



i.	Contents	1
ii.	Introduction	2
<u>On-carriageway measures and solutions</u>		<u>3</u>
1.1.	<u>Hierarchy of measures and invisible infrastructure</u>	<u>3</u>
1.2.	<u>Speed reduction and traffic calming</u>	<u>3</u>
1.3.	<u>Clear space (determining carriageway profiles)</u>	<u>4</u>
1.4.	<u>Exemptions to traffic regulations and contraflow cycling</u>	<u>4</u>
1.5.	<u>Vehicle restricted areas and town centre access</u>	<u>5</u>
1.6.	<u>Signal controlled junctions and advanced stop lines</u>	<u>5</u>
1.7.	<u>Bus lanes and bus stops</u>	<u>5</u>
1.8.	<u>Cycle lanes</u>	<u>6</u>
1.9.	<u>Core traffic lanes (removal of centre lines)</u>	<u>6</u>
1.10.	<u>Roundabouts</u>	<u>7</u>
1.11.	<u>Corner radii</u>	<u>7</u>
1.12.	<u>Audits and risk assessments</u>	<u>7</u>
<u>Off-carriageway measures and solutions</u>		<u>9</u>
2.1	<u>Traffic-free connections and links</u>	<u>9</u>
2.2	<u>Road crossings – side roads</u>	<u>9</u>
2.3	<u>Road crossings – mid-link and obstruction of crossing points</u>	<u>10</u>
2.4	<u>Visibility at junctions and forward visibility</u>	<u>10</u>
2.5	<u>Footway crossings and tactile paving</u>	<u>11</u>
2.6	<u>Flush kerbs</u>	<u>11</u>
2.7	<u>Junctions between cycle tracks</u>	<u>11</u>
2.8	<u>Access and speed controls</u>	<u>12</u>
2.9	<u>Wheeling channels</u>	<u>12</u>
<u>Other issues</u>		<u>13</u>
3.1	<u>Headroom</u>	<u>13</u>
3.2	<u>Surfaces</u>	<u>13</u>
3.3	<u>Signs</u>	<u>13</u>
3.4	<u>Drainage</u>	<u>14</u>
3.5	<u>Gradients</u>	<u>14</u>
3.6	<u>Lighting</u>	<u>14</u>
3.7	<u>Cycle parking</u>	<u>15</u>
3.8	<u>Cycling and development proposals</u>	<u>15</u>
3.9	<u>Maintenance</u>	<u>16</u>
3.10	<u>Monitoring</u>	<u>17</u>
<u>Appendix</u>		<u>18</u>
4.1	<u>Peterborough Cycle Parking Guidelines</u>	<u>18</u>
4.2	<u>Route branding in Peterborough</u>	<u>20</u>
4.3	<u>Cycle Design Checklist</u>	<u>23</u>

ii. Introduction

“As Peterborough grows there is a considerable need to meet the growing demand for travel by the promotion of attractive and safe sustainable alternatives.

The baseline research carried out at the beginning of the Travelchoice project (2004) has highlighted that cycling could replace 26% of all current car trips, representing the greatest potential for increase amongst walking, cycling and public transport. Thus, with a committed approach that considers cycling provision within all transport schemes, there is significant scope to generate modal shift.

It is recognised that alongside promotion, the full potential of modal shift will only be seen if the transport infrastructure in and around Peterborough supports the use of cycling. These Cycle Design Guidelines have been produced to provide guidance for developers submitting planning applications and Peterborough City Council officers implementing new transport schemes or upgrading existing infrastructure. .

The purpose is to provide specific guidance based on best practice to enhance the facilities for cyclists whilst improving the safety, maintenance, attractiveness and comfort of cycle routes in order to maximise cycling in Peterborough”.



1. On-carriageway measures and solutions

1.1 Hierarchy of Measures and Invisible infrastructure

Hierarchy of measures

When designing for cyclists a clear audit trail should be created to show that the following hierarchy has been followed when deciding what measures (if any) to provide:

1. Removal of unnecessary traffic
2. Reduction of speed
3. Improvements to problem areas such as junctions or accident sites
4. Redistribution of the carriageway e.g. wide nearside lanes, bus lanes
5. Segregation from other traffic in the form of cycle lanes or cycle tracks.

Design guidance available at:

http://www.dft.gov.uk/consultations/archive/2004/ltnwc/ltn104policyplanninganddesig1691?page=3#P133_29736

Invisible infrastructure

'Invisible infrastructure' is the name given to those measures that are not cycle-specific but which help to create a more cycle-friendly environment by reducing the volume and speed of traffic. These can take many forms and include demand and traffic management measures such as the pricing and availability of car parking, traffic calming and other area wide safety measures (20 mph, traffic exclusion and home zones etc.).

Design guidance available at: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a01_invisible_infrastructure.pdf

1.2 Speed reduction and traffic calming

Cyclists will always benefit from a reduction in traffic speeds. As the Manual for Streets states, "A speed limit is not an indication of the appropriate speed to drive at. It is the responsibility of drivers to travel within the speed limit at a speed suited to the conditions." It goes on to recommend, "designing to keep vehicle speeds at or below 20 mph on residential streets unless there are overriding reasons for accepting higher speeds".

Speeds can be reduced by a range of techniques including the introduction of:

1. Lower speed limits
2. Home zones
3. Shared surface roads
4. Removal of carriageway centrelines oval of carriageway centrelines
5. Traffic calming features (horizontal and vertical deflections, etc).

Where traffic calming features are to be introduced (road humps and cushions, road narrowings, central island and central hatching) these should be the subject of the cycle design checklist to ensure that additional problems are not created for cyclists and, where practicable cyclists can be given priority and consideration over other vehicular modes.

