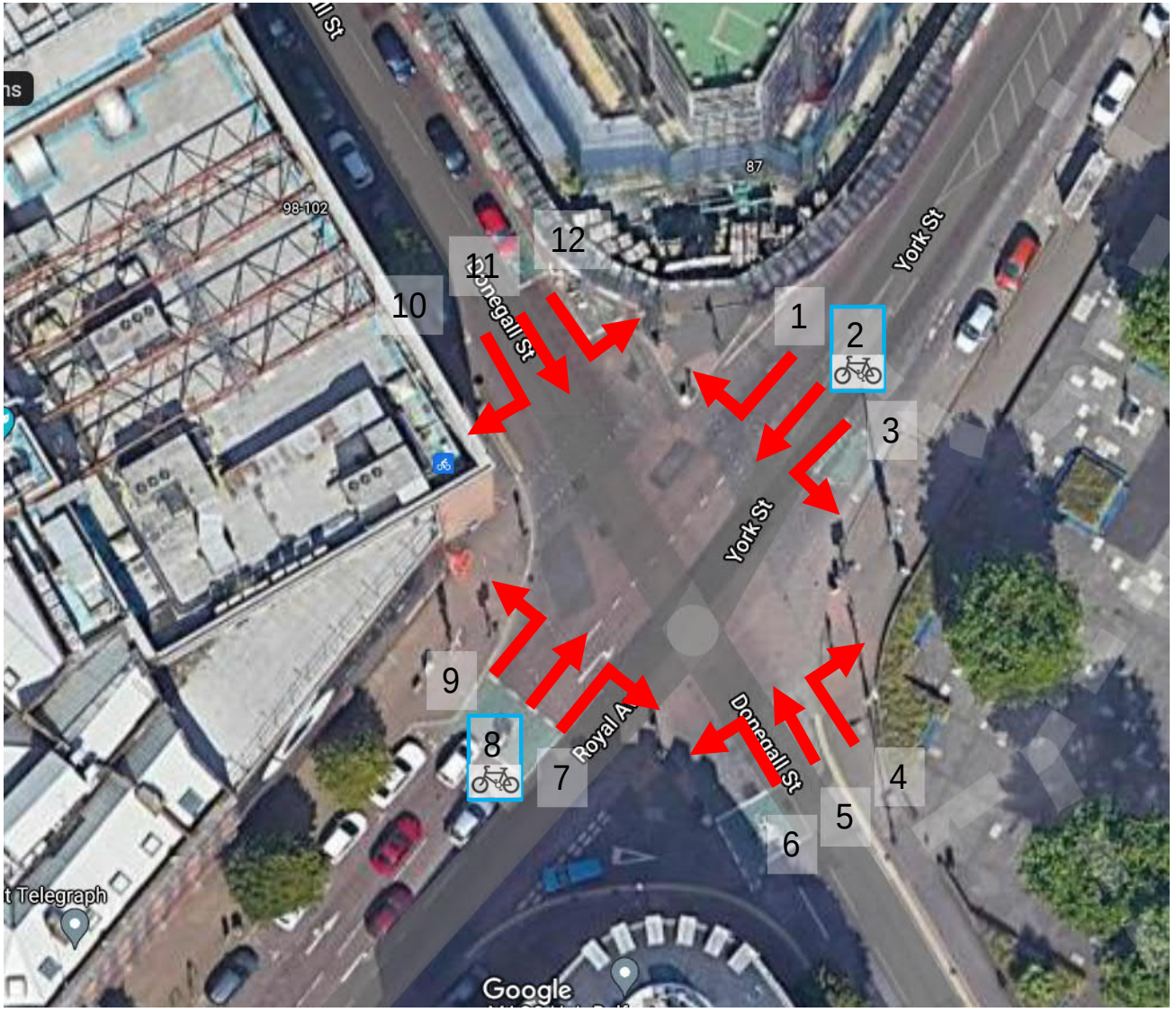
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Multiple ahead lanes in either direction and right turns taken with traffic.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	1	Most direct route towards subway does not follow curvature of the carriageway
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Five junctions over 987m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including e.cyclist ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 15 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 15 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	0	15427 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	0	Measured from google, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	1	One side road , untreated.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible, with no text provided for directions.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	2	Limited street furniture or clutter, no parking alongside carriageway.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some defects, including patches where surface course has been removed.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction	1	Some cycle and wayfinding signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none overlooked area	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	22	

Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%
Directness	10	5	50%
Safety	16	**8**	50%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

B.2 Junction Assessment baseline results



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 2 – York Street

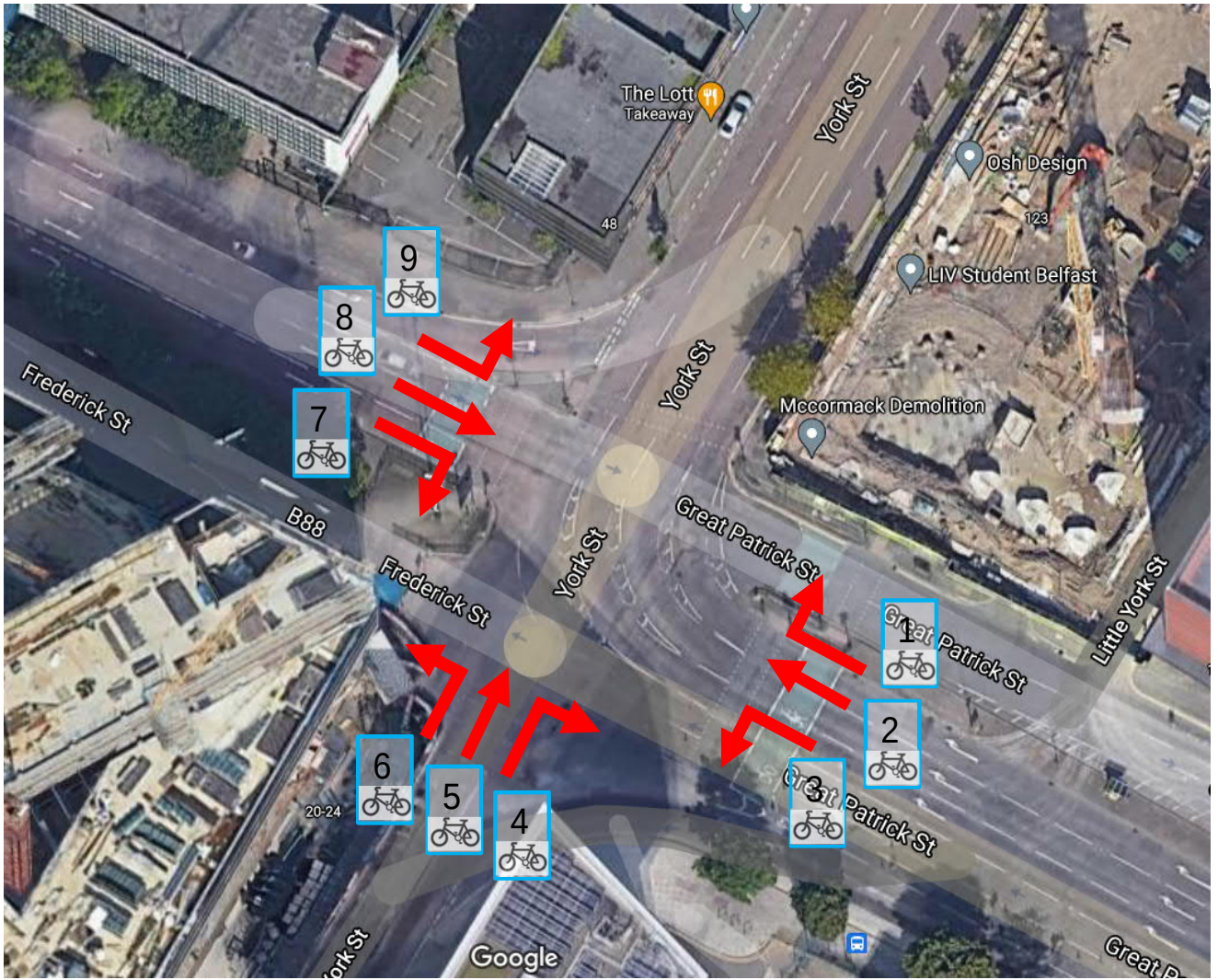
Junction 2.1 – York Street / Donegall Street

Cycle Strategy Route Review Junction 2.1

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 2 – York Street

Junction 2.2 – York Street / B88 Frederick Street

Cycle Strategy Route Review Junction 2.2

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	4			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

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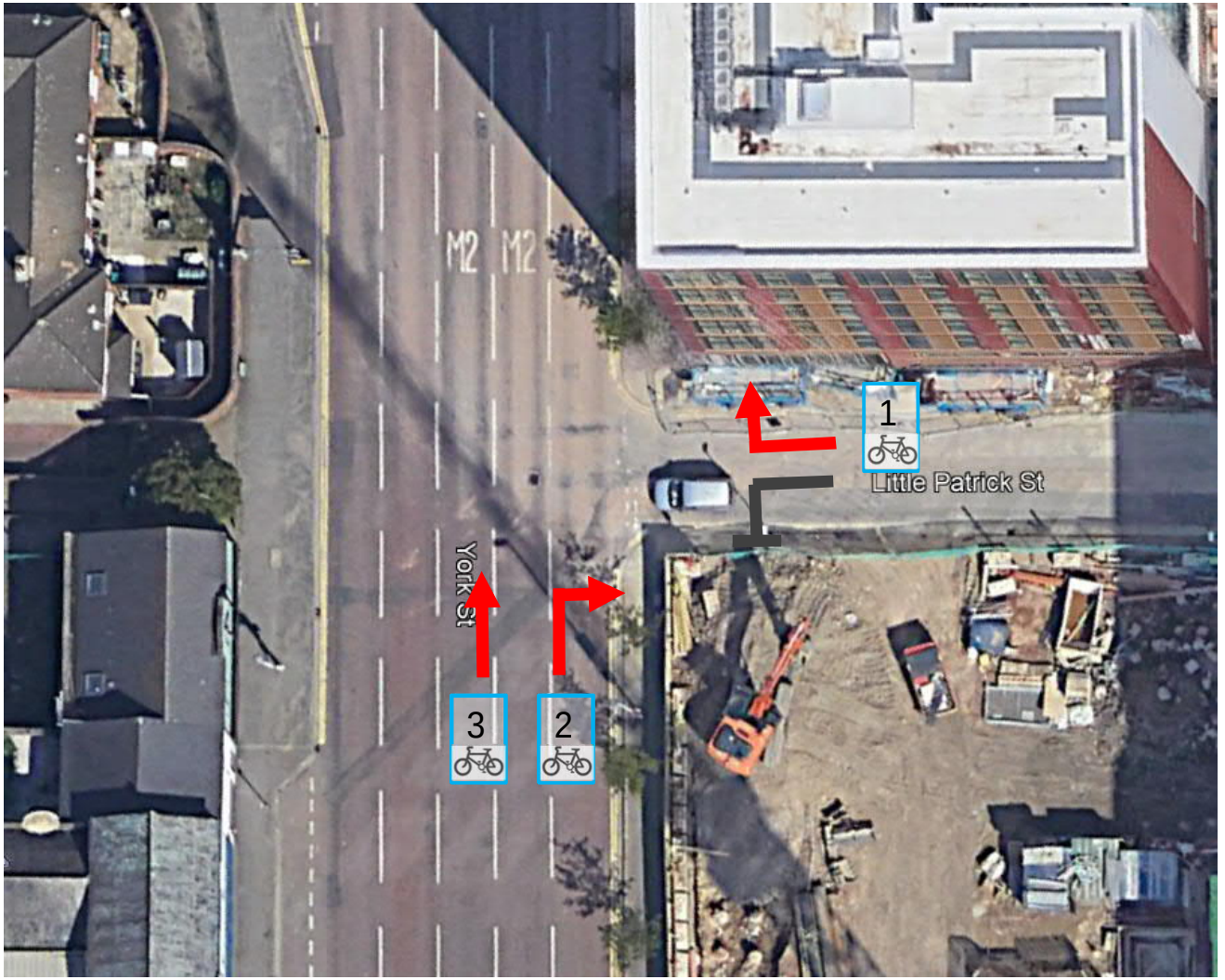
Project: Belfast - York Street Interchange

Corridor 2 – York Street

Junction 8.1 – York Street / Little Patrick Street

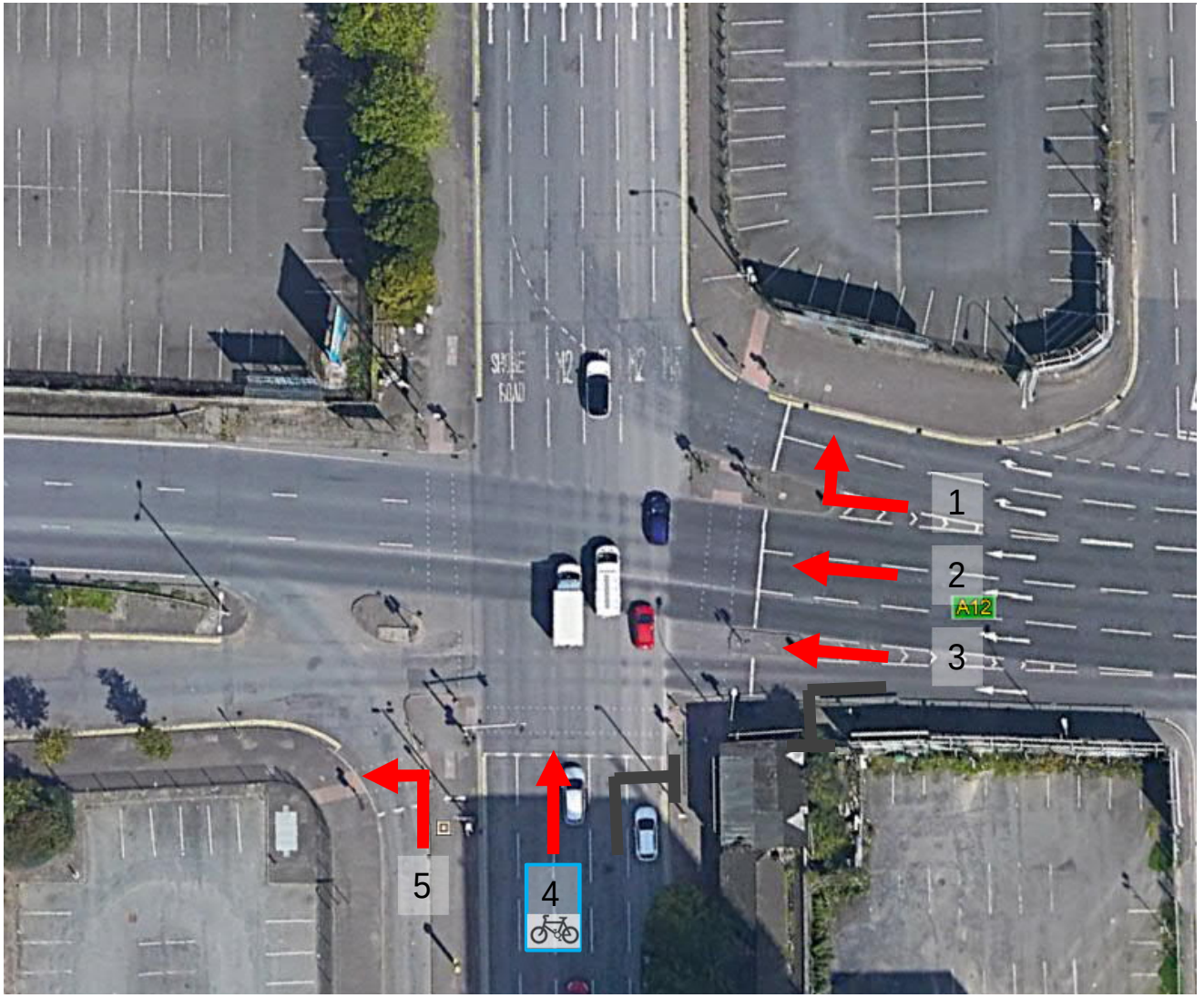


Cycle Strategy Route Review Junction 8.1

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	2	1		Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 2 – York Street

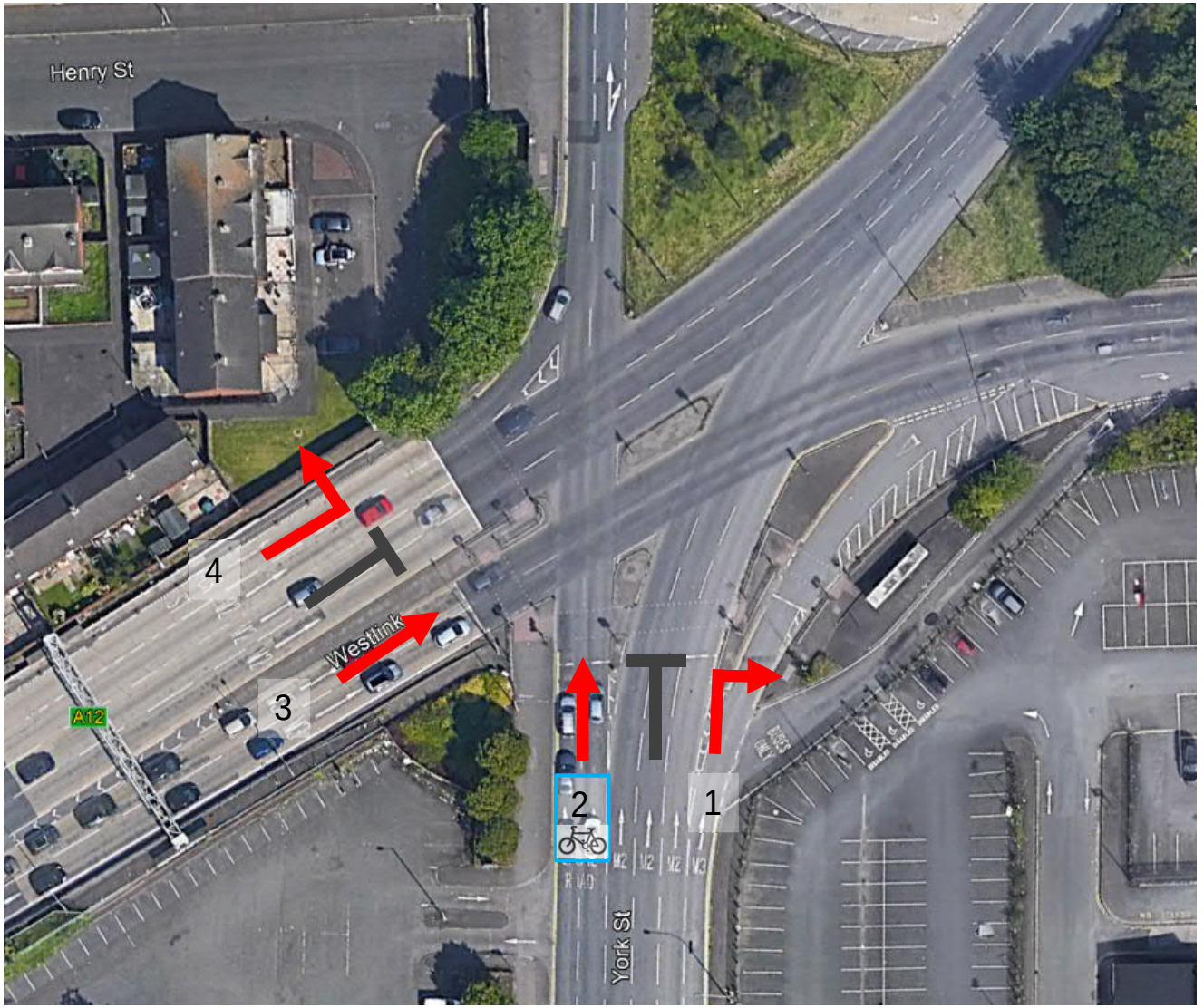
Junction 2.3 – York St / A12 Great Georges St

Cycle Strategy Route Review Junction 2.3

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	2	1		Pinch points on junction entry or exit (lane width 3.2m-3.9m).
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

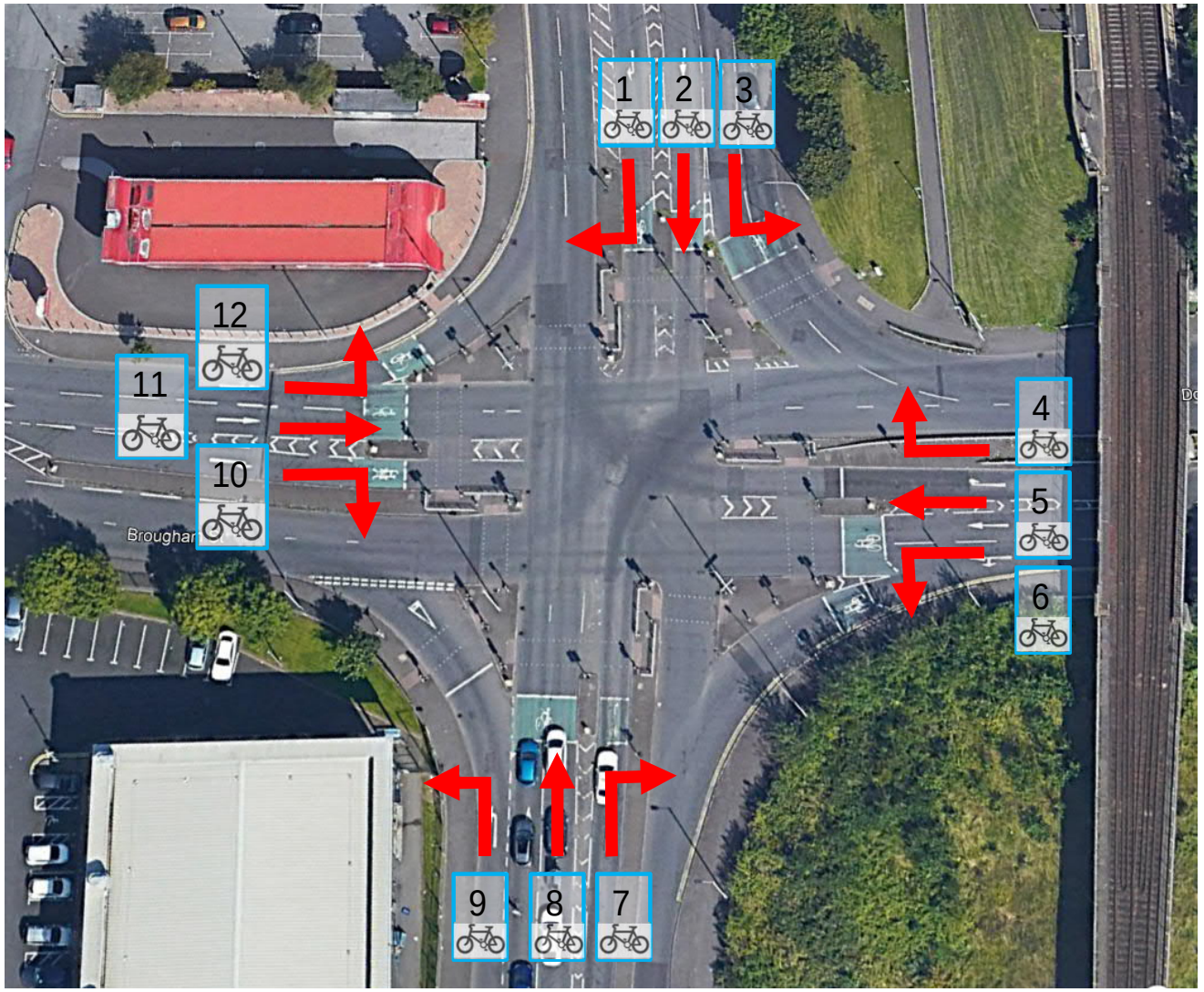
Corridor 2 – York Street

Junction 2.4 –York St / A12 Westlink

Cycle Strategy Route Review Junction 2.4					
Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 2 – York Street

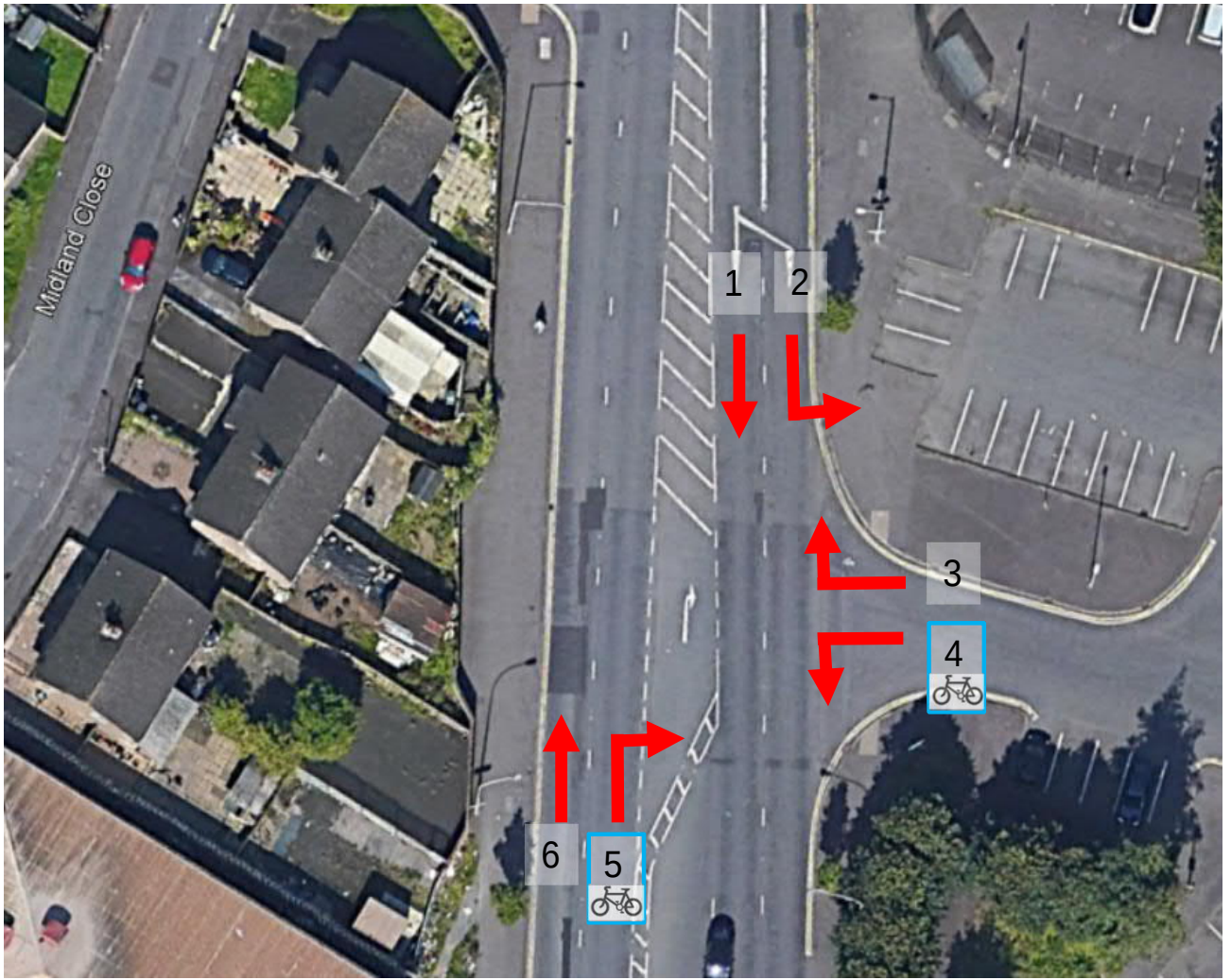
Junction 2.5 – A2 York St / Brougham Street

Cycle Strategy Route Review Junction 2.5

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 2 – York Street

Junction 2.6 – A2 York St / Yorkgate Station

Cycle Strategy Route Review Junction 2.6

Movement	Score	0	1	2	Comment
1	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	2			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	2			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

B.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

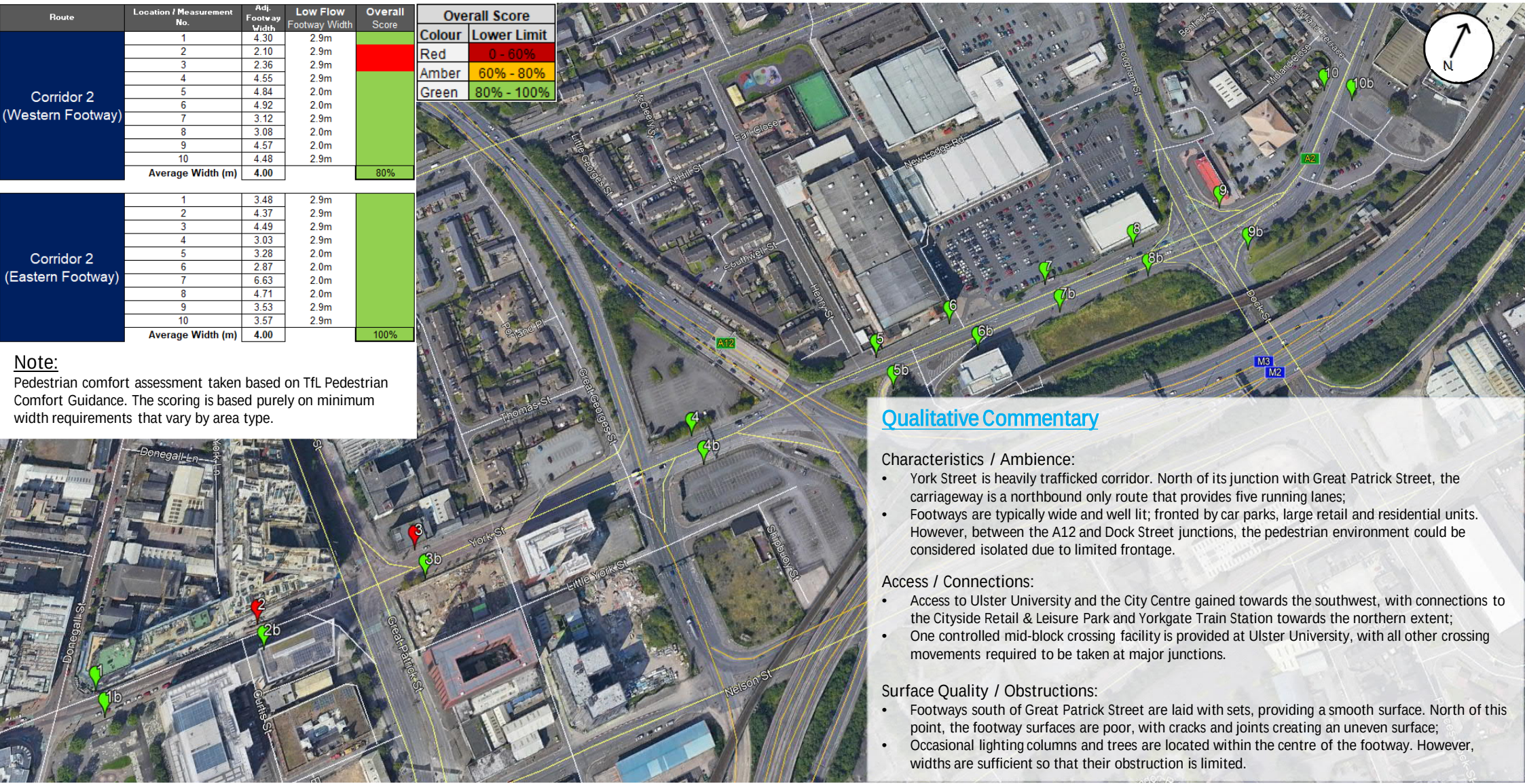
Corridor 2 – York Street/ York Road

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Footway Width	Overall Score
Corridor 2 (Western Footway)	1	4.30	2.9m	
	2	2.10	2.9m	
	3	2.36	2.9m	
	4	4.55	2.9m	
	5	4.84	2.0m	
	6	4.92	2.0m	
	7	3.12	2.9m	
	8	3.08	2.0m	
	9	4.57	2.0m	
	10	4.48	2.9m	
	Average Width (m)	**4.00**		80%
Corridor 2 (Eastern Footway)	1	3.48	2.9m	
	2	4.37	2.9m	
	3	4.49	2.9m	
	4	3.03	2.9m	
	5	3.28	2.0m	
	6	2.87	2.0m	
	7	6.63	2.0m	
	8	4.71	2.0m	
	9	3.53	2.9m	
	10	3.57	2.9m	
	Average Width (m)	**4.00**		100%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%

Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.



