Annex 1: Accessibility

1 Background

The Enfield Town to Broxbourne Walking and Cycling Route is an active travel route that runs from the southern side of the M25 junction with the A10, along the New River and eventually on the local highway network towards Enfield Town. The off-carriageway section is an approximately 3m wide shared path running alongside the New River for approximately 2.9km.

A planning consent application was submitted in November 2022 which included a Design and Access Statement and an Equalities Impact Assessment (EQIA). It was noted from statutory consultation feedback that inclusive access required further consideration.

The EQIA outlines the impact of the design on the nine protected characteristics as designed by the Equality Act 2010 as well as people who are disadvantaged due to socio-economic factors. This addendum supports the EQIA to provide additional information for some key considerations given to ensure an inclusive design.

2 Path Width

For shared use paths, *LTN 1/20, 6.5 Shared use, Table 6-3* suggest a recommended minimum width of three meters for cycle flows of 300 cyclists per hour. Norman Rourke Pryme's Traffic Impact Assessment estimates approximately 150 cyclists or pedestrians would be using the shared use path in peak hours. This concludes a three-meter width for the shared use path is suitable. The proposed path is generally a minimum 3m width. There are pinch points which reduce the path below a 3m width, including a 300m stretch of 2.5m width near Saint Ignatius College, and a discrete section of 2.25m. Discussions are being undertaken with Saint Ignatius College regarding the potential to acquire property for the path. This would reduce length of 2.5m width path to less than 250m.

If additional land is not acquired, these sections of reduced width still comply with the recommended width for two wheelchair users to pass, which requires a minimum of 2m.

Whilst these pinch points do not conform to LTN 1/20, the shared use path conforms to *Inclusive Mobility, A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure* along the full route, which recommends an absolute minimum width of 1.5m to allow one wheelchair user and pedestrian to pass each other. The recommended width for a footpath is 2m to allow enough space for two wheelchair users to pass even if they are using large electric mobility scooters.

3 Speed management

Speed management has been considered as part of the design to ensure that pedestrians, particularly elderly, children, disabled people and those pushing prams, do not come into conflict with cyclists. Speed management has also been considered to reduce conflicts with people using wheelchairs. LTN 1/20 suggests that cyclists alter their behaviour according to the density of pedestrians and therefore physical calming features to slow cyclists are rarely necessary. Options have still been explored for speed management, and these options are summarised below and explained in more detail in the Speed Management section of the Design and Access Statement.

<u>Entrances / Exits to shared spaces</u>

Shared spaces are provided at the entrances / exits to the path. The proposed solution to address speed management is to provide tegula blocks for the shared surface at the entrances to the path as a visual cue to pedestrians and cyclists to be aware of each other.

Ladder pavers (or equivalent) are also provided between the footpath and the shared space so that users with impaired vision are aware of a change in space from a footway to a shared space. Bollards are also provided at the entrances / exits, however these have been positioned so that wheelchair users can access the path.

Additional measures to reduce speeds at entrances / exits to the path were considered, such as narrowing of entrances / exits, however the entrances and exits to the path need to be accessible for all users. Any narrowing of entrances / exits that would be wide enough to accommodate a wheelchair would be unlikely to provide speed reduction measures for cyclists.

Along the New River shared path

Speed management measures have been considered which would reduce the likelihood and severity of conflicts along the path and at these pinch points. The speed reduction measures considered the impact on accessibility and inclusive access. For example, raised humps were discounted because it is more difficult for less abled pedestrians to negotiate. They were also considered challenging for wheelchair users and children on bikes. Chicanes were also considered but discounted due to the pinch points that would be created and the reduced available width to accommodate them. A full explanation of the options explored is provided in the Speed Management section of the Design and Access Statement.

Following consideration of the risks involved in each of the speed reduction measures, it was concluded that the safest solution was not to provide speed reduction measures within the path itself. Side friction was introduced to manage speeds, through the use of additional seating along the path and information boards. Bollards are also proposed at entrances / exits to the path. The hoggin surfacing appears less smooth than an asphalt or concrete path which would also help to reduce speeds.

4 Surfacing

The surfacing was initially proposed as hoggin. Concerns were raised regarding the accessibility of a hoggin path, particularly for wheelchair users, and the risk of pooling water during / after rainfall events.

