



Dublin Cycling Campaign,
% Tailor's Hall,
Back Lane,
Dublin 8

ASHTOWN LEVEL CROSSING

12 October 2020

INTRODUCTION

We are writing to you on behalf of the Fingal Cycling Campaign a subgroup of the Dublin Cycling Campaign which has been advocating for improved cycling infrastructure for Dublin for 26 years and a registered charity #20102029. Dublin Cycling Campaign is a member of Cyclist.ie (www.cyclist.ie), the Irish Cycling Advocacy Network, is the network in Ireland of Cycle Campaign, Bike Festival, and Greenway Groups, and is the Irish member of the European Cyclists' Federation (www.ecf.com). Our aim is to make Fingal a safe and friendly place for everyone, of all ages, to cycle and walk. Dublin and Fingal Cycling Campaign welcome Fingal County Council's intent to improve walking and cycling infrastructure

We welcome the DART+ West line improvements and will move Dublin's transport sector to a more sustainable mode of transport in light of a climate emergency. As Ashtown level crossing is a complex design we have made a single submission for this level crossing and will make a submission on the other level crossings separately, Although there will be similar issues raised. We urge Irish Rail to take into consideration our recommendations as suggested below. As referenced in the consultation documents Option 2, Option 4 & 4a, Option 4 & 4b and Option 6 go forward to Phase 2. **We will concentrate on Option 2, 4, 4a and 4b only.**

GENERAL COMMENTS

There are pros and cons for use of either an underpass or a bridge. Fingal Cycling Campaign is recommending an underpass is the preferred option. The benefits of an underpass are that it's protected from the elements such as wind and rain and cyclists don't have to deal with incline to cycle over the royal canal. The descent should also benefit cyclists in building momentum coming from south to North and overcoming the incline on the North side of the canal. There is a shorter descent from North to South and a 450 meter incline. This will be important if the gradient is less than 1:20 (1:5 and even 1:3.5). We have referenced both the Irish guidelines which are limited in their scope for design standards in APPENDIX I and Dutch design standards which have more comprehensive examples in dealing with similar complex junctions in APPENDIX II. We would recommend Irish Rail consider the best practice and design standards from the leaders in cycling infrastructure.

The main issues with design of tunnels/underpass and bridges for cyclists and pedestrians are

1. Lighting
2. gradients (<1:20)
3. Safety (especially at night time for women)
4. Line of sight
5. Segregation
6. Noise
7. Priority
8. CCTV

9. Passive surveillance
10. Active surveillance by An Garda Siochana

SPECIFIC COMMENTS

- Fingal Cycling Campaign supports Option 2 in combination with either Option 4a or Option 4b in order to support cycling and walking of all ages and abilities. Option 2 and 4a underpasses supports cycling and walking for people who are less well able to deal with the incline crossing the cycling and walking bridge as shown in 4b.
- The issue of safety, especially women and girls, will not use an unsafe location. We can see this already from the new section of the Royal Canal (near Guild Street/Newcomen Bridge) and at sections along the Grand Canal (near Bluebell/Inchicore)
- Option 2 will have a segregated cycle lane and it will be sharing the space in the underpass which can make it very loud in the underpass. Will there be options to reduce noise in the underpass as it is quite a long section of the underpass?
- Option 2 has 4 junctions with large entrance and egress points along its route so cyclists will lose priority and they will have to deal with crossing dangerous junctions moving in and out into the main lane of traffic. Will there be Toucan crossing at these junctions along the route of Option 2? This will make this option less attractive for cycling and walking. This is why we are requesting a separation of cycling and walking from Option 2.
- It is unlikely that Option 4a is compatible with Option 2 so we would defer to Option 2 in combination with Option 4? Is there a possibility of doing an improved design? .
- There is no mention of the incline and decline gradients on approach and exit to Option 2. The CROW design standards (<https://crowplatform.com/>) recommends a gradient of less than 1:20.
- There should be a right first time approach to this design and a great opportunity to design a good tunnel in Ireland for cyclists and pedestrians.
- It was disappointing to see that the pedestrian and cycle counts were only done on one day on 5th February 2019 compared to three weeks of surveys for vehicle traffic. Could this have biased Irish Rail view on how many cyclists and pedestrians are using these level crossing and therefore not provided for high quality designs. See Appendix III
- It will be important to have a high quality crossing for pedestrians and cyclists in order to connect to the Phoenix Park from the Royal canal and the new Hamilton way that is currently out to consultation now. <https://www.dunsink.dias.ie/hamiltonway/> See Appendix IV with image of proposed greenway
- The NTA have also mentioned (Page 29/144) in their report that that Option 2 will result in increases in journey times and travel distances for people living and working in the Ashtown Village/Scribblestown Road or Ashtown Road/Mill Lane areas could be significant. Given the local severance that will be caused, **the provision of a pedestrian bridge over the rail line should be examined if the level crossing is to be closed.**
- In Utrecht, Netherlands there are examples of combined traffic and cycle underpasses that the cycle track doesn't go as far down as the traffic lane. People on bikes aren't as