Qualitative Commentary

Characteristics / Ambience:

- York Street is heavily trafficked corridor. North of its junction with Great Patrick Street, the carriageway is a northbound only route that provides five running lanes;
- Footways are typically wide and well lit; fronted by car parks, large retail and residential units. However, between the A12 and Dock Street junctions, the pedestrian environment could be considered isolated due to limited frontage.

Access / Connections:

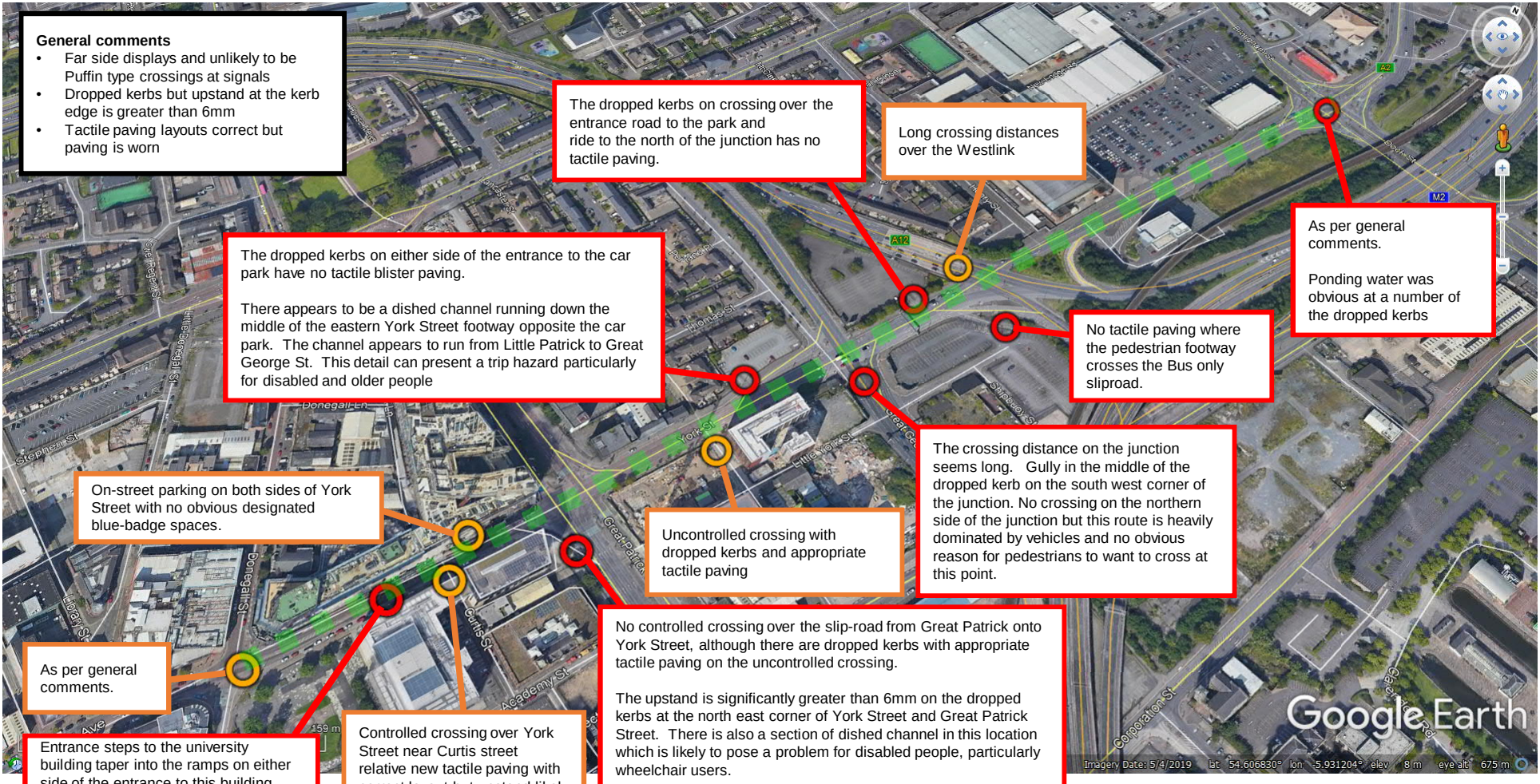
- Access to Ulster University and the City Centre gained towards the southwest, with connections to the Cityside Retail & Leisure Park and Yorkgate Train Station towards the northern extent;
- One controlled mid-block crossing facility is provided at Ulster University, with all other crossing movements required to be taken at major junctions.

Surface Quality / Obstructions:

- Footways south of Great Patrick Street are laid with sets, providing a smooth surface. North of this point, the footway surfaces are poor, with cracks and joints creating an uneven surface;
- Occasional lighting columns and trees are located within the centre of the footway. However, widths are sufficient so that their obstruction is limited.

B.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 2 York Street



Appendix C – Corridor 3 | Fredrick Street / Dunbar Link / Waring Street

C.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 3 - Fredrick Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing 3A Score	Existing 3A Comments	Existing 3B Score	Existing 3B Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Right turns taken with traffic, no access to minor arm on from EB, unless using central island.	0	Six lane carriageway westbound, dangerous for a cyclists to manoeuvre
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	B88 Fredrick Street is both straight and direct in this location.	2	B88 Great Patrick Street is both straight and direct in this location.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Four junctions over 590m route.'	0	Four junctions over 590m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore delay is similar to motor vehicles	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed	1	Multiple vehicular lanes; allowing a cyclists can overtake slow vehicles / cyclists.	1	On-street
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 9 mph	2	85th percentile speed = 11 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 9 mph	2	85th percentile speed = 11 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	C	10752 AADT	C	22089 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	C	Measured from aerial imagery, assumed critical.	C	Measured from aerial imagery, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	One side road, untreated along the southern side of the carriageway (York Lane).	0	One side road, untreated along the southern side of the carriageway (Academy Street).
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible, with no text provided for directions. Could be improved.	1	Generally legible, with no text provided for directions. Could be improved.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Number of trees alongside carriageway and central island level difference.	1	Parking alongside carriageway and tree planting, which could entrap a cyclists.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some defects, cracks where slot cuts have been undertaken.	1	Some defects, cracks where slot cuts have been undertaken.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction	1	Some wayfinding and cycle signage needed.	1	Some wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	21		21	

	Existing 3A	Existing 3B
Max possible score	50	50
Audit % score	42%	42%
Pass/Fail (70% threshold)	Fail	Fail
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	2	2

Criteria	Max Score	Sub-criteria Existing	%score Existing	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%	0	0%
Directness	10	6	60%	6	60%
Safety	16	**6**	38%	**6**	38%
Comfort	8	3	38%	3	38%
Attractiveness	10	6	60%	6	60%
	50				

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 3 - Fredrick Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

	Existing 3E

Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Three lane carriageway, on-way only, dangerous for a cyclists to manoeuvre.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Waring Street is both straight and direct in this location and is the shortest road alternative.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Four junctions over 590m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including e.cyclist ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed	1	On-street
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 7 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 7 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	c	23024 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	C	Measured from aerial imagery, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	One side road, untreated along the northern side (Tomb Street).
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible, with no text provided for directions. Could be improved.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	2	Relatively low amount of physical hazards, grass verge to the south.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some defects, cracks where slot cuts and surface course has been replaced.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction	1	Some wayfinding and cycle signage needed, including connection to existing NCN route.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none overlooked area	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	22	

Max possible score	50
Audit % score	44%
Pass/Fail (70% threshold)	Fail
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**7**	44%
Comfort	8	3	38%
Attractiveness	10	6	60%
	50		

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 3 - Fredrick Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

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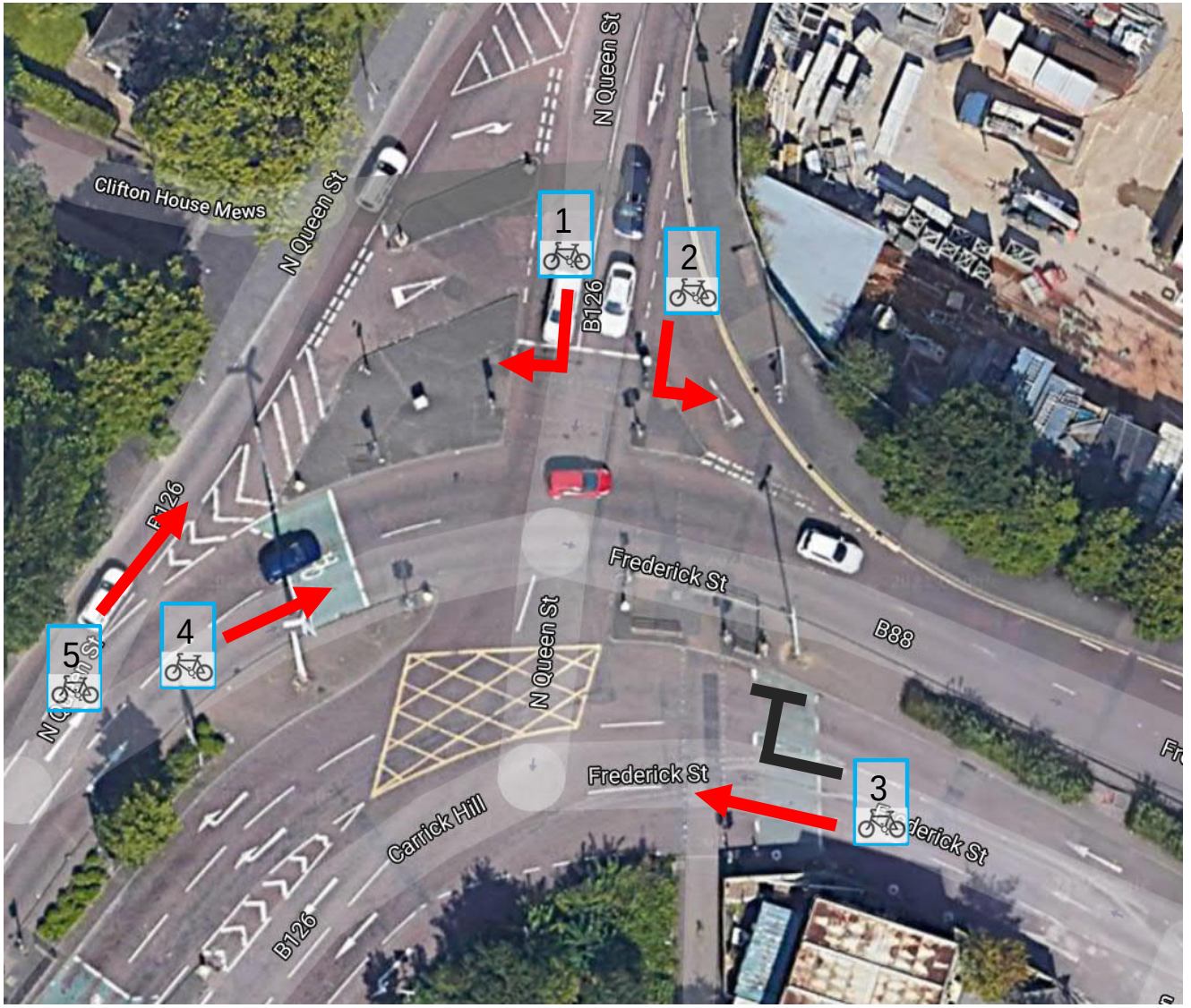
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing 3C Score	Existing 3C Comments	Existing 3D Score	Existing 3D Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Three lane carriageway either way, dangerous for a cyclists to manoeuvre	0	Three lane carriageway either way, dangerous for a cyclists to manoeuvre
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	B88 Great Patrick Street is a curved carriageway, but within <1.2 deviation factor.	2	Dunbar Link is both straight and direct
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more	The number of stops or give ways on the route is between 2 and 4	The number of stops or give ways on the route is less than	0	Four junctions over 590m route.'	0	Four junctions over 590m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore delay is similar to motor vehicles	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate	1	On-street	1	On-street
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in	There are no sections of route steeper than the gradients recommended in	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 7 mph	2	85th percentile speed = 7 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 7 mph	2	85th percentile speed = 7 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	C	20453 AADT	C	23024 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	C	Measured from aerial imagery, assumed critical.	C	Measured from aerial imagery, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	One side road on either side of the carriageway, untreated (Talbot Street and connection to Corporation Street).	0	One side road, untreated along the southern side (Dunbar Street).
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible, could be improved eastbound.	1	Generally legible, with no text provided for directions. Could be improved.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Tree planting, which could entrap a cyclists.	1	Some guard rail and tree planting, which could entrap a cyclists.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major	Minor and occasional defects	Smooth high grip surface	1	Some defects, cracks where slot cuts and surface course has been replaced.	1	Some defects, cracks where slot cuts and surface course has been replaced.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with heavy traffic, no segregation provided.	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit	Route is lit to highway standards	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.	2	The route is along a busy carriageway within a city centre environment, which is not isolated.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional	1	Some wayfinding and cycle signage needed.	1	Some wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	21		21	

	Existing 3C	Existing 3D
Max possible score	50	50
Audit % score	42%	42%
Pass/Fail (70% threshold)	**Fail**	**Fail**
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	2	2

Criteria	Max Score	Sub-criteria Existing	%score Proposed	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%	0	0%
Directness	10	6	60%	6	60%
Safety	16	**6**	38%	**6**	38%
Comfort	8	3	38%	3	38%
Attractiveness	10	6	60%	6	60%
	50				

C.2 Junction Assessment baseline results



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 3 – Fredrick St / Dunbar Link / Waring St

Junction 1.2 - B88 Carrick Hill / B126 N Queen St

Cycle Strategy Route Review Junction 1.2

Movement	Score	0	1	2	Comment
1	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

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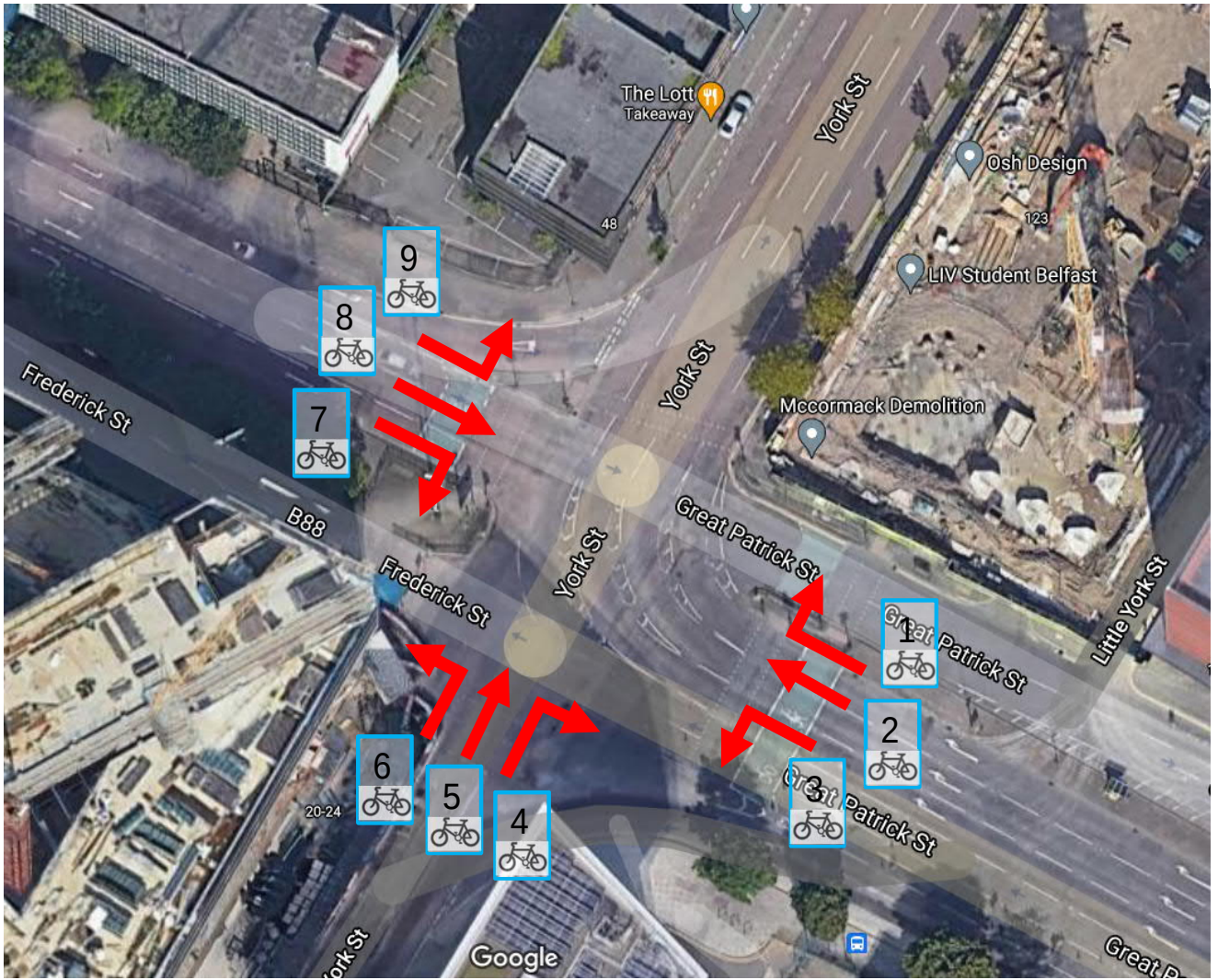
Project Number: 60571700
Project: Belfast - York Street Interchange

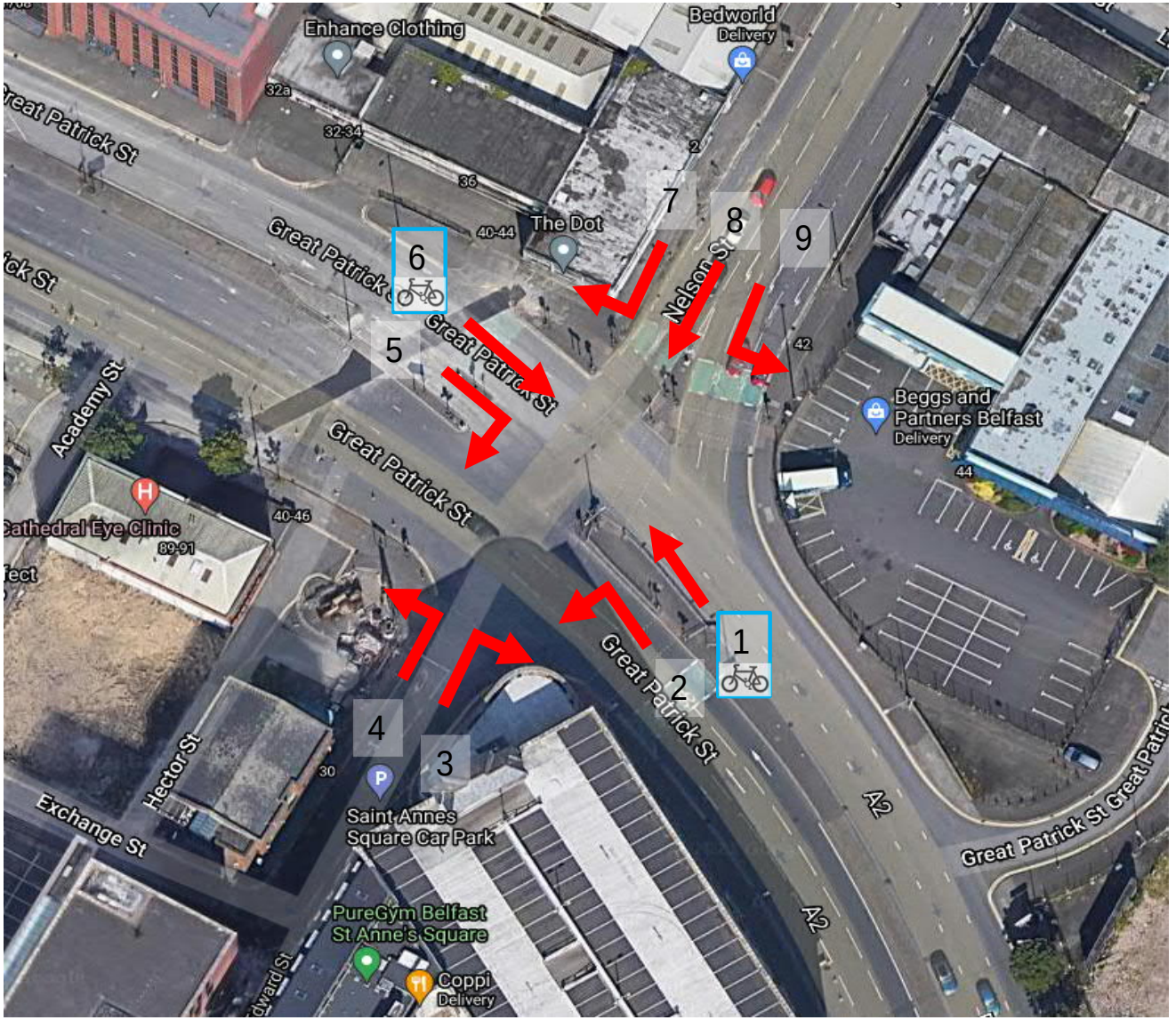
Corridor 3 – Fredrick St / Dunbar Link / Waring St
Junction 2.2 – York Street / B88 Frederick Street



Cycle Strategy Route Review Junction 2.2					
Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	4			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 3 – Fredrick St / Dunbar Link / Waring St

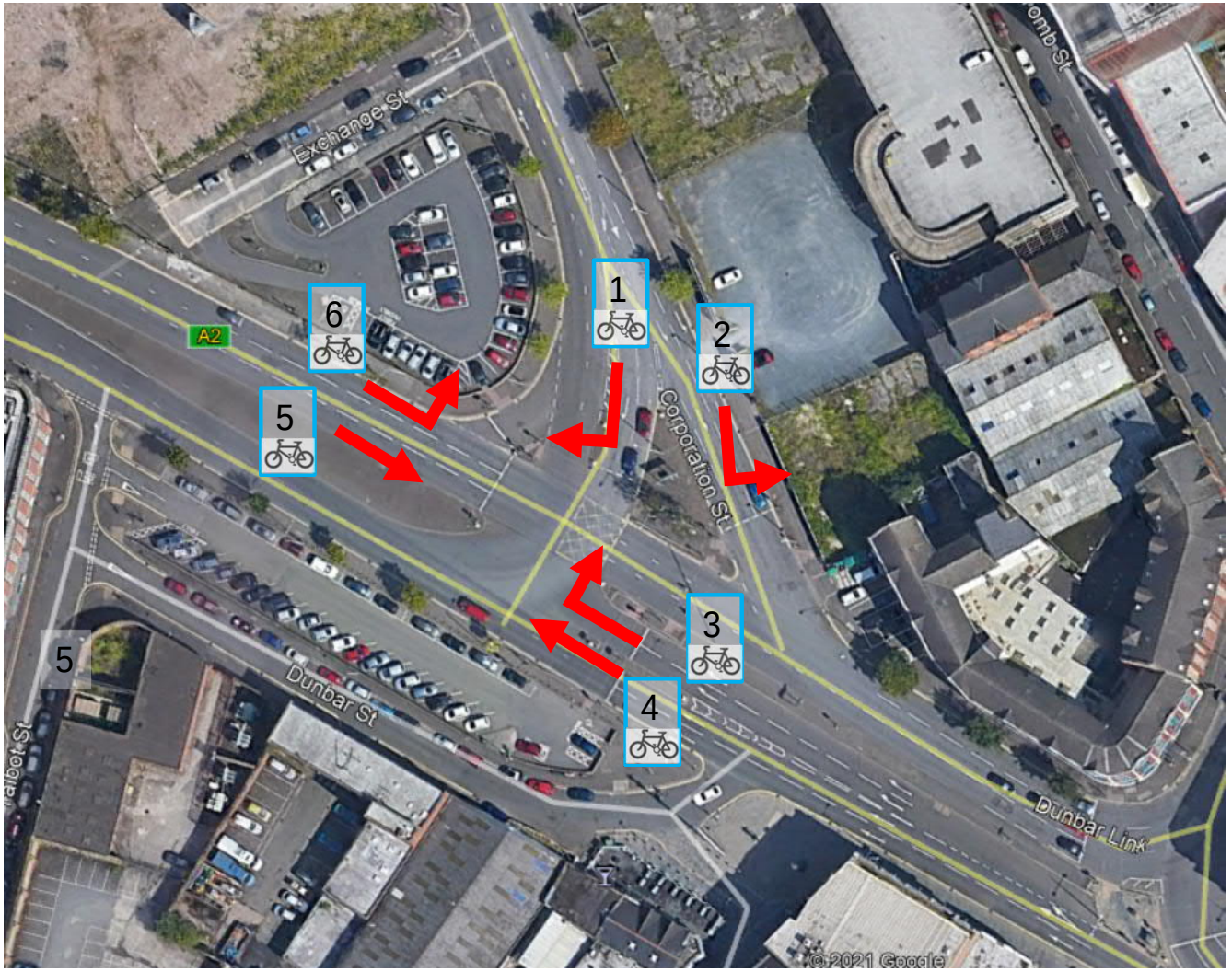
Junction 3.3 – Great Patrick Street / Nelson Street

Cycle Strategy Route Review Junction 3.3

Movement	Score	0	1	2	Comment
1	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	1	1		Pinch points on junction entry or exit (lane width 3.2m–3.9m).
4	0	1	1		Pinch points on junction entry or exit (lane width 3.2m–3.9m).
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	3	1		Necessary to cross more than one traffic lane (without refuge or protection) to complete cycle movement unless traffic flows are low
8	0	3	1		Necessary to cross more than one traffic lane (without refuge or protection) to complete cycle movement unless traffic flows are low
9	0	2	1		Pinch points on junction entry or exit (lane width 3.2m–3.9m).

