Cheshire Lines Greenway

Transport for Greater Manchester

Initial Feasibility Study

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Cheshire Lines Greenway

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0	14.01.19	Highway Engineering	SM	JC	JC
0	11.01.19	Costs	TS	RF	TH
1	07.03.19	Comments addressed	LO	DB	DB

Contents

1. Introduction

Jacobs UK Ltd, here-in referred to as Jacobs, has been commissioned by Transport for Greater Manchester (TfGM) to undertake a feasibility study for a disused section railway between Timperley and Irlam into use initially as a Greenway to provide benefits to local communities. A Greenway is a strip of undeveloped land near an urban area which is set aside for recreational use or environmental protection. As such, the aim of the study is to gain a better understanding of the suitability of this route as a Greenway including a cycleway and footway, with consideration of potential limitations including: connectivity to Irlam station and existing cycle routes, ground conditions, land ownership, ecological issues and the identification of Network Rail structures. To assess this, the report presents the analysis and findings of multiple disciplines that have inputted into this feasibility study.

There are multiple stakeholders in addition to TfGM that have an interest in this project that have been involved in discussions for this project. This comprises of:

- Northern Rail who are responsible for the operation of Irlam station;
- Trafford Council as the Local Authority for the eastern area of the potential Greenway;
- Salford City Council; as the Local Authority for the western area of the potential Greenway; and
- Hamilton Davies Trust which is a charity that supports the local communities in the Irlam and Cadishead area.

1.1 Background

The aim of the study is to bring a disused section the Cheshire rail line, located in the south-west of Greater Manchester, into use initially as a Greenway to provide social and economic benefits to local communities. Figure 1-1 shows the route that has been investigated in this report.

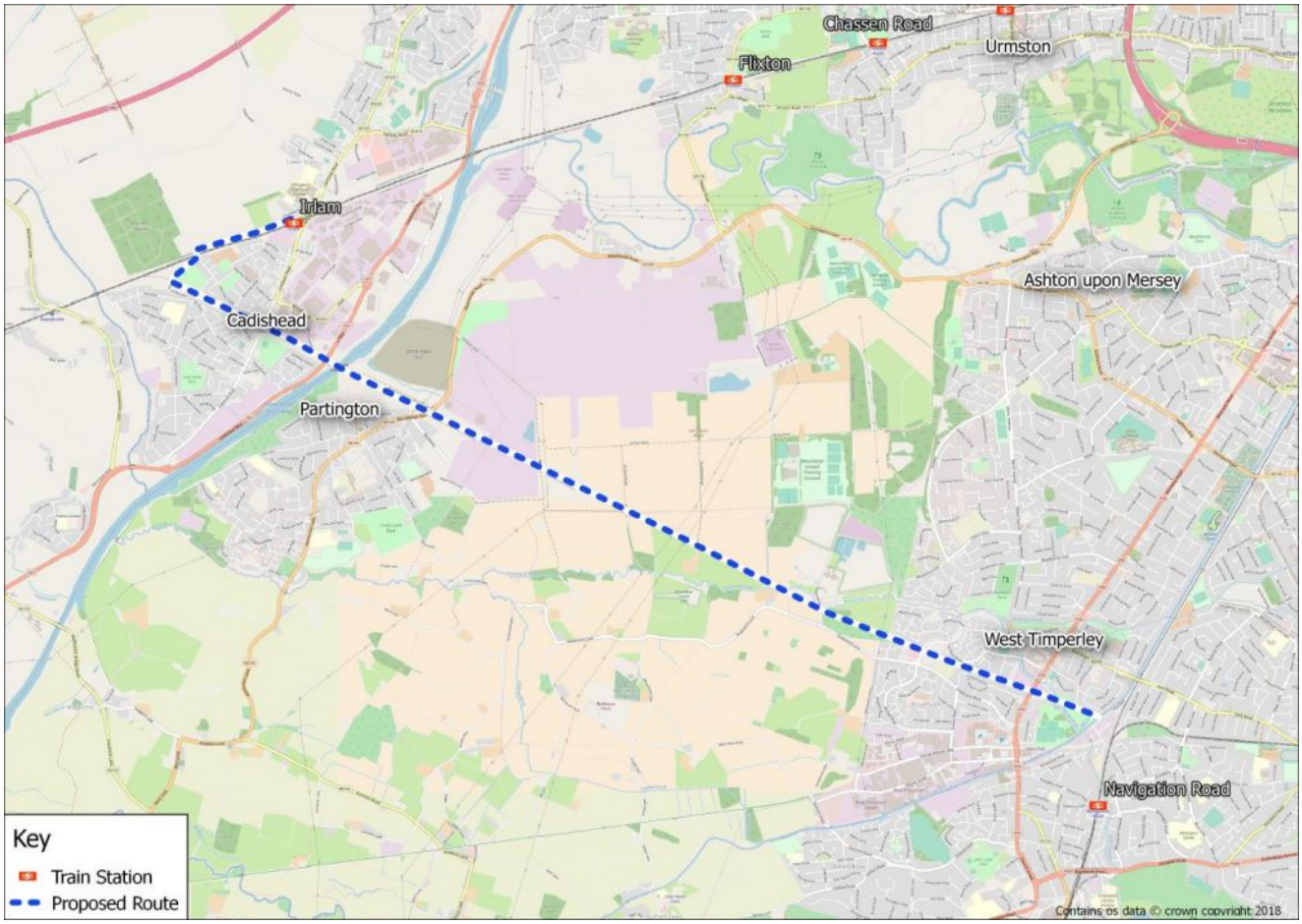

Figure 1-1 Envisaged Scheme

It is understood that the envisaged scheme would join with the existing Bridgewater Canal route in West Timperley. It would then follow the existing disused section of the Cheshire rail line between West Timperley and Cadishead, with the route passing over a number of structures, including a disused Viaduct at Cadishead/Partington, before joining an existing footpath north of Rowson Drive Playing fields, before crossing the bridge at New Moss Road, with a new off-road route parallel to the north of the Manchester to Liverpool Line before ending at Irlam Station.

The circa 8.6km route would connect by cycleway the metropolitan boroughs of Trafford and Salford. It is understood that the long-term aspiration of TfGM is for the route to include rail uses (including tram, train, tram-train). Hamilton Davies Trust have an interest in using the route for heritage purposes. The present study gains a better understanding of repurposing of the route as a pedestrian/cycle greenway including cycleway and footway, particularly the following:

- Identification of sensible access and egress points for walkers and cyclists for the entire route that best serve both the existing local communities and future GMSF development sites;
- Access and connectivity to Irlam station;
- Opportunities for connectivity to other cycle routes at each end of corridor;
- Gradients along the entire corridor;
- Ground conditions;
- Potential for a phased delivery of the route;
- Understanding of ecological issues along the corridor and identification of opportunities to provide for wildlife migration and species interchange, nature study and hiking; and
- Presence of existing public bridleways and footpaths along the route.

1.2 Report Structure

This report has been prepared based on input from different technical disciplines across Jacobs. Whilst the discipline input is not considered to be exhaustive, the technical input includes the main considerations that are necessary to assess the early development of the scheme.

Following this introduction, the remainder of the report is as follows:

Section 2 includes a review of baseline data and accessibility mapping, based upon input from Jacobs Transport Planning specialists;

Section 3 provides a summary of the initial land quality, based upon input from Jacobs Ground Engineering specialists;

Section 4 provides a summary of the initial ecological considerations, based upon input from Jacobs Ecological specialists;.

Section 5 provides a summary of the initial structural considerations, based upon input from Jacobs Structural specialists; .

Section 6 provides a summary of the initial highway engineering considerations, based upon input from Jacobs Highway specialists;

Section 7 provides a summary of the initial estimates of the costs and benefits of the route; and

The report is summarised and concluded in Section 8.

2. Transport and Planning

2.1 Census Data

2.1.1 Travel to Work

Table 2-1 shows the method of travel to work Census data from 2011. The Middle Super Output Areas (MSOAs) that surround the route has been analysed for this purpose. The areas surrounding the route include Irlam, Partington and Timperley.

Table 2-1 Method of Travel to Work (Census 2011)

Method of Travel to Work (%)	MSOAs surrounding the Route (average)	Greater Manchester (average)
Train	2%	3%
Underground, metro, light rail, tram	4%	1%
Bus, minibus or coach	7%	11%
Driving or passenger in a car or van	69%	67%
Bicycle	3%	2%
On foot	9%	10%
Other	6%	6%

As shown in Table 2-1, the areas surrounding the route differ to the Greater Manchester average for travel to work data. The MSOAs close to the route have a greater usage of the tram (4%) than the Greater Manchester average (1%), and 2% more than in the wider area of Greater Manchester travel to work via car or van. The sustainable travel modes of walking and cycling are broadly the same as Greater Manchester, with 1% more cycling to work, and 1% less walking to work.

The Greenway scheme, a high-quality route that is mostly off-road, could enable a modal shift to walking and cycling to work, rather than a high reliance on car.

2.1.2 Origin - Destination Desire Lines

Figure 2-1 and Figure 2-2 below have been taken from commute.datashine.org.uk. The website maps origin-destination Census data from 2011 that visually shows the main flows to/from different areas at MSOA level. The red lines show those out-commuting from the selected location, and the blue lines show in-commuting to the selected location for all modes of travel.

Two MSOAs have been analysed for this purpose: Trafford 19 and Salford 30. These two MSOAs have been analysed as they are locations at either end of the potential route. The origins and destinations with high flows for both locations as shown in Figure 2-1 and Figure 2-2 are listed in Table 2-2**Error! Reference source not found.** below.

Table 2-2 Origin and Destinations

MSOA	Leaving this location to work	Arriving at this location for work
Trafford 19	Altrincham, Partington, Cadishead, Salford, Manchester	Partington, Altrincham, Timperley, Sale, Salford
Salford 30	Manchester, Salford, Irlam, Warrington	Warrington, Irlam, Lymm, Manchester, Eccles

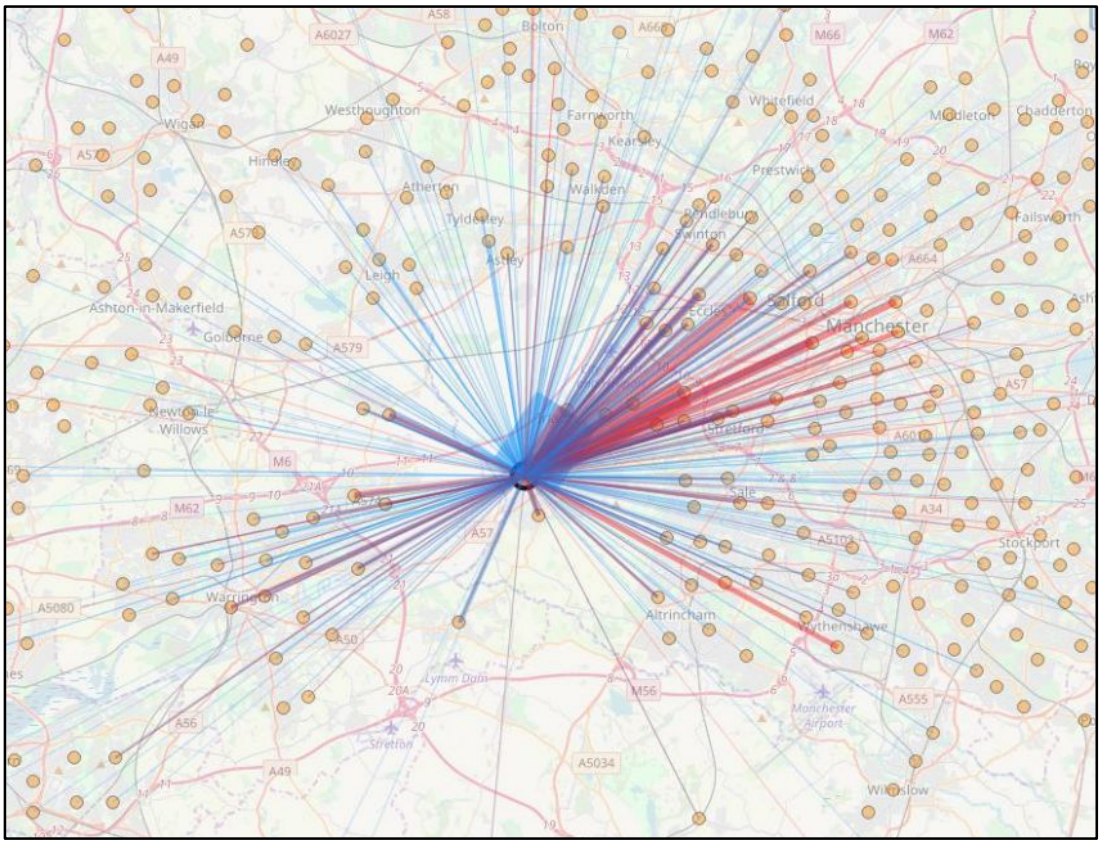

Figure 2-1 Salford 30 (MSOA) Flows (commute.datashine.org.uk)

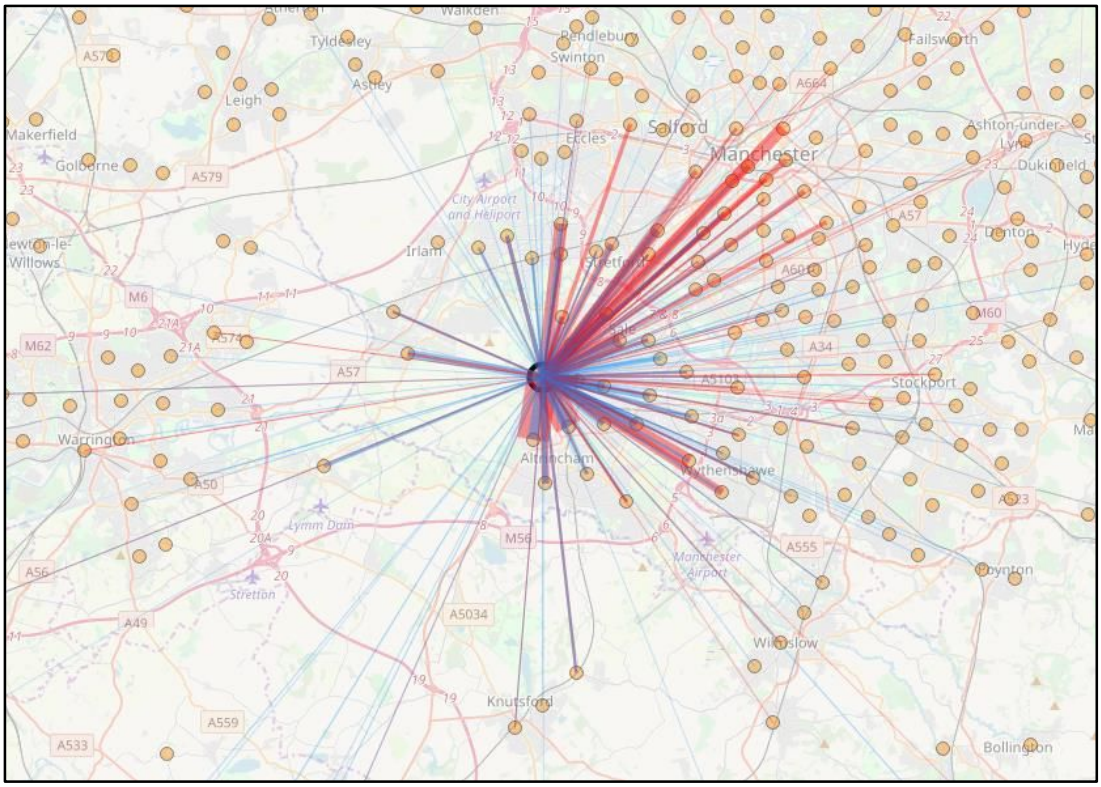

Figure 2-2 Trafford 19 (MSOA) Flows (commute.datashine.org.uk)

Figure 2-1 indicates within the Salford MSOA, the majority of out commuting is to the east of the study area and the majority of in commuting is from the west of the study area. Figure 2-2 indicates that within the Trafford MSOA, a similar trend is evident with a smaller proportion of in commuting from the west of the study area. Given the proximity of the study area to work origins and destinations, there is potential for a greater proportion of trips to be completed via active travel modes utilising the potential Greenway route. The route would be most likely used for short distances that can be travelled on foot or by bicycle and could also help to encourage residents to interchange to sustainable modes when leaving Irlam Station.

2.1.3 Population

The population size for the surrounding MSOAs have been analysed using Office for National Statistics (ONS) 2017 mid-year population estimates.

The population of the MSOAs around the potential route is 66,859, of this population,

- 23% are under 15;
- 62% are between 16 and 64; and
- 16% are over 65.

The data therefore indicates that 62% of the population within the MSOA are of working age (16-64) and approximately two thirds of the population could theoretically utilise the potential route for commuting.

2.2 Index of Deprivation

The Indices of Deprivation measures deprivation across small areas Lower Super Output Areas (LSOAs) in England. The latest release (2015) measures across 9 different domains of deprivation: income, employment, education, health, crime, barriers to housing and services, living environment, income deprivation affecting children, and income deprivation affecting older people. Figure 2-3 shows the overall indices of deprivation (2015) for the area.

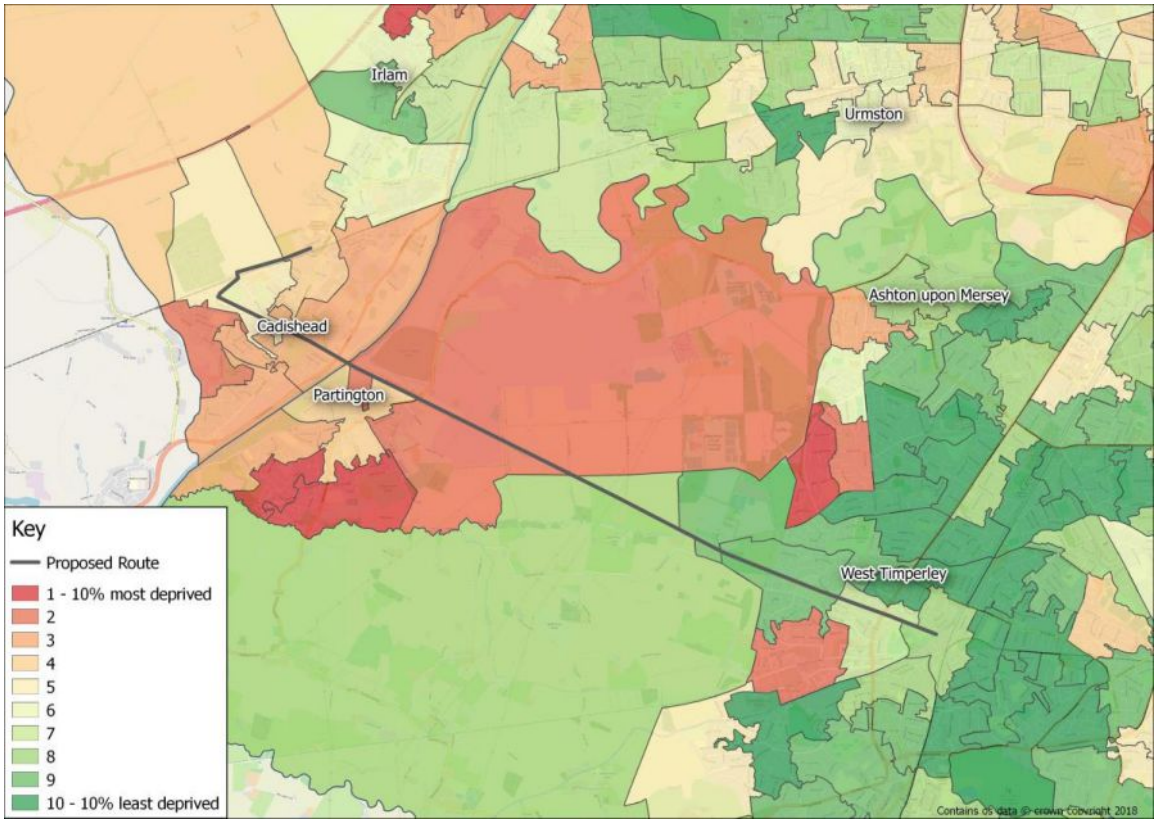

Figure 2-3 Index of Deprivation Overall (2015)

The map above shows that overall, there are three Lower Super Output Areas (LSOAs) near the route that are within the 10% most deprived nationally, and a further four LSOAs that are within the 20% most deprived nationally. A majority of these are within Trafford, with one in Salford.

Figure 2-4 below shows the health decile of the Index of Deprivation in the areas immediately surrounding the potential route.

