North Tyneside Cycling Design Guide

Specification for Designers
(Final draft for approval)

North Tyneside Council

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Date: June 2023 **Version:** Final draft for approval

North Tyneside Council

Working in partnership with Capita

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1. Introduction

1.1 Intended audience

This document is intended for use by designers for new developments and designers implementing highway improvement schemes within North Tyneside.

1.2 Overview

This document defines the *minimum* specification for cycling facilities in North Tyneside, as well as potential additional requirements as appropriate by the Developer or the Council.

1.3 Document aims and objectives

This document will provide a basis for ensuring that consistent, high quality design and appropriate cycling infrastructure is included for all new developments and highway improvement schemes. Using this design guide should reduce ambiguity and time spent seeking decisions and modifying designs as most scenarios are presented within the document.

1.4 Definitions

The provision of any facilities should cater for everyday cycling. The term 'cyclist' in this document refers to any person who chooses to use a cycle as a mode of transport. This includes children, elderly and inexperienced cyclists, as much as 'commuter' cyclists who tend to be adults that cycle on a regular basis

The term 'cycle' refers to the range of vehicles shown in Chapter 6, including hand cranked cycles and cycles that conform to the Electric Assisted Pedal Cycle Regulations 1983.

The terms 'pedestrian' and 'walking' include people using mobility aids i.e. wheelchairs on the footway and people with physical, sensory or cognitive impairments who are travelling on foot.

The term 'cycle track' is used in this document in its widest sense to describe routes for cycling that are within the highway boundary that are physically separated from motor vehicles and pedestrians.

2. Policy background

2.1 Transport Strategy

The Transport Strategy for North Tyneside sets out the Council's aspirations for transport in the borough. The vision for the Strategy is; "***Moving to a green, healthy, dynamic and thriving North Tyneside***." It sets out five principles which are key to achieving this:

I. **Reduce carbon emissions from transport;** commitment to publish an action plan of the steps it will take and the national investment it will seek to make North Tyneside carbon net-zero by 2030.

II. **Improve health outcomes;** this relates to people, communities and the local environment.

III. **Support inclusive economic growth;** through effective movement for people, businesses and goods and to support the regional aim of "more and better jobs"

IV. **Improve connectivity;** with all parts of the borough, the region, the rest of the country and the world

V. **Manage demand and enable smart choices for all;** help people, businesses and visitors find out how to get to where they need to on transport networks, assets and address current and future transport challenges.

In July 2019 North Tyneside Council declared a Climate Emergency. The Our North Tyneside Council Plan 2021-25 has the stated ambition that "We will publish an action plan of the steps we will take and the national investment we will seek to make North Tyneside carbon net-zero by 2030."

2.2 Key contacts

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North Tyneside Council
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Cobalt Business Park
The Silverlink North
NE27 0BY

3. Principles of designing for cycling

There are a number of principles for cycling that designers must appreciate when providing cycling infrastructure. LTN1/20 states that the '*Networks and routes should be* ***Coherent; Direct; Safe; Comfortable*** *and* ***Attractive****.'* North Tyneside Council have adopted the principles below, adapted from Making Space for Cycling, which was written by Cambridge Cycling Campaign in 2014:

1. People need protected space for cycling

   Mixing with traffic generally puts people off cycling. Appropriate infrastructure, away from traffic, can make cycling convenient and sociable

2. People like simple, direct routes

   Simple, direct routes help a cyclist maintain momentum. Direct routes are always shorter and wayfinding is easier.

3. People prefer cycling away from pedestrians

   Shared use spaces are rarely a suitable form of cycling infrastructure except where pedestrian flows are very low. Shared spaces are generally considered inconvenient to cyclists as they are slow and can be a poor use of highway space. Shared use routes are also poorly perceived by pedestrians as they can become the vulnerable user in an area they would normally feel safe.

4. People want to maintain momentum

   Stop-start cycling is hard work. For this reason, cycling infrastructure provided must allow for continuous movement wherever possible. Cycle tracks must not give way at every side road and driveway. All cycling infrastructure should avoid tight corners and must aim for a smooth movement.

5. People want to be visible

   Cycling infrastructure should be designed to allow people to see each other regardless of what type of vehicle they are using.

6. People like level surfaces

   A route with constantly varying heights requires more effort to ride and is less comfortable. Ideally, off road cycle tracks should not change height at driveways and junctions.

7. People want unobstructed routes

Street furniture, such as signposts, lamp columns etc. must not be located within the cycle route. These obstructions cause constrictions along the route.

8. People want to cycle away from parked cars

Safely overtaking parked cars can be problematic for cyclists. Car doors, reverse parking and pinch points on the carriageway can all cause problems for cyclists. Car parking off street or offset from the main carriageway helps to avoid blocking a cycle route.

9. People need somewhere to park their cycle

Good quality cycle parking is essential for the start and end of the journey. This means providing secure stands near the entrance to a building, on streets and at interchanges.

10. People want well maintained infrastructure

Cycling infrastructure must be designed to facilitate easy maintenance, to avoid overgrown vegetation and enable winter treatment.

11. People want to commute to work

The UK has seen an increase in the number of people choosing to cycle to their place of work. In England, around 4% of commuting trips are cycled each year (NTS0409).

4. Planning for cycling

4.1 North Tyneside's network

North Tyneside has a well-established network of existing cycling and walking routes. Free plans of these routes can be obtained via North Tyneside Council's website.

In 2017 the Government published its first Cycling and Walking Investment Strategy (CWIS) of which Local Cycling and Walking Infrastructure Plans (LCWIP) are identified as a strategic approach to identifying cycling and walking improvements. Subject to topographical constraints the Authority is aiming to create a densely spaced network with a typical grid of 250m to 400m based on the density of the land use. This should enable easy travel between neighbourhoods and provide connections to the wider cycle network.

North Tyneside Council developed a Cycle Tube Map in 2018 for the borough that identified the strategic routes where the introduction of cycling and walking improvements would be prioritised, subject to funding. These routes have been audited in line with LCWIP and as such, the Authority has an understanding of the level of infrastructure that is achievable on the network.

A copy of the Cycle Tube Map can be found in Appendix A.

North Tyneside Council may request the developer to provide links from their site to existing cycling routes if they are located close to a strategic route shown on the Tube Map. Alternatively, the Authority may request a commuted sum to fund the installation of cycle provision off their site which will help provide infrastructure in line with the 250m to 400m grid as referenced earlier. The Authority's Transport and Highways Supplementary Planning Document provides further information on the expectation from developers.

5. Integrating cycling within highway improvements and new developments

5.1 Planning the network

Manual for Streets provides guidance on the planning of highway networks within new developments, ensuring they are connected to their surroundings through a choice of routes. LTN1/20 states cycling facilities should be regarded as an essential component of the site access and any off-site improvements that are necessary.

North Tyneside Council would expect the developer to consider cycling facilities in all applications. However, within larger sites it would be important to develop a network of routes that connect all parts of the development, with the aim of a densely spaced network with a distance of around 250m between cycle routes. The cycle networks would be expected to consist of the elements covered in this design guide;

- Route infrastructure (Chapter 8)
- Quiet mixed traffic streets (Chapter 9)
- Motor free traffic routes (Chapter 10)
- Junctions and crossings (Chapter 11)
- Cycle parking (Chapter 12)

The proposed infrastructure would be expected to meet the 5 core principles as set out in LTN1/20 and the 11 principles adapted from Making Space for Cycling as covered in Chapter 3.

5.2 Designing the network

The design of the highway layout within the new development should adhere to the guidance provided in this document. Typically, there are fewer constraints preventing designers from meeting the geometric requirements so North Tyneside Council expect that high quality cycle facilities should be provided in all new developments. The Authority would also be supportive of provision that would promote multi modal journeys, such as direct links from residential areas to Metro stations.

Figure 1 and Figure 2 show the measures North Tyneside Council would expect to see on a typical residential and typical commercial development.

North Tyneside Council would expect any cycling infrastructure installed on its network to include suitable connections to existing routes or appropriate transitions to allow cyclists to continue their journey on carriageway.

Figure 1 - Typical layout of a residential estate

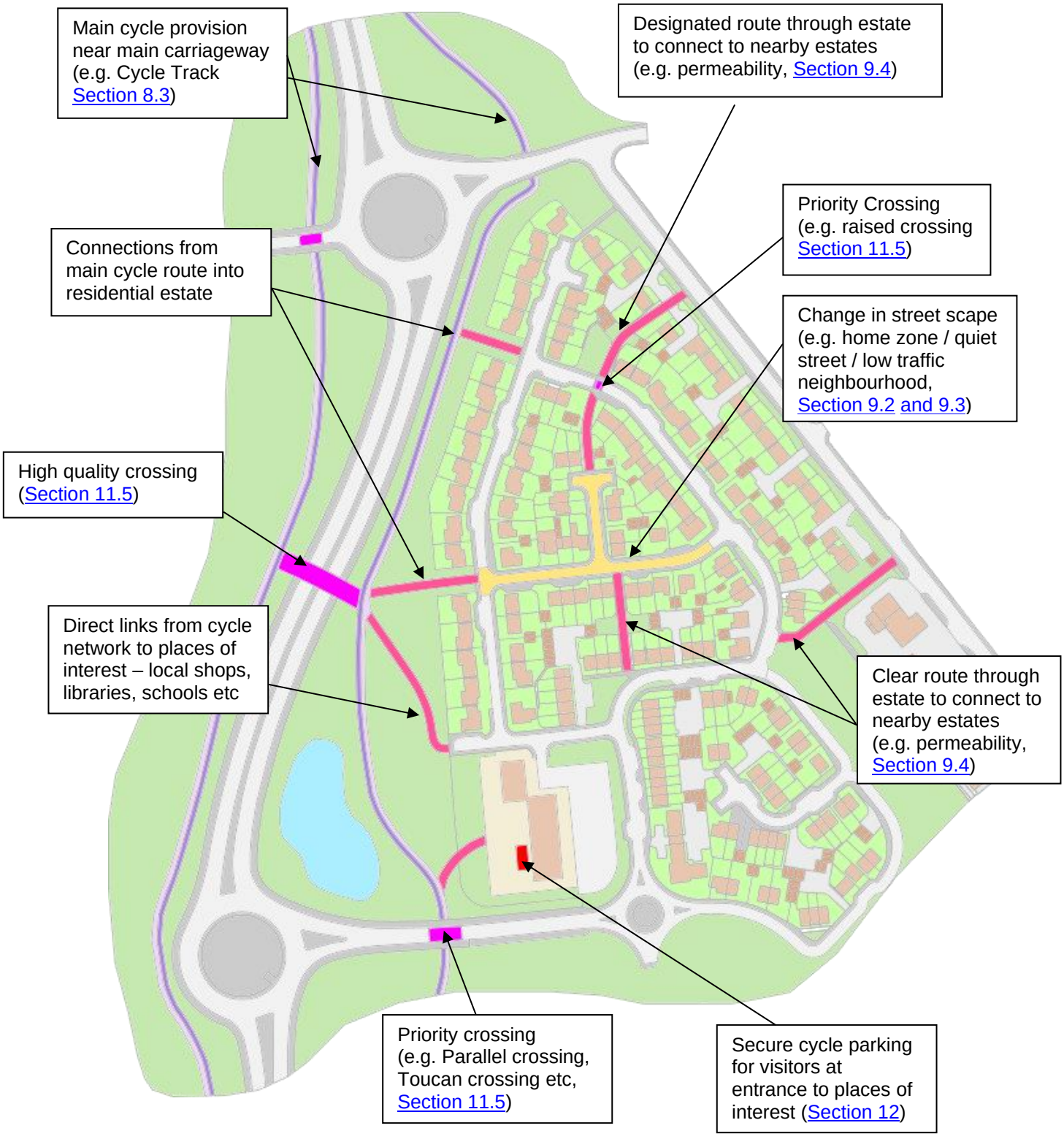
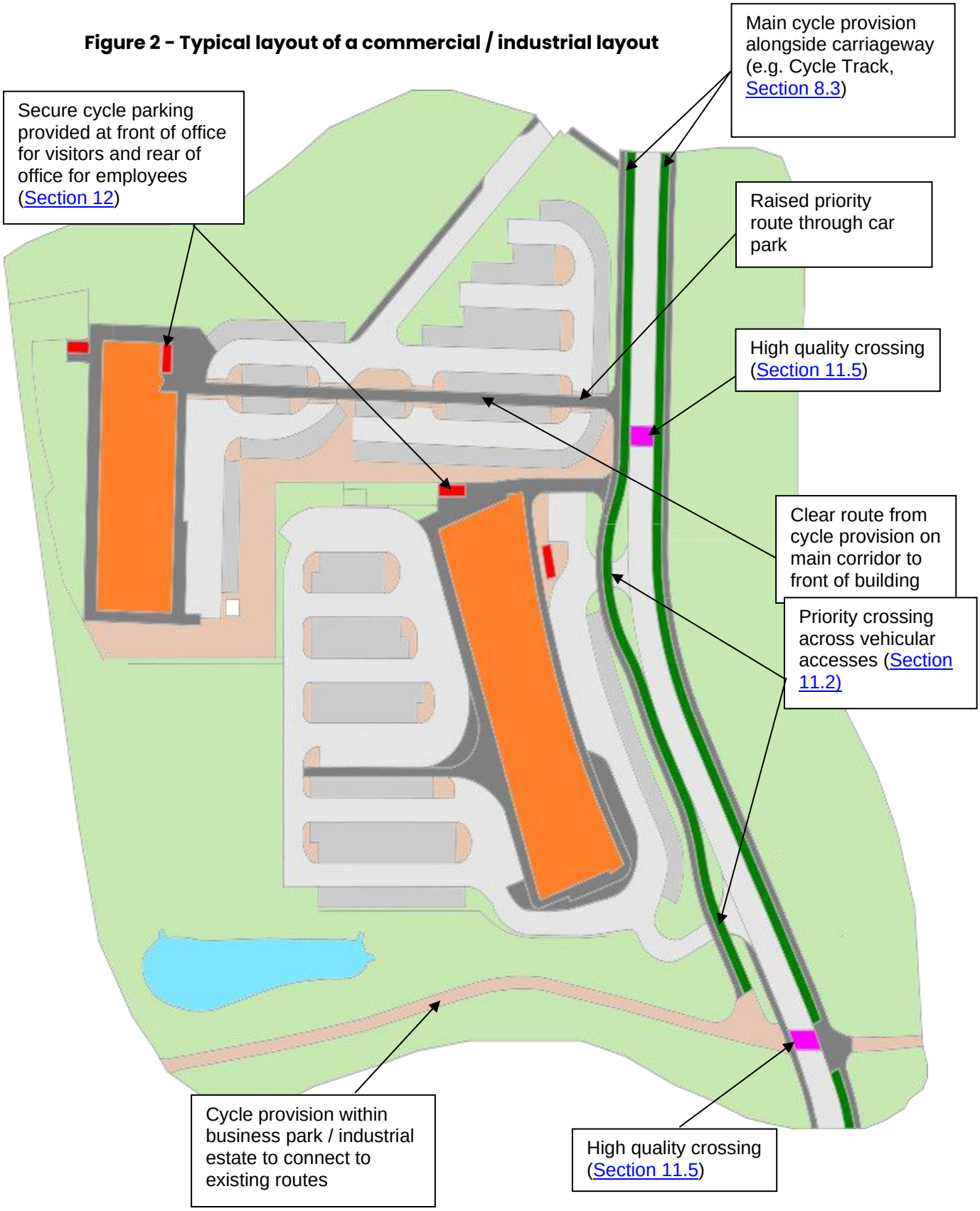