tall as buses/HGVs afterall. It means that the ramps on either side can be less steep, which makes it easier to cycle through. Could this be considered for Option 2 as it will remove the issue with gradients on both North and South sides of the underpass.

Example:

<https://www.google.ie/maps/@52.0524624,5.1549637,3a,75y,16.84h,78.8t/data=!3m6!1e1!3m4!1sCfHzOkaJXnLd6IzP9FOSSg!2e0!7i13312!8i6656>



Underpass in Houten, Utrecht

- Please also refer to Cllr David Healy from Fingal County Council study tour of the Netherlands. He references some good examples of underpass design standards

<http://davidhealy.dublin13.com/wp-content/uploads/2017/09/Report-from-Ve%CC%81lo-city-2017-Nijmegen.pdf>



Good example of underpass in Netherlands From Cllr David Healy report

CONCLUSION

Fingal Cycling Campaign welcomes the DART+ West plans. We are excited to see the plans put forward by Irish Rail. We have some concerns around the design standards that will be used. The current Irish design standards are not of a high standard and lack detail. We would recommend Irish rail take on board our points referenced and refer to the Dutch design standards for best practice that will help cycling for all ages and abilities. If a totally separate cycling and pedestrian underpass is not possible such as Option 4a we would suggest that Option 2 is altered to take into account a cycle lane that can be modified to remove any gradient issues with Option 2. We look forward to working with you on the other level crossing west of Ashtown.

ASHTOWN CROSSING

OPTION 2 - EMERGING PREFERRED OPTION BY IRISH RAIL

We have presented below a sectional elevation along the scheme looking west to illustrate the proposed works.



Figure ES-10 Ashtown Emerging Preferred Option Sectional Elevation Looking West

ES1.5.1 Ashtown Level Crossing



Figure ES-9 Ashtown Option 2 - Emerging Preferred Option at Ashtown Level Crossing Replacement

The Emerging Preferred Option at this location is a full vehicular road bridge with pedestrian and cycle facilities, to offset the permanent level crossing closure. The new bridge is deemed necessary to maintain traffic flows and mitigate against community severance. The new road bridge runs under the railway and the canal to the west of the existing Ashtown Level Crossing along the line of the Mill lane. (See Annex ES 1.1: Figure 05)

Option 2 – Underbridge on Mill Lane This option would entail re-routing Ashtown Road along its old alignment (pre-Royal Canal) on Mill Lane and passing under both the railway and the Royal Canal. The option can accommodate a cross section of a 6.5m carriageway with 1.8m footpaths on both sides and 2.5m two-way cycle track on the eastern side. An at-grade turning head and drop-off are proposed to be provided in the green space to the south of Ashtown Station. The length of the option is approximately 150m on the northern side and 300m south of the rail line. The option would drop to an approximate level of 37.5m above MSL under the rail which is at a level of 45.6m above MSL at the crossing point. On the southern side a separate pedestrian and cyclist link and link to the riding school are proposed to maintain access for non-motorised use these would have cross section of 4.0m. It is feasible to cross at this location, as it is upstream of the double lock on the canal and the canal is at the same approximate level as the adjacent railway. This option would require some property acquisition and modifications to existing accesses.

OPTION 4



Figure 9-27 Ashtown Option 4 over rail and canal at Phoenix Park Station (Copyright Ordnance Survey Ireland – 0039720)

OPTION 4A

This option also includes the construction of a new tunnel under the rail line and canal at Ashtown to provide pedestrian and cycle access. This option would drop to a level of approximately 40.1m above MSL to tie in with the existing road to the north of the rail line providing a pedestrian and cycling link north and south of the rail line with a 6m wide cross section in order to match the existing cross sections of the surrounding road network with a 3m footway..

