

Long-term impacts of barrier redesign – a case study in York



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The programme forms part of our Paths for Everyone vision of a UK-wide network of traffic-free paths, connecting cities, towns and countryside, loved by the communities they serve.

By working with the UK government, local authorities, key local stakeholders, volunteers and communities, we're turning the vision into reality.

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Executive summary

This report presents the findings from a Sustrans research initiative investigating the effects of changes to a shared use path in York. The changes involved removing 30 restrictive barriers and replacing them with alternative facilities designed to maintain access for all users. Construction was completed in 2016 and data was collected retrospectively in 2023 to measure levels of active travel, accessibility, and perception of the space.

To identify how barrier removal and redesign changed the type and frequency of path use, counts of path users were conducted using video monitoring at two points on the path for 12 hours a day over a two-month period. Users counted included legitimate users of the path, such as cyclists, pedestrians, pushchair users and people using mobility aids, as well as illegitimate users such as motorbikes and quadbikes.

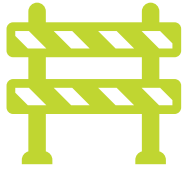
Thirteen interviews with locals asked questions about path use, diversity of users and the presence of illegitimate users such as motorbikes. Three users said they had medical conditions which meant they used a cycle as a mobility aid. Two used non-standard cycles but one used a standard cycle, highlighting the fact that some people use standard cycles as mobility aids.

The other users interviewed did not mention medical conditions and mainly used the path to cycle, but also walk and run.

The following analysis provides valuable insights into the effects of barrier redesign and sheds light on the evolving patterns of use and perceptions of the path.

Key findings

Key findings from path user counts and interviews include:



Every day at each site, an average of 45 trips were counted on modes such as pushchairs, wheelchairs and cargo bikes that may not have been able to access the path before barriers were changed.



Since the changes, both interviewees using non-standard cycles could access more of the path and therefore use it more frequently to get to work, the hospital or other personal business.



Over a two-month period, only two motorbikes and two quadbikes were recorded at each site, representing 0.002% of trips counted.



For every illegal trip counted, 22,212 trips were also counted of people using legitimate modes that benefit from increased ease of access since the changes.



Motorcycle use was not a concern for local residents interviewed. All were happy with the redesign of the barriers, and most were using the path more as a result.



About half of those interviewed either knew people who now use non-standard cycles or mobility aids on the path who could not previously or thought diversity of these modes had increased.

Introduction

Access control barriers on cycle and walking routes attempt to restrict access of unauthorised motorised vehicles such as cars, vans motorbikes, mopeds and quadbikes. However, they often also prevent legitimate users, such as people using non-standard cycles, mobility scooters and wheelchair from accessing the path due to their narrow widths or protruding shape which can be difficult to negotiate. In addition to their exclusionary impact, these barriers can cast a negative light on public spaces and contribute (ironically) to increased levels of anti-social behaviour.

Foss Islands path in York is one of many places that Sustrans chose to remove and redesign barriers. By 2016, around 30 barriers were removed or redesigned from the path to make it more inclusive and accessible to a wider range of users.

The objective of this monitoring is to produce a case study of a historic example where barriers have been removed for some time. This will help us understand the impacts these changes have on the numbers and diversity of users, and anti-social behaviour, including motorbikes.

Monitoring started in 2023 and involved video counts of path users lasting two months at two locations and interviews with 13 local residents and route users, three of which used adapted or standard cycles as mobility aids due to physical health conditions.

A limitation of this research is that there is no baseline data as the decision to monitor this project was made years after construction was finished. To address this, interview participants were asked about their memories of the path before the barriers changed and if this impacted their path use.

Barrier's policy context

Background

In 2015/16, an independent audit of the National Cycle Network reported that 52% of issues recorded on traffic-free sections were due to barriers, pinch points and other obstructions that reduced flow and access¹.

