Investigating the Opening of a Railway Station in St. John's

An Interactive Qualifying Project submitted to the faculty of

WORCESTER POLYTECHNIC INSTITUTE

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Submitted By:

Jake Byrnes

Nicole Dressler

Mionna Green

Nick Stone

Elisabeth Whittemore

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Submitted to:

Project Advisor

Rick Vaz

Project Sponsors

Lord Richard Faulkner

Katy Boom

University of Worcester

Abstract

The goal of this project was to investigate public interest and contributing factors for opening a railway station in the St. John's area. Interviews and surveys with residents and the University of Worcester community provided insights into interest levels in a new station. Interviews with transport and government officials were used to identify the next steps in the development of a railway station. The next steps discussed would involve achieving, including gathering, extensive community feedback as well as developing an in-depth business case for the station.

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And everyone else that supported us throughout this process.

Executive Summary

Public transportation is commonly used by those who commute to school or work for reasons such as time, cost, or flexibility. Rail transportation provides a cost effective and environmentally beneficial option other than cars. Since the 1960s, the British railway system has faced numerous changes, with the Beeching Cuts being the most significant. As a result of the Beeching Cuts, hundreds of stations and lines around the UK closed. Another significant event that occurred was in the 1990s, when the railway was privatised. This means that the railways infrastructure and track were passed to Railtrack and were franchised to private-sector operators. Some of closed stations from the Beeching Cuts have reopened or are in the process of reopening.

In Worcester, UK, Henwick Station was a railway station that served a key part of the city, the St. John's area, which is near the University of Worcester. Henwick Station was the first station after Foregate Street on the line from Worcester to Malvern and Hereford. The station also serviced a branch line to Bromyard but, due the Beeching Cuts, Henwick closed. Opening "Henwick Station" would provide a transportation service to the university's community as well as the St. John's area, which can be seen in Figure 1.

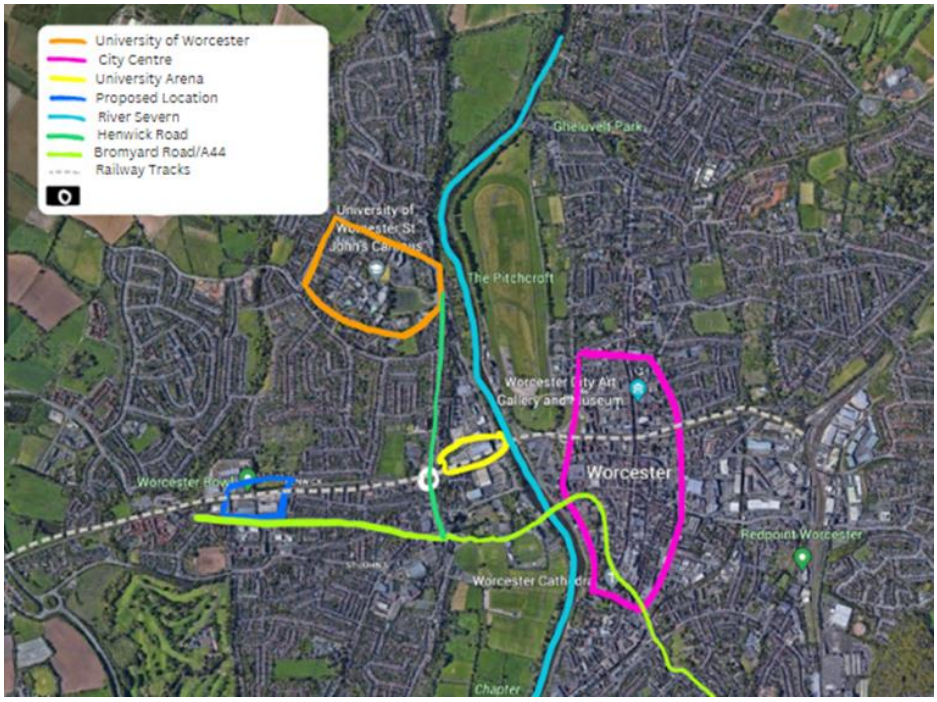

Figure 1: Map of Worcester showing the rail line, relevant main roads, important locations, and suggested locations. (*Google Maps*, n.d.)

The goal of this project was to investigate public interest and contributing factors for the opening of a railway station in the St. John's area. For this project, we sought to determine the viewpoint of residents, of students and staff at the university, and of local officials, and of rail industry representatives.

To determine the viewpoint of residents, we went to a local park in Worcester, UK, Cripplegate Park and surveyed residents walking around the park.

- The residents' preferred mode of transportation was to either walk or drive their own car. From the 70 respondents to the survey, 60% said they would use a station in the St. John's area.

To determine the viewpoint of university students and staff, the University of Worcester's Sustainability Department created a survey to help gather information about transportation habits, and how they help the environment.

- Students responded that 42.7% of surveyed students would use the station and 47 students would consider switching from driving to campus to using the station.
- Staff responded that 34.8% of surveyed staff would use the station and around 81 staff members would consider switching from driving to campus to using the station if it were available.
- Around 74% of students and 85.7% of staff travel to the campus between 3-5 days a week over.

To determine the viewpoint of key stakeholders, we held semi-structured interviews with representatives from rail industries. From these interviews we learned about the general process of opening a railway station.

- Public interest with statistically significant responses is needed to show that there is demand for a station year-round.
- An in-depth business case needs to be made with the appropriate supporting documents before anything can continue. An in-depth business case includes a **strategic case, economic case, financial case, commercial case,** and **management case**.
- Network rail provides guidelines on their website that inform the audience of all the steps necessary to create an informative business case.

In the future, it is recommended that anyone who wishes to move forward with the development of this station use Network Rail's guidelines to create a strategic, economic, financial, commercial, and management cases.

- **Finalise the strategic case for the potential station**. The strategic case for the proposed station needs to demonstrate why the station and its location is the best option for the community.

- **Expand upon the economic case and resurvey the population around St. John's.** The economic case for a proposed station discusses the economic, socio-cultural, and environmental benefit of the station. We recommend surveying at least 5% of the area of the potential station, surveying areas away from the existing stations as this is needed to demonstrate that the station would bring in new rail users rather than the same passengers using a new station, perform passenger demographic forecasts, investigate nearby communities to see if there are any better areas of economic growth, learn how many trains are needed per hour at the potential station, effects on journey times, and other considerations described in Network Rail's guidelines

- **Finalise the financial, commercial, and management cases.** The financial case will be considered further in the future after a final location for the station has been decided. Within this case the cost of the project would be listed as well as the operation and maintenance. The commercial case would have aspects of the infrastructure such as the finalised location, accessibility to facilities, ability to cross between platforms, shelters from weather, ticketing machines, parking and car/taxi drop off locations, and how often the station would have trains. Finally, the management case describes other recent projects to demonstrate if other recent projects have been effective.

- **Pursue support from the New Stations Fund to finalise aspects mentioned above that adhere to the strategic, economic, commercial, financial, and management cases.** Next steps for this project will need to review and follow the guidance notes document by Network Rail as well as review past business cases for proposed stations to ensure every section has the necessary information.

Authorship

Section	Author(s)	Editor(s)
Abstract	Mionna	Nick, Nicole
Acknowledgement	Elisabeth, Nick	Nicole, Mionna
Executive Summary	Mionna, Elisabeth	Nick, Nicole
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1.0 Introduction

Public transportation is commonly used by those who commute to work or school, because of time, flexibility, cost, and efficiency (Mann & Abraham, 2010). In a 2021 study on European studies, Fageda concluded that with an increase in rail transportation, there is less travel time for commuters and a decrease in pollution (Fageda, 2021a). Cresci et al. concluded that rail systems are the most cost-effective and efficient way of travelling as one commuter train can carry nine times as many people in one hour compared to a single lane of cars in traffic (Cresci et al., 2019).

The British rail system has faced numerous changes since the 1960s. The Beeching Cuts closed many stations, limiting methods of travel for those living in more rural areas particularly. The plan consisted of closing over 2000 stations and approximately 5000 miles of track (*Dr Beeching's Axe*, 2023). Although not all the planned closures went ahead, there were still significant social and economic impacts such as rural population decline and redistribution of population closer to where rail access was preserved (Gibbons et al., 2018a).

In 1993, Britain privatised its railway turning its national system into an association of 25 passenger train operating companies, rolling stock leasing companies, and Railtrack – a private sector infrastructure (track and signalling) that act as provider to the rail operating companies (Welsby & Nichols, 1999). Today, the franchise model is seen largely as having failed and is being replaced by a contract-based model (Topham & correspondent, 2017), with the infrastructure owned, maintained, and operated by Network Rail, a public sector body that replaced Railtrack.

Several lines and stations have been proposed to be reopened since the Beeching Cuts. The United Kingdom government's goal is to help "connect communities and support jobs and housing" claims Stephen Joseph, the former chief executive of the Campaign for Better Transport (Topham & correspondent, 2017). In 2017, The UK's Department for Transport proposed a plan, known as the "Restoring your Railway Fund". This proposal included a complete overhaul of the railway system in areas such as expanding the network by reopening closed stations, and opening new ones in places where the demand for rail travel was clearly demonstrated (*Connecting People: A Strategic Vision for Rail*, 2017). The town of Okehampton in Devon has been reconnected to the network by the reopening of the Dartmoor line. Since the reopening, they have had over 250,000 journeys in their first year, far more than originally forecast (*Dartmoor Line Passes 250,000 Journeys on Its First Anniversary, as Rail Minister Officially Opens Station Building - News*, 2022).

Henwick was a railway station serving a key part of Worcester and was one of the stations closed during the Beeching Cuts. The station opened in 1859 and was the first station on the line from Worcester to Malvern and Hereford; it was also served by local services on the branch line to Bromyard. It was operational until 1965, when it was closed along with the Bromyard branch and all other local stations between Worcester Foregate Street and Malvern Link. The station was located on the west side of the city, near the current site of the University of Worcester St. John's Campus. A reopening of Henwick Station could serve the university's community, the district of St. John's and surrounding villages to the west of the city. A further important benefit would be to increase opportunities to avoid traffic congestion on Worcester's A44 bridge over the River Severn in the city centre.

The goal of this project was to investigate public interest and contributing factors for the opening of a railway station in St. John's. To achieve this goal, we will conduct interviews and surveys with the University's community, residents and commuters, and stakeholders. Finally, we will present our findings to Lord Faulkner of Worcester, as well as the University of Worcester.

2.0 Background

In this chapter, we discuss the role of rail transportation in the United Kingdom (UK) and go more in-depth on its impact on society, its effects on traffic, and some common complaints with the rail system. Next, we will discuss the history of the British Rail system, covering the operation of the system, the impacts of station closures, as well as the current state of the rail system. Finally, we will go over the history of Worcester's rail system, including the openings of each station, rail usage in Worcester, and the potential for Henwick Station.

2.1 The Role of the United Kingdom's Rail Transportation

The development of the rail system has played a critical role in the UK's society. From moving large quantities of goods to large groups of people, trains have made mass transportation more manageable. When implemented correctly, an efficient rail system can be fast, affordable, and environmentally friendly. In this section, we discuss the positive and negative effects that an efficient transportation system can have on a nation's cities and surrounding areas.

2.1.1 Rail Travel's Impact on Society

According to a study done by The Office of Road and Rail (the independent regulator of the railway system), during a three-month period in 2022, 359 million passengers made journeys along the rail system in Great Britain. People rely on the railways for travel to and from work, school, or for long-distance travel for less cost than other methods. Rail travel can also be an environmentally effective replacement for transportation for commuting in a car (*How Many People Use the Railway | ORR Data Portal*, 2022).

Utilising public transportation for commuting to work is a popular option. Due to time, efficiency, cost, flexibility, comfort, stress, and a cost-based intervention, many commuters opt

to use trains or buses (Mann & Abraham, 2010). In a study conducted by Wheatly in the UK Midlands, one interviewee mentioned “With public transport at least you can do things productive. So you can do an hour of work which is good [as] that time can mean that you're perhaps not then working … into the evening” (Wheatley & Bickerton, 2016). Another interviewee in the same study mentioned that public transportation helps skip the stress of traffic. Other feedback discusses preferring a short walk and train ride rather than sitting in heavy traffic.

Another common use for rail systems is utilising them for personal travel. As seen in Figure 2, medium and long-distance travel is common for healthcare, retail outlets, daytrips, vacation, or social events, especially if somebody resides in a more rural area (Limtanakool et al., 2006). The primary modes of transportation for these types of trips are trains and private cars. A study by Harvey et al. (2014) found that around 92% of travellers in the UK travel medium and long distances for commutes, business, and leisure (Harvey et al., 2014). This number could increase with the addition and improvement of fast and efficient rail travel. Public support for the railway depends on different attitudes such as pollution, noise, cost, comfort, speed, and more.

A study was conducted by Stalmirska in the UK, where he primarily focused on university students and aimed to answer why students chose to commute instead of relocating. Stalmirska stated that cost, work, or family commitments, as well as mental health were some of the major reasons students chose to commute. For these reasons, he observed that university students utilised different modes of transportation such as personal cars, trains, or buses. Although the system is not perfect, it provides students with alternative options instead of moving closer to a campus (Stalmirska & Mellon, 2022).

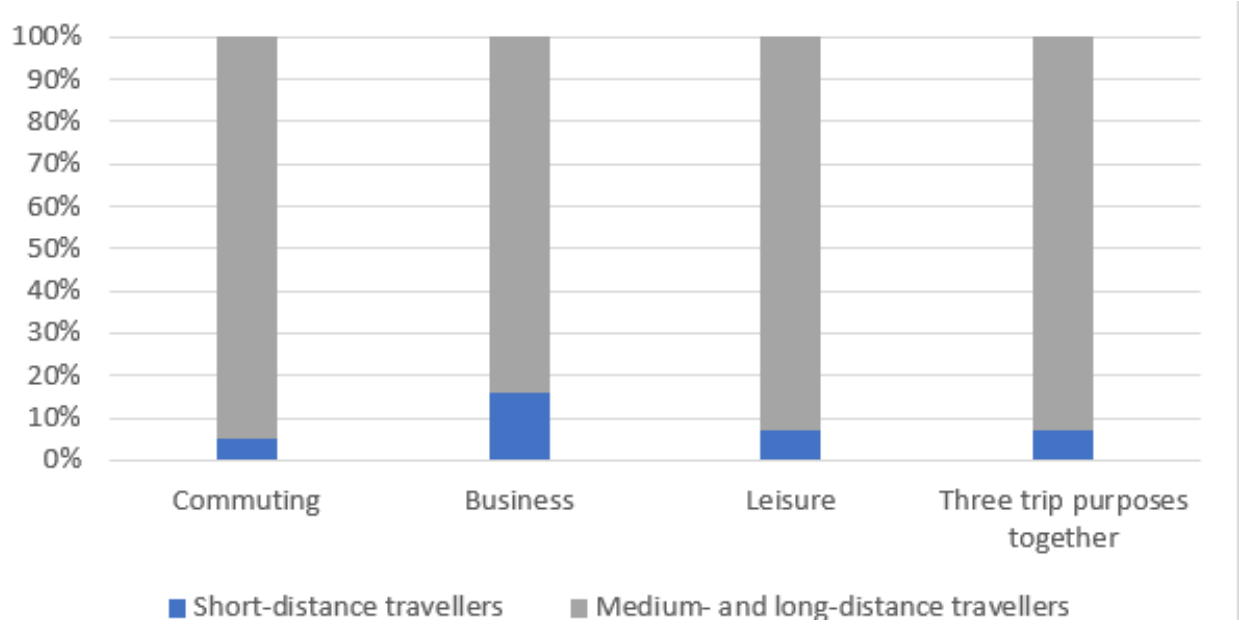

Figure 2: Percentage of medium- and long-distance travellers stratified by trip purpose.

2.1.2 Public Transportation Effects on Traffic

The Office of Rail and Road's database on rail emissions, from 2021-2022, concluded that there is an average of 831.5 kilotons of CO2 emissions in the United Kingdom each year (*Rail Emissions | ORR Data Portal*, n.d.). In a 2021 study of European Cities, Fageda concluded that with the increase of railway transportation, there is less overall travel time and pollution. Fageda found that cities with a rail system have 7% less traffic, 1% less travel time, and 3% less pollution compared to cities that do not have a rail system (Fageda, 2021a). In the study, Fageda also suggested that light rail systems were successful suppressing the negative externalities associated with the car traffic in mid-size European cities. Analysis of a graph done by Fageda can be seen in Figure 3 which shows the evolution of pollution in European cities. The graph indicates cities with new rail systems or relevant rail expansions decreased pollution levels more than cities with no rail system or systems with no relevant expansions.