Design guidance available at:

Speed reduction:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a02_speed_reduction.pdf

Traffic calming:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a02_speed_reduction.pdf

1.3 Clear Space (determining carriageway profiles)

Carriageway profiles, especially at road narrowings, should be chosen to ensure that cyclists can be passed by other traffic in safety and comfort. Where necessary, traffic speeds should be reduced to achieve this.

The chosen profile should take account of:

1. The cyclist's dynamic envelope (sometimes referred to as 'wobble' space – this varies with the speed of the cyclist and is particularly important when moving off from stationary or when going uphill)
2. The distance cyclists feel comfortable with when passing fixed objects
3. The speed and distance at which other traffic will pass cyclists.

Where practicable, widths in the range 2.75 to 3.5m are to be avoided as cars are likely to pass cyclists with inadequate clearance. Furthermore, widths of 3.5 to 4.5m are to be avoided if larger vehicles (HGVs and buses) are travelling at speeds of over 30mph as they are likely to pass cyclists with inadequate clearance. A width of over 4.5m will allow heavy goods vehicles and buses to pass cyclists with approximately 1.05m clearance. Where compromises have to be made, solutions should be arrived at following a cycle audit (recommended in all cases where alterations to the highway are made) as well as a safety audit.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a04_clear_space.pdf

1.4 Exemptions to traffic regulations and contraflow cycling

Cyclists benefit greatly from the road conditions that result from the reduction in traffic speeds and vehicle numbers that arise from Traffic Regulation Orders (TROs) designed to exclude unnecessary traffic. However, where they are not exempt from

such Orders, cyclists are often forced to make long detours on busier and potentially more hazardous routes. Where such Orders are seen as unreasonable, it is likely that some cyclists will choose to ignore them.

As Manual for Streets states: "To create a permeable network, it is generally recommended that streets with one-way operation are avoided. They require additional signing and result in longer vehicular journeys." In the case of the introduction of one-way streets or point closures, cyclists should be allowed to cycle contra-flow or pass through the closures unless there are overwhelming reasons why this cannot be achieved safely.

Where practicable, cyclists may be exempt from all Traffic Regulation Orders, including the introduction of one-way streets and road closures unless there are overriding safety reasons why this is not possible. The latter will normally be in exceptional circumstances.

Design guidance available at:

Exemptions to TROs:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a05_exemptions_to_traffic_regulation_orders.pdf

Contraflow cycling:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a06_contra-flow_cycling.pdf

1.5 Vehicle restricted areas and town centre access

Studies have shown that there are no real reasons why cyclists should not be allowed to use vehicle restricted areas. In the presence of pedestrians, cyclists are observed to adapt their behaviour to take account of the level of pedestrian density. When there are proposals to introduce vehicle restricted areas, providing cyclists' access should be the default position.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a07_vehicle_restricted_areas.pdf

1.6 Signal controlled junctions and advanced stop lines

All junction designs should seek to meet the needs of cyclists where practicable, and minimise delay and maximise cyclists' safety and comfort in all cases. The needs of cyclists should therefore be considered as part of the design of signal controlled junctions. Where possible, cyclists should be given advantage by means of:

1. The introduction of advanced stop lines (ASLs) at all signalised junctions.
2. Signal timings and early detection (where there are individual cycle phases or crossings)
3. Bypasses (where these will not create a hazard for pedestrians)

Cyclists gain a range of benefits from ASLs, however, their design should be undertaken with care to ensure that the lead-in lanes match cyclists' manoeuvres (see also Cycle Lanes, below). Lead-in lanes are an extremely important ASL feature and must not be omitted. The lead-in lane affords cyclists significant advantage in that they can more safely and conveniently pass traffic queues at junctions. For this reason they should be provided at an adequate width (1.5m minimum).

Design guidance available at:

Signal controlled junctions: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a08_signal_controlled_junctions.pdf

Advanced stop lines: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a09_advanced_stop_lines.pdf

Cyclists and junctions: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c11_cyclists-and-junctions.pdf

1.7 Bus lanes and bus stops

Bus lanes on major roads provide cyclists with a direct and barrier-free route into and around urban areas. For this reason they should be allowed to share bus lanes and excluded only when there are overriding safety reasons for doing so. Contra-flow bus lanes are of particular benefit to cyclists; again shared-use should be the default option. Similarly, access through bus gates (e.g. Werrington) and bus-only links should also be available to cyclists.

Bus lanes 4.5m wide allow buses to overtake cyclists without leaving the lane and bus lanes shared by cyclists as narrow as 3m have been demonstrated to work safely with no discernable delay to bus services. Bus lanes with widths between 3m and 4m are not recommended. Lanes 4.5m wide may benefit from the introduction of a cycle lane (requires DfT approval).

Manual for Streets advises that, "The siting of bus stops should be based on trying to ensure they can be easily accessed on foot. Their precise location will depend on other issues, such as the need to avoid noise nuisance, visibility requirements, and the convenience of pedestrians and cyclists". The siting of bus stops and their interaction with cycle lanes and cycle tracks should be the subject of the cycle design checklist (see Appendix 4.3).

Design guidance available at: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a10_bus_lanes_and_bus_stops.pdf

1.8 Cycle lanes

Cycle lanes should not be regarded as an automatic solution, though they can be effective in certain circumstances. Neither should they be introduced without first applying the 'hierarchy of measures' methodology. Cycle lanes can give benefit to cyclists but only if they are of adequate width (2m where possible, 1.5m minimum), continuous, conspicuous across road junctions and do not disappear at points where there is a need to provide additional traffic lanes, for example, at right turns and

through pinch-points. They should also follow a logical path and not place cyclists in positions where they do not want to be, especially at junctions.