Despite many barriers being installed to deter anti-social behaviour and motorbikes², there is limited evidence to prove their effectiveness³, whilst we know they prevent the legitimate access of people using adaptive cycles, wheelchairs, hand-cycles, mobility scooters, tandems, trikes, cargo bikes, running frames, buggies and horses⁴. This disproportionately affects older people, young families and disabled people⁵.

Barriers prevent many groups from being active and getting around without a car. Many disabled people use cycling to support mental and physical health⁶, and as a vital form of independence and mobility if they find cycling easier than walking⁷. This is especially important as some people are unable to drive due to a medical condition such as epilepsy but can use a standard cycle⁸.

Wheels for Wellbeing's national annual survey consistently reports that infrastructure is the greatest barrier to cycling for disabled cyclists, ahead of lack of parking and storage and cost⁹. More specifically gates, A-frames and poor-quality cycleways¹⁰ often have narrow widths or 'pinch points' which are more difficult to pass through using longer non-

¹ [Sustrans, Paths for Everyone, 2018](#)

² [Sustrans, Why are there barriers on the National Cycle Network?, 2023](#)

³ [Sustrans, Barriers Strategy, 2022](#)

⁴ [Sustrans, Barriers Strategy, 2022; Wheels for Wellbeing, 2018, Assessing the needs and experiences of Disabled cyclists – annual survey](#)

⁵ [Sustrans, Barriers Strategy, 2022](#)

⁶ [Wheels for Wellbeing, Disability & Cycling: Report of 2021 National Survey Results, 2021](#)

⁷ [Wheels for Wellbeing, Disability & Cycling: Report of 2021 National Survey Results, 2021](#)

⁸ [Wheels for Wellbeing, Disability & Cycling: Report of 2021 National Survey Results, 2021](#)

⁹ [Wheels for Wellbeing, Disability & Cycling: Report of 2021 National Survey Results, 2021](#)

¹⁰ [Wheels for Wellbeing, Disability & Cycling: Report of 2021 National Survey Results, 2021](#)

standard cycles or which require that path users dismount their standard cycle which is often more difficult to do for disabled people.

Sustrans' Paths for Everyone report recommended the removal or redesign of 16,000 barriers on the National Cycle Network¹¹. Between 2015/16 and 2022/23, 1,470 barriers were redesigned or removed across the UK¹². Of them, 854 barriers were removed or redesigned with Sustrans involvement, with a further 420 still in progress.

In recent years, there has been a rise in the number of people using non-standard cycles and other non-motorised vehicles to make everyday journeys, explore their local areas and get active¹³. Sustrans and their partners still need to remove and redesign an average of 800 barriers per year to meet the recommended 16,000 barriers removed or redesigned by 2040¹⁴.



Figure 1 shows one of the redesigned barriers. Changes made include:

- Two small hoops and standalone posts removed.
- Post replaced with 'gas bottle' to create a 1.5m wide gap.
- Stones on either side retained to block bypasses.
- Barriers painted blue and reflective strips added.

Figure 1 - One of the 30 barriers that was redesigned on the Foss Islands path after changes were made. Please note that the barriers after removal do not all meet LTN 1/20 but are still better for a wide range of users than they were before – (c) 2016, Sustrans

¹¹[Sustrans, Paths for Everyone, 2018](#)

¹²[Sustrans, Barriers Audit: Section Allocation Tool, 2023](#)

¹³[Sustrans, Paths for Everyone Three Years On, 2021](#)

¹⁴[Sustrans, Paths for Everyone Three Years On, 2021](#)

Requirements and recommendations

The Equality Act (2010) prohibits providers of services from discriminating (Section 29) and places a duty on public bodies to eliminate discrimination (Section 149). As disability is a protected characteristic, those designing infrastructure should ensure paths are as easy for disabled people to use as it is for everyone else. Furthermore, public bodies have a responsibility to remove barriers that deny access to disabled people.

In England and Northern Ireland, design guidance for local authorities state that access control measures such as chicane barriers should not be used on cycle paths as they limit capacity, comfort, and accessibility for all users, but especially those using non-standard cycles, tandems, tricycles, cargo bikes, hand bikes, and some wheelchairs¹⁵.