The use of hoggin and alternative surface materials were explored in more detail with Enfield Council specialists, the external design team, construction partners and the design review panel to determine the preferred surface.

4.1 Hoggin

Hoggin has been used on a range of schemes within the Enfield Borough, including Four Hills Estate, Boundary Ditch Parkway, and sections of the path alongside the Turkey Brook. Hoggin is a general term to describe a mix of gravel, sand and clay. The hoggin mix proposed for the Enfield Town to Broxbourne project has a 20mm thick surfacing of 0/10 gravel, underlaid by a 50mm thick layer of 0/20 gravel. The fines in the mix make this type of hoggin dense, very hard, self-binding, resistant to rutting (surface depression / grooving) and ponding, provided it is constructed by a capable contractor. Over time some small gravel particles become loose, however the loose particles are so fine that it should not create an accessibility issue.

The path alongside the Turkey Brook, west of Forty Hill is a well-established path that was constructed more than 5 years ago. A site visit to the path showed that it was still dense and hard, providing good levels of accessibility. A picture of the surfacing is shown in Figure 2.

During the site visit users were observed to be cycling and pushing prams along the surface with ease, as demonstrated in Figure 1.

Figure 1 Turkey Brook path, north of Maidens Bridge

Figure 2 Turkey Brook Path, north of Maiden's Bridge (zoomed in)

The path has a cross-fall, as outlined in section 6 of this annex. This, combined with the hoggin being a semi-permeable surface, will avoid the concerns of water pooling on the path.

The look of a hoggin path is in-keeping with the New River. The section of path being delivered by Broxbourne Council, that this project connects in to, is being constructed from a

type of hoggin. Using a similar material will provide a continuous looking path from Enfield to Broxbourne.

4.2 Porous Asphalt

Porous asphalt was investigated as an alternative material. Porous asphalt was chosen as a potential alternative to hoggin because it is permeable and therefore will not require additional stormwater measures, and because it provides a smooth surface for cycling, wheelchairs and prams.

While it may provide a smooth ride, the negatives of this material outweighed the positives. The environmental footprint would be significantly increased if the path was laid from asphalt due to the construction methodology of laying bitumen (which is derived from fossil fuels) and the importing of material. The construction of an asphalt path next to the New River would entail environmental and health risks due to potential leakage of poisonous substances into the New River, which carries potable drinking water for London. Tree roots or general ground subsidence would crack the asphalt and lead to expensive maintenance costs. The standard porous asphalt is a black bitumen, which does not visually fit the character of the New River.

Standard porous asphalt is outside the budget of the project, and a buff-coloured asphalt, which would be more in-keeping with the look of the New River, would be even further above the budget.

4.3 Resin path

A resin bound path was considered for the project because it is permeable and therefore will not require additional stormwater measures, and because it provides a smooth surface for cycling, wheelchairs and prams. It is also more visually in-keeping with the character of the New River.

While these positives supported the use of a resin bonded path, there were many negative aspects to a resin bound path that were also raised. The environmental footprint would be significantly increased when compared to a hoggin path. Tree roots or general ground subsidence would crack the resin and it is a very expensive material to repair due to not being feasible to make localised repairs.

The cost of a resin bound path is approximately 75% more than a hoggin path, which brings the budget significantly outside of the available funds.

4.4 Conclusion

The current section of open path along the New River, from Carterhatch Lane to the M25 junction, is a challenging walk for most pedestrians and is inaccessible for cyclists. The section from Tenniswood Road to Carterhatch Lane is completely inaccessible to all users as it is closed to the public. The improvements to accessibility of the New River, using any of the materials explored above, is a significant enhancement to the existing situation. The case studies of existing paths constructed from hoggin highlighted that it is a hard surface that provides good levels of accessibility, whilst balancing the issues of environmental impacts, maintaining the character of the New River, and being accommodated within the available budget. Given these considerations, hoggin is proposed as the surface material for the Enfield Town to Broxbourne Project.