Figure 2 - Typical layout of a commercial / industrial layout



6. Geometric requirements

6.1 Introduction

Developers are encouraged to familiarise themselves with the Department for Transport's LTN1/20 when considering the geometric requirements required for cycling provision. North Tyneside Council would expect all infrastructure to conform to this guidance. However, the sections covered in this document are considered key by North Tyneside.

6.2 Cyclists width requirements

Clear space is essential for cyclists to feel safe when travelling. The space needed for a cyclist to feel safe depends on the cyclist's dynamic envelope, the clearance when passing fixed objects and the distance and speed of other traffic. The topography of the site must be considered when designing cycling infrastructure. For example, when a cyclist is travelling uphill, they will sway more than travelling on flat ground. In these instances, the width of the cycling infrastructure must be increased to provide the safe width. LTN1/20 states that a cyclist will have a minimum typical space profile of around 1m. Cyclists travelling side by side or passing each other will require the minimum 1m each plus an additional 0.5m separation.

6.3 Headroom

Suitable headroom afforded to cyclists is essential when they are expected to travel beneath a sign or structure. At locations where signs overhang a cycle route, the recommended minimum mounting height in the Traffic Signs Manual is 2.3m. Cyclists require a minimum of 2.4m headroom at underbridges / subways. LTN1/20 recommends this is increased to 2.7m in instances where the underbridge is longer that 23m in order to allow more natural light.

6.4 Dimensions and types of cycles

Designers would be expected to consider a range of cycles within their layout to ensure the infrastructure is suitable for all users. The design, width and length of a bike has an impact on its turning circle.

Electric assisted pedal bikes, also known as e-bikes, are becoming increasingly popular in the UK. E-bikes offer users assistance in tackling steeper gradients

through the use of a motor with a maximum output of 15.5mph. Whilst e-bikes are comfortable using infrastructure at speed, they are generally heavier than ordinary cycles and can be difficult to handle at low speeds and when stationary. However, in design terms they are considered to be pedal cycles and can use infrastructure designed for cycling.

Figure 3 shows the typical dimensions of cycles.

Figure 3 - Typical forms of cycles and their dimensions (LTN1/20)

6.5 Cycle lane and track widths

The widths for cycling provision shown in Table 1 is North Tyneside's recommended absolute and desirable minimum widths for its infrastructure. It mirrors the widths as specified in LTN1/20. The table also provides information on widths to accommodate higher cycle flows.

The absolute minimum would only be considered at locations where there are physical constraints on existing roads. North Tyneside Council would not consider anything other than the desirable minimum width on new routes constructed as part of a new development, and would encourage the developer to futureproof their schemes.

In instances where site-specific constraints make it difficult to achieve the desirable design characteristics, the designer is encouraged to explore alternative means of achieving consistent and continuous cycle facilities along the route. Such interventions could include (but are not limited to):

- Remove or relocate parking and loading bays
- Inset bus stops
- Make links one-way
- Alter or narrow footway configurations as appropriate
- Reduce vehicle speeds such that links can be reclassified and require reduced cycling infrastructure
- Consider responding to severe constraints by mixing types of provision along a route, such as using short sections of shared use to connect two sections of a segregated provision rather than leaving a gap in provision.

In retrofit locations it will not always be possible to achieve the minimum widths set out in Table 1 and there will be a necessity to compromise. North Tyneside Council will consider designs on an individual basis where existing constraints restrict the desired widths or prevent types of infrastructure from being installed in line with this guidance.

Table 1 - Required widths for cycle provision

Cycle Route Type	Direction	Peak hour cycle flow (either one way or two-way depending on cycle route type)	Desirable minimum width (m)	Absolute minimum width at constraints (m)
Protected space for cycling (including light segregation, stepped cycle track, kerbed cycle track)	1 way	<200	2.0	1.5
		200-800	2.2	2.0
		>800	2.5	2.0
	2 way	<300	3.0	2.0
		300-1000	3.0	2.5
		>1000	4.0	3.0
Cycle Lane	1 way	All – cyclists able to overtake on carriageway	2.0	1.5

Table 1 provides the desired widths of cycle infrastructure where no edge constraints are present, such as boundary walls, barriers. Additional widths in line with Table 2 should be added to the proposed design to ensure the cycle provision is an appropriate effective width for users.

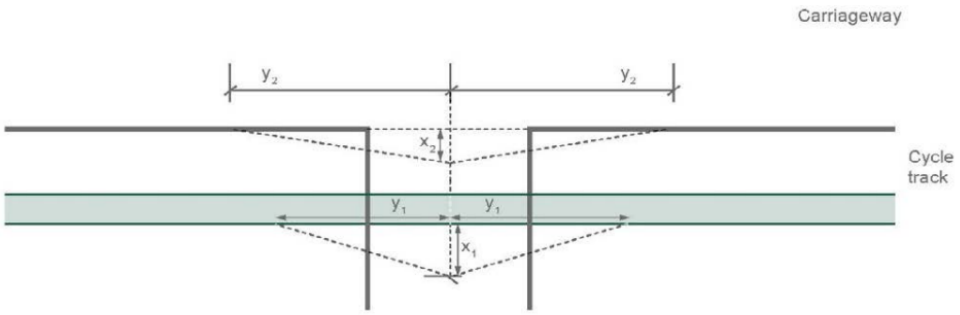
Table 2 - Additional widths required to maintain effective width

Type of edge constraint	Additional width required to maintain effective width of cycle track (mm)
Flush or near flush surface including low and splayed kerbs up to 60mm high	No additional width needed
Kerbs 61mm to 150mm high	200
Vertical feature from 151mm to 600mm high	250
Vertical feature above 600mm high	500

6.6 Visibility splays

Visibility is a key factor which should be considered when designing all types of junctions. Visibility splays are defined by their X and Y distances, Figure 4, taken from LTN1/20 shows the basic layout.

Figure 4 - Visibility splays (LTN1/20)



Manual for Streets recommends an X distance of 2.4m, which allows one car at a time to check along the main alignment before exiting the minor arm. On cycle tracks a longer X distance is preferred as they reduce the stop/start effort and may enhance safety. The desirable minimum 'x' distance according to LTN1/20 is 4.5m.

6.7 Horizontal alignment

High quality horizontal alignment would be expected on cycling provision within new developments. The routes should not be diverted away from the desire line, disjointed or include obstacles. Changes to the alignment should be in simple curves designed to accommodate different types of cycle along with the anticipated design speed. Well designed routes will allow cyclists to maintain momentum.

Appropriate forward visibility in line with Manual for Streets 2 should also be considered when designing the horizontal alignment. Designers should not position fences, walls, trees etc close to bends on cycle routes as this will likely impact the visibility splay.

Table 3 shows the minimum horizontal radii taken from LTN1/20 that would be expected on cycle tracks within North Tyneside.

Table 3 - Horizonal radii for cycle tracks

Design speed (kph)	Minimum horizontal radius (m)
40	40
30	25
20	15
10	4

6.8 Crossfall and camber

Cycle tracks can be created with either a crossfall or camber subject to their surrounding environment to keep them clear of standing surface water. The required gradient for all cycle tracks should not exceed 2.5% as it could have an impact on grip in icy conditions.

7. Level of provision

Speed Limit[1]	Motor Traffic Flow (pcu/24 hour)[2]	Protected Space for Cycling			Cycle Lane (mandatory/ advisory)	Mixed Traffic
		Fully Kerbed Cycle Track	Stepped Cycle Track	Light Segregation		
20 mph[3]	0					
	2000					
	4000					
	6000+					
30 mph	0					
	2000					
	4000					
	6000+					
40 mph	Any					
50+ mph	Any					

Provision suitable for most people

Provision not suitable for all people and will exclude some potential uses and/or have safety concerns

Provision not suitable for all people and will exclude most potential uses and/or have safety concerns

Speed Limit	Total traffic flow to be crossed (pcu)	Maximum number of lanes to be crossed in one movement	Uncontrolled	Cycle Priority	Parallel	Signal	Grade separated
≥60 mph	Any	Any					
40 mph and 50 mph	≥10000	Any					
	6000 to 10000	≥2					
	0-6000	2					
	0-10000	1					
≤30 mph	>8000	>2					
	>8000	2					
	4000 - 8000	2					
	0 - 4000	1					
	0 - 4000	1					

Provision suitable for most people

Provision not suitable for all people and will exclude some potential uses and/or have safety concerns

Provision not suitable for all people and will exclude most potential uses and/or have safety concerns

8. Route infrastructure

8.1 Introduction

This section covers the key principles for provision of cycling infrastructure on busy or high-speed routes. The aim of designers should be to design a cycle route which is segregated from both pedestrians and motorists.

8.2 Road space reallocation and lane widths

Creating space for cycling is likely to require reallocation of road space within the highway boundary. This should be achieved by reducing the width for motorists rather than pedestrians. The UK generally adopted a standard practice of 3.65m lanes in line with the Design Manual for Roads and Bridges, but this should not always be considered the preferred width. Lane widths of between 3.2 and 3.9m allow motor vehicles to drive alongside a cyclist without crossing the centre line, but without any safety margins for the comfort or protection of cyclists. This may lead to close overtaking that may endanger the cyclist and result in prosecution for the motorist. Table 4, in line with LTN1/20 shows preferred lane widths in North Tyneside for urban areas carrying mixed traffic.

Table 4 - Carriageway lane widths

Feature	Desirable Minimum	Absolute Minimum	Notes
Traffic lane (cars only, speed limit 20/30mph)	3.0m	2.75m	2.5m only at offside queuing lanes where there is an adjacent flared lane
Traffic lane (bus route or >8% HGV's or speed limit 40mph)	3.2m	3.0m	Lane widths of between 3.2 and 3.9 are not suitable for cycling in mixed traffic
2-way traffic lane (no centre line) between advisory cycle lanes	5.5m	4.0m	4.0m width only where AADT flow <4000 vehicles and/or peak hour <500 vehicles with minimal HGV/bus traffic

Designers should refer to Table 7.3 of LTN1/20 for widths of other carriageway features such as bus lanes with cyclists or parking bays.

8.3 Cycle Tracks

A cycle track is a section of highway adjacent to, but not on the carriageway, that has been dedicated for use by cyclists. Key design features of a cycle track include;

- Suitable effective width
- Smooth horizontal alignment
- Raised priority junctions

Cycle tracks are the preferred facility for key cycle links in North Tyneside. The reason for this is they provide a safe route for cyclists of all abilities and confidence levels. They also allow for continuous movement with minimal stop/starting procedures for cyclists.