Similarly, Transport Scotland emphasises that access control measures exclude some disabled people and others riding non-standard cycle vehicles on cycle paths. They advise against access controls, but when absolutely necessary, spacing should be a minimum of 1.5m to allow all types of cycle vehicle to pass unrestricted¹⁶. In England and Scotland these are recommendations with the expectation that local authorities and designers consider them when planning infrastructure and/or applying for Government funding.

The Welsh Government says that barriers should not be used to slow cyclists and instead recommends arrangements like shown in Figure 2, where clear sight lines and bollards with a minimum spacing of 1.5m can prevent motor vehicle access, whilst retaining better permeability for users than chicane barriers. In Wales, a minimum width of 1.5m is required between bollards on cycle paths to accommodate the full range of cycles and gates should not be used¹⁷.

Transport for London has detailed design requirements including a minimum width of 1.5m for access barriers¹⁸.

¹⁵ [Department for Transport, Cycle Infrastructure Design, 2020](#)

¹⁶ [Transport Scotland, Cycling by Design Update, 2021](#)

¹⁷ [Welsh Government, Active Travel Act guidance, 2021](#)

¹⁸ [Transport for London, Access Control Barriers, 2023](#)



Figure 2 – Dropped kerb and single bollard (with more than 1.5m spacing either side) at entrance to shared use path.

(c) 2021, Sustrans

Methodology

Monitoring tools

Video Manual Counts (VMC)

Two VMCs were carried out at the locations indicated in Figure 3. These locations were chosen after discussions with two local disabled cyclists who suggested that they were well used sections of the path.

The intention was to count path users from 7am to 7pm from 1st of April 2023 to the 31st of May 2023, but the camera at site 2 was vandalised six days before the scheduled end. Adjustments were made during analysis to account for the missing data.

Due to budgeting restraints, the video manual count was only 12 hours per day. There may have been other illegitimate users who were on the path between 7pm and 7am but were not recorded. Future research should include 24-hour video monitoring where possible.

The counts provided detailed figures on the number and diversity of users on the Foss Islands path as well as a record of motorcycle and quadbike usage over an extended two-month period. User age and gender were also estimated for each of these categories.

Interviews

Thirteen case study interviews were carried out with path users to understand how, why and when they use the path and if the recent changes had affected their use and perceptions of the path. Three of those interviewed were people who have an impairment that requires them to use adapted or standard cycles as their main form of transport. As mentioned earlier, many disabled people find it easier to cycle than walk and may use a standard cycle as a mobility aid. The remaining interviews carried out were with people without impairments but who walk or cycle on the path regularly. They were recruited via a Facebook advert that targeted people living in York who use the path.