5 Longitudinal Gradient

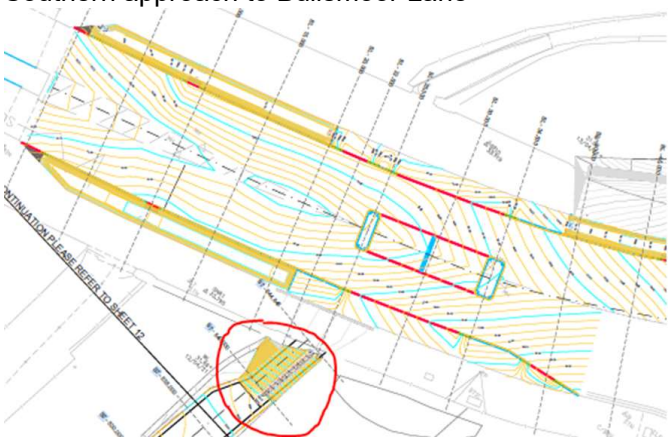
LTN 1/20, Alignment of cycle tracks and ramps 10.8.22 recommends a gradient of less than 8% to be accessible for all users, in particular those using wheelchairs, pushing prams or less abled walkers, such as elderly and pregnant people.

5.1 Gradients Reduced to 8%

The path is generally in accordance with this recommendation, however there were four locations were this was initially not achieved. A workshop was held, and feasible solutions were found to reduce the gradient at three of the four locations. These solutions are outlined in Table 1.

Table 1 Location of steep gradients

Initial Gradient	Location	Solution
14.4% for approx. 4.5m	Northern approach to Turkey Brook Bridge 	Level of Turkey Brook Bridge approach raised to provide a conforming gradient.
14.2% for approx. 1.2m	Southern approach to Turkey Street 	Retaining wall proposed which reduces the gradient to within LTN 1/20 recommended gradients

23.2% for 4.3m	Southern approach to Bullsmoor Lane 	Retaining wall proposed which reduces the gradient to within LTN 1/20 recommended gradients

5.2 Saint Ignatius College

The fourth section, which could not be reduced, is a section of ramp by St Ignatius College which is currently proposed as 15.9%. A wide range of options have been investigated to reduce this gradient to make it accessible for all users, however a feasible solution has not been found.

The constraints dictating the steep gradient are the private property, St Ignatius College, east of the Thames Water facility and the location of and level of an existing Thames Water structure within the path at chainage 31. To avoid the two constraints, aligning the proposed path with the fence line and achieving the top level of the existing structure at chainage 31, a gradient of 15.9% was needed.

In this section, the scheme cannot follow the proposed alignment while keeping the gradient at a maximum of 8% since it would clash with the existing structure.

A longer path utilising additional Thames Water property was considered however the length of the path needed to achieve the level difference would need to be at least 60m towards the west, as outlined in Figure 3. This would clash with the existing Thames Water access road, would require extensive earthworks (cuts) in the vicinity of other Thames water structures and would require introducing 3 new 6m radius bends on the path.