Cycle tracks may be;

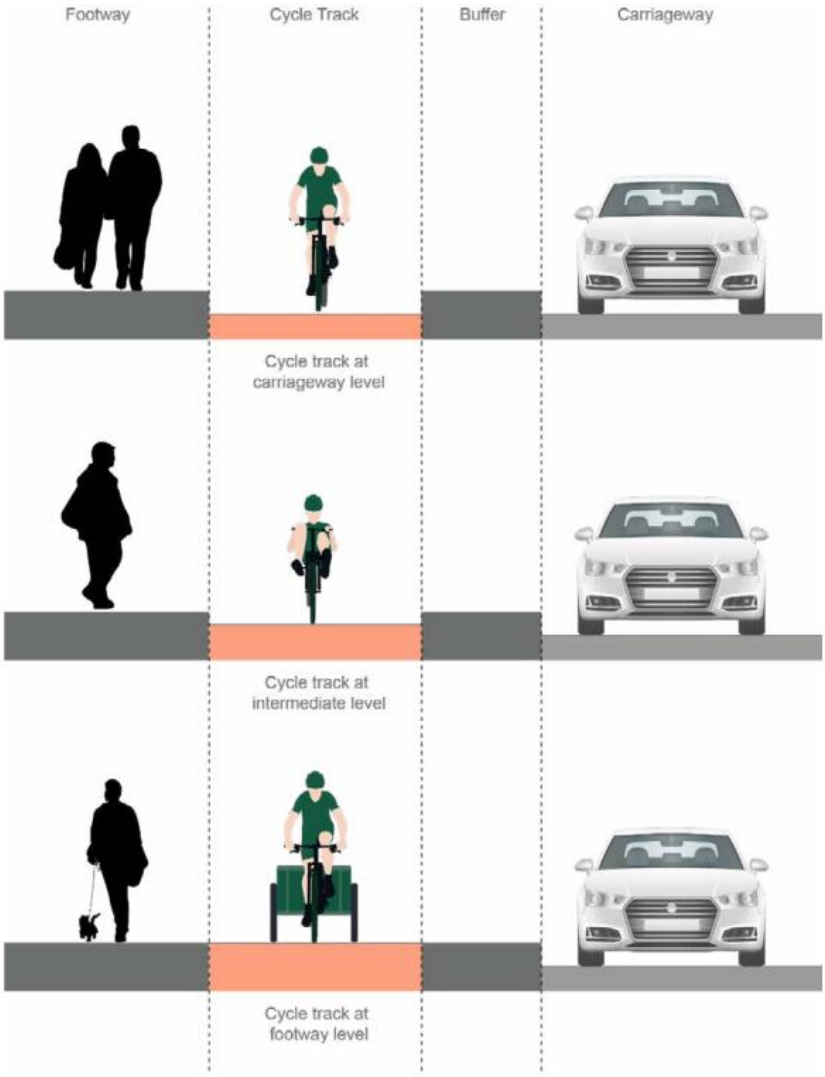
- Fully kerbed cycle tracks – this form of cycle track is protected from motorists through the use of a full height kerb, preferably with a buffer between the cycle track and carriageway; and
- Stepped cycle tracks – this provision is set at an intermediate level between the footway and carriageway, and is protected from motorists through the use of a lower height kerb

8.3.1 Fully kerbed cycle tracks

Fully kerbed cycle tracks may be installed at carriageway level, footway level or at an intermediate height between the two. The choice of the cycle track will depend on the surrounding topography, functionality, and aesthetics.

Figure 5 shows a cross section of the cycle track options with full kerb separation from the carriageway and footway.

Figure 5 - Cycle track cross section (LTN 1/20)



Cycle tracks should generally be provided on both sides of the road, this will prevent the need for the provision of suitable crossing points at numerous locations along the route. The inclusion of a buffer zone adjacent to the cycle track offers safety for cyclists using the provision and can positively contribute to the streetscape. A buffer also allows for other infrastructure to be accommodated such as bus boarders or as a waiting area for pedestrians to cross. Table 5 shows the minimum horizontal separation widths as set out in LTN1/20.

Table 5 - Horizonal separation based on speed limit

Speed Limit (mph)	Desirable minimum horizontal separation (m)	Absolute minimum horizontal separation (m)
30	0.5	0
40	1.0	0.5
50	2.0	1.5
60	2.5	2.0
70	3.5	3.0

Two-way cycle tracks on one side of a road can be considered an appropriate measure in some locations. For example, where a large number of side streets or high levels of pedestrian activity are present on one side of the road. They also offer the advantage of taking up less space within the highway boundary when compared with one way cycle tracks. However, there are design issues which should be considered, such as crossing facilities, where trip generators are located on both sides of the road.

8.3.2 Stepped cycle tracks

Stepped cycle tracks consist of a terraced approach from the cycle track to the carriageway. They are normally one way in the same direction of flow as the adjacent traffic lane. Key design features of this form of cycle infrastructure include;

- Vertical separation from the footway and main carriageway to provide greater protection than a cycle lane
- Cycle priority at side roads and vehicle accesses
- Bus stop bypasses on bus routes

Parking demands should be considered when implementing a stepped cycle track. Due to lower levels of the cycle track motorists can often use it as a parking area. Therefore, appropriate restrictions or raised buffer zones should be provided to prevent parking and protect cyclists

8.3.3 Pedestrian crossings on cycle tracks

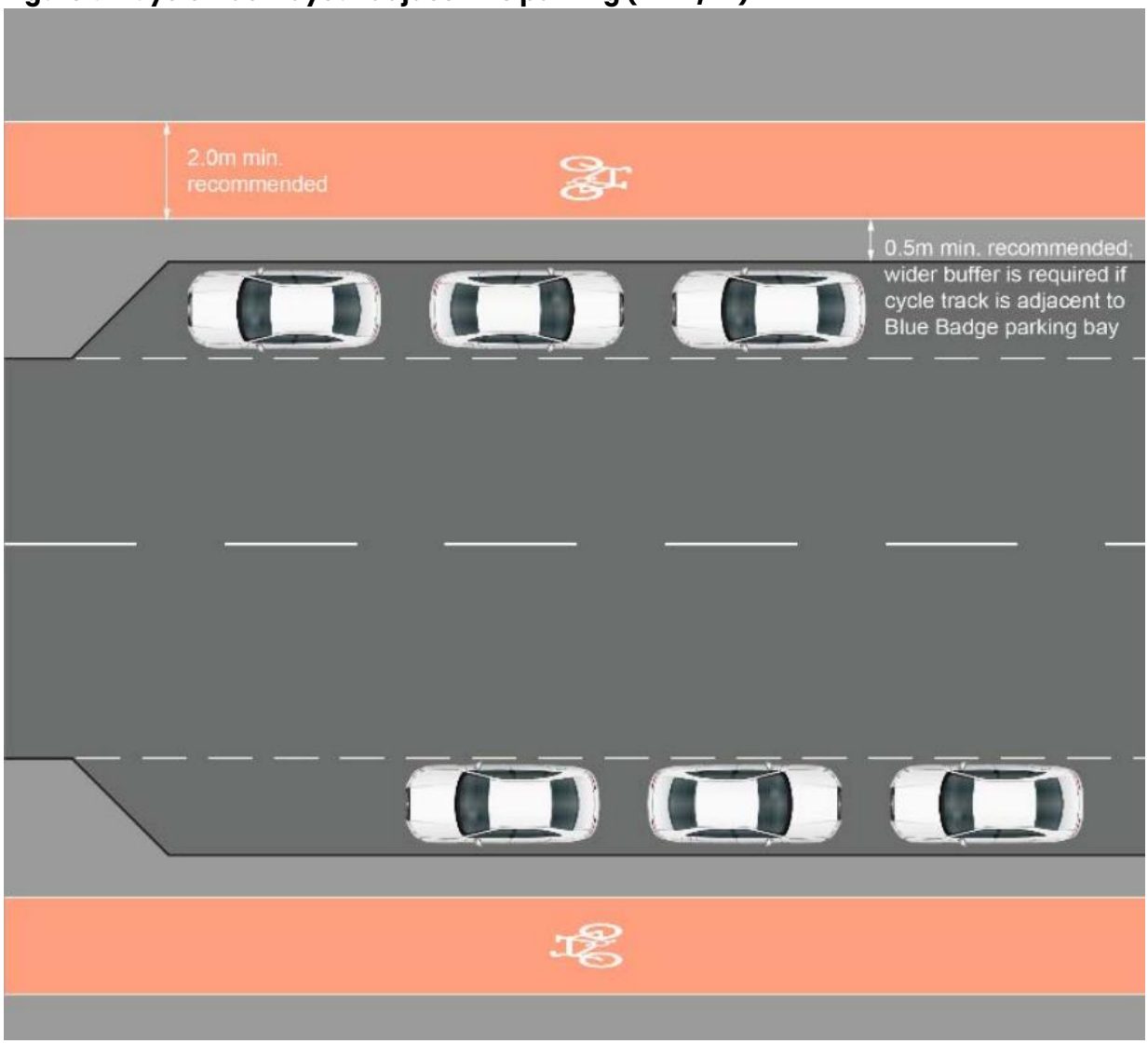
The cycle track design should allow pedestrians the opportunity to cross with priority at busy locations such as junctions or bus stops. Formal crossings are recommended for use on all two way cycle tracks and busy one way cycle tracks. The recommended formal crossing type in North Tyneside is a zebra crossing. If there is a level difference between the footway and cycle track then the cycle track should be raised to the footway level for the extents of the crossing point to slow cyclists on the approach to the crossing. The zig zag markings typically associated with zebra crossings can be omitted on cycle tracks.

8.3.4 Parking adjacent to cycle tracks

Cycle tracks located between parked vehicles and the footway provide a greater level of comfort and safety for cyclists in comparison with cycle lanes on the offside of the parked vehicles.

Kerbed island separation or light segregation that provides a buffer zone of 0.5m between cyclists and parked vehicles is recommended to reduce the risk of collisions between car doors and cyclists. A clear level width of 2.0m is recommended in areas where cycle tracks pass parked vehicles to allow sufficient space for cyclists to negotiate past motorists loading/unloading their vehicles. Figure 6 shows the recommended layout when cycle tracks interact with parked vehicles.

Figure 6 - Cycle track layout adjacent to parking (LTN 1/20)



8.4 Light segregation

Where on-carriageway routes have been identified as the preferred solution, designers are expected to consider options which provide additional protection between the cycle lane and general traffic lane in order to provide better separation. The types of light segregation can include;

- Wands,
- Armadillos,
- Orcas,
- Hatch / chevron markings

Light segregation is generally used to support mandatory cycle lanes for one way cycling but can be used to protect two way cycle facilities. The relatively low cost of light segregation means that it can be considered a beneficial addition to mandatory cycle lanes that offer greater protection to the cyclist.

In accordance with Table 1, it is recommended that cycle lanes with light segregation are a minimum width of 2.0m to provide sufficient effective width to allow overtaking within the confines of the cycle lane.

Low level segregation is not recommended in areas where pedestrians may cross the carriageway as this presents a trip hazard. A run of low level features should begin with a vertical feature to alert road users of their presence. Vertical features should be repeated where a break in provision is required for side road and major junctions.

8.5 Cycle Lanes

Cycle lanes can be either mandatory or advisory. Mandatory cycle lanes exclude other traffic from using them at all times. Advisory cycle lanes signify an area of carriageway that other vehicles should not enter unless it is safe to do so. Where mandatory cycle lanes pass side road junctions, they should be replaced with short sections of advisory cycle lane to achieve continuity. This would also highlight the presence of cyclists on the main route for motorists negotiating the side road junction.

Cycle lanes should be considered only for carriageways where motorised traffic volumes and traffic speeds are low. As covered in Section 6, cycle lanes should be

2.0m wide but may be reduced to 1.5m where constraints are present. Cycle lanes should not be installed less than 1.5m wide as they would not suitably accommodate all ranges of cycles and could encourage close passing by motorists.

Cycle lanes can conflict with nearside kerb activities such as parking, loading and bus stops. Designers would be expected to minimise interactions with these activities through the use of bus stop bypasses and inset parking facilities.

Cycle lanes cannot be used with zig zag markings at controlled crossings but the zig zags can be offset up to 2m to from the kerb to maintain the space for cyclists.

8.6 Shared use

Shared use is the term used to describe a route that is shared between pedestrians and cyclists. Shared use can be either segregated or unsegregated through the use of a continuous white line marking. The use of white line markings is generally not well adhered to and pedestrians crossing the line could encounter a greater conflict by walking or crossing on the cycle side.

North Tyneside Council regard shared use facilities as the lowest form of provision in the hierarchy of cycling infrastructure and would only allow for it to be provided in limited circumstances. If designed well shared use provision may be appropriate in the following situations;

- Alongside interurban and arterial roads where there are few pedestrians
- At and around junctions where cyclists are generally moving at slow speed, including junctions with crossing facilities
- In situations where a length of shared use may be acceptable to achieve continuity of a cycle route and;
- At situations where pedestrian and cycle flows occur at different times

Table 6 shows the expected widths for shared use provision. Where possible greater widths should be used to reduce conflict.

Table 6 - Width for shared use provision

Cycle Flows	Minimum width
Up to 300 cyclists per hour	3.0m
Over 300 cyclists per hour	4.5m

8.7 Cycling on bus routes

8.7.1 Bus lanes

Cyclists are usually permitted to use with flow and contraflow bus lanes. Although this is not a cycle specific form of infrastructure, bus lanes can offer some segregation for cyclists as they reduce the amount of interaction that a cyclist would have with general motor traffic. North Tyneside Council would expect bus lanes to accommodate cycling but may also request adjacent off-road provision subject to location. Whilst it is accepted that bus lanes will reduce interactions, they may still not be inclusive for all cyclists as they will still be required to interact with buses.

The minimum accepted width for a bus lane would be 4m, with a preferred width of 4.5m. This will allow buses to pass a cyclist with sufficient room. Bus lanes less than 4m wide will not be authorised within North Tyneside as this will encourage close overtaking or require a bus to leave the lane when overtaking a cyclist.

8.7.2 Bus gates

Bus gates are used to control routes and access to bus only areas. As with all access controls, cyclists would be expected to be exempt from the restriction.