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 3 – Fredrick St / Dunbar Link / Waring St

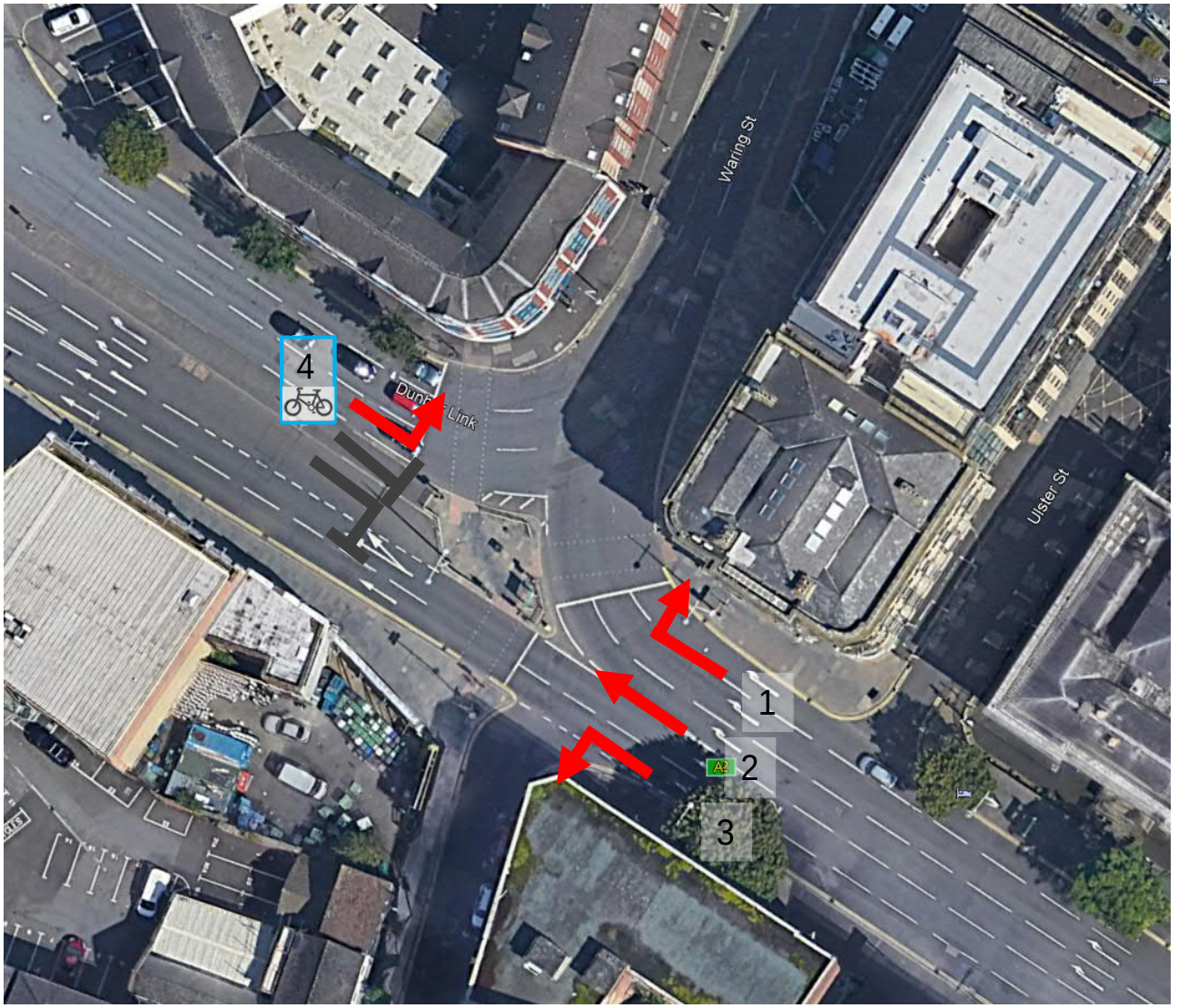
Junction 5.1 – A1 Dunbar Link / Corporation Street

Cycle Strategy Route Review Junction 5.1

Movement	Score	0	1	2	Comment
1	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
2	0			3	Cycle movement in potential conflict with heavy motor traffic flow.
3	0			4	Cycle movement in potential conflict with heavy motor traffic flow.
4	0			3	Cycle movement in potential conflict with heavy motor traffic flow.
5	0			3	Cycle movement in potential conflict with heavy motor traffic flow.
6	0			3	Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 3 – Fredrick St / Dunbar Link / Waring St

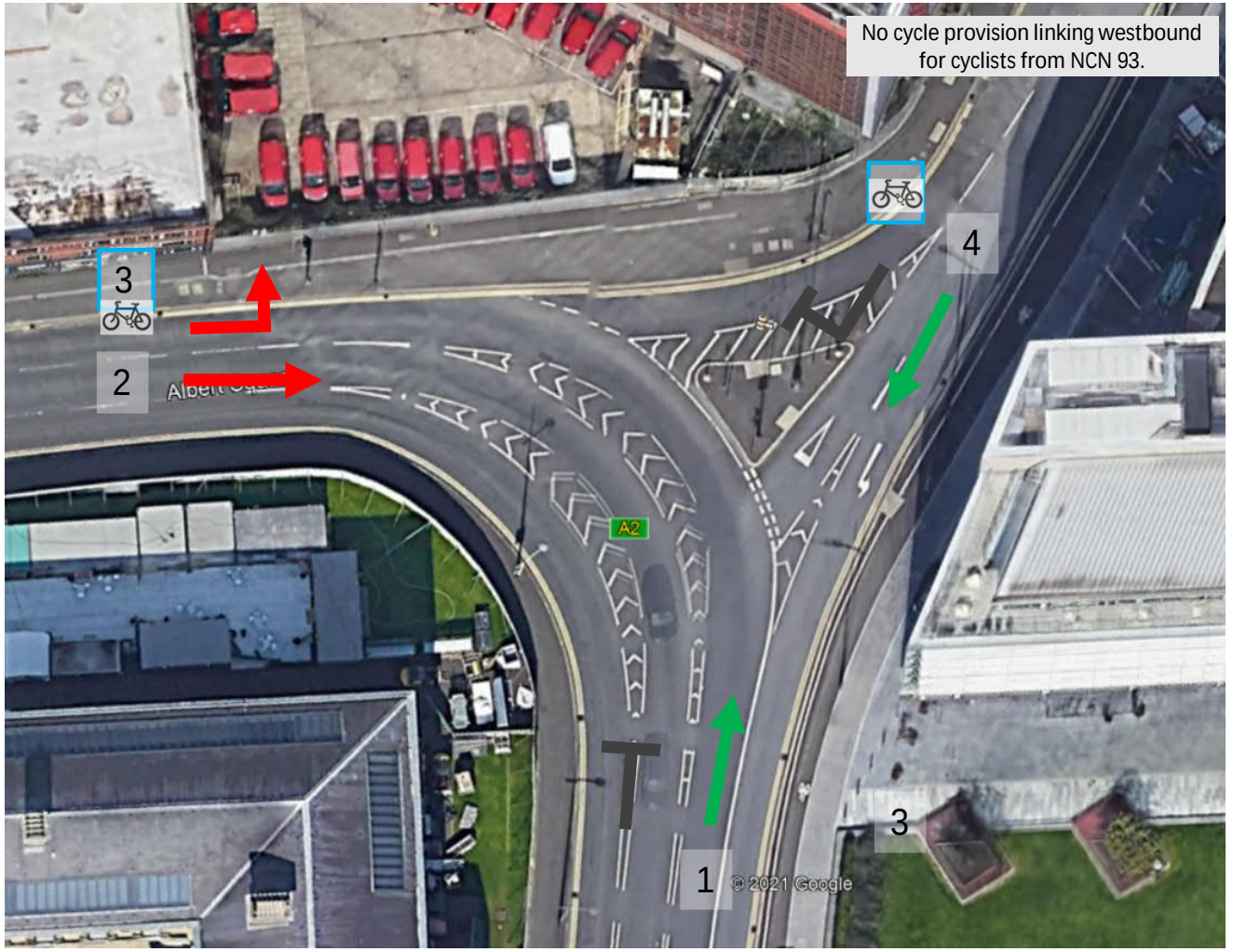
Junction 3.5 – A2 Dunbar Link / Waring Street

Cycle Strategy Route Review Junction 3.5

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 3 – Fredrick St / Dunbar Link / Waring St

Junction 6.1 – Albert Square / Donegal Quay

Cycle Strategy Route Review Junction 6.1

Movement	Score	0	1	2	Comment
1	2		1		Cycle movement separated physically and/or in time from motor traffic and also separated from pedestrians.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	2			Cycle movement in potential conflict with heavy motor traffic flow.
4	2		1		Cycle movement separated physically and/or in time from motor traffic and also separated from pedestrians.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

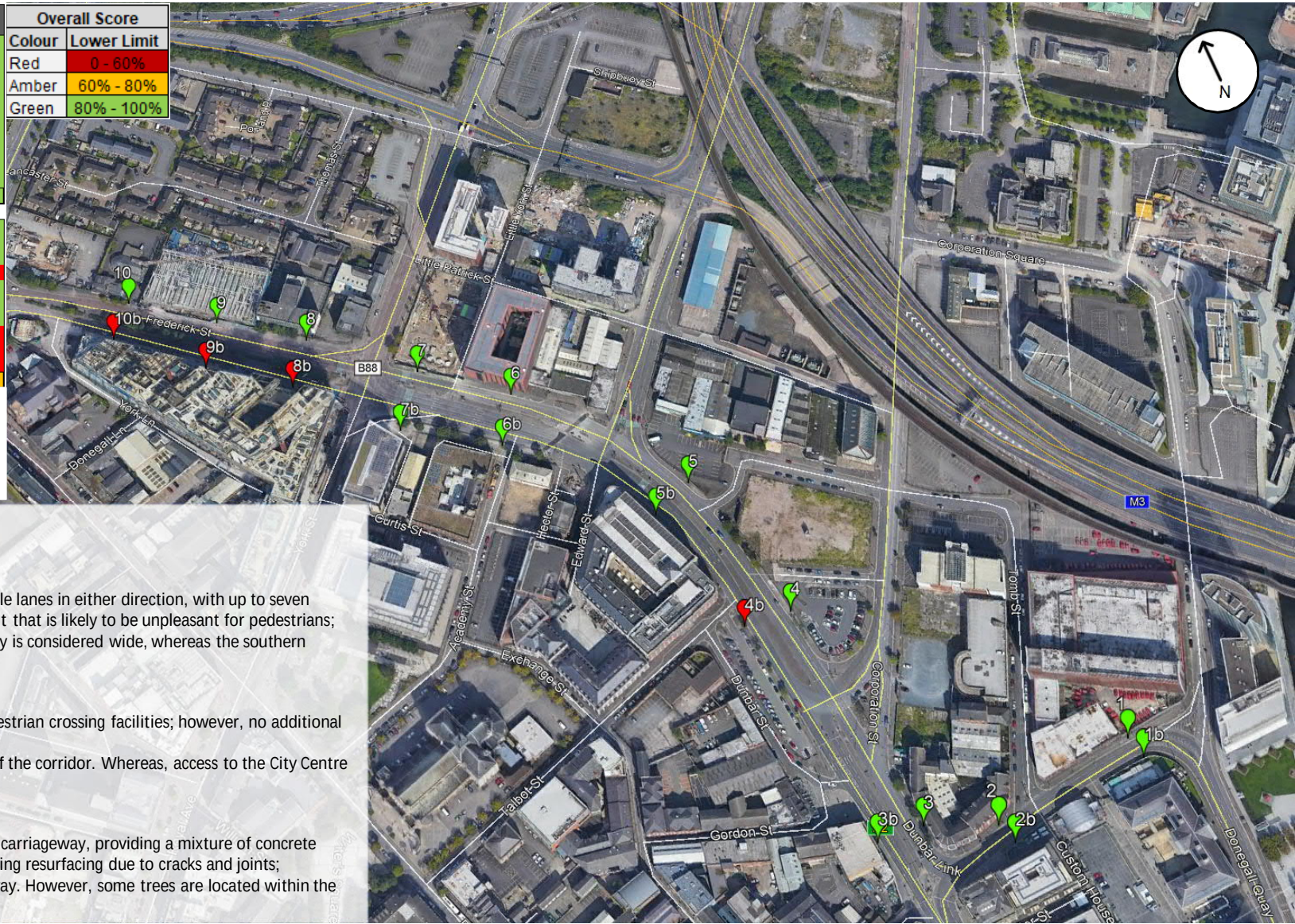
C.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

Corridor 3 – Frederick Street / Dunbar Link / Waring Street

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Footway Width	Overall Score
Corridor 3 (North Footway)	1	3.59	2.0m	
	2	4.50	2.9m	
	3	2.96	2.9m	
	4	3.83	2.9m	
	5	3.17	2.9m	
	6	3.46	2.0m	
	7	3.28	2.0m	
	8	5.13	2.0m	
	9	3.86	2.0m	
	10	4.52	2.9m	
	Average Width (m)	**3.83**		100%
Corridor 3 (Southern Footway)	1	2.66	2.0m	
	2	2.50	2.0m	
	3	3.62	2.0m	
	4	2.79	2.9m	
	5	4.08	2.9m	
	6	3.13	2.0m	
	7	10.16	2.0m	
	8	1.72	2.0m	
	9	1.32	2.0m	
	10	1.89	2.0m	
	Average Width (m)	**3.38**		60%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%



Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.

Qualitative Commentary

Characteristics / Ambience:

- Dunbar Link is a very heavily trafficked route, providing multiple lanes in either direction, with up to seven westbound lanes. This creates a traffic dominated environment that is likely to be unpleasant for pedestrians;
- Both footways are well lit and tree lined. The northern footway is considered wide, whereas the southern footway is considered moderately wide.

Access / Connections:

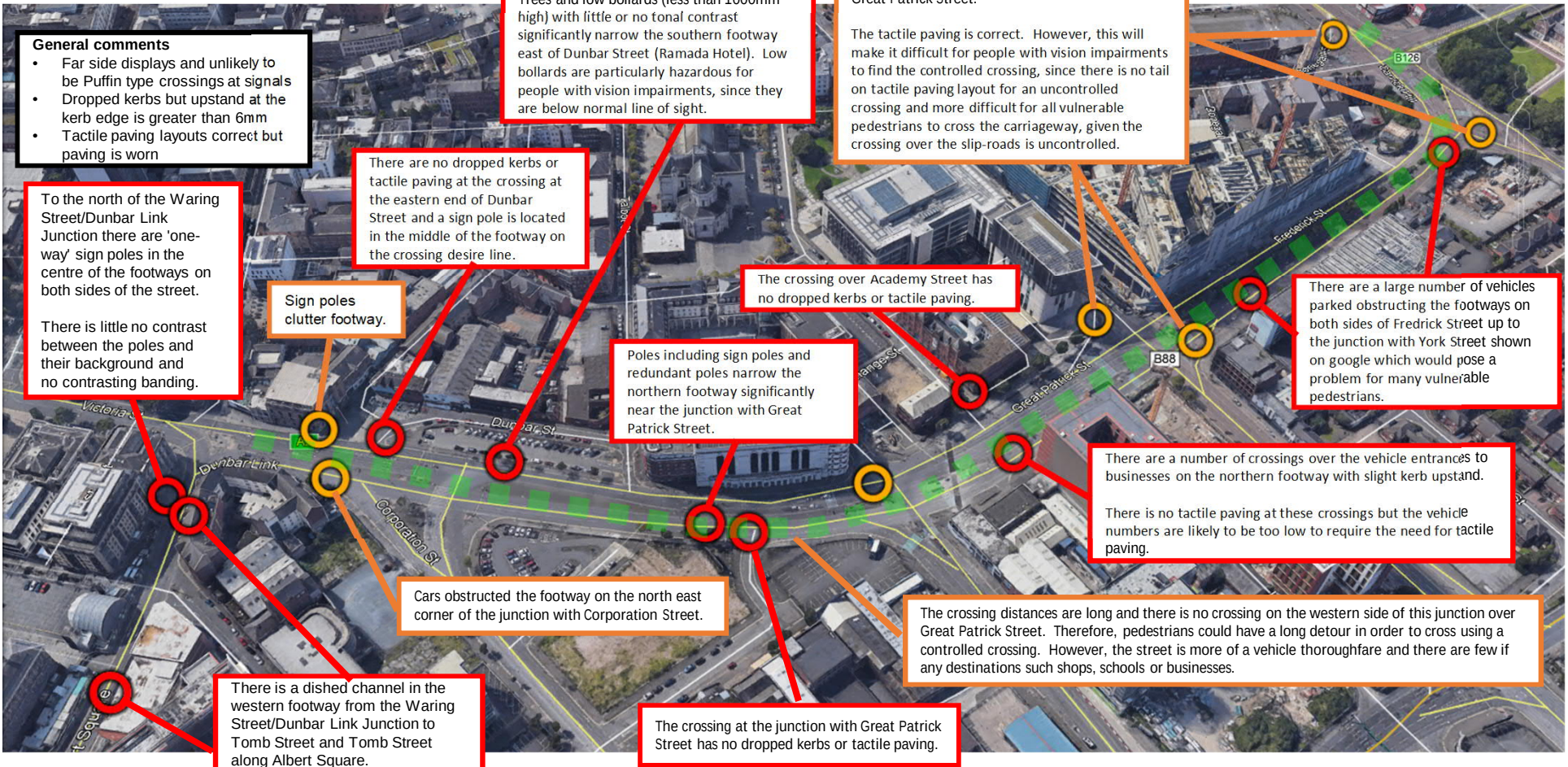
- Five main junctions along the corridor provide multistage pedestrian crossing facilities; however, no additional mid-block crossings are provided;
- Access to Ulster University is provided at the central section of the corridor. Whereas, access to the City Centre is gained to the southwest.

Surface Quality / Obstructions:

- The footway surface is variable in quality on either side of the carriageway, providing a mixture of concrete paving slabs and bituminous surfacing, with some areas requiring resurfacing due to cracks and joints;
- Lighting columns are typically located at the back of the footway. However, some trees are located within the centre of the footway on either side that cause obstruction.

C.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 3 Frederick Street & Dunbar Link



General comments

- Far side displays and unlikely to be Puffin type crossings at signals
- Dropped kerbs but upstand at the kerb edge is greater than 6mm
- Tactile paving layouts correct but paving is worn

To the north of the Waring Street/Dunbar Link Junction there are 'one-way' sign poles in the centre of the footways on both sides of the street.

There is little no contrast between the poles and their background and no contrasting banding.

Trees and low bollards (less than 1000mm high) with little or no tonal contrast significantly narrow the southern footway east of Dunbar Street (Ramada Hotel). Low bollards are particularly hazardous for people with vision impairments, since they are below normal line of sight.

There are no dropped kerbs or tactile paving at the crossing at the eastern end of Dunbar Street and a sign pole is located in the middle of the footway on the crossing desire line.

Sign poles clutter footway.

Uncontrolled crossing over the slip-road from North Queen Street to an island. This leads to a controlled crossing over the North Queen Street carriageway. The same detail is used over the slip-roads from Donegal Street, Frederick Street and Great Patrick Street.

The tactile paving is correct. However, this will make it difficult for people with vision impairments to find the controlled crossing, since there is no tail on tactile paving layout for an uncontrolled crossing and more difficult for all vulnerable pedestrians to cross the carriageway, given the crossing over the slip-roads is uncontrolled.

The crossing over Academy Street has no dropped kerbs or tactile paving.

Poles including sign poles and redundant poles narrow the northern footway significantly near the junction with Great Patrick Street.

There are a large number of vehicles parked obstructing the footways on both sides of Fredrick Street up to the junction with York Street shown on google which would pose a problem for many vulnerable pedestrians.

There are a number of crossings over the vehicle entrances to businesses on the northern footway with slight kerb upstand.

There is no tactile paving at these crossings but the vehicle numbers are likely to be too low to require the need for tactile paving.

Cars obstructed the footway on the north east corner of the junction with Corporation Street.

The crossing distances are long and there is no crossing on the western side of this junction over Great Patrick Street. Therefore, pedestrians could have a long detour in order to cross using a controlled crossing. However, the street is more of a vehicle thoroughfare and there are few if any destinations such shops, schools or businesses.

There is a dished channel in the western footway from the Waring Street/Dunbar Link Junction to Tomb Street and Tomb Street along Albert Square.

A channel in a pedestrian space can present a trip hazard.

The crossing at the junction with Great Patrick Street has no dropped kerbs or tactile paving.

Appendix D – Corridor 4 | Brougham Street / Sock Street

D.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571300
Scheme	Belfast - York Street Interchange
Location	Corridor 4 - Brougham Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

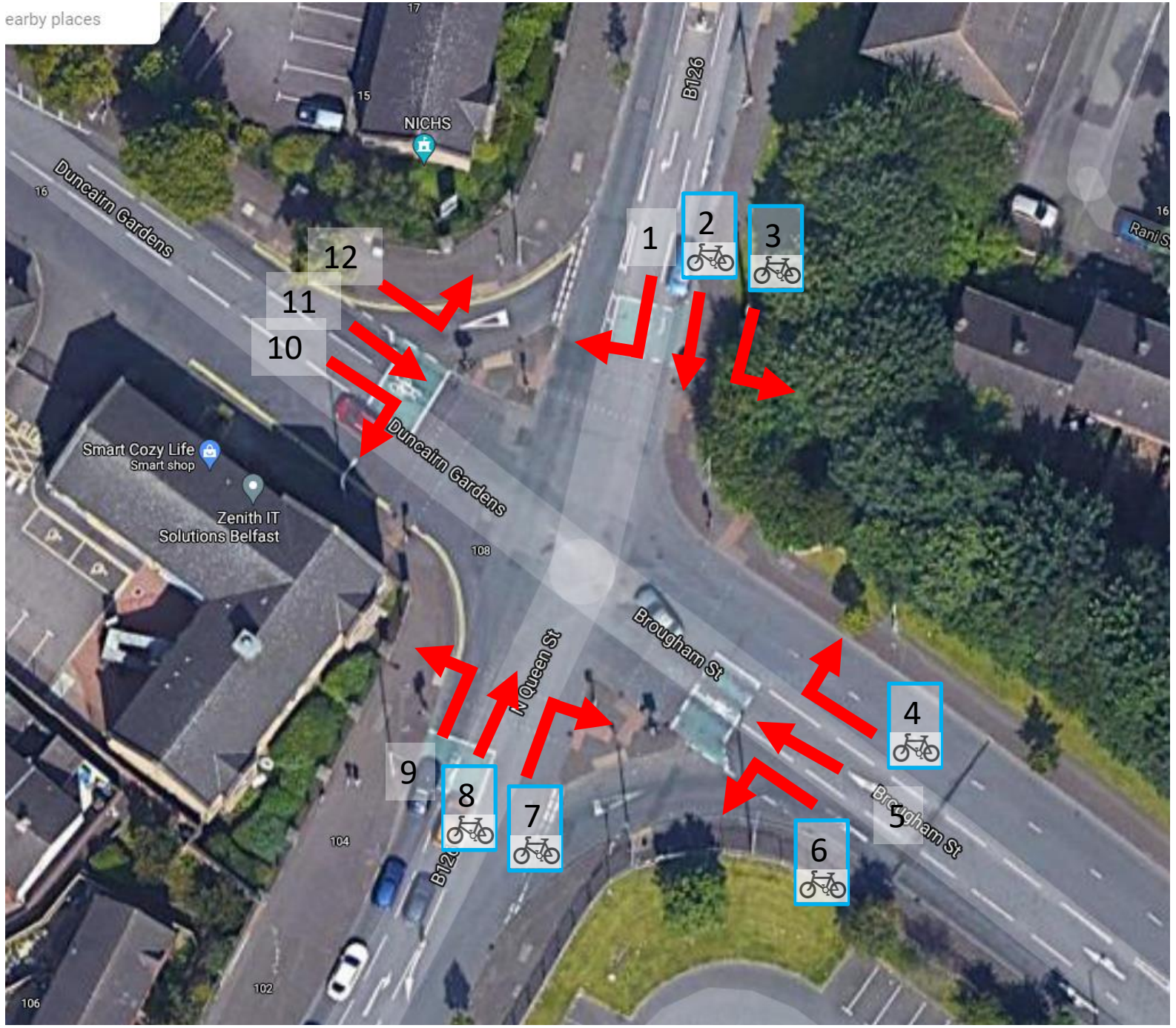
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Route Section: Existing 4A Score	Existing 4A Comments	Existing 4B Score	Existing 4B Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Right turns from dual carriageway offering unsafe connection to adjacent links.	0	No alternative routes within short section; however zero score as provision still considered unacceptable.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Brougham Street is both straight and direct	2	Brougham Street is both straight and direct
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Three junctions over 420m route.'	0	Three junctions over 420m route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore delay is similar to motor vehicles	1	Cyclists are with traffic, therefore delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed	1	Dual lane with hatching; allowing a cyclist to overtake slow vehicles / cyclists.	1	Multiple lanes carriageway; allowing a cyclist to overtake slow vehicles / cyclists.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 9 mph	2	85th percentile speed = 9 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 9 mph	2	85th percentile speed = 9 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	c	13791 AADT	c	16596 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	c	Measured from aerial imagery, assumed critical.	c	Measured from google, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	One untreated side road on either side of the carriageway, leading to Petrol Station (north) and Yorkgate Shopping Centre (south).	0	One untreated side road on north side of the carriageway, Nelson Street slip.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Clear road markings, however not text provided for directions.	1	Clear road markings, however not text provided for directions.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Tree planting along the carriageway could act as hazard.	0	Traffic barriers on either side of the carriageway could trap cyclists.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some minor defects within carriageway surface.	1	Some minor defects within carriageway surface.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.	0	Cyclists are with traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	The route is along a busy carriageway within a city centre environment, which is not isolated.	1	The route is underneath underpass, which could be isolated at night. However on a busy vehicular route.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction	1	Some wayfinding and cycle signage needed.	1	Some wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	21		19	

	Existing 4A	Existing 4B
Max possible score	50	50
Audit % score	42%	38%
Pass/Fail (70% threshold)	Fail	Fail
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	2	2

Criteria	Max Score	Sub-criteria Existing	%score Existing	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%	0	0%
Directness	10	6	60%	6	60%
Safety	16	**6**	38%	**5**	31%
Comfort	8	3	38%	3	38%
Attractiveness	10	6	60%	5	50%
	50				

D.2 Junction Assessment baseline results



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

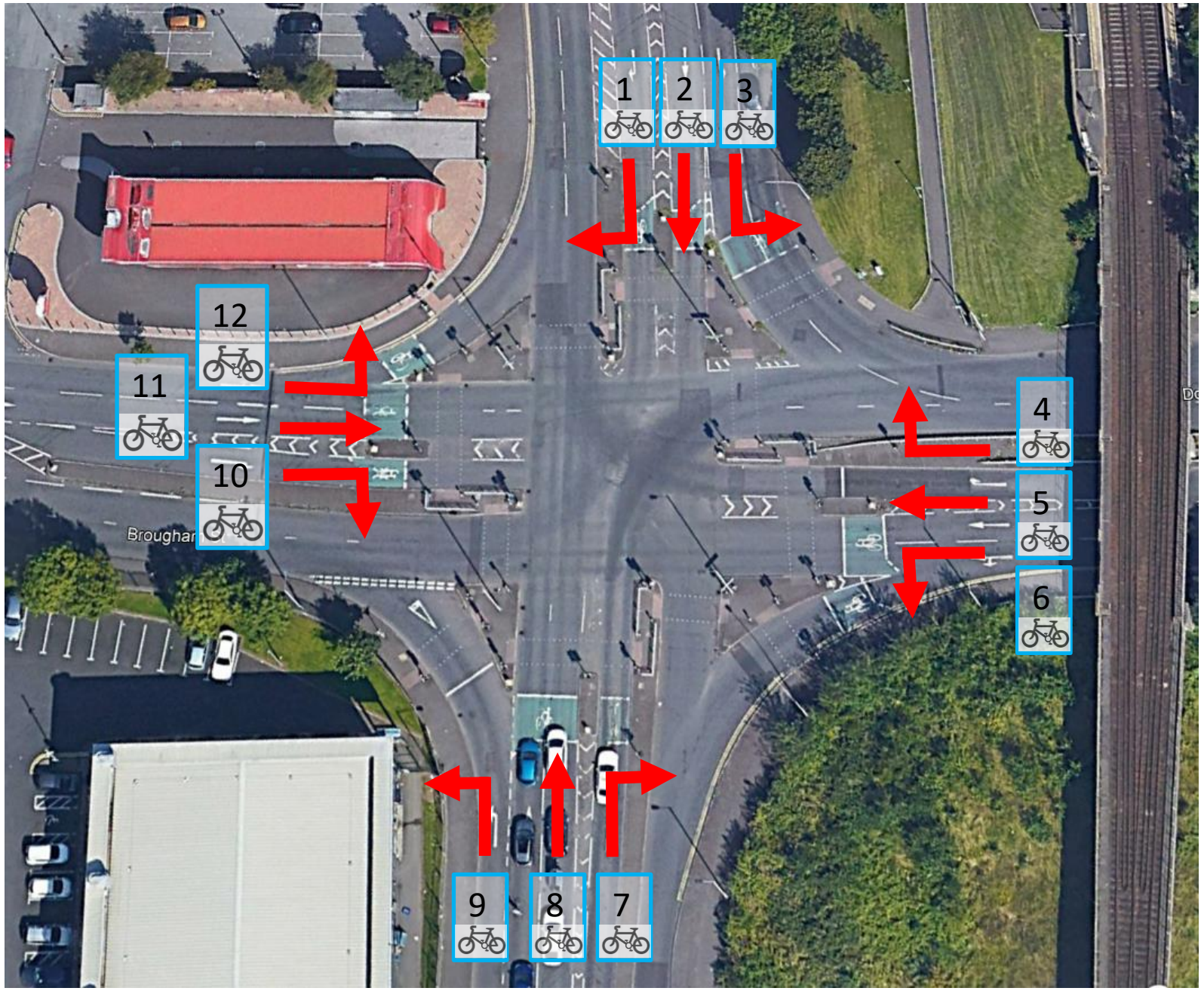
Corridor 4 – Brougham Street / Dock Street

Junction 1.3 - B126 N Queen St / Brougham St

Cycle Strategy Route Review Junction 1.3					
Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	4			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 4 – Brougham Street / Dock Street

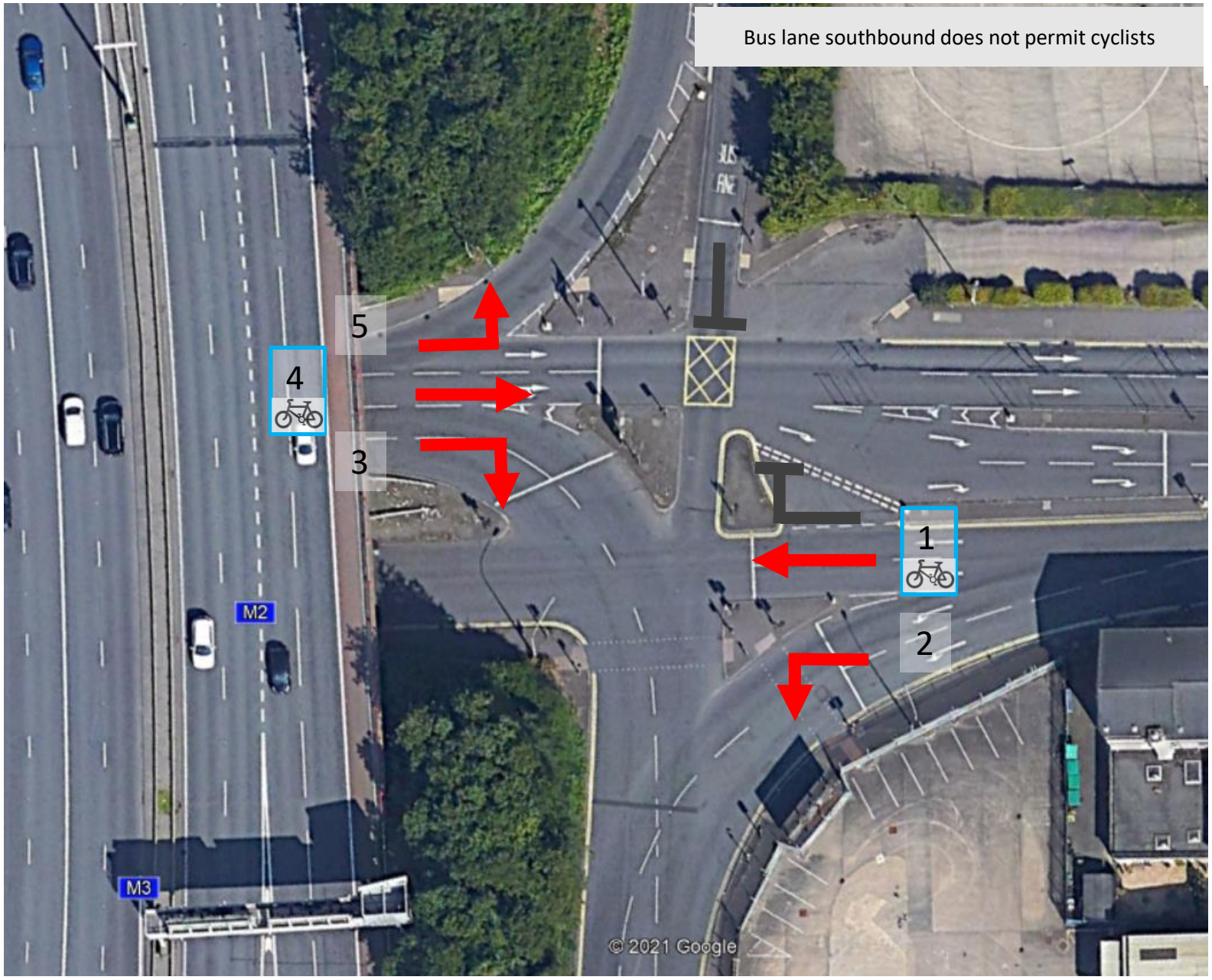
Junction 2.5 – A2 York St / Brougham Street