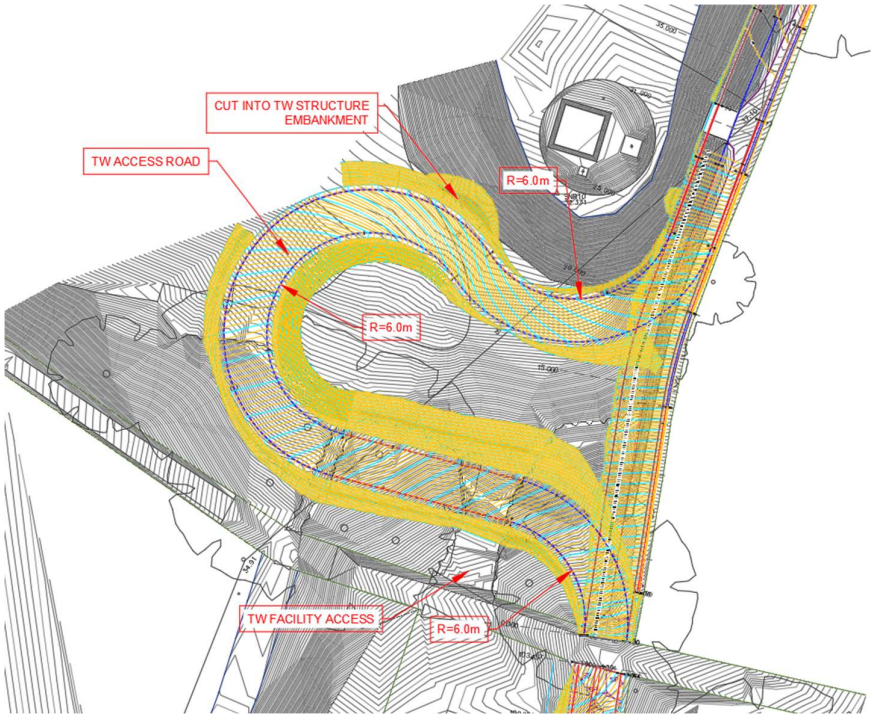


Figure 3 8% path alignment avoiding Saint Ignatius College

Building up the path to achieve the smaller gradient would require adjusting Saint Ignatius path which is out of the scope of this scheme. This was, however, looked at following a proposal from the Urban Design officer. The adjustment would extend 50m south into the section south of the Saint Ignatius path and the level of the Saint Ignatius path itself would need to be raised 1.8m minimum at the crossing. There would also be a further 10m of existing path needing raising either side of the crossing, which would encroach on private land and would go over the existing Thames Water accesses west of the proposed path. This option was therefore discounted.

The final option considered was to move the alignment to the east, through Saint Ignatius College. There is currently no topographical survey within Saint Ignatius College, but it appears that gradients of 8% or less could be achieved with the purchase of private property. Discussions are being undertaken with St Ignatius College and may result in additional land being made available to reduce the gradient of the path to within the LTN1/20 guidance.

5.3 Rest Areas for Steep Gradient

The installation of seating was considered mid-way along the steep gradient to provide a rest stop, however the available width is narrow in this location. Therefore, there is not sufficient width to include a seating area. There is seating proposed south of the steep section where there is sufficient space available.

5.4 Alternative Accessible Route

Should additional land not be made available from Saint Ignatius College, wayfinding signage would be installed at locations north and south of the 15.9% gradient outlining an alternative accessible route.

The alternative route that would be sign posted is in Figure 4. It is approximately 850m, whereas the direct route along the New River is approximately 450m. Therefore, the detour adds approximately 400m of additional travel. This route avoids the steep gradient and utilises the concrete surfaced greenway, the footpath along the A10 and the footpath on the northern side of Turkey Street, re-joining the New River Path at Turkey Street. There is a short 50m length of Turkey Street, from Capel Road to the Turkey Street Bridge, which does not have a footpath. Vehicle usage along this short stretch is expected to be minimal because it only provides access to four driveways.

The route from the greenway to Turkey Street to the west, utilising Forty Hill, is 50m shorter. This was investigated but the footpath is less than 2m in a number of locations, has tight bends and is very undulating due to cracks in the pavement. This option was therefore discounted.

Figure 4 Sign-posted alternative route

Figure 5 Existing greenway

A further alternative route is provided in Figure 6. The route is approximately 550m, whereas the direct route along the New River is approximately 300m. Therefore, the detour adds approximately 250m of additional travel. This would avoid the steeper gradient, however 280m of the route is an unpaved public footway. This would not be accessible for wheelchair users and challenging for people cycling or pushing prams. Therefore, this route will not be signed as an alternative accessible route, however it will be available for use.