OPTION 4a : Cycling and Walking underpass

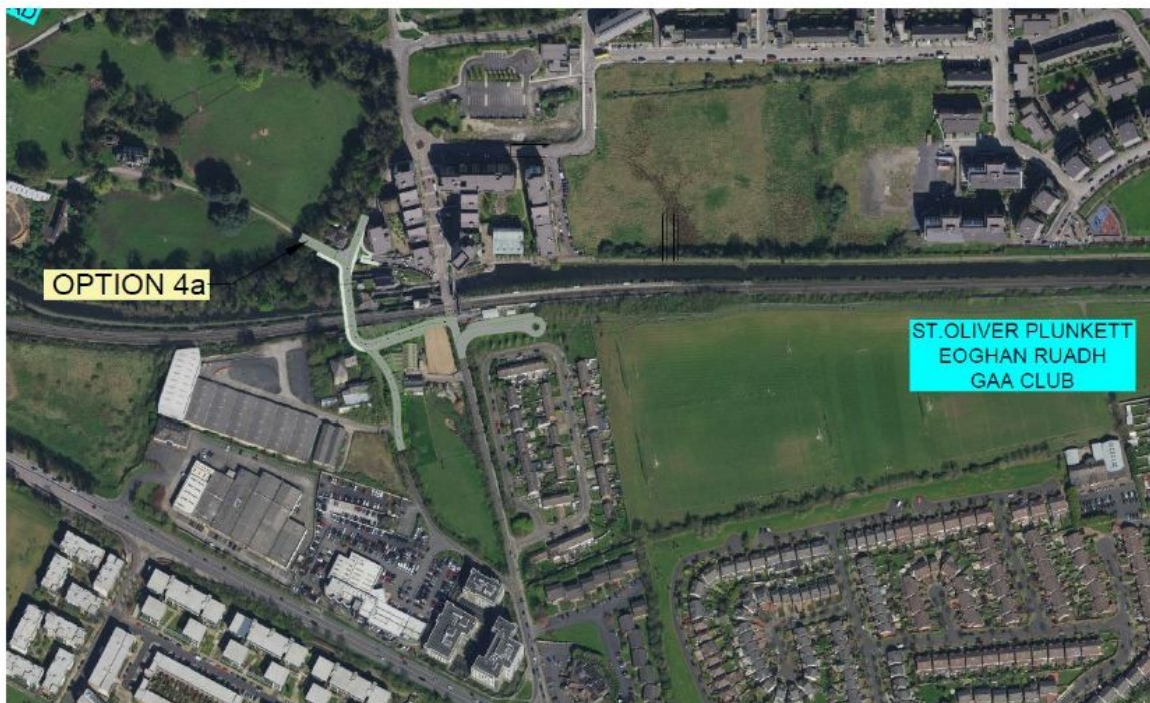


Figure 9-28 Ashtown Option 4A complimentary pedestrian and cycle underpass at Ashtown
(Copyright Ordnance Survey Ireland – 0039720)

Option 4+4b - Link from River Road to Phoenix Park Station Grade Separated Junction

This option is considered in combination with Option 4 described above and also includes a pedestrian cycle overbridge structure with a 5m wide cross section (Option 4b) over the canal and railway. It includes the demolition of both the existing cable stayed footbridge at the level crossing and the station footbridge to provide space for the proposed bridge.

The proposed bridge would cross the rail and Canal at a level of approximately 50.0m above MSL where the rail is at a level of 43.0m above MSL and the canal at a level of 39.7m above MSL.



Figure 9-29 Ashtown Option 4B - complimentary pedestrian and cycle overbridge at Ashtown
(Copyright Ordnance Survey Ireland – 0039720)

APPENDIX I - IRISH DESIGN STANDARDS

Please see guidelines referenced in the National Cycle Manual for design standards for cycling and walking bridges and underpasses.

https://www.nationaltransport.ie/wp-content/uploads/2013/10/national_cycle_manual_1107281.pdf

1.9.4 Bridges

The key determinant of whether to mix cyclists and pedestrians on bridges is the speed of the bike. This is influenced by the length and slope of the bridge.

Non-traffic short flat bridges are suitable for shared use with pedestrian priority.

However, longer bridges where cyclists are likely to build up higher speeds, should segregate both modes.