Cycle Strategy Route Review Junction 2.5

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 4 – Brougham Street / Dock Street

Junction 4.3 – Dock Street / Nelson Street

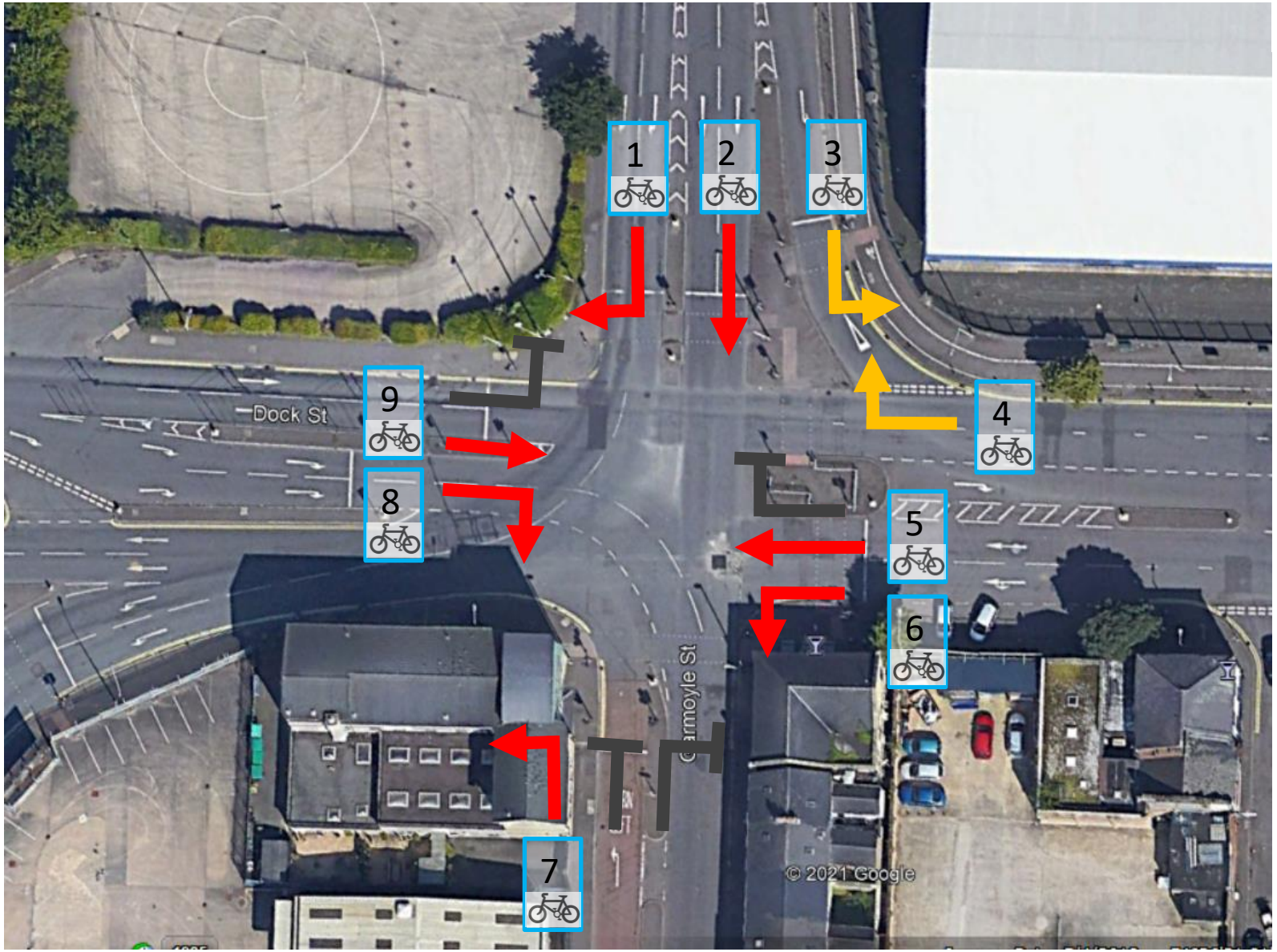
Cycle Strategy Route Review Junction 4.3

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	6			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

Cycle movements 3 and 4 assumed to follow two-way cycle track to the northeast of the junction



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 4 – Brougham Street / Dock Street

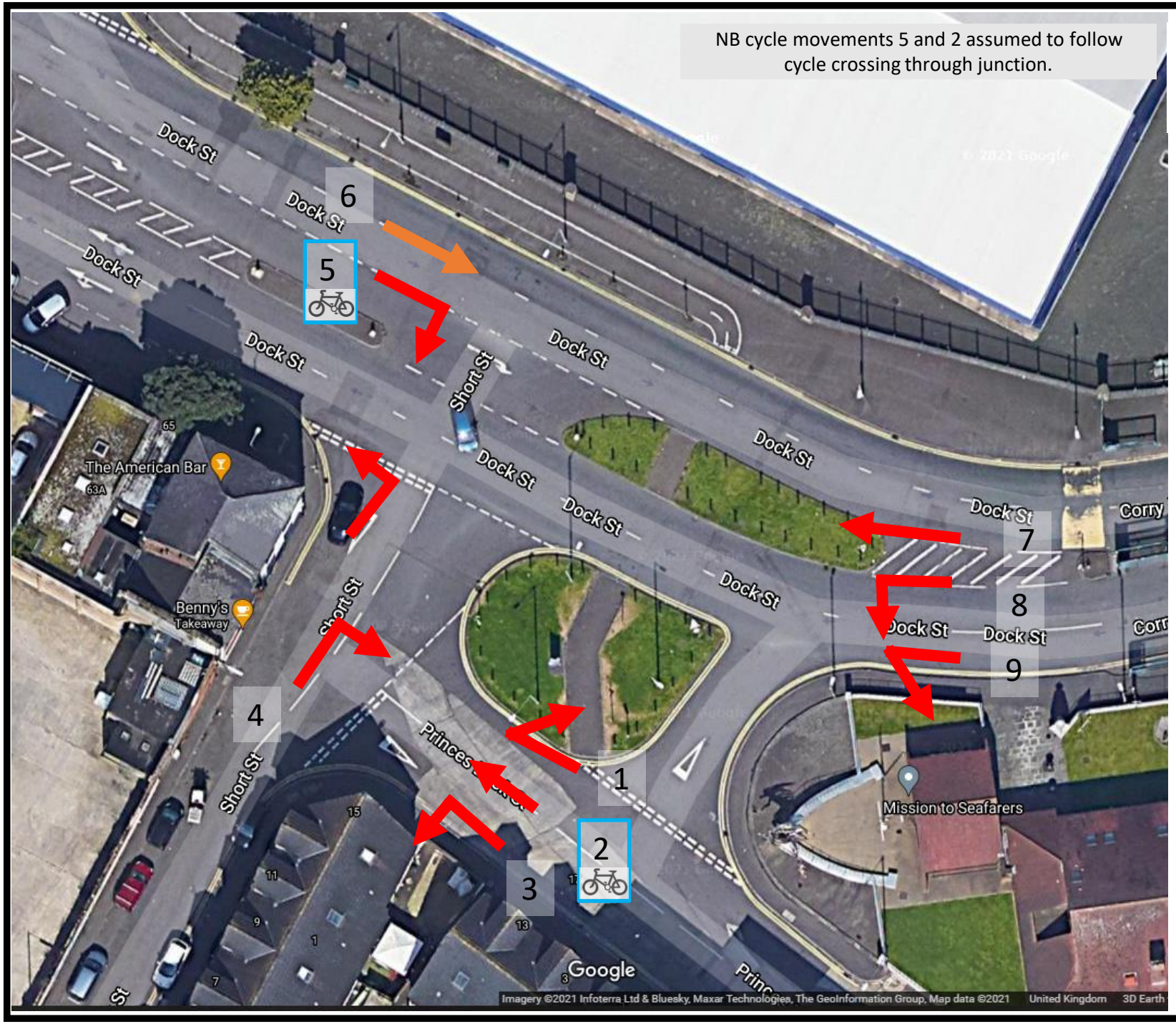
Junction 5.3 – Garmoyle Street / Dock Street

Cycle Strategy Route Review Junction 5.3

Movement	Score	0	1	2	Comment
1	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	1		2	1	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under consideration.
4	1		2	1	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under consideration.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	1	1		Cycle movement crosses wide junction entry or exit: e.g. with merge or diverge taper or slip lane.
8	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 4 – Brougham Street / Dock Street

Junction 6.3 – Princes Dock Street / Dock Street

Cycle Strategy Route Review Junction 6.3

Movement	Score	0	1	2	Comment
1	0	2	2		Cycle movement in potential conflict with heavy motor traffic flow.
2	0	2	2		Cycle movement in potential conflict with heavy motor traffic flow.
3	0	1		1	Cycle movement affected by very poor surface quality utility reinstatement, gully positioning, debris.
4	0	1		1	Cycle movement affected by very poor surface quality utility reinstatement, gully positioning, debris.
5	0	2			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	2	2		Cycle movement in potential conflict with heavy motor traffic flow.
7	1		2		Cycle movement in potential conflict with moderate traffic flow.
8	0	2	1		Pinch points on junction entry or exit (lane width 3.2m-3.9m).
9	0	1	1		Pinch points on junction entry or exit (lane width 3.2m-3.9m).
10	0	2	1		Pinch points on junction entry or exit (lane width 3.2m-3.9m).

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

D.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

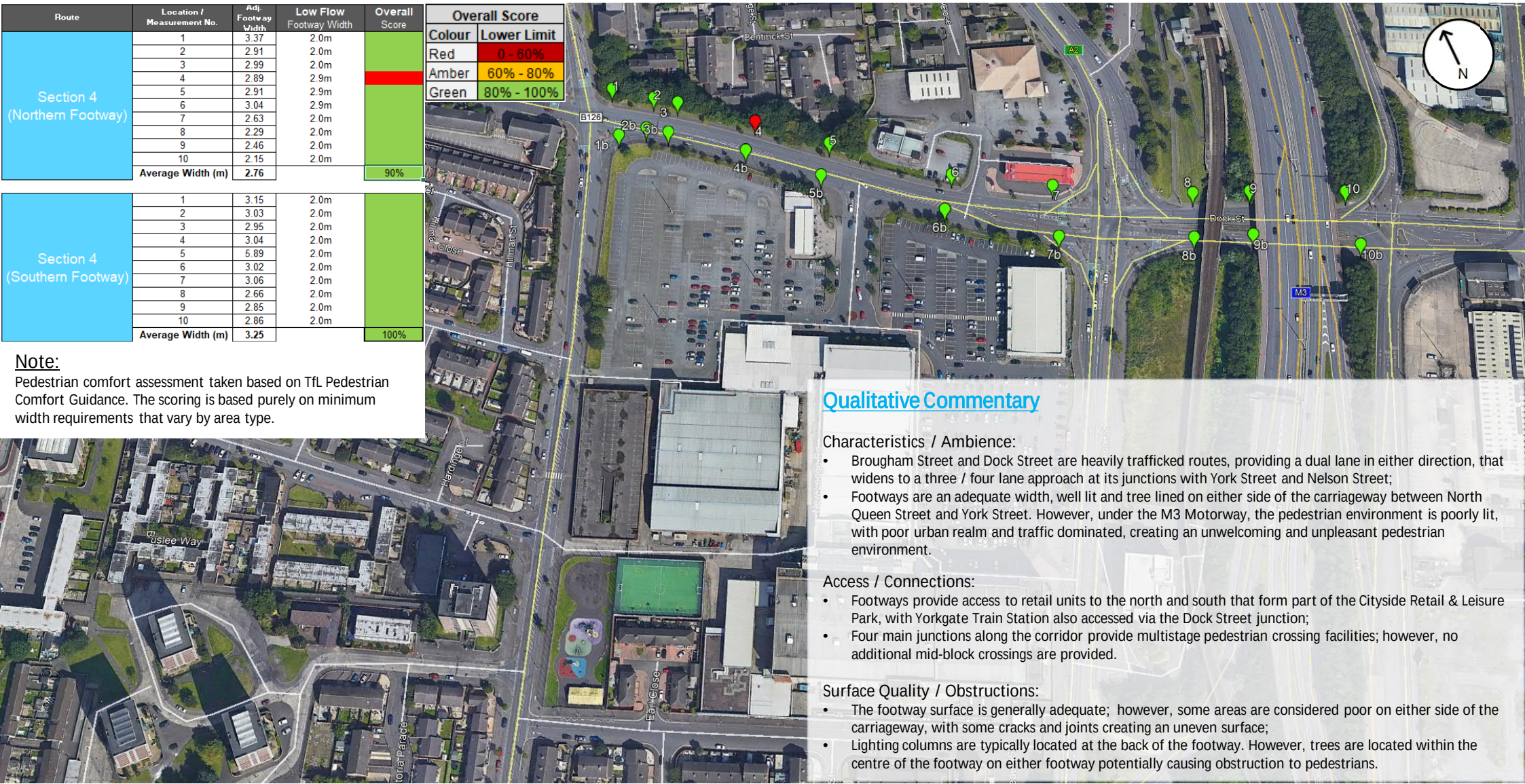
Corridor 4 – Brougham Street/ Dock Street

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Footway Width	Overall Score
Section 4 (Northern Footway)	1	3.37	2.0m	
	2	2.91	2.0m	
	3	2.99	2.0m	
	4	2.89	2.9m	
	5	2.91	2.9m	
	6	3.04	2.9m	
	7	2.63	2.0m	
	8	2.29	2.0m	
	9	2.46	2.0m	
	10	2.15	2.0m	
	Average Width (m)	**2.76**		90%
Section 4 (Southern Footway)	1	3.15	2.0m	
	2	3.03	2.0m	
	3	2.95	2.0m	
	4	3.04	2.0m	
	5	5.89	2.0m	
	6	3.02	2.0m	
	7	3.06	2.0m	
	8	2.66	2.0m	
	9	2.85	2.0m	
	10	2.86	2.0m	
	Average Width (m)	**3.25**		100%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%

Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.



Qualitative Commentary

Characteristics / Ambience:

- Brougham Street and Dock Street are heavily trafficked routes, providing a dual lane in either direction, that widens to a three / four lane approach at its junctions with York Street and Nelson Street;
- Footways are an adequate width, well lit and tree lined on either side of the carriageway between North Queen Street and York Street. However, under the M3 Motorway, the pedestrian environment is poorly lit, with poor urban realm and traffic dominated, creating an unwelcoming and unpleasant pedestrian environment.

Access / Connections:

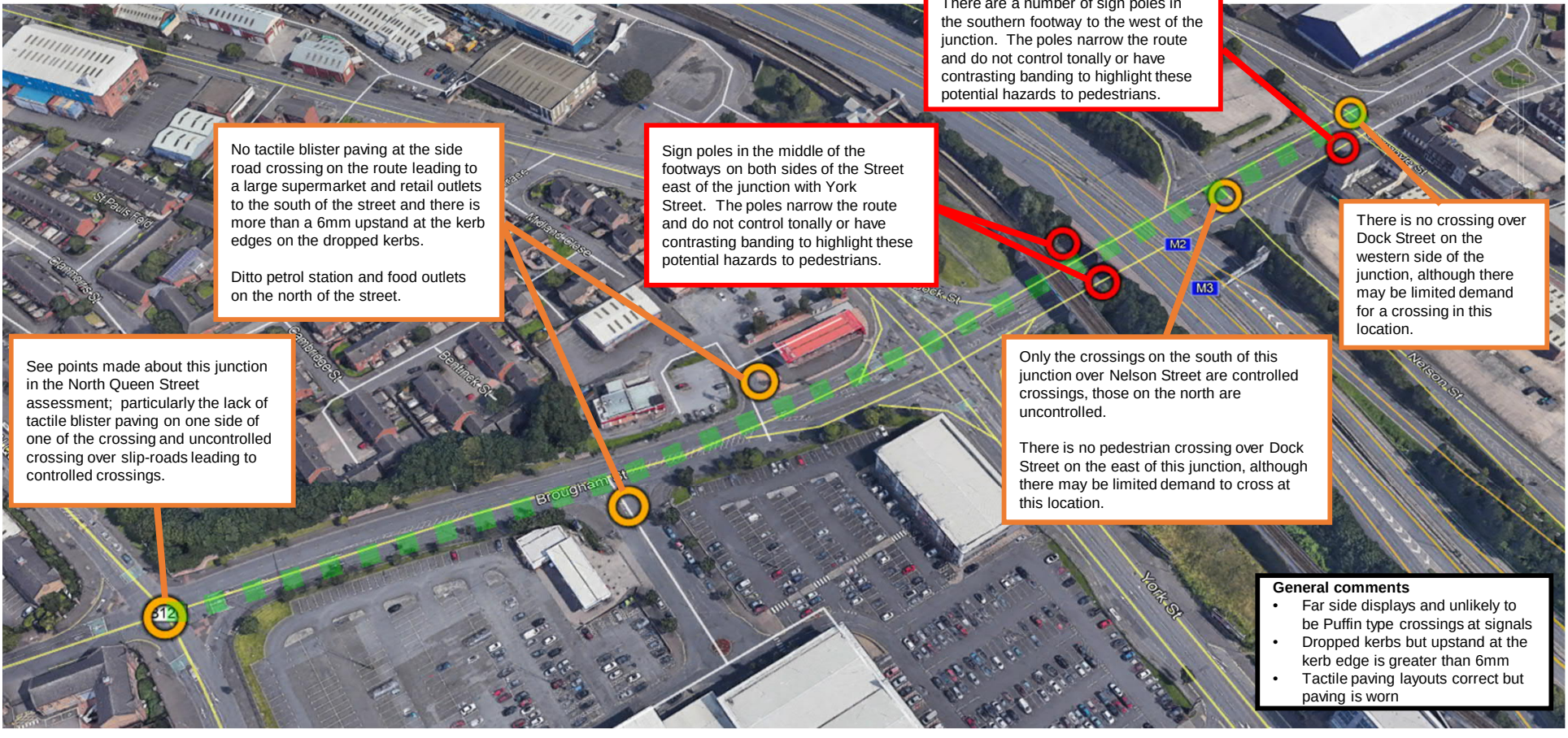
- Footways provide access to retail units to the north and south that form part of the Cityside Retail & Leisure Park, with Yorkgate Train Station also accessed via the Dock Street junction;
- Four main junctions along the corridor provide multistage pedestrian crossing facilities; however, no additional mid-block crossings are provided.

Surface Quality / Obstructions:

- The footway surface is generally adequate; however, some areas are considered poor on either side of the carriageway, with some cracks and joints creating an uneven surface;
- Lighting columns are typically located at the back of the footway. However, trees are located within the centre of the footway on either footway potentially causing obstruction to pedestrians.

D.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 4 Brougham Street & Dock Street



There are a number of sign poles in the southern footway to the west of the junction. The poles narrow the route and do not control tonally or have contrasting banding to highlight these potential hazards to pedestrians.

No tactile blister paving at the side road crossing on the route leading to a large supermarket and retail outlets to the south of the street and there is more than a 6mm upstand at the kerb edges on the dropped kerbs.

Ditto petrol station and food outlets on the north of the street.

Sign poles in the middle of the footways on both sides of the Street east of the junction with York Street. The poles narrow the route and do not control tonally or have contrasting banding to highlight these potential hazards to pedestrians.

There is no crossing over Dock Street on the western side of the junction, although there may be limited demand for a crossing in this location.

See points made about this junction in the North Queen Street assessment; particularly the lack of tactile blister paving on one side of one of the crossing and uncontrolled crossing over slip-roads leading to controlled crossings.

Only the crossings on the south of this junction over Nelson Street are controlled crossings, those on the north are uncontrolled.

There is no pedestrian crossing over Dock Street on the east of this junction, although there may be limited demand to cross at this location.

General comments

- Far side displays and unlikely to be Puffin type crossings at signals
- Dropped kerbs but upstand at the kerb edge is greater than 6mm
- Tactile paving layouts correct but paving is worn

Appendix E – Corridor 5 | Garmoyle Street / Corporation Street

E.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571700
Scheme	Belfast - York Street Interchange
Location	Corridor 5 - Corporation Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing 5A Score	Existing 5A Comments	Existing 5B Score	Existing 5B Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	Right turns from dual carriageway providing unsafe connections.	0	Cyclists with busses in bus lane northbound, but mixed with traffic southbound.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.	0	No signage, cyclists abandoned at end of bus lane.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of	**3.Density of routes based on mesh width** i.e. distances between primary and secondary		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.	0	Bus / cycle lane northbound; but linking to no adjacent routes and no providing southbound.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Corporation St is both straight and direct	2	Corporation St is both straight and direct
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more	The number of stops or give ways on the route is between 2 and 4	The number of stops or give ways on the route is less than	1	Two junctions / two crossings over 1km route.'	1	Two junctions / two crossings over 1km route.'
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	1	Cyclists are with traffic, therefore, delay is similar to motor vehicles.	1	Cyclists are with traffic, therefore, delay is similar to motor vehicles.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	1	Multiple vehicular lanes; allowing a cyclists to overtake slow vehicles / cyclists.	0	Multiple vehicular lanes SB; allowing a cyclists to overtake slow vehicles / cyclists. However, cyclists with bus in single lane NB
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 11 mph	0	85th percentile speed = 33 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 11 mph	0	85th percentile speed = 33 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	0	9584 AADT	C	11804 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	C	Measured from google, assumed critical.	C	Measured from google, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	1	Three minor side roads on western side, one on eastern side, all untreated.	1	Three minor side roads on western side, two on eastern side, all untreated.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible; however, some markings are faded and unclear underneath the overpass.	1	Generally legible, with no text provided for directions.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	2	Small number of trees alongside carriageway; however, no parking.	2	Small number of trees alongside carriageway; however, no parking.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major	Minor and occasional defects	Smooth high grip surface	1	Some defects, cracks where slot cuts have been undertaken.	1	Some defects, cracks where slot cuts have been undertaken.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	2	Carriageway surface machine laid and in typically good condition.	2	Carriageway surface machine laid and in typically good condition.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.	0	Cyclists are with heavy traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	1	Within a city centre environment; however, area near to the car park / overpass could feel isolated.	1	Within a city centre environment; however, environment is not surrounded by buildings so could feel isolated
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional	1	Some wayfinding and cycle signage needed.	1	Some wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	23		18	

	Existing 5A	Existing 5B
Max possible score	50	50
Audit % score	46%	36%
Pass/Fail (70% threshold)	Fail	Fail
Any Critical Fails? (Y/N)	Yes	Yes
Number of Critical Fails	1	2

Criteria	Max Score	Sub-criteria Existing	%score Existing	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%	0	0%
Directness	10	7	70%	6	60%
Safety	16	**8**	50%	**4**	25%
Comfort	8	3	38%	3	38%
Attractiveness	10	5	50%	5	50%
	50				

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571700
Scheme	Belfast - York Street Interchange
Location	Corridor 5 - Corporation Street
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

Existing SC

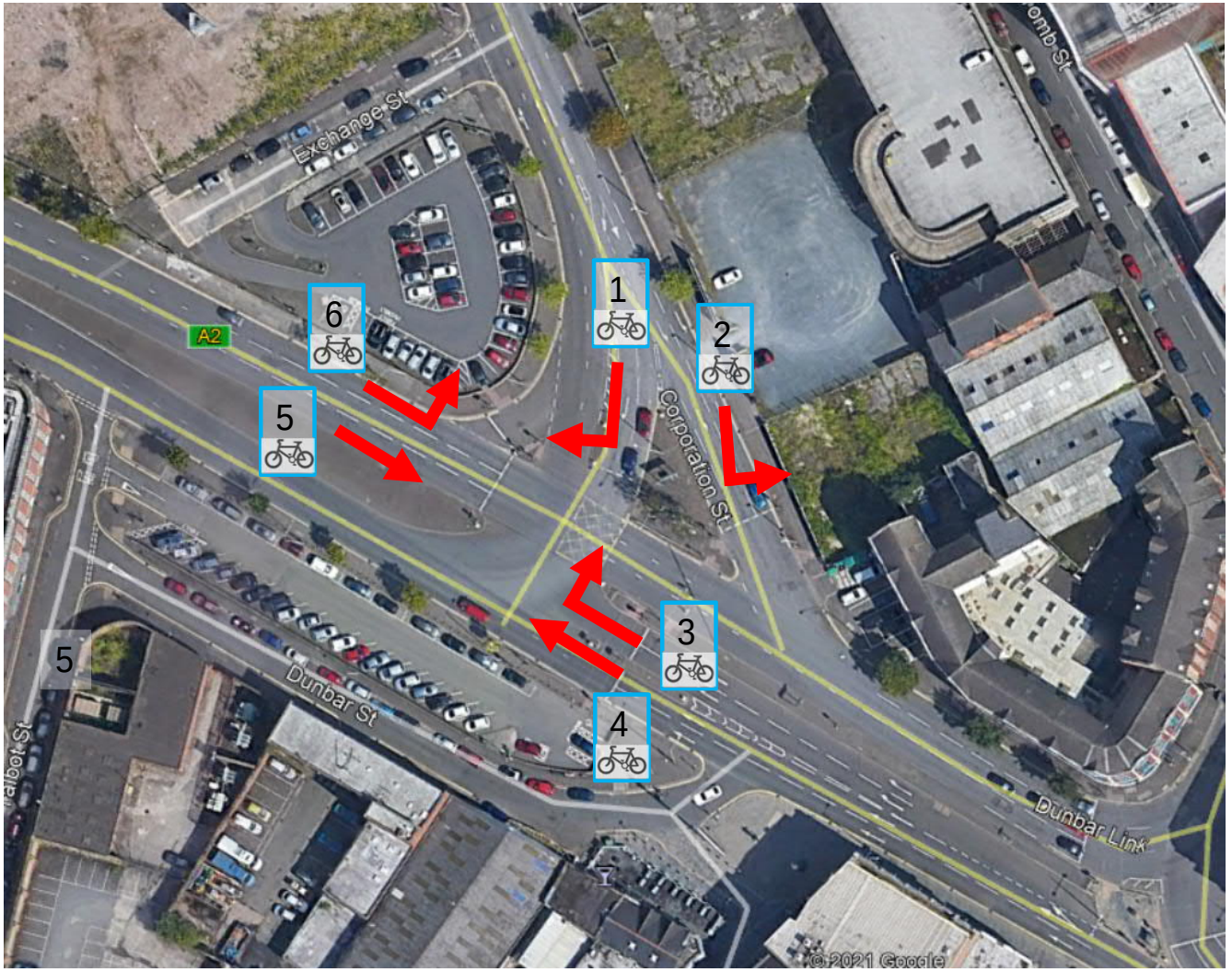
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	No dedicated connection to adjacent routes e.g. Garmoyle Street / Corporation Street to the south or Dock Street to the west.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	1	Some signage, but no connections to adjacent routes.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No wider provision as yet; therefore zero score.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	1	Garmoyle Street deviation factor in this location is between 1.2-1.4.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	1	Two junctions / two crossings over 1km route. Cyclists also give-way at side road junctions within this section.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at	0	Cyclists are forced to stop at side roads due to not having priority when within the cycle lane.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	1	Two-way cycle track very narrow, no safe overtaking space available.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Off-carriageway facilities
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Off-carriageway facilities
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	2	17881 AADT (Off -carriageway cycle facilities provided)
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	2	Off-carriageway facilities
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	1	Side road on eastern side leading to / from Dock's with no priority for cyclists.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible; however, some markings are faded and unclear along cycle lane.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	1	Some parking with narrow buffer between narrow cycle lane.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Hazards within the cycle lane along this section, mainly road signs.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some defects within cycle lane
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy	1	Pavements along cycle route could be improved, with cracks and vegetation growth.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	1	Appears to be 2m wide for sections of the two-way cycle track, which is below desirable. Will need to confirm with TOPO if possible.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	1	Route signage could be improved.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	1	Within a city centre environment; however, not particularly overlooked by buildings.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	0	Pedestrian footway narrowed to below 1.8 in order to provide cycle lane. Need to check exact widths on TOPO.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional	1	Some additional wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	**26**	

Max possible score	50
Audit % score	52%
Pass/Fail (70% threshold)	**Fail**
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	%score Proposed
Coherence	6	1	17%
Directness	10	5	50%
Safety	16	**12**	75%
Comfort	8	4	50%
Attractiveness	10	4	40%
	50		

E.2 Junction Assessment baseline results



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Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 5 – Corporation Street