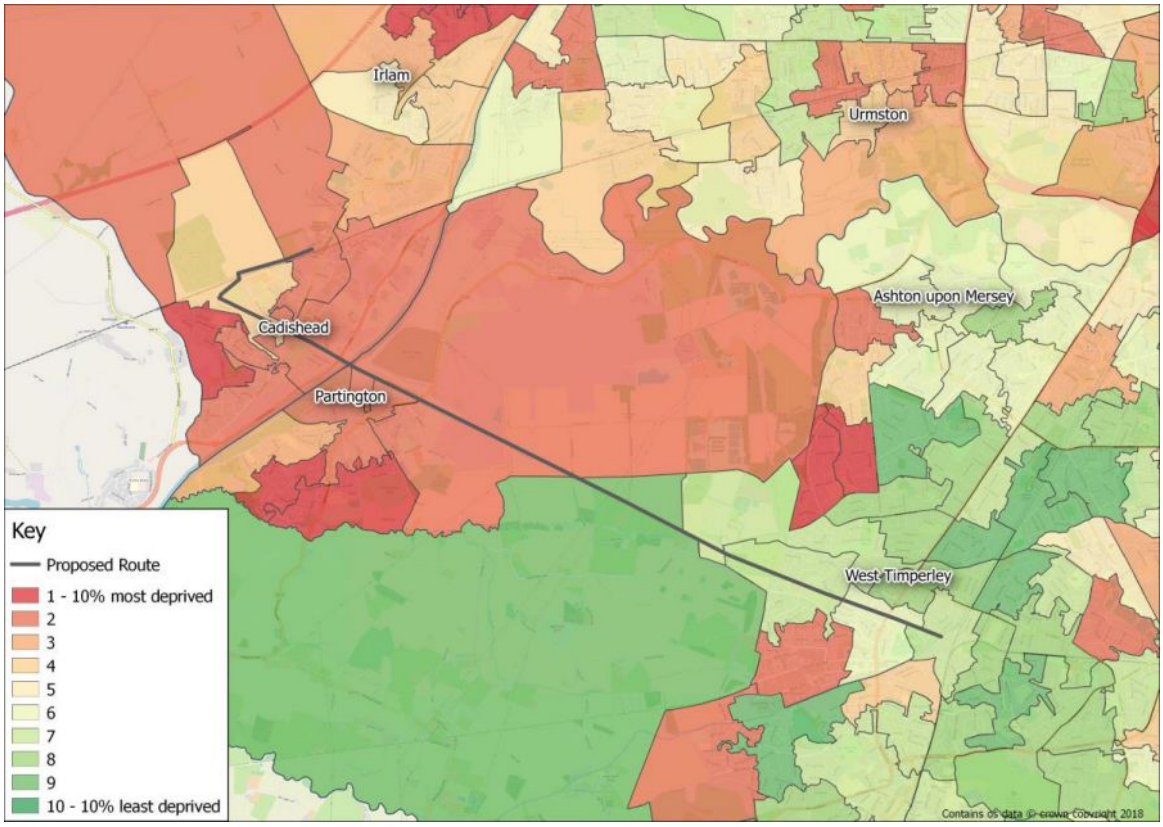

Figure 2-4 Index of Deprivation Health Decile (2015)

Figure 2-4 shows that overall there are five LSOAs within the 10% most deprived nationally, with a further six LSOAs within the 20% most deprived nationally. Encouraging active travel through a new walking and cycling route will have a positive impact on health, especially for those areas within the 20% most deprived for health. To the north and to the west of the potential route, the route extends through areas which are within the 10% to 30% most deprived areas based upon the Index of Deprivation (2015) data. Active travel is considered to be a cheap and highly accessible mode of travel, and as such the potential Greenway route presents an opportunity to increase accessibility for residents within deprived area to access local services and opportunities.

2.3 Local Development

This section details development in the area that had been identified in the Greater Manchester Spatial Framework (GMSF) and Local Plans, in addition to planning applications that have been submitted in proximity to the potential route. Figure 2-5 maps these developments.

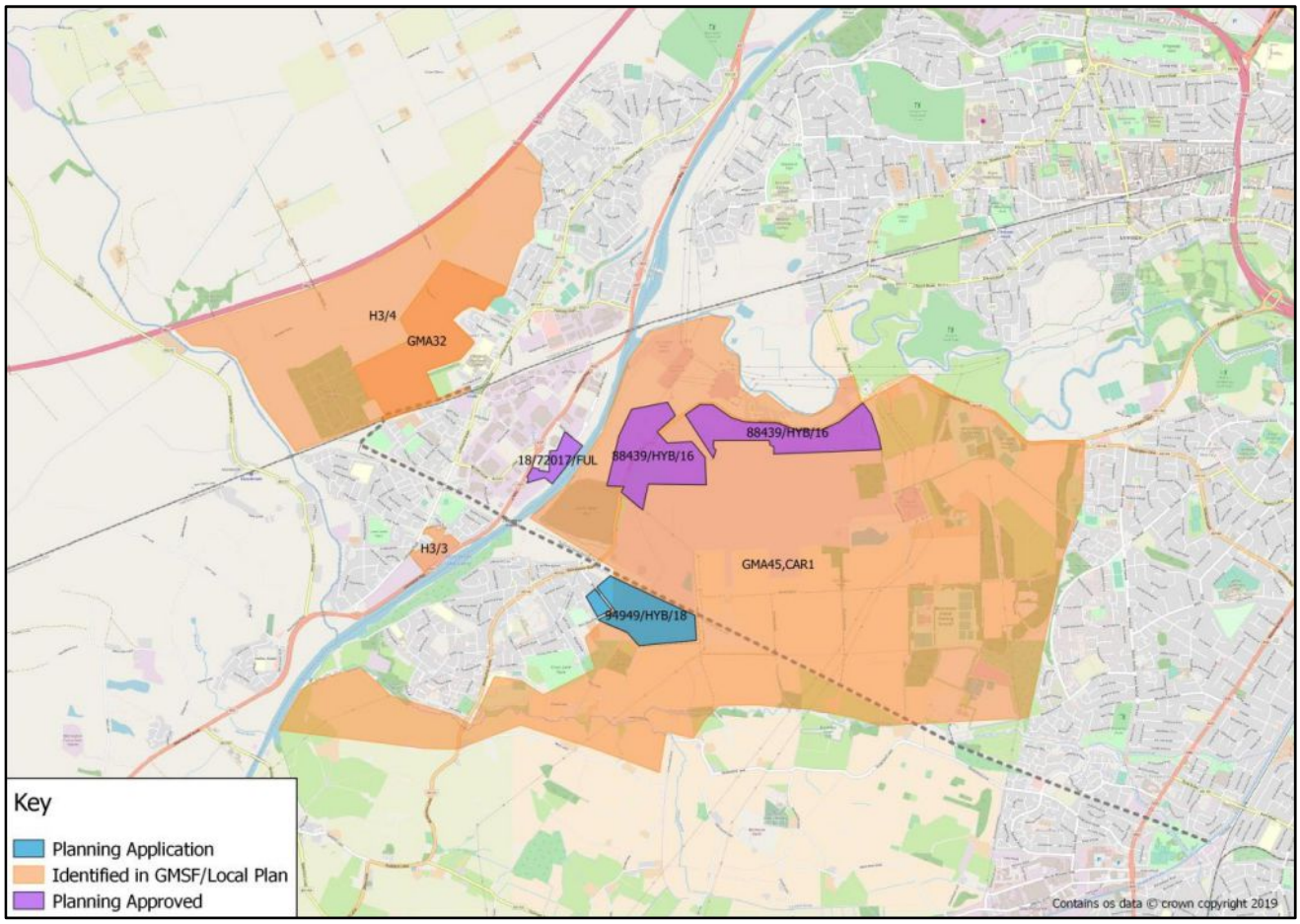

Figure 2-5 Local Developments

2.3.1 Greater Manchester Spatial Framework (GMSF)

The GMSF(2018) is a joint plan for Greater Manchester that will provide the land for jobs and new homes across Greater Manchester. The framework has been produced by all 10 Councils in partnership with the Combined Authority and will ensure that there is the right land available in the right places to deliver the homes and jobs that are needed to 2037; it also identifies the new infrastructure that will be required to support these developments, such as transport (through the TfGM 2040 Draft Delivery Plan 2020-2025).

The draft GMSF was published on 21st January 2019 and is currently out for consultation until the 18th March 2019. Following incorporation of this consultation feedback, a second phase of consultation is scheduled for August 2019 with publication of the final plan expected in December 2020.

Table 2-3 details two sites that are included in GMSF that are nearby to the potential route.

Table 2-3 GMSF Sites near the Potential Route

Ref.	Site Name	Employment	Dwellings	Additional Information
GMA45	Carrington	410,000m² within the plan period (900,000m² in total)	6,100 within the plan period (10,000 in total)	• References the utilisation of the disused railway through the site as a strategic sustainable transport corridor providing links from New Carrington to the wider area and contributing to improved east/west linkages; • Employment development will be located in the north western area of New Carrington, largely on existing brownfield land.

Ref.	Site Name	Employment	Dwellings	Additional Information
				• Significant infrastructure investment will be required to serve the New Carrington site, in terms of both highways improvements and public transport.
GMA32	North of Irlam Station	N/A	1,600	• A high-quality extension to the Irlam and Cadishead neighbourhood focused around Irlam Station. • Incorporate a high-quality network of public routes through the site, connected into the wider pedestrian and cycling network that provides access to local facilities, public transport services • Include a new direct pedestrian and cycle route to Irlam Station from the west

As noted in Table 2-3 above, both of GMA45 and GMA32 support the proposed use of walking and cycle routes within the developments. GMA45 references the use of the disused railway for sustainable travel, and GMA32 proposes a route to Irlam Station from the west, aligning with the route the study has investigated.

In addition, the Greenway route is also suggested within the GMSF proposals as a potential bus corridor/rapid bus transit corridor. It is therefore important that the feasibility of the Greenway route is fully investigated. It is unclear whether this would be alongside the greenway, or instead of. As such, it is recommended that further engagement occurs between the TfGM scheme promoter and the TfGM Strategy team as the Greenway route develops, to ensure a coordinated approach.

2.3.2 Local Plans

GMSF will act as the overarching framework for the 10 authorities. The development site allocations in the Local Plans will reflect the allocations identified in GMSF.

Trafford Local Plan

The Land Allocations Plan part of the Trafford Local Plan shows how the objectives defined in the Core Strategy (adopted in 2012) will be translated into specific sites. The Council consulted on a draft of the Land Allocations Plan in 2014. Following this, the Land Allocations Plan was delayed until the production of the GMSF was further advanced. Table 2-4 details the Local Plan Sites in Trafford near the route.

Table 2-4 Trafford Local Plan Sites Near the Potential Route

Ref.	Site Name	Employment	Dwellings	Additional Information
CAR1	Carrington Strategic Location	750,000m²	1,560	• Residential units will be delivered in this Plan period • Housing densities and heights of units will vary across the site
**CAR1 is an early stage of GMSF GMA45*				

Salford Draft Local Plan

Consultation on alford's Draft Local Plan took place between November 2016 and January 2017. The Plan sets out the development in Salford up to 2035 and identifies the amount of development that will come forward in line with GMSF. The latest version of the Local Plan will be published for consultation in early 2019. Table 2-5 shows the Local Plan sites within Salford that are near to the potential route.

Table 2-5 Salford Local Plan Sites Near the Potential Route

Ref.	Site Name	Employment	Dwellings	Additional Information
H3/3	Land West of Hayes Road	N/A	200	• Provide a high quality green infrastructure buffer along the southern edge of the site, presenting an attractive setting for Cadishead Way
H3/4	Western Cadishead and Irlam (Salford)	N/A	2,250	• A mix of housing including higher density dwellings close to Irlam Station. • Promote walking and cycling through a range of measures, including: enhancing existing, and provide new, walking and cycling routes through the site
**Please note H3/4 is also included in GMSF (GMA32)*				

2.3.3 Carrington Village

Carrington Village, included in GMSF (GMA45) and the Trafford Local Plan Allocations (CAR1), is a major area allocated for development that is close to the potential route. The site is in a prime location within Greater Manchester with potential for development opportunities and well as a new residential community. The 1,665-acre site was acquired by HIMOR for development in 2014[1]. The masterplan for the site, which was provided by HIMOR in December 2018, is shown in Figure 2-6. This is also provided in 0.

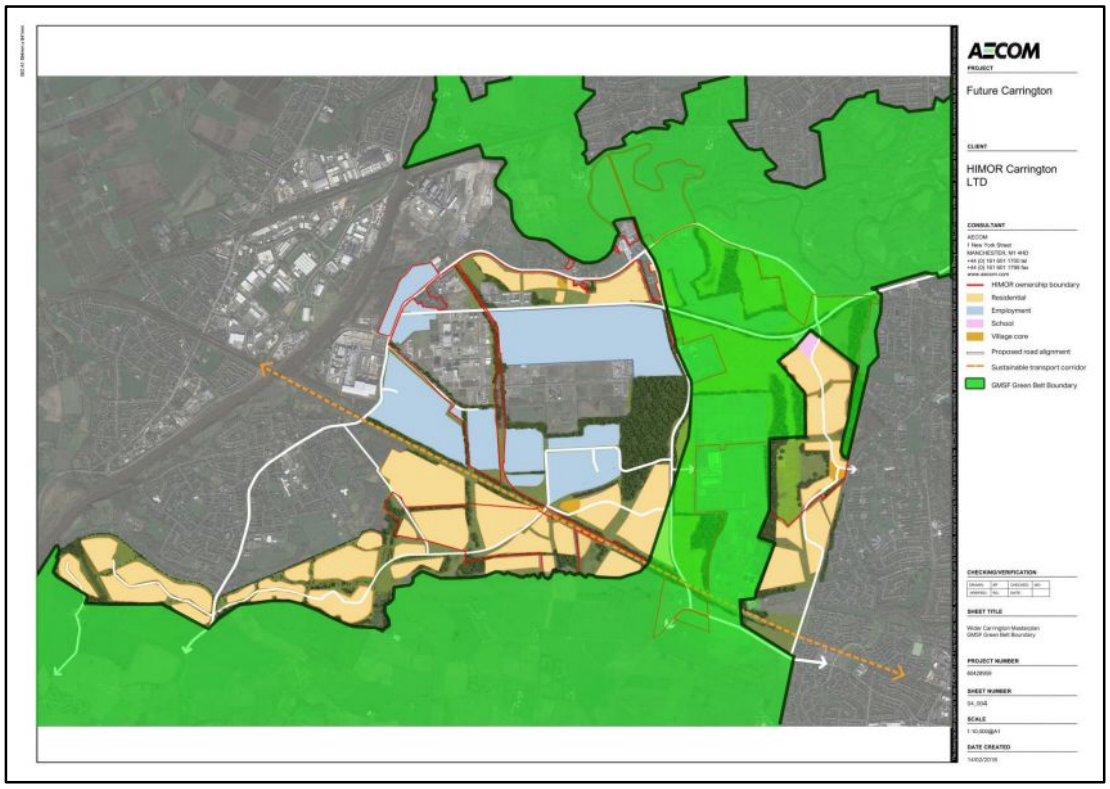

Figure 2-6 New Carrington Masterplan (Source: HIMOR)

As shown in Figure 2-6, the masterplan covers a large area which mostly consists of a former Shell processing works. If Carrington Village was delivered, this would be a major area for growth in Greater Manchester, both for

[1] https://www.himor.co.uk/what-we-do/regeneration/

housing and employment. The potential route would pass through this site and help to integrate the new development into transport infrastructure and improve connectivity to nearby areas.

Due to the scale of the development, it is being broken down into phases. The first phase of the site was granted planning permission in April 2017. The application (reference 88439/HYB/16) is approved for up to:

- 725 dwellings;
- 46,450 sqm employment floorspace (B1/B2/B8); and
- 929 sqm of retail (A1/D1).

The site plan for Phase 1 is shown in Figure 2-7.

Figure 2-7 Site Plan for Phase 1 (Source: Trafford Planning Portal)

The phasing plan and outline of the area for development is shown in Figure 2-8. This is located to the north of the masterplan area.

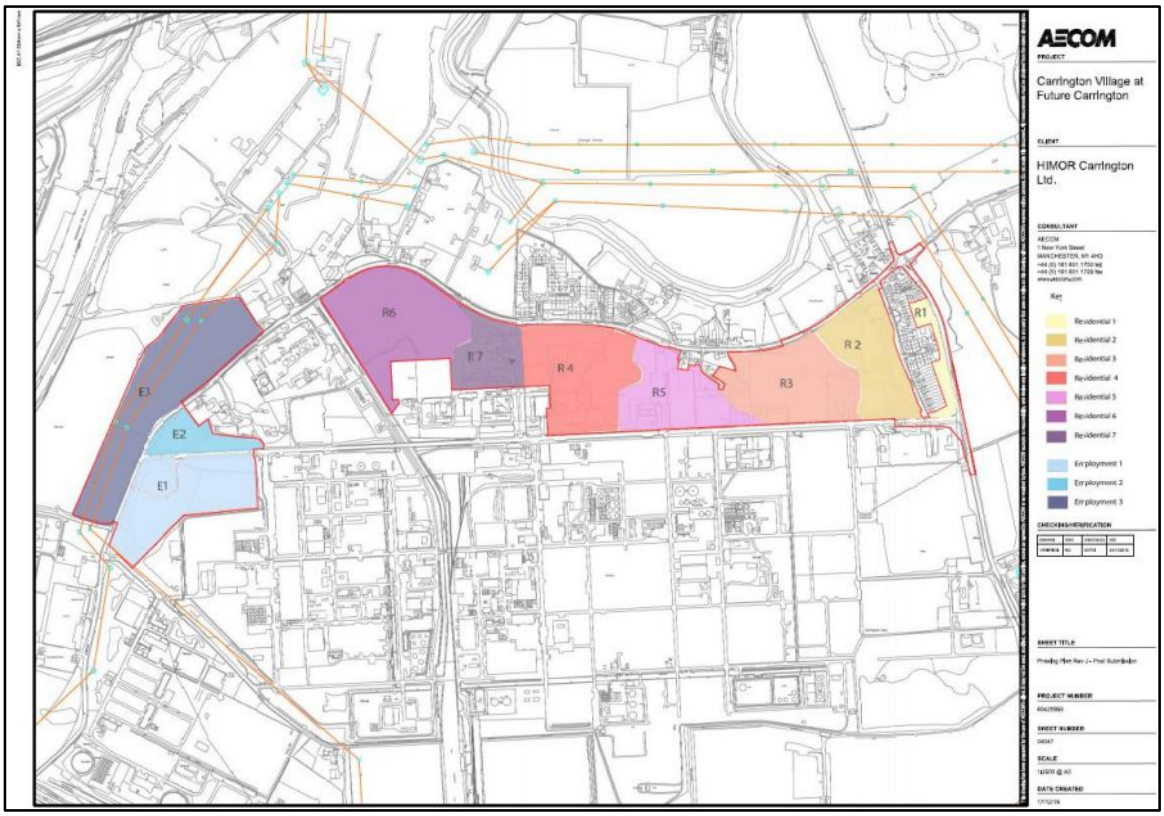

Figure 2-8 Phasing Plan for Phase 1 (Source: Trafford Planning Portal)

2.3.4 Other Local Development

Additional planning applications have been submitted in the vicinity of the scheme. These are detailed in Table 2-6 below.

Table 2-6 Other Planning Applications

Planning Ref.	Site Name	Employment	Dwellings	Planning Permission
94949/HYB/18 (Trafford)	Land At Heath Farm Lane	N/A	148, additional 452 for outline planning	Application received 26/06/18 and awaiting decision
18/72017/FUL (Salford)	Land off Omega Drive	Erection of three industrial and warehousing units, use class B1(c), B2, B8	N/A	Approved
94670/RES/18 (Trafford)	Land Known as Carrington Village on Land Off Manchester Road, Carrington	N/A	277	Approved with conditions (18th Dec 2018)

The potential Greenway route is currently in the ownership of Network Rail and could potentially overlap with Network Rail aspirations of reopening the route for rail purposes in the future. This was noted in the Network Rail response to planning application 94949/HYB/18, which stated " or the benefit of assessing this planning application the council should treat this railway as if it were an operational asset There has been discussion on the reopening of this line". As such, it is recommended that TfGM work alongside Network Rail as a valued partner to address any potential land ownership issues.

2.4 Existing Situation

2.4.1 Cycle Network

The existing cycle network nearby the potential route in shown in Figure 2-9. Red routes are the existing local cycle network, which is piecemeal. The green route shown is the National Cycle Network Route 62, which connects Fleetwood on the Fylde region with Selby in North Yorkshire. The potential route would also tie into regional route 82 along the Bridgewater Way.

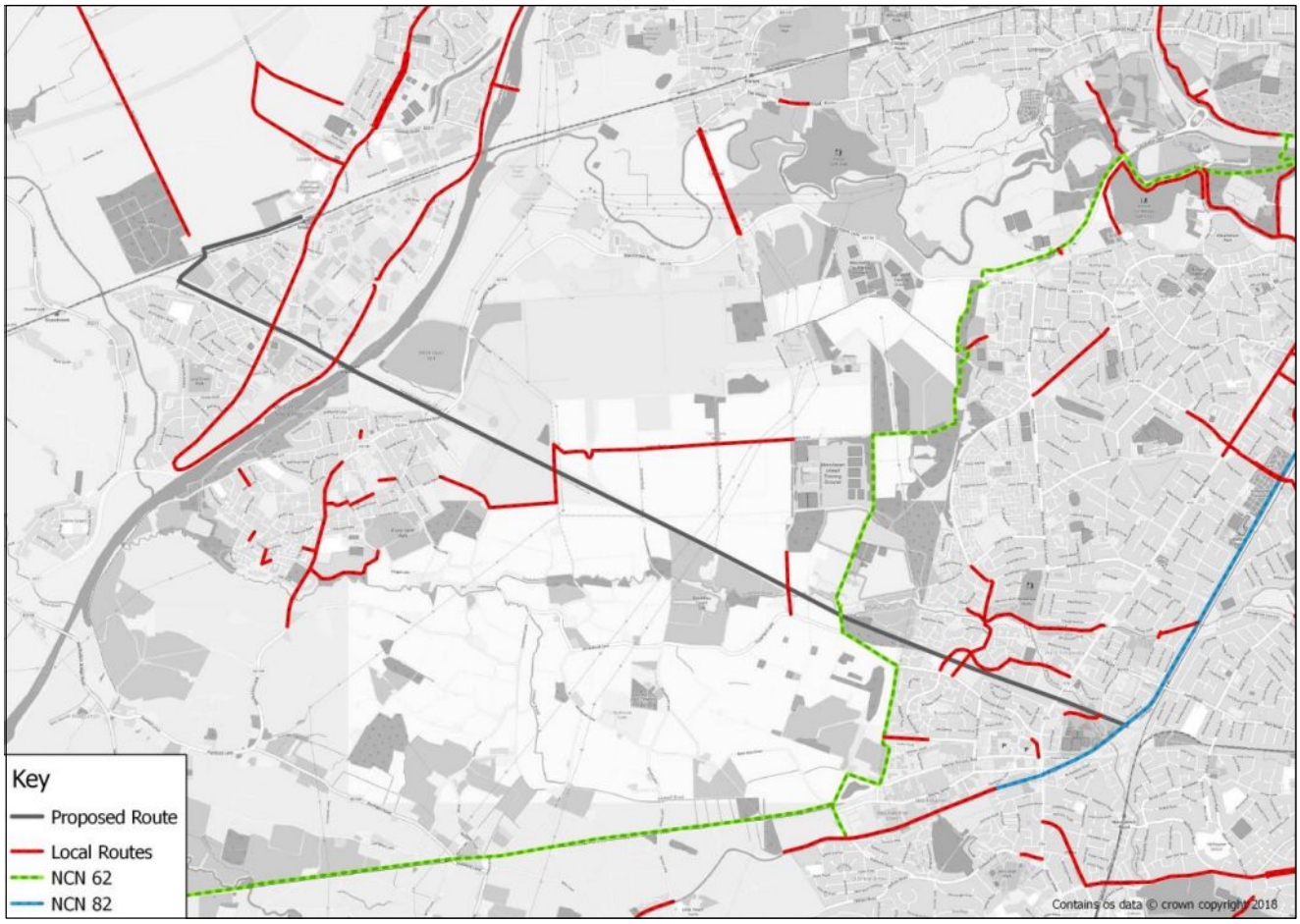

Figure 2-9 Cycle Routes

From Figure 2-9, it is evident that the potential Greenway route would integrate with existing local routes and also integrate with the NCN 62 and NCN 82 to the east of the potential route, which would assist in developing a cycle network in the area and link local service centres with the wider active travel network. TfGM also have plans for the Chat Moss cycleway/bridleway to be improved in the near future that will link to NCN 55 at Tyldesley.