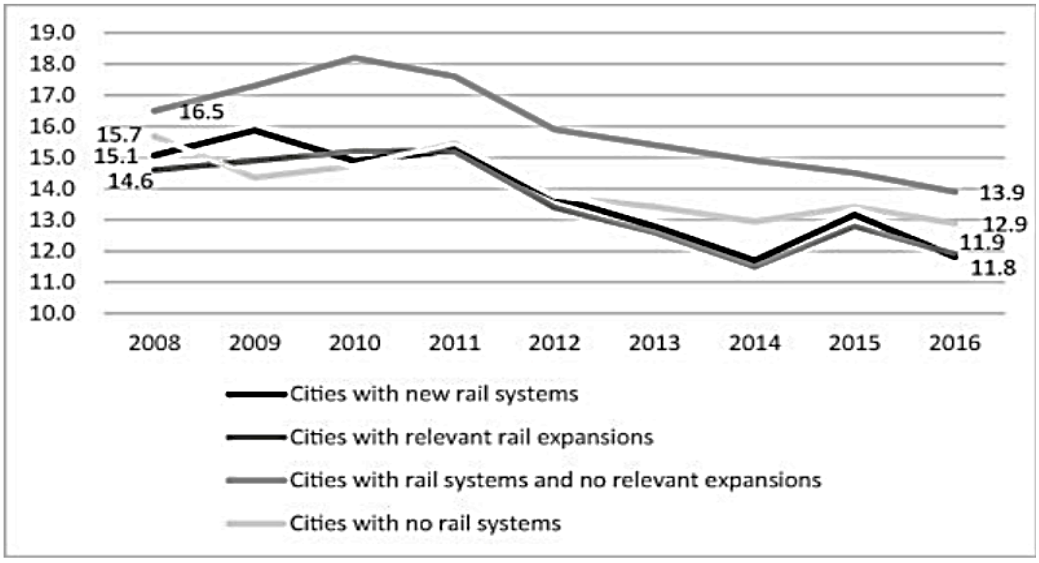

Figure 3: Decreases in pollution of cities from 2008 to 2016 in estimates of PM 2.5 - μg/m^3.

(Fageda, 2021)

Cresci et al. (2019) concluded that by 2050, there will be 30 percent more megacities with over 10 million people living in them. Cresci determined that rail is the most cost effective and efficient way of travelling since one commuter train can carry nine times as many people in an hour compared to a single lane of cars in traffic (Cresci et al., 2019). The study concluded rail emits between 30 and 70 percent less carbon emissions than a conventional car.

In terms of switching to rail transportation, it was determined by Oliver Wyman's Research on Mobility that 92 percent of car drivers would switch to public transportation if they had access to “smart mobility” services that made their time commuting more enjoyable. An example is London's rail stations being renovated to allow for more leisure, commercial services, and multimodal connectivity (Cresci et al., 2019).

2.1.3 Common Complaints with the British Railway System

Between 1 July and September of 2022, the Office of Rail and Road received 24 complaints per 100,000 journeys (*Passenger Rail Service Complaints | ORR Data Portal*, 2022). Some of the main complaints involved punctuality and reliability, seating and standing room, ticketing and refund policies, facilities, and compensation claims. An interviewee from a study by Mann in the UK stated, “I was taken into Rugby station in the train being towed in by a diesel, and we got out at Rugby and had to wait for another train, which when it turned up, was packed, and we had to get on a full train, and I got to the meeting just as they were finishing. Then I came back, and the train coming back, for some reason, didn't have the buffet car open, so the whole thing was a nightmare. So there are those experiences that put you off” (Mann & Abraham, 2010). Crowds can be off-putting and are a prime reason people prefer personal cars over rail travel. Another negative comment regarding rail travel found through interviews was that car costs can be cheaper depending on the trip. Other attitudes towards railways that deter users include comfort, journey time, the possibility of standing, unpleasant experiences with standard class, missing connections, and distractions (Harvey et al., 2014).

Many of the complaints throughout the UK were directed towards the operators Caledonian Sleeper, Avanti West Coast, Hull Trains, Grand Central, and London North Eastern Railway (*Passenger Rail Service Complaints | ORR Data Portal*, 2022). The rail companies are aware of these complaints and have a near 100% response rate except for South Western Railway (89.4%), London North Eastern Railway (88.9%), Grand Central (22.9%), and Cross Country (13.9%). Of the 25 operators throughout the UK, the high response rates suggest they are aware of the problems and are working towards helping their passengers.

2.2 The History of the British Railway System

Britain's rail system has a rich history and has gone through many changes over time. In this section, we will discuss how it operated in the past, how it changed from major acts such as the Beeching Cuts in the 1960s and how rail became privatised in the 1990s. We also discuss how the rail system looks today by looking into who owns and operates it, its usage in modern times, and what the plans for rail are in the future.

2.2.1 Operation of the Rail Systems

According to "All Change!" on Britain's Railways, the operation of the rail system originated in the 1820s and 1830s and has been under the same operation since, with a few moderations. The website discusses how the system started with the Middleton Railway in the city of Leeds in 1758. It is the world's oldest continuously working railway, and is now a heritage railway run by volunteers from The Middleton Railway Trust Ltd. Early railways transported coal to various towns in the UK. In 1830, the first railway stations opened in Liverpool and Manchester, offering passenger and locomotive services running on timetables. These stations also brought in an expansion of the 'railway network' that is still being used today (*"All Change!" on Britain's Railways | The National Archives*, 2023). Although the expansion paved the way for today's railway network, there were many changes that occurred during the 20th century.

In 1900, there was a significant strike at the Taff Vale Railway Company in South Wales. Workers were striking against the company's treatment of employees, and trade union recognition. This was one of the critical events that led to formation of the Labour Party. During the first World War the 120-plus railway companies that existed then were brought together by the Government and placed under national control to pursue the war effort. In 1914, the Railway

Executive Committee was formed, consisting of the general managers of the major railway companies (*"All Change!" on Britain's Railways | The National Archives*, 2023).

After the end of hostilities, Parliament passed the Railways Act 1921, with the intention of stemming the losses being made by many of the country's 120 railway companies, by grouping them into four large companies which became known as the "Big Four" – the Great Western Railway, the London North Eastern Railway, the London Midland and Scottish Railway, and the Southern Railway.

In 1948, the railway system was nationalised with 'British Railways' operating the trains in Britain formerly run by the "Big Four", itself part of a wider 'British Translation Commission' (*History of British Rail | Rail.Co.Uk*, 2023). The article explains that during the period, changes were made to the service. Rail usage increased and there was profit made within the network. Furthermore, all the transformations of the new system happened in the span of six years.

Dr. Richard Beeching released a report called *The Restructuring of British Railway* was published in March of 1963. McKie describes the suggestions and reasons Beeching cited for why over 2000 stations and 5000 miles of track should be cut. According to McKie, The report that was published by Beeching reports that dozens of branch lines that linked villages with market towns were rated egregious loss-makers to be culled, along with great chunks of mainline" (McKie, 2013). According to Wikipedia, "The closure of stations serving rural communities removed much feeder traffic from mainline passenger services.", meaning the closures helped remove traffic and have a better flow of transportation ("Beeching Cuts," 2023).

In 1982, the British Rail services were split into three sectors: InterCity, Network South East, and Regional Railways (*History of British Rail | Rail.Co.Uk*, 2023). Each of these sectors

were responsible for different service types. InterCity was responsible for long-distance express trains. Network SouthEast provided passenger services for greater London and inter-urban travel. Lastly Regional Railways offered a diverse range of routes providing both express and local services to destinations that were often non-principal or less popular. These sectors provided a basis of services that were divided between rail operators during the privatisation. Between the years 1994 and 1997, the railway system was privatised, meaning the infrastructure and track passed to Railtrack, then the rail services were franchised to private-sector operators ("Privatisation of British Rail," 2022).

Since the privatisation of the railway, the number of passengers has increased rapidly, and by 2010, there were more passengers on railways than at any time since the 1900s ("Privatisation of British Rail," 2022). Hirst et al. noted that "Since privatisation, successive governments have attempted to redress the fragmentation that exists within the rail industry by bringing responsibility for track and train (namely responsibility for managing the infrastructure and running services) closer together." The governments were brought together through the privatisation of the railways which are now currently owned by Network Rail (Hirst et al., 2022).

2.2.2 Impact of the Stations Closing

The 1963 report released by Dr. Beeching, *The Restructuring of British Railway* recommended that 2000 stations and over 5000 miles of track should close because of economic reasons. This was known as the Beeching Cuts, where the closures of stations that served the rural communities caused the removal of feeder traffic from longer-distance passenger services. (*The Reshaping of British Railways - Part 1: :: The Railways Archive*, n.d.). Not only did this policy impact the passenger stations, but it also impacted freight depots. The policy resulted in many larger industries that used coal and iron for road haulage ("History of Rail Transport in

Great Britain," 2022). This policy also caused the general passenger levels to decrease steadily in the rail industry.

Studies have looked deeper into the effects of Beeching Cuts and how it affects society and where people choose to live. Gibbons has looked into census data and created maps showing the differences between the rail network in the 1960s versus the 1980s (Gibbons et al., 2018). These maps shown in Figure 4 primarily illustrate the lack of interconnection throughout the United Kingdom unless you are in areas away from the main railway lines.

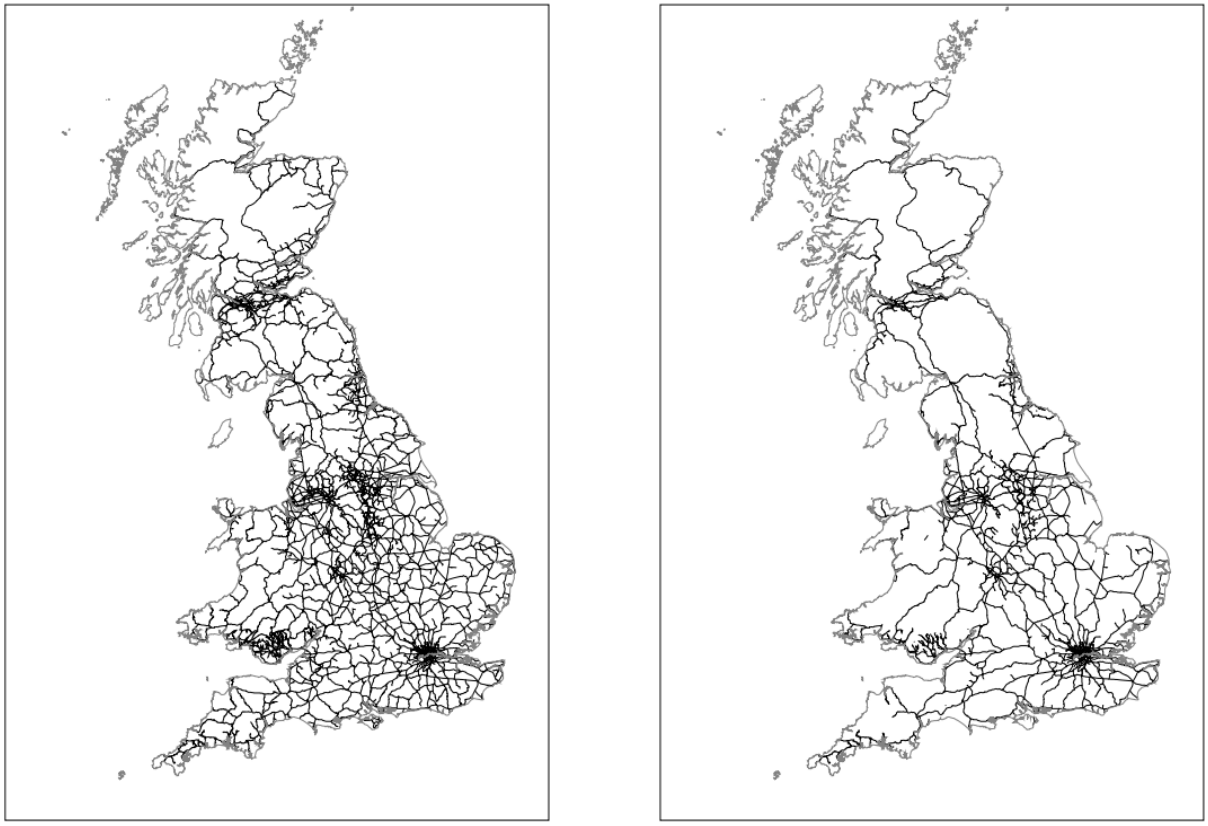

Figure 4: Map of Rail Lines before and after Beeching Cuts. (Gibbons et al., 2018)

In Chris Austin and Richard Faulkner's historical analysis, *Disconnected: Broken Links in Britain's Rail Policy*, they discuss the effects of railway stations' closures in various regions of the UK, particularly from the Beeching Cuts. They discuss that the abrupt closing of stations had

a significant impact on travel, resulting in road travel being double the time it would have been. The Beeching Cuts had a hard effect on places like Whitby, where the railway was an importance to tourism. Despite the importance, Beeching proposed the closure of all railway stations in Whitby. The authors explain that "In 1938 the London & North Eastern Railway ran through trains with restaurant cars between King's Cross and Whitby, completing the journey in 4 hour 55 min, and as late as June 1961 Whitby appeared in the timetable for the East Coast Main Line from King's Cross to Newcastle and Edinburgh as a place reached by connecting at York, though by then the journey time had deteriorated to 6hr 13min (off the 11.00am from King's Cross)." (Austin & Faulkner, 2015) This was a significant setback for the community, as the train ride went from 5-hours, to be nearly an hour and 20 minutes longer, and the train only stopped in King's Cross once a day.

2.2.3 The Current State of Britain's Rail System

Today Britain's railway infrastructure is owned, operated, and developed by Network Rail. Network Rail is a government owned company that is a non-departmental public body: a separate entity from the Department of Transport that has no shareholders and reinvests its income back into the railways. It manages over 32,000 km of track and 20 of the UK's largest stations (*About Us*, 2023). According to the BBC, the Government announced in 2022 an intent to replace Network Rail with a new public body called Great British Railways (GBR). By 2024, Great British Railways will manage a concession contract system which will replace the previous passenger rail franchising system run by the Department of Transport ("Great British Railways Transport Bill Shelved," 2022).

While Britain's rail infrastructure is run by Network Rail, the passenger rail services are run by train operating companies (TOCs) which are members of the unincorporated association

called National Rail. There are currently 34 TOCs and Station Operators operating in the UK. Currently, 25 are privately owned TOCs that were franchised by the government. These franchises are now ceasing to exist and are being replaced by operating contracts which reduces the commercial risk for the operators (*National Rail Enquiries - Train Companies and Station Operators*, 2023).

According to the Office of Rail and Road as seen in Figure 5, prior to the pandemic ridership for the rail was fairly consistent (*Passenger Rail Usage | ORR Data Portal*, 2023). For over half a decade before 2020 there were over 1.7 billion passenger journeys per financial year. During 2020, with the COVID pandemic passenger journeys decreased 77%. In the 2021-22 fiscal year passenger journeys increased back to about 60% of what they were pre-pandemic.

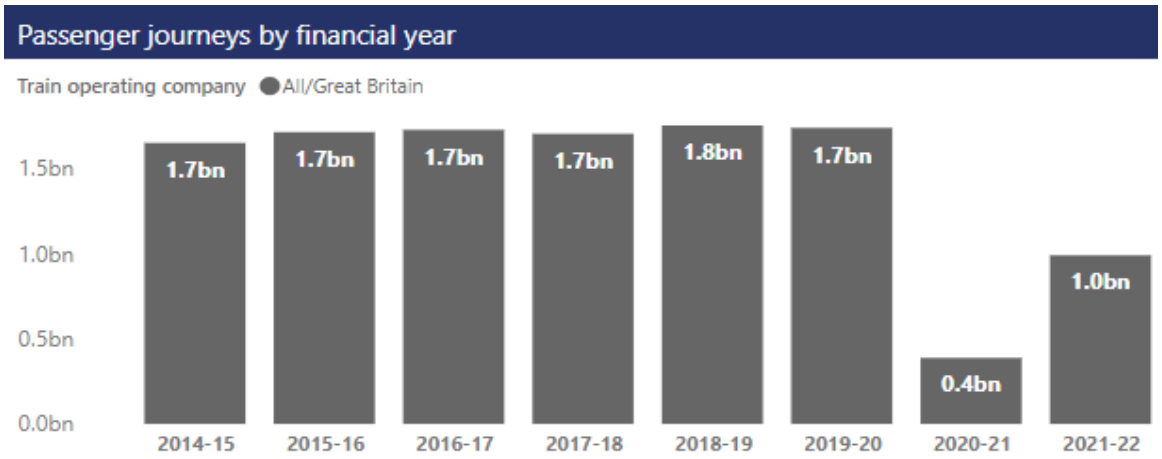

Figure 5: Office of Road and Rail Statistics of Passenger Journeys by Year. (*Passenger Rail Usage | ORR Data Portal*, 2023)

Within the past few years, the UK has been moving slowly towards reopening lines closed during the Beeching Cuts. In January 2020, the Restoring Your Railway Fund was introduced where the government pledged £500 million to begin the process of reopening lines across the UK and Wales (*Restoring Your Railway Fund*, 2022). The Restoring Your Railway

Fund stems from a larger proposal to interconnect the UK under the newer privatised rail system proposed in 2017. The proposal, *Connecting People: a Strategic Vision for Rail*, was presented to Parliament by the Secretary of State for Transport with goals of increased reliability, expanded networks, better deals, modernised workforce, and innovation (*Connecting People: A Strategic Vision for Rail*, 2017). Although this project has seen no movement since 2017, the Restoring Your Railway fund has had several updates up until 2022. The Restoring Your Railway funding was split into three sections: an ideas fund for the initial stages of restoring lost stations, advanced proposals for lines already in consideration, and proposals for the restoration of old station sites. Additional funding was also sponsored by local governments, community groups, heritage railways, local enterprise partnerships, and other interested parties (*Restoring Your Railway Fund*, 2022). As of November 2021, the program was no longer accepting new proposals and plans to focus on the current proposed reopening to help their local economies and increase jobs, homes, and education. The fund was withdrawn in June 2022 due to the bidding process ending, leaving several members of parliament upset at this decision (*[Withdrawn] Restoring Your Railway Fund*, 2022). One member of parliament, Tony Lloyd, has publicly expressed anger towards the decision which stopped funding for the Bury to Rochdale rail line. He described it as a "kick in the teeth" as he felt it would be a great opportunity to provide a tram-train from Rochdale to Manchester for easier transportation to the city centre. The city will be able to continue with the project through City Region Sustainable Transport Settlements funding and the tram train will open in 2029 (Statham, 2023).