Where new bridges are intended for cyclist usage, it is recommended that they meet the following requirements.
Feature Design Requirement External parapet 1.2 to 1.4m height Clearance to parapet See Section 1.5.1 Surface Suitable for bicycle wheels and braking Lighting Sufficient for social security Landing points (each end) Bridge deck gradient < 1:20, to keep cycle speeds low Priority Design to reinforce pedestrian priority in mixed area at bridge access/egress aprons

5.3.3.6 Lighting and Safety at Isolated Locations

Outside of built-up areas, recreational routes will not normally require lighting unless there are specific road safety concerns, e.g. at junctions or crossings.

Underpasses require special attention to address a perceived sense of reduced personal safety for pedestrians and cyclists. Underpasses should be provided with a minimum level of 30 Lux unless a CCTV system requires a higher level.

APPENDIX II - DUTCH DESIGN STANDARDS

Why tunnels are better than bridges for cycling

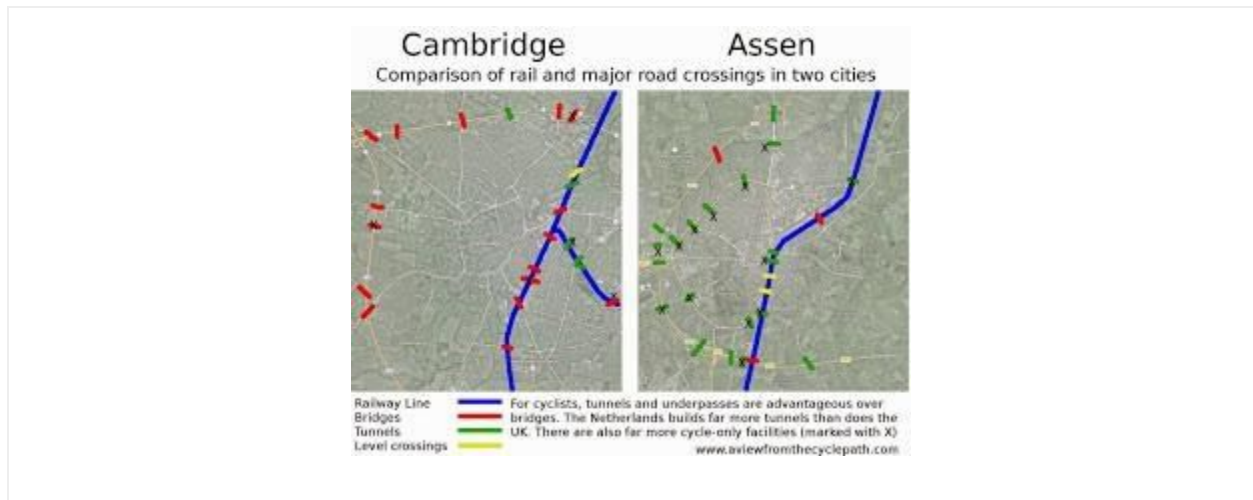
Some useful information on why underpasses are preferred in the Netherlands

(<http://www.aviewfromthecyclepath.com/2014/08/why-tunnels-are-better-than-bridges-for.html?m=1>)

“A couple of weeks ago a campaigner from Cambridge in the UK asked me a question about bridge parapet heights in the Netherlands especially with regard to clearing railway lines. He'd realised that he'd not had any problems due to climbing bridges in this

country and assumed that the Dutch had standards which were more suitable for cyclists than the UK.

“However, the answer to this question turned out to be more involved than just heights of bridges. Actually, in the Netherlands there are not many high bridges. Cyclists in the Netherlands use tunnels and underpasses far more often than bridges. There are very good reasons for this which I'll explain below, but first a graphic showing the facilities which exist in both Cambridge and Assen to cross railway tracks and major roads which would otherwise form barriers to cycling:



Crossings marked with an X are cycle and pedestrian exclusive crossings. Note that all but three of the combined crossings for cyclists and motor vehicles in Assen have separate cycling infrastructure. Crossings of the river Cam and canals in Assen are not included though they make much the same point. There are many canal bridges in Assen - mainly cycling specific flat opening bridges which do not require riding uphill and none have obstacles upon them. Assen's many crossings form important links in [the fine grid of high quality cycling facilities](#) required for a high cycling modal share.