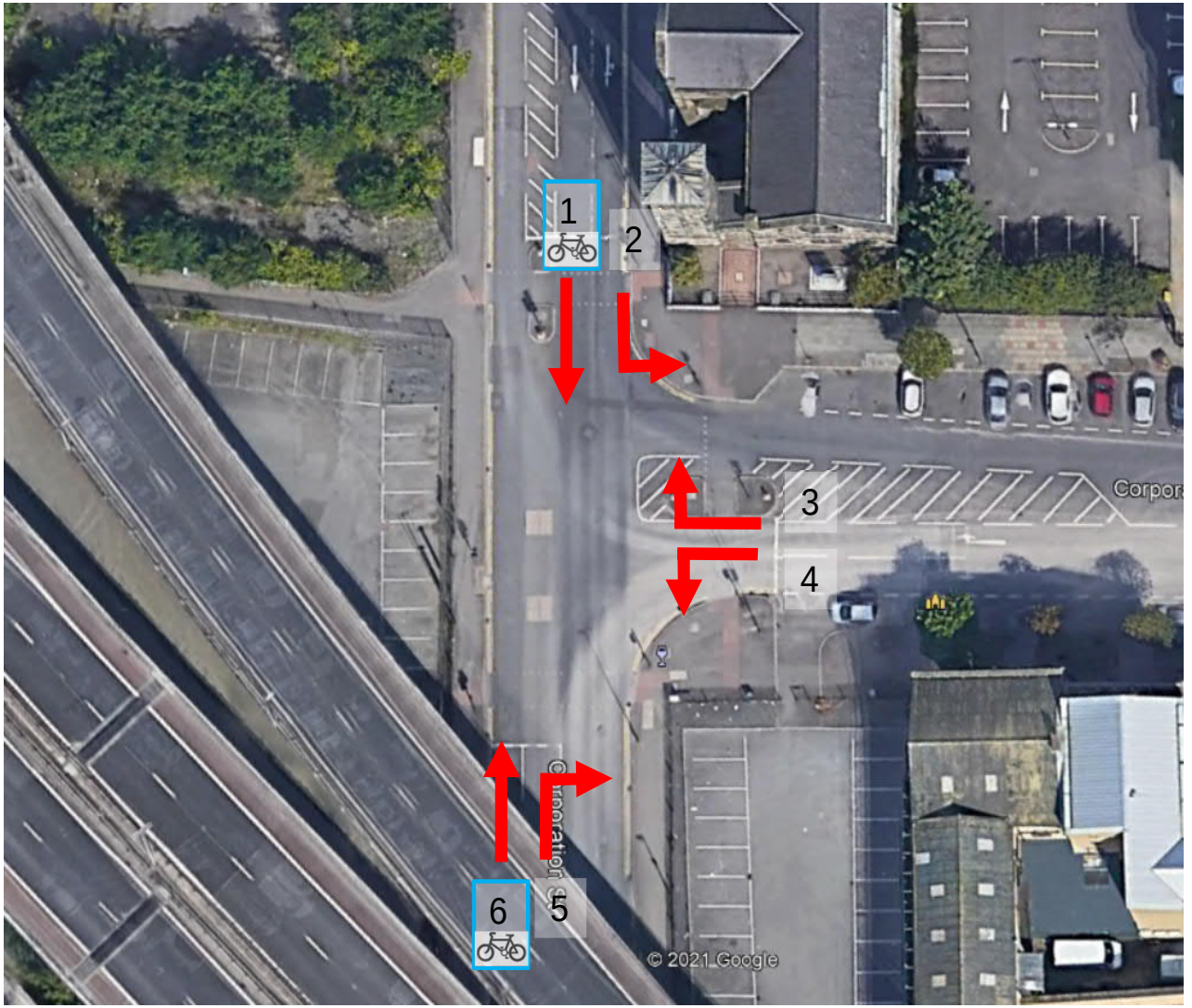
Junction 5.1 – A1 Dunbar Link / Corporation Street

Cycle Strategy Route Review Junction 5.1

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 5 – Corporation Street

Junction 5.2 – Corporation Street / Corporation Square

Cycle Strategy Route Review Junction 5.2

Movement	Score	0	1	2	Comment
1	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

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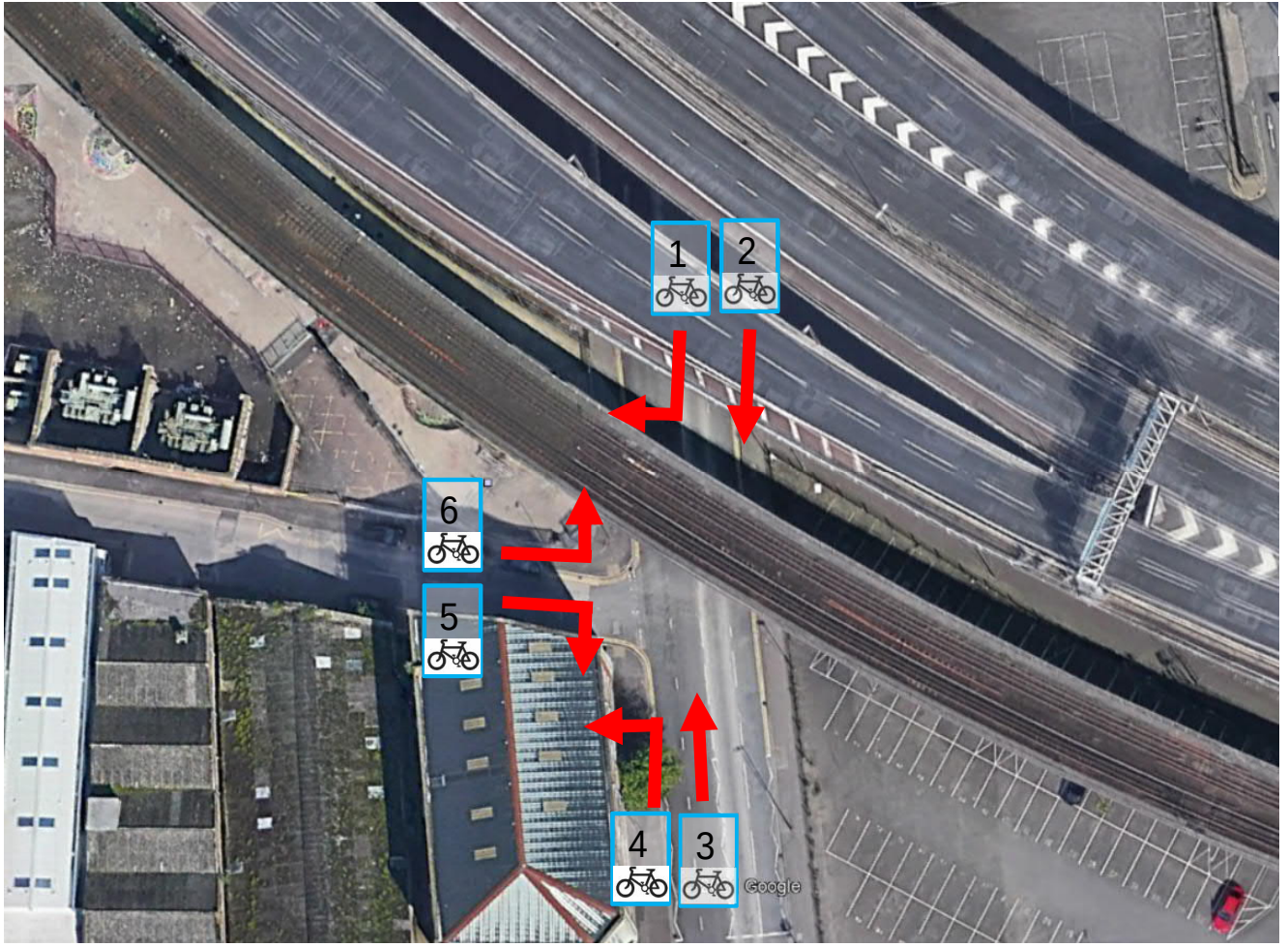
Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 5 – Corporation Street

Junction 8.3 – Corporation St / Little Patrick St



Cycle Strategy Route Review Junction 8.3

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3	1		Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3	1		Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

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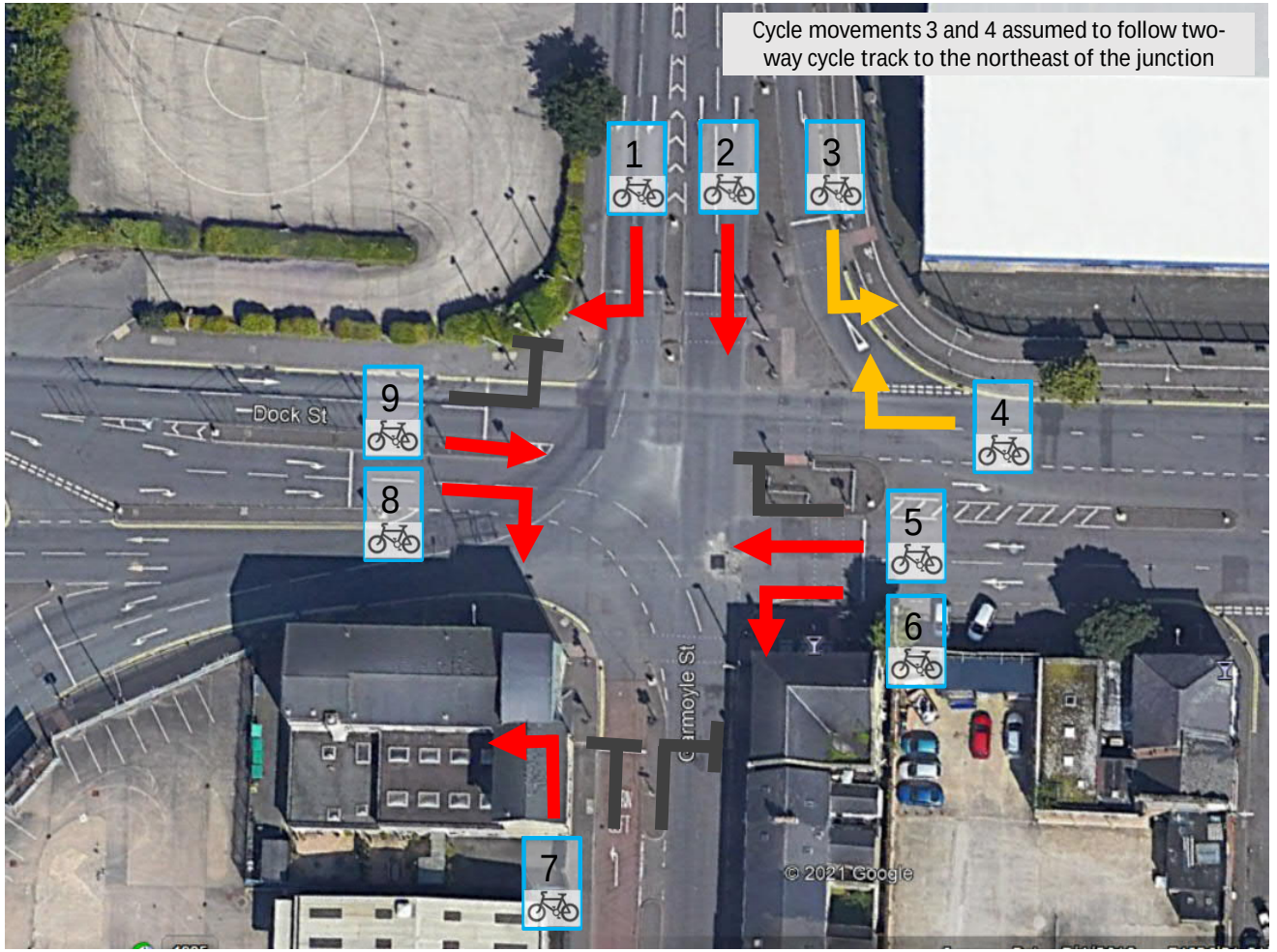
AECOM

Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 5 – Corporation Street

Junction 5.3 – Garmoyle Street / Dock Street

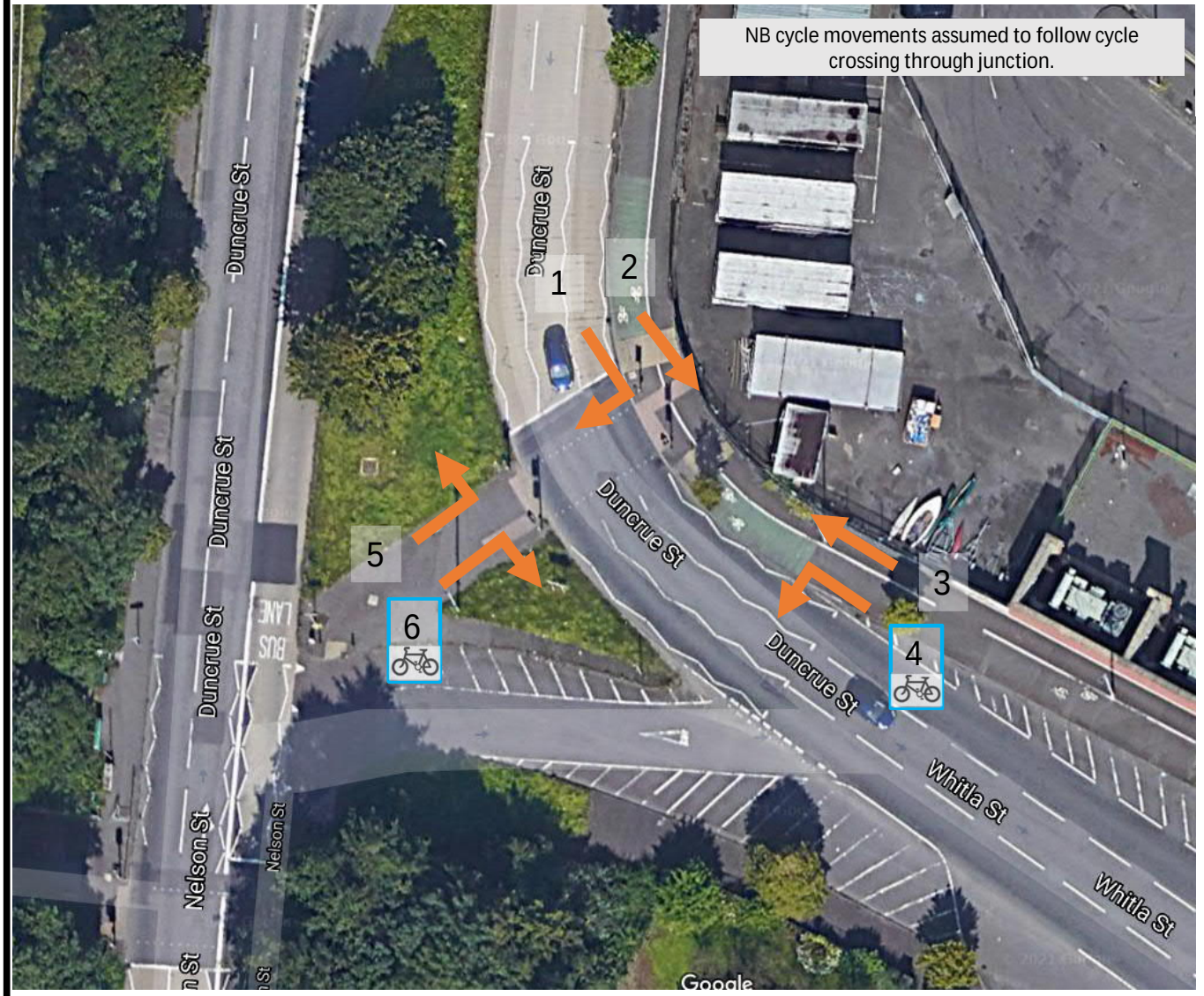


Cycle Strategy Route Review Junction 5.3

Movement	Score	0	1	2	Comment
1	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	1		2	1	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under consideration.
4	1		2	1	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under consideration.
5	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	1	1		Cycle movement crosses wide junction entry or exit: e.g. with merge or diverge taper or slip lane.
8	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



Department for Infrastructure
An Roinn Bonneagair
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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 5 – Corporation Street

Junction 5.4 – Duncrue Street / Whitla Subway

Cycle Strategy Route Review Junction 5.4

Movement	Score	0	1	2	Comment
1	1		1		Cycle movement made by transiting onto section of shared use footway
2	1		1	1	Cycle movement made by transiting onto section of shared use footway
3	1		1	1	Cycle movement made by transiting onto section of shared use footway
4	1		1		Cycle movement made by transiting onto section of shared use footway
5	1		2		Cycle movement made by transiting onto section of shared use footway
6	1		2		Cycle movement made by transiting onto section of shared use footway

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

E.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

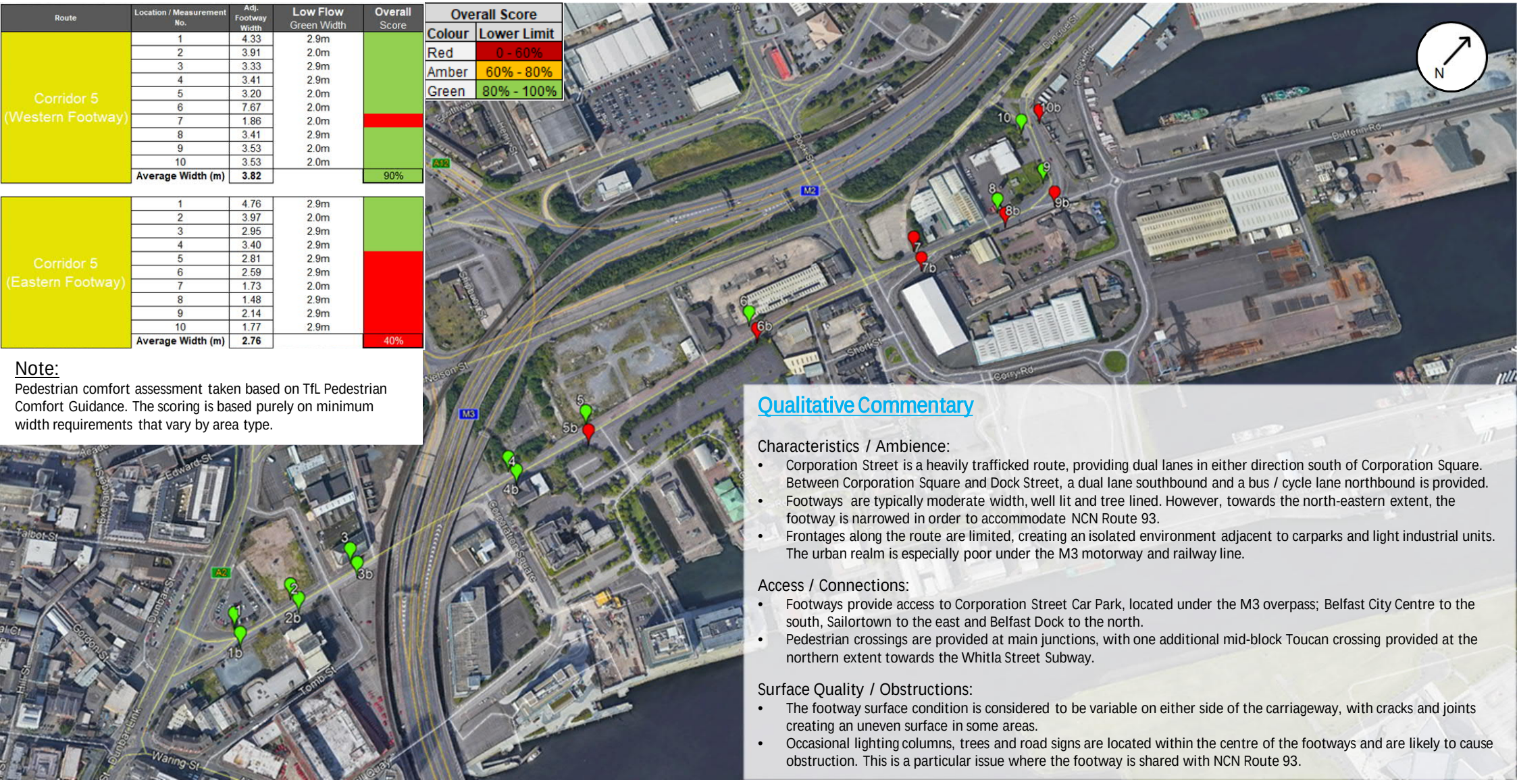
Corridor 5 – Garmoyle Street / Corporation Street

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Green Width	Overall Score
Corridor 5 (Western Footway)	1	4.33	2.9m	
	2	3.91	2.0m	
	3	3.33	2.9m	
	4	3.41	2.9m	
	5	3.20	2.0m	
	6	7.67	2.0m	
	7	1.86	2.0m	
	8	3.41	2.9m	
	9	3.53	2.0m	
	10	3.53	2.0m	
	Average Width (m)	**3.82**		90%
Corridor 5 (Eastern Footway)	1	4.76	2.9m	
	2	3.97	2.0m	
	3	2.95	2.9m	
	4	3.40	2.9m	
	5	2.81	2.9m	
	6	2.59	2.9m	
	7	1.73	2.0m	
	8	1.48	2.9m	
	9	2.14	2.9m	
	10	1.77	2.9m	
	Average Width (m)	**2.76**		40%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%

Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.



Qualitative Commentary

Characteristics / Ambience:

- Corporation Street is a heavily trafficked route, providing dual lanes in either direction south of Corporation Square. Between Corporation Square and Dock Street, a dual lane southbound and a bus / cycle lane northbound is provided.
- Footways are typically moderate width, well lit and tree lined. However, towards the north-eastern extent, the footway is narrowed in order to accommodate NCN Route 93.
- Frontages along the route are limited, creating an isolated environment adjacent to carparks and light industrial units. The urban realm is especially poor under the M3 motorway and railway line.

Access / Connections:

- Footways provide access to Corporation Street Car Park, located under the M3 overpass; Belfast City Centre to the south, Sailortown to the east and Belfast Dock to the north.
- Pedestrian crossings are provided at main junctions, with one additional mid-block Toucan crossing provided at the northern extent towards the Whitla Street Subway.

Surface Quality / Obstructions:

- The footway surface condition is considered to be variable on either side of the carriageway, with cracks and joints creating an uneven surface in some areas.
- Occasional lighting columns, trees and road signs are located within the centre of the footways and are likely to cause obstruction. This is a particular issue where the footway is shared with NCN Route 93.

E.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 5 Garmoyle Street & Corporation St

General comments

- Far side displays and unlikely to be Puffin type crossings at signals
- Dropped kerbs but upstand at the kerb edge is greater than 6mm
- Tactile paving layouts correct but paving is worn.

There are no dropped kerbs with the necessary tactile blister paving on the route across the entrance to the Fire Station.

The footway on the eastern side of the street is shared with cyclist and there is only a painted white line between pedestrian and cycle routes.

This is far from ideal for vulnerable pedestrians and particularly people with vision impairments.

However, there is no pedestrian crossing from the route from the Whitla Street subway to the eastern footway.

There is no tactile paving at the drop kerbs at the entrance to this street, although the traffic volumes are probably fairly low.

Road sign poles obstruct the footway and have little or no contrast with their background and no contrasting banding.

A lack of dropped kerbs/poorly maintained kerbs and a lack of tactile paving and the depot and weigh bridge entrances along the western footway.

There is no tactile paving at the drop kerbs at the entrance to the Driver & Vehicle Agency.

There is no tactile paving at the drop kerbs at the entrance to Trafalgar Street, although the traffic volumes are probably fairly low.

There is an upstand greater than 6mm at the dropped kerbs at a disused entrance to a brown field site on the west side of the street.

Appendix F – Corridor 6 | NCN Route 93

F.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571700
Scheme	Belfast - York Street Interchange
Location	Corridor 6 - NCN Route 93
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

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Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Existing 6A Score	Existing 6A Comments	Existing 6B Score	Existing 6B Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to their journey	0	No dedicated connection to adjacent routes e.g. A2 / Waring Stree / Albert Square.	0	No dedicated connection to adjacent routes
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	1	Some signage, but no connections to adjacent routes.	0	Some signage, but cyclists abandoned between Claredon Rd and Princes Dock St
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m.	**3.Density of routes based on mesh width** ie distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No additional routes within the network as yet.	0	No additional routes within the network as yet.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'asthe-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Donegall Quay is both straight and direct	0	Claredon Road meanders around the Dock Side and hasa deviation factor greater than 1.4.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	1	Cyclists give-way at several side road junction across the 1km route including at the busier Dock Street connection.	1	Cyclists give-way at several side road junction across the 1km route including at the busier Dock Street connection.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (eg bypass at signals)	0	Cyclists are stopping at side roads.	1	Cyclists are with traffic, therefore, delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	0	Two-way cycle track minimum width of 2m, limited overtaking.	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Off-carriageway facilities	0	85th percentile speed = 33 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Off-carriageway cycle facilities.	0	85th percentile speed = 33 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway.	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	1	4207 AADT	1	3389 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed max 30mph.	2	Off-carriageway cycle facilities.	1	Lanes assumed to be less than 3.2m along access road, measurement taken aerial imager.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	1	Side roads on eastern side with raised tables but no priority for cyclists.	1	Frequent side roads which could provide further speed reduction measures.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legiable; however, some markings are faded and unclear underneath the overpass.	1	Generally legiable; however, some markings are faded and unclear at side roads.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (eg nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - eg less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	1	Some parking with narrow buffer between cycle lane.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	2	Cycle lane with no obvious hazards.	0	Tree planting, bollards and parking, which could entrap a cyclists.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (eg from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	2	Newly laid surface along cycle lane.	0	Route is surfaced with stone sets which create an uneven surface for cyclists
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - eg Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy vehicles.	2	Carriageway surface machine laid.	0	Route is surfaced with stone sets which create an uneven surface for cyclists
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum values.	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	1	Cycle track narrows to around 1.3m at pinch points. Appears to be 2m wide for two-way cycle track at other locations.	0	Cyclists are with traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	1	Route signage could be improved.	0	Route signage could be improved significantly as cyclists are abandoned mid-route when connection to Princes Dock Street.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	1	Within a city centre environment; however, area near to the car park / overpass could feel isolated.	1	Within a city centre environment; however, could feel isolated out of working hours.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists within segregated lane and parallel pedestrian footway approx. 2m; therefore asssumed no impact on pedestrian facilties.	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction.	1	Some additional wayfinding and cycle signage needed.	1	Some additional wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure nonoverlooked areas	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.	0	Currently no cycle parking provided.
							Audit Score	**29**		**14**	

	Existing 6A	Existing 6B
Max possible score	50	50
Audit % score	58%	28%
Pass/Fail (70% threshold)	**Fail**	**Fail**
Any Critical Fails? (Y/N)	No	No
Number of Critical Fails	0	0

Criteria	Max Score	Sub-criteria Existing	% score Existing	Sub-criteria Existing	% score Proposed
Coherence	6	1	17%	0	0%
Directness	10	5	50%	5	50%
Safety	16	**12**	75%	**4**	25%
Comfort	8	6	75%	0	0%
Attractiveness	10	5	50%	5	50%
	50				

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571700
Scheme	Belfast - York Street Interchange
Location	Corridor 6 - NCN Route 93
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

Existing 6C

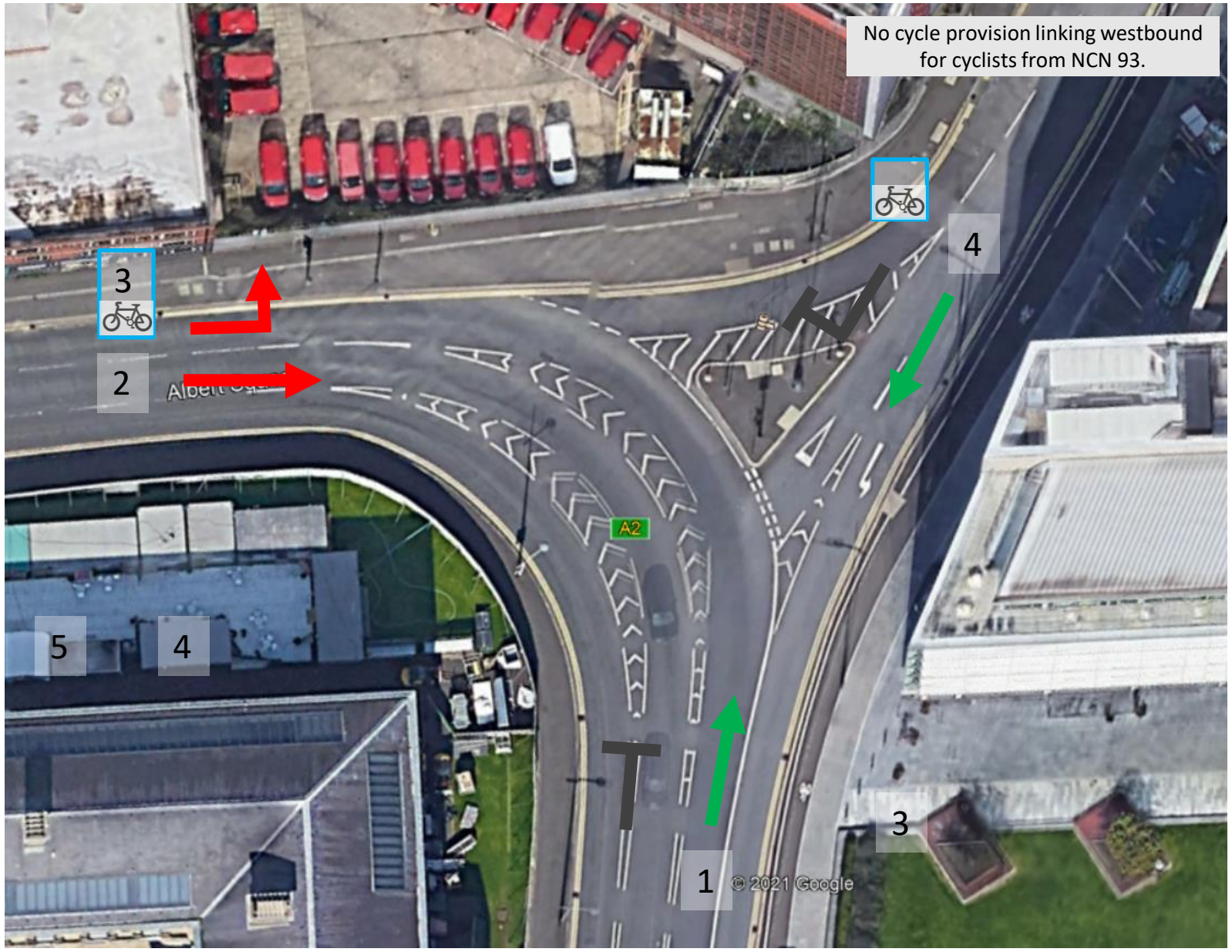
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to their journey	0	No dedicated connection to adjacent routes e.g. Corry Road / Nelson St
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	1	Some signage, but no connections to adjacent routes.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m.	**3.Density of routes based on mesh width** ie distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No additional routes within the network as yet.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'asthe-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Dock Street is both straight and direct from itss connection to Pinces Dock Street
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	1	Cyclists give-way at several side road junction across the 1km route including at the busier Dock Street connection.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (eg bypass at signals)	0	Cyclists are required to stop and find gaps across Dock Street.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	0	Two-way cycle track minimum width of 2m, limited overtaking.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	0	85th percentile speed = 33 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	0	85th percentile speed = 33 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway.	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	1	3389 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed max 30mph.	2	Off-carriageway cycle facilities.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	Gap seeking for crossing of major link (Dock Street)
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legiable; however, markings need to be improved for cycle movments, e.g. give way markings at Dock Street crossing.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (eg nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - eg less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	1	Narrow two-way cycle lane with narrow buffer segregating from carriageway.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	1	Cycle lane, with lighting columns located within the cycle lane.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (eg from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Cycle lane surface could be improved, cracks and vegetation growth.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - eg Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy vehicles.	1	Cycle lane surface could be improved, cracks and vegetation growth.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum values.	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	1	Appears to be 2m wide for two-way cycle track. Will need to confirm with TOPO if possible.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	1	Route signage could be improved.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	Existing street lighting provided along the entire route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	1	Short section overlooked by Dock Street, but could be isolated at night.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists within segregated lane and parallel pedestrian footway approx. 2m; therefore asssumed no impact on pedestrian facilties - check with TOPO.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction.	1	Some additional wayfinding and cycle signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure nonoverlooked areas	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	**21**	