A blog post made by Sweco, a European engineering consultancy company, about 15 minute cities mentioned that the 15 minute city (15MC) idea rearranges urban spaces and promotes the use of community and environmentally friendly infrastructure and development as

well as to help combat climate change (*The 15 Minute City*, n.d.). According to Sweco, a successful 15MC should have an efficient, sustainable, and active transport network to make the journey practical. Along with having an efficient and sustainable transport network, a 15MC needs to have all the necessities like healthcare clinics, green spaces, local government offices, and more. 15MCs are increasingly becoming popular and the expansion of public transport is an enabler.

2.3 Worcester, UK's Transportation History

Worcester's railway system has a long history dating back to the mid-1800s. In this section, we discuss the early days of Worcester's railways as well as their usage. We also discuss one of Worcester's former stations, Henwick, around which this study is based.

2.3.1 Opening of Rail Stations in Worcester

From the online article *Tracking the History of the Railway*, before the 1850s, starting around 1840, there were several railway lines that operated near Worcester, UK. These lines near Worcester were mostly used for transportation of goods. Due to the railway lines not being close to Worcester, the city used the River Severn and canal system between Worcester and Birmingham to transport goods and it was considered to be effective. It wasn't until early in the 1850s that the first rail station, Shrub Hill, opened allowing a connection to the main railway lines in other parts of the country (Neville, 2021). The opening of the station allowed for more goods to be transported between towns along the line leading to South Wales and increased tourism and population for the towns on the line.

The Branch Lines of Worcestershire, shown in Figure 6, shows that The Oxford, Worcester, and Wolverhampton lines had opened in 1853 and were used frequently. They ran

from east to west in Worcestershire then went north to split the county. In 1860, the line joined the then West Midland Railway (integrated into the Great Western Railway in 1863), then in 1890, it connected to Midland Railways main line that ran through Birmingham, New Street and Gloucester. The addition of the Oxford, Worcester, and Wolverhampton line allowed trains from Worcester to travel to New Street and the Oxford, Worcester, and Wolverhampton stations. It was once a double line but then partially reduced to a single line in 1969 (Maggs, 2010).

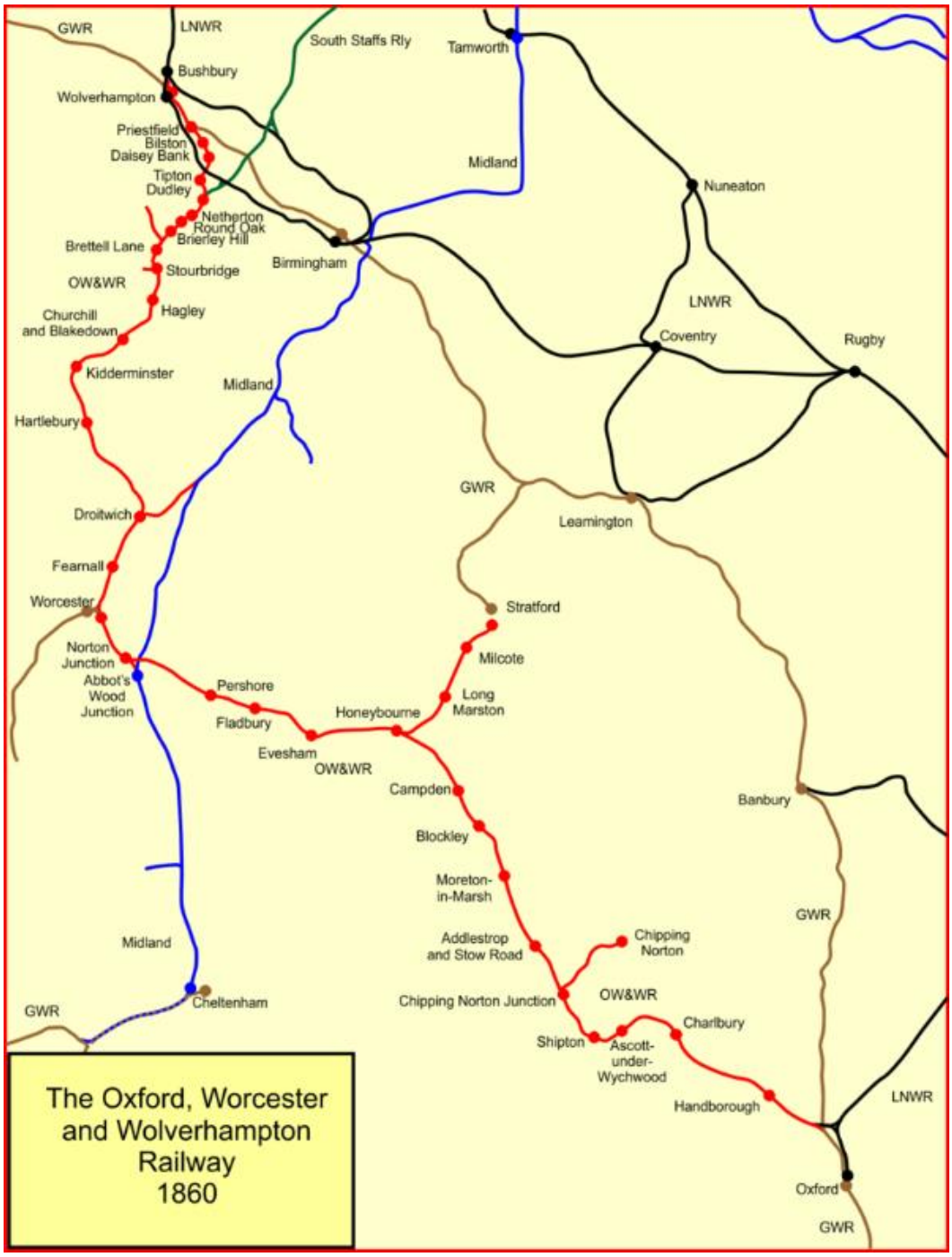

Figure 6: Map of the Oxford, Worcester, and Wolverhampton Railway Lines. (*Wikiwand - Oxford, Worcester and Wolverhampton Railway*, n.d.)

2.3.2 Rail Usage in Worcester

In present day, there are two train operating companies operating in Worcester. These companies are Great Western Railway and West Midland Railway ("List of Railway Stations in Worcestershire," 2022). There are two main stations the city's residents use, Shrub Hill and Foregate Station as seen in Figure 7.

Figure 7: Map of Shrub Hill and Foregate Station in Worcester, UK. (*Google Maps*, n.d.)

According to The Office of Rail and Road, there were over 1.7 million entries and exits between the two stations for the 2021-22 financial year seen below in Figure 8.

Station Name	Entries and Exits (2021-22)	Entries and Exits (2020-21)	Interchanges	Limitations
Worcester Foregate Street	1,358,222	534,904	256,306	
Worcester Shrub Hill	409,540	161,288	175,791	

Figure 8: Data of entries and exits in Foregate Street and Shrub Hill Stations. (*Estimates of Station Usage | ORR Data Portal*, n.d.)

In February 2020, a station was opened on the outskirts of the city – Worcestershire Parkway. As seen in Figure 9, the red pin is Parkway Station, and the blue pins are Shrub Hill and Foregate Street Stations in Worcester's City Centre. Prior to the opening of Worcestershire Parkway station, there was doubt in the station's success. However, since opening, many started to use the station and its 500-space car park that approaches capacity on certain weekdays. Lord Faulkner said, "the usage of that station has been phenomenal success as well." regarding Worcestershire Parkway Station (R. Faulkner et al., personal communication, March 17, 2023). Passenger figures for Parkway have grown steadily, largely because of a large and inexpensive car park, and the opportunity for passengers to interchange between the Worcester, Oxford and London main lines, and the north to west services going to Birmingham, Nottingham, and Derby in the north and to Cheltenham, Gloucester, and South Wales to the south. With passenger numbers at Parkway now at around 800 per day the target for Year 10 was met at Year 3.

Figure 9: Location of Worcestershire Parkway Station in relation to Shrub Hill and Foregate Station. (Google Maps, n.d.)

2.3.3 Henwick Station

Henwick Station opened on 25 July 1859 at the level crossing on Henwick Road in St. John's, a village in Worcester, UK. ("Henwick Railway Station," 2022). A picture of Henwick Station in 1960 can be seen in Figure 10.

Figure 10: Henwick Station's platform in 1960. (*Henwick Platform Obtained by Chris Wilkinson*, 1960s)

The station served as the first stop after Foregate Street Station on the way to Malvern Link and Hereford (*Adrian the Rock - Signals at Henwick and Worcester Foregate Street*, 2023). The station also served the Bromyard Branch which left the line to Hereford before it reached the Bransford Road Station. The line contained five stations after Henwick Station with the final station being Bromyard (*Railways in Worcestershire*, n.d.). When talking about Henwick Station Eric Prince said, "It was always a small but fully staffed railway station with its own booking office, waiting room, station master's office, porter service, signal box, extensive goods sidings and very well-kept gardens on the up platform." (*Halt... at the Station Ahead | Worcester News*, 2001). Behind Henwick Station, there was a large goods yard primarily used to store coal for Worcester Power Station, which was on the opposite side of Henwick Road. Figure 11 and

Figure 12 show the location of Henwick Station as it was in 1910 compared to what it looks like in 2023.

Figure 11: Henwick Station and Goods Yard 1910, (Henwick Station Goods Yard Obtained by Chris Wilkinson, 1910)

Figure 12: View of the former Henwick Station and Goods Yard 2023. (Stone, 2023)

As a result of the Beeching Cuts mentioned in previous sections, The Bromyard line closed on the 5th of September 1964 (*Railways in Worcestershire*, n.d.). The closure of this branch contributed to Henwick Station closing on 3 April 1965, and the goods yard closing on 1 May 1968. As seen in Figure 13 all that remains of Henwick Station is the signal box for the level crossing. The land where Henwick Station once stood has since been developed, with Henwick Halt Medical Centre and a group of flats now occupying the site of the former goods yard (*WorcesterVista.Com » Henwick Worcester.*, 2005). Due to Henwick Station closing nearly sixty years ago, there is very little information available about its operational history.

Figure 13: The remaining signal Box at Henwick Station. (Stone, 2023)

If Henwick Station were to reopen, it would provide a useful method of travelling between west to east sides of Worcester. Currently, there are two main routes for crossing the Severn River. One route is the Sabrina Bridge which serves as a walking bridge nearer to the University's St. John's campus. The other route is the main A44 road bridge slightly downriver; however, this bridge is prone to excessive congestion. During the rainy season in Worcester, the Severn River can flood, which has been known to flood the main roads and walkways. The railway sits above all other structures which makes it invulnerable to these floods. Due to the location of Henwick Station, it would not be possible to include a car park with the station. However, the University of Worcester has recently built a large car park behind the University of Worcester Arena, which can serve as parking for the station. The cost of parking for this carpark ranges from 50 Pence for the first 30 minutes to £6 for a full 24 hours (*Car Parking - Service Site - University of Worcester*, n.d.). This car park would be useful for residents to be able to drive to the station and leave their car for an affordable price. There are also options for bus transportation both to the arena and directly to the station.

3.0 Methodology

In this chapter we investigated the public's interest and contributing factors for the opening of a railway station in the St. John's area by developing three main objectives: determined the viewpoints of residents and commuters of Worcester, the University of Worcester community, and key stakeholders. We explain how we learned their viewpoints and what we discovered. Finally, we outlined how we determined the overall interest in a new railway station.

3.1 Determining the Viewpoints of Residents and Commuters of Worcester

The purpose of determining the viewpoints of residents and commuters of Worcester was to gauge the likelihood of using "Henwick Station" and how people could benefit from a station opening. Our target population was people who lived near the station or had a commute that could be made more accessible by the station. These findings could help decision-makers determine whether the opening of a station in St. John's is feasible.

To better understand what commuters and residents think, we developed four main research questions as follows:

1. What primary method(s) of transportation do residents and commuters use?
2. Would residents and commuters use "Henwick Station" if it were available?
3. Would using this station make travelling easier?
4. What is their reasoning for using or not using the station?

To determine the viewpoints of residents and commuters, we conducted face-to-face surveys at a nearby park, known as Cripplegate Park. Figure 14 shows the geographical location of Cripplegate Park in relation to the University of Worcester St. John's Campus and the City Centre.

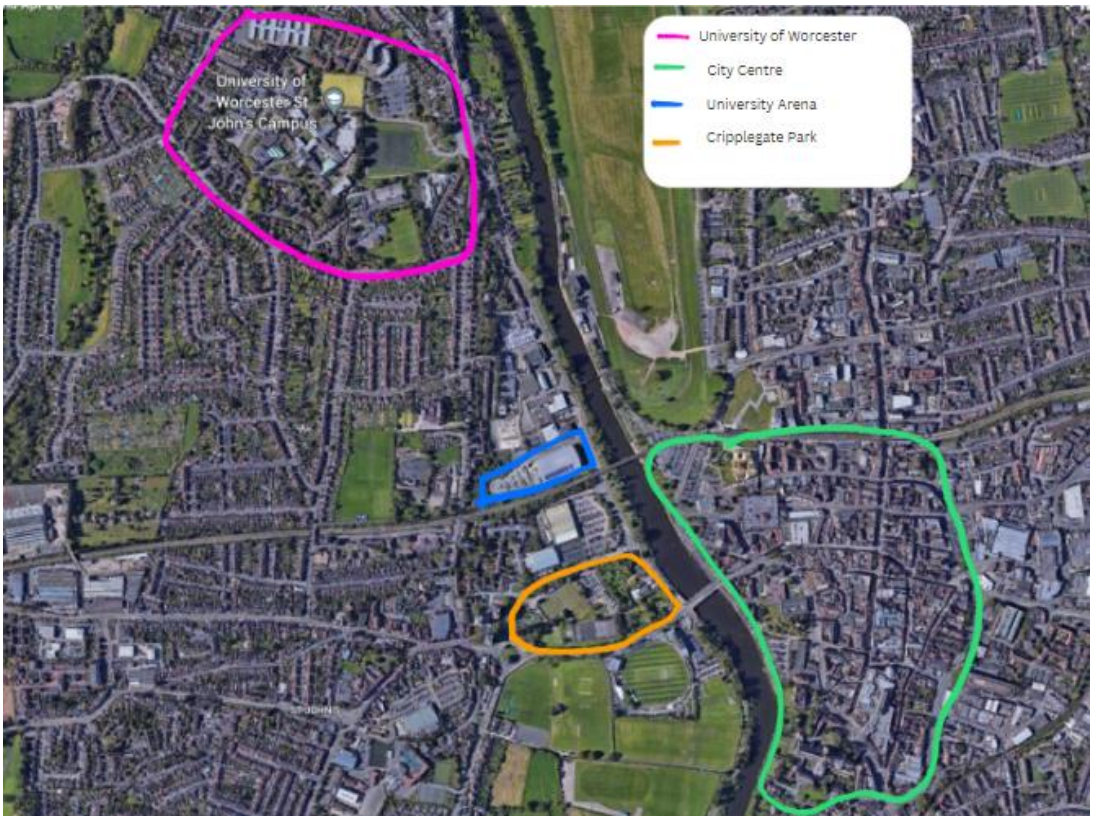

Figure 14: Map Showing the Location of Cripplegate park. (*Google Maps*, n.d.)