The diagram above does not include bridges over rivers and canals. No

**bridges in Assen require
dismounting**

like this example in Cambridge.

As you can see, in both cities, the railway line cuts the eastern part of the city from the western part while major roads have a similar effect on the western parts of the cities. The maps show crossings of motorways and ring-roads only, excluding rivers and canals as well as roads closer to the centre.

Comparison of crossings in Assen and Cambridge

It's immediately obvious that there are far more green crossings (tunnels) in Assen than there are red (bridges). The reverse is true in Cambridge. What's more,

The railway has a similar effect on both cities, cutting off people in the east from the centre. More people live east of the railway in Cambridge than is the case in Assen. Note that in Assen all the most commonly used crossings are either tunnels or level crossings while in Cambridge the majority of crossings are bridges.

It's a similar story with major roads. Both cities have a motorway running north-south west of the city. Cambridge also has a dual carriageway (a road built to motorway standard) running west-east across the north of the city, while Assen has a partial ring-road which runs around the west of the city. These roads are crossed almost entirely by tunnel or level in Assen while they are crossed by bridges in Cambridge.



All crossings in Assen can be
used
without slowing down. This is one
of the many cycle and pedestrian
crossings of a major road in
Assen.

Four metre wide cycle-path,
separate
pedestrian path, gentle inclines,
well
lit and we can see right through for
good social safety. Built in the
1970s
well maintained: last resurfaced

2012

Note also that in Assen the crossings mostly have an X which indicates that they are cycle-specific crossings. There are also crossings shared with cars, but these include separate infrastructure for cycling.

In Assen it is rare for a cyclist to use a bridge, common to use tunnels, and very often we cross on infrastructure which is cyclist specific so that cars are rarely seen. In Cambridge the crossings are mostly bridges, usually along the same routes as used by cars, and in several cases you have to cycle on the road to cross major roads or the railway line.

Dutch standards for Tunnels and Bridges



CROW still recommend maximum
of 5% incline and that's what this
tunnel has. Complaints from some
local cyclists have led to this
Assen

underpass being redesigned at
3.5%.

The CROW *Design Manual for Bicycle Traffic* includes many details of how both bridges and tunnels should be designed to make cycling over and through them safe and convenient. I'm not going to repeat all of their recommendations here but will include some important points.

1. The incline to a bridge or tunnel should be less than 1 in 20 (5%)
2. Upward inclines: "Upward inclines require cyclists to make an extra effort and should be avoided where possible in the design of a bicycle friendly infrastructure."
3. Downward inclines: "On long declines, attention should focus on the speed of the descending cyclist". It is suggested that planners should expect "35 to 40 km/h" and that there should be "plenty of free deceleration space at the bottom of inclines, with no intersections, sharp bends or other obstacles in the way".
4. Absolute minimum width of cycle-paths should be 3 m. That's permissible only if there's a separate 1 m minimum walking path on both sides of the cycle-path. Without a separate walking path (i.e. where no pedestrians are expected, this isn't *shared use*) the minimum width becomes 4.15 m, made up of 3.5 m cycle-path plus 0.325 m clearance between each side of the cycle-path and any railings or wall.

All the examples in Assen meet all these requirements except for one tunnel built in the 1960s which is a little too narrow.

Generally speaking, it is better that cyclists do not have to climb to cross roads or railway tracks. It is better to have cyclists continue on flat infrastructure and that powered vehicles should climb.



Only three bridges in Assen have

a

significant inclines for cyclists.

Most

are completely flat like this
example.

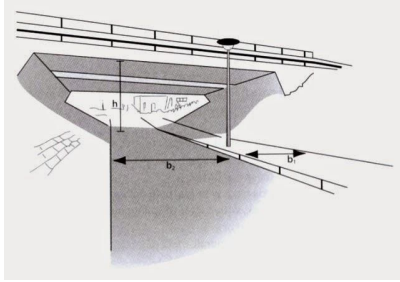
Advice for bridges

- 1. Gradients should not be constant all the way up the incline. Cycling speed diminishes when climbing. For relatively short inclines (height less than 10 m), the highest section should be less steep than the lowest section to enable cyclists to maintain an almost steady speed uphill.*
- 2. If a height over 5 m must be climbed, 'resting places' in the form of a horizontal section about 25 m in length should be provided before cyclists must to climb again.*
- 3. Wind nuisance is greatly increased on an exposed bridge so this should be taken into account. Climbs against the prevailing wind should compensate by being less steep. Wind barriers can be installed on bridges to reduce the nuisance to cyclists.*
- 4. It should be possible to cycle onto and over a bridge. Cyclists should never be required to dismount. Escalators or lifts to access the bridge are OK as a last resort measure.*