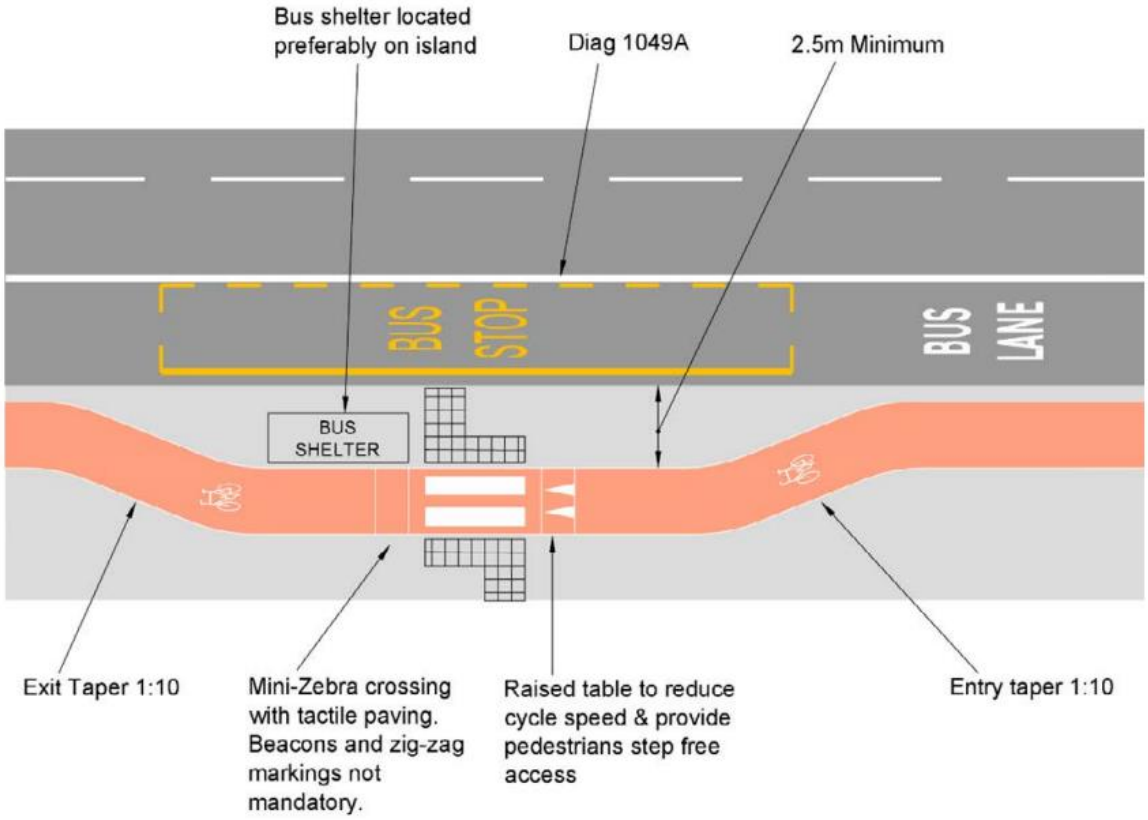
8.7.3 Bus stop bypass

Bus stops will often appear on strategic routes where the provision of cycle tracks are regarded as necessary. At these locations a bus stop bypass must be provided.

A bus stop bypass takes a cycle track which is usually adjacent to a kerb on the approach to a bus stop, and routes it behind the bus stop; removing the need for cyclists to pass a stopped bus on the main carriageway. After the bus stop, the bypass either continues on to a cycle track or merges cyclists back into to the main carriageway.

The island for the bus boarder should be wide enough to accommodate the shelter as well as people waiting for a bus. The minimum recommended width for the island would be 2.5m. In instances where the cycle speeds and or volumes are anticipated to be high then the provision of a controlled crossing point will be required between the bus boarder and footpath.

Figure 7 - Bus stop bypass layout (LTN 1/20)



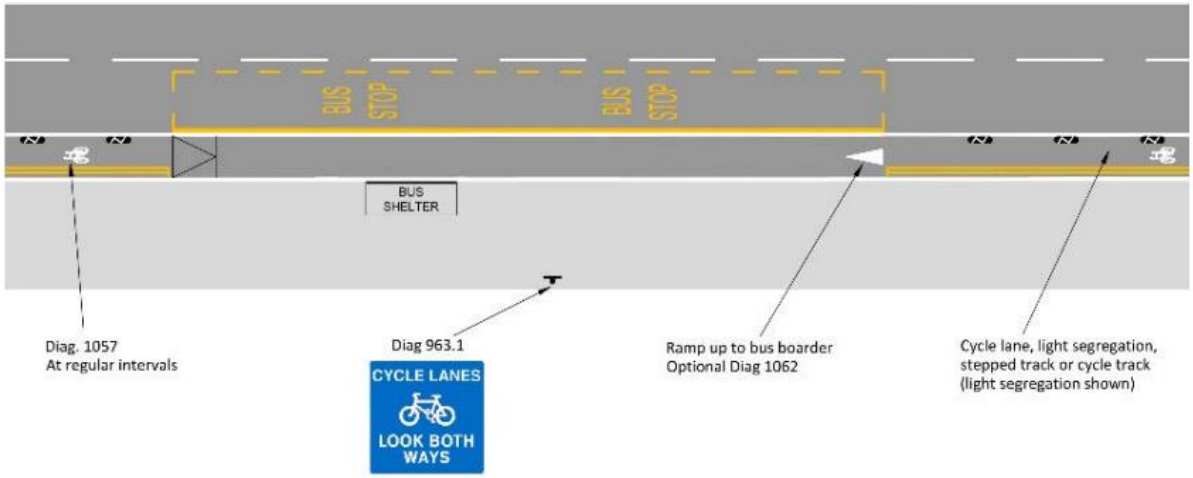
8.7.4 Bus stop boarder

It is also possible to route a cycle track between the bus boarder and the shelter. This is often done to create a smoother route alignment or where site constraints make it difficult to place the bus shelter within the boarder.

In order to implement a bus boarder it is necessary to introduce a shared area in the vicinity of the bus stop. The introduction of a shared area directly at the point people board and alight a bus does increase the potential for conflict. Therefore this layout is best suited to locations where bus services are less frequent and there are lower pedestrian volumes.

Good intervisibility is required between pedestrians waiting for a service and cyclists. it is recommended that an area for pedestrians crossing the track is clearly defined. This could be achieved through the use of paving.

Figure 8 - Bus boarder layout (LTN 1/20)



8.8 Transitions

A transition area is where a cycle track joins or leaves a carriageway. Designs should be carefully considered to minimise the risk of conflict between cyclists and motor vehicles. Where cycle tracks rejoin carriageways, the transition should be designed to minimise the risk of conflict whist not inconveniencing on-carriageway cyclists.

Tramline (cycle side) and ladder (pedestrian side) tactile paving is essential where a cycle track is flush with the footway. This will reduce the likelihood of pedestrians inadvertently walking into the cycle track.

Cyclists leaving the carriageway can be at risk of losing control if the design of the transition isn't suitable. Dropped crossings are often installed leaving an upstand meaning cyclists have to make a sharp turn to negotiate the transition.

The desired transition style on new carriageway transitions will be through the implementation of a build out perpendicular to the carriageway alignment with a short section of mandatory cycle lane or taper markings. The build out may need a bollard to increase conspicuity. Transitions between cycle tracks and the carriageway should not include a kerb and would be expected to be via a continuous surface course.

It is accepted that there is not always highway space on existing carriageways to implement a buildout. Where the carriageway cannot be widened to create a buildout for a smooth transition, dropped kerbs may be used with an arrow marking on the carriageway. In these instances, it would be expected that the dropped crossing is installed flush with the carriageway, or with a 6mm check at locations where ponding is likely to occur.

Road gullies must not be located within the extents of a dropped crossing. At locations where the transition is near or on an approach to a pedestrian crossing point, a separate dropped crossing must be provided.

9. Quiet mixed traffic streets

9.1 Street Design

Street design is key to making cyclists feel comfortable on roads with no specific cycling infrastructure. Speed reducing measures are a major contributory factor to help achieve the feeling of comfort. Lower vehicle speeds are known to reduce the likelihood of an accident but will also reduce the severity of an accident, should one occur.

Developers would be expected to design their new developments to conform to a 20mph speed limit. The speed limit must be self-enforcing through its design or via the implementation of speed reduction measures. Carefully designed horizontal alignment is the preferred form of self-enforcement. This can be achieved by avoiding long straight sections of carriageway which encourages higher motor vehicle speeds.

Specific information on speed reducing measures can be found in Local Transport Note 1/07 and in the Department for Transport's Traffic Advisory Leaflets on traffic calming. When investigating the use of appropriate traffic calming measures it is important that designers consider cyclists and take particular care so that they are not disadvantaged by their use. Further information on traffic calming design is covered in this section.

9.2 Home zones and quiet streets

A home zone will generally include a combination of the following features:

- gateway features
- a level surface
- indirect routes for traffic
- junction priorities removed
- areas of planting
- seats or play equipment
- appropriate signage

Quiet Streets are residential streets that give priority to people over vehicles. Quiet streets are based on a change in the way that people perceive the street. Motorists should feel that they have left the normal highway and entered an area where they

can expect to find people who are using the whole of the street. It is the only form of street where no dedicated cycling infrastructure may be acceptable.

Quiet streets have similar design principles to Home Zones where the whole space is the same level and vehicular routes are highlighted through a contrast in materials. Gateways should be provided on all entrances to home zones and quiet streets. This can be achieved by the use of signs and road narrowing. Planters are a common feature used at gateway entrances as they both narrow the carriageway whilst providing the change in street scape required for home zones and quiet streets to work.

Home zones and quiet streets would be expected within large new developments, so that they are permeable and accessible to pedestrians, cyclists and local traffic.

9.3 Low Traffic Neighbourhoods

Low Traffic Neighbourhoods are residential areas which have been designed to reduce the volume of motor vehicles and remove through traffic. Well-designed Low Traffic Neighbourhoods still allow motorised access to residential properties but eliminate the ability for 'rat running'.

The implementation of Low Traffic Neighbourhoods offers numerous benefits to residents within the area of the scheme. Through the reduction of motor traffic, the area will likely see a reduction of air pollution which links with the Authority's ambition to make North Tyneside carbon net-zero by 2030. The reduced number of motor vehicles will also lower the risk of road traffic collisions within residential areas.

Sustrans guide[1] on Low Traffic Neighbourhoods highlights the following benefits that can be realised when implemented effectively.

- Increased physical activity through more walking and cycling
- Benefits to local businesses through increased sales and high spend in people who walk or cycle to a high street
- Creation of new public space
- Improved air quality
- Reduced car use for shorter trips
- Increased social interactions between neighbours and strengthened communities

[1] https://www.sustrans.org.uk/our-blog/get-active/2020/in-your-community/what-is-a-low-traffic-neighbourhood

Measures which can be introduced within Low Traffic Neighbourhoods include;

- Road closures
- Pocket parks
- Modal filters
- Diagonal filters
- Banned turns
- One way streets

The measures listed above prevent motor traffic from flowing freely through an estate but still allow cyclists to move continue their journey unhindered by restrictions. Low Traffic Neighbourhoods must be considered where home zones and quiet streets are not feasible to allow cyclists to continue their journey.

9.4 Filtered permeability

Filtered permeability provides an advantage to cycling and walking by exempting them from access restrictions applied to motorised traffic; or through the creation of short connections only available to cyclists and pedestrians

Where home zones, quiet streets or a continuous cycle track though a development have not been provided, link paths would be expected at the end of cul-de-sacs in order to connect residential streets and provide a continuous link through the development for pedestrians and cyclists.

Figure 9 shows the typical detail for a link path connecting streets. The local Authority's preferred connection would be a segregated cycle track with a level difference between the cyclists and pedestrians.

However, at a minimum, it is recommended that the path is 3m wide for shared use with a 1m grass strip between the path and each boundary fence. This will create a feeling of safety for users of the path. The provision of street lighting will further enhance the link.

Figure 9 - Typical detail for 5m wide link path between streets

Entry treatments are another feature which would be expected to be considered within the design of new developments. Entry treatments should encourage slow speeds in the area via the installation of tighter radii or raised tables. These items are covered in more detail in Section 11 of this document.

9.5 Traffic calming

Physical traffic calming measures can sometimes cause a problem for cyclists. Generally, road humps tend to reduce cyclist comfort whereas buildouts and chicanes are more likely to introduce cycling hazards such as directing cyclists into the path of motor vehicles.

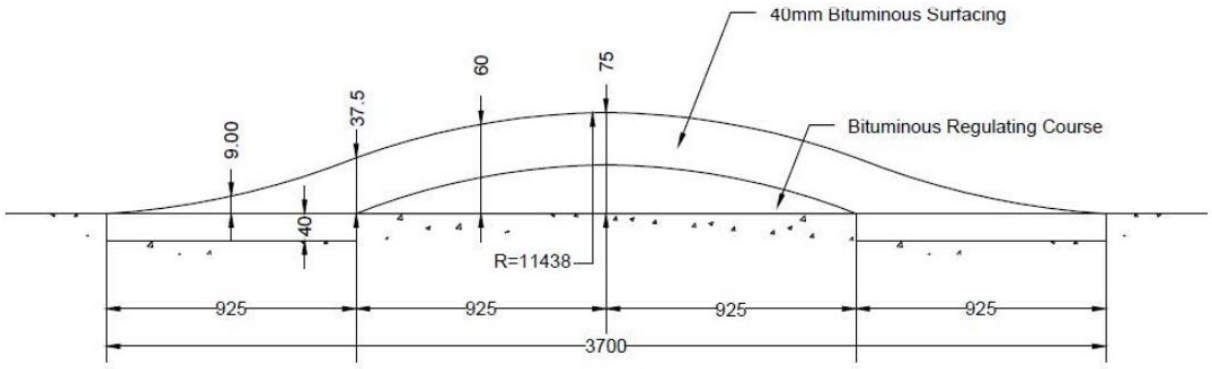
Cycling should always be considered when traffic calming is being installed within a development. North Tyneside Council expect cycle bypasses to be installed at locations where traffic calming is necessary. LTN 1/20 advises that cycle bypasses, should be at least 1.5m wide without any sudden changes in direction. Where debris is likely to collect in the bypass at carriageway level, the alternative solution would be to ramp up the cycle lane across the buildout.