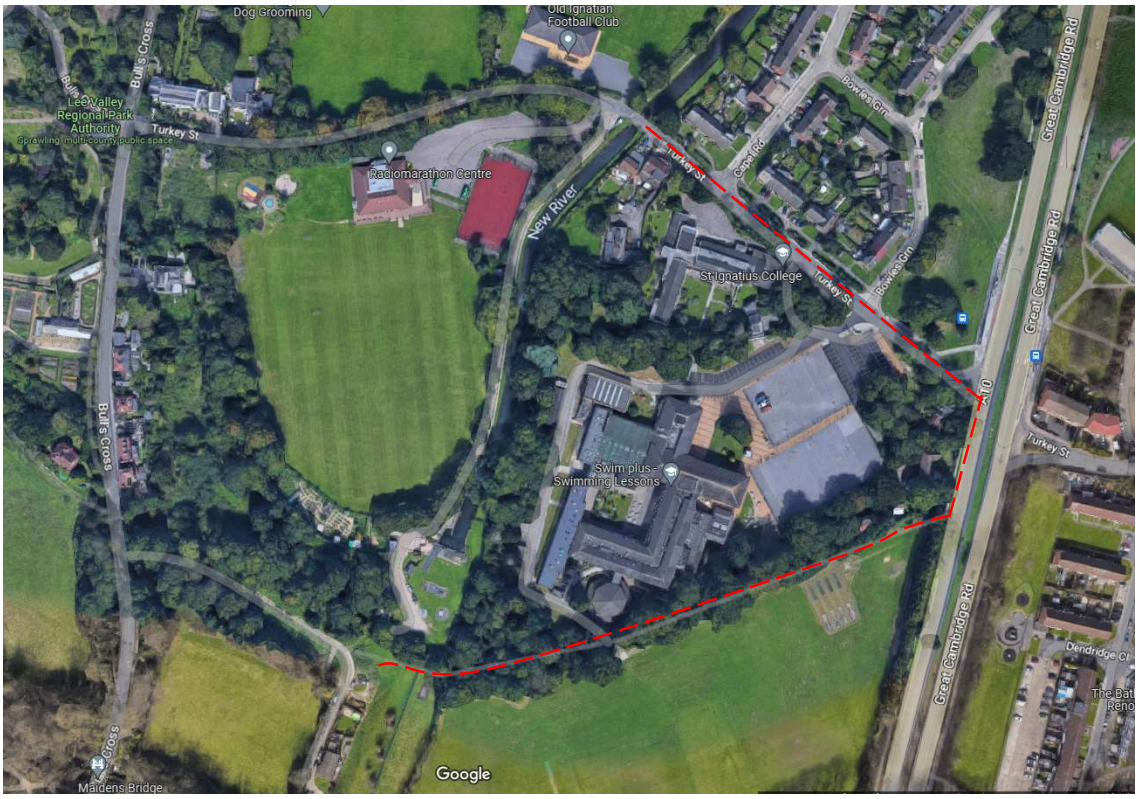


Figure 6 Alternative Route 2

Figure 7 Existing footpath near Saint Ignatius College

6 Horizontal Cross-fall

LTN 1/20 advises that cycle tracks should have a crossfall to help surface water clear, therefore making the path better suited for use in the rainy season. LTN 1/20 also advises that the crossfall should be no more than 2.5% as this could cause wheels to slide in icy conditions. This has been accommodated where possible, however there is a very constrained width available to construct the path. The proposed path makeup uses hoggin which is a permeable material (as opposed to a sealed surface). This allows for any residual water to permeate into the material thus removing any pooling of water that would otherwise freeze on the surface. In addition, the *Design Manual for Roads and Bridges document CD 195 Revision 1* states that crossfalls should not exceed 5% (E3.23), rather than 2.5%.

Although the path is not expected to be icy and the DMRB suggests a maximum of 5%, the path has been designed 2.5% or lower where possible. This has not been achieved everywhere because wider slopes (for fills and cuts) would be needed over the existing terrain, which was not achievable in all locations due to constraints with available space within the Thames Water property between New River and boundary fences. 37% of the path has achieved a maximum 2.5% crossfall, and 99% of the path has achieved a maximum 5% crossfall.

1% of the path length has crossfalls higher than 5%. These are mostly around tie-ins with existing roads and paths that this route crosses and is constrained with the gradients of the existing roads and paths.

While the design team have reduced the crossfall as much as reasonably practical, the above rationale outlines why this has not been achievable in all locations and why a maximum 5% crossfall is still considered appropriate and accessible in this location.

7 Rest areas

There will be users of the path, particularly elderly, pregnant people, or those recovering from illness / injury that would benefit from being able to rest while using the path. Rest

areas have been designed with these users in mind. Below outlines some of the considerations given to these users when designing the rest areas:

- Rest areas are generally provided at a maximum of 500m spacings to ensure there are frequent rest stops for users.
- The area between the path and the seat is surfaced so that there is easy access from the path to the rest area.
- The surfacing extends on one side of the seat with sufficient width for a wheelchair so that a wheelchair or pram could be positioned next to the bench seat.
- The bench seats have been chosen with a back rest because pregnant and elderly people were likely to benefit from reclining against a back rest.