This survey location was chosen because it is a common area for residents to travel through. To receive the proper permissions, we held numerous meetings with city and company representatives. Stuart Minchin from Worcester City Council assisted us in allowing us to conduct the survey on the same day as the "Friends of Cripplegate Park" hosted their café pop-up on Tuesday mornings. Additionally, he allowed us to hang posters around the park, which featured a QR code that linked to an online version of our survey (See Appendix G). Our questions revolved around their transportation habits and the likelihood of utilising "Henwick Station" if available. We avoided simple yes/no questions, which provided us with more detailed answers, allowing us to gain a better understanding of the responses. To ensure a representative sample, we utilised a section on demographics, which allowed us to understand the demographic groups who may or may not use the proposed station (Fisher, 2020). As shown in Appendix A,

our survey questions went more in-depth, providing the interviewee a multiple-choice selection as well as a section for any comments, concerns, or questions about a station opening in the area. These questions allowed us to quickly gain insight on the transportation habits of the residents and commuters.

Our approach to analysing the interview data involved categorising and quantifying the responses. We carefully categorised the responses into different demographics, such as age and gender, to better understand which groups were for or against the opening of a new railway station. Through cross-tabulation, we were able identify any statistically significant trends in the data.

We encountered a few challenges along the way while collecting our responses. Receiving approval to survey at various locations in the St. John's area was one of the first challenges we faced. We found that local businesses were hesitant in having us there as they believed we would scare away costumers. Another challenge we faced was getting responses from different age groups. Due to the time of day our surveys were conducted, many of the participants at Cripplegate Park were of an older demographic, which led our data to have a bias towards older residents' views.

3.2 Determining the Viewpoints of the University's Faculty, Staff, and Students

The purpose of this objective was to gauge the interest level in opening "Henwick Station" with the University of Worcester community. Given its proximity to the station, the University would serve as the closest and most significant attraction to the station. Those who visit the University could make up a sizeable portion of people utilising the station. The results

of the study with the University community will help decision-makers in considering the case for opening a station in St. John's.

Research questions for the University's faculty, staff and students were structured to focus on their use and interest level for the station, which included the following:

1. How do you travel to and from the university and where are you travelling from?
2. What primary method(s) of transportation does the university community use?
3. Would the university benefit from the opening of "Henwick Station"?

Our approach to gauging interest from the University community regarding the opening of Henwick Station was efficient and effective. We table sat numerous times to gather more student responses for the transportation habits survey, which was created and distributed by the university's sustainability department, prior to us arriving. We then sought to increase the response rate of this survey by table sitting and offering raffle prises as an incentive. To further understand the data, we engaged with students using unstructured interviews, allowing them to elaborate on their transportation habits and how they could benefit from a station's opening. We used this approach because we were able to gather a substantial amount of data while supplementing it with the insights from the unstructured interviews. Similar to our residential surveys, we were able to define the necessary information from the students and received more responses in a shorter period (Fisher, 2020). Furthermore, the advertisements we used had QR codes (see Appendix E and F), so we were able to collect responses without being physically present. The unstructured interviews were useful since it allowed the student or staff members the opportunity to explain why they would or wouldn't use a station in greater detail. (George, 2022b) For more information regarding the unstructured interviews and survey questions, reference Appendix B.

Our plan for analysing the data collected from the surveys and unstructured interviews was conducting a thematic analysis and quantifying the survey results. To do this, we categorised each question based on positive or negative responses, which allowed us to identify general themes of the participants' input. Furthermore, we included written responses from the surveys in our thematic analysis which can all be found in the findings section.

However, one of the primary challenges we faced with this style was that we couldn't conduct unstructured interviews with the survey respondents, nor could we receive relevant written feedback. Additionally, some students who completed the survey appeared to only be interested in being entered into the raffle, which led to some responses being less serious than others.

3.3 Determining the Viewpoints of Key Stakeholders Involved in the opening of a Railway Station.

Our goal was to gain a better insight of the political, social, and financial factors involved in the opening of a local station by engaging with key stakeholders. These stakeholders included members of Parliament, Community Rail Partnership members, regional bodies for rail transportation, and Worcester's Travel Officer. Additionally, we went to a landlord forum on to ask landlords from the St. John's area in Worcester about how a new railway station could affect the housing market in the area.

To further our research, we created a series of research questions to gain insight into the unique knowledge of each stakeholder regarding the community and railway systems. The questions to help keep us on track to understanding what goes into the reopening stations were as follows:

1. Would you support “Henwick Station” if it were to reopen? Why/ Why not?
2. Which other public and private organisations could be affected and/or be influential?
3. How much public interest is needed prior to reopening a station for politicians and companies to consider opening a new railway station?
4. What does it take for a railway station to be opened/in operation?
5. Would railway station owners benefit financially from opening another station in the region?
6. How could a new station affect renting in the area?
7. Would “Henwick Station” be helpful to those living in the local area?

Rail operators within the Midwest Region of the UK have significant knowledge about lines that can be reopened, budgeting information, and commuter statistics. This information was helpful for our study in the opening of “Henwick Station.” We were able to conduct semi-structured interviews with several representatives through contacts provided by Lord Richard Faulkner and by Katy Boom from the University of Worcester, by using open-ended questions that allowed the interviewee to offer their insight on specific topics. This interview style allowed the interviewee to share information that we may not have considered relevant to the study. All interview questions used can be found in Appendix C. These questions were also crafted based on the interviewee’s role and led to a discussion allowing them to expand on their expertise (George, 2022a). One of our interviews we conducted was with Colin Major, from Railfuture, who provided us with information on next steps including a business case. This information can be found in Appendix H. Despite the informational nature of this interview style, a limitation we

faced was tangents that were unrelated to the study and therefore unusable data at the time. Crafting questions for the individual may also limit the scope of usability in future analysis.

Furthermore, we attended a landlord forum on April 18th and conducted a survey with those who attended to better understand their renters' perspectives on the effects of a proposed rail station. Questions asked during the forum can be found in Appendix D. However, a limitation was that not all the landlords lived in the area and were unfamiliar with the proposed locations in St. John's, such as the old Henwick Station.

To analyse the data gathered from the interviews, we recorded and transcribed them using Microsoft Teams. We then made more detailed notes of information learned during the interview and utilised the transcripts to identify how complicated the process of opening a station would be. By using a thematic analysis, we identified the feasibility of opening a station based on the feedback given by each company or group. We also categorised the support given as positive or negative and organised the quotes from the interviews into a table that can be found in Appendix I.

3.4 Determining the Overall Interest Level in Reopening Henwick Station

Our project aimed to assess the level of interest in opening a railway station in St. John's. To achieve this goal, we performed an integrative analysis of the data we collected, using the various methods mentioned in the previous sections. Our analysis focused on gauging the overall interest level as a beginning step towards the process of opening the station. We learned more about the station's financial viability, location, connecting rail lines, and other political, economic, logistical, and environmental factors that affect a station opening. This entire process can take several years, hence why the feasibility of this section will be focused on interest levels.

To better focus on the interest levels and understand other needed support, we created the following research questions. These questions guided our analysis and helped identify the groups interested in the opening of “Henwick Station” and include:

1. What problems is a potential station addressing and are there any alternative ways to fix these problems?
2. Where may a potential station be located?
3. What may the potential ridership and revenue look like?
4. What information is necessary to develop a business case?

We utilised integrative analysis to determine the overall interest in opening “Henwick Station” and to gain a better understanding of which groups were interested in the opening of Henwick Station. To categorise the responses from previous surveys, we used cluster and stratified sampling. We interviewed individuals from both the residents and commuters as well as the university community for cluster sampling while stratified sampling involved dividing our stakeholders into rail operators and politicians (*Statistics: Introduction*, n.d.). Since the number of response options were limited, we quantified the results, such as the percentage of participants who expressed interest or the percentage of student participants who expressed interest, which will be further discussed in Chapter 4.

4.0 Findings

In this chapter, we present findings regarding the views of the public and key stakeholders with respect to a potential rail station in St. John's.

4.1 Viewpoints of the Local Community

This section explains how the residents of the St. John's area would be affected by a new station. Below, we describe the themes that emerged from surveys and interviews of community members. However, the community findings are based on small sample of surveys and interviews taken in Cripplegate Park in St John's. Additionally, those surveyed were primarily over 60 and therefore do not accurately represent the area's demographics. Surveying the area and achieving a statistically significant number would be needed to draw stronger conclusions. Despite the small sample size, we aimed to answer our research questions below.

Interviewees in the community drive or walk more than any other method of transportation.

Over half of the participants surveyed selected a combination of methods of transportation which involved using a car and/or walking. This question allowed participants to select multiple answers if their commutes involved several forms of transportation. As shown in Figure 15, 64.3% of respondents indicate using a car regularly for transportation, and 62.9% indicated that they walk regularly. Those who walk were more enthused about a prospective station since it would be more useful than their primary mode of transportation for them to travel into City Centre for leisurely purposes. Those who typically drive for their commutes indicated that they were less likely to utilise the station because there may not be a close enough station to their destination.

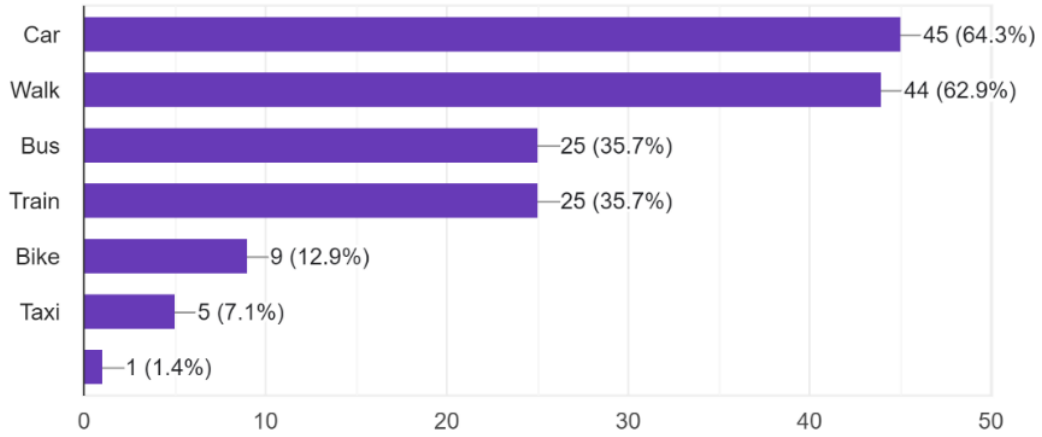

Figure 15: Percentage of interviewees indicating forms of transportation they use. (n = 70)

If a railway station were available in the St. John's area, over half the local surveyed population would use the station.

In our residential survey, 60% of the 70 participants reported that they would use "Henwick Station". Of those who responded, 28.6% claimed they would use it weekly and 27.1% would use it monthly. This suggests that of those who responded they would use the station, many of them would utilise it on a consistent basis and further indicating a healthy level of interest in the station among residents.

Convenience and sustainability were the most commonly cited reasons from those who indicated they would use the station.

As seen in Figure 16, 56.1% of the participants stated that a station would be convenient for them. One participant noted that the station "would be helpful for journey from Foregate to St. John's" while another stated "I always thought a station before town is a good idea as Shrub (Hill) is not helpful as it's so close to Foregate." This question allowed the participant to select multiple responses for their feedback. the positive feedback received suggests that they would support a station that is on the west side of the River Severn.

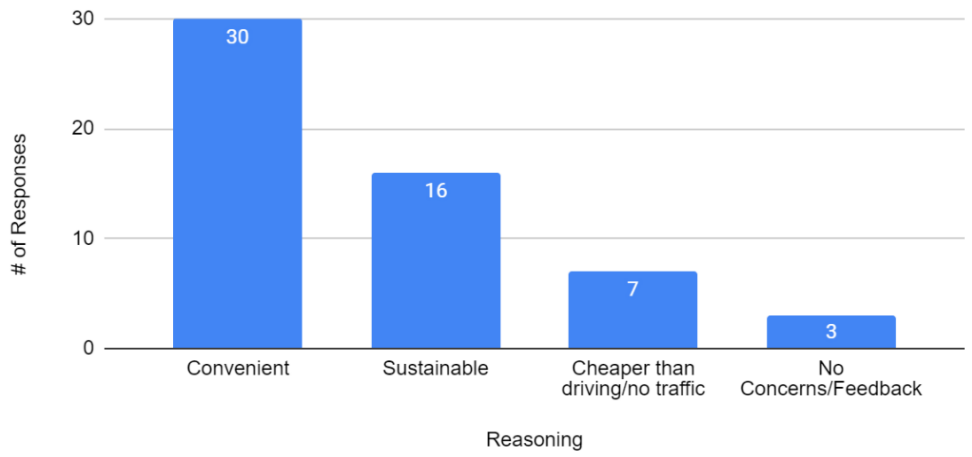

Figure 16: Reasoning of support for a proposed rail station in St. John's. (n = 41)

The reasoning of those who claimed they would not use a potential station is primarily due to preferring other modes of transportation or not having access to a station near their desired locations. Reference Figure 17 for more insight of the concerns listed by residents about a potential station.

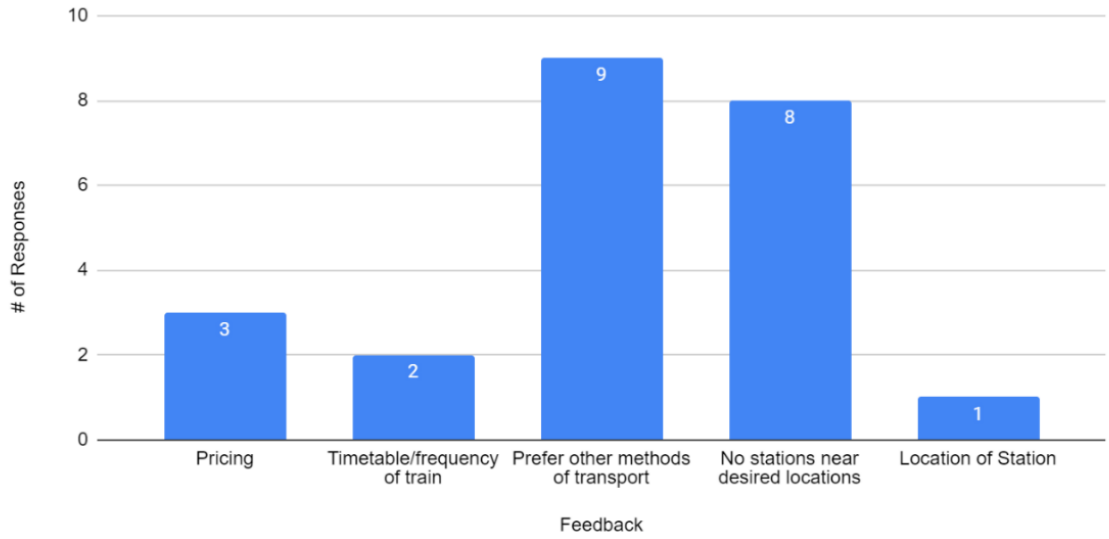

Figure 17: Reasoning residents of St. John's would not utilise a new railway station. (n = 23)

4.2 Viewpoints of the University Community

In this section, we discuss the interest of the University Community with the opening of a rail station. Due to the proximity of St. John's to the University of Worcester's two campuses, a proposed station could provide an alternative mode of transportation to class or work.

About half of the surveyed students and over half surveyed staff from the University of Worcester commute to campus using their own cars.

As shown in Figure 18, 46.2% of students noted that they drive their own car to campus, while 22.7% walk to campus. On the other hand, in Figure 19, 66.5% of staff noted that they drive their own car to campus. This is significant because if most students and staff are driving to campus, there can be a build-up of traffic and negative environmental effects. If more of the University community utilised the railway, it could help lower the city's carbon emissions to reach their net-zero goal by 2030 and reduce traffic going over the bridge from St. John's to Worcester City Centre.