The entry and exit of the bypass should be free from parked cars. Where vehicle parking prevents access, consideration must be given to installing physical measures or waiting restrictions in order to prevent obstruction.

Where cycle bypasses cannot be installed due to existing constraints, a gap of 1m will be provided between the edge of the road hump / speed cushion and kerb. This distance may be reduced to 750mm as an absolute minimum when installing

speed cushions in areas where standard distances are difficult to achieve. It is essential that traffic calming is not placed alongside existing drainage such as gullies as they can be hazardous to cyclists.

North Tyneside Council will also consider the installation of sinusoidal road humps within residential areas. Sinusoidal road humps are similar to round top humps but have a shallower initial rise. They provide a more comfortable ride for cyclists. Sinusoidal road humps would be expected at locations where cycle bypasses have not been provided. The height of the hump should be 75mm and the length should be 3700mm.



9.6 Centre line removal

Consideration should be given to the removal of centrelines as an option where carriageway widths do not permit the introduction of cycle lanes of adequate width (min 1.5m) whilst retaining two general traffic lanes.

In addition to increasing the width available for cyclists, the technique also has a speed reducing effect. This is because, to a certain extent, the layout operates like a single-track road with passing places. Where the need arises for on-coming motor vehicles to pass each other, this is achieved by both vehicles momentarily pulling over into their respective near-side cycle lanes, having first checked to see they are clear of cyclists.

This technique is only suitable for roads wide enough to accommodate two 1.5m to 2.0m cycle lanes and a central 4.0m general traffic lane (7 to 8m). There should not be significant heavy goods vehicle traffic, and general traffic flows need to be low enough to permit single-lane working. If the road widths exceed 8.0m, the additional space should be used to increase the width of the cycle lanes or introduce a buffer strip between the cycle lanes and any on-street parking bays.

10. Motor traffic free routes

10.1 Introduction

This section provides guidance on traffic free routes away from the carriageway. These include routes through parks, off road NCN routes, public rights of way as well as North Tyneside's waggonways. The section will go into detail on each of the key considerations for the design of motor free traffic routes.

10.2 Access controls

Access controls can reduce the useability of a route for most cyclists and sometimes disabled users. North Tyneside has a general presumption that access control measures which require cyclists to dismount should not be implemented on any motor free traffic routes.

Access control measures should not be required to slow cyclists on the approach to crossings. It would typically be sufficient to provide good sightlines and road markings to ensure cyclists understand the requirement to take care and give way to pedestrians or other traffic.

An alternative method to cycle barriers/ pedestrian guardrail would be to place bollards at 1.5m spacings. This would allow cyclists to negotiate the measure in a straight line, whist still enabling access for mobility scooters. Bollards and signage should be fitted with retroreflective material to ensure they are conspicuous in all conditions.

10.3 Surface materials

The quality of the surface will affect the comfort and effort required when cycling. Loose surfaces such as gravel or mud increase the level of risk of punctures and can lead to loss of control. North Tyneside would prefer smooth, sealed surfaces such as asphalt or macadam as they offer the best conditions for everyday cycling. Cycling routes within the highway should be constructed in line with North Tyneside Council's standards. Routes away from the highway should still be smooth and well maintained to ensure they play a useful role in the cycle network.

Sealed surfaces would be expected in built up urban areas. Crushed stone is considered an acceptable material for the off-highway routes outside of built-up areas. This form of construction is considered a cost effective way to create lengthy off road links.

10.4 Construction Details

Traffic free routes require proper construction of each element to ensure they remain safe and appealing to all users. Information on construction details is covered in Section 14.

11. Junctions and crossings

11.1 Introduction

Junctions are the most common location for road traffic collisions, particularly for cycling related collisions. A well designed junction can reduce the number of decisions to be made by each road user. Providing space for cycling and minimising conflict points can prevent collision blackspots.

There are a variety of types of priority junctions such as T-junctions and cross roads where cyclists will be required to cross as part of their route. The key objective at these locations is to control traffic movements and speed. It would be expected that cyclists have priority over vehicles at junctions and vehicle accesses along a route. Key items to consider in making side roads more understandable for motorists and cyclists are covered below.

In line with North Tyneside Council's Transport and Highways Supplementary Planning Document, the minimum radius that should be used on all priority junctions within residential estates would be 6m. This minimum radius increases to 10m on industrial estates to accommodate HGV movements. This figure may be reduced where appropriate subject to agreement from North Tyneside Council.

11.2 Priority junctions

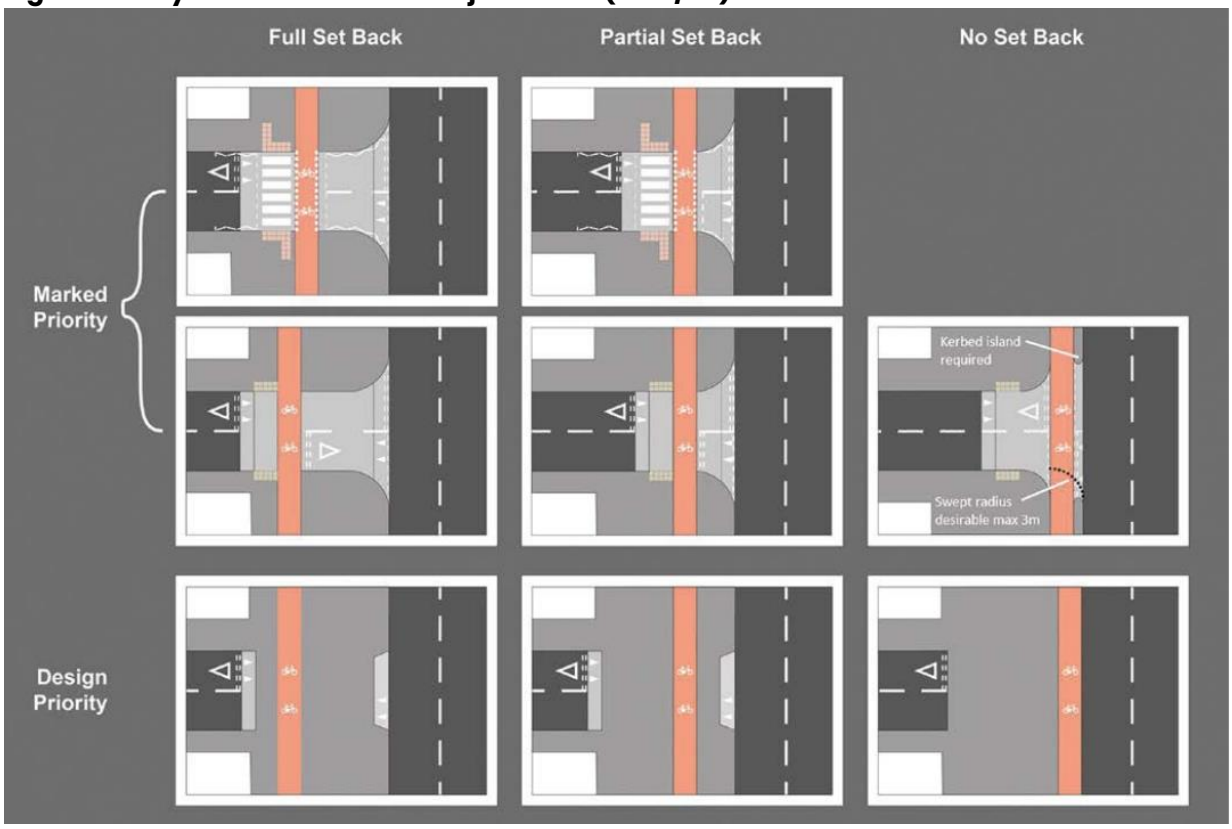
Whenever possible cyclists must have priority over side roads and accesses along a cycle route. This would either be through raised entry treatments of via the use of road markings.

Figure 10 shows the options for providing cycle priority at side roads in urban areas. LTN1/20 has classified the options in relation to their distance from the carriageway kerbline. The options are defined as:

- Full set back – at least one car length (5m) from the kerbline
- Partial set back – less than a car length from the kerbline
- No set back – at the kerbline

The location of the crossing point within a junction can vary subject to the type of infrastructure. Generally, cycle tracks cross a side road further away from the junction mouth than other forms of cycling infrastructure.

Figure 10 - Cycle track set back at junctions (LTN1/20)

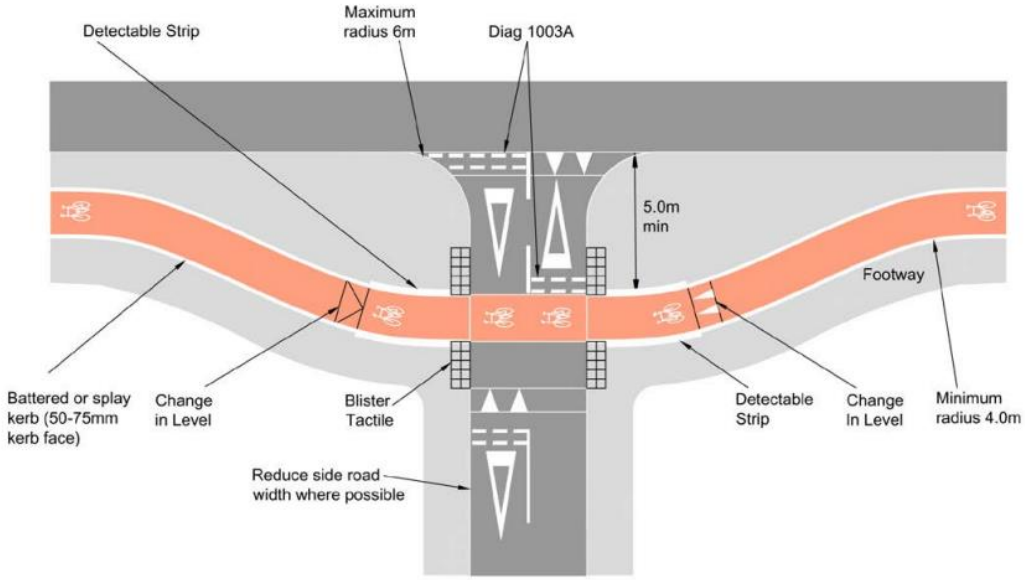


11.2.1 Full set back

LTN1/20 states that the full set back priority arrangement is where traffic flows on the minor arm are up to 2000 PCU/day. The full set back layout retains priority for cyclists at the junction but enables a car to enter the minor road and give way to a cyclist without impacting vehicle flows on the major road.

The give way makings should be set at least 5m back from the carriageway edge. The junction should have a maximum radius of 6m. Give way road markings with an associated give way triangle may be used to reinforce the necessity for cyclists to give way.

Figure 11 - Layout for full set back at junction (LTN 1/20)



11.2.2 Partial set back

This arrangement is used when the set-back is less than 5m to the junction. Clear visibility of the arrangement is required for vehicles traversing the main road. North Tyneside would only recommend this arrangement where traffic volumes and speeds are low.

Vehicles can often block the cycle crossing point when waiting to exit the junction so this arrangement should only be considered at locations where the traffic flows on the minor arm are very light.

11.2.3 No set back

This arrangement allows for cyclists to retain their position at the carriageway edge which results in them being more visible to vehicles turning into the junction. This form of provision also enables the give way markings to be placed at the edge of the cycle crossing and should reduce the likelihood of vehicles blocking the cycle track.

The arrangement would be recommended for cycle lanes with light segregation and cycle tracks which are at carriageway level.

11.3 Signalised junctions

There are numerous permutations of traffic signal controlled junctions, many of which require bespoke design solutions. However, it would be expected that the finalised junction design would provide priority for cyclists in order to minimise waiting times.

Although the design of every signalised junction is bespoke to the junction, it would be expected that developers consider keeping cyclists segregated through the junction for example through the provision of segregated cycle tracks throughout the junction.

Single phase crossings should be provided so that users of the cycle route can clear the junction in one movement.

LTN1/20 states that the types of facilities (in descending order for cyclists) at signalised junctions include;

- Cycle bypasses
- Dedicated cycle phases
- Cycle and pedestrian only stage
- Hold the left
- Two stage right turns
- Cycle gate
- Early release, and
- Advanced stop lines (ASL's)

11.3.1 Cycle bypasses

Cycle bypasses should be considered as an appropriate facility at signalised junctions as they allow a cyclist to continue through the junction without delay. They should especially be considered on the straight-ahead movement at signalised T-junctions and left turn movements where there is no pedestrian conflict.

11.3.2 Dedicated cycle phases

Should a cycle track or cycle only on road provision enter a signalised junction then it is possible to provide cyclists with a dedicated phase. Cycle only phases would be recommended in the following situations:

- Where cyclists undertake a manoeuvre that is not permitted to motorists
- Where cyclists need to be separated for safety reasons
- Where a two way cycle track passes through a junction

11.3.3 Cycle and pedestrian only stage

Where cycle routes interact with signalised junctions, cycle and pedestrian only stages would be expected as a minimum. Separate parallel cyclist and pedestrian crossing facilities would be the preferable form of crossing, however where this cannot be achieved a toucan crossing is acceptable. Should a toucan crossing be implemented then shared use provision with the appropriate tactile paving would need to be provided at each crossing point.