2.4.2 Bee Network

In summer 2018, Chris Boardman; the Greater Manchester Cycling and Walking Commissioner, unveiled plans to create a Bee Network of more than 1,000 miles of walking and cycling routes across Greater Manchester. The

aim is to create a fully joined up network across the city. Chris oardman said "it's about making better places to live and work by giving people a real choice about how they travel. n doing so, we'll make the city -region healthier and more prosperous". The ocal Authorities within reater Manchester contributed towards identifying the routes. The approach will better connect neighbourhoods, improving accessibility.

The Bee Network report also includes design principles to support its ambition and examples of good practice:

1. Streets should be places where people choose to spend time socialising rather than just save time passing through
2. Street design should focus on moving people rather than traffic
3. Dedicated separate space should be provided for walking and for cycle traffic
4. People should feel safe, relaxed and secure on the street and not just in a car
5. People should feel like they can stroll without delay and linger without issue
6. Protection and priority should be given to people cycling and walking at junctions
7. Health benefits should be highlighted and quantified for all street improvements
8. Walking, cycling and public transport should go hand-in-hand

The Bee Network in the surrounding area of the potential route are shown in Figure 2-10.

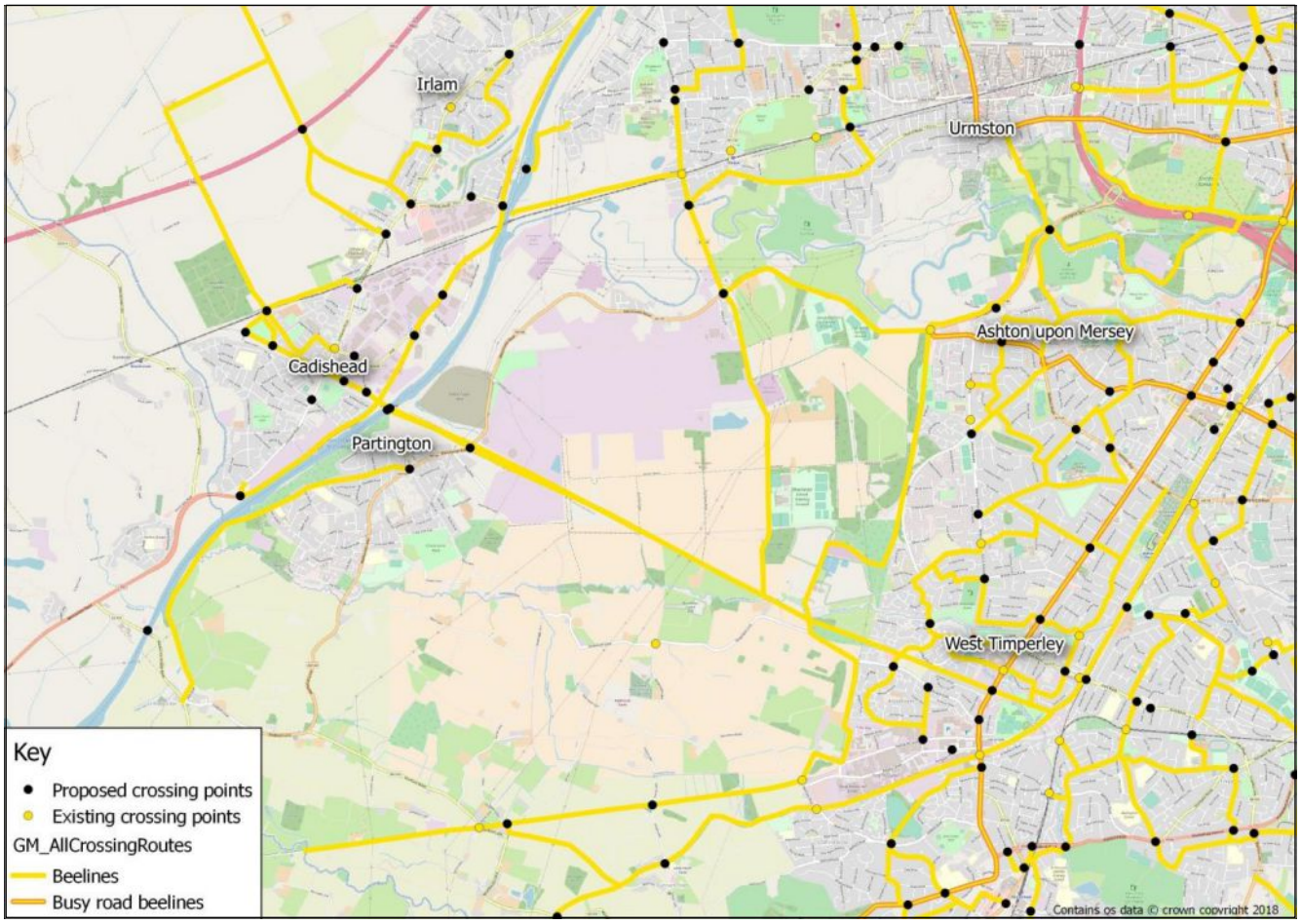

Figure 2-10 Bee Network

The potential Greenway route is included as part of the Beeline network proposals and would tie into other routes across the Bee Network.

2.4.3 Public Rights of Way (PRoW)

Public rights of way (PRoW) are open to all at all times and can be roads, paths or tracks:

- Public footpaths are for pedestrians only;
- Bridleways are for pedestrians, horse riders and cyclist; or
- Byways are for pedestrians, horse riders, cyclists and motorised vehicles.

Figure 2-11 shows the PRoW network in the vicinity of the potential route based upon information from Mapping GM (https://mappinggm.org.uk/gmodin/).

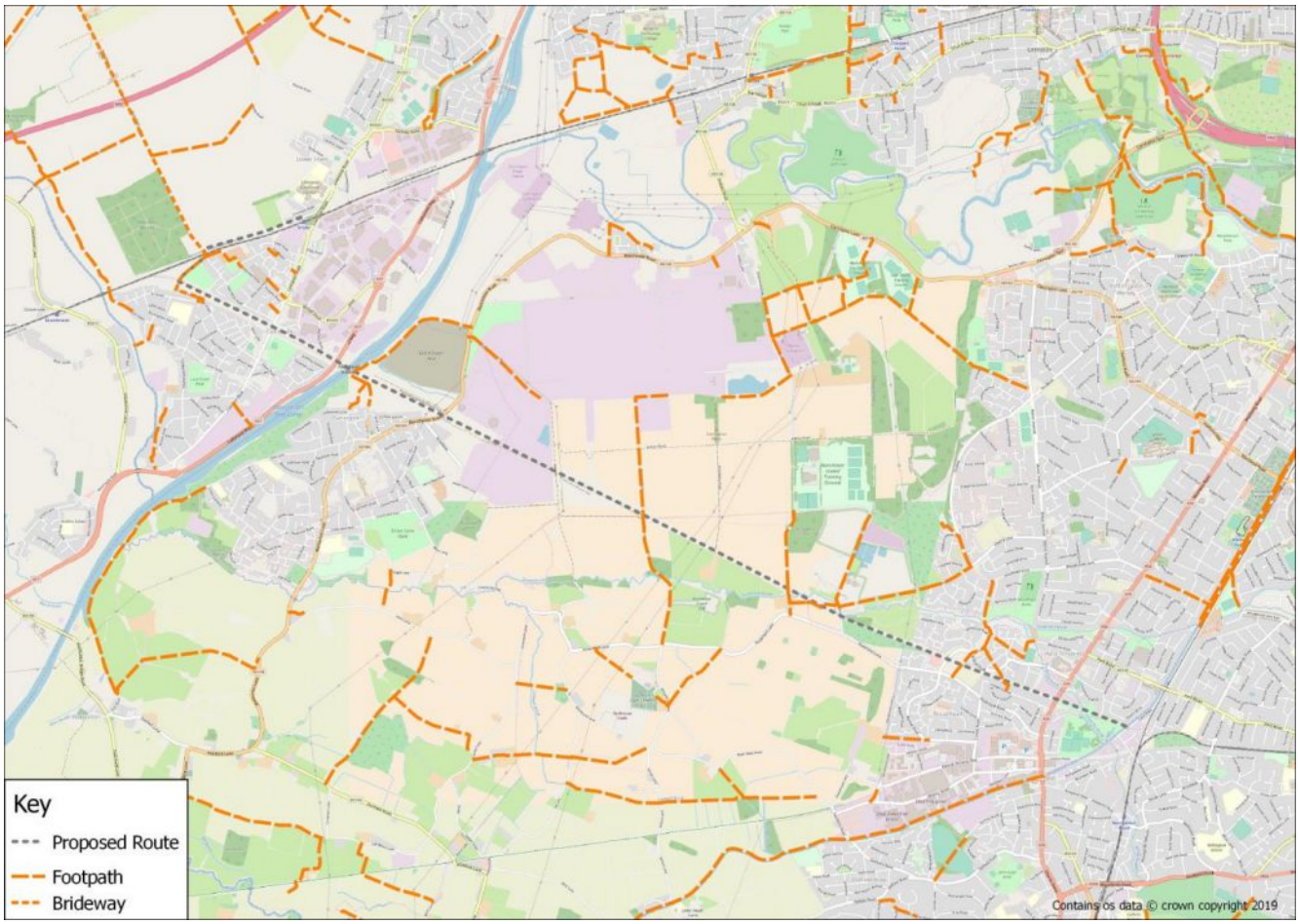

Figure 2-11 Public Rights of Way (PRoW)

As shown in Figure 2-11, a number of PRoW cross the potential route, which would create a network of routes in this area if the route was turned into a cycleway/walking route.

2.5 Accident Data

STATS19 accident data has been sourced from data.gov.uk. For this purpose, a 150m buffer around the potential route has been analysed for a 5-year period from 2013 to 2017. This is mapped in Figure 2-12. The breakdown of accidents per year by severity is shown in Table 2-7.

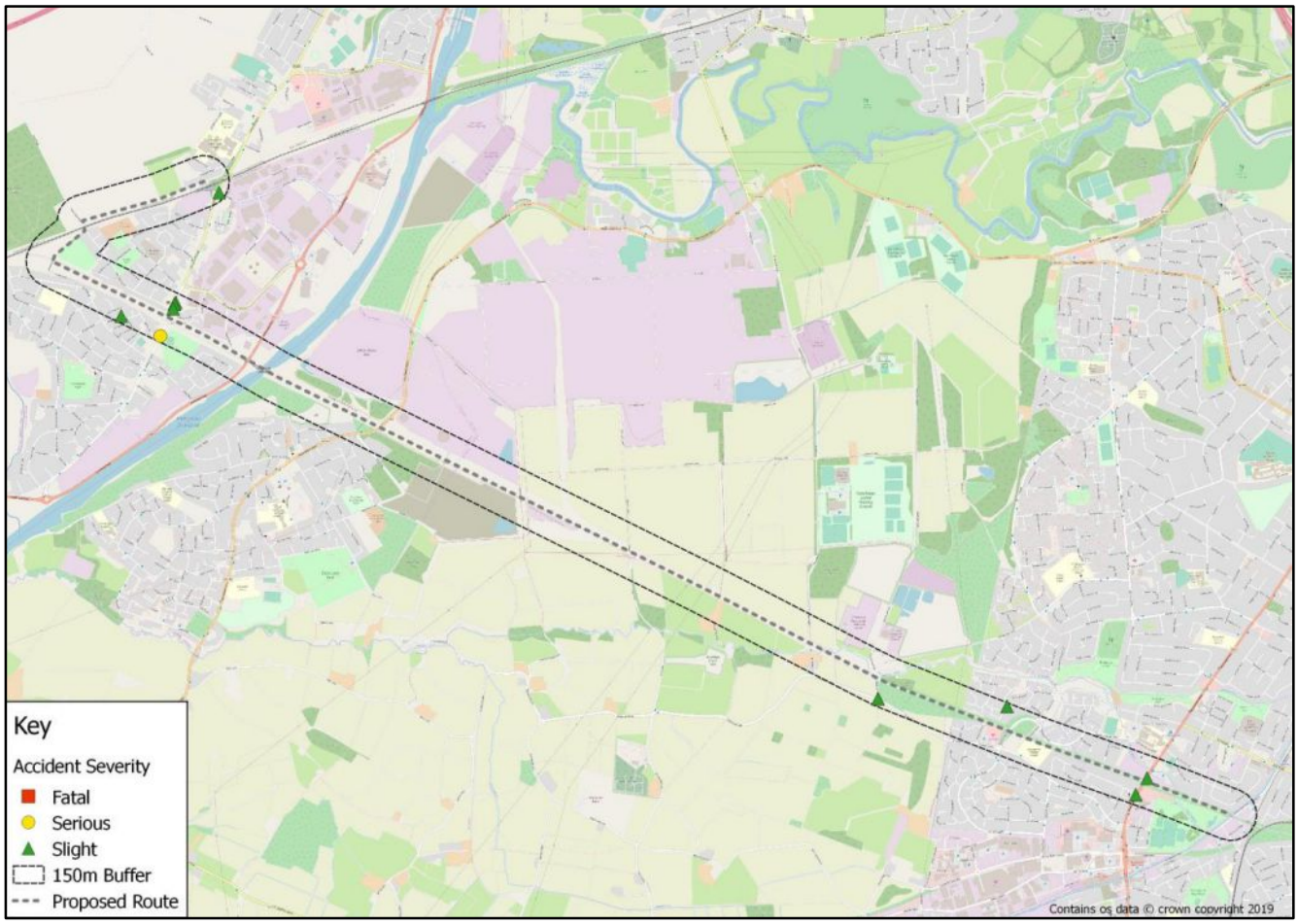

Figure 2-12 Accident Severity

Table 2-7 Accidents per Year and by Severity (STATS19)

Year	Slight	Serious	Fatal	
2013	3	0	0	
2014	3	0	0	
2015	3	1	0	
2016	0	0	0	
2017	1	0	0	
Total	10	1	0	**11**

As shown in Figure 2-12, there are have been few accidents recorded in the vicinity of the route over 2013 – 2017, with a total of 11 accidents recorded: ten that were recorded as 'slight', and one that was recorded as 'serious'. In part, this is due to the majority of the route is located away from the public highway and hence STATS19 casualties are not collected in these locations. The areas where the accident rate is higher is in those areas where

the potential route crosses the road network, such as on Liverpool Road in Cadishead and Manchester Road (A56) in West Timperley. However, both of these crossing points of the potential route are at a different level – the railway bridges over the road. It is important that the potential route is designed to be safe and attractive for pedestrians and cyclists along on-road sections and crossing points with the road network as detailed in NACTO guidance adopted by TfGM.

2.6 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are areas identified by a Local Authority where the air quality objectives are not likely to be achieved. The Local Authority is then required to put together a plan to improve air quality in this area[2].

Greater Manchester is in the process of developing a Clean Air Plan to tackle harmful and illegally high levels of roadside pollution across the city-region. In July 2017 the Government instructed many areas across the UK to develop measures to tackle high levels of nitrogen dioxide (NO_2) on local roads. The Government have identified 12 road-links in eight of the ten Greater Manchester local authorities as likely to have levels of NO_2 in breach of legal limits beyond 2020. Given that the main source of NO_2 is road traffic, TfGM is working with the Greater Manchester Combined Authority (GMCA) and the 10 Greater Manchester Local Authorities to produce a single Clear Air Plan. A list of shortlisted potential measures has been produced which could help reduce roadside NO_2 levels. Greater Manchester is in the process of undertaking detailed studies and research to assess which measures to take forward and work will continue throughout 2019 to finalise the Clean Air Plan. The final package of measures within the Plan will be decided by the 10 local authorities and the GMCA.

Figure 2-13 shows the AQMAs within close proximity to the potential route. The route crosses over the A56, which is an AQMA, in West Timperley. Districts across Greater Manchester, alongside TfGM, are in the process of producing a Clean Air Plan to tackle harmful and illegally high levels of roadside pollution across the city-region. Other cities in the UK such as Birmingham are currently considering producing clean air plans to address the air quality issues.

[2] https://uk-air.defra.gov.uk/air-pollution/glossary

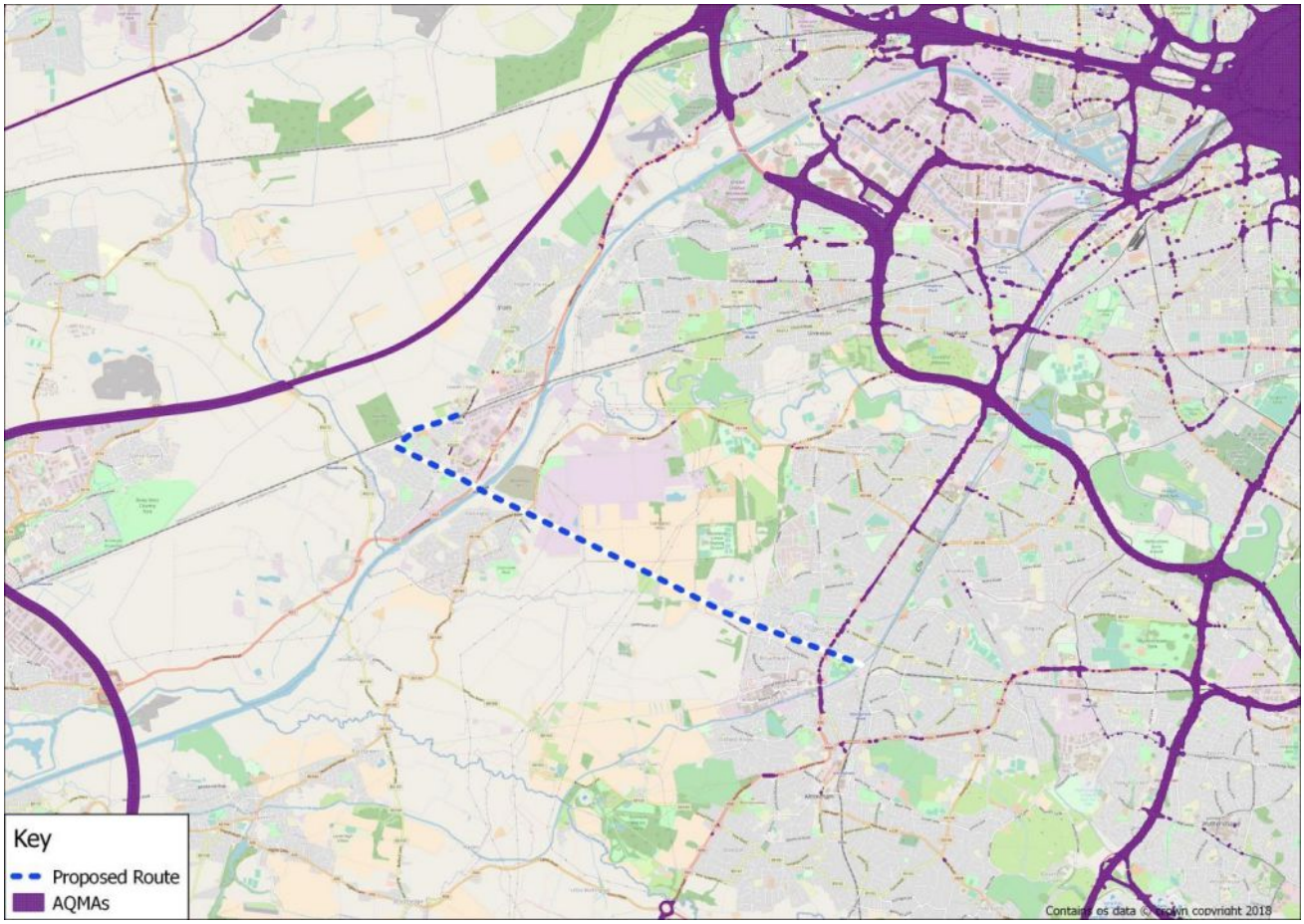

Figure 2-13 AQMAs near the Route

Most of the AQMAs are on the strategic road network or major road network within Greater Manchester, as most air quality issues are related to transport. Given the links of the potential Greenway route to local transport hubs including Irlam rail station and Timperley Metrolink to the west of the study area, there is potential for the route to be utilised as a mode of travel from home to the local rail station, with the remainder of the journey to be completed via rail to destinations further afield including Liverpool and Manchester. This presents potential to reduce the number of journeys completed by car from those areas forecast for NO_2 exceedance along the A56 and potentially other routes such as the A57 and M60. The majority of NO_2 emissions are associated with road traffic and therefore reducing the number of journeys undertaken by car would have a direct beneficial impact on air quality.

2.7 Propensity to Cycle (PCT)

The Propensity to Cycle Tool (PCT) tool is a freely-available online resource that has been designed by the Department for Transport to help with strategic planning of cycle networks. The data in the PCT is based on the 2011 Census travel to work data and reports the number of people travelling by different modes from Middle Super Output Areas (MSOA) and Lower Super Output Areas (LSOAs). Factors that are taken into account when suggesting routes include the target national modal share, overall travel to work demand, distance and gradients. The tool also presents 'fast' and 'quiet' route options.