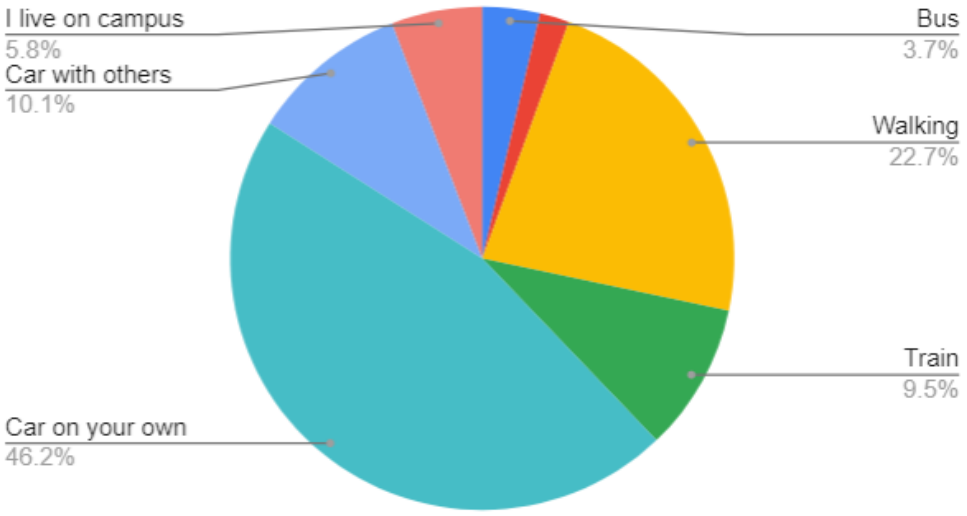

Figure 18: Students' methods of transportation when commuting to campus. (n=281)

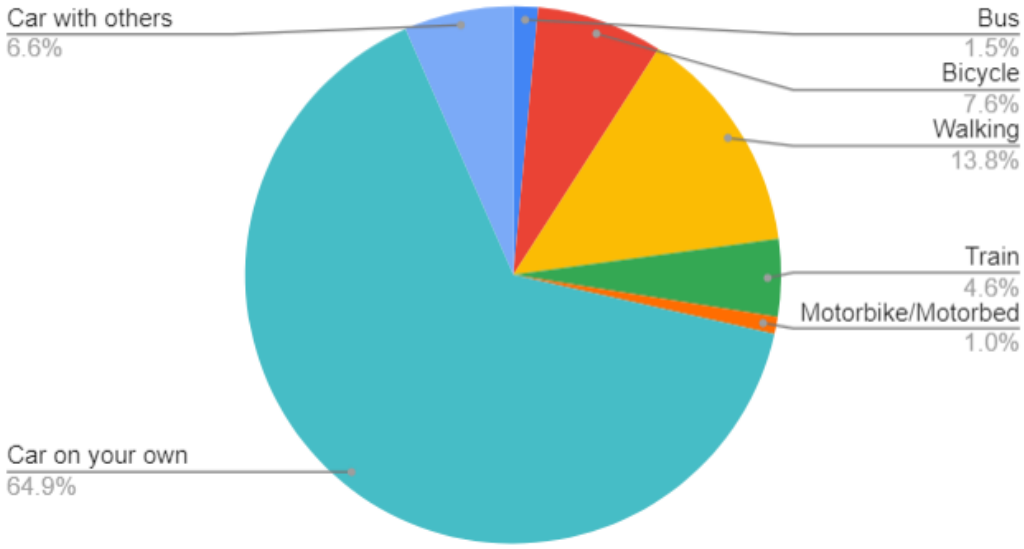

Figure 19: Staff's methods of transportation when commuting to campus. (n=380)

Many students and staff report traveling far distances to get to their homes.

On average, the staff must travel approximately 15 miles each way to get to campus. Figure 20 presents the distances travelled to campus by students and staff, as well as the average number of days per week travelled to campus. 87.3% of the staff travel to the university 3-5 days a week on average, while 76.6% of the students travel to the campus between 3-5 days a week for class. The number of days both staff and students came to the university is notable because the use of a station can make it easier to travel long distances and help reduce carbon emissions.

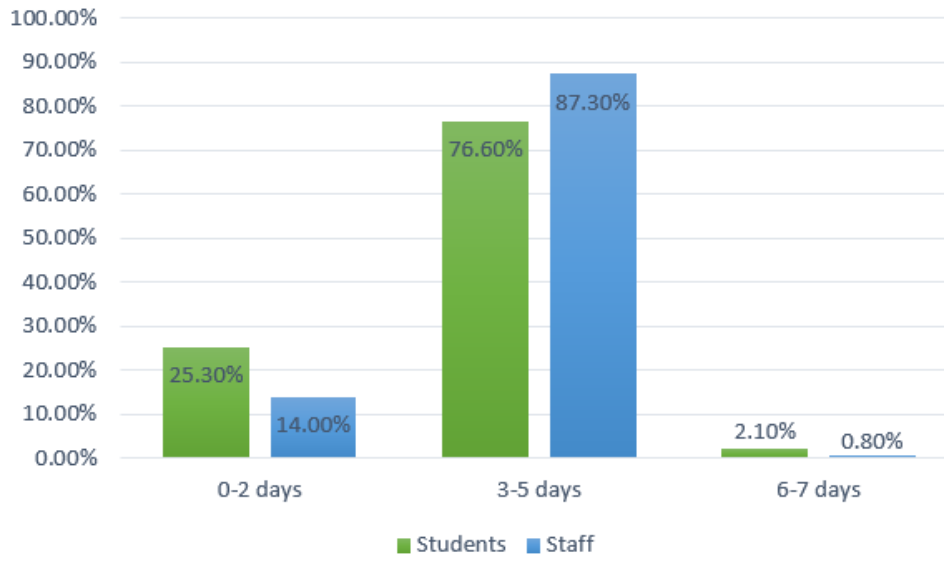

Figure 20: Average amount of days per week students and staff travel to campus. (Staff n=380, Students n=281)

About one-third of the surveyed staff indicated that they would use "Henwick Station" for their commute.

34.8% of staff claimed they would use the station while 50.1% of staff's responses declared that they would not use "Henwick Station" if it were available. 15.1% of the staff were unsure if they would or would not use the station if it were available. The sample size of 380 responses represents approximately 38% of the staff at the university. During unstructured interviews a couple of staff members, they said they would use the station to get around the area more effectively, by being able to go to Malvern easily. This would also benefit them since they are sometimes late to work when taking the train to Foregate Station, and having to either walk across the city, or take a taxi or bus. Some of the reasoning that the surveyed staff would not use the station is "bus and train services from where I live do not go to Worcester without having to undertake multiple changes and almost double my journey time." As shown in Table 1 below, of the 264 staff members that utilise their own cars for their primary form of transportation to the

campus, approximately 31% of them would consider using a station in St. John's. If this were to relate to the total staff population of approximately 1,000 staff members, it can be said that 645 would drive. If the same statistic were true, it would suggest approximately 200 users of the station. This demographic would be a sizable addition to utilise the station and would help reduce traffic congestion and carbon emissions.

Table 1: Staff Responses broken down by current mode of travel to campus. n = 409

If the former Henwick rail station (on Henwick Road in St Johns) with local services to the centre of Worcester, Malvern, Droitwich, and Kidderminster was re-opened would you consider using it?	How do you mostly travel to work? If you use more than one type of transport ie walk then train, please answer with the longest part of your journey, so if you walk to the station then catch a train, choose train.							No answer	Totals
	Bus	Bicycle	On Foot	Train	Motorbike/Moped	Car on your own	Car with others		
Yes	2	9	24	8	0	81	9	1	134
No	2	14	24	5	3	132	15	0	195
Don't know	2	6	7	5	0	43	2	0	65
No answer	0	2	1	1	1	8	1	1	15
Totals	**6**	**31**	**56**	**19**	**4**	**264**	**27**	**2**	**409**

Nearly half of the surveyed students indicated they would use "Henwick Station" if available.

42.7% of students responded that they would use a potential Henwick Station whereas 39.2% of them stated they would not, and 18.1% of students were unsure if they would use the station. Responses were received from 281 students, less than 3% of the student body. A larger sample would be needed for more definitive results. Students that said they would use the station noted it could "take 30 minutes off my drive" and "It would make the world of difference as I would no longer have to worry about my walk back to my accommodation in the dark or have to struggle getting up the hill and over the bridge which can be quite time consuming and tiring

depending on how much stuff I have." By referencing Table 2, we can learn that of the students who responded that they typically walk to or between campus, approximately 59% of the 74 students who walk would consider using a station near the campus. Additionally, around 31% of students who drive would consider using a nearby station. This result is similar to the one mentioned above with the staff. If this were to relate to the over 10,000 students, this would approximate to over 2,800 students that would use the station twice or several times a day, 5 days a week. Like the staff, if a large percentage of the 10,000 plus students opted to use the rail station, traffic and carbon emissions in the area could be significantly reduced.

Table 2: Student responses broken down by current mode of travel to campus. n = 324

If the former Henwick rail station (on Henwick Road in St Johns) with local services to the centre of Worcester, Malvern, Droitwich, and Kidderminster were re-opened would you consider using it?	How do you mostly travel to campus? If you use more than one type of transport ie walk then train, please answer with the longest part of your journey, so if you walk to the station then catch a train, choose train.								No answer	Totals
	Bus	Bicycle	On Foot	Train	Motorbike/Moped	Car on your own	Car with others	I live on campus		
Yes	9	4	44	23	0	47	10	12	2	151
No	1	2	13	2	0	75	17	4	0	114
Don't know	2	0	15	5	0	22	6	2	0	52
No answer	0	0	2	0	0	4	0	1	0	7
Totals	**12**	**6**	**74**	**30**	**0**	**148**	**33**	**19**	**2**	**324**

4.3 Viewpoints of Public Officials and Rail Professionals

This section goes into detail about the information from the interviews with public officials and rail professionals. The stakeholders have important insight to whether the development of a station is feasible. Through this process, we learned how different rail companies, private companies, and landlords are impacted by the development of a station and what is necessary to move forward in the process.

Some of the main public and private organisations that would be influential in a potential reopening of Henwick would be West Midlands Railway, Network Rail, West Midlands Rail Executive, Worcester City and Worcestershire County councils, Members of Parliament (MP), and the Department for Transport of UK.

Representatives from West Midlands Railway, Transport Focus and Worcester City Council explained how each of these organisations would play a role in getting the approval of opening a station as well as how it will impact them in years to come.

- As the potential rail operator, **West Midlands Railways** would need to understand how the station would impact their company financially. According to West Midlands Representatives Toby Rackliff and Daniel Pass, running a station in St. John's area could benefit the company if it was profitable. Mr. Rackliff explained that rail companies such as West Midlands Railway would be "both supportive but sceptical, and certainly worry about what are the long-term implications for them and what are the implications for operational costs." If aspects such as lack of use, incompatibility of timetables, and maintenance problems would negatively impact the current use of the line it would be a bad investment for the company. Since the proposed location of the station is along the current line, it would provide a stop in-between Foregate Street and Malvern Link which would likely increase travel time by 5-10 minutes which could be a problem for adjusting timetables. **Network Rail** owns the infrastructure of the railway, as we learned from Colin Major. Network Rail has an outline for a business case that includes several cases, strategic, economic, commercial, financial, and management. **West Midlands Executive** manages rail transport policy and would most likely be included on the management case of a business case.

- **Worcester City and Worcestershire County Council** would be vital to receiving the funding to build the station. While the **Department for Transport** would likely contribute to the cost of opening a station, WCC would most likely provide the majority of the required funding. It is important that the business case and interest suggests that the station would be successful if built.
- **Members of Parliament** (MPs) are needed to advocate for the station to government organisations. MPs not based in the West Midlands may have a limited understanding of how the system currently works beyond the infrastructure since other regions have better interconnectivity and therefore would have to explain in detail the need for the station so they can properly advocate for the case.

Public interest is a crucial factor for getting a project such as this off the ground.

Public support with a range of demographics was emphasised in each interview. Although a lack of public support does not indicate the station would fail, it would be considered a risky investment to those who fund the project. To have the highest chance of success, a business case would have to represent that there would be definite consistent ridership throughout the year. Geoff Grant from Transport Focus explained to us that "the public not only needs to endorse it as something they probably need. You need to get them to answer your questions in a view that is more positive than yes. Instead of 'I'd be interested' more of a 'I would definitely use that station if it were available to me'." Mr. Grant used this format to help us identify the difference between someone who may be saying they would be interested in a general sense versus someone who would be excited about it. For a business case, those who claim they would use the station are likely to be future customers therefore would help prove the stations future success.

For a station to opened, an in-depth business case is required involving a Strategic Case, Transport (Economic) Case, Financial Case, Commercial Case, and Management Case.

Company representatives from West Midlands Railway, Transport Focus, and the City Council emphasised the importance of a business case. Mr. Grant from Transport Focus says, “a good business case built on answering all of the questions almost before they are asked is the key to where something can be reintroduced successfully” indicating that an effective business case would answer any question that could negatively impact the development of “Henwick Station”. Andrew McGill, the Public Affairs Manager from West Midlands Trains explained “it has to be about demonstrating the financial case to build a new station because unfortunately everything boils down to money in the world at the moment.” From our meeting with Colin Major who works with Railfuture as a secretary of the West Midlands area, we received more in-depth information on the business case, which can be referred to in Appendix H. Our meeting with Ian Baxter, strategy director of SLC Rail, disclosed the most essential information about developing a rail strategy. This involves considering several aspects that align with the development of a business case such as looking at future and existing populations for growth, effects on timetables and what lines would be used in the proposed station, and traffic and parking consideration. Each of the sections of a business case involve an in-depth process of researching transportation related problems, policy and scheme research, key influences, the economic, environmental, social, and public impacts, anticipated value and expenditure, funding sources, passenger services, communications, and risk management.

The majority of the landlords at the Landlord Forum believed a station in St. John's would encourage renting in the area.

After our presentation at the Landlords Forum, we ran a quick survey to find the opinions of landlords on a station in the St. John's area and how it could affect the area. By referring to Figure 21, there was an overwhelmingly positive response by the landlords where 65% of them indicated that a rail station would be useful to their renters and 92% of them felt it would increase their ability to rent in the area. The landlords were unsure with how a new station would affect their property's value, but around 41% thought it would increase the value. Additionally, respondents were unsure if the traffic would increase or decrease, but several believed traffic would be lowered if there were a new station. Overall, landlords had a positive response to the station suggesting that it would be good for their property value and renting in the area. A limitation we had at the forum was many landlords did not live in the area and were not familiar with the St. John's area.

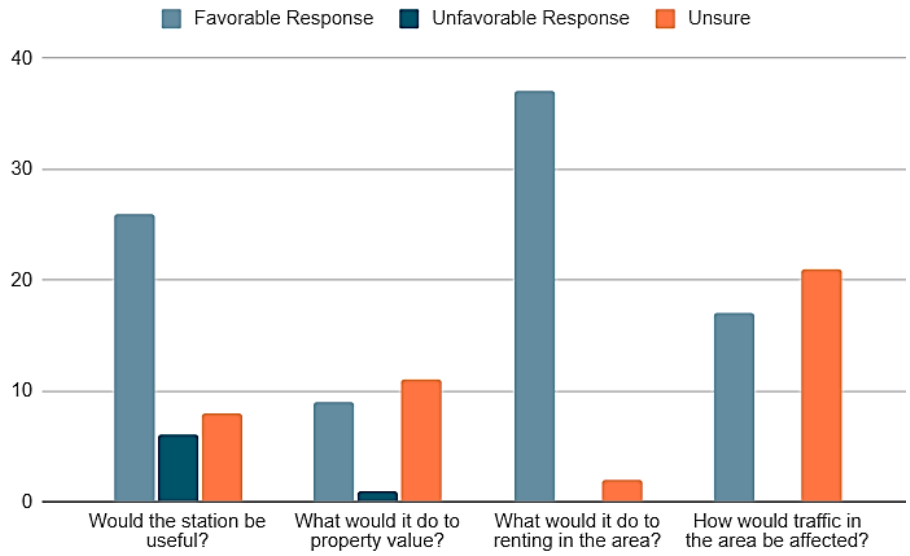

Figure 21: Responses from the questionnaire delivered to the landlords. n = ~37

4.4 Factors to Analyse When Proposing a New Rail Station

In this section we present our analysis of the main factors to consider when investigating a potential railway station in St. John's.

A railway station in St. John's could alleviate traffic congestion and reduce vehicle emissions.

The main concerns addressed by having a station in St. John's are easing traffic over the bridge and lowering the carbon emissions released by cars in the City of Worcester. If more people who commuted into St. John's utilised the rail system rather than personal cars, traffic would be reduced. Despite this possibility, utilising a carpark to provide parking for commuters would also encourage surrounding villages to come and use it. Rather than freeing up the roads, it may create build-up. The main roads that lead to St. John's connect at a round-about. Leading up to this round-about are two A roads coming from the west and south which have two lanes of traffic. Utilising this round-about onto the one-way road that leads to Hylton Road and going left is the most direct route to the potential parking at the University of Worcester Arena. The A44 coming from the north becomes one directional just after the bridge, therefore if traffic were intending to go into the city, they would need to use this round-about to get to Hylton Road and around rather than just going straight. Similarly, those driving from the north through the city would have to go straight to the round-about and around to get to Hylton Road rather than being able to just turn right at the bridge and arrive at the arena. The round-about is the main convergence point if the station's parking were behind the arena therefore there would likely be more traffic with more people utilising the station. Referencing Figure 22 helps visualise the road structure in the area and how the current routes needed to arrive at the proposed station carpark.