Cycle lanes come in two forms: mandatory and advisory. Mandatory ones are segregated from other traffic by a continuous white line which vehicles may not cross. Advisory lanes have a broken line which motorists may cross if traffic conditions dictate and it is safe to do so. On routes where it is either not practicable or inappropriate to introduce cycle lanes, the likely presence of cyclists may be indicated by use of the bicycle road marking which associates with the appropriate upright plated sign (see link to design guidance below for details – see also Core traffic lanes, below).

Substandard width cycle lanes are unacceptable. 1.5m should be the absolute minimum. 1.2m may be acceptable for lead-in lanes at Advance Stop Lines (see 1.6 above).

Design guidance available at: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a11_cycle_lanes.pdf

1.9 Core traffic lanes (removal of centre lines)

In many cases where cycle lanes are seen to be of advantage to cyclists, carriageway widths do not allow their introduction at 1.5m wide whilst still retaining general traffic lanes of adequate width. In these circumstances consideration should be given to the removal of the central white line to achieve a single, central lane (the 'core' traffic lane) and two, edge of carriageway, cycle lanes. The removal of the centre line has been shown to be beneficial in reducing speeds and accident levels and, when accompanied by the introduction of cycle lanes, is a good example of the redistribution of carriageway space (see current situation on Oundle Rd).

Design guidance available at: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a12_removal_of_road_centrelines.pdf

1.10 Roundabouts

Roundabouts, especially large, high capacity ones, can act as a significant deterrent to cyclists. Whenever roundabouts are proposed or existing roundabouts reviewed, consideration should be given the 'continental style' roundabout design. These roundabouts cater for junction flows of 2500 vehicles per hour, so are applicable to most urban situations. This type of layout features low entry and exit speeds for all traffic and, when combined with a single circulatory lane (incorporating over-run areas as necessary), result in a more cycle-friendly and pedestrian-friendly junction. 'Annular' cycle lanes are not generally recommended on any roundabout as they do not follow the optimum path for cyclists' safety and as a consequence their presence can pose additional hazards.

Design guidance available at: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a13_roundabouts.pdf

1.11 Corner radii

The minimum radius of curvature for the path taken by cyclists should be 6m.

Where cyclists have to undertake tight turns, for example turning on/off of the carriageway to join a cycle track this may be reduced so that the effective radius i.e. the path followed by the cyclists, and not the radius of the internal/external corner, is 4m. These radii should be considered as minimum and applicable only when a cyclist is undertaking low speed manoeuvres on a reasonable flat path. They should be improved upon where possible.

When deciding what radius to adopt the designer should take into account:

1. The likely speed of the cyclist
2. The gradient
3. Available forward visibility
4. Usable width of carriageway or cycle track
5. Surface characteristics (there should be no adverse crossfall).

Design guidance available at: http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a14_corner_radii.pdf

1.12 Audits and risk assessments

All changes to the highway network should be the subject of the cycle design checklist. Arbitrary cut-offs based on scale or cost of schemes should be avoided: the important issue being that the audit should be fit for purpose and that someone with the right background should ask the questions 'can things be improved for the benefit of cyclists and will any new problems be created?'

Cyclists exercise the usual and normal traits of human behaviour and, unlike motorists, cannot be relied upon to stay broadly within the confines of what the designer intended, i.e. stay within the kerbs. As a result, they will sometimes undertake unexpected or unorthodox manoeuvres but only very rarely will they put themselves at risk by doing so. Rather than seeking to constrain these (except where they are clearly unlawful) they can often serve as an indication of how to improve matters for the benefit of cyclists.

Where a safety audit raises an issue that may stop all or part of a scheme - because of the perceived safety needs of cyclists (whether or not it is a cycle scheme) - a 'risk assessment' should be undertaken before that project is abandoned or significantly changed or diluted. The Manual for Streets makes it clear that, "authorities should put procedures in place that allow rational decisions to be made with the minimum of bureaucracy, and that create an audit trail that could subsequently be used as evidence in court".

Design guidance is available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/a15_audits_and_risk_assessment.pdf

2. Off-carriageway measures and solutions

Traffic-free cycling environments (e.g. cycletracks and shared-use paths) are favoured by most cyclists since they are comparatively safe to use as well as being both pleasant and attractive. They are particularly useful for children on their journey to school and for the less confident adult cyclist. Where appropriate, and if they can be provided to a good standard, traffic-free routes can be both useful and desirable.

Directness, priority and continuity, however, are key design elements that are often compromised on traffic-free routes. Ill-conceived cycletracks can also introduce additional danger, particularly if side road crossings are not to best practice design. It is for this reason that 'invisible infrastructure' and more cost-effective on-road approaches may be more useful and appropriate. Where opportunities are available to create high quality, traffic-free routes, which cyclists will choose to use because they provide a superior service to, and advantage over, the road network, then they must be taken forward.

2.1 Traffic-free connections and links

Connections and links introduced for cyclists that are not available to motor traffic can provide improved accessibility and journey times, which positively encourages more cycling. This is particularly true where the permeability created offers an advantage in terms of journey time over motor traffic coupled with the avoidance of congested or hazardous road conditions.

These links can range from simple connections between the heads of culs-de-sac and gaps in road closures to the building of a new bridge or paths created in new developments or along former railway lines. Links through public parks can also serve the same purpose whilst creating a more pleasant environment in which to cycle. When creating any traffic-free link or connection it is important that the manner in which cyclists are returned to the carriageway is designed with care, preferably in a manner that does not require them to give way to other traffic. Traffic-free links will be more useful as part of a wider network that incorporates local roads.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b01_connections_and_links.pdf

2.2 Road crossings – side roads

Maintaining the continuity of cycle tracks when interrupted by side roads is very important if they are to provide an attractive alternative to being on the carriageway.