Whilst the PCT is a useful tool to measure the potential number of cyclists using a proposed route, it is important to note that the tool does not account for all journey types. Journey types not included within the tool include: leisure journeys, journeys to school, and journeys to local services such as health and retail. It is expected that the potential Greenway route would attract a number of cyclists undertaking journeys which are not accounted for within the PCT and as such, the prospective number of cyclists using the route is likely to be higher than those indicated by the PCT.

Different scenarios are possible using the tool aiming to answer the question at both the strategic and local level of where to prioritise high quality cycling infrastructure of sufficient capacity for a planned growth in cycling. The scenarios are:

- Government Target: double cycling from current levels by 2025.
- Gender Equity: A scenario where equal numbers of women and men cycled. Currently 75% of cycle commutes are by men in England.
- Go Dutch: If people in England had the same likelihood to cycle for commuter trips as people in the Netherlands.
- E-bikes: Where people consider E-bikes for longer and hillier trips.

Two scenarios are presented using the tool, 'fast' route and 'quiet' route. The tool calculates propensity to cycle based on factors such as distance and hilliness. Research during the development of the PCT illustrated that propensity to cycle declines as distance and hilliness rises. The Made to Move report, published by the GMCA Walking and Cycling Commissioner in December 2017, states that "The Propensity to Cycle tool shows that if Greater Manchester residents were as likely to cycle to work as the Dutch (for trips of similar length and hilliness) commuter cycling rates would increase ten-fold, from 2.2% to 21.3% of all journeys." The Made to Move report sets out a vision for Greater Manchester to become the very first city region in the UK to have a fully joined up walking and cycling network, through the adoption of a 15-step plan to transform Greater Manchester which has been adopted by the region's ten district leaders.

The PCT for the Government Target scenario for the area around the potential route is shown in Figure 2-14.

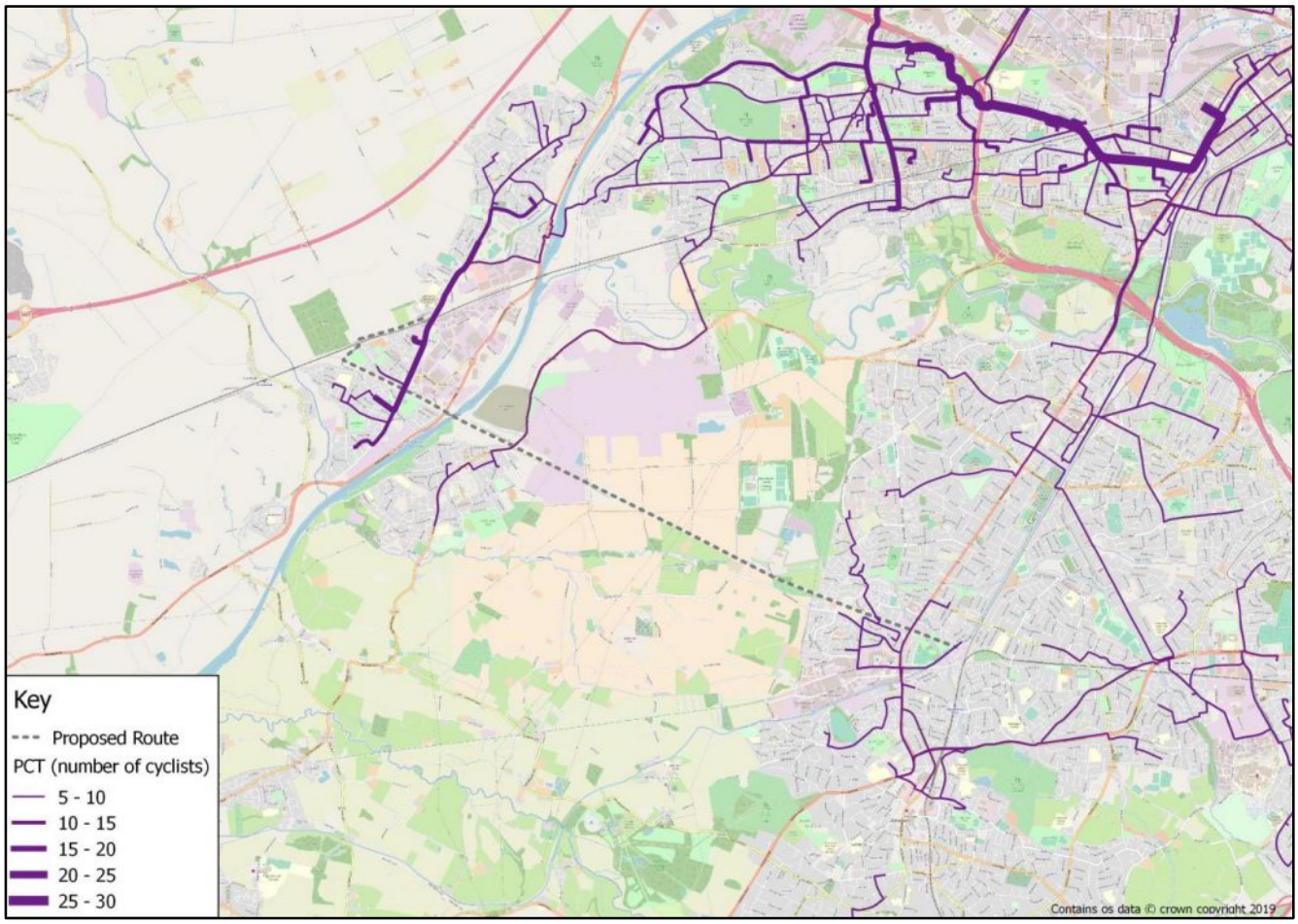

Figure 2-14 Propensity to Cycle (Government Target Scenario)

The routes shown in Figure 2-14 are reflective of those routes considered to be the fastest cyclable routes. The potential route that is being investigated in this study is not shown in the PCT Tool as it is currently not legally cyclable. The map however, shows that there are routes which have some potential of increasing cycling numbers at either end of the potential route. To the west of the route, the potential Greenway route integrates with existing cycle routes within Cadishead that link to the centre of Manchester.

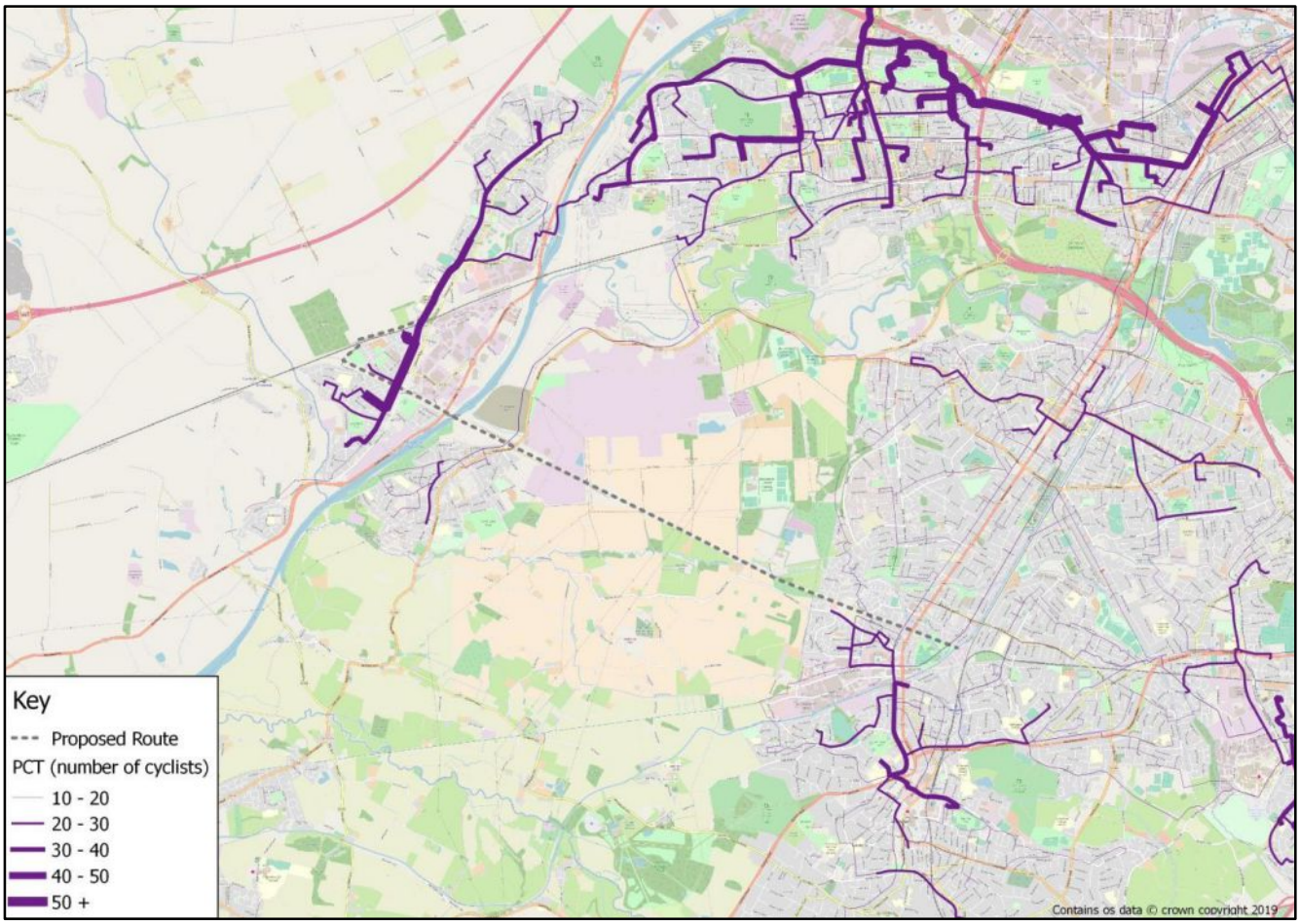

Figure 2-15 Propensity to Cycle (Do Dutch Scenario)

As shown in Figure 2-15, the Go Dutch scenario shows that there are routes which have some potential of a high increase in cycling numbers at either end of the potential route.

Further to this, the potential Greenway route connects built up areas to the east and west of the route and increases the provision of dedicated walking and cycling routes for leisure purposes. The potential Greenway route also provides a sustainable connection between Cadishead and Timperley, and the local services located within these areas.

2.8 Land Ownerships

Figure 2-16 shows the land ownerships for those areas of land that are close to the disused railway boundary, these are mostly limited companies who own substantial areas of land. The land ownerships were provided by TfGM and are shown for information purposes.

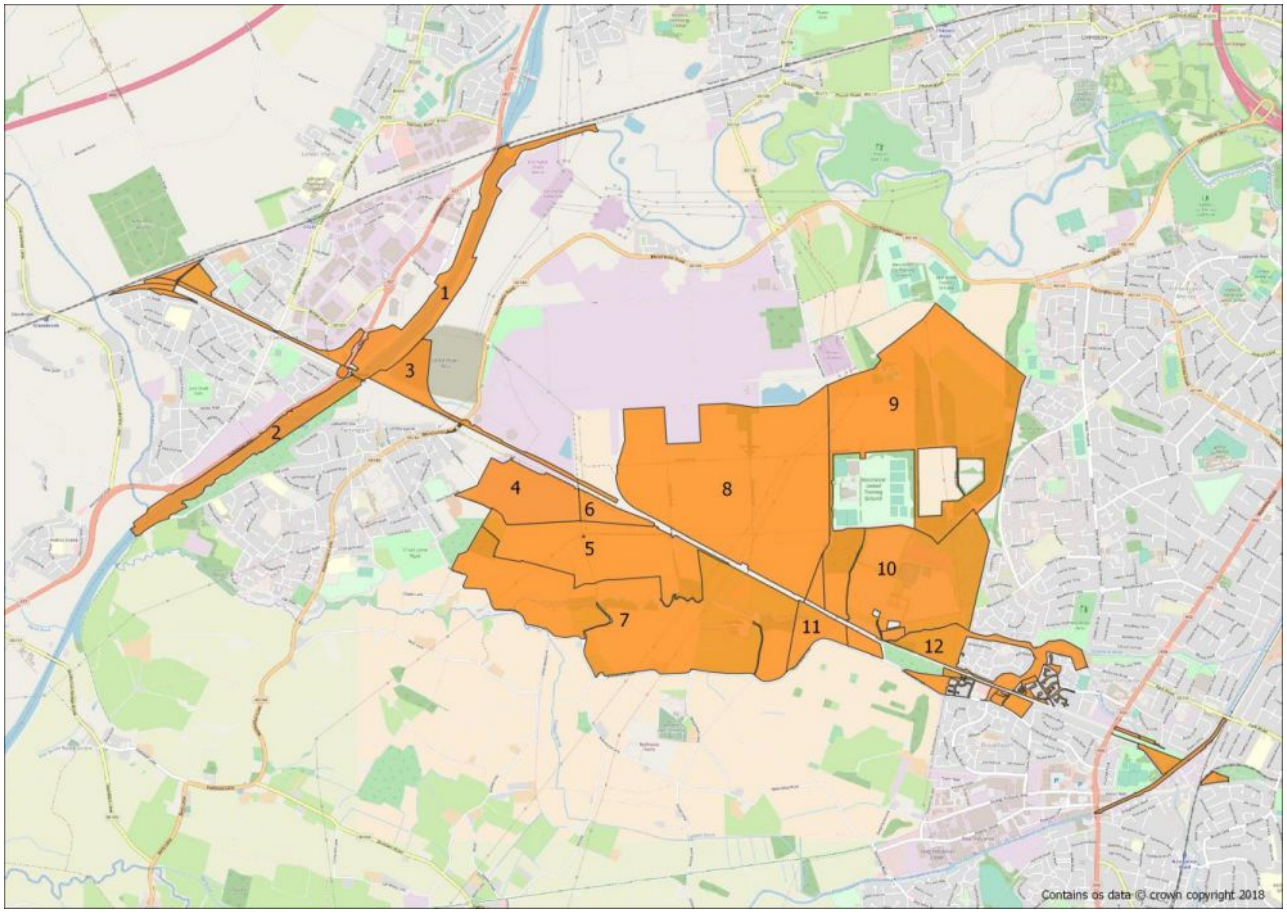

Figure 2-16 Major Land Ownership Plots

The owners of the large plots of land round the route are shown in Table 2-8 below.

Table 2-8 Major Land Owners

Map Ref.	Owner
1,2	The Manchester Ship Canal Company Limited
3	Peel Environmental Limited
4,6	National Grid Twenty Eight Limited
5,8-9,11	Himor (Carrington) Limited
7,12	The National Trust for places of Historic Interest or Natural Beauty
10	United Utilities Water Limited

In order for the potential Greenway route to be adopted, land negotiation discussions would be required between TfGM and major land owners. There is potential that some of the land surrounding the potential Greenway route may be subject to a Compulsory Purchase Order (CPO) if land negotiations were unsuccessful. It is therefore

recommended that TfGM begin land ownership negotiations with existing major landowners to understand any issues which may exist around land ownership.

2.9 Accessibility Mapping

Route accessibility mapping has been completed using TRACC for the area around the route, comparing accessibility differences for the existing situation with the envisaged scheme scenario. TRACC is a multi-modal transport accessibility tool that can quickly and accurately calculate travel time based upon transport mode and distance. A number of outputs are shown below along with a brief description and the differences between the scenarios.

Figure 2-17 shows the walking distances achievable at 5-minute intervals up to 30 minutes from the potential route for both with and without the scheme, based upon a walking speed of 4.8km/h which is considered the default speed by the DfT

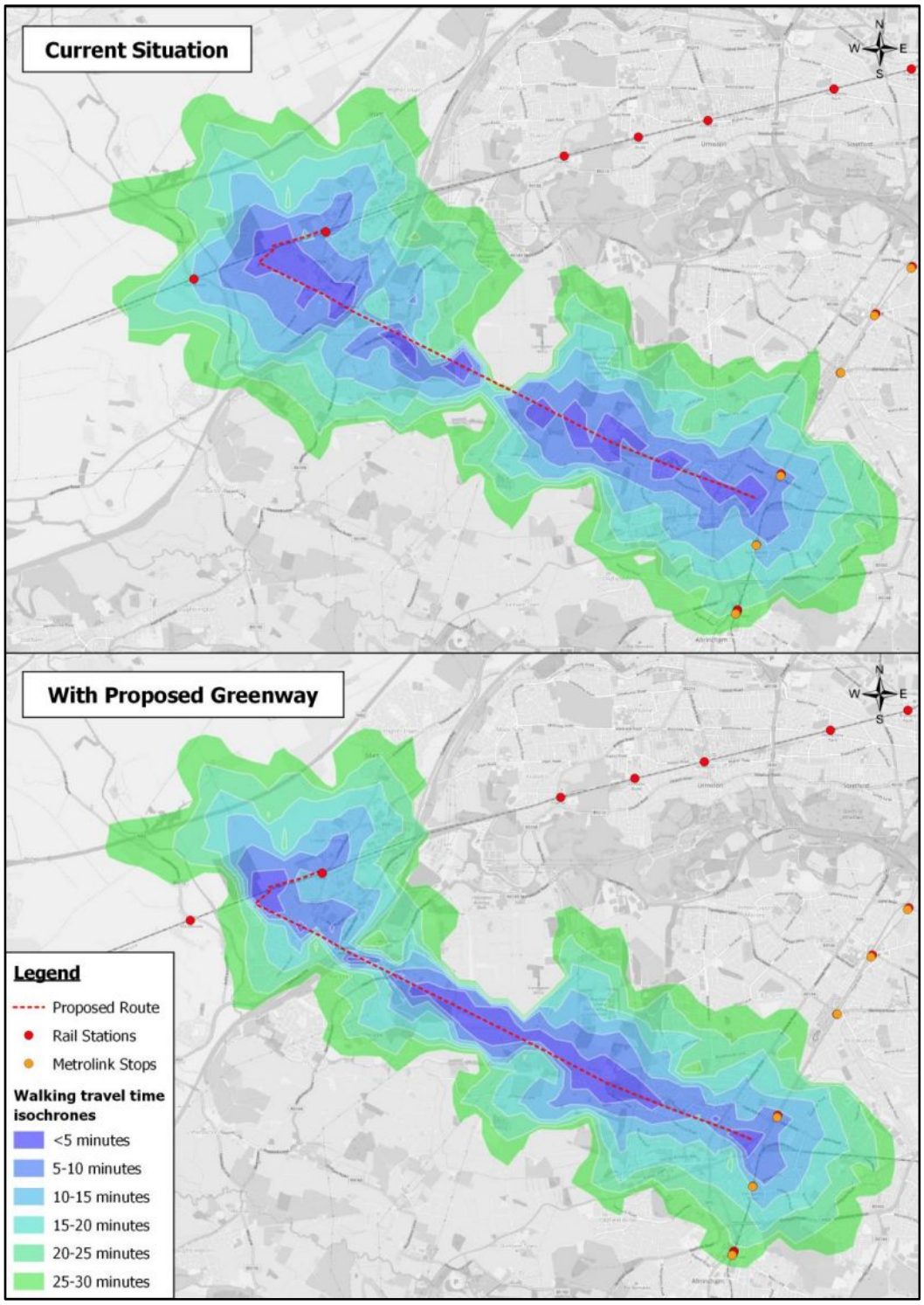

Figure 2-17 Walking Distances from Potential Route

As shown in Figure 2-17, further distances can be travelled in a shorter time with the potential route in place. As outlined in Section 2.3.1, GMSF sites are proposed along the full extent of the route with a significant amount of development proposed at the centre of the potential Greenway route. The outputs from TRACC show that accessibility at the centre of the route increases significantly with the Greenway route in place, through relatively short journey times of a 0-10 minute walk. The route would therefore assist in improving connectivity to proposed new development from local areas. The outputs from TRACC also show that with the potential Greenway route in place, the extent of the areas accessible through a 5 minute walk increases along the full extent of the route and therefore improves accessibility for the local population.

This analysis has also been completed for cycling using TRACC based upon a cycling speed of 16km/h, which is considered the default speed by the DfT.

The outputs of TRACC for cycling distances associated with the potential Greenway scheme are shown in Figure 2-18.