Circulating cycle stage junctions are also acceptable in line with LTN1/20. This layout enables the cyclist to make all movements at the junction in a clockwise direction during a single stage, subject to timings. They would typically be used at locations where cycle tracks are present or proposed on each arm of the junction. Zebra facilities should not be provided where pedestrians cross the cycle track to use the signalised crossing.

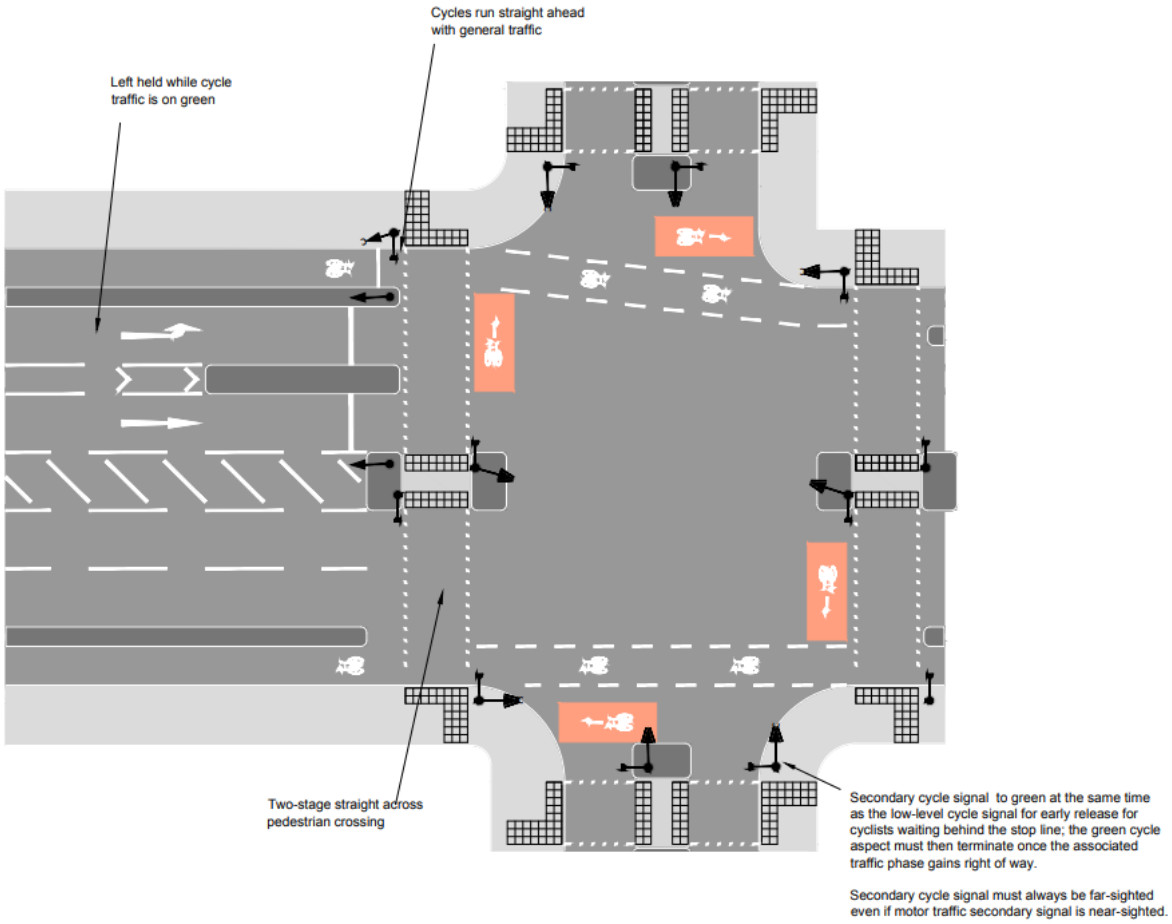
Image 1 - Segregated crossing facilities at a signalised junction (LTN 1/20)

11.3.4 Hold the left and two stage right turns

Hold the left and two stage right turns are measures which reduce the likelihood of conflict between motorists and cyclists at the junction. Hold the left arrangements allow cyclists to continue a straight ahead movement whist holding any left or right turning motor vehicles. The two stage right turn enables a cyclist to turn right at a

junction without the need to move into the centre of a carriageway and is beneficial at signalised junctions with a multi lane approach.

Figure 12 - Two stage right turn arrangement at a signalised junction (LTN 1/20)



11.3.5 Cycle gates and early release

Cycle gates provide a reservoir area with separately controlled entry points for cyclists and motorists. The implementation of a cycle gate, combined with early release means that cyclists do not have to travel through the junction. This form of arrangement is safer than the provision of an Advanced Stop Line (see Section 11.3.6) as motor traffic will be held for a short time period eliminating the conflict that can occur at ASLs. North Tyneside would consider the provision of cycle gates but accept the substantial carriageway space required to implement such a measure may not always be viable.

11.3.6 Advanced stop lines (ASL's)

Advanced Stop Lines would be expected as a minimum at the majority of signalised junctions to facilitate stacking of higher volumes of straight ahead cycle movements, enhance the presence of left turning cyclists to high-sided vehicle

drivers, and also to accommodate right-turning cycle movements through a junction.

Where ASLs have been provided at junctions, it would be expected that a suitable feeder lane is provided in order to allow cyclists to safely reach the ASL.

11.4 Roundabouts

Suitable cycling provision would be expected on all roundabouts. Conventional roundabout design is not considered suitable for cyclists and is therefore not acceptable unless very convenient alternative crossing facilities are provided to form a continuous route.

Safety, and not capacity, is the over-riding principle for good roundabout design.

The design principles are very similar to those for side roads of T-junctions.

- Approaching traffic should be slowed. This provides better gap acceptance, greater legibility for drivers and a safer cycling environment.
- Traffic speed on the roundabout should also be controlled by means of a narrow gyratory lane.
- Approach arms should be aligned towards the centre point of the island and not deflected to the left.
- Left only lanes are not recommended

There are two main ways to accommodate cyclists more safely at roundabouts;

- Roundabouts with protected space for cycling – This form of provision consists of providing protected spaces for cycling away for the carriageway, preferably with cycle priority at roundabout entries or exits. This layout is recommended where traffic volumes are high where they have a high speed geometry.
- Roundabouts for cycling in mixed traffic conditions – Mixing cyclists with motorists in general motor traffic would be suitable at well designed compact or mini roundabouts where volumes and speeds are low. The lane widths should be narrow so cyclists can safely share single lane entries / exits and the circulatory in the primary position.

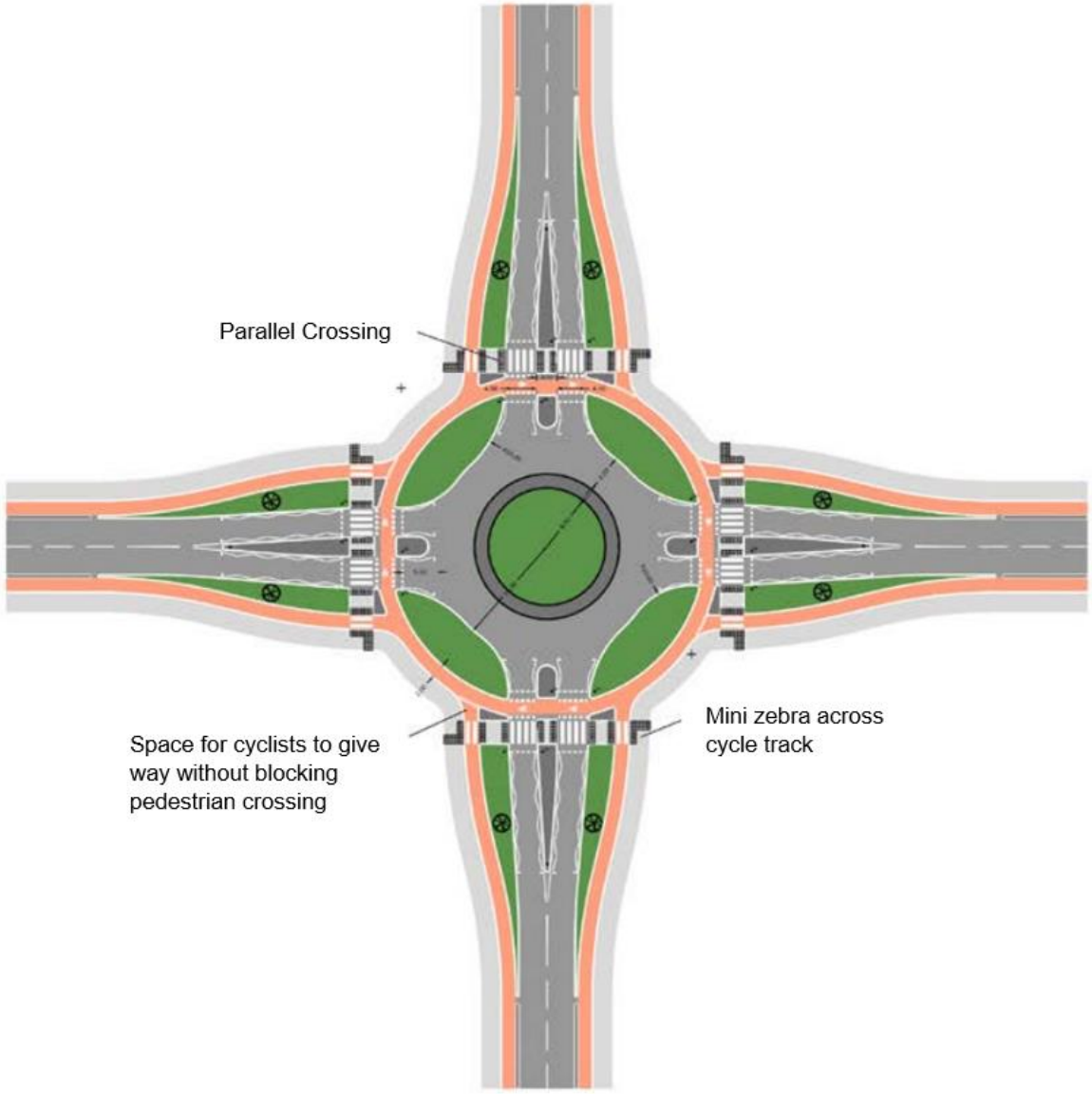
11.4.1 Roundabouts with protected space for cycling

Roundabouts with higher traffic flows and speeds should incorporate protected space for cycling, both around the junction and on all approaches and exits so that cyclists do not mix with traffic. North Tyneside's preference is to provide one way

cycle tracks on the perimeter of the roundabout whilst retaining priority over the side arms. In instances where priority is not retained due to high vehicle flows then a two way cycle track would be expected as it will allow the cyclist to undertake a right turn manoeuvre whilst crossing the minimum number of side arms.

Median islands will be required on the roundabout to achieve appropriate deflection and provide refuges for cycle and pedestrian crossings. The preferred type of crossing on roundabout entries and exits is a parallel crossing as they have the advantage of giving immediate priority to pedestrians and cyclists whilst creating minimal delay for motorists.

Figure 13 - Roundabout with protected space for cycling (LTN 1/20)



The same principles would be expected to be adhered to should the roundabout require traffic signals. LTN1/20 states that at signalised roundabouts there are three suitable approaches to providing for cycle traffic at grade. These are:

- Provide facilities on-carriageway at the signalised nodes so cyclists are separated and protected from conflict with motor traffic;
- Provide a cycle track around the junction with signalled controlled crossings of the roundabout entries and exits as part of the overall junction control; and
- Provide a cycle track across or around the central island, with crossings of the circulatory carriageway and the roundabout entries and exits as necessary, as part of the overall junction.