Where a cycle track crosses a side road, the following options are available;-

- Cyclists can either give way or have priority (where side road traffic is less than 2000 vpd and visibility is sufficient)
- The crossing can either be at road level or placed on a road hump (mandatory for priority crossings to conform to TSRDG)

- The crossing can either be 'in-line' (i.e. straight across) or 'bent-out' (i.e. the crossing point is moved at least a car's length from the channel line of the major road).

'Bent-out', arguably represents the safest option for cyclist priority but 'in-line' is the most convenient. Getting an appropriate balance, based on the local circumstances, is important. There are growing numbers of locations where 'in-line' ramped crossings are provided, particularly in London, which work safely and effectively, conferring enhanced safety, advantage and priority to both cyclists and pedestrians.

Research suggests that it may be safer to return cyclists to the carriageway prior to the side road but this only works for cyclists travelling in the direction of the flows on the carriageway. Again, this should be determined on a site-specific basis.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b02_road_crossings_side_roads.pdf

2.3 Road crossings - mid-link and obstruction of crossing points

Where cycle tracks cross roads with less than 4,000 vpd, and where speeds are maintained at 20mph or less by traffic calming features, they should be provided with 'priority' crossings sited on a flat top hump. At such crossings, approaching vehicles must give way to cyclists and pedestrians using the crossing. There are approved designs for such crossings and a considerable number of examples where they have been in place and safely used for many years.

A Toucan crossing (now a variant of the 'Puffin' design) is a traffic light controlled crossing that is shared by both pedestrians and cyclists which can be useful in certain circumstances – i.e. where traffic volumes are high, crossing widths are great or can only be achieved in two stages, the use of a flat top ramp is inappropriate, etc.

Zebra crossings, especially on ramps, are extremely cost-effective in comparison with light-controlled designs (e.g. Toucan crossings). Where cyclists are brought by cycle tracks to zebra crossings and the cyclists' desire-line means that they too wish to cross, then a wide zebra should be provided and accompanied by 'cyclists dismount' signs.

The preference will be for a priority crossing, followed by a Toucan crossing, then a ramped Zebra as appropriate to the location.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b03_road_crossings_mid_link.pdf

Where non-priority crossings are provided a range of techniques exist to keep the crossing points clear of obstruction, for example by parked cars. These include 'keep clear' road markings, parking restrictions and build-outs and other designed-in, self enforcing features.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b09_obstruction_of_cycle_track_accesses.pdf

2.4 Visibility at junctions and forward visibility

The requirements for visibility at junctions between cycle tracks and the carriageway will vary according to the speed of the cyclist and the speed of traffic on the road. At junctions between cycle tracks they will also be affected by the user type, the route type and the cyclists' design speed.

Where appropriate visibility cannot be achieved and there is a potential for conflict with pedestrians, the cycle track should be widened or measures introduced to reduce the speed of cyclists.

These are complex issues and should be determined on a case by case basis.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b04_junction_and_forward_visibility.pdf

2.5 Footway crossings and tactile paving

Where cycle tracks meet a carriageway and need to cross a footway to do so, those with impaired vision should be warned of these features by the use of 'corduroy' paving on the approaches (not the same as the 'ladder and tramline' paving used on cycle tracks).

The need for any tactile paving is best determined by consultation with appropriate user groups. The use of such paving should be kept to a minimum wherever possible and not placed in the path of a turning cyclist.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b05_footway_crossings_and_tactile_paving.pdf

2.6 Flush kerbs

At the point where a cycle track joins/leaves the carriageway the flush kerbs should be completely flush with no upstand whatsoever with a smooth transition between surfaces: where necessary, additional drainage measures should be provided to stop ponding.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b06_flush_kerbs.pdf

2.7 Junctions between cycle tracks

In order to minimise delay and ensure the stability of cyclists turning at the junction of cycle tracks the layout should be designed to ensure that the minimum radius of curvature of the path of the cyclists is 6m. Where cyclists are required to make tight turns, the minimum radius should be 4m. If necessary, the surface should be widened to accommodate these movements. The minimum kerb/edge radius of curvature of the inside of any corner should be 2m. For the benefit of all users, where a cycle track meets the rear of a footway, the corners should be chamfered (a minimum of 1m).

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b07_cycle_track_junctions.pdf

2.8 Access and speed controls

Rarely is the use of access controls justified at the start of cycle tracks to stop misuse by other vehicles (usually motorcycles) or to control the speed of cyclists. Inappropriate barriers create access problems and unwarranted delays for the intended users - pedestrians and cyclists. Those with disabilities, in wheelchairs or who use powered carts, and parents with 'double buggies' are often denied access, which is not acceptable. Any barrier arrangement must allow reasonable access for all path users.

Rather than introducing barriers from the outset, such measures should only be introduced if a need is identified after an extended period of use. Where barriers are deemed necessary, a single or double row of bollards is the preferred solution. Such bollards can also incorporate any signing (e.g. the shared-use roundel, diag. 956) which reduces the need for additional posts, obstruction and general signing clutter.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b08_access_and_speed_controls.pdf

2.9 Wheeling channels

Where cycle routes coincide with existing stepped bridges, and an acceptable alternative route is not available, suitable wheeling ramps should be installed to facilitate their use by cyclists. Care should be taken to avoid placing them in a manner that will create hazards for the footfall of vulnerable pedestrians using any existing handrail. Wheeling channels should not be seen as a reason for not providing an appropriate new crossing where reasonably possible.

Design guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/b10_wheeling_channels.pdf

3. Other issues

3.1 Headroom

Headroom in new subways should be a minimum of 2.4m. For lengths over 23m this should be increased to 2.7m. It may be possible to convert existing subways that do not meet these requirements following a risk assessment, though each site should be treated on its merits.