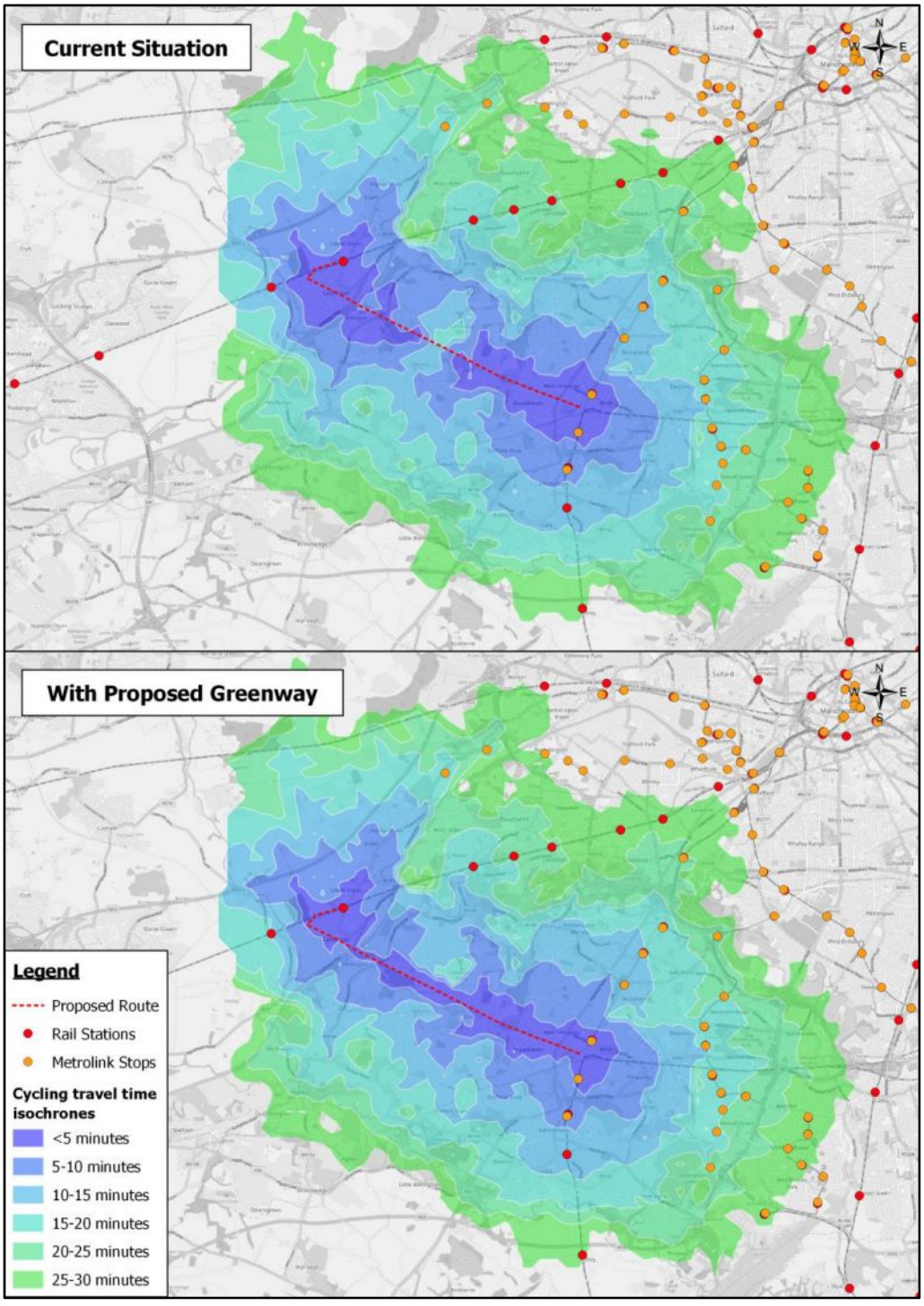

Figure 2-18 Cycling Distances from Potential Route

Figure 2-18 shows that further distances can be travelled by cycle within a shorter timeframe with the potential Greenway route in place. Similar to the walking scenario in Figure 2-17, areas to the centre and north of the route

have improved accessibility and the areas which can be accessed within a short cycling travel time of less than 10 minutes increases with the potential Greenway route in place.

2.10 Design guidance and Best Practice

2.10.1 Global Street Design Guide (NACTO)

In 2018, Greater Manchester adopted the ational Association of City Transportation Officials' ACTO lobal Street Design Guide, the first city in the UK to do so outside of London. The Guide is internationally-renowned to help make streets safer, attractive and more economically vibrant and provides a global standard for safe and sustainable urban streets.

The Guide designs streets that puts pedestrians first, followed by cyclists and public transport users, people doing business and last people in vehicles. The Guide recommends a shift in how streets are approached, with the focus on designing streets for people and creating places, rather than highway investment.

There are two sections that specifically design for pedestrians and cyclists, although the guide focuses on streets rather than Greenway type. Table 2-9 below summaries the key information from these sections relevant to this study. The full guidance can be read in full online: https://globaldesigningcities.org/publication/global-street-design-guide/.

Table 2-9 NACTO Summary

Chapter	Content
Designing for Pedestrians	• Pedestrians need continuous and unobstructed moving paths, well-lit spaces, inviting building edges, shaded places to rest and walk, and wayfinding signs for a safe and comfortable street experience. • All streets should be universally accessible. • Pedestrians cover less ground in the same amount of time and experience the street the most intensely. • People are more likely to walk from one destination to another if the experience is convenient, comfortable, and enjoyable. • Spaces must be safe for all users at different times of the day. They should be well-lit, provide accessible slopes and gradients and be free of obstructions. • Illustrate walking and cycling times and distances in wayfinding signs and maps. Systems should encourage walking and transit usage by providing multimodal information. • Safe and frequent pedestrian crossings support a walkable environment. Pedestrian crossing design has the potential to shape pedestrian behaviour, while guiding people toward the safest possible route
Designing for Cyclists	• Cycle lanes should allow for social and conversational riding for everyday use as well as long commutes. • Routes should be continuous.

Chapter	Content
	• Cities should design and implement cycle facilities that provide safe routes for cycling for all ages and abilities. Facilities should be well maintained and kept clear of debris and obstacles. • Evidence shows that where comprehensive cycle facilities are extensively installed throughout the entire street network, the modal share of cyclists dramatically increases. • Consider cycle share at key destinations e.g. train stations.

In light of the above guidance, it is recommended that the Greenway should have a width of at least 3 m, and preferably 4 m where feasibility allows. The route should be as safe as possible at all times of day through appropriate lighting, safe and frequent crossings, and good maintenance to ensure that the route is free of obstructions.

2.10.2 Made to Move

The Made to Move report (2017) provides 15 steps to transform Greater Manchester by changing the way residents get around.

The Goal is:

To double and then double again cycling in greater Manchester and make walking the natural choice for as many short trips as possible. We must try to do this by putting people first, creating world class streets for walking, building one of the orld's best cycle net or s, and create a genuine culture of cycling and al ing.

To deliver the vision, a network of walking and cycling routes is needed in Manchester providing continuous and safe routes across junctions and main roads, as well as segregated and off-road routes. A high-quality network will encourage an uptake in cycling and walking for short trips. This will have benefits for health, congestion and the environment. The focus is to increase uptake of cycling for those who currently use their car. The potential route would connect Timperley with Cadishead, Irlam and Partington via a direct 8.6kmkm cycle route. This would improve sustainable connections to local services and centres and offer a quicker journey time than travelling via car and therefore improve the attractiveness of sustainable travel modes.

The potential route would provide a high-quality walking and cycleway that is mostly off-road and is a high standard when at touchpoints with the road network. Investing in this route would help to achieve the Made to Move goal as it would contribute towards creating a network of routes in Manchester and that is attractive for users due to its world class design. These qualities mean that it is more likely to attract users to walk and cycle, contributing towards delivering this vision.

2.11 Summary

This section has investigated the existing conditions within the proximity of the potential Greenway route and has completed an initial analysis of the potential benefits of the Greenway, from a transport and planning perspective.

This has shown that there is significant development proposed around the route in the form of planning applications and GMSF housing and development site allocations. These developments would benefit from improved walking and cycling facilities, in addition to the walking and cycling benefits the potential Greenway route would bring to existing residents and businesses. The route is referenced in GMSF housing allocations for both GMA45 (Carrington) and GMA32 (North of Irlam Station) for a walking and cycling route, and it is also suggested as a bus/public transport corridor. As such, the feasibility of the route requires investigation alongside the ongoing development on the GMSF.

It is recognised that there are uncertainties towards potential land ownership issues on those areas of land which would form part of the potential Greenway route. As such, it is recommended that land negotiation discussions need to be initiated by TfGM and stakeholders to understand the extent of any potential land ownership issues.

Improved walking and cycling facilities would assist in enabling a modal shift to sustainable modes and could improve the likelihood of people choosing to interchange from public transport to sustainable modes as a result of the link of the potential Greenway route with Irlam Station and Timperley Metrolink. This would have a positive impact on health and potentially improve AQMAs, and contribute to the aims of the Greater Manchester Clean Air Plan as a result of reduced car trips undertaken. The route would improve the existing network of PRoWs and cycle network within the area and contribute towards the ongoing plans for a Bee Network.

3. Land Quality

3.1 Introduction and Study Area

A high level commentary on land contamination at the proposed Cheshire Greenways route between Timperley and Irlam has been completed following a review of the sources of information listed below.

It is recommended that future stages of work revisit these and additional sources, to provide further in-depth reviews and assessment in accordance with best practice guidance.

The sources of information used herein include the following:

- British Geological Survey, 2018. Geology of Britain Viewer [online];
- Department for Environment, Food & Rural Affairs (Defra) (2017), Multi-Agency Geographic Information for the Countryside (MAGIC) website [online]; and
- Landmark Information Group Ltd, 2018. Envirocheck Report: Site at Timperley, Trafford, Report 188854466_1_1.

3.2 Geology

No made ground is identified on BGS online mapping across the proposed scheme area. It is however considered likely that such materials will be present through the route associated with former railway use of the site. Historical railway earthworks could be present and formed with unknown materials derived from local industries. Made Ground could be contaminated from previous land-uses or nearby industries.

Online mapping (BGS, 2018) shows the study area to be underlain by alternating deposits of till (diamicton), sand and gravels and peat.

Online mapping (BGS, 2018) shows the study area to be by the following bedrock geology:

- Wilmslow Sandstone Formation – Sandstone; and
- Helsby Sandstone Formation - Sandstone, Pebbly (gravelly).

3.3 Hydrology & Hydrogeology

The Manchester Ship Canal is the main surface water feature in the study area and is the canalised former channel of the River Mersey. The Bridgwater Canal forms the south eastern extent of the scheme.

Sinderland Brook flows approximately east to -west across the study area, crossing the route where it passes adjacent to Sinderland Road. The brook enters the Manchester Ship Canal approximately 2km downstream of the study area.

The superficial geological strata underlying the site are designated by the Environment Agency (EA) as Secondary A Aquifers (sands, sand and gravels) and unproductive strata (till). The bedrock underlying the site is designated by the EA as Principal Aquifer. There is potential for groundwater abstractions from these aquifers within the study area.

3.4 Land Contamination

A high-level review of historical land-uses in the vicinity of the scheme has identified the following potential sources of contamination:

- The whole route was previously the Cheshire Lines Railway (1881 to 1980s) including associated sidings, stations and chemical works sidings;

- Gasworks – adjacent to north & south of the proposed route from 1954 (Partington);
- Carrington chemical works to the north from 1954, expanding considerably over subsequent decades with associated railhead;
- Former clay pit shown from late 1800s, possible landfill waste filled site adjacent (Sinderland Lane);
- Altrincham Wastewater Treatment Works adjacent to north from late 1960s;
- Irlam steel and iron works and associated industry; and
- Multiple engineering works, potentially railway associated.

These specific land-uses and more general development in the area could have resulted in a broad variety of potential organic and inorganic contaminants being present, which may include; heavy metals, hydrocarbons, fuel oils, ash, clinker and asbestos. Whilst the site is not within the curtilage of the Carrington chemical works, use of the former railway for raw material or produced chemicals transport could potentially have led to the presence of chemical residues within the former track bed if any accidental spillages occurred.

Further more detailed assessment and Conceptual Site Model development will be required to ascertain the likely risk to receptors from these possible contaminants.

3.5 Proposed Scope of Assessment

Risks from land contamination should be assessed in accordance to the 'Model Procedures for the Management of and Contamination' C , EA & Defra 2004).

A Preliminary Risk Assessment (PRA) incorporating a Conceptual Site Model will be required to identify sources and receptors for ground contamination and transmission pathways by which receptors could be exposed to contaminants. A PRA also provides a detailed assessment of the environmental setting of the site pertinent to land contamination.

Given the historical land use of the site and surrounding area, some form of ground investigation is likely to be required. This would comprise the formation of exploratory holes, most likely targeted to areas of interest, that would establish ground conditions and enable soil sampling and subsequent laboratory analysis to be undertaken.

Once ground investigation data are available, appropriate risk assessments for environmental receptors including human health and controlled waters would be undertaken to assess whether relevant pollutant linkages exist on site. Assessments are likely to comprise the following:

- human health risk assessment via comparison with relevant published generic assessment criteria;
- controlled waters risk assessment considering risks to surface water and groundwater, using relevant published generic assessment criteria;
- detailed risk assessments for human health or controlled waters, if generic assessments indicate a potential risk;
- assessment of the suitability for reuse of site won materials within the scheme (to support the preparation of a Materials Management Plan (Contaminated Land: Applications in Real Environments, 2011));
- assessment of the waste classification of excavated materials should they require disposal off site following ' uidance on the Classification and Assessment of aste' nvironment Agency, ; and
- if relevant pollutant linkages are identified, appropriate mitigation measures to address the identified risks to receptors would need to be developed.

3.6 Summary

At this stage it would not be appropriate to discuss potential outcomes in respect of land contamination in advance of conceptual site model development, ground investigation and assessment. However, in broad terms the following can be concluded:

- If soil within the study site, most likely within the former track bed, is found to have potentially harmful level of contaminants, then these materials may need to be removed and replaced with suitable material, and suitable working practices developed for construction;
- Removal of former track bed material in this manner will incur associated material excavation, replacement and disposal costs. If material is hazardous, this will be higher costs in terms of landfill tax/ disposal and may have limited sites willing to accept it;
- An alternative to disposal might be to incorporate appropriate design measures so that materials were not disturbed during construction and were effectively immobilised/ prevented from reaching receptors;
- If unexpected contamination is found during construction this will lead to unforeseen costs associated with time delay and material removal; and
- Land quality is a material consideration within the planning process and requirements in this respect should be anticipated.

3.7 References

British Geological Survey (2018). *Geology of Britain Viewer.* [Online]. Accessed 20/12/18 via: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Environment Agency & Defra. Model Procedures for the Management of Land Contamination.

Defra (2018), Multi-Agency Geographic Information for the Countryside (MAGIC) website;

Landmark Information Group Ltd, 2018. Envirocheck Report: Site at Timperley, Trafford Report 188854466_1_1.

4. Ecology

4.1 Introduction

Jacobs UK Ltd (Jacobs) was commissioned by Transport for Greater Manchester (TFGM) to provide ecological services to inform the proposed Cheshire Lines Greenway Scheme (hereafter referred to as the ' cheme'). The purpose of the survey was to fulfil the Client's cope of ervices to allow an '*understanding of ecological issues along the corridor and identification of opportunities to provide for wildlife migration and species interchange, nature study and hi ing'*.

Jacobs therefore carried out high-level desk and field-based study to establish an ecological baseline for the Scheme. This included an ecological walkover survey to record broad habitat types and to identify the presence or likelihood of occurrence of legally protected flora and fauna that may pose constraints to the Scheme. This exercise also included the identification of opportunities to enhance the ecological value of the Scheme corridor and make recommendations for further survey and/or assessment to support further development of the Scheme proposals beyond the feasibility stage.

4.2 Methodology

4.2.1 Desk Study

A desk study exercise was undertaken in December 2018 to identify any statutory and/or non-statutory designated sites of nature conservation interest within 2km and 1km of the Scheme, respectively, hereinafter referred to as the 'study area'. ecords of the presence of legally protected or notable species or habitats were identified within 1km. The findings of the desk study are summarised in section 7.3.1.

Protected species include those afforded legal protection under the Wildlife and Countryside Act (WCA) (1981) (as amended), the Protection of Badgers Act 1992 and the Conservation of Habitats and Species Regulations 2017. Notable species include those listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006) and red or amber listed Bird Species of Conservation Concern. Records of species and habitats included in the Cheshire and Greater Manchester Local iodiversity Action Plans AP's were also sought.

Impact Risk Zones (IRZs) are a tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the specific sensitivities of the sites and set criteria for development proposals which could have adverse impacts on them atural ngland, . s in within km of the cheme were identified using D A's MA C application.

The following consultees and web-based resources were used:

- The Multi-Agency Geographical Information for the Countryside website (www.magic.gov.uk);
- Aerial mapping (Google Earth);
- Cheshire rECOrd (Biodiversity Information Centre for Cheshire, Halton, Warrington and Wirral); and,
- Greater Manchester Local Records Centre (GMLRC) Ecology Unit (GMEU).

Please note that although the data provided by the consultees and web-based search is the most complete set of species data available, the absence of records should not be taken as an indication of absence of species.

4.2.2 Ecological Walkover Methodology

An ecological walkover survey of the habitats adjacent to the disused railway line between Irlam (OS Grid Reference SJ706929) and Timperley (OS Grid Reference SJ772894) was undertaken by Jacobs' ecologists on

the 5th and 6th of December 2018. The extent of the surveyed area is shown in Figures 1.1 – 1.14 in 0 of this report.

The site was surveyed on foot from the disused railway line (i.e. the Scheme). No landowner access was available to allow walkover of adjacent habitats; these were viewed from the disused railway line itself, using binoculars as appropriate. Identification and verification of these habitats was also undertaken with the assistance of aerial imagery. Using this approach, all habitats within m of the cheme hereinafter referred to as the 'survey area' were mapped according to the Handbook of Phase 1 Survey (JNCC, 2010). Specific points of interest were identified and recorded as numbered Target Notes (TNs), as shown in 0 Each Target Note is described in full in Appendix C. As part of the survey; habitats with the potential to support protected species were identified, including (but not limited to): badgers; bats; water vole; breeding birds; wintering birds; reptiles; and great crested newts (*Triturus cristatus*). Areas with opportunities for ecological enhancement were also noted.

4.2.3 Limitations

It should be noted that the field survey was undertaken outside the optimum survey window for botanical surveys (mid-March to late October) and therefore some plant species may not have been visible at this time of year. However, given that the Scheme is at feasibility stage, the data collected still allows for a high-level baseline description of the habitats present and identification of potential constraints and/or opportunities. This was not therefore considered a limitation to the survey methodology.

Due to the constraints of undertaking the survey on foot with access only to the disused railway line, habitats beyond this were observed from the railway line only and viewed with binoculars where possible. Although a fully comprehensive Phase 1 Habitat survey could not be undertaken in these areas, for the purposes of this report this is not considered a limitation as broad habitat types were identified and mapped. Using this approach, it was not possible to record evidence of protected species. However, this survey did identify habitats with the potential to support protected species and a precautionary approach has been taken in respect to recommendations for further surveys at subsequent stages of the assessment.

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document.

4.3 Results

4.3.1 Desk Study

a) International Statutory Designated Sites

One internationally designated site was identified within 2km of the Scheme; **Manchester Mosses Special Area of Conservation (SAC).** The location of the site can be viewed in Figure 2 0. The site is composed of three mossland areas on the Mersey flood plain, one of which falls within the 2km study area – Holcroft Moss Site of Special Scientific Interest (SSSI). Holcroft Moss SSSI is the closest of these SAC areas to the Scheme. It is located approximately 1.7km north-east of Irlam. These areas are comprised predominantly of bog with a small proportion of broad-leaved deciduous woodland. Whilst past drainage has produced dominant purple moor-grass (*Molinia caerulea*), bracken (*Pteridium aquilinum*) and birch (*Betula* spp.) scrub or woodland, wetter pockets have enabled peat-forming species to survive. Although degraded, Holcroft Moss, alongside the other Manchester mosses, is designated as part of an SAC due to their capability to naturally regenerate peat bog habitats.

b) Nationally Designated Sites

Two Sites of Special Scientific Interest (SSSI) were identified within the 2km study area: **Brookheys Covert SSSI; and Holcroft Moss SSSI.** The location of these sites can be viewed in Figure 3 0.

Brookheys Covert SSSI is located 280m south of the disused railway near Brookheys Farm. The site is predominantly well-established woodland comprising pedunculate oak (*Quercus robur*) hazel (*Corylus avellana*)

and ash (*Fraxinus excelsior*), with a large number of small pools. This habitat is uncommon within Greater Manchester and is one of the most diverse in the county.

Holcroft Moss SSSI occupies several small depressions in the Upper Terrace of the Mersey Valley and is an isolated remnant of the once extensive area of mossland formerly associated with this valley. It is the only known unexploited area of raised peat bog remaining in Cheshire and boasts diverse vegetation including five species of bog moss including *Sphagnum papillosum* and *S. tenellum*. The SSSI and SAC share the same boundaries.

Impact Risk Zones (IRZs) are a tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the specific sensitivities of the sites and set criteria for development proposals which could have adverse impacts on them (Natural England, 2018).

Creation of a green way does not currently trigger any of the criteria for the SSSIs associated with the Impact Risk Zones.

c) Non-Statutory Designated sites

Ten Local Wildlife Sites (LWSs – formally known as Sites of Biological Importance) were identified up to 1km from the Scheme. These sites can be viewed in Figure 4 in 0. There are three ' directly adjacent to the cheme as follows: Malljurs Covert; Partington Nature Reserve; and the Wetland near Balfour Road. In addition, the Bridgewater Canal LWS crosses underneath the Scheme. A summary of the ecological features of these sites is provided in alphabetical order in Table 4-1 Summary of Ecological Features for Local Wildlife Sitesbelow.