Max possible score	50
Audit % score	42%
Pass/Fail (70% threshold)	**Fail**
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	1	17%
Directness	10	5	50%
Safety	16	**6**	38%
Comfort	8	4	50%
Attractiveness	10	5	50%
	50		

F.2 Junction Assessment baseline results



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 6 – NCN 93

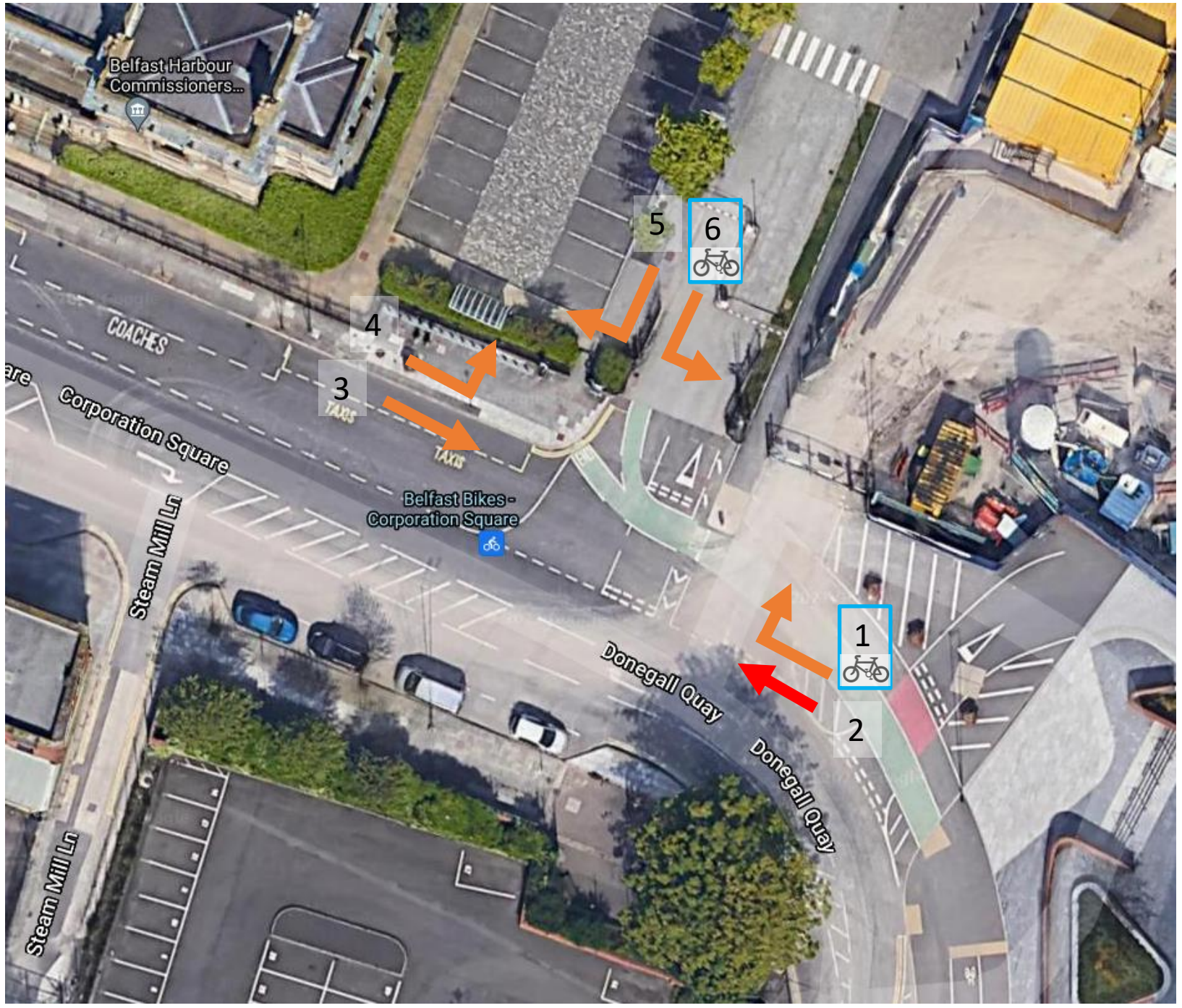
Junction 6.1 – Albert Square / Donegal Quay

Cycle Strategy Route Review Junction 6.1

Movement	Score	0	1	2	Comment
1	2			1	Cycle movement separated physically and/or in time from motor traffic and also separated from pedestrians.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	2			Cycle movement in potential conflict with heavy motor traffic flow.
4	2			1	Cycle movement separated physically and/or in time from motor traffic and also separated from pedestrians.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 6 – NCN 93

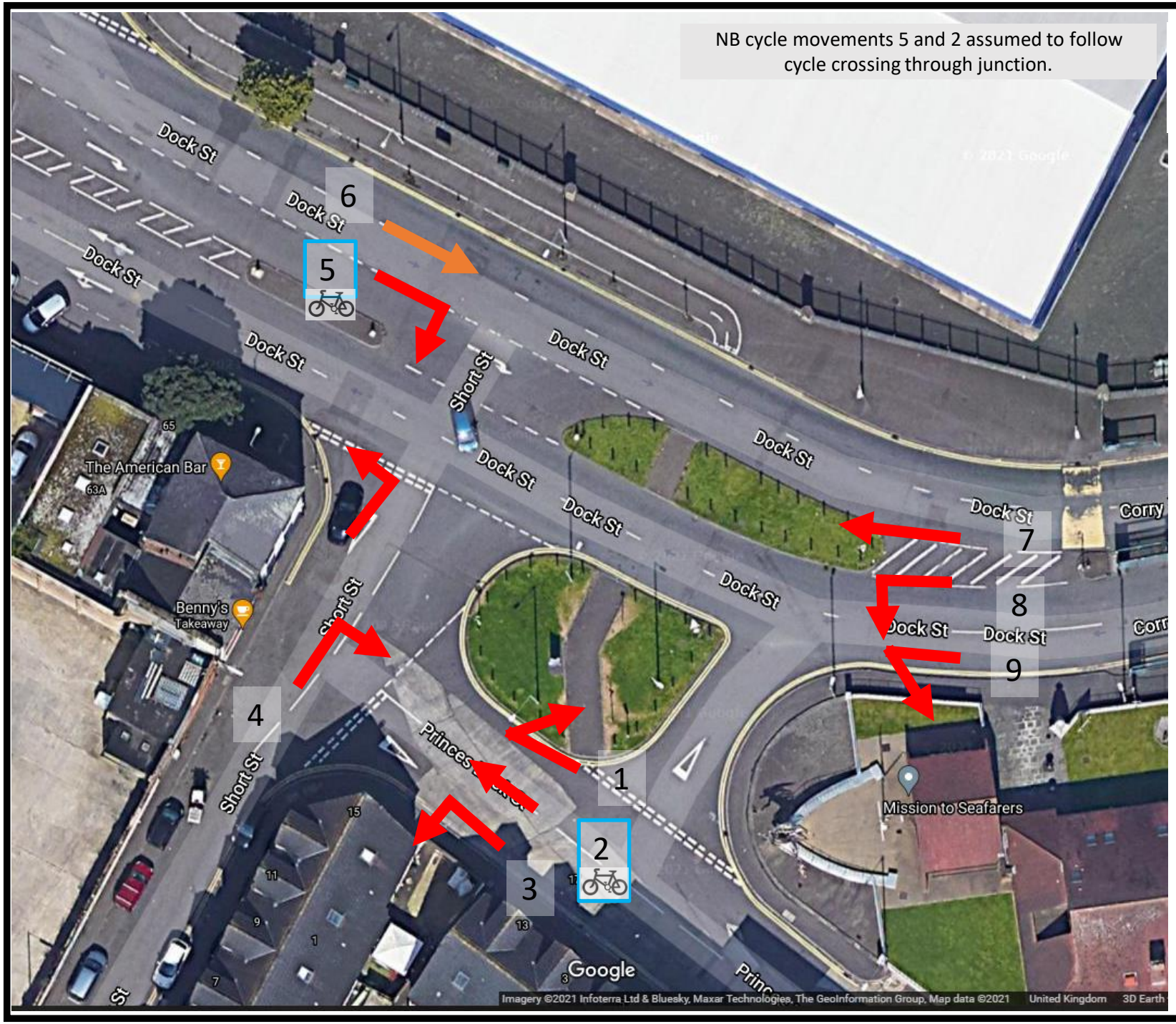
Junction 6.2 – Donegal Quay / Clarendon Way

Cycle Strategy Route Review Junction 6.2

Movement	Score	0	1	2	Comment
1	1			2	Cycle lanes through junction meeting appropriate desirable minimum width requirements for the movement under consideration.
2	1		1		Cycle movement in potential conflict with moderate traffic flow.
3	1		2		Cycle movement in potential conflict with moderate traffic flow.
4	1		3		Cycle movement in potential conflict with moderate traffic flow.
5	1		1		Cycle movement in potential conflict with moderate traffic flow.
6	1		2		Cycle movement in potential conflict with moderate traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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AECOM

Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 6 – NCN 93

Junction 6.3 – Princes Dock Street / Dock Street

Cycle Strategy Route Review Junction 6.3

Movement	Score	0	1	2	Comment
1	0	2	2		Cycle movement in potential conflict with heavy motor traffic flow.
2	0	2	2		Cycle movement in potential conflict with heavy motor traffic flow.
3	0	1		1	Cycle movement affected by very poor surface quality utility reinstatement, gully positioning, debris.
4	0	1		1	Cycle movement affected by very poor surface quality utility reinstatement, gully positioning, debris.
5	0	2			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	2	2		Cycle movement in potential conflict with heavy motor traffic flow.
7	1		2		Cycle movement in potential conflict with moderate traffic flow.
8	0	2	1		Pinch points on junction entry or exit (lane width 3.2m–3.9m).
9	0	1	1		Pinch points on junction entry or exit (lane width 3.2m–3.9m).
10	0	2	1		Pinch points on junction entry or exit (lane width 3.2m–3.9m).

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

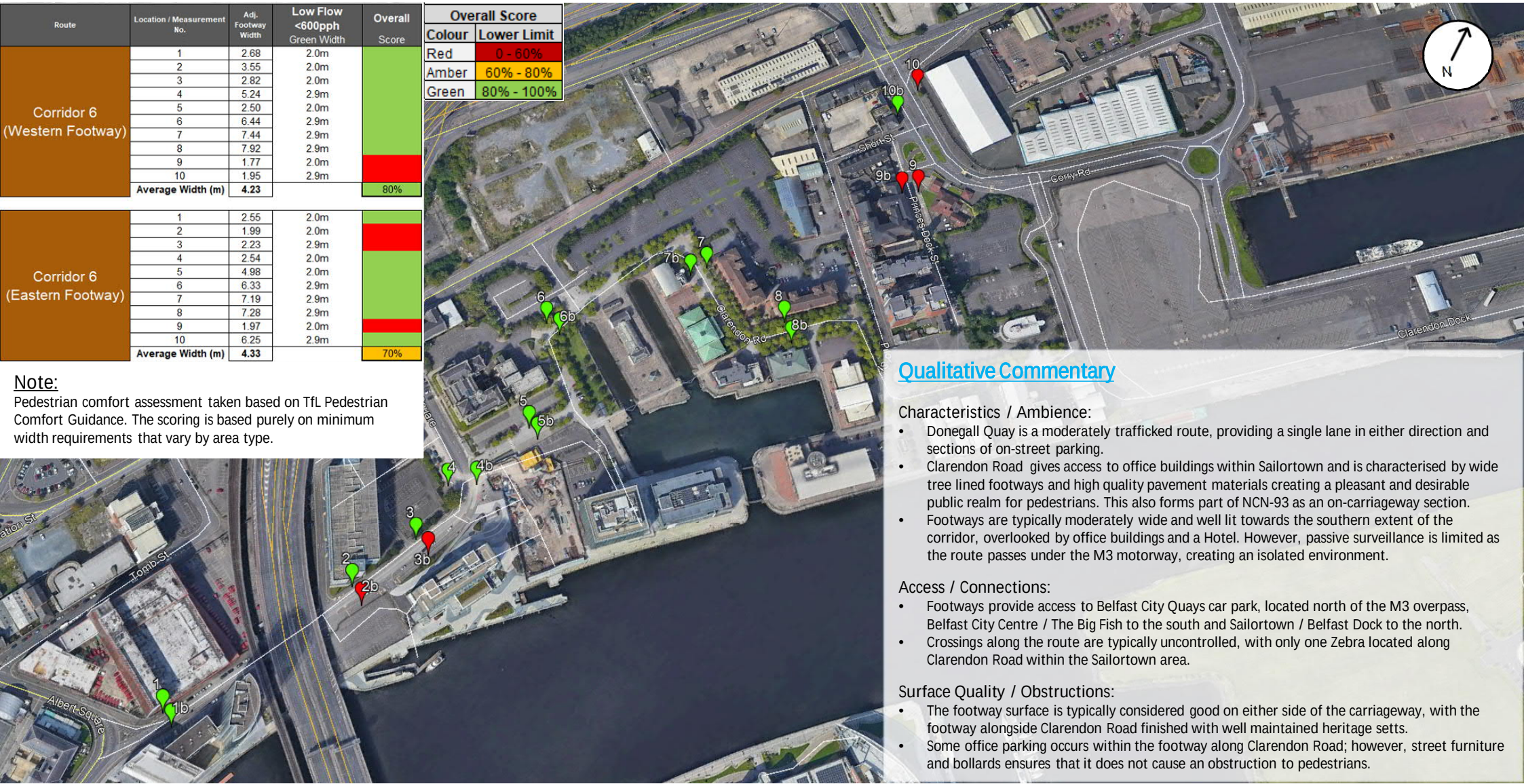
F.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

Corridor 6 – NCN Route 93

Route	Location / Measurement No.	Adj. Footway Width	Low Flow <600pph Green Width	Overall Score
Corridor 6 (Western Footway)	1	2.68	2.0m	
	2	3.55	2.0m	
	3	2.82	2.0m	
	4	5.24	2.9m	
	5	2.50	2.0m	
	6	6.44	2.9m	
	7	7.44	2.9m	
	8	7.92	2.9m	
	9	1.77	2.0m	
	10	1.95	2.9m	
	Average Width (m)	**4.23**		80%
Corridor 6 (Eastern Footway)	1	2.55	2.0m	
	2	1.99	2.0m	
	3	2.23	2.9m	
	4	2.54	2.0m	
	5	4.98	2.0m	
	6	6.33	2.9m	
	7	7.19	2.9m	
	8	7.28	2.9m	
	9	1.97	2.0m	
	10	6.25	2.9m	
	Average Width (m)	**4.33**		70%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%



Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.

Qualitative Commentary

Characteristics / Ambience:

- Donegall Quay is a moderately trafficked route, providing a single lane in either direction and sections of on-street parking.
- Clarendon Road gives access to office buildings within Sailortown and is characterised by wide tree lined footways and high quality pavement materials creating a pleasant and desirable public realm for pedestrians. This also forms part of NCN-93 as an on-carriageway section.
- Footways are typically moderately wide and well lit towards the southern extent of the corridor, overlooked by office buildings and a Hotel. However, passive surveillance is limited as the route passes under the M3 motorway, creating an isolated environment.

Access / Connections:

- Footways provide access to Belfast City Quays car park, located north of the M3 overpass, Belfast City Centre / The Big Fish to the south and Sailortown / Belfast Dock to the north.
- Crossings along the route are typically uncontrolled, with only one Zebra located along Clarendon Road within the Sailortown area.

Surface Quality / Obstructions:

- The footway surface is typically considered good on either side of the carriageway, with the footway alongside Clarendon Road finished with well maintained heritage setts.
- Some office parking occurs within the footway along Clarendon Road; however, street furniture and bollards ensures that it does not cause an obstruction to pedestrians.

Appendix G – Corridor 7 | Whitla Street Subway

G.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571700
Scheme	Belfast - York Street Interchange
Location	Corridor 7 - Whitla Street Subway
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

Route Section	Existing 7A

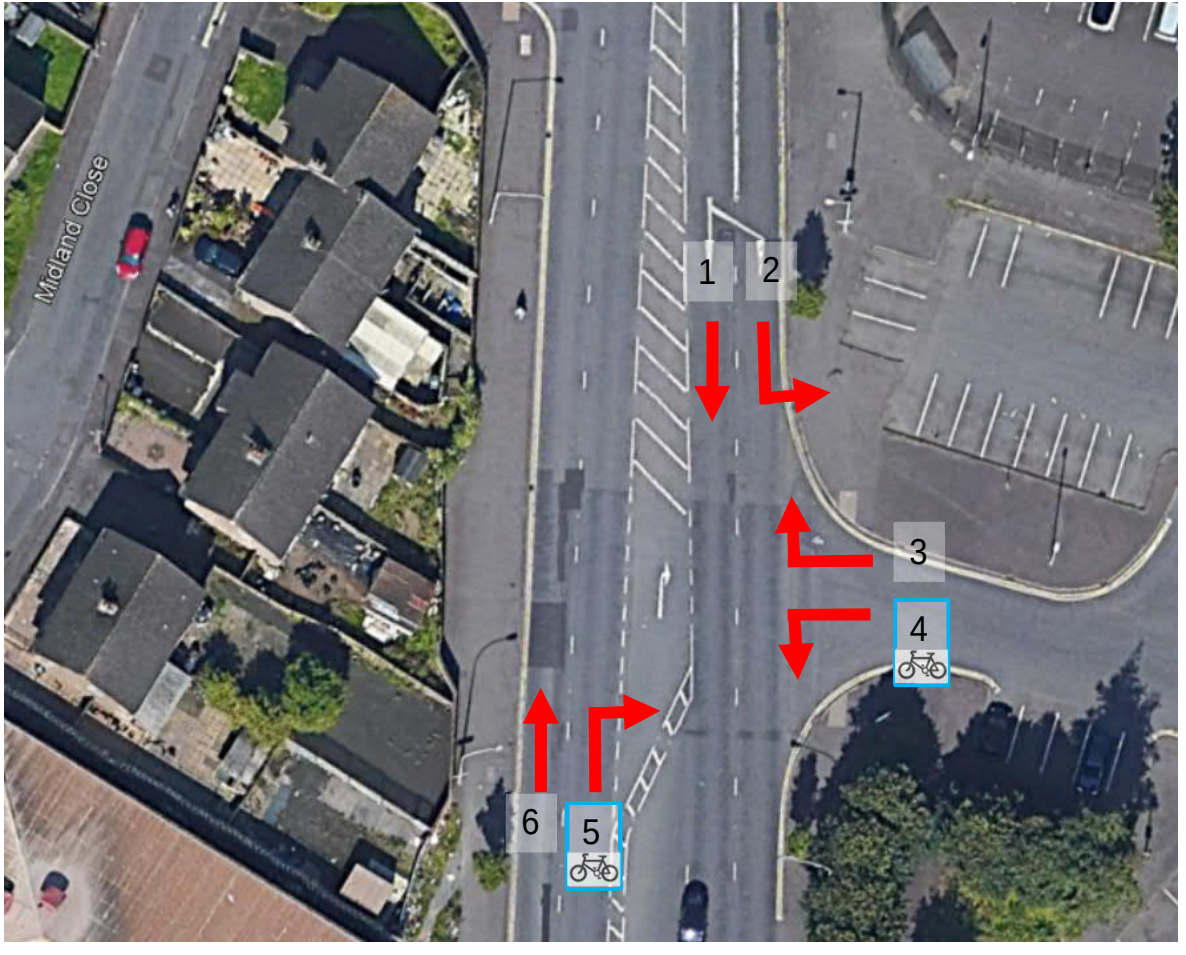
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to their journey	0	Cyclists can connect to NCN Route 93 to the east of the subway, but not without dismounting.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No signage, no continuation of the route to the west of the subway.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m.	**3.Density of routes based on mesh width** i.e. distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No additional provision to NCN Route 93 as yet; therefore, no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'as the-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Whitla Street Subway is both straight and direct.
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Three junctions over 200m route.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (e.g. bypass at signals)	1	The route is a mixture of off-carriageway shared use and on-carriageway sections, with junction crossings, therefore delay mixed.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	1	The route is a mixture of off-carriageway shared use and on-carriageway sections, with junction crossings, therefore delay mixed.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Access only, low speed route and shared use pedestrian / cycle subway.
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Access only, low speed route and shared use pedestrian / cycle subway.
	Avoid high motor traffic volumes where cyclists are sharing the carriageway.	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	2	Access only, low speed route and shared use pedestrian / cycle subway.
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed max 30mph.	0	No segregation. On carriageway for short section to the west of the subway. Measured from aerial imagery.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	Major junctions with A2 / Duncrue Street, conflicting cycle/motor traffic movements which are not separated.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Generally legible, but fading road marking near to Whitla St Car Park.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (e.g. nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - e.g. less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	Limited, but some kerbside parking to the west of the subway within Whitla Street Car Park.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	2	For more than half of the route cyclists are within a subway; therefore, are not at risk.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (e.g. from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some defects, exposed gullies, poorly maintained sets within the subway.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - e.g. Thin Surfacing, or firm and closely jointed blocks undisturbed by turning heavy vehicles.	0	Typically smooth machine laid surface on carriageway, but unmaintained sets within subway.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum values.	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic or on shared surface, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	1	Infrequent street lights along the route, poor lighting within Subway.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	0	Subway section is typically isolated, overgrown at the eastern entrance and painted with graffiti.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Shared use route through subway impacting pedestrians, but approx. 5m wide.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction.	1	Some cycle and wayfinding signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure none overlooked areas	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	**19**	

Max possible score	50
Audit % score	38%
Pass/Fail (70% threshold)	**Fail**
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**9**	56%
Comfort	8	1	13%
Attractiveness	10	3	30%
	50		

G.2 Junction Assessment baseline results



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Project Number: 60571700
Project: Belfast - York Street Interchange

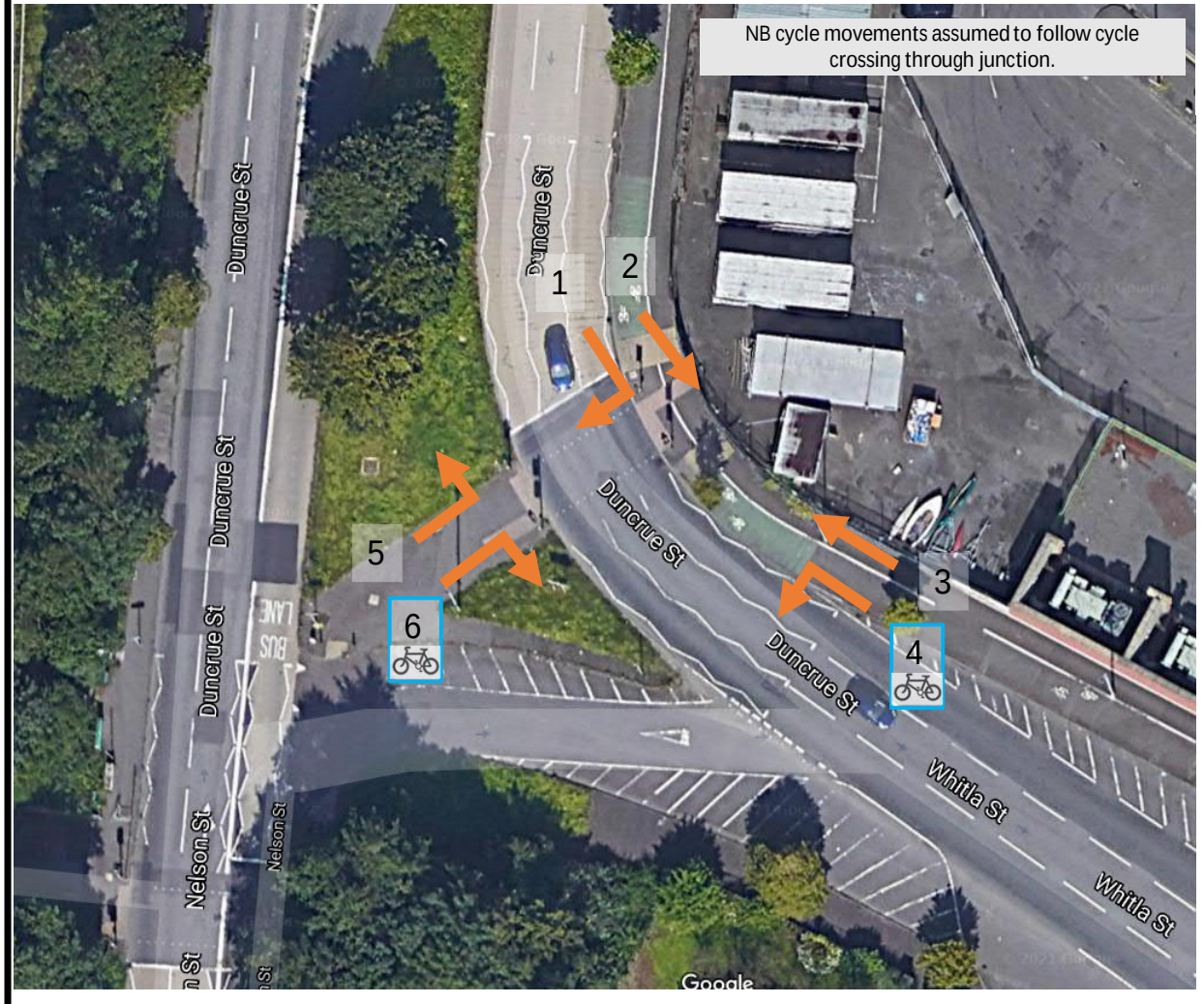
Corridor 7 – Whitla Street Subway
Junction 2.6 – A2 York St / Yorkgate Station

Cycle Strategy Route Review Junction 2.6

Movement	Score	0	1	2	Comment
1	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	2			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	2			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 7 – Whitla Street Subway

Junction 5.4 – Duncrue Street / Whitla Subway

Cycle Strategy Route Review Junction 5.4

Movement	Score	0	1	2	Comment
1	1		1		Cycle movement made by transiting onto section of shared use footway
2	1		1	1	Cycle movement made by transiting onto section of shared use footway
3	1		1	1	Cycle movement made by transiting onto section of shared use footway
4	1		1		Cycle movement made by transiting onto section of shared use footway
5	1		2		Cycle movement made by transiting onto section of shared use footway
6	1		2		Cycle movement made by transiting onto section of shared use footway

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

G.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

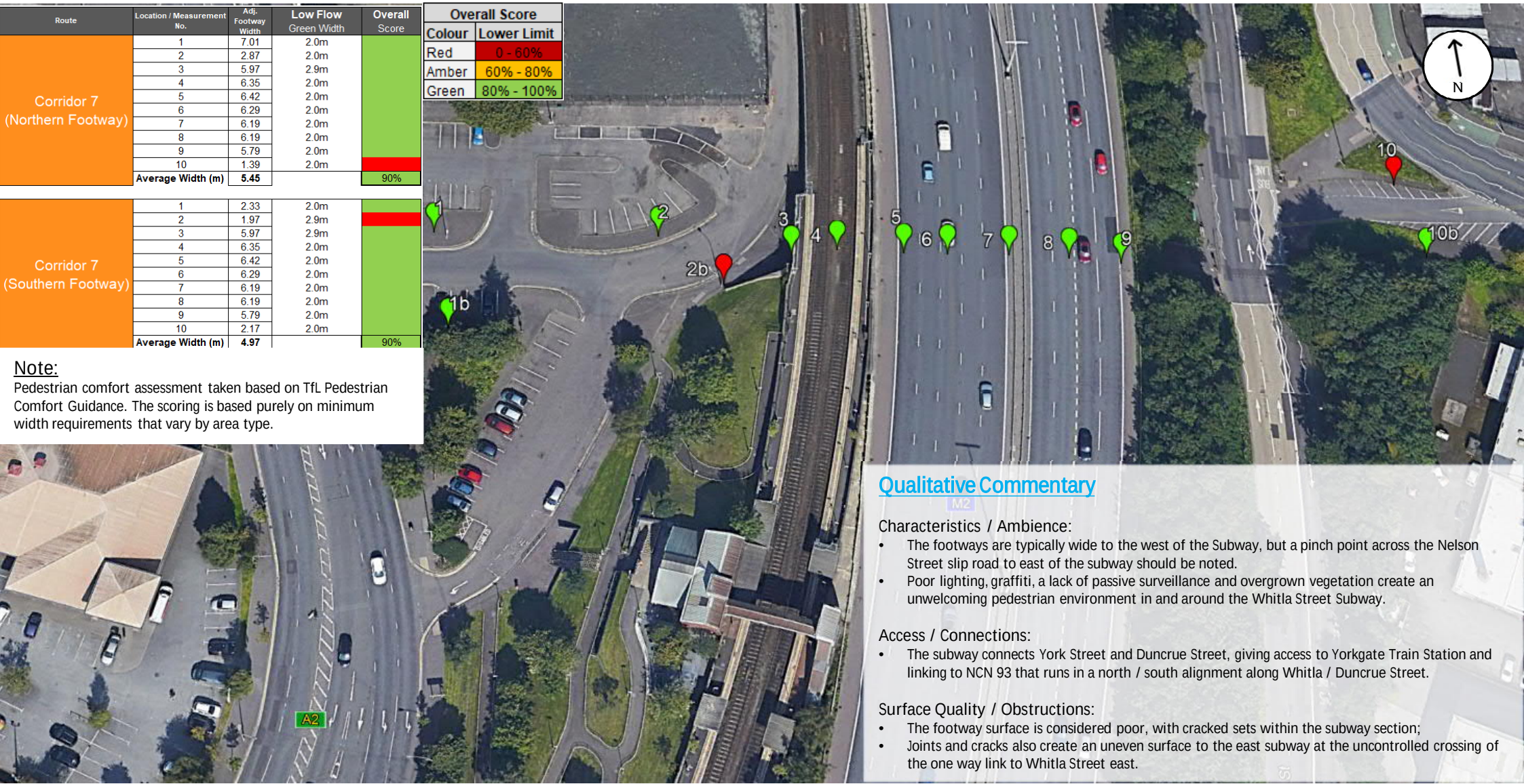
Corridor 7 – Whitla Street Subway

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Green Width	Overall Score
Corridor 7 (Northern Footway)	1	7.01	2.0m	
	2	2.87	2.0m	
	3	5.97	2.9m	
	4	6.35	2.0m	
	5	6.42	2.0m	
	6	6.29	2.0m	
	7	6.19	2.0m	
	8	6.19	2.0m	
	9	5.79	2.0m	
	10	1.39	2.0m	
	Average Width (m)	**5.45**		90%
Corridor 7 (Southern Footway)	1	2.33	2.0m	
	2	1.97	2.9m	
	3	5.97	2.9m	
	4	6.35	2.0m	
	5	6.42	2.0m	
	6	6.29	2.0m	
	7	6.19	2.0m	
	8	6.19	2.0m	
	9	5.79	2.0m	
	10	2.17	2.0m	
	Average Width (m)	**4.97**		90%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%

Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.