Signs cannot be mounted clear of cycle tracks the required minimum headroom is 2.3m. Where the presence of large signs straddling a cycle track gives the impression that they appear lower than they are, the clearance should be increased to 2.7m.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c01_headroom.pdf

3.2 Surfaces

Normally, surfaces should be machine-laid, sealed and suitable for use in all weathers. The choice of surface employed should be based on whole life costs (on-carriageway and off).

On-carriageway, the use of coloured surfacing (green in Peterborough) should be confined to those areas where it will make the greatest impact, for example highlighting the presence of a cycle track across a junction with a side road and on ASL reservoirs and associated lead-in lanes. Over-use of colour can diminish its impact. It is also expensive to introduce and to maintain and can be visually intrusive.

Off-carriageway, the choice of surface will be determined by a range of factors including such matters as level of use, aesthetics, etc. Unbound surfaces are generally suited to low use or primarily recreational use. They can give rise to unwelcome spray in wet weather and surface erosion if poorly designed/built.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c02_surfaces.pdf

3.3 Signs

The use of direction signs particularly at complex junctions can help reduce delay. They also advertise the presence of cycle routes and make a visual statement about an authority's commitment to cycling. The use of 'cyclists dismount' and 'end of cycle route' signs are rarely justified and usually indicating a flawed or inappropriate design.

Existing posts should be used whenever possible to reduce clutter. Mounting signs on bollards rather than posts reduces both cost and clutter. Where new posts are used they should be set back from the edge of the cycle track or set tight against walls and fences to avoid reducing the effective width. Locating sign plates at a

height of 2.4m and the use of anti-rotational fixings can make them less vulnerable to vandalism. The location and likely speed of approach of cyclists will dictate the physical plate size and 'x-height' of any sign text used, however it is recommended that the minimum acceptable be specified in order to reduce clutter and visual intrusion.

'Route branding' and 'times in minutes' to locations (in addition to the usual 'miles') are more innovative ways of signing and are worthy of consideration (see Peterborough's example of route branding in Appendix 4.2).

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c03_signs.pdf

3.4 Drainage

Designers of all facilities used by cyclists, particularly where they leave/join the carriageway, should pay due attention to the provision of adequate drainage measures to avoid 'ponding'. Whenever possible, gullies and other ironwork should be sited away from the path of cyclists. Where this is not possible they should be of a cycle-friendly design and not located where they will coincide with cyclists' turning movements.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c08_drainage.pdf

3.5 Gradients

Cyclists will often go out of their way to avoid steep gradients. Designers of cycle routes should, therefore, endeavour to follow contours where possible to avoid the need for cyclists to gain or lose height. When creating new cycle tracks designers should aim to achieve a maximum gradient of 3% with the absolute maximum 5% for lengths up to 100m. On the approach to priority junctions this should not exceed 3%. Where steeper slopes are unavoidable the limiting gradient is 7% for lengths up to 30m.

Detailed available at guidance at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c09_gradients.pdf

3.6 Lighting

Lighting should be provided on routes cyclists are encouraged to use for as long as they are likely to use them. Lighting should be of the highest quality but care should be taken not to over-light the facilities and create light pollution. Routes away from natural surveillance are generally less well used after dark once user levels have fallen, even if lighting is provided. On-carriageway routes should be identified as an alternative in such cases, with the adequacy of the existing lighting system checked and improvements made where necessary. In addition, where cyclists may be

expected on a carriageway at night white lighting is preferred as this will provide more positive contrast and better colour rendition than other forms of lighting.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c10_lighting.pdf

3.7 Cycle parking

The provision of cycle parking is an integral part of encouraging more cycling. 'Sheffield'-type stands, no more than 20m away from likely destinations, are the preferred form and are well-liked by cyclists. This will be the expected provision. These should be covered where providing for long-stay parking. 'Little and often' is the cycle parking maxim, particularly in shopping areas.

Providing appropriate cycle parking at people's homes and other locations, for both residents and visitors, is critical to increasing the use of bicycles.

For cycle parking at businesses, education and residential developments, access to cycle parking/storage should be at least as convenient as access to car parking. New developments will be expected to make provision for practical cycle storage arrangements in homes and to provide for visitor cycle parking.

The cycle parking standards that must be adhered to at new developments are found in the Cycle Parking Guidance (Appendix 4.1) and the Cycle Parking Standards (Peterborough City Council Local Plan).

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c04_cycle_parking.pdf

Peterborough City Council Local Plan – Cycle Parking Standards:

http://www.cartoplus.co.uk/peterborough/text/app04_cycle_parking.htm

3.8 Cycling and development proposals

All new developments should be the subject of a formal cycle design checklist to ensure that they are accessible by bicycle and provided with a level of permeability that creates good access and advantage over motorised modes.

In the design of new developments it will be expected that there will be:

- Enhanced, direct access for cyclists over motorised traffic
- Direct, through-routes for cyclists but not for motorised traffic
- A mix of traffic-free and on-carriageway cycling environments
- Well-located, best practice cycle parking, for residential, schools and workplace developments as well as at 'local centres'

The design process should reflect a user hierarchy with pedestrians and cyclists at the top. Cycle (and pedestrian) routes must be considered and identified at an early stage, rather than 'retro-fitted' around the main vehicular access and internal road

network. Such routes should be available at an early building stage of the development and not during the final stages, where established car-reliance, due to the unavailability of alternatives, will be more difficult to overcome.

There will be a presumption that most vehicular routes within new developments will be subordinate to core, walking and cycling routes, e.g. through the provision of priority crossings (see Road crossings – 2.3 above). Development briefs, design codes, masterplans, etc. should provide for and maintain cyclist permeability, for example, through spaces where vehicles are to be excluded, one-way streets, etc. Routes should be direct, linking local facilities with adjacent neighbourhoods plus links to the wider cycle network. Pedestrian/cycle bridges over rivers, railways, major roads, etc., should be implemented where there are obvious, unsatisfied desire-lines.