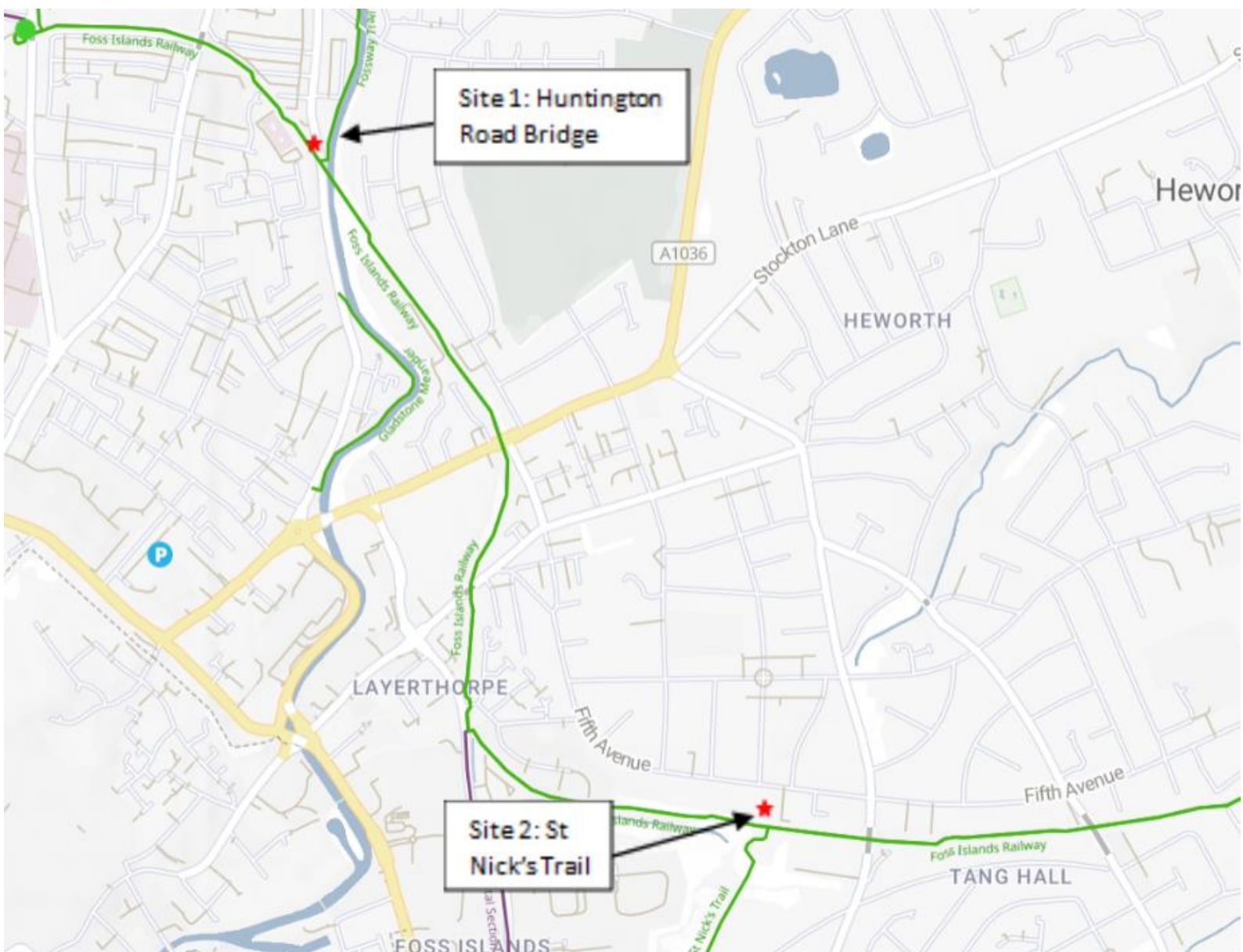


Figure 3– Map showing the Foss Islands path and locations of the two VMCs

Study site

The Foss Islands path is a 4 km traffic-free shared walking and cycling path in York. The path was constructed in the mid-1990s and runs along two former railway lines. The section of the path that runs from the eastern edge of York towards the centre is part of the National Cycle Network (NCN66 and NCN658). But where the NCN goes through the centre of York, the Foss Islands path goes north and then northwest towards the hospital. The path mainly passes through dense residential areas from across the scale of Indices of Multiple Deprivation (IMD)¹⁹. The proportion of people in York who are disabled under the Equality Act is 17% which is close to the English average of 18%²⁰. The areas around the Foss Islands path have similar proportions of disabled people as the rest of York.

During planning of the path, concerns were raised about anti-social behaviour, including motorcycle usage. In response to this, and in some cases because of planning conditions, the path was designed so that there were barriers at all access points and at various points along it. Motorcycle use decreased in the years after the path was opened. This may be linked to the introduction of path lighting in the late-90s and the increasing number of path users.

More recently, Sustrans conducted a study to understand how the Foss Islands path could be improved. One of the recommendations from this was to improve accessibility by changing restrictive barriers. Funding for this came from the City of York Council's Local Sustainable Transport Fund i-Travel York project which sought to make the path more attractive to encourage residents to be active.