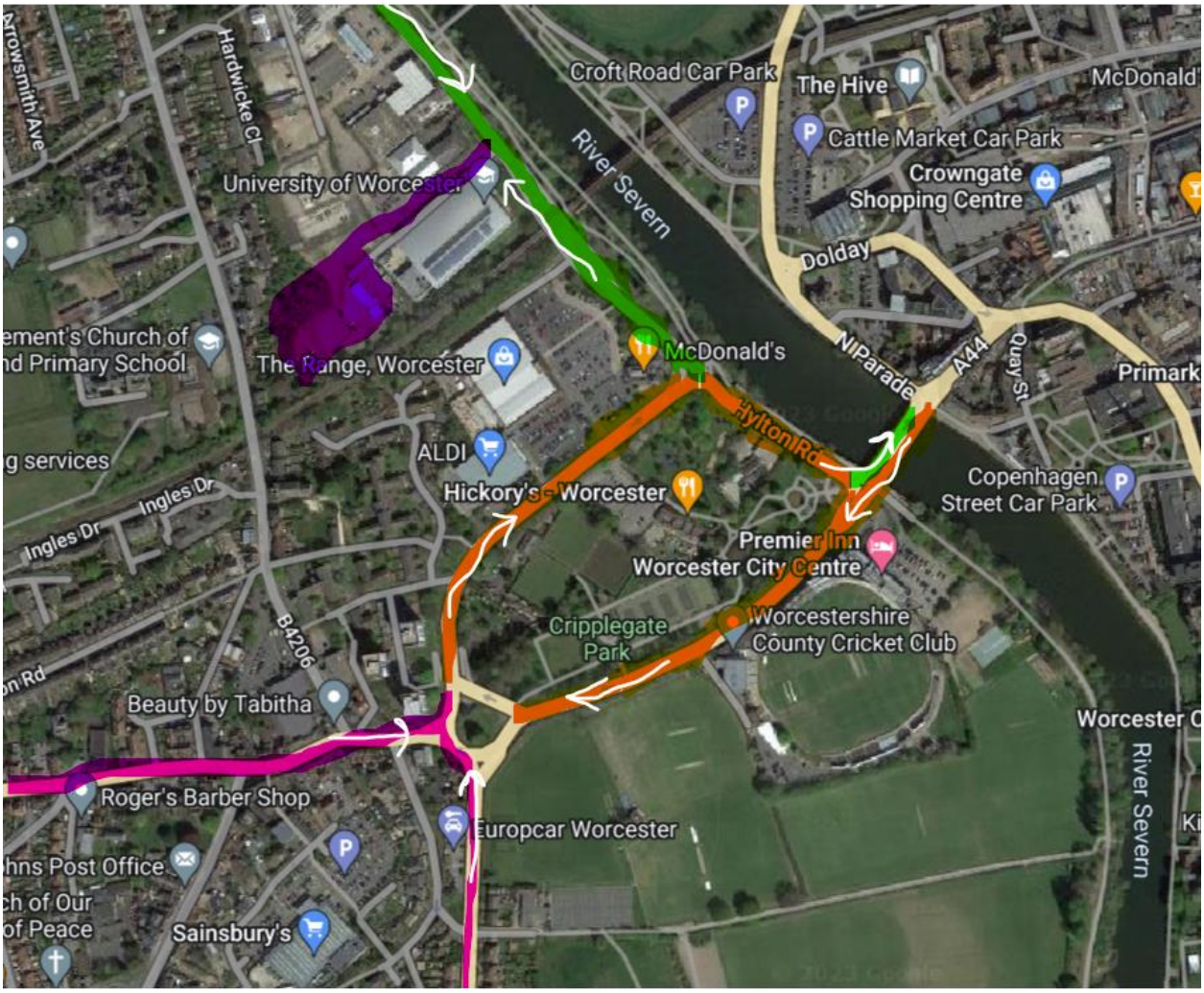

Figure 22: Map of Worcester's St. John's area displaying major roads and the directions of traffic allowed on those roads. (*Google Maps*, n.d.)

Aside from the carbon emissions, another environmental concern was the ability to travel during times of flooding. In recent years, the flooding of the river has become more dramatic. Additionally, if surrounding villages would utilise the station, it would bring more cars into Worcester and could increase the carbon emissions released. This is not including any additional fuel used from a potentially 3-9 car train stopping and idling several times a day. Despite the bridge typically remaining open during flood times, several side roads become flooded leading

residents to have the inability of using their car to travel. Long-time resident Colin Major mentioned it “I've been here 40 years the city bridge has only been closed once because of flood.” The bridges in the area (car, walking, and rail) are all raised and not affected by the flooding, rather, the roads leading up to them are and traffic that would typically use those roads are redirected in times of flooding. The train will not be affected by the flooding due to the track being raised and would therefore provide an alternative form of transportation in times of flooding granted their ability to get to the station is not cut-off.

The availability of parking near a new station would be an important factor.

Additionally, the location of a potential carpark would have to be evaluated in terms of traffic congestion effects on the main roads. If a station were to be rebuilt at the location that closed in the 1960s, the University of Worcester recently completed a brand-new carpark behind the Arena which could potentially be used for the station. Unlike Foregate Street station which has no parking, providing a park and pay would allow current residents or the university community have easier access to larger stations such as Foregate Street or Shrub Hill. If a station and park and pay was provided in this area, traffic congestion in St. John’s and over the bridge and carbon emissions released from cars in traffic may not decrease.

Alternative solutions to traffic and emissions should also be considered.

The development of a station is a long and expensive process. Prior to moving forward with the station, it is important to research alternative solutions to the problems discussed above to make sure a station is the best option. One of the options would be to rework or improve upon the current bus system. This can be done by adding bus lanes, more stops, or more routes to the current system. One problem with this is the traffic congestion going over the bridge. If one of

the current lanes was turned into a bus lane, it would be more difficult for car traffic to go over the bridge and lead to more congestion. A local bus route would also not consider those who commute into Worcester's St John's from surrounding areas. Aside from a bus route, there is the option to develop a metro system throughout Worcester. Rather than a subway, a tramway system may be developed to work with the roadways of the city. A tram would allow for more intercity travel connecting the two sides of the river. For those who commute into Worcester, there would have to be a tramway stop near current the stations to St. John's. Worcester had a tram system from 1884 through 1928, shutting down from the increased use of buses throughout the city (Nash, 2019).

Potential locations for a station include the previous Henwick Station site, next to the University of Worcester Arena, behind the Worcester Bowl, and in other nearby suburbs.

The proximity to the St. John's town area and University of Worcester buildings and St. John's campus is a major benefit to a proposed location on or near Henwick Road. Members of the University's community would likely utilise the station as well as the residents surveyed in the St. John's area. There are other proposed locations along the line such as next to the University of Worcester Arena as well as locations west of Henwick Road such as behind the Worcester Bowl and the growing village of Rushwick. The benefits of the Arena include the parking availability as well as proximity to shops and campus but since the area is on an embankment, it would be difficult to engineer because limited space and elevation presents problems for making the station accessibility friendly. The Worcester Bowl may provide an area that is flat rather than the embankment next to the Arena but would need major construction to demolish a building and rebuild a carpark. Rushwick on the other hand presents locations with growth potential as well as being on the city limits with closer accessibility to major motorways.

Figure 23 shows both proposed locations in the St. John's area. Figure 25, in Chapter 5, presents a zoomed-out map of Worcester's existing railway stations relative to a proposed station in Rushwick and St. John's.

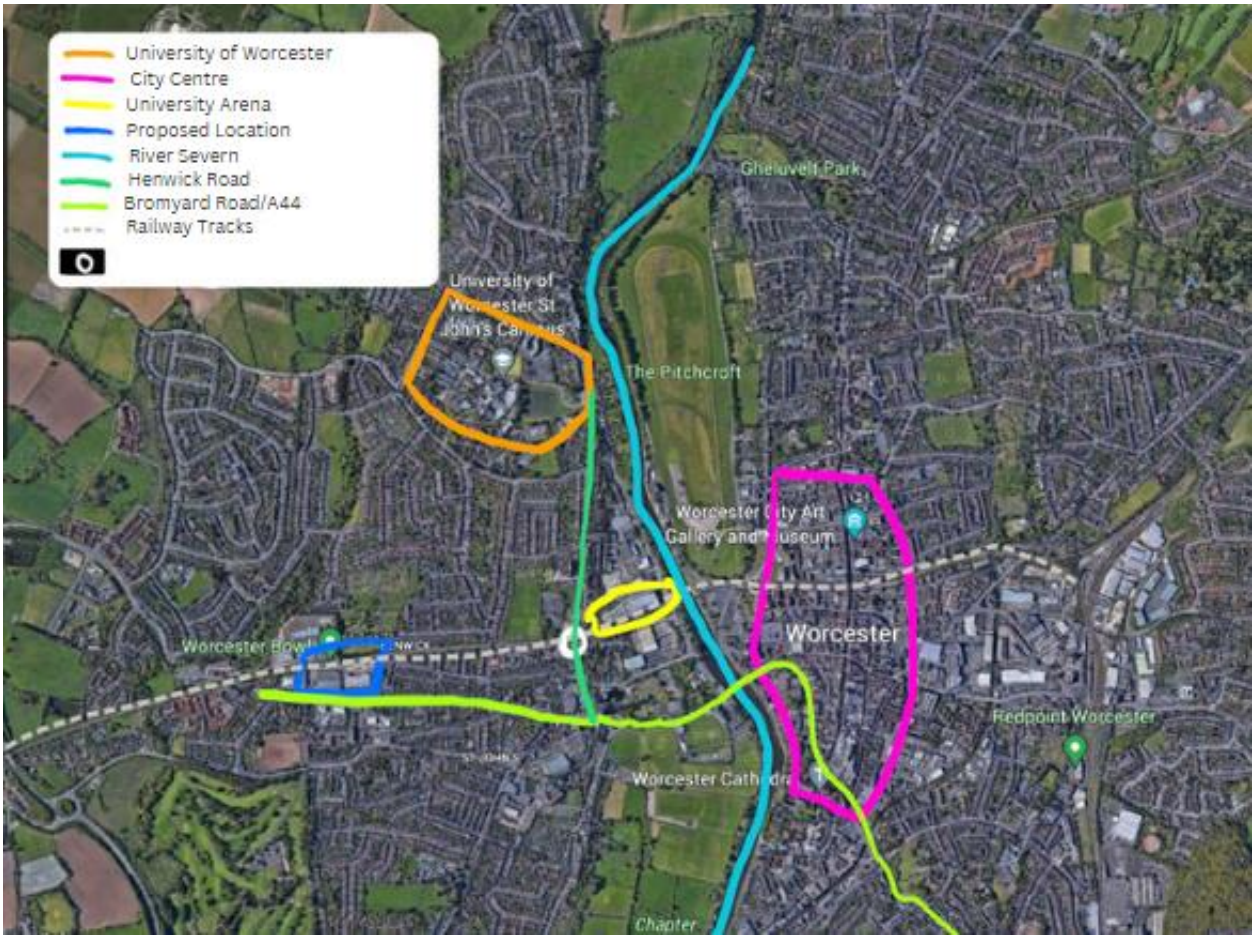

Figure 23: Map of Worcester demonstrating the proposed station locations in the St. John's Area with relation to the University of Worcester and City Centre. (*Google Maps*, n.d.)

A detailed business case is needed for consideration of a new station.

From our interviews with "key stakeholders," it was emphasised that there needs to be public support and interest to continue with the project as well as a business case. Community involvement is particularly important, as there needs to be a demand for the station before

anything can move forward. This can be done through online and in person surveys, as well as online campaigns. St. John's has a population of just under 9,000 residents according to the 2021 census. (*St (Ward, United Kingdom) - Population Statistics, Charts, Map and Location*, n.d.) According to the Office for National Statistics, a standard of 5% is used to get statistical significance. (*Uncertainty and How We Measure It for Our Surveys - Office for National Statistics*, n.d.) For the data gathered to reach statistical significance, there needs to be evidence from at least 450 residents in the St. John's area. Once there is enough community demand, local politicians' support is necessary. According to Geoff Grant from Transport Focus, political support from the local members of House of Parliament and local authorities would have to be consulted and support the station as well. Afterwards, a business case is made and proposed, which entails funding, operation, and more details regarding the station. The business case needs to prove that this station and its location is important for the growth of the community over all other options such as increasing the bus network or researching the development of a metro system throughout Worcester. Once this is completed, the business case will be presented to several parties to gain the support of the organisations who will fund the station.

The sections of a business case would include:

- A **strategic case** demonstrates the need for the station in terms of reliance on cars, demand, effects on traffic, options for parking, and proof the station is the best option for the community.
- An **economic case** would determine if the station will be beneficial to the community, profitable, environmentally beneficial, and examine whether the station would be worth the 3–4-minute increase to all lines that would stop at "Henwick". Within this economic case there should be multiple analyses on the

trains that would pass through each hour, parking provisions, monetised benefits, non-monetised benefits which includes access to service and journey quality.

- The **financial case** includes the cost of operation, maintenance of a potential train station, and cost of the whole project.
- The **commercial case** determines if the infrastructure is commercially viable which Network Rail determines because they own the rails. This case would discuss if building a station is even feasible while other trains are in operation.
- A **management case** includes examples of projects that have been successful, legal requirements for project, proposed governance arrangement, risk assessment, and engagement with stakeholders.

5.0 Conclusion and Recommendations

Throughout the duration of this project, we have been able to investigate the interest levels of many groups regarding a station in the St. John's area. In this chapter we summarize our conclusions and offer some recommendations for future advancement of this project.

The Impact of Henwick Station

The opening of a station would have lasting impacts on the city of Worcester. Residents and commuters would have a station on the west side of the river, which could affect traffic congestion as well as possibly ease travel between the sides of the city. The University could also be affected from the station as it provides another method of transportation for the staff and students. Henwick Station could also impact the carbon emissions and economic health of the City of Worcester.

Preliminary findings suggest a healthy level of interest in Henwick Station among residents.

Many residents that responded to our survey indicated that they would utilise the station on a consistent basis. These responses show that a station in that location would have the potential for consistent use by the community. Unfortunately, the residents surveyed were primarily older and all surveyed on Tuesday mornings during work hours, so it is not an accurate representation of the St. John's community nor is it statistically significant.

About one-third of the surveyed University of Worcester staff indicated that they would use Henwick Station for their commute.

A significant population of the staff indicated they use a potential nearby station. Additionally, several more staff members claimed that they would switch from their current forms of transportation to using the railroad for their daily commutes if the station was built.

A significant portion of University of Worcester students surveyed indicated they would regularly use the station.

Of the students who responded they would use the station, one of the common reasons was that the walk to the university from Foregate Street Station was too long, especially in the rain, dark, or with luggage. Numerous other students were unsure if they would use the station, as many of them did not have background about the location or accessibility. This is significant as there is evidence that students would use the station which is supported by their reasoning.

Public interest is an important first step.

In our interviews with representatives from West Midlands Railway, the representatives viewed demonstrating public interest in a new station as an initial step towards building the station. Moreover, public support gives train operating companies such as West Midlands Railway reason to view the station as a potential new source of revenue. Public interest also serves as a reason for local politicians to get involved and support the building of the station. Our stakeholders emphasised that funding for the station was likely to need to come from a mix of national and local government sources and the private sector, and support for the station from the community would play a key role in acquiring that funding. According to Colin Baxter, to get a general representative sample of St. John's residents, typically one-thousand survey responses

are needed. This is entirely dependent on the population and since the population of St. Johns is lower, this number would be around 450 residents.

A business case is key to opening a station.

During our interviews it was highly emphasised that a solid business case for the station needs to be made for the station to be built. Our analysis showed that this point was made by our stakeholders more often than any other. A well-founded business strategy for the station will play a key role in any decisions made about building the station. We found that to create this solid case for the station it needs to be demonstrated that there is adequate demand for it. This station also needs to be able to offer services that would not disrupt the existing timetables and allow for the same level of service to be provided by the passenger service operator. We found that operators are interested in being able to serve a new market with development of this station. For the station to be built it needs to have continuous demand year-round. Within a business case there is a strategic case, economic case, financial case, commercial case, and management case and each of these sections should be researched and presented to have the ability to show the necessity for the station. Any further research should consider this factor when deciding audiences to survey.

Limitations

During our project we had limitations that hindered our progress. The sample size of the resident's survey was 70 which is not enough people to make a claim of a community. Many of the residents surveyed were 60 and over and therefore not a representative demographic of St. John's. Additionally, the number of students surveyed did not represent a statistically significant sample of the university.

Recommendations

This section goes over our recommendations for if this proposal were to be pursued in the future. The development of a rail station can take many years and has several steps, so the current recommendations are the preliminary steps in an initial proposal/business case. Below outlines the immediate next steps for the future of this project.

Finalise the strategic case for the potential station.