In addition to any core, traffic-free provision, routes for cyclists should include the use of the majority of the development's road network which should be designed accordingly. This should keep vehicle speeds at or below 20mph unless there are overriding reasons for accepting higher speeds. This approach accords with the Manual for Streets guidance which moves away from hierarchies of standard road types based on traffic flows, and/or the number of buildings served. Within new developments, cyclists should generally be expected to use and be accommodated on the carriageway. In areas with low traffic volumes and speeds, there should be no need for dedicated cycle lanes (see Invisible infrastructure 1.1 above).

Where industrial, commercial and retail developments generate high levels of traffic or frequent movements of heavy goods vehicles, it may be better to provide separate cycle routes, designed and constructed to a high standard.

All routes away from roads should be well lit, overlooked by properties and not include features which can create hiding places, thus compromising personal security and the feeling of being safe and seen by others.

The requirement for ample, high specification cycle parking (particularly at people's homes) is reiterated and will be expected (see Cycle parking 3.7 above and Appendix 4.1).

All development should create and fund connections with the wider network and likely destinations. Off-site improvements and contributions to a 'Peterborough-wide cycling fund' will be secured using Section 106 agreements, etc.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c07_integrating_cycling_into_development_proposals.pdf

3.9 Maintenance

Poor maintenance can create hazards for cyclists and is a major factor in compensation claims against local authorities. Poor quality surfaces, potholes, ruts, un-cleared debris and fallen leaves or poorly reinstated surfaces may cause cyclists to fall. Proper and timely maintenance is essential if these problems are to be lessened or avoided. A potential regime for off-road route maintenance is shown in

the current draft Department for Transport Local Transport Note 'Cycling Infrastructure Design'.

Cyclists are particularly vulnerable to the effects of poor maintenance whether on- or off-carriageway. The design of all new cycling infrastructure should, therefore, take account of the need to minimise future maintenance and other whole-life costs. Non-highway sections of cycle networks should be covered by an adequately funded maintenance programme.

Maintenance programmes, especially winter maintenance, should reflect the importance of cycling as a mode that is to be encouraged. Gritting of important, strategic cycle routes should be considered.

Where major structural maintenance of the carriageway or any re-surfacing is planned a cycle audit should be undertaken at appropriate stages during the scheme design. Where there are no existing measures for cyclists a cycle audit should identify any needs and opportunities.

There should be a presumption against reinstating centre hatching and road centre lines where possible. Where there are existing cycle lanes, these should be widened out to 1.5m (the recommended minimum width). Any gaps in cycle lane continuity should be reviewed and resolved to match good practice. Any changes at traffic light controlled junctions should include the incorporation of ASLs and associated lead-in lanes where these do not exist at present.

Detailed guidance available at:

http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c06_maintenance.pdf

3.10 Monitoring

Effective monitoring procedures are necessary to enable the setting of targets and measuring progress towards them. To judge the effectiveness of cycling projects the levels of use/user satisfaction/awareness should be measured before and after their introduction: this applies to all measures.

The provision of automatic cycle counters should be considered in all new cycle schemes, including at measures in new developments. Cycle monitoring should be a requirement of all travel plans.

Detailed guidance available at:

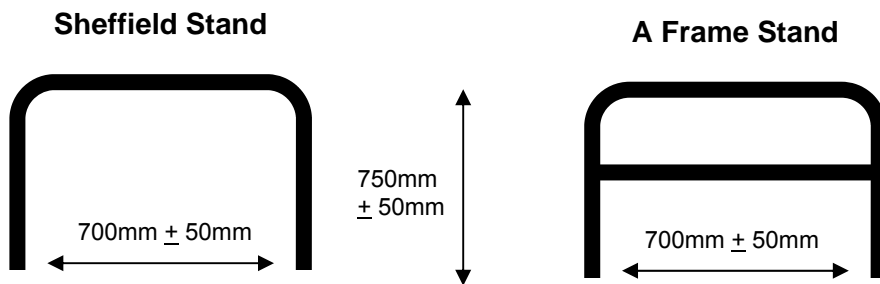
http://www.cyclingengland.co.uk/site/wp-content/uploads/2008/10/c05_monitoring.pdf