The improvements involved changing 30 access barriers to increase inclusivity and bring them in line with the Equality Act. It was hoped the standardisation of barriers would mean path users could enter and exit at their preferred points of access, rather than have to use surrounding roads with traffic to get to the few accessible points on the path. This would therefore increase safety for those travelling actively and hopefully encourage locals to choose to travel actively more.

¹⁹ [Office for National Statistics, Household deprivation, 2021](#)

²⁰ [Office for National Statistics, Disability, England and Wales, 2021](#)

The North Yorkshire Police raised concerns about crime near access points, and safety of vulnerable path users if there was not an obvious physical obstacle to warn people they are approaching a road. Sustrans and the council responded by highlighting that higher levels of path use could deter criminals from using the path to access adjacent properties and as an escape route. In response to this, the Council put Sustrans designs through Stage 2 and 3 of a Safety Audit and recommendations were adopted in design and implementation.

Changes to most of the barriers did not require planning permission as the Council (and the local planning authority), considered the changes to be of no significance. But some of the barriers that were put in by planning conditions *did* need the planning authority's permission to remove. However, alterations to gates, walls and fences are permitted if they do not exceed the initial height. Once the specifics were agreed, construction began and was completed by 2016.

In 2023, the Foss Islands path was chosen as a case study to assess the long-term impacts of removing barriers. This location was chosen as it is one of the only paths that serves utility and recreational journeys in a suburban and urban context where barriers were removed several years ago. Monitoring began shortly after with video manual counts and interviews in Spring and Summer 2023.



Figure 4 – A barrier on the Foss Islands path before changes were made (c) 2016 Sustrans



Figure 5 - The same access point on the Foss Islands path after changes were made. Please note that this does not meet LTN 1/20 but are still better for a wide range of users than they were before. (c) 2017 Peter Cox, all rights reserved

Results

User counts

Based on the data collected it is estimated that there were 570,000 trips in 2023 at site 1 and 640,000 at site 2. This is equivalent to 1,400 and 1,600 trips per day at site 1 and 2 respectively.

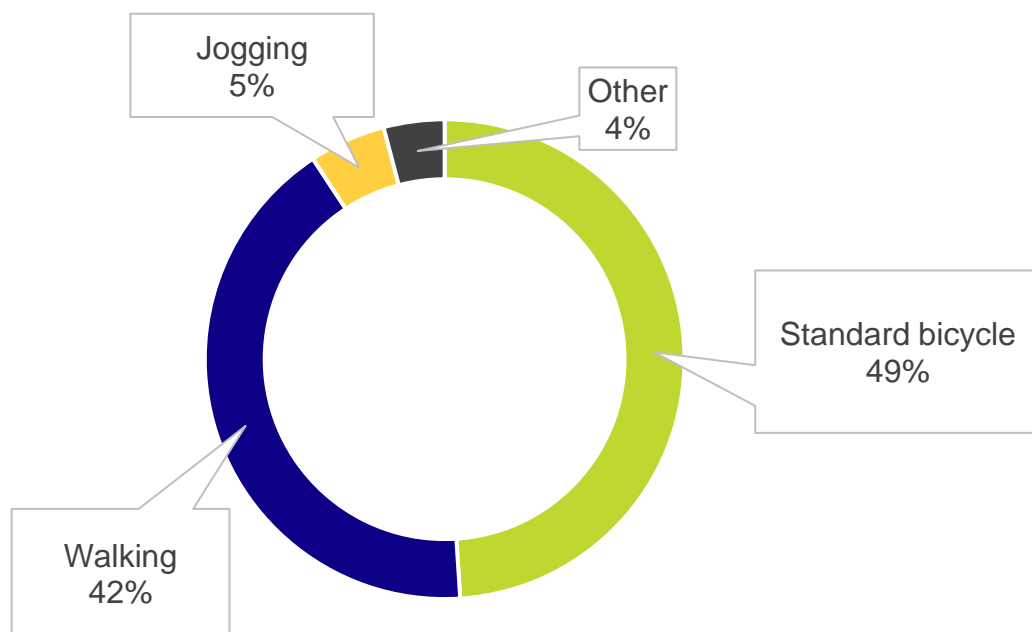


Figure 6 - Modes used on path (both sites combined)

Most trips were either people using a standard bike (49%), walking (42%) or jogging (5%). The remaining 4% includes a range of modes as detailed in Figure 7.