Problems with bridges

The following are given as specific problems with bridges:

- 1. There are often longer inclines than with a tunnel (because of greater height difference in order to clear railway lines, for instance - precisely the parapet height question which prompted this blog post)*
- 2. There is a possibility of fear of heights with a high bridge*
- 3. Bridges must be designed to keep height difference to be overcome by cyclists as small as possible*
- 4. Suggestion that with a cycle-bridge across the road: if necessary the road should be lowered to make the cycle-bridge less high.*



CROW ideal tunnel impression.

Short

open, well lit, separate pedestrian
path

also of good width. Splayed out
sides

Advice for tunnels

1. *Steeper gradients can be used than with a bridge because cyclists going into a tunnel first ride downhill and pick up speed which can be used to climb back out of the tunnel.*
2. *Tunnels can be made less deep by moving roads and railways above them upwards.*
3. *Social safety issues should be addressed by making it possible to see out of a tunnel before you enter, and by avoiding long tunnels.*
4. *A "semi-buried" design can work well, with the road above rising by about two metres, effectively a small bridge. This makes the tunnel into an open structure and reduces the change in height required of cyclists.*
5. *Tunnels require good drainage (often pumped) and should be designed to be easy to clean.*
6. *Tunnel height should never be less than 2.5 m and width should be no less than 1.5 x the height in order that the tunnel feels comfortable to use.*
7. *Lights and light colours are preferable in a tunnel to make it appear as 'open' as possible. The time spent in a tunnel should be minimised and sides should be splayed outwards.*

Some of the suggestions refer to [social safety issues](#). In short, infrastructure should not lead to a feeling of unease, especially after dark.



All the tunnels were retrofitted to

Assen. The process continues.

This

tunnel dates from 2008. Note that

this

is an example of where the road

rises

slightly as the cycle-path drops.

Why tunnels are preferred

CROW consider that tunnels are "often more favourable". They make many points including:

- 1. Tunnels have a smaller height difference than bridges. Only need clearance for the height of a cyclist, not for trucks or trains plus electric lines.*
- 2. Tunnels take up less space than a bridge because inclines are shorter*
- 3. Tunnels are easier to fit into an existing landscape.*
- 4. Tunnels offer protection from wind and rain*
- 5. Tunnels offer faster journeys than bridges due to less climbing*
- 6. In rural areas tunnels can also be useful for wildlife*

There are also other advantages which may seem to be quite small such as that tunnels naturally provide shelter when it rains.

Tunnel disadvantages

A possible disadvantage is low social safety. It is important that cyclists can see out of a tunnel before they enter it. There should be no turns within the tunnel, no-where for a potential mugger to hide. Obviously tunnels should also be well lit.

Drainage is very important in tunnels. The Netherlands has many tunnels which are below the water table and require pumps. Nevertheless, it is rare that tunnels become flooded.

The best tunnel in Assen is a bridge



Conceptually, this is an **incline-less tunnel for cyclists**, not a bridge for cars. It provides part of a direct and uninterrupted route by bike from **a new suburb** to the centre of Assen. This

bridge has no benefit at all for drivers,

only for cyclists. Re-opening the canal

for tourism was a side-benefit. This replaced a large flat road junction.

If possible, it's best that cyclists don't have to change level at all. If motor vehicles can be sent into a tunnel or over a bridge then they no longer hinder cyclists.

*In 2007, there was a traffic light junction at this location in Assen. For cyclists to use the road to travel directly into the city they had to stop at a traffic light. By 2008 **this bridge** had been built. It severs the pre-existing link by motor vehicle into the city, leaving the direct route as a bicycle road which excludes through motor traffic.*

This bridge has no utility for drivers. It actually reduces their options as it is now impossible for a car travelling over the bridge to turn left or right as used to be possible.

Instead of building this bridge to carry four lanes of motor vehicles, a much smaller and less expensive bridge could have been built to take cyclists over the road, a small tunnel could have been excavated to take them under the road or a [signal controlled crossing](#) could have been installed on the level. However all these other options would have meant a reduction in speed and convenience for cyclists due to inclines for bridge or tunnel and delays at traffic lights for a level crossing. There could also have been [social safety](#) issues. The solution, to ensure the best possible service for cyclists was this bridge. Cyclists now have a smooth, level uninterrupted route which is well lit at night and has good sight lines in all directions.