Qualitative Commentary

Characteristics / Ambience:

- The footways are typically wide to the west of the Subway, but a pinch point across the Nelson Street slip road to east of the subway should be noted.
- Poor lighting, graffiti, a lack of passive surveillance and overgrown vegetation create an unwelcoming pedestrian environment in and around the Whitla Street Subway.

Access / Connections:

- The subway connects York Street and Duncrue Street, giving access to Yorkgate Train Station and linking to NCN 93 that runs in a north / south alignment along Whitla / Duncrue Street.

Surface Quality / Obstructions:

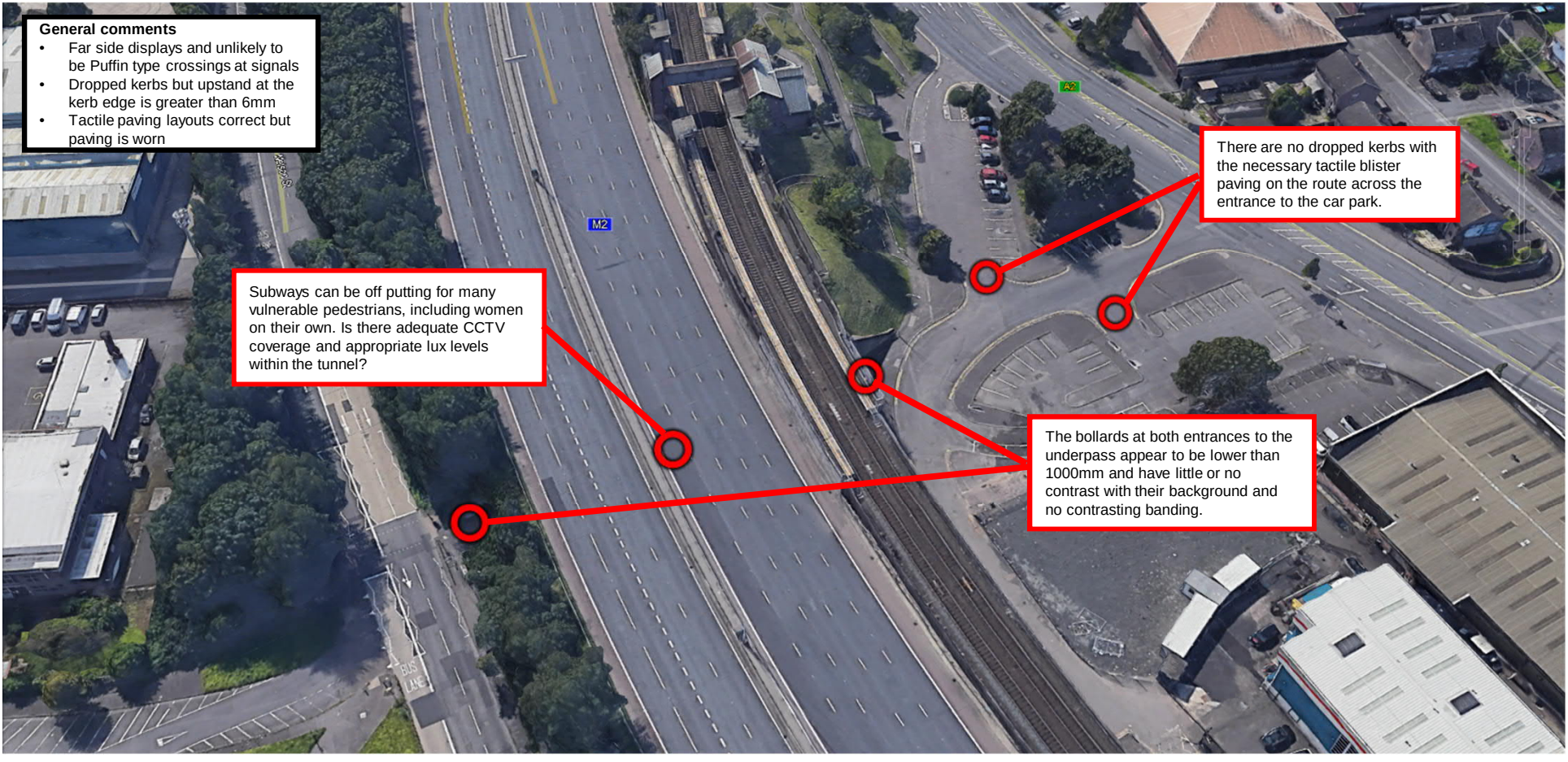
- The footway surface is considered poor, with cracked sets within the subway section;
- Joints and cracks also create an uneven surface to the east subway at the uncontrolled crossing of the one way link to Whitla Street east.

G.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 7 Whitla Street Subway

General comments

- Far side displays and unlikely to be Puffin type crossings at signals
- Dropped kerbs but upstand at the kerb edge is greater than 6mm
- Tactile paving layouts correct but paving is worn



Appendix H – Corridor 8 | Little Patrick Street

H.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571700
Scheme	Belfast - York Street Interchange
Location	Section 8 - Little Patrick St
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

Route Section	Existing 8A

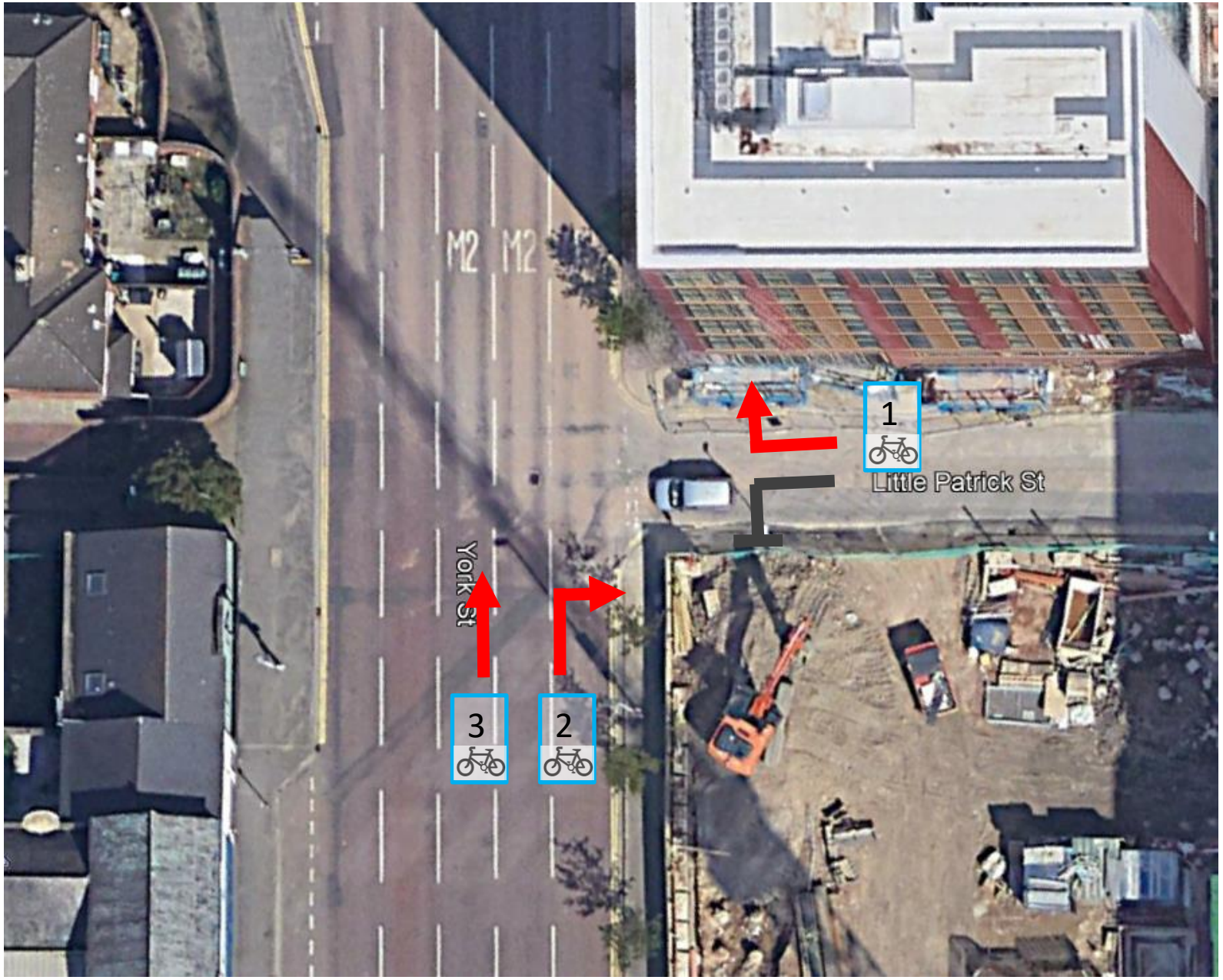
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to their journey	0	No alternative routes within short section, zero as provision still considerd unacceptable.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m.	**3.Density of routes based on mesh width** ie distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'asthe-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Little Patrick Street is both straight and direct
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Four junctions over 300m route.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (eg bypass at signals)	1	Cyclists are with traffic; therefore, delay is similar to motor vehicles.
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including a cycle) ahead	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate speed.	0	Two lane carriageway; but is very narrow with no room for overtaking.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Access only, low speeds
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	Access only, low speeds
	Avoid high motor traffic volumes where cyclists are sharing the carriageway.	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	2	Access only, no vehicular flow
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed max 30mph.	1	No segregation. On carriageway and 3m traffic lanes
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	One untreated side road on either side of the carriageway, Nelson Street causing major severance.
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	1	Clear road markings at junction mouths; however, no centerline along the majority of the route.
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (eg nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - eg less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	0	Narrow lanes (3.0m) and lots of parked vehicles on either side of road
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (eg from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	0	Numerous defects and cracked paving.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete paviours with frequent joints.	Machine laid smooth and non-slip surface - eg Thin Surfacing, or firm and closelyjointed blocks undisturbed by turning heavy vehicles.	1	Frequent joints and rough surfacing.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum values.	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	0	Infrequent street lights along the route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	1	The route is a back street, which could be isolated at night. However is industrial so will have some activity of HGVs throughout the day.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	on street = no impact
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction.	1	Some cycle and wayfinding signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure nonoverlooked areas	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	17	

Max possible score	50
Audit % score	34%
Pass/Fail (70% threshold)	**Fail**
Any Critical Fails? (Y/N)	No
Number of Critical Fails	0

Criteria	Max Score	Sub-criteria Existing	% score Proposed
Coherence	6	0	0%
Directness	10	5	50%
Safety	16	**8**	50%
Comfort	8	1	13%
Attractiveness	10	3	30%
	50		

H.2 Junction Assessment baseline results



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 8 – Little Patrick Street

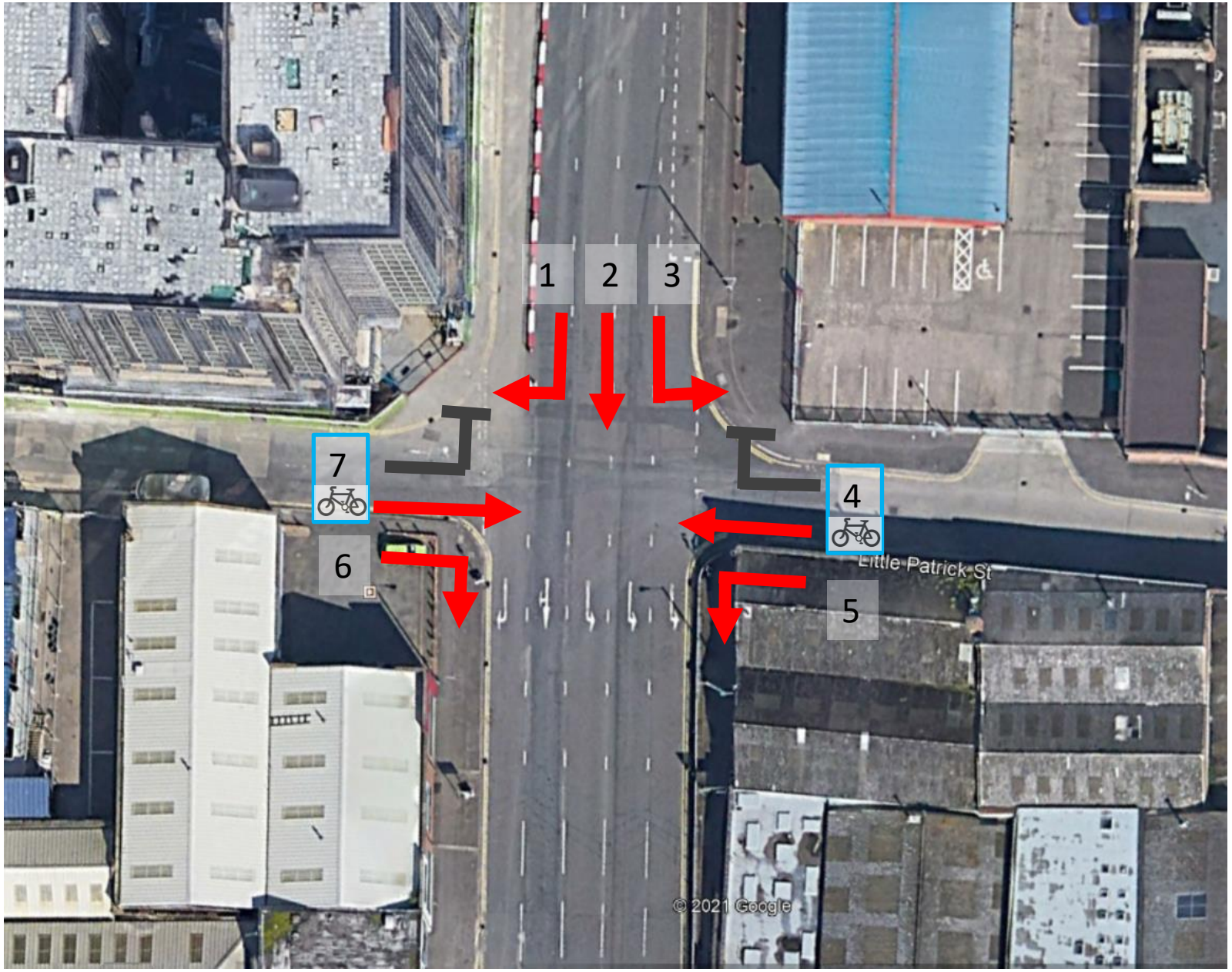
Junction 8.1 – York Street / Little Patrick Street

Cycle Strategy Route Review Junction 8.1

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	2	1		Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 8 – Little Patrick Street

Junction 8.2 – Nelson St / Little Patrick Street

Cycle Strategy Route Review Junction 8.2

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3	1		Cycle movement in potential conflict with heavy motor traffic flow.
3	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

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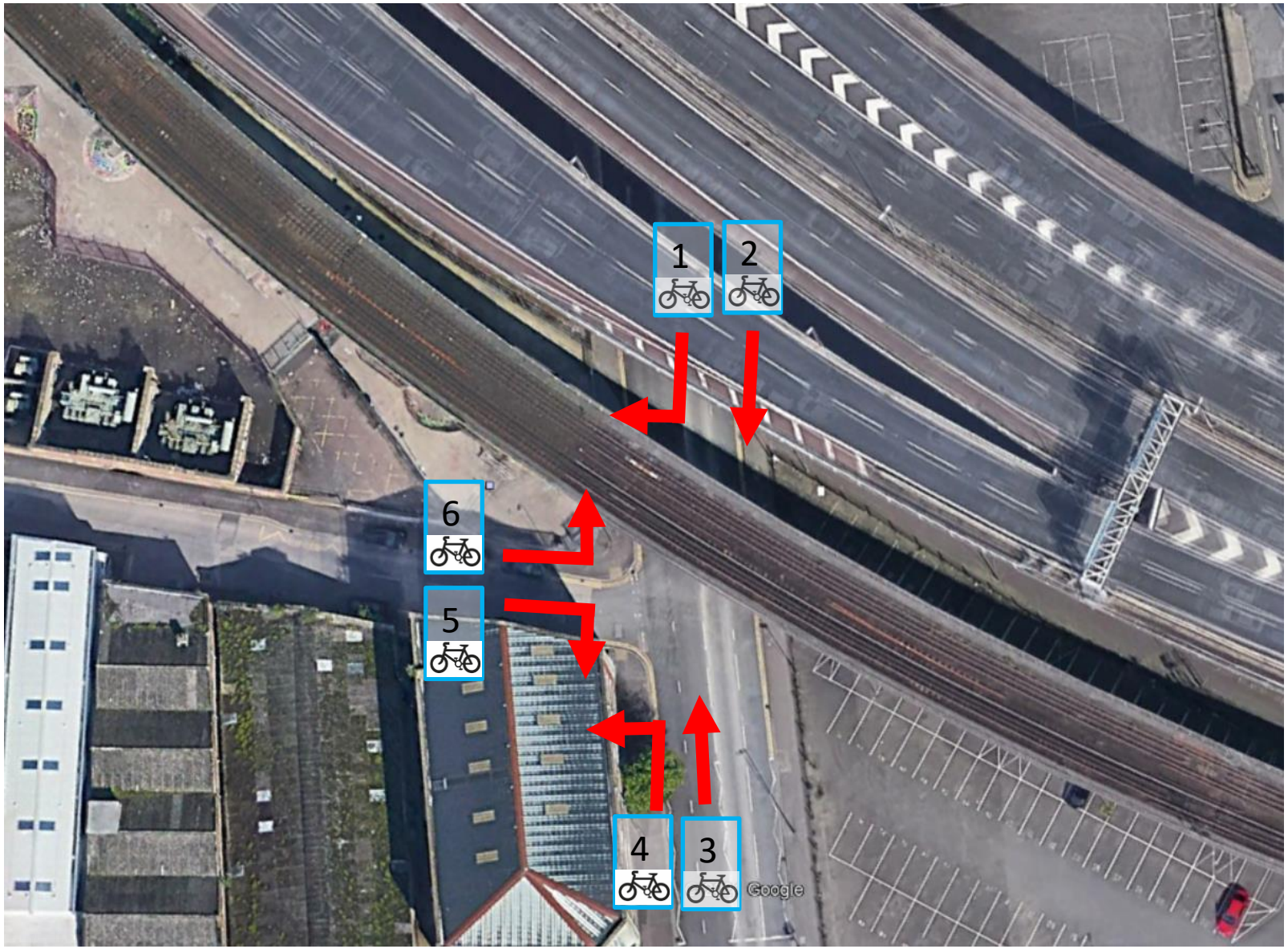
Project Number: 60571700

Project: Belfast - York Street Interchange

Corridor 8 – Little Patrick Street

Junction 8.3 – Corporation Street / Little Patrick St



Cycle Strategy Route Review Junction 8.3

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3	1		Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3	1		Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

H.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

Corridor 8 – Little Patrick Street

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Green Width	Overall Score
Corridor 8 (Northern Footway)	1	3.28	2.0m	
	2	2.66	2.0m	
	3	2.89	2.0m	
	4	3.58	2.0m	
	5	3.58	2.0m	
	6	0.00	2.0m	
	7	2.12	2.0m	
	8	2.00	2.0m	
	9	2.37	2.0m	
	10	1.86	2.0m	
	Average Width (m)	**2.43**		80%
Corridor 8 (Southern Footway)	1	2.26	2.0m	
	2	2.52	2.0m	
	3	1.56	2.0m	
	4	1.10	2.0m	
	5	1.69	2.0m	
	6	1.67	2.0m	
	7	2.42	2.0m	
	8	2.14	2.0m	
	9	2.13	2.0m	
	10	1.90	2.0m	
	Average Width (m)	**1.94**		50%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%

Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.

Qualitative Commentary

Characteristics / Ambience:

- Footways are typically narrow and poorly lit;
- Tall multi-storey buildings over shadow the carriageway on either side, making the environment feel enclosed and reducing the quality of urban realm.

Access / Connections:

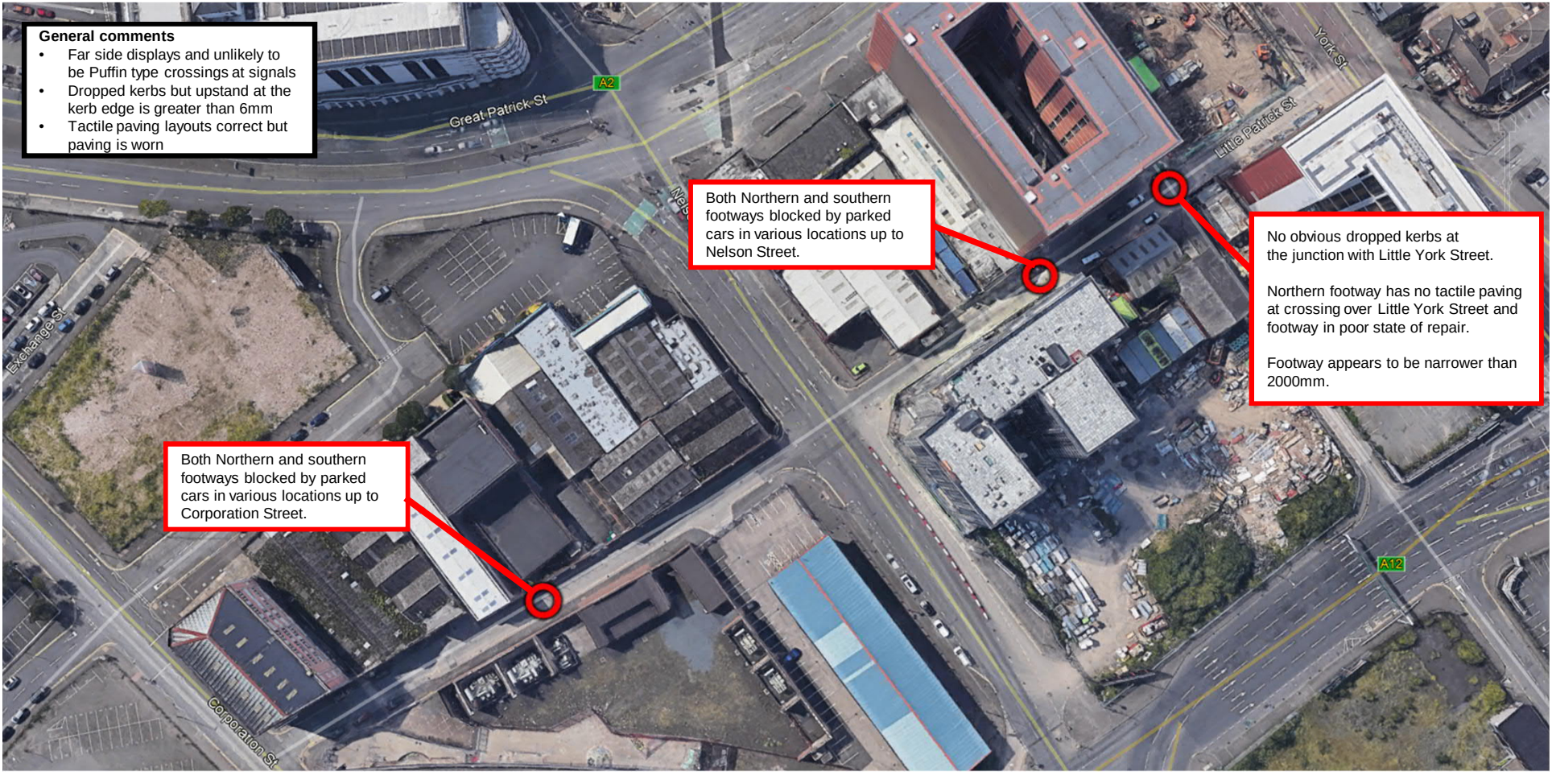
- Footways provide access to the Student Roost / residential buildings to the west of Nelson Street and small businesses and industrial units to the east of Nelson Street;
- No crossing facilities are provided along the corridor, with Nelson Street / York Street causing major severances.

Surface Quality / Obstructions:

- The footway surface is considered poor, with cracks and joints resulting in an uneven surface;
- Parking and deliveries undertaken on the footway cause a major obstruction.