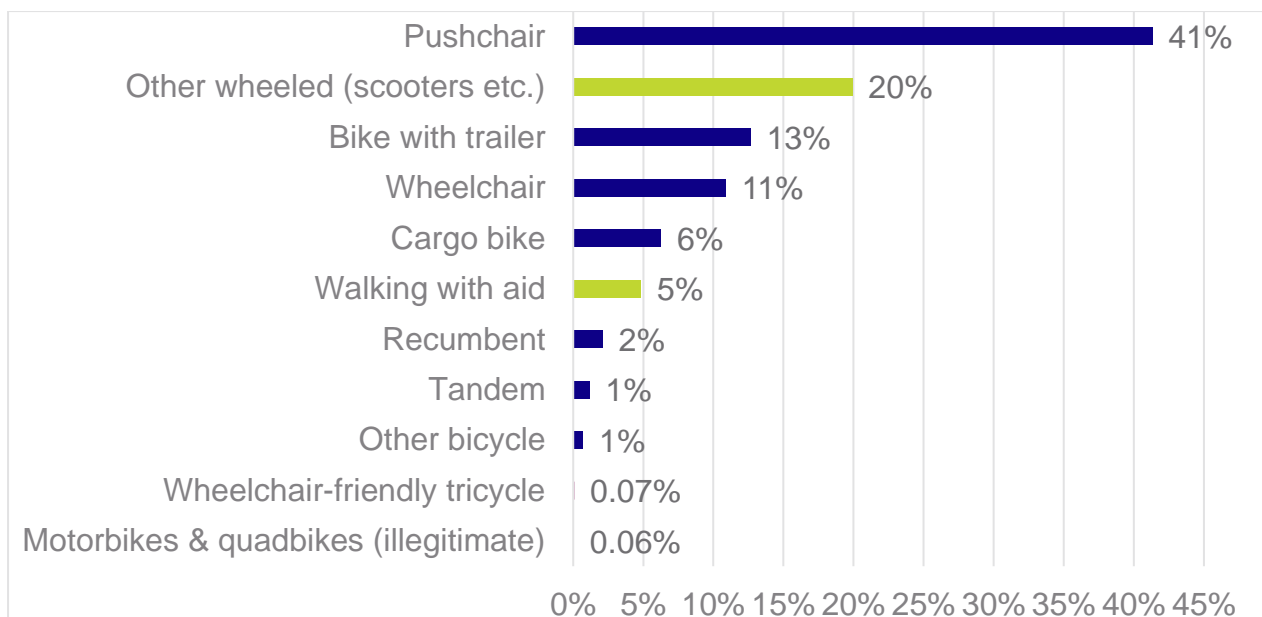


Figure 7 - Breakdown of 'other' modes

At site 1 and 2, there were an average of 37 and 53 trips counted daily with people using modes that may have been prevented from accessing the path prior to the barrier changes. This includes people using pushchairs, bicycles with trailers, wheelchairs, cargo bikes, recumbents, tandems, other bicycles and wheelchair-friendly tricycles.

21 pushchairs were recorded daily at site 1 and 30 at site 2 indicating that the route feels safe enough to take young children.

Interviews with people using standard bicycles evidenced that their ease of access also increased with the redesigned barriers. This means potentially 52% of trips today are people on modes that have a better experience since the changes. This includes standard bikes, pushchairs, bikes with trailers, wheelchairs, cargo bikes, recumbents, tandems, other bicycles and wheelchair-friendly tricycles. There is no evidence to suggest that those walking with or without aids or using 'other wheeled'²¹ modes are impacted by barriers.