The strategic case for the proposed station needs to demonstrate why the station and its location is the best option for the community. Currently, the determined need is that Worcester has a high reliance on cars, there are high levels of traffic going over the bridge between City Centre and St. John's, limited parking opportunities for other stations in Worcester (Foregate Street Station), there is increasing demand for the University of Worcester, and flooding creates a potential issue for using roads in the area. Therefore, the objectives of the station would be to cater to the growing university, improve connectivity between the east and west sides of the River Severn, promote sustainable transport opportunities and active transport among residents, support the town of St. John's as well as additional university developmental projects for increased tourism, and reduce parking pressure in the City Centre. We recommend when developing the strategic case, consider these points and prove the need of this station in relation to the problems and opportunities listed.

Expand upon the economic case and resurvey the population around St. John's.

The economic case for a proposed station discusses the economic, socio-cultural, and environmental benefit of the station. Despite having preliminary surveys from the St. John's population and University of Worcester, both populations will have to be resurveyed to reach

statistical significance. As mentioned previously, this will have to be around 450 residents for 5% of the community's population. Aside from those surveys, there will need to be a forecasted passenger demand for consistent ridership year-round and determine the monetary benefits from the users of the station. More information on this can be found using the Passenger Demographics Forecasting Handbook (PDFH). Geographical location of the station is another big consideration when adding a station along the rail line. We recommend looking at surveying areas away from the existing stations as this is needed to demonstrate that the station would bring in new rail users rather than the same passengers using a new station. This would include areas of increased economic growth, such as Rushwick. Reference Figure 24 to understand a potential station at Rushwick, rather than one in such a proximity to the city stations. To understand where growing communities are located, investigate a community's local development plans for the upcoming years. Other information that would have to be finalised is how many trains will stop at the station per hour and how many platforms will be used, predicted prices of tickets and a monetary analysis, parking provisions and pricing, and non-monetised aspects such as effects on journey times for passengers of the station and users of the line, journey quality, physical accessibility considerations, access to employment and other services, and other impacts that would need to be researched further.

Figure 24: Map showing Rushwick in relation to Worcester Stations. (*Google Maps*, n.d.)

Finalise the financial, commercial, and management cases.

The financial case would be a consideration further in the future after a final location for the station was decided. Within this case the cost of the project would be listed as well as the operation and maintenance. A different recent proposal listed the station cost to be 7 million pounds in 2016 before inflation. Additional operation and maintenance costs of 50,000 per year but would be offset by passenger revenue fares and parking prices. The commercial case would have aspects of the infrastructure such as the finalised location, accessibility to facilities, ability to cross between platforms, shelters from weather, ticketing machines, parking and car/taxi drop off locations, and how often the station would have trains. Additionally, the commercial case would include work that Network Rail would need to perform on the railway along with how Worcestershire County Council would contribute to the project. This section also details the passenger rail services and revenue risks associated with the project. Finally, the management

case describes other recent projects to demonstrate if other recent projects have been effective. Aside from that it will describe the legal requirements, governance arrangements and quality assurance for the project, and risk management for the station. Network Rail has a significant amount of information for those proposing a new station.

Pursue support from the New Stations Fund to finalise aspects mentioned above that adhere to the strategic, economic, commercial, financial, and management cases.

Next steps for this project will need to review and follow the guidance notes document by Network Rail which can be found in Appendix H as well as review past business cases for proposed stations to ensure every section has the necessary information.

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Appendix A: Residential Surveys

Introduction: We are students from the United States studying transportation in the area. We were wondering if you had 2 minutes to answer a few questions about your train and transportation habits. Any responses made are completely anonymous.

Research Questions (to keep on task):
What is your preferred method(s) of transportation?
Would you personally use Henwick Station if it was available?
Would using this station make it easier to travel?
Why would you use/not use this station's transportation?

To which of these age groups do you belong?

16-24 25-34 35-44 45-59 60+

Gender?

Male Female Non-Binary Prefer not to say Other:_____

What do you typically travel for?

Work School Personal Travel Other:_____

With what form of transportation do you use to travel based on the previous question? (choose all that apply)

Walk Bike Taxi Car Bus Train

Henwick Specific questions

If there were a train station between the Foregate and Malvern lines on Henwick Road, would you use it?

Yes No Unsure

How often would you use Henwick Station if available?

Daily Weekly Monthly Bi-Monthly Quarterly Never

Why or why not? (choose all that apply)

I prefer to drive I prefer to ride with family/friends
Rude or unhelpful people or staff Cheaper than driving
Not near where I live More Sustainable
Too expensive Convenient
Transportation is not on time/run at times needed
Other: _____

_____

Are there any questions or concerns you have with a possible opening of a station?

_____

_____

Appendix B: Surveys/Semi-Structured Interviews with Students and Faculty at University

Introduction: Hi, we are students from the United States here to gather information on transportation habits and reopening a station in the area, Henwick Station. Henwick Station would be located at the level crossing on Henwick Road near the intersection of Henwick Road and Ingles Drive. Our goal is to gain insight into whether a station along this line would benefit students, faculty, and members of the public. We are wondering if you had 2 minutes to answer some questions we have. By filling out this survey you will be entered into a raffle for a gift basket.

Research Questions (to keep on task):
How do you travel to and from the university and where are you travelling from?
What is your preferred method of travel?
Would the University benefit from the reopening of Henwick Station?

How do you typically come to the university? (multi-select)
Walk Bike Taxi Car Bus Train

Do you purchase a parking pass?
Yes No

How many days a week do you travel to the university?
None/I live on campus 1 2 3 4 5

Would a closer train station be beneficial for travelling?
Yes No Unsure

Why or why not?

If yes, if there were a train station between the Foregate and Malvern lines on Henwick Road, would you use it?
Yes No Unsure

How could this station help you with your commute?

How could a new station impact your travel time? (either going between campuses or elsewhere)

Could the university offer you anything to encourage you to use this station? (group/student/ or faculty discounts/vouchers)

Appendix C: Unstructured Interviews for Stakeholders

Introduction: Hello and thank you for meeting with us. We are students from the United States with the goal of gauging interest and an understanding of the transportation system. This interview should take approximately an hour and your name will remain anonymous in our reports.

Research Questions (to keep on task):
Which other public and private organisations could be affected and/or be influential?
How much public interest is needed prior to reopening a station for politicians and companies to consider reopening Henwick Station?
What goes into the decision of opening or closing stations?
What does it take for a train station to be reopened/in operation?
Would rail station owners benefit financially from opening another station in the region?

Company Representatives
What goes into the decision of opening a train station or train line?

How can the public influence a new or reopened station?

How could the rail companies be affected by reopening a station?

Would rail companies be for or opposed to a new station in the region?

Are there any other public or private organisations you recommend we talk to?

Politicians/City Administration
How does the city decide if a new station should be built/reopened?

What does the process of opening/reopening a train station look like?

What public support is necessary to consider opening/reopening a station?

What types of political hurdles would supporters of a new station have to overcome?

How could the city benefit from reopening Henwick Station between Foregate and Malvern lines on Henwick Road?

Are there any public or private organisations you recommend we talk to?

Appendix D: Interviewing Landlords at the Landlord Forum

Introduction: Hello everyone, we are students from the United States studying transportation in the area. Given that everyone here rents in the area, we were hoping you can provide us with some valuable feedback about how rail stations affect the ability to rent. Any responses made are completely anonymous and no names will be used in our study.

Research Questions(to keep on task):
How will a new station affect renting in the area?
Would Henwick Station be helpful to those living in the local area?

Questions for Forum:

If there were a train station between the Foregate and Malvern lines on Henwick Road, would it be useful for your renters?

Yes No Unsure

If there were a new station, would it affect property value?

Yes No Unsure

If there were a new station, would it encourage people to rent in the area?

Yes No Unsure

If there were a new station, would it affect traffic in the area?

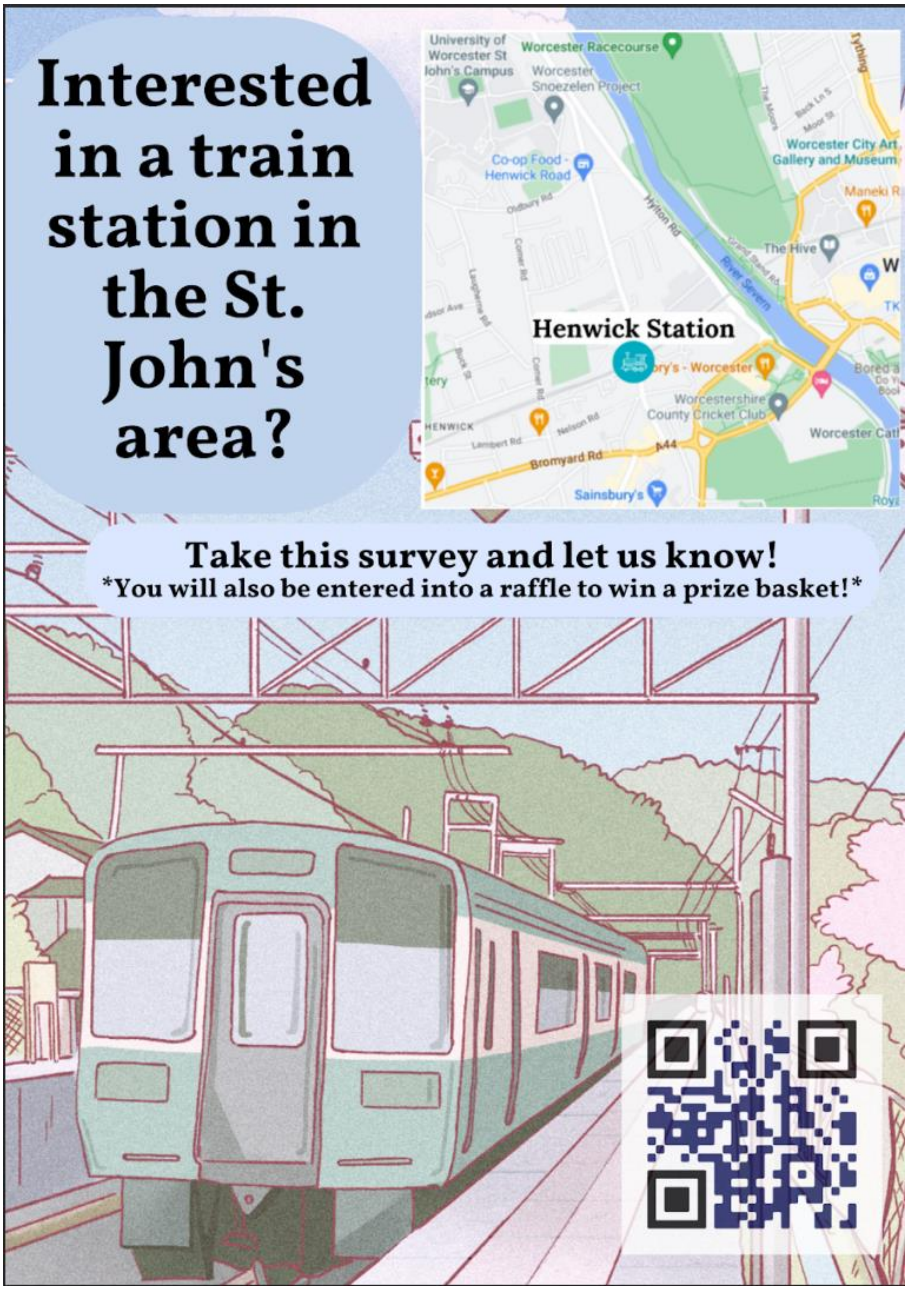
Yes No Unsure

Are there any concerns or reservations you have with a possible opening of the station?

Outro: Thank you for helping us with our project, we welcome any questions or statements you may have afterward. We hope everyone has a great night!

Appendix E: University Flyer

Flyer that was posted around campus in buildings to encourage students to fill out Katy Booms survey.

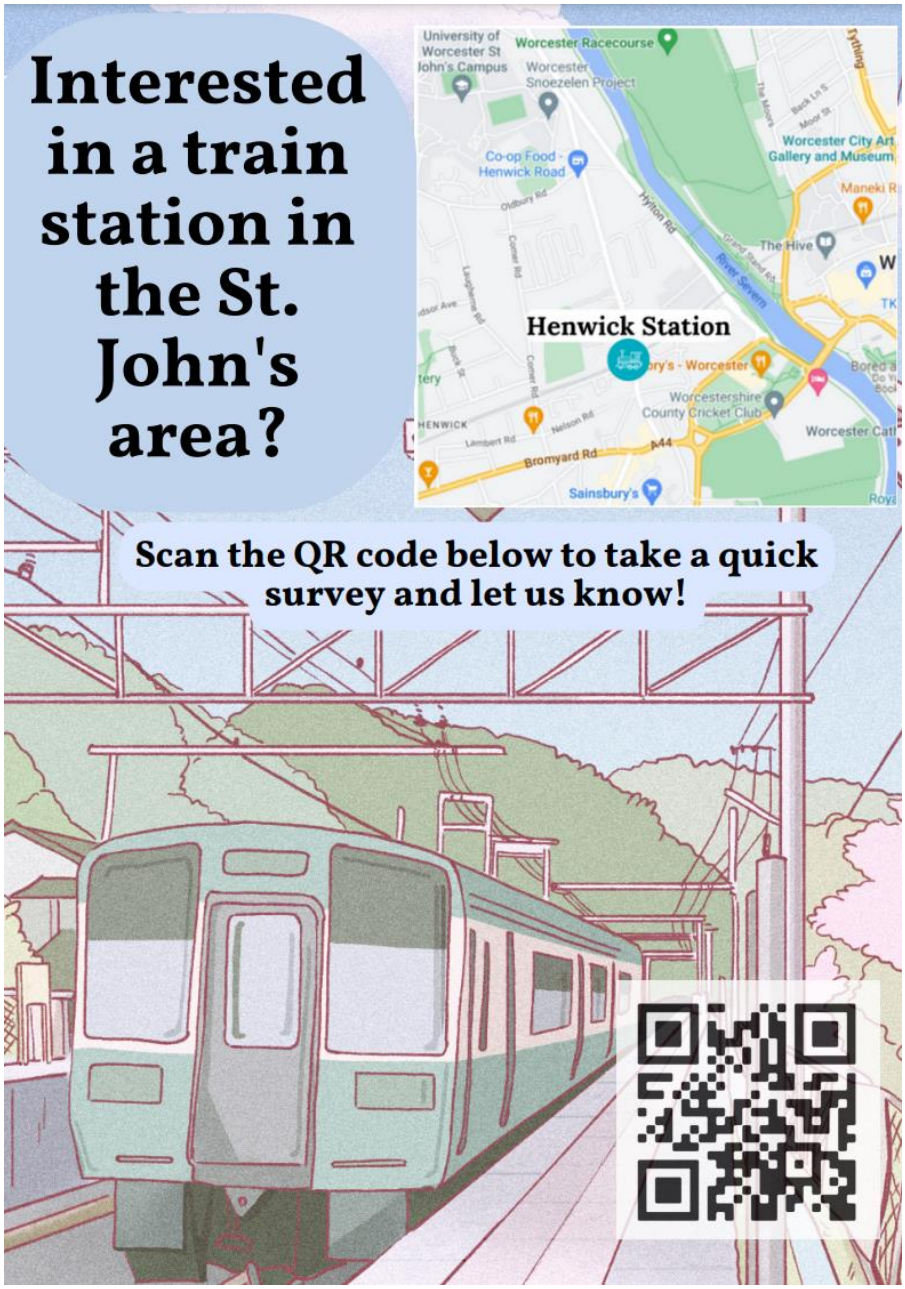


Appendix F: Katy Boom and Team Flyer

Prior to our arrival Katy Boom and her team posted flyers all throughout the St. John's Campus and City Campus to increase survey responses. From November to March the responses increased from 38 to 230.

Appendix G: Residential Flyer

This flyer was posted around Cripplegate Park to encourage residents to fill out a 2-minute survey on their transportation habits and opinion on reopening Henwick Station. It was also distributed to those that visited the Sons of Rest building during their pop-up coffee and teatime every Tuesday from 10am to noon.



Appendix H: Network Rail Business Proposal

We received New Stations Fund 3 - Guidance Note for Applicants-Network Rail from Colin Major. This document outlines a Strategic Case and Objectives that need to be included in a business case to Network Rail.

New Stations Fund 3 – Guidance Note for Applicants-Network Rail

Strategic Case

The strategic case is used to set out a clear rationale for the scheme, supporting the need for investment. The following table sets out the expectations of the information to be provided.

Strategic Case Requirements Theme Overview of Requirement Business strategy
The applicant should identify how this scheme will support local transport objectives including links to Route Utilisation Strategies and/ or Route Studies.

Impact of no provision
The applicant should detail what the consequences of not providing a new station in this location would be – it should include information about population and employment within specified catchments of the new station (and thus how many people would remain without access to a rail station should this station not be funded).