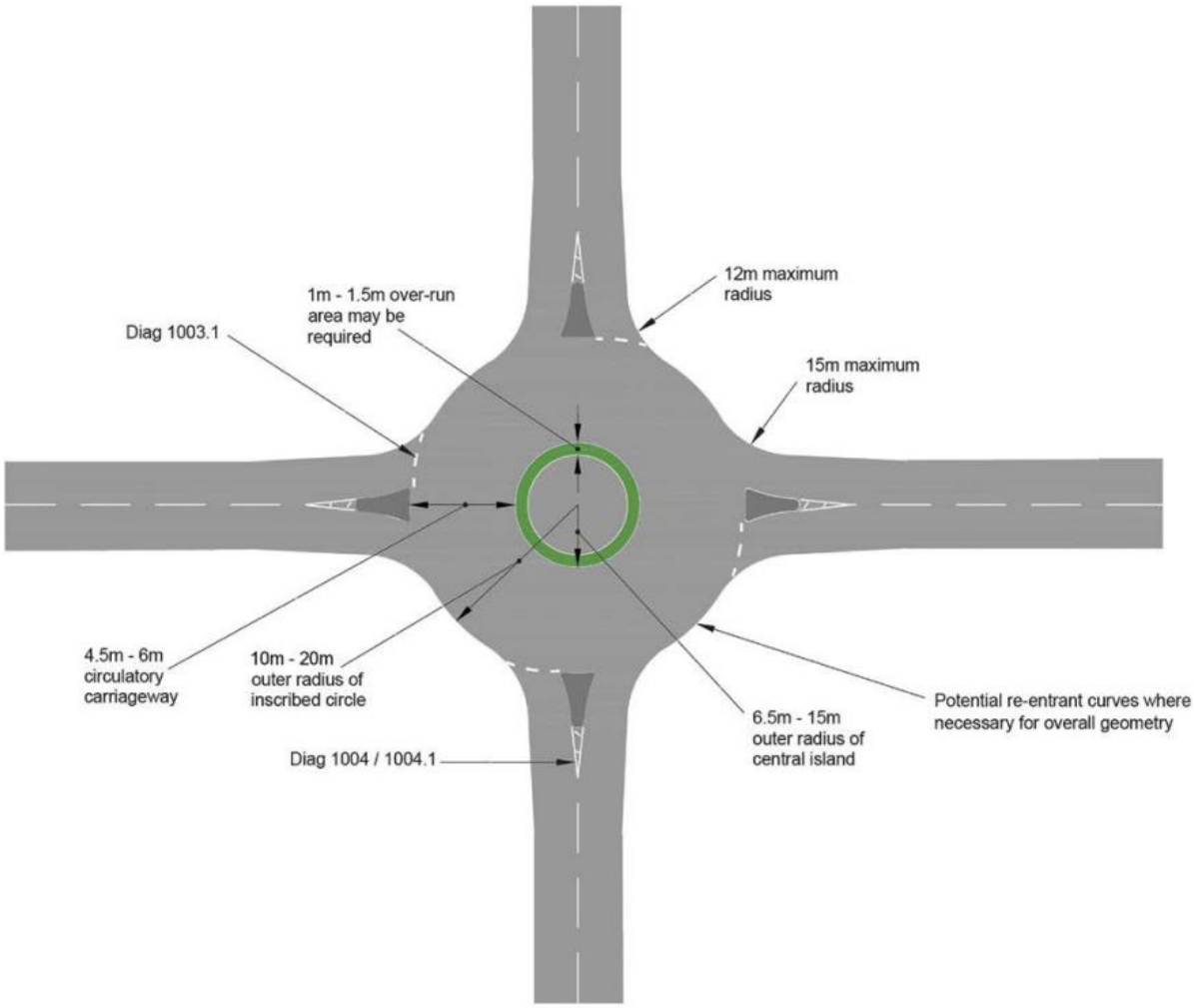
11.4.2 Roundabouts with cycling in mixed traffic

Compact roundabouts have a tight geometry that encourages lower speeds, which in turn enables cyclists to negotiate the junction in the primary position without causing significant delays to motorists.

Compact roundabouts without protected space for cycling should only be used in locations where mixed cycling in the carriageway is appropriate such as within urban areas with a slow speed environment or at junctions within the residential development.

Key design features include unflared single lane entries and exits, a single lane circulatory and an Inscribed Circular Diameter (ICD) of 10-20m.

Figure 14 - Compact roundabout layout (LTN 1/20)



Mini roundabouts are considered an acceptable form of provision at junctions when traffic speeds and volumes are low. Similar to compact roundabouts they should be designed to reduce speed at junctions using tight geometry, with single lane approaches and exits so vehicles pass through the junction in single stream. The ICD of a mini roundabout should be no more than 15m. Mini roundabouts at busy junctions with 4 or more arms would not be authorised by North Tyneside.

11.4.3 Multi lane roundabouts

Multi lane roundabouts, with one or more circulating lanes and / or multiple approach and exit lanes, are not suitable for cyclists. In these circumstances off carriageway segregated cycle routes with suitable crossing points would be expected. Designs for roundabouts will be agreed with the Local Authority on an individual basis.

11.5 Crossings

Cycle crossings are mid link standalone facilities that enable cyclists to cross a carriageway they would typically consider hazardous. LTN1/20 identifies the following forms of crossing:

- Uncontrolled crossings
    - With or without a refuge
- Controlled crossings
    - Cycle priority crossings using give way markings
    - Parallel crossings
    - Signal controlled – Toucan and cycle signal crossings

11.5.1 Uncontrolled crossings

Cyclists travelling on an off-carriageway route will often be required to cross the highway. In some instances it will be acceptable to provide an uncontrolled crossing where cyclists will be required to give way to the motorists. Where cyclists are required to give way to cross the carriageway without priority, then pedestrian refuges would be considered the most appropriate from of uncontrolled crossing as they allow cyclists and pedestrians to cross in two movements.

The minimum island width for straight across movements is 2.5m. The minimum width of a staggered island would be 3m.

11.5.2 Cycle priority crossings

Where a cycle track crosses a lightly trafficked street, the cycle track can be given priority over the road using TSRGD diagram 1003 (give way markings). The crossing should generally be sited on a flat-topped road hump to ensure low vehicle speeds. This treatment can be used at crossings of side roads where they join a larger road, or mid link.

The design in both situations should ensure that it is clear to motorists that they must give way, and that there is sufficient intervisibility between drivers and users approaching the road along the cycle track. This helps cyclists to maintain momentum as well as ensuring safety.

At locations where a cycle route crosses a minor road with low vehicle flows (less than 4000vpd), the cycle track may give way to carriageway. However, it is still recommended that a flat topped road hump is installed at the crossing point to maintain low vehicle speeds.

11.5.3 Parallel crossings

Parallel crossings are the preferred form of crossing in North Tyneside as they minimise the waiting time for cyclists and motorists. They provide legal priority to pedestrians and cyclists. The layout is prescribed in TSRGD as diagram 1001.5.

The pedestrian aspect limits of the crossing vary from a minimum of 2.4m to a maximum of 10m. The width of the cyclists' side of the crossing can vary from a minimum of 1.5m to a maximum of 5m. The width would be determined by the volume of pedestrians and cyclists using the route.

11.5.4 Toucan crossings

A toucan crossing is a signalised crossing shared by both pedestrians and cyclists. They are normally unsegregated, although sometimes a segregated Toucan can be more appropriate. Where a signal controlled crossing is justified in the vicinity of a new development, a toucan crossing will usually be required. Should the crossing be required on an equestrian route, a Pegasus crossing should be provided with its pole positioned accordingly.

The main criterion for introducing a toucan crossing should be to reduce the level of risk associated with conflict between motorised and non-motorised users at pedestrian crossing points. The preferred width of a toucan crossing is 4.5m. This will provide sufficient width for both pedestrians and cyclists to cross at the same time. The crossing should be single stage which will allow for one continuous movement across the carriageway.

Toucan crossings can be installed at a minimum width of 3.6m. However, North Tyneside Council will only consider using the minimum width where site constraints exist.

The provision of advanced detector loops on the cycle track must be considered in order to reduce the waiting time at crossings for cyclists. These loops must be considered on key routes, particularly routes with a high commuter use.

11.5.5 Grade separated crossings

Grade Separated crossings can take the form of Underbridges (Subways) or Overbridges. North Tyneside would typically expect to see such measures over rail lines or strategic high-speed corridors.

The location and alignment of underbridges / overbridges and their accesses should be arranged so that cyclists do not have long diversions from a direct line of travel.

In line with LTN1/20, the minimum widths between the walls or parapets for cycle provision at over and underbridges are as follows:

- 5.5m separate provision (2m footway, 3m cycle track, 0.5m clearance on cycle track side)
- 4m shared use (3m useable width, 0.5m clearance on both sides)

The parapet height at overbridges should be 1.4m where cycling provision is located immediately adjacent to it. This height should be increased to 1.8m where equestrians are expected to use the route. A 1.2m parapet height is only considered acceptable when adjacent to cycle provision on existing structures. The Authority may choose to increase this height should a risk assessment highlight any issues with the existing structure or if there is a likelihood of high crosswind.

The headroom required at any underbridge should meet the desirable minimum clearance of 2.4m. The length of the underbridge should be minimised in order to maximise natural light levels, and the gradient of access ramps should also be minimised. These design characteristics can help maximise forward visibility and levels of natural light as well as the comfort of users travelling through the underbridge.

12. Cycle parking

In order to support journeys by bike, convenient cycle parking must be provided at key destinations, for example local shops or high streets etc. Public transport accessibility can also be greatly increased by providing good quality cycle parking at key bus stops and metro stations. There may be occasions where North Tyneside Council will stipulate the requirement for a financial contribution to a commuted sum of funding to be spent on cycle facilities at a metro station or shopping area near the development site.

If a development has community facilities, such as local shops or libraries etc. then there must be sufficient cycle parking for the likely number of visitors or employees. If the development is a commercial development (offices, supermarkets), cycle parking should be provided next to the main entrance for visitors. The cycle parking should be located closer to the visitor entrance than vehicle parking. Separate cycle parking, in the form of lockable shelters, would be expected for employees and should be located near the employee entrance.

For long stay parking, sheltered and secure provision should be provided: for example, this could be in the form of cycle 'hangars', similar to the one shown in Image 2. Cycle hangars offer increased security over the more traditional Sheffield stands for long stay or even overnight parking. However, the Sheffield stand is still seen as the leading design for short stay parking as it is a simple, robust and effective parking facility.

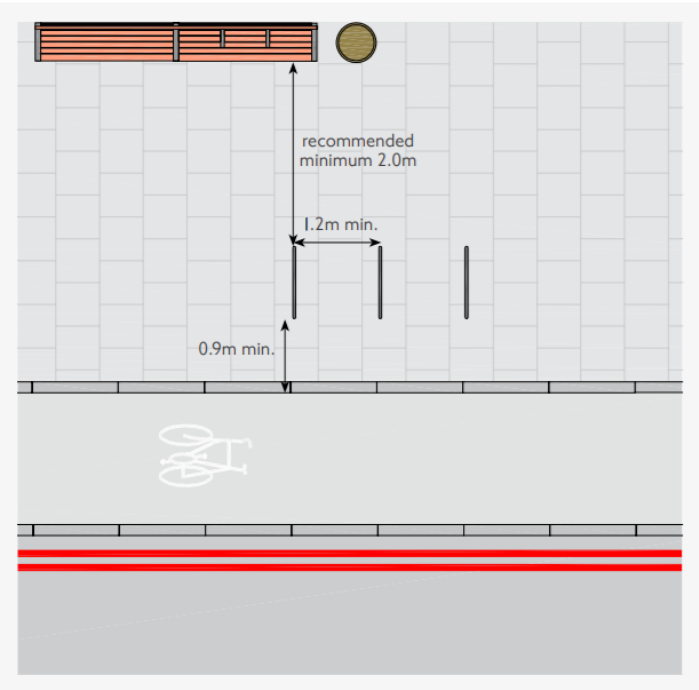
Image 2 - FalcoPod Cycle hangar (www.falco.co.uk)

The number of cycle parking spaces required for each type of development is outlined in North Tyneside Council's Transport and Highways Supplementary Planning Document. The quality of provision will be agreed on a case-by-case basis.

Image 3 - Sheffield Cycle Stands at Cambridge Primary School (Cyclestreets)

Image 3 shows an example of cycle parking at a primary school and Figure 15 shows the typical layout of the cycle stands. The positioning of the cycle stands in relation to vertical features is key. The designer should ensure cycle stands are positioned a minimum of 1m away from vertical features to ensure the parking facility is usable. These dimensions would be reviewed on an individual basis as the positioning and spacing of cycle parking may need to be amended based on the likelihood or presence cargo bike or bikes with trailers.

Figure 15 - Sheffield stand layout (LCDS)



13. Traffic signs and Road markings

All cycle routes require appropriate signage. The level of signage will depend on the type of infrastructure as well as the routes strategic importance. Where signage is required, it would be expected that designers utilise existing street furniture where possible to minimise street clutter. The use of traffic signs is prescribed in the Traffic Signs and General Directions (TSRGD) as well as the Traffic Signs Manual (TSM).

Signs must not be situated in the middle of a cycle lane, track, route or shared cycleway / footway. Any sign mounted over a form of cycling infrastructure must maintain a minimum clearance of 2.4m.

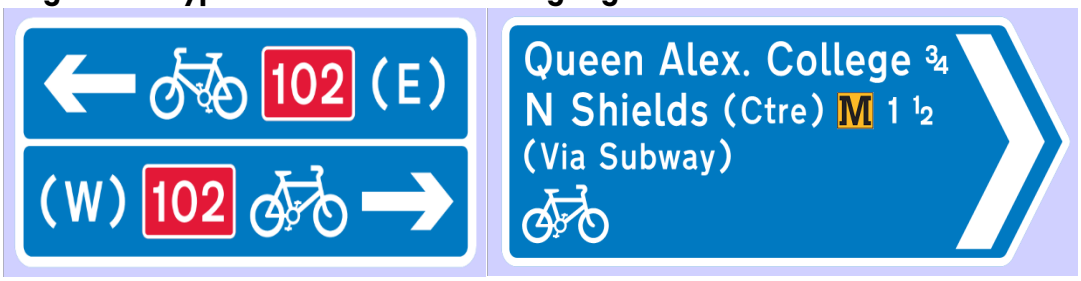
Regulatory and informatory signs would be expected to be provided as required. Most traffic regulation orders associated with regulatory signage apply to motorists. Where necessary, cyclists can be exempt from prohibitions on movements such as no entry, no left or right turn.

All informatory signage associated with cycle provision can be found in TSRGD. Whilst the CYCLIST DISMOUNT sign to TSRGD diagram 966 and the END OF ROUTE sign to TSRGD diagram 1058 is permitted by the Department for Transport, North Tyneside Council would not expect to see it used on the provision of new

infrastructure. In instances where an off road route comes to an end, the CYCLISTS REJOIN CARRIAGEWAY sign to TSRGD diagram 966 is the preferred option.

Route destination signs would be expected at key decision points along a route. There may be occasions where North Tyneside Council will stipulate the requirement for a financial contribution to a commuted sum of funding to be spent on route signage in the vicinity of the development. All route signage will need to be agreed with North Tyneside Council. Figure 16 below shows examples of the route destination signage installed in North Tyneside. All route destination signage must be installed with an X height of 24 and should reflect the destinations highlighted on the Tube Map.