²¹Other wheeled includes, but not limited to, scooters, electric scooters, skateboards, roller-skates/rollerblades and hoverboards. Does not include individuals using the path illegally (e.g. mopeds, motorbikes, quad bikes).

Interviews

Interview profiles

Many of the interviewees were very familiar with and fond of the path – 9 out of 13 had used the path for more than 10 years and the same proportion currently used it three or more times per week. Two had not used it before the barriers were removed in 2016.

“It’s a green vein across the city.”

One path user with multiple sclerosis said that cycling has always been the easiest way for him to get around the city. He has moved from a standard bicycle, to an e-bike and then an e-trike as his condition progressed and also uses a powered 3-wheeled wheelchair on the path. Another user whose left arm and leg were paralysed explained that as it is difficult for him to walk, he travels locally using his recumbent tricycle which he described as wonderful but ‘long, wide and awkward to get places’. A third user said he was unable to drive for medical reasons, so he uses a standard bicycle on the path as his main form of transport and said we should ‘think of the bike as a mobility aid for less-able people’.

Amongst those who did not state an impairment, four used the path for cycling, another five both cycled and walked, and one exclusively walked and ran.

All of those interviewed used the path for multiple reasons, with the most popular being recreation (10 out of 13), and shopping, personal business and commuting (all of these for 7 out of 13).

Most of the interviewees with impairments said cycling was easier for them than walking or driving so the Foss Islands path was often the most convenient way for them to get around York. They used it for the same reasons as other interviewees such as to get to work and the hospital or for recreation. One interviewee with an impairment also said they cycle 10km a day on their e-trike to help with their condition.

“It’s a nice traffic-free way to get to the edge of York”

Themes in interviews

Convenience and accessibility

All interviewees expressed that they were happy with the removal of barriers, but the degree to which this affected their path use varied greatly. At one end of the spectrum, the barriers were described as a 'nuisance' and 'unpleasant', but their presence did not deter use. Up from this, some postulated that they had subconsciously used the path less before, as the barriers were a 'pain' and caused bottlenecks. On the other end of the spectrum, a non-standard cycle user who now uses the path 3-4 times per week to travel to work, on personal business and for exercise did not regularly use the path before 2016 as he could not access it at key points.

"I wasn't really using it before because I either couldn't get on or off it where I wanted on my trike."

Others have similarly started using the path in different ways, for example, cycling with grandchildren on the path or using a cargo bike to transport children. These interviewees said they would not have done this had the barriers still been in place as they were too cumbersome to navigate. One e-trike user said the main reason he did not use the path as much pre-2016 was because there was lots of broken glass. He believed that since the removal of barriers has increased the popularity of the path, there is less antisocial behaviour and therefore less broken glass.

"The removal of barriers reduces conflict – allows for more scope of keeping out of people's way and moving more freely."

Words such as easier, safer and more pleasant were used to describe the path since the removal of barriers. The specific (adverse) design of

the barriers was highlighted by two participants with one explaining that as she lacks confidence, she used to dismount her bicycle at each barrier to negotiate through the gates. Another cyclist described the steep part leading up to the Tang Hall Lane barriers as ‘unmanageable’. Both commented on the convenience and increased pleasantness the path now offers.

“It was an absolute impossibility and used to make me curse and think ‘oh, I can't manage this.’”

Diversity of users and modes of transport

Post-barrier removal, users reported a noticeable diversification in the modes of transport of other path users. About half of interviewees either mentioned a person known to them who uses a non-standard cycle, cargo bike, recumbent or mobility scooter on the path now where they could not previously, or reported an increase in people using these modes.

As we did not conduct baseline video counts, we do not have quantitative data to support or reject these views. However, we do know that approximately 45 trips counted per day at each site were using the following modes: pushchair, bike with trailer, wheelchair, cargo bike, recumbent, tandem, other bike and wheelchair-friendly tricycles. Based on our interviews and the Wheels for Wellbeing annual report, we know that many of these users would have had difficulty negotiating the barriers when they were in place²².

“I have friends who use trikes who would definitely not have been able to use it before and now can.”