Objectives

The applicant should establish **Specific, Measurable, Achievable, Realistic and Time-bound objectives** (SMART) that the scheme will aim to deliver – this should focus around providing access to the rail network for people who do not have it and generating new rail journeys.

Who, how many and by when will these be realised from the New Station?

It would be ideal for the applicant to consider travel trends in the area using sources such as Census travel to work data.

Measures for success
Linked to the objectives, the applicant should provide clear measurement indicators for when the scheme is deemed a success.

Constraints -The applicant should identify any potential constraints that may impact on this scheme being a success – e.g. capability to deliver; engineering feasibility; planning approvals; land acquisition (this is not an exhaustive list).

Inter-dependencies -The applicant should clearly identify where the success of the new station is related to other schemes e.g. the realisation of housing or employment development sites.

Stakeholders- The applicant should provide a clear indication of all stakeholders involved and outline general support or conflicts identified between demands.

Economic Case

The economic case is used to identify the key economic impacts of the scheme, and its overall value for money.

Economic Case Requirements The applicant should provide a clear overview of the assumptions used for developing assumptions for producing the value for money assessments including benefit cost ratio (BCR) and net present value (NPV) of the new station.

The socio economic appraisal should be over 60 years.
Business cases should be calculated at October 2016 prices, excluding inflation.

Passenger demand forecasts
The applicant should clearly identify passenger demand forecasts for the new station.

Applicants should provide clarity in their assumptions with regards to demand forecasting, setting out clearly the sources of data utilised to develop such assumptions (MOIRA/LENNON).

The applicant should clearly identify the annual demand for the new station; with clarity between passengers 'new to rail' compared with 'abstracted from other services.

Where abstraction occurs, the applicant must consider whether this is a true revenue benefit for the financial case. The applicant should provide clarity on the expected profile of demand, i.e. whether demand will 'ramp-up' from opening or show steady growth. The applicant should be clear when the full demand value predicted will be achieved.

The applicant should provide information on the types of trips likely to be made from the new station, and where possible, the type of ticket likely to be purchased.

This should reflect average length of train trip; class of passenger; and ticket type (season, one-off etc). The forecasts should be submitted as an appendix utilising the spreadsheets provided in the form. The spreadsheets should be submitted 'unlocked' to allow review. All data sources and assumptions made in the calculation of passenger demand forecasts should be clearly outlined and explained.

Sensitivity and risk profile
The applicant should provide some evidence of sensitivity testing. This should include the impacts of the cost of the station exceeding expectations; or levels of demand not being realised. The scope of the sensitivity test should be suitable for the case of the New Station being proposed.

Wider revenue
The applicant should clearly set out any additional revenue that may be generated from the opening of the New Station e.g. car park tariffs, retail provisions etc.

Other impacts
The applicant should consider wider impacts that the new station may induce – this may include (but is by no means exhaustive): - Reduced travel distances to a rail station (reduction in road veh/km); - Environmental impacts – noise and air quality.
Wider economic benefits – gross value added.

Commercial Case
The commercial case is used to summarise the preferred approach to scheme procurement and justifies the commercial and legal viability of such an approach.

Overview of Requirement Procurement strategy The applicant should set out the planned strategy for procurement and contracting. This should be clearly aligned to the GRIP process. The applicant should specify the form of contract, including the agreed payment terms, defining the reasons and the choice of contract.

Risk management The applicant should provide a risk register that provides a clear assessment of all risks related to the project. The risks should be attributed to clear owners, set out against the risk register to show where the responsibilities for managing risks lie.

Contract management and station ownership
The applicant should provide a clear identification of construction timescales, station hand over and lease dates. The applicant should clearly state who will become the Station Facility Owner and by what date. The applicant should provide information regarding the leasing arrangements with the SFO to ensure that the ongoing operation and maintenance of the station have been designated to a responsible owner. Financial Case The financial case is used to present evidence of the scheme's affordability including revenue impacts, outturn, and maintenance costs.

Financial Case Requirements
Overview of Requirement Capital costs The applicant should provide a clear indication of capital costs detailing the total scheme costs, alongside a profile of when costs are incurred. The costs should be calculated at current prices, excluding inflation.

Operating costs- The applicant should provide a clear indication of operating costs including station access charges. The applicant should set out costs for repair, maintenance and ongoing operational costs that will be attributed to the station.

Other costs The applicant should detail any other costs borne by the applicant, including, but not limited to those that result from the payment terms, financial cost and risk allocation contingency, Network Rail programme management and Sponsor costs.

Revenue
The applicant should clearly set out the expected generated income revenue, including revenue from those 'new to rail' compared with 'abstracted from other services. The applicant should consider the revenue lost through longer journey times for 30 years. The financial summary should clearly identify the benefit being attributed to the fund. The additional funder(s) should be stated including their financial contributions and how any benefits are to be shared.

Funding cover The applicant should provide an analysis of the budget/funding cover for the project setting out the levels of funding by source, date (including any third-party contributions). This should set out the anticipated impact against the organisation's balance sheet with a signed commitment to underwriting scheme costs.

Management Case
The management case is used to set out the mechanisms for delivering the project successfully, on time and budget – with suitable governance and risk management processes in place. The following table sets out the expectations of the information to be provided.

The applicant should clearly set out the programme for project delivery including key milestones and decision points (including approval milestones). Critical path actions should be clearly identified. This should identify timescales for related planning applications and approvals, track access periods and consultation periods.

Governance, organisational structure, and roles
The applicant must provide a clear organization chart identifying partners involved, their roles on the project and the lines of accountability.

The applicant must show clear support from Network Rail and the TOC whose trains are planned to call there and is designated as the senior financial officer. Where the TOC has a franchise, which could expire before the station opens, the promoter must have discussed the proposal with DfT prior to submitting the application. The relevant DfT Franchise Commercial Manager should have been notified and a letter should be provided from the relevant individual as part of the application submission confirming that they have been informed.

Communications
The applicant must show planned consultation periods, ensuring an appropriate level of stakeholder engagement has been/will be carried out with affected parties.

Monitoring and evaluation for the realisation of benefits
The applicant must set out a clear monitoring and evaluation plan that will be subsequently used one year and five years after opening to assess the success of the scheme. The applicant must show what existing information will be utilised to understand the base case and for benchmarking the scheme success against. The applicant must ensure that the data sources and criteria used relate to the objectives and measures for success as set out in the strategic case so the scheme success can be fully understood. Further guidance on completing the business case can be found at https://www.gov.uk/government/publications/transport-business-case New Stations Fund 3 – Guidance Note for Applicants

Appendix I: Official Findings Chart

Official Findings chart outlines questions asked during interview and answers during key stakeholder interviews.

Question	**Lord Faulkner, Stuart, and Fiona**	**West Midlands (Toby, Dan, and Sarah)**
Would you support Henwick Station if it were to reopen? Why/ Why not?	Lord Faulkner has a very promising outlook about the reopening of Henwick and it's uses. Stuart showed some concerns but understood the benefits and functionality if it were pursued	West Midlands would not be opposed to a new station, but by the development of a business case the station would have to be proved profitable
Supporting Quote	"A walk past the side of the organic station and think wouldn't be great if I could just go on the train now and go into town"	"They will be both for and against it in. In many ways. There are instances where they can see there is a clear market that will actually bring in revenue for them, then yes, they, they will ultimately be interested." - Toby
Which other public and private organisations could be affected and/or be influential?	West Midlands, Worcester County and City Council, Transport Focus	Worcestershire City Council, SLC, Railfuture, Department of Transportation
Supporting Quote	"helpful to talk to West Midlands Combined Authority or West Midlands Rail executive because they have just signed off on I think on five new stations in the area, three of which are in Birmingham. So and I think that it might be good to talk to them about I suppose how they went about their surveys." - Fiona	"Scheme that gets funding generally every sort of five years or so from central government, it's worth looking at that as well, just for some pointers on the Department for Transport website to land use stations, which again has some useful background material, but it's thinking about." - Toby
How much public interest is needed prior to reopening a station for politicians and companies to		Public interest is necessary in order to prove if a station will be successful to those investing time and money into it. Additionally, you would have to consider the long-term use of the station.

consider reopening Henwick Station?		
Supporting Quote		"So I've got some they're called monitoring evaluation guidance for the new stations. Data that the Department of Transport expects you to know beforehand and to monitor, so it's a long term commitment and this is how we know that some stations work and some stations don't work." - Sarah. "Clearly these are long term assets as well. So actually you're putting in a new railway station that barring unforeseen the economic circumstances could be there for another 100 years. It you know, and you look at some of the assets that we've got already on the network, so sometimes you do need to take that longer term view and I think there are the stations that we're aware of." - Toby
What does it take for a rail station to be reopened/in operation?		Interest from the community and local politicians, proper funding, business case, proof it is a better investment than other options, accessibility to the public
Supporting Quote		"It does tend to come from communities or from in areas where you've got a transport authority like ours and organization like the rail executive looking for opportunities in their own. Sometimes there might be a politician pushing, particularly for a scheme. It's not generally the new rail stations, certainly not the reopened ones, that come from the rail industry itself, or British Railways, or the new industry." - Dan
Would rail station owners benefit financially from opening another	N/A	Companies that would run and own the stations such as West Midlands would have to consider several aspects to determine if a station would be

station in the region?		profitable. This includes, pricing of tickets, fuel burned, wear on the track, and timetable affects.
Supporting Quote	N/A	"long term implications for them and what are the implications for operational costs. I mean, even things like, it uses slightly more fuel and causes more wear than tail on the trains and track to slow down, stop at the station and then accelerate away again, again from it. And whilst you know they're quite marginal on each individual trip it's quite surprising how the cumulative impact of that. Might actually translate into a cost impact." - Toby
How will a new station affect renting in the area?	See Findings	See Findings
Supporting Quote	See Findings	See Findings
Would Henwick Station be helpful to those living in the local area?	See Findings	See Findings
Supporting Quote	See Findings	See Findings

Question	**Transport Focus (Geoff)**	**Andrew McGill (Public Affairs Manager WMR)**
Would you support Henwick Station if it were to reopen? Why/ Why not?	A station would be great, but there has to be interest from the community and look into how it will impact the area.	N/A
Supporting Quote	"Centered on the community more than just that place you get on the train, get off the train. That's particularly important if you can and make links to how it will benefit local businesses, how it will particularly."	N/A
Which other public and private organisations could be affected and/or be influential?	Local Bus Networks, British Transport Police, Local Members of Parliament, West Midlands, Network Rail, Department for Transportation	Department for Transport, Network Rail, West Midlands

Supporting Quote	"And you've got a however many people you think will be involved in that decision making process. It will be at least twice as many and I think the key thing is. Touch on as many of those as you can in terms of preparation."	"in order to secure money from either the local authority or whether it stems from the Department for Transport and Flows via Network Rail."
How much public interest is needed prior to reopening a station for politicians and companies to consider reopening Henwick Station?	Definitive public interest is one of the most important aspects of opening a station. When surveying, it is important to gather a representative sample of the community and asking the likelihood of using the station rather than just if they are interested.	Utilize other resent openings to gather a better understanding of the necessary public interest in order to reference it for Henwick
Supporting Quote	"Outside of who's gonna pay for it and who's gonna fund it, [public interest] is probably the most important thing, because if you have a business case with the local community bought into it, they cannot object."	"Value in reopening some of these stations and I know funding has been allocated in some cases to get these stations reopened. So again for your research, it may be worth looking at previous examples elsewhere in the country."
What does it take for a rail station to be reopened/in operation?	Using a business case that proves current and future demand that is sustainable, getting support of local Members of Parliament	Once there is adequate public support gained through surveying, new stations can move onto the next step of a business case, which is the most important step in securing funding
Supporting Quote	"And is worth considering is are there plans for house building and an expansion of people who would use rail in future planned and that may be 5-10 years away, but there are really good." "political support, it has the support of local MP's, it has the support of local authorities, it has the support of, most importantly, the people who will pay for it, which in reality these days is the Department for Transport. In the past you would have seen private companies."	"typically the way local authorities would go about that is through things like surveying the local population, asking for views of people who live locally, trying to demonstrate through statistics that there is a demand for that rail service. Otherwise, you know a funding bid, particularly post pandemic when railway finances are tighter than ever, we'll struggle to get off the ground if the local authority or whoever's behind that scheme can't demonstrate public support. So I think that's probably the first thing to say. Obviously, once a schemes got the go ahead and stations are being built and we're fortunate at the moment in the

		West Midlands, there are five new railway stations currently under construction."
Would rail station owners benefit financially from opening another station in the region?	N/A	N/A
Supporting Quote	N/A	N/A
How will a new station affect renting in the area?	See Findings	See Findings
Supporting Quote	See Findings	See Findings
Would Henwick Station be helpful to those living in the local area?	See Findings	See Findings
Supporting Quote	See Findings	See Findings

Question	**Colin Major Railfuture**	**Ian Baxter**
Would you support Henwick Station if it were to reopen? Why/ Why not?	Would support Henwick Station if it was proven to be viable. As convenient as a station would be for some groups such as university students, it may not have use year round and be a better investment to improve public transportation in other areas.	Although it is an interesting proposal, it would make more sense to research other forms of public transportation such as bus routes or look into a tram system
Supporting Quote	"We're talking about emissions, were talking about energy, and were talking about cost so were back to its nice to have it on weekends"	"The question might be not 'should there be out another railway station in Worcester', but 'what are the most sustainable and effective ways of providing metro levels of connectivity within the City of Worcester', but for the residents and for the university and colleges of higher education and so on, and in a way that doesn't destroy the environment in Worcester."
Which other public and private organisations could be affected and/or be influential?	Some of the organizations discussed were West Midlands, Department of Transportation, Network Rail, Worcester County	The main audience for a rail strategy is the politicians of Worcestershire and districts around it, the rail industry, the communities of Worcestershire, and the UK Government
Supporting Quote	"This is Network Rail who is all the infrastructure owners. I'll give you the guidance notes they issue if you want to build a station." "You're making a business case to West Midlands." "The Department for Transport in this country is given money by the government to run the railways and they give contracts to train	"with the politicians to help them prioritize, what would the right things and not just once an engineering and infrastructure solution to a problem. Secondly, it was the rail industry because I would say the rail industry has had a perpetual blind spot to Worcestershire throughout the whole of Worcestershire rail history because when it was originally created in the 1840s and 1850s." "If you live in Worcester, in Worcestershire, in the count rural areas of

	operating companies and manage the rent contract and they run the services there that they want to reduce costs, the money that you as a passenger pay does not go to Department for Transport" "I would I spend it at Rushwick which is where the County Council like one."	Worcestershire or Shropshire or Herefordshire, and I think it's difficult for them to understand the needs of a place like Worcestershire, and indeed many of them will have never, ever, ever been to Worcester. But we'll be making decisions about things that impact upon it. So communication with them as well."
How much public interest is needed prior to reopening a station for politicians and companies to consider reopening Henwick Station?	There is a significant amount of public interest necessary prior to moving forward with a business plan proposal. There would need to be significant surveys that have at least 1000 participants from St. Johns area as a representative sample.	Aside from public interest, we would need to look into the demographics and future plans the city has for growth
Supporting Quote	"As a yardstick, you need 1000 people as a sample to represent something."	"Get your understanding of your demography of the population. Is the first thing. Secondly, you obviously need to look at what's going to change." "But then you need to think from the local plan also, where is employment gonna go? Where are people gonna work? So my thinking, my simplistic little thinking is that with 24,000 more people to come in your lifetimes around Worcestershire Pkwy. Those people are gonna need to work somewhere. Some of them will work in Oxford and some will go to work in London. But loads will work in Worcester."
What does it take for a rail station to be reopened/in operation?	Refenced Network Rail's Guidance Note for Applicants - New Station Fund 3 (see Appendix X)	Developing a rail strategy looks at the existing population and the future populations and growth potential, timetable impacts and what lines would run through the stations, traffic impacts, parking and the ability to get to the station, and feasible station locations
Supporting Quote	"Most stations that are opened are opened because there is a new development or a good business case"	"Rushwick has the A 44 that comes from this sort of western part of the rural area of, of Worcestershire and Hereford share. It also has this main road coming up here from Hereford and Great Malvern. So when you think of, if you have a station here, you can kind of not only serve the bigger population that's going to be at Rushwick and the plan, by the way at Rushwick is that housing."
Would rail station owners benefit financially from opening	We would have to prove that the rail companies would benefit to even consider a new station	One of the main impacts to the station and station owners is how their current timetables would be changed

another station in the region?		
Supporting Quote	"How are you going to recoup the cost of the station over and above their running of the actual train"	"If one train is late, it affects the train going the other way. So what's called performance? The performance of the railway is really threatened, so whether trains can arrive, arrive on time, you have something called line speed."
How will a new station affect renting in the area?	See Findings	See Findings
Supporting Quote	See Findings	See Findings
Would Henwick Station be helpful to those living in the local area?	See Findings	See Findings
Supporting Quote	See Findings	See Findings