Table 4-1 Summary of Ecological Features for Local Wildlife Sites

LWS Name and Grid Reference	Distance/Direction from the Scheme	Summary of Ecological Features
Altrincham Sewage Works (SJ573909)	Approximately 300m north of the disused railway adjacent to the sewage works.	A series of sludge lagoons primarily designated for its potential to support breeding birds, particularly wetland species.
Birchmoss Covert (SJ749909)	Approximately 300m north of the disused railway, west of the sewage works.	Semi-natural broadleaved woodland on remnant peat moss which supports a diverse community of plants, invertebrates and woodland birds. Parts of the woodland has been cleared to support a water vole mitigation strategy for an adjacent development.
Bridgewater Canal (SJ772894)	The canal crosses beneath the proposed greenway between Broadheath and Timperley.	Canals are a Greater Manchester Biodiversity Action Plan (GMBAP) habitat and the site supports a population of nationally important moss (*Tortula freibergii*) alongside a diverse range of emergent and submerged plant species. Banksides are comprised of grassland and tall herb with occasional stretches of scrub and developing woodland which provide habitat for wildlife.
Broadoak Wood (SJ725909)	Situated approximately 350m south of the disused railway, east of Partington.	The woodland is dominated by birch (*Betula* sp.), characteristic of its acid peat soil on mossland and supports a diverse ground

		flora. There is also a pond present within the site. Ponds and woodland are Cheshire Biodiversity Action Plan (CBAP) and GMBAP habitats, and are also Habitats of Principal Importance.
Brookheys Covert (SJ742903)	Located 280m south of the disused railway near Brookheys Farm.	This area of woodland has been identified in the Ancient Woodland Inventory . The canopy is dominated by pedunculate oak (*Quercus robur*) with silver birch (*Betula pendula*), sycamore (*Acer pseudoplanatus*) and ash (*Fraxinus excelsior*). The ground flora is diverse. There are a number of ponds with diverse aquatic and marginal vegetation which support invertebrates and amphibians. The site supports an array of breeding bird species including several Species of Principal Importance. The site is also a SSSI, as previously mentioned. Brookheys Covert SSSI shares the same boundaries as the LWS.
Hogswood Covert (SJ745903)	Approximately 150m south of the Scheme, near Brookheys Farm.	The site is comprised of lowland broadleaved and wet woodland. Wet woodland is a CBAP and GMBAP habitat. The woodland has been identified in the Ancient Woodland Inventory and contains a series of small ponds.
Malljurs Covert (SJ753902)	Directly adjacent to the disused railway, south of Altrincham Sewage Works LWS.	A small broadleaved woodland with associated ponds which is one of a series of woodland pockets along Sinderland/Red Brook. The woodland is wet in areas and support a diverse ground flora. The site has the potential to support water vole (*Arvicola amphibius*), which have been recorded on the adjacent Sinderland Brook, due to the presence of drainage ditches.
Partington Nature Reserve (SJ720919)	Directly adjacent to the disused railway, north of Partington.	The site is comprised of a mosaic of habitats including immature woodland, scrub, neutral grassland, open water and scrub. The woodland is dominated by birch and willow (*Salix* sp.). Ponds and ditches within the site contain diverse aquatic and marginal vegetation. The site supports an array of breeding bird species including several Species of Principal Importance.
Sinderland Green Wood (SJ733905)	Approximately 600m south of the disused railway, west of Brookheys Farm.	The site is comprised of broadleaved woodland with Sinderland Brook forming the north boundary. The site has a diverse ground flora, including some ancient woodland indicator species. An open area of

		grassland habitat and a pond are also present.
Wetland near Balfour Road (SJ771894)	Adjacent to the disused railway and Bridgewater Canal near Broadheath.	The site is an urban wetland site created in the 1980s as a flood defence. The site supports a pond, marsh and wet woodland which are CBAP and GMBAP habitats. The site provides habitat for birds, particularly wetland birds, and importantly provides a mix of aquatic and good terrestrial habitat for amphibians.

d) Protected and Notable Species

Records for protected and notable species were requested from local ecological record centres up to 1km from the Scheme. The results of this data search are summarised below in Table 4-2. Relevant legislative protection offered for the species listed below can be found in Appendix D.

Table 4-2 Summary of Protected and Notable Species Desk Study Records

Species/Taxon Group	Summary of Desk Study Records
Badger (*Meles meles*)	Two records of badger setts and two records of badger field signs were identified within 1km. The closest of these records was approximately 230m away from the proposed greenway near Partington. For the purposes of this report, exact locations of badger setts and field signs remain undisclosed. Badgers are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Protection of Badgers Act 1992.
Bats	Thirty-two field records were returned for bats. Two records of bat roosts were identified. Species included common pipistrelle (Pipistrellus pipistrellus), soprano pipstrelle (*Pipstrellus pygmaeus*), noctule (*Nyctalus noctula*) and brown long-eared bat (*Plecotus auritus*). These records were concentrated around Brookheys Covert, the wetlands near Balfour Road and Woodheys Park. The closest was for a common pipistrelle roost in woodland on the dissed railway line. The second was a pipistrelle (*Pipistrellus* sp.) roost located approximately 500m north of the proposed greenway, to the east of Altrincham Sewage Works. All UK bat species are protected under Schedule 5 of the WCA and are all European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017. All species are also listed as are CBAP and GMBAP species. A European Protected Species Licence was granted for common pipistrelle in 2011 near Irlam station (approximately 300m from the Scheme).
Birds	One hundred and eighteen bird species were recorded within 1km of the study area, including several species of conservation concern. These included species of Red UK conservation status such as; common cuckoo (*Cuculus canorus*), grasshopper warbler (*Locustella naevia*), linnet (*Carduelis cannabina*) (CBAP), starling (*Sturnus vulgaris*) (CBAP), yellowhammer (*Emberiza citrinella*) (CBAP) and corn bunting (*Emberiza calandra*) (CBAP). One record of black redstart (*Phoenicurus ochruros*), a Schedule 1, UK red-listed and GMBAP species, was identified at

	Altrincham Sewage works LWS. Bittern (*Botaurus stellaris*), another Schedule 1, UK red-listed and GMBAP species, was recorded north of the Scheme in Carrington.
European Otter (*Lutra lutra*) and Water Vole (*Arvicola amphibius*)	One record of otter was identified approximately 0.7km south west of the disused railway line on the Manchester Ship Canal. Three records of water vole were identified, two of which were on drainage ditches approximately 400m north of the Scheme near Moss Road, Cadishead. The third was approximately 300m north of the scheme on Sinderland Brook, west of Woodheys Park. Otter are protected under Schedule 5 of the WCA and are also a EPS and CBAP species. Water vole are protected under Schedule 5 of the WCA and are also a GMBAP and CBAP species.
Great Crested Newt (*Triturus cristatus*) and Other Amphibians	Great crested newt (GCN) is a CBAP and GMBAP species. Two records of GCN were identified within the study area. The closest of which was approximately 180m south of the disused railway, near Partington Nature Reserve. Other species identified included common toad (*Bufo bufo*), common from (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*). Of these 115 amphibian records, most were concentrated around an industrial site east of the Manchester Ship Canal, less than 100m north of the disused railway. Records were also returned from Hogswood Covert LWS and the wetland near Balfour Road LWS. Several records of common toad were identified at Holcroft Moss SSSI, however this is outside the 1km desk study area. GCN are protected under Schedule 5 of the WCA, are an EPS, and are a GMBAP and CBAP species. Common toad are a NERC Act (2006) S41 species.
Reptiles	Four records of slow-worm (*Anguis fragilis*) were identified within the study area. The closest of which was 70m north of the disused railway, west of the wetland near Balfour Road LWS. Several records of common lizard (*Zootoca vivipara*) were identified at Holcroft Moss SSSI, however this was located outside of the 1km desk study area. Slow-worm are a NERC Act (2006) S41 species and are also a CBAP species. Common lizard are a NERC Act (2006).
NERC Act (2006) S41 Species	Other notable species found within the desk study area were European brown hare (*Lepus europaeus*), hedgehog (*Erinaceus europaeus*), cinnabar moth (*Tyria jacobaeae*) and small heath butterfly (*Coenonympha pamphilus*).
Non-native Invasive Species	Records of Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*) were identified within the 1km desk study area. Non-native invasive species are listed under Schedule 9 of the WCA which prohibits their intentional spread in the wild.

4.3.2 Field Survey

a) General Site Description

The Scheme runs between Irlam station (OS Grid Reference SJ706929) and West Timperley (OS Grid Reference SJ772894) and passes through a suburb of Cadishead and town of Partington. The area predominantly consists of semi-natural broadleaved woodland and stretches of dense scrub but is bordered by large areas of suburban residential developments and agricultural land used for arable crops or livestock. The central portion of the Scheme runs through a large expanse of agricultural land between Partington and West Timperley. The disused railway itself is still *in situ* in some areas with tracks, sleepers and ballast still present.

b) Habitats

The dominant habitat types during the field visit were semi-natural broadleaved woodland and scrub which bordered the disused railway line encountered throughout the survey area. Habitat maps and associated target notes can be found in 0 and Appendix C.

Broad habitat types within the survey area listed in order of decreasing spatial proportions below;

- **Semi-natural broadleaved woodland** – variable throughout the survey area but generally dominated by willow (*Salix* sp.) and birch (*Betula* sp.), large areas of wet woodland present;
- **Scrub** – bramble (*Rubus fruticosus* agg.) predominated throughout;
- **Bracken** – large expanses of bracken (*Pteridium aquilinum*) dominated particularly around Partington Nature Reserve LWS;
- **Neutral semi-improved grassland** – a large expanse near Broadheath, species included a mix of neutral and wet species such as hard rush (*Juncus inflexus*), cocksfoot (*Dactylus glomerata*), common reed (*Phragmites australis*) and reed canary grass (*Phalaris arundinacea*);
- **Arable land** – tree nurseries are localised in the north of the survey area and stretches of arable field border the disused railway line between Partington and Broadheath;
- **Improved grassland** – bordering the disused railway to the south, several fields used for horse grazing were present;
- **Poor semi-improved grassland** – rare in the field survey area, restricted to two fields alongside the disused railway;
- **Standing water** – two ponds were identified in the field 50msurvey area, one in the Wetland near Balfour Road LWS and one near Turnbull Road, Broadheath.
- **Amenity grassland** – playing fields and parks present sporadically;
- **Bare ground** – mainly in areas used for recreation activities such as biking;
- **Running water** – Sinderland Brook bisects the Scheme, flowing through areas of semi-natural broadleaved woodland and scrub;
- **Tall ruderal vegetation** – restricted to small areas along the disused railway, one large area in the Wetlands near Balfour Road LWS. Species included great willowherb (*Epilobium hirsutum*) and common nettle (*Urtica dioica*);

- **Scattered trees –** rare within the survey area, concentrated in urban areas;
- **Species-poor hedge –** present in agricultural and residential areas, generally beech (*Fagus* sp.) or hawthorn (*Crataegus monogyna*) dominated; and,
- **Short ephemeral –** a small strip of colonising vegetation along the disused railway where ballast is still dominant.

c) Protected and Notable Species

The findings of this survey are summarised below. Further detail can be found in the habitat maps and Target Notes in Appendices B and C.

i. Badger

Semi-natural broadleaved woodland and dense continuous scrub provide suitable badger habitat throughout the survey area. In particular, the steep embankments of the disused railway between Partington and Manchester Road provide good opportunities for sett digging in well drained soils. From aerial imagery, the wider landscape in the central portion of the Scheme is comprised of agricultural land, with areas of woodland which have potential to support badgers.

ii. Great Crested Newts and Other Amphibians

Suitable habitat for great crested newts (GCN) and other amphibians was identified in two particular locations within the 50m field survey area: Wetland near Balfour Road LWS and an expanse of wet woodland between Partington and Brookheys Farm. Two ponds were identified during the field survey with two further ponds located near Irlam station identified through aerial imagery which could not be accessed at the time of survey. Further ponds not shown on aerial imagery may be present within 50m of the Scheme but could not be identified due to the access constraints of the survey. The ponds identified during the field survey may provide suitable breeding habitat for amphibians. Suitable terrestrial habitats were identified on, and adjacent to, the disused railway line and are widespread throughout the survey area. These habitats include broadleaved woodland, dense scrub and semi-improved grassland (TNs 20, 33, 34, 41 and 42).

iii. Bats

There are numerous habitats within the survey area which offer foraging opportunities for bats, especially due to the linear nature of the Scheme. Habitats suitable for foraging bats include broadleaved woodland, scrub, watercourses and ponds, which are widespread throughout the survey area (TNs 5-7, 11, 18, 24, 25, 28, 29, 33, 34, 36 and 42) As much of the woodland along the route was relatively immature, very few trees were noted to support features which could provide potential habitat for roosting bats. Only three trees with potential roosting features for roosting bats were identified along the disused railway line. They were located near the Wetland near Balfour Road LWS (TNs 4, 35 and 39). Furthermore, each of the nine rail structures and bridges accessible for survey appeared to be generally well maintained and offered no significant potential for roosting bats (TNs 10, 15, 21, 22, 23, 26, 31, 32 and 38). Residential or industrial buildings adjacent to the route may provide suitable roosting habitat for bats.

iv. Breeding and Wintering Birds

The areas of broadleaved woodland, hedges, dense and scattered scrub and scattered trees in the 50m field survey area provide suitable nesting habitat for numerous species of birds. Species including robin (*Erithacus rubecula*), blackbird (*Turdus merula*), magpie (*Pica pica*), jay (*Garrulus glandarius*), sparrowhawk (*Accipiter nisus*) and wood pigeon (*Columba palumbus*) were observed during the field survey. Although the survey was not undertaken during the breeding season, evidence of numerous nests from previous seasons were noted. Habitats suitable for wintering birds were also widespread within the 50m field survey area. Suitable habitats include farmland, grasslands and waterbodies (TNs

30, 33, 34, 41 and 21). Habitats suitable for bittern, Schedule 1, UK red-listed and GMBAP species, were identified within the survey area. This species requires wetland habitats such as those found around the ponds to the south of the Scheme (TNs 34, 41 and 42). Similarly, habitats suitable for black redstart were identified using aerial imagery in close proximity to the Scheme such as Altrincham Sewage Works LWS and the industrial estates near Manchester Ship Canal and Carrington.

v. Barn Owl

Only one area of suitable foraging habitat for barn owl (*Tyto* alba) was identified within the field survey area – neutral semi-improved grassland adjacent to the Scheme, east of Altrincham Sewage Works LWS (TN 33). There were no trees or buildings identified within the survey area with potential for roosting or nesting barn owls. The vast majority of trees were not considered to be sufficiently mature, and most buildings are associated with residential housing developments. In the wider landscape, the network of farms south of the Scheme with surrounding grasslands, may offer more suitable habitat for barn owl.

vi. Otter and Water Vole

Habitat suitable for both otter and water vole was present within the 50m field survey area (TNs 5, 28 and 36). Sinderland Brook in particular offers suitable habitat for both species (TN 28). The watercourse provides opportunities for otter holts and couches due to its woodland bankside vegetation. The brook is also likely to support suitable prey such as fish. The banks are suitable for water vole burrowing and appropriate food plant species are present. The water is also deep enough (approximately 1m) to allow effective predator evasion for water vole. However, large stretches of the brook are highly shaded which decreases its suitability for the species.

vii. Reptiles

Dismantled railways are often utilised by reptiles due to their linear structure, embankments and ballast stone that provide good basking opportunities. The woodland, often associated with historic railways, provides refuge and hibernation opportunities. However, the site is heavily shaded throughout by semi-natural broadleaved woodland and dense scrub, making the majority of the scheme sub-optimal for reptiles due to lack of basking opportunities.

viii. White-clawed Crayfish and Other Aquatic Invertebrates

None of the watercourses or ditches accessible within the 50m field survey area were considered to provide suitable habitat for white-clawed crayfish (*Austropotamobius pallipes*). Sinderland Brook and its tributary had silty substrates with no opportunities for refugia. (TN 28). The other significant water course in the survey area adjacent to the Wetlands near Balfour Road LWS, was canalised (TN 36). The banks were reinforced with concrete and wood and appeared to offer no gaps or crevices for white-clawed crayfish. Ponds identified within the survey area may offer potential for aquatic invertebrates

ix. Terrestrial Invertebrates

There were a limited number of habitats of suitable quality identified within the field survey area with significant potential for terrestrial invertebrates. Terrestrial habitats with structural diversity such as Partington Nature Reserve, neutral semi-improved grassland with scrub and wet woodland may offer some potential (TNs 17, 33 and 20).

x. Non-native Invasive Species

Himalayan balsam was relatively widespread and locally abundant throughout the broadleaved woodland along the route, particularly in the areas of wet woodland. A large patch of Japanese knotweed was identified along the disused railway embankment adjacent to the wetlands near Balfour Road LWS.

4.4 Summary, Recommendations and Opportunities for Enhancement

4.4.1 Baseline

a) Designated Sites

One international statutory designated site (Manchester Mosses SAC), two national statutory designated sites (Holcroft Moss SSSI and Brookheys Covert SSSI) and ten non-statutory Local Wildlife Sites were identified within the desk study area. Those closest to the Scheme are Malljurs Covert LWS, Partington Nature Reserve LWS and the Wetland near Balfour Road LWS. In addition, the Bridgewater Canal LWS crosses underneath the Scheme. These sites can be viewed in Figures 2, 3 and 4 in 0.

b) Habitats

Several habitats which could qualify as UK Habitats of Principal Importance and which are listed in the Cheshire and Greater Manchester Biodiversity Action Plans were identified in the desk study and field survey areas such as broadleaved woodland, wet woodland, ponds and canals.

c) Protected and Notable Species

I. Badger

Suitable habitat for badger was identified within the field survey area in woodland and dense scrub. Four records of badger field signs were returned from the desk study; the closest of which was just over 200m from the Scheme in Partington.

II. Great Crested Newts and Other Amphibians

Suitable habitat for GCN and other amphibians was identified across the field survey area and included ponds and wet woodland. Two ponds were identified during the field survey, with two more located near Irlam station which could not be accessed at the time of survey. Two records of GCN were identified within the study area. The closest of which was approximately 180m south of the disused railway, near Partington Nature Reserve. Other species identified included common toad (*Bufo bufo*), common from (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*), records for these species were widespread.

III. Bats

Widespread habitats within the survey area offer foraging opportunities for bats, including broadleaved woodland, scrub, watercourses and ponds. Trees and structures providing roost potential were present but limited. Two roost records for common pipistrelle were identified in the desk study, one of which was directly adjacent to the Scheme. A further 32 field records of bats were identified within the desk study area.

IV. Breeding and Wintering Birds

Many of the habitats present within the survey area are suitable for breeding and wintering birds, including. broadleaved woodland, hedges, scrub, arable fields, grassland, waterbodies and scattered trees. Wetland habitats suitable for bittern, a Schedule 1, UK red-listed and GMBAP species, were identified within the survey area. Additionally, urban and brownfield habitats suitable for black redstart were identified using aerial imagery in close proximity to the Scheme. One hundred and eighteen bird species were recorded within the desk study area, including several species of conservation concern and one record of both bittern and black redstart.

V. Barn Owl

Only one area of suitable foraging habitat for barn owl was identified within the field survey area. There were no trees or buildings identified within the survey area with potential for roosting or nesting barn

owls. However, in the wider landscape, the network of farms south of the Scheme with surrounding grasslands offer potential for barn owl roost and nesting sites. Seven records of barn owl within 1km were returned from the desk study search.

VI. Otter and Water Vole

Habitat suitable for both otter and water vole was present within the field survey area. Sinderland Brook in particular offers potentially suitable habitat for both species. One record of otter was identified the Manchester Ship Canal. Three records of water vole were identified, one of which was approximately 300m north of the Scheme on Sinderland Brook.

VII. Reptiles

Habitats were identified which were considered to be suitable for reptile refugia and hibernation such as woodland and scrub along the disused railway. The habitats were largely sub-optimal for reptile basking and foraging. In the wider landscape, suitable habitats were identified using aerial imagery which could offer potential habitat for reptiles such as woodlands adjacent to rough grasslands. Four records of slow-worm were identified within the desk study, one of which was in very close proximity to the dismantled railway. Common lizard records were also identified in the wider landscape near Holcroft Moss SSSI.

VIII. White-clawed Crayfish and Other Aquatic Invertebrates

None of the watercourses or ditches accessible for within the field survey area provided suitable habitat for white-clawed crayfish. Ponds identified within the survey area may offer potential for aquatic invertebrates. There were no desk study records for white-clawed crayfish or any other protected aquatic invertebrates.

IX. Terrestrial Invertebrates

Habitats across the scheme are suitable for a range of widespread and common invertebrate species. Two species of notable invertebrate were recorded within the desk study the cinnabar moth and small heath butterfly. Cinnabar moth is a widespread and common species associated with common ragwort (*Jacobaea vulgaris*) and small heath butterfly is a generalist species associated with heathland, grassland, dune habitats and woodland rides.

X. Non-native Invasive Species

Himalayan balsam was relatively widespread and locally abundant throughout the woodland areas along the Scheme. Japanese knotweed was identified along the disused railway embankment near the Wetlands near Balfour Road LWS. Both species were also identified in the wider area from the desk study records.

4.4.2 Recommendations for Further Survey

The information provided within this report is considered sufficient to inform a high-level feasibility study. It is however noted that as the Scheme design progresses to subsequent stages and more specific details of the Scheme are defined (e.g. the exact location and nature of the greenway including access points, lighting design and the timing of the works), further survey for a number of habitats and protected species may be recommended to ensure compliance with current legislation and planning policies, as well as to refine opportunities for ecological enhancement. Suggested recommendations for ecological feature are discussed in further detail below.

a) **Designated Sites**

Further consideration of designated sites is recommended, in further consideration of the likely impacts of the Scheme. In particular, any LWSs that are in close proximity to the Scheme and also statutory sites such as Holcroft Moss SSSI, which as a wetland/bog site could be sensitive to hydrological change in the

wider landscape. It is not currently considered that a Habitats Regulations Assessment (HRA) screening exercise will be needed in relation to the Manchester Mosses SAC due to the scale of the works and distance from the SAC.

Creation of a green way does not currently trigger any of the criteria for the SSSIs associated with the Impact Risk Zones. Further assessment of these zones may be required should the scale and nature of the proposed scheme change.

b) **Habitats**

Depending on the nature of the Scheme proposals and consideration of ecological opportunities, a full and comprehensive Extended Phase 1 Habitat survey may be recommended for the Scheme. This may include securing landowner access to survey habitats beyond the dis-used railway line in consideration of likely construction and operational impacts, and would be undertaken during the optimal survey period (March – October). Where habitats of particular ecological value were identified, that may be affected by the Scheme or else identified for ecological enhancement, then a Phase 2 detailed botanical survey (or National Vegetation Classification (NVC) survey may also be recommended.

c) **Protected and Notable Species**

Following further habitat survey, consideration of the likely Scheme impacts during subsequent stages of the assessment, and following consultation with relevant statutory and non-statutory consultees, further survey may be recommended for the following ecological features (please note that this may include survey of habitats beyond the current 50m field survey area):

- Badger;
- Bats;
- Great Crested Newts (GCN) and other amphibians;
- Otter and Water Vole;
- Non-native invasive species; and,
- Reptiles.

Further surveys for the following protected and notable species are considered unlikely at the current time. However, this should be verified following further habitat survey, consideration of the likely Scheme impacts and following consultation with relevant statutory and non-statutory consultees:

- Barn Owl
- Breeding Birds (though pre-construction surveys may be necessary);
- Terrestrial Invertebrates
- Wintering Birds; and,
- White-clawed Crayfish and Other Aquatic Invertebrates

4.4.3 Enhancement Opportunities

Using the desk study and field survey data, opportunities for enhancement of habitats to enhance the existing biodiversity value of the site were identified. The National Planning Policy Framework 2018 states that developments should be 'minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures' P ,

2018). Some suggestions for ecological improvement and enhancement opportunities which could be developed for the Scheme are outlined below.