4. Appendix

4.1 Cycle Parking Guidance

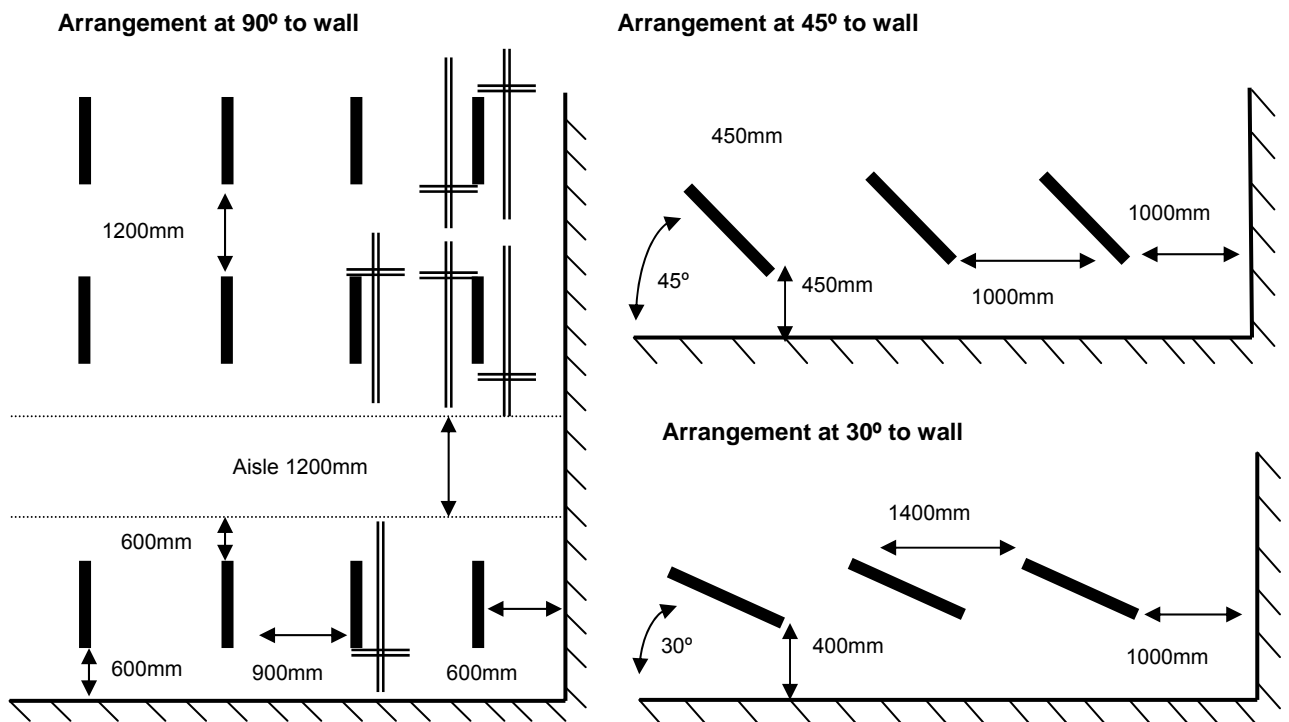
Design

A Sheffield stand is acceptable in most instances but a rounded or flat top A frame stand is recommended as it provides additional support, particularly for smaller bicycles.



Material: $\varnothing 50\text{mm} \pm 5\text{mm}$ tube, minimum weight of 2.5kg / metre.
 Finish: Galvanised steel, primed and painted black.

Layout



Restricted space

For locations where there is restricted space alternative racks can be used with the agreement of the Council. The racks will only be acceptable if a support post is provided between each rack to which the frame of the bicycle can be easily locked.

Access to cycle parking

Cycle parking must be easily accessible from the main point of entry and should not be blocked by any obstructions including car parking spaces, kerb build outs, etc. Internal cycle storage must allow cycles to manoeuvre in and out of the unit with ease and where needed provide adequate turning space.

Cycle parking for businesses and local amenities

Cycle parking for businesses must incorporate policies included within the current Local Plan or its replacement.

- ◆ **Cycle parking for staff** should be secure and enclosed, located close to the building itself and provide frost protection. For sites that have multiple buildings it is advisable to install secure and enclosed cycle parking for staff near each building. The cycle stands within the enclosure must be to the specifications above. Lockers and shower facilities would also be advantageous.
- ◆ **Cycle parking for visitors to a business** should be located near to the main entrance of the site. For multiple buildings visitor parking should be located near the main entrances of those buildings that visitors are likely to enter. The number of cycle stands should reflect the number and type of visitors to the site.

For locations where there is adequate cycle parking already in situ, e.g. some city centre locations, or there are reasons why visitor parking could not be installed agreement with the Council must be sought.

Cycle parking for education

All cycle parking for educational establishments should ideally be covered. Lockers available for staff and pupils for storage of personal cycle equipment is also advised.

- ◆ **Nursery, crèches, and playschools** should have enough cycle stands to be able to accommodate at least 3% of the maximum pupil capacity, and the appropriate number of stands available for staff according to the current Local Plan or its replacement. Consideration for parents picking up and dropping children off in bike buggies or tag alongs should also be given. Either the A frame stand could be used or a Sheffield stand with a maximum height of 650mm \pm 50mm for the pupils.
- ◆ **Primary, junior and infant schools** should have enough cycle stands to accommodate at least 10% of the maximum number of pupil for the school. Staff cycle parking to be in accordance with the current Local Plan or its replacement. For the pupils either the A frame stand could be used or a Sheffield stand with a maximum height of 650mm \pm 50mm for the pupils.

- ◆ **Secondary schools, colleges and universities** should have enough cycle stands to accommodate at least 25% of the maximum pupil capacity. Staff cycle parking to be in accordance with the current Local Plan or its replacement. Consideration should be given to those establishments that have added attractions in house or on site such as swimming pools, cinema's and agreement reached with the Council on the number of additional stands required according to its class in the Local Plan or its replacement.

- ◆ **Visitor cycle parking** should be provided at all educational establishments near the main entrance(s).

Cycle parking for residential developments

- ◆ For **housing with enclosed frontages** with good access to private rear type garden areas no cycle parking facilities are required.

- ◆ For **housing with open plan frontages** and limited access to private rear type garden areas it may be appropriate to install occasional visitor cycle parking depending upon the design of the development.

- ◆ **Flats, back to back housing and residential properties with communal or no garden facilities** should have cycle storage facilities within each property or communal, secure and enclosed cycle storage. The enclosure for communal cycle storage must provide frost and rain protection to the cycles. The cycle stands within the enclosure must be to the specifications above. There should be 1 space available for each bedroom in each property and the A frame stand should be used to accommodate children's cycles. Visitor cycle parking should be provided near the main entrances or if there is not a main entrance available occasional visitor cycle parking should be installed.

- ◆ For **sheltered housing or similar developments**, communal secure cycle storage provision should be 1 space for every 10 dwellings and visitor parking should be located near the main entrance or occasional cycle parking installed if there is no main entrance. Warden accommodation cycle parking should be as per the type of dwelling above.