²² [Wheels for Wellbeing, Disability & Cycling Report of 2021 National Survey Results, 2021](#)

Motorbikes

Motorcycles using the path was not a concern for those interviewed, with only three of those interviewed having ever seen a motorbike on the path themselves. This is a higher proportion than you would expect, considering that only 4 illegitimate vehicles were counted on the route over a two-month period. This may reflect the considerable time spent on the path by those interviewed or that one motorbike can be seen or heard by many people and news of it can travel far beyond eye witnesses.

One user who lived on the path said he could see motorbikes on the path from his house, but he could not specify the frequency as he is often at work. He mainly hears about it from the residents' WhatsApp group, and it appears to have reduced in recent years. He believes it to be a mix of quadbikes and motorbikes.

Another interviewee said that they saw more motorbikes before the barriers were changed than they do now.

A third interviewee said they had seen motorbikes on another cycle track in York where there *are* barriers in place. This individual went on to say that if motorbike riders want to access a path, they will find a way to do so regardless of barriers.

“In Hob Moor they had some very complex barriers and motorbikes still managed to get on one day. If [motorbikes] really wanted to get on it - they could.”

It was also suggested by an interviewee that increased use of the path would serve as a deterrent.

Other areas that require further attention

Whilst the removal of barriers has apparently brought about significant positive changes, there are still areas that require attention. The most common issue raised was uneven surfacing, followed by issues of

flooding which were reported on various sections of the path, but especially between Derwenthorpe and Tang Hall Lane.

Where resurfacing has taken place, sometimes it is only done for half the width of the path, leaving a ridge in the centre of the path. This ridge caused one of the interviewees to have a serious fall when her bicycle wheel slipped on the ridge. She asked that future resurfacing is done for the full width to avoid ridges.

Other issues highlighted include broken glass, inadequate signage to relevant parts of the city, overgrown vegetation and limited visibility at the junction near Morrisons. At certain times, the path can get congested with people and dogs and one woman was concerned about safety whilst using the path in the early morning when it was dark. Improved lighting and motor traffic calming measures at junctions were suggested for enhanced safety.

“Now all the barriers have been improved, it’s a fantastic traffic-free route across York, but the barriers that remain at Metcalfe Lane could do with being removed.”

There are also remaining barriers on Metcalfe Lane which one interviewee who uses a recumbent tricycle highlighted. Another non-standard cycle user said that as the path is not an obvious A to B route, it’s utility is dependent on surrounding infrastructure which is often not accessible. He called for the cycle route to be better integrated with wider infrastructure and for other infrastructure to be made more accessible.

Despite the remaining issues, many said the path was very pleasant and commented on how well-maintained it is.

Conclusion

This report has deepened our understanding of the long-term impacts of barrier removal on the Foss Islands Path.

All local path users said the removal of barriers was a positive change and many increased their use of the path or changed the way they used it as a result. For example, by taking grandchildren on the path or using a cargo bike. Both people interviewed who use non-standard cycles were able to access more of the path since the changes, which facilitated both exercise and everyday journeys.

Our count data showed that approximately 45 trips were counted daily at each site using modes that may not have been able to access the path when the original barriers were in place. Half of those interviewed either knew someone who now used the path on their non-standard cycle or wheelchair or thought diversity of these modes had increased since the changes.

Only two motorbikes and two quadbikes were counted, representing 0.002% of users. This means that for every illegitimate user, 22,212 legitimate users benefitted from increased ease of access. Illegal path use was not a concern for those interviewed, even for the three out of thirteen that had ever seen a motorbike or quadbike on the path. One of these three said they believed motorcycle frequency to have reduced since the changes and another said a busier path in recent years may have acted as a deterrent to illegal users.

Route users also identified areas that require further attention, such as flooding, poor surface quality and barriers on connected paths.

The findings from this research demonstrate the long term impacts replacing problematic barriers with barriers that meet current design guidance can have. This will inform Sustrans' ongoing practical work to remove restrictive barriers, and also it's wider work to influence local policy across the UK.