- Identifying and engaging with appropriate stakeholders with shared objectives (e.g. Local Planning (LPA) ecologists, local Wildlife Trusts and other non-governmental nature conservation groups) to identify opportunities to achieve a collaborative approach to conserving biodiversity in the local area for the community to enjoy.

a) **Designated Sites**

- The Scheme runs through a network of Local Wildlife sites, some of which are continuous with the habitats on the disused railway line. By both improving and creating new habitats in and around these sites, this would create a network of 'stepping-stone' habitats and effective wildlife corridors along the length of the Scheme. This would help to establish coherent ecological networks across the wider landscape which is also consistent with the aims of NPPF, 2018.

b) **Habitats**

- Creating and enhancing high value ecological habitats such as woodland, semi-improved neutral grassland, watercourses and ponds along the Scheme will increase the suitability of the habitats for protected species and enhance biodiversity. This could be particularly effective for GCN and water vole.

c) **Protected and Notable Species**

- **Amphibians –** creating and enhancing ponds and wet woodland by controlling invasive plant species and managing wooded areas. Grassland areas could be managed and refugia and hibernacula created to improve terrestrial habitats for amphibians.

- **Bats -** bat boxes could be erected on suitable trees. Derelict rail structures such as those in Partington Nature Reserve could be modified and enhanced to provide roosting and hibernation features. Creation and enhancement of woodland, watercourses and grassland habitats to provide foraging opportunities.

- **Birds -** a variety of bird boxes of different designs could be installed to attract an array of species. For example, nest boxes specifically designed for black redstart could be provided to encourage the species to utilise habitats along the greenway such as residential developments, the railway and the canal. Marginal vegetation could be managed around ponds to increase suitable habitat for bittern. Fruit bearing trees of local provenance could be planted throughout the Scheme to provide a variety of food resources.

- **Water vole -** Habitats along Sinderland Brook could be improved by managing the dense scrub and woodland habitats along the brook to avoid over-shading and to encourage marginal plant species which provide foodplants for this species. Furthermore, improving the hedgerow and ditch network in this area would increase connectivity between the brook and Birchmoss Covert LWS, which is part of a mitigation strategy for water vole associated with the Manchester United training centre[3].

- **Reptiles –** Creation of open areas of vegetation along south facing banks along the disused railway would increase foraging and basking areas adjacent to the currently good hibernation habitats. Ballast and sleepers could also be used to create hibernacula.

- **Non-native Invasive Species -** Reduction and/or management of, the spread of invasive species which would increase the biodiversity of plant species throughout the site. Particularly for the

[3] Greater Manchester Ecology Unit, Birchmoss Covert Site of Biological Importance Site Description 2015

Himalayan balsam throughout the wet woodland and in the Wetlands near Balfour Road LWS, where Japanese knotweed is encroaching from the disused railway embankment.

4.5 References

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5. Structures

The proposed Greenway would follow the line of the former Glazebrook East Junction to Skelton Junction railway line, identified by the ngineer's ine eference JP . This section of line connected the current iverpool to Manchester MAJ line to Stockport. Originally featuring stations at Cadishead, Partington and West Timperley, the stations and line were closed to passengers in 1964, following the recommendations of the Beeching Report. The line continued to carry freight until 1983, when it was completely closed and the track lifted over the majority of the route. The former track bed remains and is generally two tracks wide but widens in the Irlam area, where additional lines diverged to service a former steelworks and in the Partington area where the lines serviced a former gas works.

The section of closed track between Irlam and the Bridgewater Canal features 24 No. structures and some remaining elements of the former stations. Jacobs bridge engineers have visited the full length of line between Bridgewater Canal and Irlam station, viewing each of the structures to confirm their structural form and condition.

The majority of the structures currently remain in the ownership of Network Rail who continue to carry out annual and six-yearly examinations to monitor their condition.

The exceptions are structure WJP1/4A (A bridge map is provided in Appendix E), which is owned by Salford City Council and structures WJP1/7A, WJP1/10, and WJP1/18A, which are owned by Trafford Metropolitan Borough Council. The ownership of structure WJP1/9B is unknown but suspected to be the owners of the former gasworks site at Partington, however this structure is located slightly off the route of the former main line. Network Rail are currently visually examining these structures annually, as is usual with third party bridges on the rail network but the responsibility for both inspections and maintenance lie with the bridge owners.

5.1 Ownership Implications

5.1.1 Underbridges

It is envisaged that, in developing the Greenway, TfGM may be required to take on ownership of the structures which would support the Greenway i.e. the former rail underbridges. The following liabilities associated with asset ownership should therefore be considered.

- **Load capacity**
  Before opening the Greenway structures to the public, the load capacity of the bridges which will carry footway loading must be confirmed. Since they formerly carried railway loading, it is unlikely that they would not be able to accommodate the significantly lower footway loading unless the capacity has been significantly compromised by deterioration of the load carrying elements. Based upon our site observations there is nothing to suggest that significant works would be required to the structures to carry footway loading. The cost of an inspection and assessment of a bridge can vary significantly depending upon the accessibility, structural material, size and condition. The simpler structures on the line may cost in the region of £3,000 - £5,000 to inspect and assess, whereas the inspection and assessment of Cadishead Viaduct could cost as much as £50,000.
- **Maintenance**
  Once a satisfactory load capacity has been confirmed, this assessed capacity remains valid until either the loading circumstances are altered or the condition of the structure deteriorates from the condition at the time of assessment. The ongoing condition of the structure is the responsibility of the owner and is usually monitored by an annual General Inspection of the structure, to confirm that the structure appears visually sound. Also, a more detailed, touching distance, Principal Inspection is generally carried out every 6 years, to view each element in detail. In the case of Cadishead Viaduct this would require roped access surveys and periodic underwater inspection of the canal piers by divers.
- **Safety of the structure.** Returning these structures into service and changing the nature of their use will require some works to be carried out to maintain public safety e.g. fencing to protect users from falls and, where necessary, to exclude them from parts of the structure, removal of vegetation etc.

It may be possible for TfGM to negotiate wayleaves across the bridges, allowing ownership to remain unaltered whilst accommodating the Greenway, although this could result in complex liabilities regarding the safety of the structures. If this was agreeable to the owners, it is envisaged that any bridge works required to facilitate the Greenway and that were acceptable to the owners would be financed by TfGM. It should also be assumed that the owners would, as a minimum, want to oversee and approve any works and may insist that they arrange them, through their own suppliers on behalf of TfGM.

In addition, retaining the ownership of the route may be strategically important to Network Rail as it has the potential to be developed into a rail freight path to avoid the congested lines in central Manchester.

5.1.2 Overbridges

Bridges over the proposed Greenway would not need to be acquired but there may be works required to these structures to protect public safety or which are desirable to create a safe and pleasant Greenway user experience.

The Greenway route is crossed by 5No. overbridges. These structures are of less significance to the functioning of the Greenway but the following factors should be considered.

- **Safety**
  At the time of inspection, there was nothing to suggest that any of the overhead structures presented a risk regarding objects falling onto the land below. Each location would need to be assessed to establish whether Greenway users should be separated from any overbridge elements which could form a safety risk. This is considered to be a relatively low risk and, if present, could be solved by appropriate use of fencing.
- **Trespass and Vandalism**
  Improving the accessibility of the area beneath the bridges may increase the likelihood of vandalism.
- **Access & Egress**
  Some of the overbridges present opportunities for connecting with other parts of the transport network and these have been identified in the Highways appendix. This would require construction of access points at various sites and the provision of waymarking.

5.2 Cadishead Viaduct

The most significant and highest risk structure on the route is the five span, Cadishead Viaduct, constructed in 1892 to carry the railway across the Manchester Ship Canal. The structure features arched approach spans in blue brick with a 42.6m main span comprising 3 No. rivetted metallic lattice trusses with overhead bracing. Metallic trough decking spans transversely between the main trusses to support the former tracks. Four tracks of disused railway remain on the north span but the south span has been cleared. The viaduct is not currently listed by Historic England.

Figure 5-1 Cadishead Viaduct Viewed from Partington Bank of the Manchester Ship Canal

Access to the structure is currently discouraged by shipping containers stacked at each end of the bridge and steel palisade fencing. This prevented our access to view the structure up close however, a copy of the latest Detailed Examination carried out in 2014 by Bridgeway Consulting and Amco has been provided. The examination and recent photographs confirm the following items of remedial work that are required:

- All the metalwork requires blasting and repainting. The temporary works required to carry out this work are significant and the access scaffold would need to be completely encapsulated to contain the blast debris.
- Isolated loss of section to various members has been identified and additional defects could be expected to be uncovered following the blasting process. It would be good practice and efficient use of the available access to repair these areas, although given the significant redundant capacity of the span, repairs would not necessarily be required for the structure to support footway loading.
- The stepped form of the troughing deck is unsuitable for a footway and some engineering intervention would be required to provide a level footway across the structure. This could could take the form of lightweight decking or a concrete slab laid over the troughing. A decision would need to be made whether the Greenway crossed the bridge within a restricted, fenced, corridor or whether the entire deck was made accessible, with the latter option being significantly more costly.
- Longitudinal fractures have been identified in the arch barrels of the approach spans. These should be repaired to avoid further deterioration but are not essential to accommodate footway loading.
- Various parapet repairs and height alterations are required to make them safe although the latter could be avoided if access to the parapets was prevented by inboard fencing.
- Vegetation is present at various locations and this should be removed and the rots treated to avoid further growth damaging the structure.
- The north span appears to support an exposed utility. At this stage it should be assumed that this is live and would need to be either, diverted, protected or avoided.

Table 5-1 overleaf lists the structures on the route, summarises their condition and provides a high level estimate of the immediate works which could be required to deal with existing defects. These estimates do not account for the cost of the Greenway construction and should not be relied upon for budgeting purposes.

5.3 New Structures

In addition to the existing structures, new structures may be required to support the Greenway. More detail of the proposed route would be required to make an assessment of specific requirements but, at this stage, one known option is that a section of Greenway could be located at the crest of the northern railway embankment between New Moss Road bridge and Irlam Station.

Figure 5-2 New Moss Road Bridge Location

Figure 5-3 View of Railway Embankment Looking towards Irlam Station from New Moss Road Bridge

The crest of the embankment is heavily vegetated but is potentially relatively flat and sufficiently wide to accommodate a Cycleway however it would be prudent to assume that a section of wall approximately 600m long would be required to retain it at the top of the slope. It is envisaged that this be of reinforced concrete construction.

Table 5-1 Detail on Structures

ELR	M	Yds	Owner	NR Bridge Id.	Network Rail Name	Owner Bridge Id.	Owner Bridge Name	Bridge Type	Material	Condition	Outline Est. Maintenance works cost	Comments
MAJ	25	313	Network Rail	189	NEW MOSS LANE BRIDGE			Overline Bridge	Cast Iron & Reinforced Concrete	Fair	£0	Carries Public Highway
WJP1	25	72	Network Rail	1	MOSS LANE			Footbridge	Early Steel	Poor/Fair	£750,000	
WJP1	25	775	Network Rail	2	CADISHEAD STATION SUBWAY - FILLED			Former Bridge Structure	Brick	N/A	N/A	Subway filled in
WJP1	25	870	Network Rail	3	LIVERPOOL ROAD (B5320)			Underline Bridge	Brick	Fair	£12,000	
WJP1	25	924	Network Rail	4	3FT BRICK ARCH CULVERT			Culvert	Brick	Unknown	Not known	Culvert not found
WJP1	25	1442	City of Salford	4A	A57 CADISHEAD WAY	494	South Bank Bridge	Underline Bridge	Unknown	Good	£5,000	
WJP1	25	1506	Network Rail	5	PARTINGTON VIADUCT			Viaduct	Early Steel	Poor/fair	£2,000,000	
WJP1	25	1669	Network Rail	6	MERSEY VIADUCT			Former Bridge Structure	Early Steel	N/A	N/A	
WJP1	26	626	Trafford MBC	7A	FOOTPATH SUBWAY	57	Lynn's Subway	Underline Bridge	Cast in-situ reinforced Concrete	Fair	£1,000	
WJP1	26	626	Network Rail	7	LYMM ROAD			Underline Bridge	Cast in-situ reinforced Concrete	Fair	£1,000	
WJP1	26	744	Network Rail	8	PARTINGTON STATION SUBWAY			Underline Bridge	Brick	Unknown	£4,000	
WJP1	26	1056	Network Rail	9	FOOTPATH SUBWAY			Underline Bridge	Cast Iron	Fair	£6,000	
WJP1	26	1098	Network Rail	9A	GAS WORKS			Underline Bridge	Steel	Good	£55,000	Not located on the main line
WJP1	26	1098	Unknown	9B	GAS WORKS			Underline Bridge	Cast in-situ reinforced Concrete	Poor/Fair	£30,000	Not located on the main line
WJP1	26	1627	Trafford MBC	10	SINDERLAND ROAD	123	Sinderland Road	Overline Bridge	Pre-tensioned Concrete	Fair	N/A	
WJP1	27	638	Network Rail	11	DUNHAM ROAD			Overline Bridge	Cast Iron	Fair	£120,000	
WJP1	28	250	Network Rail	14	CULVERT 900MM			Culvert	Unknown	Fair	£4,000	
WJP1	28	265	Network Rail	15	SINDERLAND BROOK			Underline Bridge	Cast in-situ reinforced Concrete	Good	£5,000	
WJP1	28	400	Network Rail	15A	SIDE FOOTBRIDGE			Side of Line Bridge	Mass Concrete	Good	£1,000	
WJP1	28	651	Network Rail	16	WOODCOTE			Overline Bridge	Cast Iron	Fair	£30,000	
WJP1	28	651	Network Rail	17	CULVERT 900MM			Culvert	Brick	Poor	£0	

WJP1	28	1672	Trafford MBC	18A	SINDERLAND LANE	350	Stamford Brook	Overline Bridge	Steel	Fair	N/A	
WJP1	29	718	Network Rail	19	MANCHESTER ROAD			Underline Bridge	Steel	Fair	£2,800	
WJP1	29	947	Network Rail	20	TIMPERLEY BROOK			Underline Bridge	Brick	Fair	£1,800	
WJP1	29	1090	Network Rail	21	ATTENBURY'S LANE			Underline Bridge	Brick	Fair	£1,500	

6. Highway Engineering

6.1 Presence of existing public bridleways, Greenways and footpaths along the route

Twenty-one existing walking, cycling and equestrian routes were identified that dissect or are near the proposed Greenway scheme, these were identified during a desk top study of the area. The routes are publicised routes that form part of Salford Council's or Trafford Council's Non-Motorised User (NMU) network. See Table 6-1 below.

Table 6-1 Identified Routes

ID	Name of Facility	NMU Group
1	Irlam Train Station	Footpath / Cycle Facility
2	SALB-0 bridleway and Moss Road Greenway	All NMU
3	SALB-1	Bridleway
4	SALF-153	Footpath
5	SAlF-309	Footpath
6	Tra-25	Footpath
7	Tra-215	RUPP
8	Tra-216	RUPP
9	Tra-217	RUPP
10	Tra-49 and Tra-50	Footpath
11	Tra-51 and Tra-52	Footpath
12	Tra-53 and Tra-228	Footpath
13	Tra-85, Tra-86 and Tra-87	Footpath
14	Tra-84	Footpath
15	Tra-150	Footpath
16	Tra-151	Footpath
17	Liverpool Road	Cycle Facility
18	Cadishead Way	Cycle Facility
19	Heath Farm Lane	Cycle Facility
20	artington oad Attenbury's ane	Cycle Facility
21	Bridgewater Way	Cycle Facility

Figure 6-1 below depicts the routes identified in Table 6-1, all of which are existing potential trip generators.

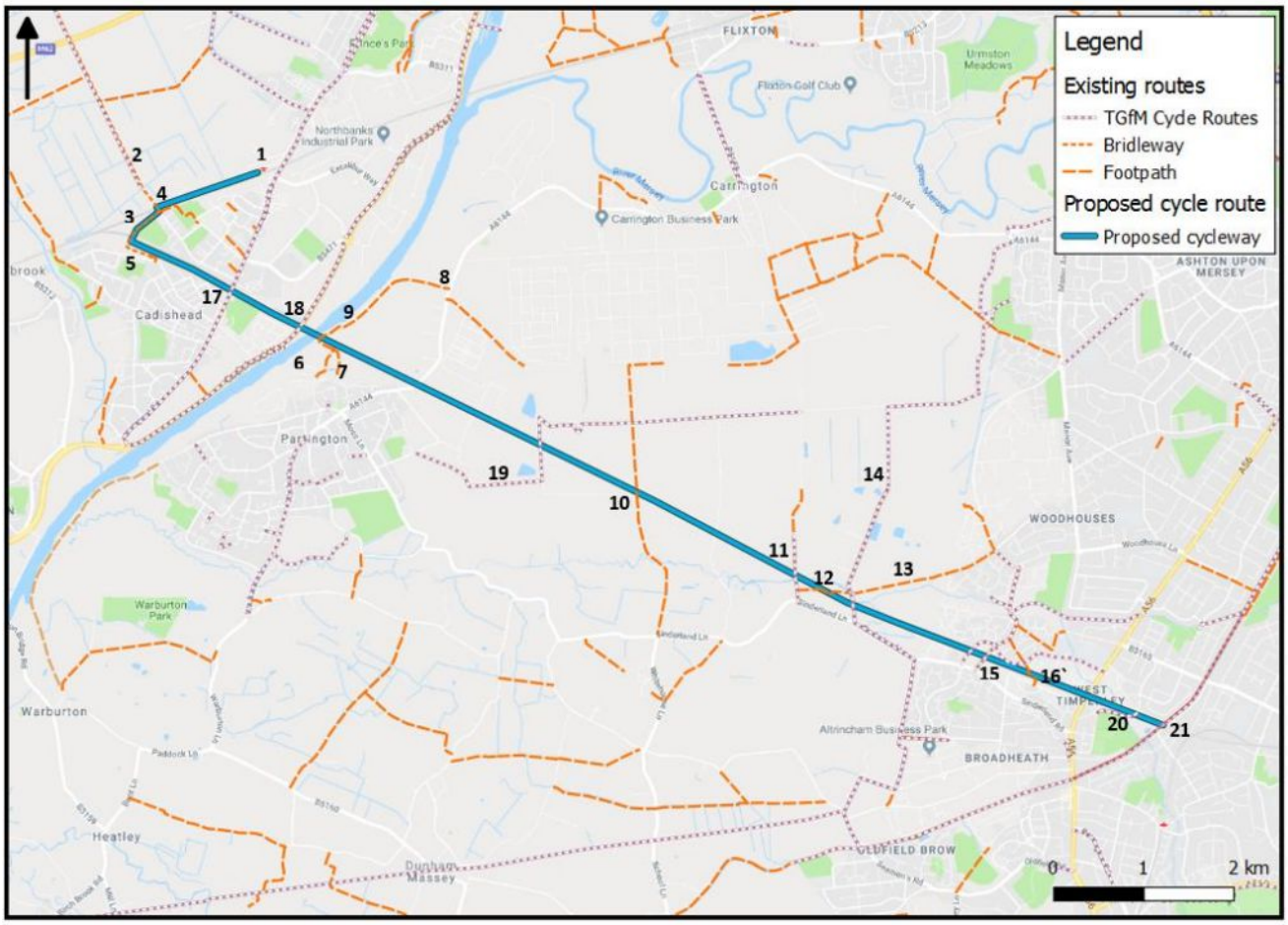


Figure 6-1 Locations of the published NMU routes

6.2 Site Observations and Comments

A site visit was carried out on Wednesday the 12th December 2018, the majority of the proposed Greenway route was observed by way of a walkover, with other sections unable to be visited because of site constraints or public access/ parking issues. Below in Table 6-2 are observations from the site visit for each of the existing walking, cycling and equestrian routes identified in Table 6-1. Additionally, opportunities to improve connectivity are highlighted.