Just as recommended by CROW, motor vehicles have to use inclines in this example rather than cyclists.

Short note about funneling

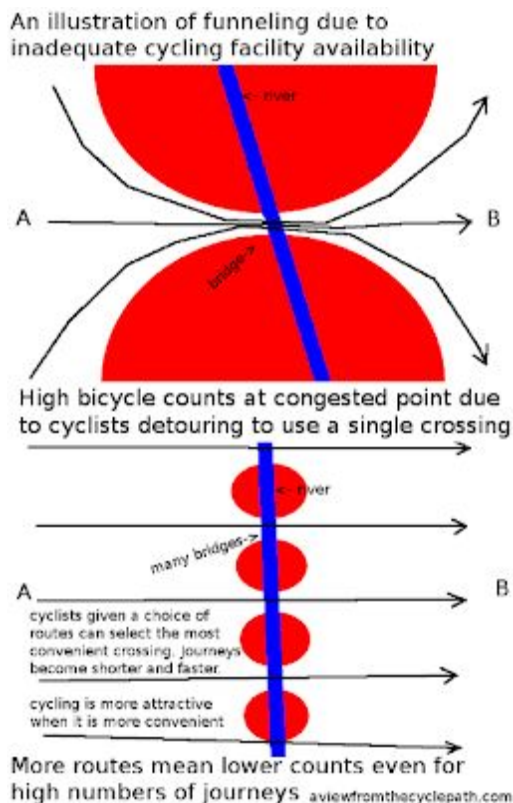


Illustration of how **high cycle counts** can indicate a problem: A lack of bridges or tunnels to cross railways, roads, rivers or canals can force people onto the same crowded route. High cycle counts are not a symbol of success when they result from detours and traffic-jams for cyclists. A **proper comprehensive grid of infrastructure** keeps counts down. Not so good for photographers who want to see lots of bikes but good for individual cyclists.

Unless enough pleasant routes are provided, excess numbers of cyclists are likely to be seen on the few remaining routes. It can be especially a problem where there are too few crossings of railway lines, major roads or rivers. Such funneling can make for great promotional headlines ("N bicycles per day pass this point") but actually it's not good news for cyclists at all because this actually means a detour onto overcrowded cycle-paths and conflict.

*It is far better for cyclists that there should be **more available routes** so that more people can make **direct journeys** and there is **less of a need to detour** to find a comfortable route. Detours should be minimised by providing extra cycle crossings of large roads, railway lines, rivers and canals. This makes cycling more viable for more people and therefore more attractive. This principle should not only be applied for what are considered to be practical routes - CROW state that "recreational routes can also form reason enough to remove barriers".*

Reducing funneling in Groningen

*Groningen has **many students**, making up a relatively transient population who while they are more likely to cycle are also likely not to know the local area well. The city used **specific marketing to encourage people to choose a selection of other routes** which*

would serve them better. However, it's important to note that this was only possible because a very *comprehensive grid of cycling infrastructure* already existed.

It comes down to having a proper grid

*I've often railed against hype about *exceptional pieces of infrastructure*. They're nice to see, but not really very important. The fact is that a few impressive bridges or tunnels are of relatively little use unless they form part of *a comprehensive grid of good quality infrastructure*. The grid is really the exceptional achievement of the Netherlands. The grid is the thing which should inspire and be copied elsewhere.*

Tunnels are less photogenic than bridges, but they are preferable for the reasons explained above. However, whether tunnels or bridges are built it is most important that there are enough of them, that they are of high enough quality and that they link everything else together.

UNDERPASS DUTCH DESIGN

Here is a good reference for cycling underpass by a Dutch cycling infrastructure blogger.

<https://bicycledutch.wordpress.com/2016/11/15/a-roundabout-bypass-in-goes/>

https://youtu.be/_FwhBFL-0F0



Here is another example of a Dutch design in Harlem which is similar to the Ashtown issue with a major route to cross and a built up area. https://youtu.be/EfD8_ApgXi4

APPENDIX III

Traffic counts and Pedestrian and cycle counts.