H.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 8 Little Patrick Street



Appendix I – Corridor 9 | Clifton Street

I.1 Cycle Level of Service baseline results

Cycling Level of Service Assessment (CLoS) based on LTN 1/20	
Project Number	60571200
Scheme	Belfast - York Street Interchange
Location	Section 9 - Clifton St
Date	24/05/2021
Version Number	v0
Assessment By	Luke Oddy
Checked By	Joel Hawthorn

AECOM

Route Section	Existing 9A

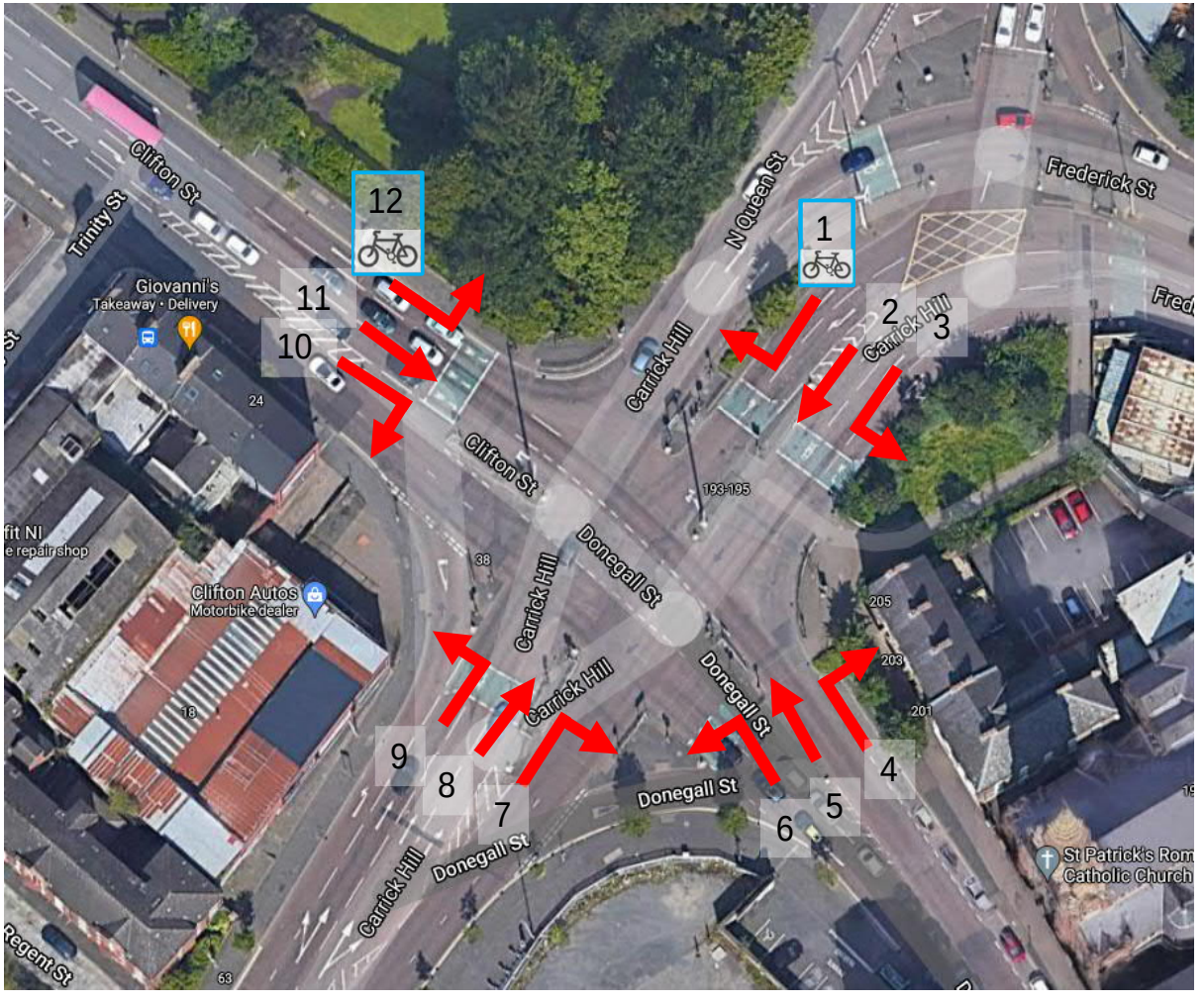
Cycling Level of Service (CLOS)

Key Requirement	Factor	Design Principle	Indicators	Critical	0 (Red)	1 (Amber)	2 (Green)	Score	Comments
Coherence	Connections	Cyclists should be able to easily and safely join and navigate along different sections of the same route and between different routes in the network.	**1. Ability to join/leave route safely and easily** considering left and right turns		Cyclists cannot connect to other routes without dismounting	Cyclists can connect to other routes with minimal disruption to their journey	Cyclists have dedicated connections to other routes provided, with no interruption to	0	No alternative routes within short section. Right turns taken with traffic and dual lane with no provision.
	Continuity and Wayfinding	Routes should be complete with no gaps in provision. 'End of route' signs should not be installed - cyclists should be shown how the route continues. Cyclists should not be 'abandoned', particularly at junctions where provision may be required to ensure safe crossing movements.	**2.Provision for cyclists throughout the whole length of the route**		Cyclists are 'abandoned' at points along the route with no clear indication of how to continue their journey.	The route is made up of discrete sections, but cyclists can clearly understand how to navigate between them, including through junctions.	Cyclists are provided with a continuous route, including through junctions	0	No cycle signage currently provided.
	Density of network	Cycle networks should provide a mesh (or grid) of routes across the town or city. The density of the network is the distance between the routes which make up the grid pattern. The ultimate aim should be a network with a mesh width of 250m	**3.Density of routes based on mesh width** ie distances between primary and secondary routes within the network		Route contributes to a network density mesh width >1000m	Route contributes to a network density mesh width 250 - 1000m	Route contributes to a network density mesh width <250m	0	No provision as yet; therefore no contribution to wider network.
Directness	Distance	Routes should follow the shortest option available and be as near to the 'asthe-crow-flies' distance as possible.	**4.Deviation of route** Deviation Factor is calculated by dividing the actual distance along the route by the straight line (crow-fly) distance, or shortest road alternative.		Deviation factor against straight line or shortest road alternative >1.4	Deviation factor against straight line or shortest road alternative 1.2 – 1.4	Deviation factor against straight line or shortest road alternative <1.2	2	Clifton Street is both straight and direct
	Time: Frequency of required stops or give ways	The number of times a cyclist has to stop or loses right of way on a route should be minimised. This includes stopping and give ways at junctions or crossings, motorcycle barriers, pedestrian-only zones etc.	**5.Stopping and give way frequency**		The number of stops or give ways on the route is more than 4 per km	The number of stops or give ways on the route is between 2 and 4 per km	The number of stops or give ways on the route is less than 2 per km	0	Three junctions over 325m route.
	Time: Delay at junctions	The length of delay caused by junctions should be minimised. This includes assessing impact of multiple or single stage crossings, signal timings, toucan crossings etc.	**6.Delay at junctions**		Delay for cyclists at junctions is greater than for motor vehicles	Delay for cyclists at junctions is similar to delay for motor vehicles	Delay is shorter than for motor vehicles or cyclists are not required to stop at junctions (eg bypass at	1	Cyclists are with traffic; therefore, delay is similar to motor vehicles
	Time: Delay on links	The length of delay caused by not being able to bypass slow moving traffic.	**7.Ability to maintain own speed on links**		Cyclists travel at speed of slowest vehicle (including	Cyclists can usually pass slow traffic and other cyclists	Cyclists can always choose an appropriate	1	Cyclists on street; therefore, are able to overtake within the adjacent running lane.
	Gradients	Routes should avoid steep gradients where possible. Uphill sections increase time, effort and discomfort. Where these are encountered, routes should be planned to minimise climbing gradient and allow users to retain momentum gained on the descent.	**8.Gradient**		Route includes sections steeper than the gradients recommended in Figure 4.4	There are no sections of route steeper than the gradients recommended in Figure 4.4	There are no sections of route which steeper than 2%	2	Unknown, though no significant gradients observed.
Safety	Reduce/remove speed differences where cyclists are sharing the carriageway	Where cyclists and motor vehicles are sharing the carriageway, the key to reducing severity of collisions is reducing the speeds of motor vehicles so that they more closely match that of cyclists. This is particularly important at points where risk of collision is greater, such as at junctions.	**9.Motor traffic speed on approach and through junctions where cyclists are sharing the carriageway through the junction**	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 14 mph
			10.Motor traffic speed on sections of shared carriageway	85th percentile > 37mph (60kph)	85th percentile >30mph	85th percentile 20mph-30mph	85th percentile <20mph	2	85th percentile speed = 14 mph
	Avoid high motor traffic volumes where cyclists are sharing the carriageway	Cyclists should not be required to share the carriageway with high volumes of motor vehicles. This is particularly important at points where risk of collision is greater, such as at junctions.	**11.Motor traffic volume on sections of shared carriageway, expressed as vehicles per peak hour**	>10000 AADT, or >5% HGV	5000-10000 AADT and 2-5%HGV	2500-5000 and <2% HGV	0-2500 AADT	c	14258 AADT
	Risk of collision	Where speed differences and high motor vehicle flows cannot be reduced cyclists should be separated from traffic – see Table 6.2. This separation can be achieved at varying degrees through on-road cycle lanes, hybrid tracks and off-road provision. Such segregation should reduce the risk of collision from beside or behind the cyclist.	**12.Segregation to reduce risk of collision alongside or from behind**	Cyclists sharing carriageway - nearside lane in critical range between 3.2m and 3.9m wide and traffic volumes prevent motor vehicles moving easily into opposite lane to pass cyclists.	Cyclists in unrestricted traffic lanes outside critical range (3.2m to 3.9m) or in cycle lanes less than 1.8m wide.	Cyclists in cycle lanes at least 1.8m wide on carriageway; 85th percentile motor traffic speed max 30mph.	Cyclists on route away from motor traffic (off road provision) or in off-carriageway cycle track. Cyclists in hybrid/light segregated track; 85th percentile motor traffic speed	c	Measured from aerial imagery, assumed critical.
		A high proportion of collisions involving cyclists occur at junctions. Junctions there-fore need particular attention to reduce the risk of collision. Junction treatments include: - Minor/side roads : cyclist priority and/or speed reduction across side roads - Major roads : separation of cyclists from motor traffic through junctions.	**13.Conflicting movements at junctions**		Side road junctions frequent and/or untreated. Major junctions, conflicting cycle/motor traffic movements not separated	Side road junctions infrequent and with effective entry treatments. Major junctions, principal conflicting cycle/motor traffic movements separated.	Side roads closed or treated to blend in with footway. Major junctions, all conflicting cycle/motor traffic streams separated.	0	Two untreated side roads on the southern side (Trinity / Stanhope St), one on the northern side of the carriageway (Henry Place).
	Avoid complex design	Avoid complex designs which require users to process large amounts of information. Good network design should be self-explanatory and self-evident to all road users. All users should understand where they and other road users should be and what movements they might make.	**14.Legible road markings and road layout**		Faded, old, unclear, complex road markings/unclear or unfamiliar road layout	Generally legible road markings and road layout but some elements could be improved	Clear, understandable, simple road markings and road layout	2	Clear road markings along route
	Consider and reduce risk from kerbside activity	Routes should be assessed in terms of all multi-functional uses of a street including car parking, bus stops, parking, including collision with opened door.	**15.Conflict with kerbside activity**	Narrow cycle lanes <1.5m or less (including any buffer) alongside parking/loading	Significant conflict with kerbside activity (eg nearside cycle lane <2m (including buffer) wide alongside kerbside parking)	Some conflict with kerbside activity - eg less frequent activity on nearside of cyclists, min 2m cycle lanes including buffer.	No/very limited conflict with kerbside activity or width of cycle lane including buffer exceeds 3m.	0	No cycle lane provision; therefore, zero score.
	Reduce severity of collisions where they do occur	Wherever possible routes should include "evasion room" (such as grass verges) and avoid any unnecessary physical hazards such as guardrail, build outs, etc. to reduce the severity of a collision should it occur.	**16.Evasion room and unnecessary hazards**		Cyclists at risk of being trapped by physical hazards along more than half of the route.	The number of physical hazards could be further reduced	The route includes evasion room and avoids any physical hazards.	0	No evasion room for cyclists, unless they mount the footway.
Comfort	Surface quality	Density of defects including non cycle friendly ironworks, raised/sunken covers/gullies, potholes, poor quality carriageway paint (eg from previous cycle lane)	**17.Major and minor defects**		Numerous minor defects or any number of major defects	Minor and occasional defects	Smooth high grip surface	1	Some minor defects along the carriageway.
		Pavement or carriageway construction providing smooth and level surface	**18.Surface type**		Any bumpy, unbound, slippery, and potentially hazardous surface.	Hand-laid materials, concrete pavours with frequent joints.	Machine laid smooth and non-slip surface - eg Thin Surfacing, or firm and closelyjointed blocks undisturbed by turning heavy	1	Intermitent slot cut joints and rough surfacing in places.
	Effective width without conflict	Cyclists should be able to comfortably cycle without risk of conflict with other users both on and off road.	**19.Desirable minimum widths according to volume of cyclists and route type** (where cyclists are separated from motor vehicles).		More than 25% of the route includes cycle provision with widths which are no more than 25% below desirable	No more than 25% of the route includes cycle provision with widths which are no more than 25% below desirable minimum	Recommended widths are maintained throughout whole route	0	Cyclists are with traffic, no segregation provided.
	Wayfinding	Non-local cyclists should be able to navigate the routes without the need to refer to maps.	**20.Signing**		Route signing is poor with signs missing at key decision points.	Gaps identified in route signing which could be improved	Route is well signed with signs located at all decision points and junctions	0	No existing cycle signage along the route.
Attractiveness	Social safety and perceived vulnerability of user	Routes should be appealing and be perceived as safe and usable. Well used, well maintained, lit, overlooked routes are more attractive and therefore more likely to be used.	**21.Lighting**		Most or all of route is unlit	Short and infrequent unlit/poorly lit sections	Route is lit to highway standards throughout	2	High number of street lights along the route.
			22.Isolation		Route is generally away from activity	Route is mainly overlooked and is not far from activity throughout its length	Route is overlooked throughout its length	2	The route is overlooked by heavy vehicular traffic and several frontages.
	Impact on pedestrians, including people with disabilities	Introduction of dedicated on-road cycle provision can enable people to cycle on-road rather than using footways which are not suitable for shared use. Introducing cycling onto well-used footpaths may reduce the quality of provision for both users, particularly if the shared use path does not meet recommended widths.	**23.Impact on pedestrians** Pedestrian Comfort Level based on Pedestrian Comfort guide for London (Section 4.7)		Route impacts negatively on pedestrian provision, Pedestrian Comfort is at Level C or below.	No impact on pedestrian provision or Pedestrian Comfort Level remains at B or above.	Pedestrian provision enhanced by cycling provision, or Pedestrian Comfort Level remains at A	1	Cyclists on street; therefore, no impact to pedestrian comfort level.
	Minimise street clutter	Signing required to support scheme layout	**24.Street Clutter** Signs are informative and consistent but not overbearing or of inappropriate size		Large number of signs needed, difficult to follow and/or leading to clutter	Moderate amount of signing particularly around junctions.	Signing for wayfinding purposes only and not causing additional obstruction	1	Some cycle and wayfinding signage needed.
	Secure cycle parking	Ease of access to secure cycle parking within businesses and on street	**25. Cycle parking** Evidence of bicycles parked to street furniture or cycle stands		No additional cycle parking provided or inadequate provision in insecure nonoverlooked	Some secure cycle parking provided but not enough to meet demand	Secure cycle parking provided, sufficient to meet demand	0	Currently no cycle parking provided.
							Audit Score	20	

Max possible score	50
Audit % score	40%
Pass/Fail (70% threshold)	**Fail**
Any Critical Fails? (Y/N)	Yes
Number of Critical Fails	2

Criteria	Max Score	Sub-criteria Existing	%score Proposed
Coherence	6	0	0%
Directness	10	6	60%
Safety	16	**6**	38%
Comfort	8	2	25%
Attractiveness	10	6	60%
	50		

I.2 Junction Assessment baseline results



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Project Number: 60571700
Project: Belfast - York Street Interchange

Corridor 9 – Clifton Street

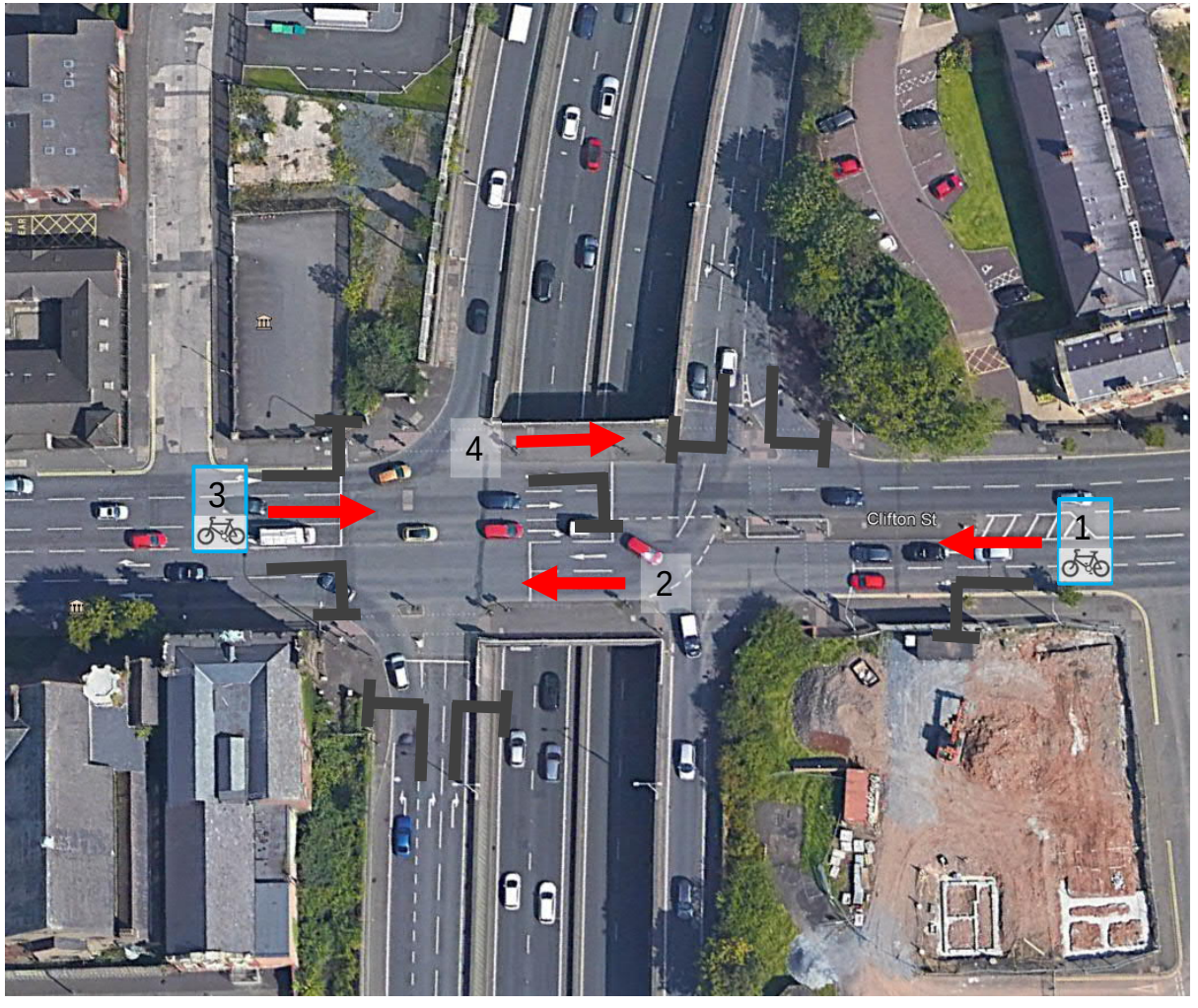
Junction 1.1: B126 Carrick Hill / Clifton St

Cycle Strategy Route Review Junction 1.1

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Corridor 9 – Clifton Street

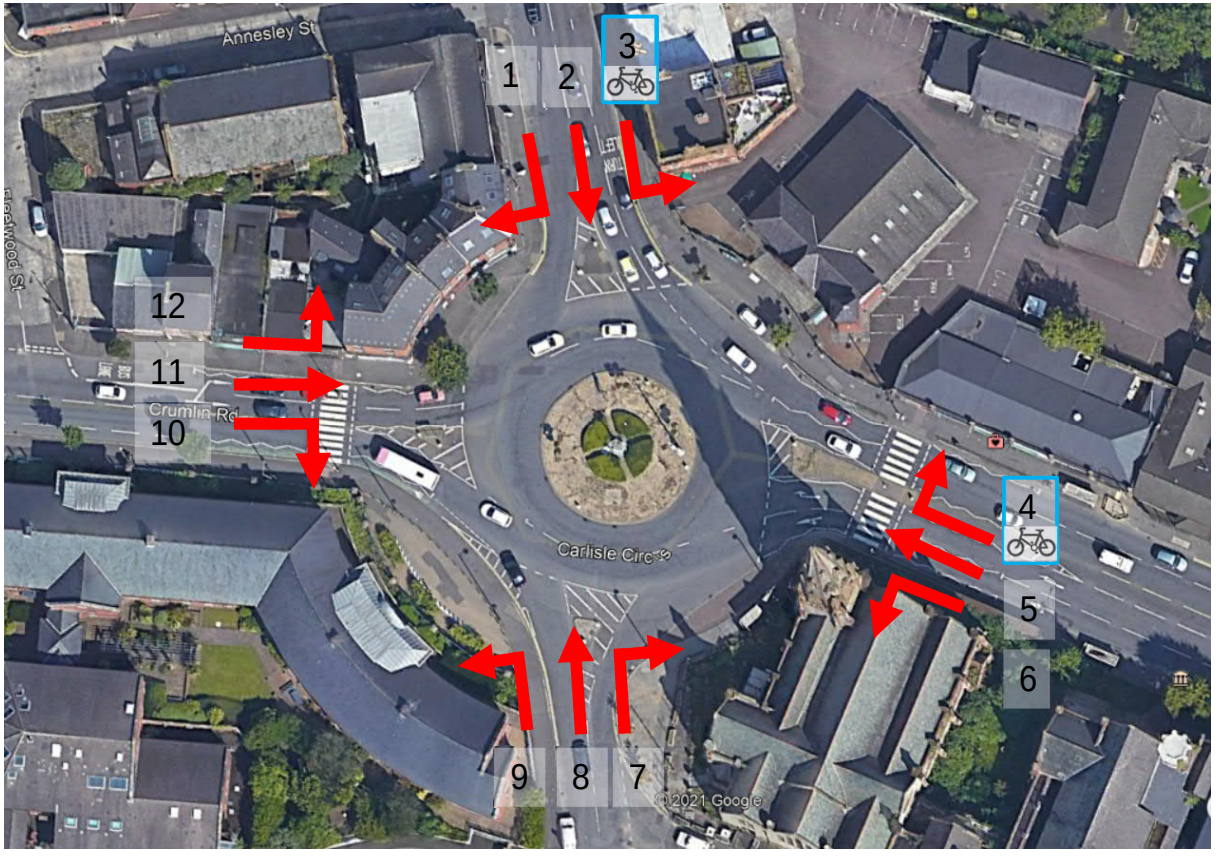
Junction 9.2: A12 Westlink / Clifton St

Cycle Strategy Route Review Junction 1.1

Movement	Score	0	1	2	Comment
1	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	3			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement



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Corridor 9 – Clifton Street

Junction 9.3: Carlisle Circus

Cycle Strategy Route Review Junction 9.3

Movement	Score	0	1	2	Comment
1	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
2	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
3	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
4	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
5	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
6	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
7	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
8	0	5			Cycle movement in potential conflict with heavy motor traffic flow.
9	0	3			Cycle movement in potential conflict with heavy motor traffic flow.
10	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
11	0	4			Cycle movement in potential conflict with heavy motor traffic flow.
12	0	4			Cycle movement in potential conflict with heavy motor traffic flow.

Key

Suitable only for confident existing cyclists, and may be avoided by some experienced cyclists. Conditions are most likely to give rise to the most common collision types. Score = 0	Likely to be more acceptable to most cyclists, but may still pose problems for less confident or new cyclists. The risk of collisions has been reduced by design layout or traffic management interventions. Score= 1	Suitable for all potential and existing cyclists. The potential for collisions has been removed, or managed to a high standard of safety for cyclists. Score = 2	Movement banned or unable to be completed by cyclists within current design. Score = 0	Core Cycle Network Movement

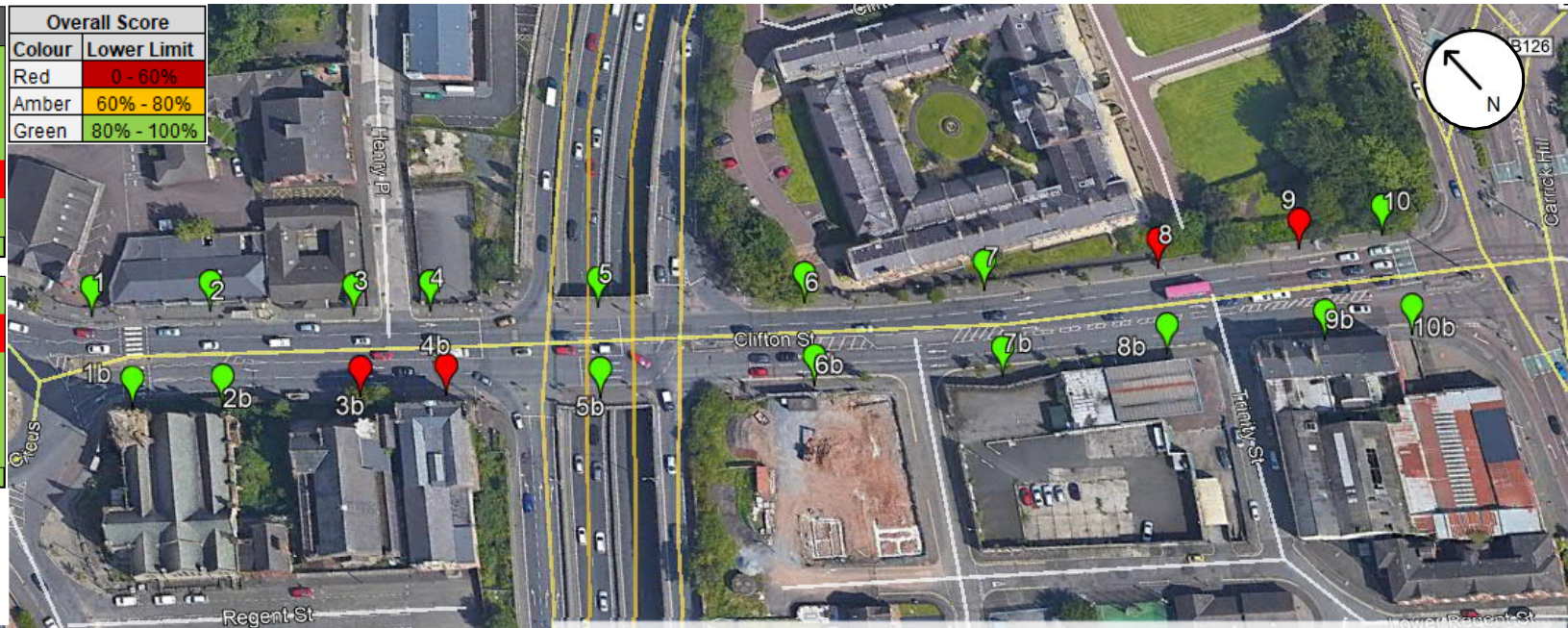
I.3 Pedestrian Comfort Levels baseline results

Pedestrian Comfort Assessment

Corridor 9 – Clifton Street

Route	Location / Measurement No.	Adj. Footway Width	Low Flow Green Width	Overall Score
Section 9 (Northern Footway)	1	3.03	2.9m	
	2	3.20	2.9m	
	3	2.49	2.0m	
	4	2.78	2.0m	
	5	3.72	2.0m	
	6	2.58	2.0m	
	7	2.55	2.9m	
	8	2.80	2.9m	
	9	3.14	2.0m	
	10	2.70	2.0m	
	Average Width (m)	**2.90**		80%
Section 9 (Southern Footway)	1	2.68	2.0m	
	2	3.07	2.0m	
	3	2.51	2.9m	
	4	2.45	2.9m	
	5	4.11	2.0m	
	6	3.51	2.9m	
	7	3.55	2.9m	
	8	2.82	2.0m	
	9	2.73	2.0m	
	10	4.49	2.0m	
	Average Width (m)	**3.19**		80%

Overall Score	
Colour	Lower Limit
Red	0 - 60%
Amber	60% - 80%
Green	80% - 100%



Note:

Pedestrian comfort assessment taken based on TfL Pedestrian Comfort Guidance. The scoring is based purely on minimum width requirements that vary by area type.

Qualitative Commentary

Characteristics / Ambience:

- Footways are typically of moderate width, well lit and tree lined on either side of the carriageway;
- Clifton Street is a heavily trafficked route, providing dual lanes in either direction and access to the A12 Westlink.

Access / Connections:

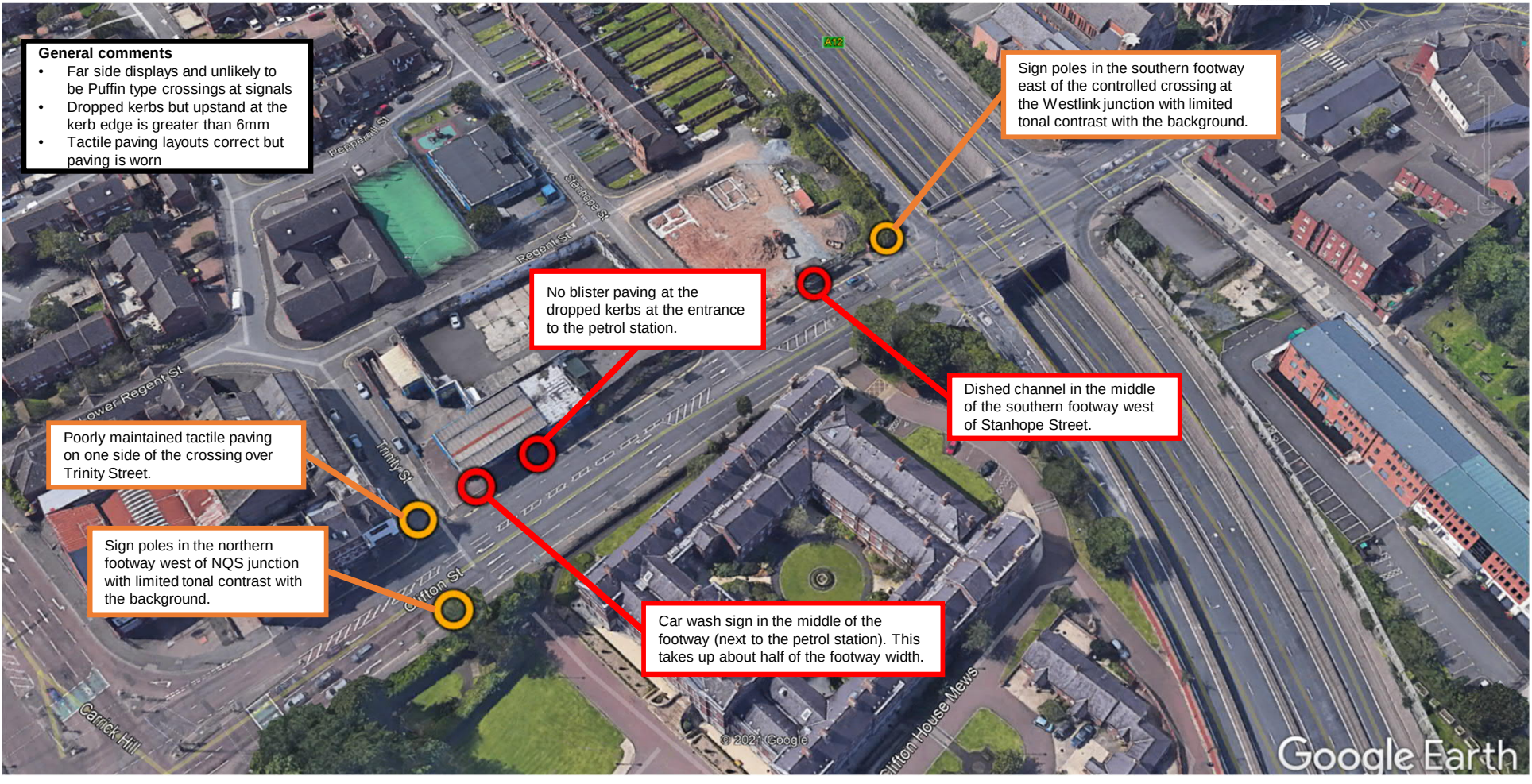
- Footways are fronted by a mixture of residential buildings and businesses on either side of the carriageway;
- Footways connect residential areas to the west of the A12 Westlink towards the City Centre to the east;
- Controlled crossing facilities are provided at the Carrick Hill and A12 Westlink junction, with a mid-block zebra crossing facility provided at Carlisle Circus.

Surface Quality / Obstructions:

- The footway surface is considered poor on either side of the carriageway, with numerous cracks and joints creating an uneven surface.
- Lighting columns are typically located at the back of the footway. However, occasional trees and road signs are located within the centre of the footways and are likely to cause obstruction.

I.4 Mobility Impaired Audit baseline results

Mobility Impaired Assessment – Corridor 9 Clifton St



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