4.2 Examples of Route Branding in Peterborough

The primary objective of these trials is to investigate alternatives to the traditional use of signage based navigational aids. It is recognised that signage is often outdated, damaged or not appropriate under certain conditions or for certain types of pedestrians. It can also be costly and in some areas may have a relatively short lifespan. Whilst these trials are set up to primarily investigate the durability & effectiveness of some alternatives it is nonetheless anticipated that a number of spin-offs could also be realised. These could range from improving the safety of users through to encouraging more people to consider walking & cycling as a feasible alternative to the car.

- Reducing incidences of conflict between persons travelling in opposite directions

- Providing easier ways of navigating for people who can't read signs or are visually impaired
- Raising peoples confidence and reducing the fear of getting lost when using the route
- Encouraging more people to consider walking and cycling
- Providing a busier, friendlier route where people can meet and as a result reduce the likelihood of crime and anti social behaviour through increased surveillance
- Creating the potential to reduce 'clutter' in the form of signage along routes which is not always aesthetically appealing





4.3 Cycle Design Checklist

Date:	Scheme:	Location:
Completed by:		
1. On carriageway measures and solutions		Please Tick:
1.1 Hierarchy of measures and invisible infrastructure: - Was the LTP transport hierarchy followed when deciding which measures to implement?		
- Could demand management and traffic management measures reduce the volume and speed of motor traffic?		
1.2 Speed reduction and traffic calming: - Has the range of techniques available for reducing speeds been considered?		
1.3 Clear Space (determining carriageway profiles): - Can sufficient widths be achieved to ensure that cyclists can be passed by other traffic in safety and comfort?		
1.4 Exemptions to traffic regulations and contraflow cycling: - If one-way streets or point closures are to be introduced can cyclists cycle contra-flow or pass through the closures?		
1.5 Vehicle restricted areas and town centre access: - In proposals to introduce vehicle restricted areas, is the provision of cyclists' access considered?		
1.6 Signal controlled junctions and advanced stop lines: - Where practicable can advanced stop lines, cyclist bypasses and signal timings with early detection (where there are individual cycle phases or crossings) be introduced?		
1.7 Bus lanes and bus stops: - Can cyclists share the bus lane (other than if there are overriding safety reasons)?		
1.8 Cycle lanes: - Are the cycle lanes of an adequate width (2m preferred, 1.5m minimum)?		
1.9 Core traffic lanes (removal of centre lines): - Has consideration been given to the removal of the central white line to achieve a single, central lane and two, edge of carriageway, cycle lanes?		
1.10 Roundabouts: - Has consideration been given to the preferred 'continental style' roundabout design?		
1.11 Corner radii: - Is the minimum radius of curvature for the path taken by cyclists 6m?		
1.12 Audit and risk assessments to current provisions for cyclists been passed by the Sustainable Travel Officer?		
2. Off-carriageway measures and solutions		
2.1 Traffic-free connections and links:		

- Are the planned off carriageway measures clearly signed, safe, direct, relevant to cyclists' needs and designed in a manner that will remove cyclists from less attractive routes on the carriageway?	
2.2 Road crossings – side roads: - Have the three options been considered when a cycle track crosses a side road?	
2.3 Road crossings mid-link and obstruction of crossing points: - Where feasible, has priority for cyclists at road crossings been considered?	
2.4 Visibility at junctions and forward visibility: - Is adequate visibility (20m where design speed is 12mph) provided and have measures to manage vehicular speed been considered?	
2.5 Footway crossings and tactile paving: - Where cycle tracks cross footways to reach the carriageway are blind and partially sighted pedestrians warned by corduroy paving etc?	
2.6 Flush kerbs: - In the vast majority of cases at the point where a cycle track joins/leaves the carriageway the flush kerbs should be completely flush with no upstand whatsoever (not even 6mm). Has this been considered?	
2.7 Junctions between cycle tracks: - Has appropriate consideration been given to adequate corner radii, so that cyclists can turn as easily as possible?	
2.8 Access and speed controls: - Has appropriate information been gathered for the introduction of access barriers on cycle tracks / shared-use paths? Two rows of bollards are preferred as barriers are against best practice.	
2.9 Wheeling channels: - Where a cycle route coincides with an existing stepped bridges, and an acceptable alternative route is not available, are suitable wheeling ramps installed?	
3. Other issues	
3.1 Headroom: - Is the headroom in new subways a minimum of 2.4m and for lengths over 23m is the headroom increased to 2.7m?	
3.2 Surfaces: - If coloured surfacing is to be used on-carriageway (green in Peterborough), is it confined areas where it will make the greatest impact (e.g. over junctions)?	
3.3 Signs: - At complex junctions are directive signs provided? - Are "Cyclists Dismount" and "End of route" signs being used as a last resort, as they should be avoided unless there is an absolute proven need for it?	
3.4 Drainage: - Has provision of adequate drainage measures been made to avoid 'ponding'?	
3.5 Gradients: - Have endeavours been made to avoid the need for cyclists to gain or lose height?	
3.6 Lighting: - Have efforts been made so that lighting is of the highest quality and care has been taken not to over-light the facilities and create light pollution.	

<p>3.7 Cycle parking:</p> <ul style="list-style-type: none"> - For cycle parking at businesses, education and residential developments, is the access to cycle parking/storage more convenient than the access to car parking? - Has the Peterborough Cycle Parking Guidance been adhered to (App 4.1)? 	
<p>3.8 Cycling and development proposals:</p> <ul style="list-style-type: none"> - Has cycling been considered in the layout and design of new developments? - Are all new developments accessible by bicycle? - Will the new development link up to the existing cycle network? 	
<p>3.9 Maintenance:</p> <ul style="list-style-type: none"> - Will this route be maintained throughout the year to a high standard? 	
<p>3.10 Monitoring:</p> <ul style="list-style-type: none"> - Are effective monitoring procedures in place? 	

Please send a completed copy to the Sustainable Travel Officer at Travelchoice@peterborough.gov.uk