It's disappointing to read in the Main report in Section 3 under Transport surveys that pedestrian and cycle counts were only done on one day on the 5th February 2019 and there were 3 week surveys completed for vehicle traffic.

This is the data from the Phoenix park weather station and you can see that there was quite a lot of rain that day of 13.3.mm. How accurate would the counts be on a rainy day for pedestrians and cyclists?

date	ind	maxtp	ind	mintp	igm in	gmin	ind	rain	cbl	soil
05-Feb-19	0	13.3	0	-1.2	0	-6.3	0	3.3	1008.5	3.932

APPENDIX IV



Ashtown Level Crossing

Summary of issues identified for pedestrian / cyclists:

- To cross the level crossings, pedestrian and cyclist have to share the road space with the general traffic. The path provided for pedestrians is narrow (approx. 1.5m) and delineated by road markings. Also, it must accommodate all users, i.e. pedestrian, cyclist, wheelchair users, pushchairs, etc.;
- The existing footbridge within the land ownership of Irish Rail doesn't provide ramps/lifts, therefore it is not adequate for universal access (wheelchair, cyclists, pushchairs, elderly users, mobility impaired users, etc.);
- Narrow footpath approaching from the south, only on the eastern side. No crossings provided from the Navan Road roundabout junction to the level crossing;
- There are no dedicated cycle facilities. Cyclist must dismount to share the pedestrian paths or must share traffic lanes.

Summary of issues for general traffic:

- The level crossing is manually operated, creating long queues and increasing the waiting time for vehicles;
- The bridge over the Royal Canal is narrow;
- Inappropriate vertical visibility across the overbridge due to the high crest;
- No car parking / drop off area for accessing the Train Station.

Ashtown level crossing pedestrian and cycling modelling: Maynooth line transport study

- 7.4.4 The results in Figure 7.5 indicate that, in the AM peak, the majority of pedestrians using the Ashtown level crossing southbound are originating in the Rathborne and Royal Canal Park apartments, and travelling to the Phoenix Park and other employment locations, and schools, to the south.

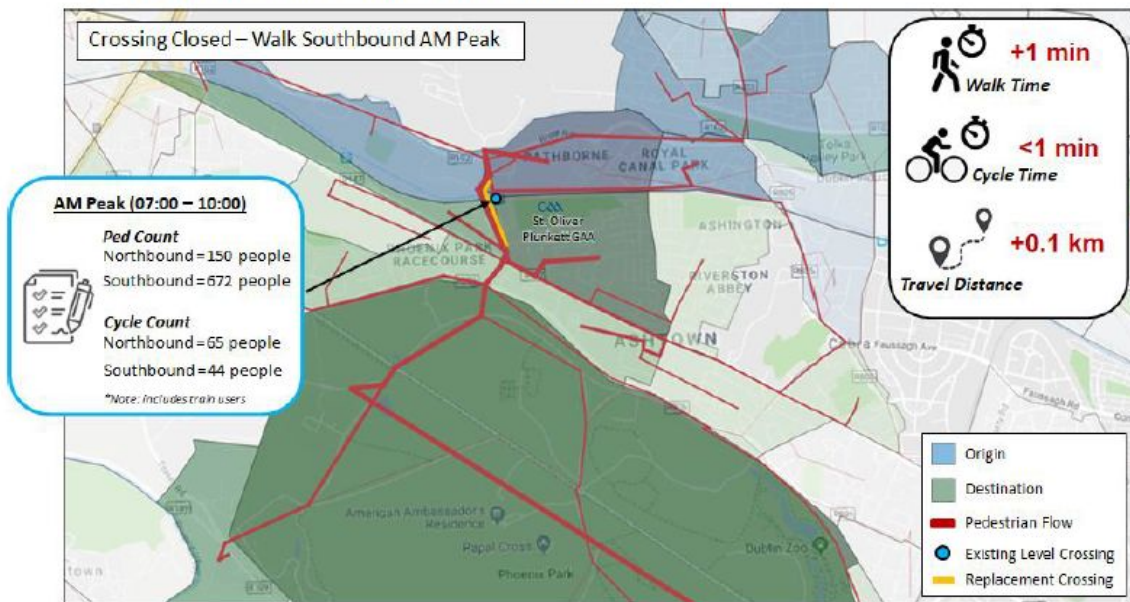


Figure 7.5 Ashtown Level Crossing Modelling Analysis