Figure 16 - Typical Route Destination Signage



In order to keep street clutter to a minimum. It would be expected that signage is incorporated into street furniture (e.g. bollards, lighting columns etc.).

14. Construction and maintenance

14.1 Adoption

Designers must consider the practicality of North Tyneside Council adopting new cycling infrastructure provided as part of the development. Designers should be aware of the level of maintenance involved with the infrastructure. North Tyneside Council may choose not to adopt streets which use forms of infrastructure with a high maintenance liability.

Designers should generally look to utilise standard paving materials. If it is proposed to depart from this, then a discussion with the Council would be required to confirm what is acceptable.

14.2 Construction

It is important that high quality cycle facilities are consistently implemented across North Tyneside, offering a smooth riding experience to cyclists. A number of general construction requirements are identified below:

- Street furniture, gullies and inspection chambers should be located away from surfaces used by cyclists.
- Finished levels of all surfaces within a cycle route must be machine laid. This will ensure the cycle track is smooth, flat, well-drained and well-maintained.
- A geotextile material must be included within the construction of any routes located away from the highway, such as leisure routes. This is to reduce the chances of any vegetation growing through newly constructed routes.
- Construction joints should be at right angles to the direction of travel.

The construction details should be suitable for everyday cycling. It is envisaged the construction specification shown in Figure 17 will suffice for the majority of off-road links.

14.3 Cycleway / footway construction

Figure 17 - Typical cycleway construction

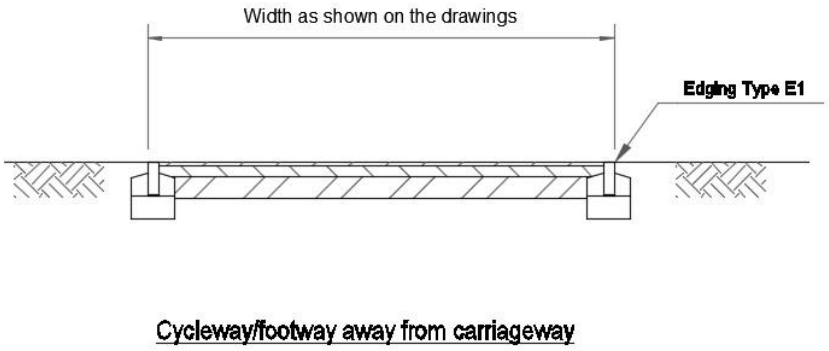


Table 7 - Construction details

Construction Details	Layer Thickness
AC6 Dense Surface Course	20mm
AC20 Dense Binder Course	50mm
Type 1 GSB to Clause 803	200mm

14.4 Street lighting

Lighting is normally provided on urban routes where cycling can be expected after dark. Lighting helps users detect potential hazards, discourages crime and helps users to feel safe.

Cyclists using two-way cycle tracks alongside unlit carriageways may be blinded or dazzled by the lights of oncoming vehicles, particularly on tracks alongside high-speed rural roads. Drivers may also be confused when seeing cycle lights approaching on their nearside. These hazards can be reduced by, for example, locating the track as far away as possible from the carriageway edge, or by providing with-flow cycle tracks alongside both sides of the carriageway.

Cycle routes across large quiet areas may not be well used outside peak commuting times after dark, even if lighting is provided. In these cases, a suitable streetlit on-road alternative that matches the desire line as closely as possible should be provided. Subways should be lit at all times, using vandal-resistant lighting where necessary. It is not expected that routes outside built-up areas used primarily for recreation would need to be lit except where there are road safety

concerns, such as at crossings or where the track is directly alongside the carriageway.

There may be occasions when North Tyneside Council stipulates the requirement for existing public footpaths and bridleways to be lit in the interests of safety.

Where an off-carriageway track requires lighting, the designer needs to consider the proximity of an electricity supply, energy usage, and light pollution. In these instances, the use of low level (such as bollards) or surface level lighting should be considered.

14.5 Coloured Surfacing

The provision of coloured surfacing is believed to improve cycling infrastructure as it further enhances its presence, making it more conspicuous to motorists. However, blanket application of full coloured surfacing on all cycle facilities would be very expensive and, in many cases, would not contribute to improved compliance. The use of coloured surfacing is therefore recommended in the following circumstances:

- At the beginning and end of cycle lanes
- Full width of a cycle lane through junctions, past parking bays or in other situations where there is likely to be conflict between cycles and other road users
- Along the full route on stepped cycle tracks.

The preferred type of surfacing material consists of the use of coloured aggregate within the surface course. The Council's recommended surfacing material is Tarmac Ulticolour. The recommended colour is classic green.

14.6 Vegetation

All small plants / bushes planted within the vicinity of cycling infrastructure must be set back a minimum distance of 1.0m, then gradually increase in height as the distance from the cycle track increases. This prevents interference with the cycle route should the vegetation become overgrown, meaning less maintenance is required.

All trees should be offset a minimum of 5m from all forms of cycling infrastructure. This is to prevent the canopy from overhanging the route and the tree roots from

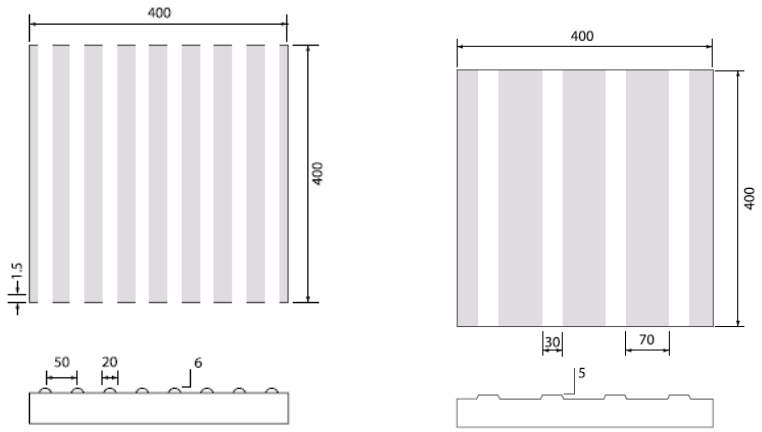
impacting on the integrity of the cycling infrastructure. Tree root protection grids must be provided where trees are located within 5m of cycle tracks.

14.7 Tactile Paving

The purpose of the tactile surface used in conjunction with a segregated shared cycle track/footway is to advise vision impaired people, cyclists and all other users of the correct side to enter. On the footway side, the surface is laid so that the bars are transversely across the main direction of travel for people walking, and it is called the 'ladder' surface in this orientation. On the cycle track side, the surface is laid so that the bars are in line with the main direction of travel for people cycling, and it is called the 'tramline' surface in this orientation. The tactile surface should be laid 2.3m deep at the beginning and end of the shared segregated route and 800mm deep at regular intervals along the route (repeater strips). Corduroy paving should be provided where a footpath or footway joins a segregated route. Care needs to be taken to ensure that the correct tactile is installed.

The Department for Transport has produced Guidance on the use of Tactile Paving Surfaces document which provides detailed information on all forms of tactile paving. The document also includes several detailed layouts of tactile paving which is useful for designers.

Figure 18 - Corduroy tactile paving (left) and Cycleway tactile paving (right)



14.8 Maintenance

Until adoption takes place, developers have a responsibility to ensure their cycle routes are kept in good condition, making them more useful, attractive and popular

than those allowed to deteriorate. Maintenance can often be an afterthought in comparison to designing and constructing new routes but having invested time and money implementing cycling infrastructure, it is important that it remains attractive to users.

Maintenance should be considered as part of the route development process long before construction starts. A thoughtful design will mean less maintenance in the future.

Regular inspections should be undertaken whilst developing and any repairs or problems should be prioritised and dealt with quickly. Failure to maintain the infrastructure may result in North Tyneside Council refusing to adopt the asset.

14.8.1 On road routes

When cycling on roads, the quality of the surface can make a huge difference to the cyclist's experience. As a minimum, the following maintenance should be undertaken on all on road cycle routes:

- Routes to be kept ice free
- Loose drain covers and potholes to be repaired swiftly
- Drainage channels and gullies to be cleared regularly
- Worn road markings (cycle lanes, cycle logos etc) or coloured surfacing to be refreshed
- Damaged or lost signs to be repaired or replaced
- Maintenance of 2m nearest to kerb to be prioritised. Potholes should be repaired with a smooth level surface patching rather than simple pothole repairs.
- Routes to be swept free of debris
- Cyclists to be accommodated at road works

14.8.2 Off road routes

Cycle routes segregated from traffic can quickly become unattractive and difficult to use if maintenance is not undertaken and the route is not kept clear. As a minimum, the following maintenance should be undertaken on all off road cycle routes:

- Surface damage to be repaired promptly
- Drainage channels and gullies should be cleared regularly
- Routes to be swept free of debris
- Verges to be mowed regularly to prevent encroachment onto cycle route

- Vegetation to be cut back regularly (outside of bird nesting season)
- Damaged or lost signs to be repaired or replaced swiftly
- Lighting, street furniture and structures to be maintained

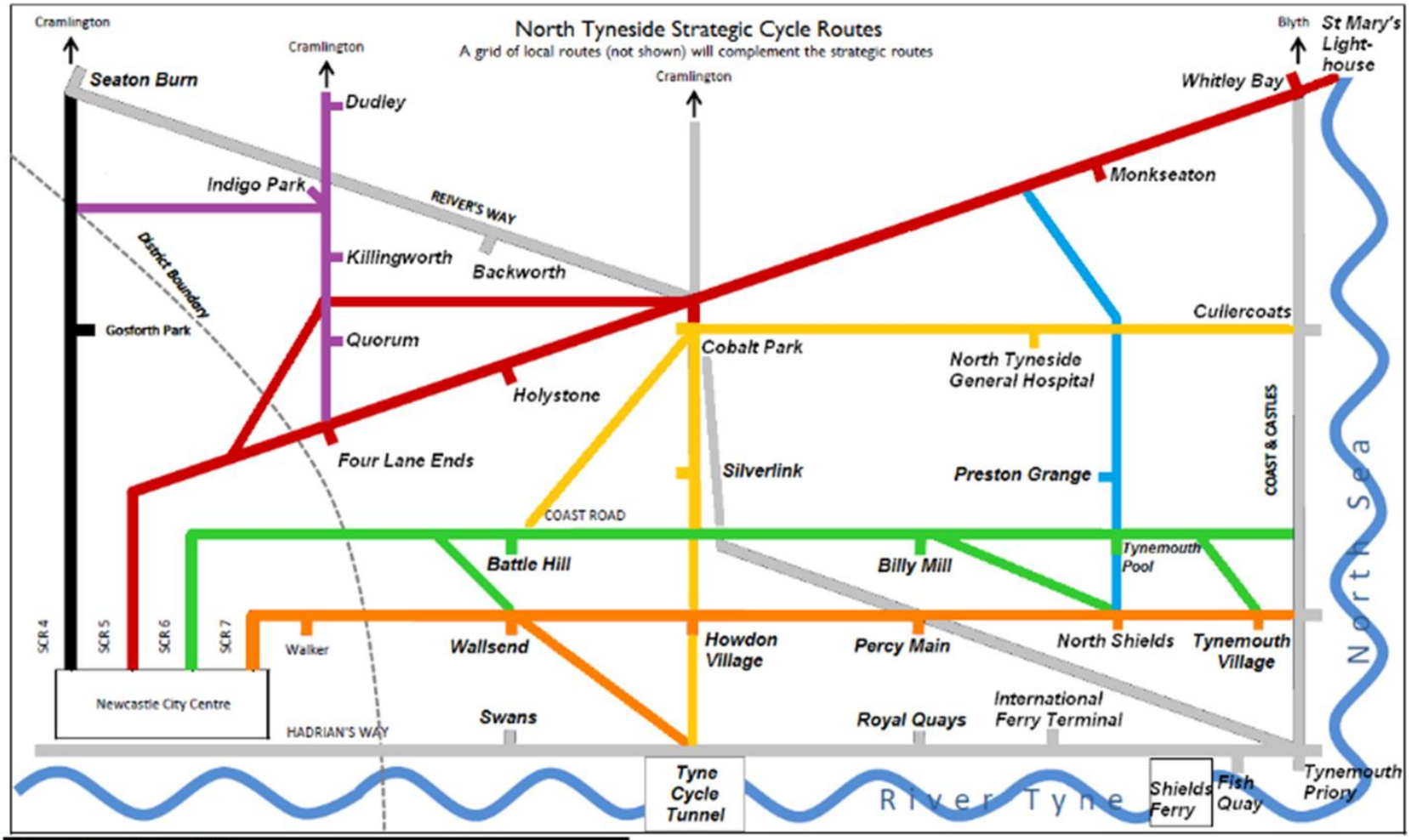
Failure to undertake this maintenance may result in North Tyneside Council refusing to adopt this asset.

14.8.3 Buffer zones

The buffer zones for cycle routes should be installed with a material that is easily maintainable. Grass verges are the preferred buffer zone, although they should only be used where a buffer zone of 1m or wider can be provided.

In instances where buffer zones are less than 1m, block paving will normally be used to reduce maintenance issues. Buffer zones less than 1m should be 50mm higher than the cycle route for safety reasons. The recommended block paving is Marshall's Keyblok concrete block paving. The recommended colour is Brindle.

Appendix A – Strategic Cycling Routes: the 'tube map'



How will we deliver this?

- Bidding for external funding for sections of route
- Through the planning process, as new developments are brought forward
- Through the general programme of highway schemes and regeneration schemes