Table 6-2 Site Observations and Opportunities for Connectivity

ID	Name of Facility	NMU Group	Observations	Opportunities for Connectivity
1.	Irlam Train Station		Refer to section 6.5.	Refer to section 6.5.
2.	SALB-0 bridleway and Moss Road Greenway	All NMU	Access to the Bridleway (Moss Road) is via New Moss Road via the Railway overbridge. The existing bridge parapets appear to have been heightened.	Yes, there are three possible off-road routes to Irlam Railway Station from New Moss Road / Moss Road, depending on

			 The carrigeway over the bridge is narrow, where an informal one way is likely to operate. There is an existing narrow footpath on the eastern side of the bridge structure and there is a raised hard standing which protects the bridge structure from vehicle strikes on the western side of the structure. Visbility is poor due to the vertical alignment of the bridge.  Promoting a walking and cycling route over the bridge with the existing layout would potentially put pedesrains and cyclist in direct conflict with motor vehicles.	which route is preferred will determine the provision at this location. Refer to section 6.6 and section 6.7.
3.	SALB-1	Bridleway	SALB-1 is accessed directly south of the overbridge (described in ID2). There is poor visibility when exiting the bridleway onto New Moss Road due to vegetation and the vertical alignment of the bridge/ carrigeway. The route provides access to the disused railway line. Travelling east from New Moss Road the path appears wide enough for a shared path, based on Sustrans[4] guidance"the preferred minimum width should be 3m (although 4m would be the prefered width ", the path then rises to a bridge over the disused railline. Site team are aware that TfGMs aspiration is for a 4m wide Greenway.	Yes, see section 6.6 below for connectivity at New Moss Road. There is an opportunity to connect to the old rail line at either side of the bridge

[4] https://www.sustrans.org.uk/sites/default/files/images/files/migrated-pdfs/Technical%20Note%2019%20-%20Segregation%20of%20shared%20use%20routes.pdf

			  Concerns over the height of the bridge parapet, especially as designated for equestrian use. SALF-309 connects to this provision. 	structure shown. The grade separation would require paths at suitable gradients to allow easy and safe access / egress.
4.	SALF-153	Footpath	This footpath provides off road access to a nearby residential area on Allotment Road, which also accommodates Cadishead Primary School. SALB-1 and SALF-153 are split by New Moss Road, there are no	Yes, depending on which route is preferred will determine the

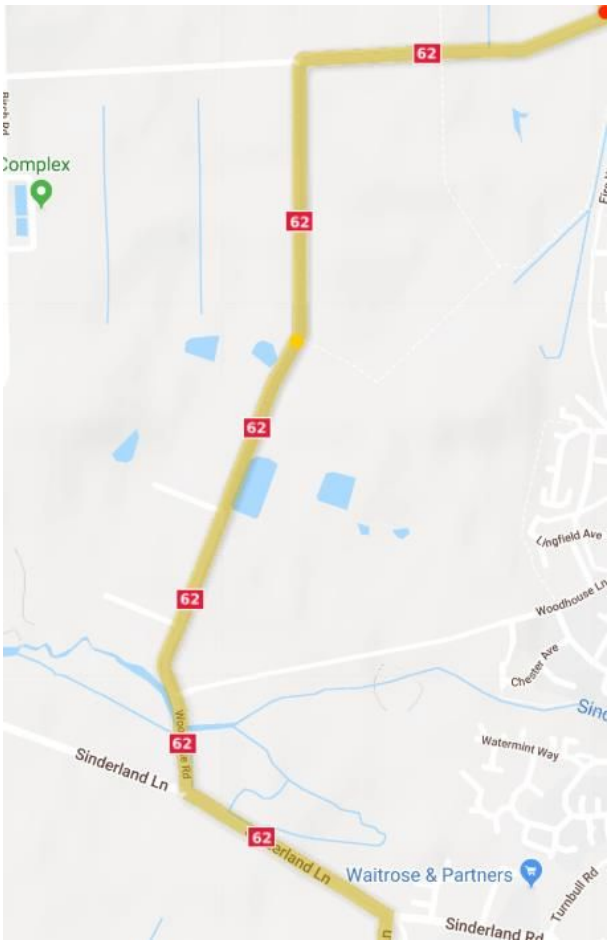
			facilites to cross the main road and visibility is poor due to the vertical alignment of the road caused by the overbridge and vegetation. 	provision at this location. Yes, see section 6.6 below.
5.	SAIF-309	Footpath	A large section of this path forms SALB-1 which is a bridleway and links to a residential area off Fir Street. At the top of the path adjacent to the bridge there is a bank which could be used to gain access to the disused railway line. There is evidence of a wire and post fence to the side of the path which is in a poor state of repair. At the bottom of the path is an informal path to the old railway line which is well trodden. 	Yes – The existing path could be widened and fenced. Potential to provide access to the old railway line at the top or bottom of the path. Is the proposed route going to cater for equestrians?
6.	Tra-25	Footpath	Access to the footpath is off Hall Lane which is a residential area of Partington, a construction site is preventing easy access to the site, but the footpath is still accesible. An off road uneven grassed path provides access to to the east of the viaduct which passes over the river Irwell.	Yes, this existing footpath would be in important link between Partington and the proposed route, especially as it appears to be a

			 Changes in levels and missing section of bridge / enbankment mean it is not possible to asses how this footpath could tie in with any new structure. The original embankment appears to have been cut away, therefore there is a considerable difference in levels between the structure and the ground. A new structure / embankment would be required to ensure a continuous path at the same level as the existing structure. 	well-used existing route. Demand is likely to increase if the viaduct over the river Irwell is re-opened. Tra-25 or Tra-215 could be upgraded to allow access from Partington.
7.	Tra-215	RUPP	Access to the footpath is off Derwent which is a residential area of Partington, An off road uneven grassed path provides access to to the east of the viaduct which passes over the river Irwell. Changes in levels and missing section of bridge / enbankment mean it is not possible to asses how this footpath could tie in with any new structure	Yes, this existing footpath would be in important link between Partington and the proposed route, especially as it appears to be a well-used existing route.

				Demand is likely to increase if the viaduct over the river Irwell is re-opened. Tra-25 or Tra-215 could upgraded to allow access from Partington.
8.	Tra-216	RUPP	Footpath access on to the A6144 Manchester Road through a pedestrian only gate. The route travels to the Cadishead viaduct. 	This access onto the proposed Greenway will likely attract demand from both walkers and cyclists. As a result, modifications to the pedestrian entrance will be required, as well as surface and route improvements towards Cadishead viaduct.
9.	Tra-217	RUPP	Tra-217 is a route which connects onto Tra-216, connecting the A6144 to the Cadishead viaduct. The route is unpaved. 	This route is not surfaced and will require improvements to allow safe use by cyclists. The route is below the level of Cadishead viaduct, and so a structure will be required to facilitate access onto the proposed Greenway.

10.	Tra-49 and Tra- 50	Footpath	Tra-49 and Tra-50 connect Sinderland Road in the south to the A6144 in the north (via Tra-44 and Isherwood Road. Tra-49 and Tra-50 are unsurfaced footpaths, which cross the proposed Greenway route via an overbridge on Dunham Road (image below).  	There is available space along this route to be widened to make it suitable for cyclists. The bridge over the proposed Greenway is wide enough for shared NMU use. Provision to segregate motor vehicles and NMUs on the bridge is potentially needed as this bridge can be used for vehicle access to nearby properties. However, no vehicles were seen here during the site visit. The height of the bridge parapet would need to be assessed to ensure it is the appropriate height.
11.	Tra-51 and Tra-52	Footpath	Tra-51 and Tra-52 connects Sinderland Lane in the south to Birch Road in the north, crossing the proposed Greenway at grade. Connectivity using this route for the public is by Public Right of Way (PRoW) footpaths only (vehicle access is possible, but the road is private property). The route is tarmacked. 	Tra-51 and Tra-52 can be used as connection routes onto the proposed Greenway without the need for substantial engineering works. The route is at the same elevation as the proposed Greenway and so will not require any structures for cycle access.

				However, consideration must be given to the vehicle access requirements across the Greenway.
12.	Tra-53 and Tra-228	Footpath	PRoW footpaths which connect Tra-52 (Birch Road) in the west to (Woodcote Road) in the east. The route crosses the proposed Greenway route and then the Sinderland Brook via a small bridge.	The proposed Greenway will likely replace the requirement of this route, connecting Tra-53 in the west to Woodcote Road in the east. As a result, it is proposed that this route can be closed and replaced with the Greenway access.
13.	Tra-85, Tra-86 and Tra-87	Footpath	This route connects the residential area of Woodhouses to Sinderland Lane, crossing over the proposed Greenway via an overbridge. Part of the route is along Woodcote Road, which is a public highway providing access to Sinderland Road House Waste Recycling Centre. The Tra-85 section of the route is on a private tarmacked road, accessible only to pedestrians. The image below is the gated access onto the private road. 	This route has the potential to be used as a key access onto the proposed Greenway for a heavy populated area. To facilitate this, the access onto the route would require changing to a Greenway access. Also, consideration of NMU and more vehicle traffic segregation is required on Woodcote Road
14.	Tra-84	Footpath	Tra-84 is a footpath which connects Woodcote Road in the south to Ashton Road in the north, intersecting with Tra-47 further north. Carrington Riding Centre is also nearby. Because of the presence of riding school near this route, this path is potentially used by equestrians	Woodcote Road is publicised as a footpath by Trafford Council,

			(although further investigations would be required to assess this). Tra-84 section of this route is on tarmacked road with a bridge over the proposed route, this route is part of the National Cycle Network 62. Non-motorised Users are not provided a segregated path, they must walk in the carriageway. Woodcote Road also provides vehicular access to a Household Waste recycling centre. There is currently no provision to access the disused rail line from Woodcote Road. 	however it also publicised by Sustrans as forming part of a cycle route. Access for cyclists on this route is very important due to it being on the National Cycle Network 62. Further study is required to assess if this route is used frequently by equestrians. It is not ideal that cyclists pedestrians and potentially equestrians will be sharing the road with motor vehicles. Woodcote Road has tree lined verges. The bridge structure has no footways.

				
15.	Tra-150	Footpath	Shared pedestrian and cycle route connecting Sinderland Road in the south to Turnbull Road in the north, crossing the proposed Greenway at grade. An off road shared use facility along Turnball Road connections the Tra-151 and Tra-150 routes. 	This route can be utilised as a key access onto the proposed Greenway. The route will likely need widening to safely accommodate both pedestrian and cyclists. Access here should not be stopped as it is a connecting route for NMUs traveling north-south over the Greenway.
16.	Tra-151	Footpath	Footpath access connection Turnball Road in the north to Lindsell Road in the south. The proposed Greenway at his location still has the remains of the abandoned railway tracks. An off road shared use facility along Turnball Road connections the Tra-151 and Tra-150 routes.	Both pedestrian and cycle access onto the proposed Greenway can be accommodated. Access here should not be stopped as it is a connecting route for NMUs traveling north-south over the

				proposed Greenway.
17.	Liverpool Road	Cycle Facility	Liverpool Road travels under the proposed Greenway (more than 5 metres below). There is no current access from Liverpool Road as the embankments are too steep. 	Access onto the Greenway from Liverpool Road will likely provide a useful connection for users. However, space limitations and the height difference between the Greenway and Liverpool Road will require engineering solutions to facilitate both cyclists and pedestrians. However there is the option to take a shared use path from the rear (northern end) of Cadishead Park.
18.	Cadishead Way	Cycle Facility	Cadishead Way travels under the proposed Greenway (more than 5 metres below). There is a shared use path on one side of the road. There is no current access from Cadishead Way as the embankments are too steep.	Access onto the Greenway from Cadishead Way will likely provide a useful connection for users. However, space limitations and the height

				difference between the Greenway and Cadishead Way will require engineering solutions to facilitate both cyclists and pedestrians.
19.	Heath Farm Lane	Cycle Facility	No Access – gate facility with no entry	
20.	Hartington Road / Attenbury's Lane	Cycle Facility	At this location the disused rail line is grade separated, there is evidence of people climbing the embankment to access the proposed route. To the north of this location is a residential area, to the south there is a public green space (Timperley Brook). 	This will likely be a key trip generator onto the proposed Greenway for all users from the local area. The bridge parapet and difference between the levels will require engineering solutions to facilitate both cyclists and pedestrians.
21.	Bridgewater Way	Cycle Facility	Bridgewater Way is the canal towpath which forms part of the NCN route 82, which links into a wider cycle network, potentially a high trip generator. The disused railway line is grade separated above the canal and would require a new link down to the existing route 82 cycle facility.	Being the end of the proposed Greenway and location of NCN route 82, this will be a fundamental access route onto the proposed Greenway for all users.

6.3 Presence of existing unmarked NMU routes

As well as the officially designated Public Right of Way routes near the proposed Greenway route, there are unmarked routes which appear to be used frequently by pedestrians. These paths do not appear on maps as footpaths, but consideration must be given to how their use will change because of the proposed Greenway route. The map below shows the identified unmarked routes, and the numbers shown correspond to the table provided below.

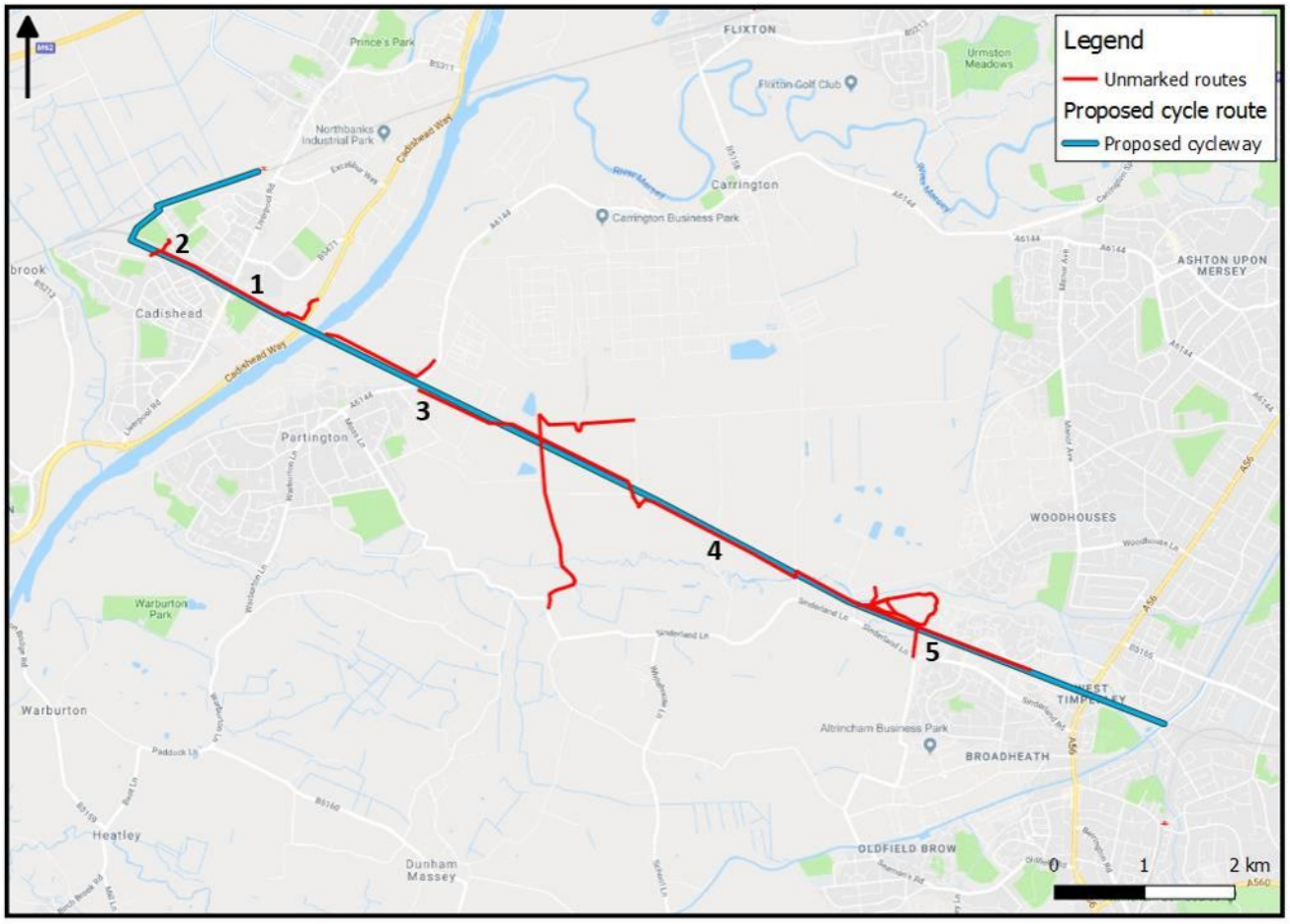


Figure 6-2 Unmarked routes near the proposed Greenway route

Table 6-3 Unmarked paths and Opportunities for Connectivity

ID	Name of Facility	NMU Group	Observations	Opportunities for Connectivity
1	Footpath along proposed Greenway route	Pedestrians	As shown in Figure 2, many sections along the proposed Greenway route are currently being used as unmarked footpaths. During the site visit, frequent walkers were observed using the routes.	Consideration should be given to how users of the current footpaths along the proposed Greenway route are accessing the facility and how they will be impacted by the proposed scheme.

				
2	Rowson Drive, Cadishead	Pedestrians	There is currently a pedestrian access onto the proposed cycle route from a residential area, which is currently being used as an unmarked route. The abandoned railline at this location is at two distinct levels. This access gives easy access to the lower level. However a steep bank would need to be climbed to gain access to the higher level. 	There is currently demand for the walking route along the proposed cycle route, and therefore this connection should not be stopped. Consideration should also be given to improving the route to allow cycle access.
3	Manchester Road Shared use facility / separate NMU tunnel	Pedestrians / Cyclists	On Manchester Road there is access onto the proposed Greenway route via an unmarked path on an embankment, this route appears to be well trodden despite users having to step over a barrier. On Manchester Road there is a shared use facility on the eastern footway, and a decicated NMU tunnel underneath the proposed route.	It is likely that there will be a demand for access onto the cycle route at this location. There is scope to connect the existing shared use facility on Manchester Road to the proposed Greenway at this location,

			 	however due to the difference in levels (grade separation), engineering solutions to facilitate both cyclists and pedestrians access would be required.
4	Unmarked Paths	Pedestrians	There is an NMU route which travels on unmarked paths parralel to the proposed Greenway at this location. This route connects the Tra-50 and the Tra-52 PRoW paths.	The requirement of this route will be removed once the proposed Greenway is in operation.
5	Stamford Brook Community Woodland	Pedestrians	There is a new NMU provision called Stamford Brook Community Woodland which is accessed from a new housing estate, this currently provides an at grade link to the proposed Greenway and continues south onto Sinderland Road.	There is an opportunity to upgrade the facility to a shared use facility.

			 	
6			This route connections Sinderland Lane in the south to Ashton Road in the north. This route is on a private road with a gated entry, and it crosses over the proposed route via an overbridge. 	There is currently demand for NMUs on this route, using it to cross over the proposed route. The requirements for accessing the proposed route by these users need to be considered.

6.4 Potential Route Access Points

In Figure 6-3 below are potential access points to the proposed scheme. Please refer to Appendix F where these access points are detailed further.

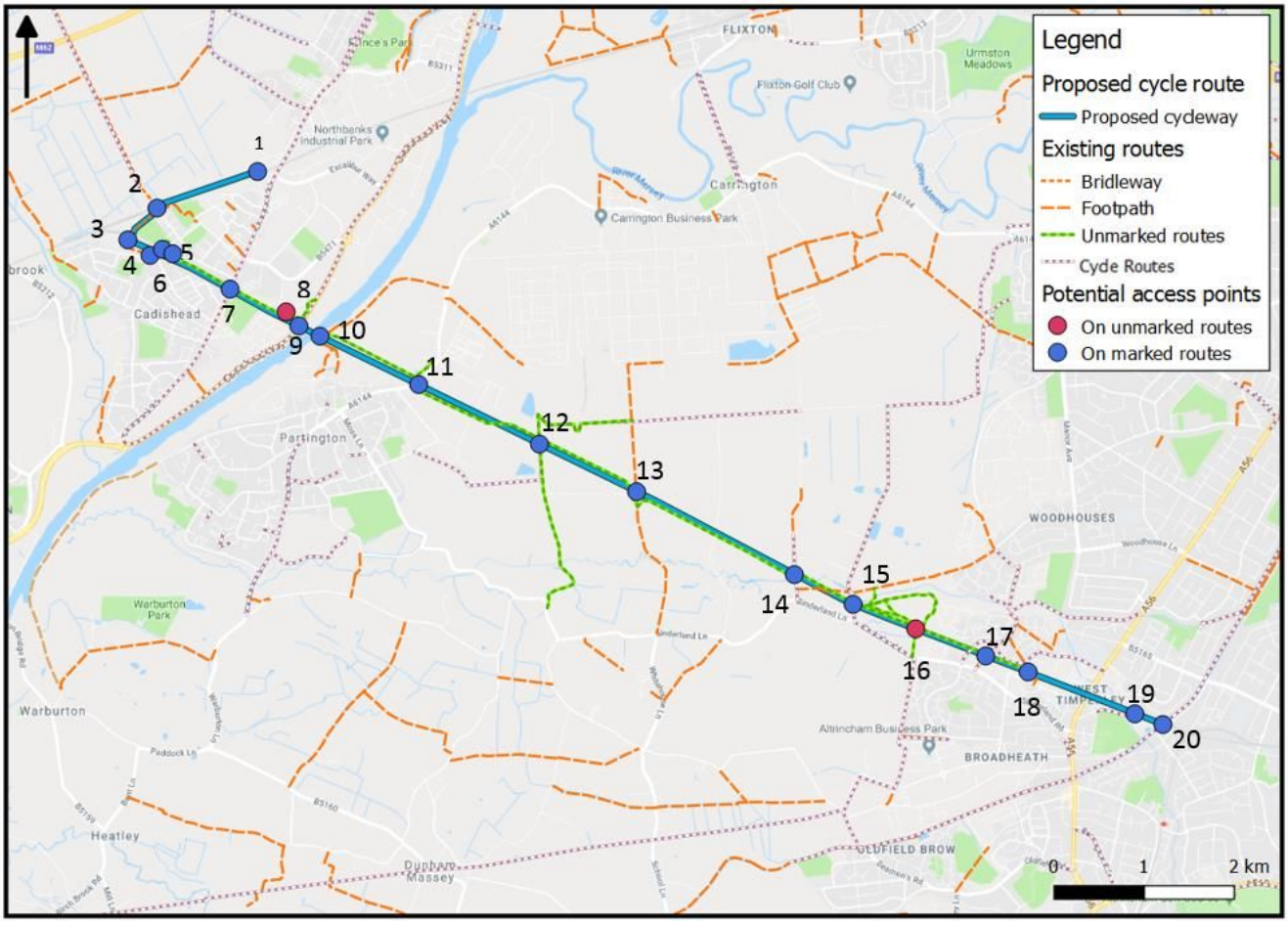


Figure 6-3 Potential Route Access Points

6.5 Potential New Trip Generators

Using the Greater Manchester Open Data Infrastructure Map[5], which has published data for 2017, revealing land indentified for future housing, office developments and industrial and warehouse development sites in close proximity to the proposed scheme have been indentified, please refer to section 2 (Transport Planning) for futher details. Any future development on these site will be a potential trip generator and will require access / egress points onto the proposed scheme.

6.6 Existing facilities at Irlam Station

Irlam Train Station is located on Station Road, Irlam and is accessed via Liverpool Road. The junction of Station Road and Liverpool Road is signal-controlled with an integrated controlled pedestrian crossing. A footway is provided on the western side of the carriageway. Cyclists can access the station via Station Road by riding in the carriageway.

Station Road has double yellow lines on both sides of the carriageway restricting parking. Within the car park there are parking bays with a pedestrian walkway within the road and an off-road walkway to the south eastern side of the car park., Motorists are contravening the double yellow lines on Station Road and parking restrictions within the car park due to insufficient parking. The car park has been extended to the west of the station, however on the site visit the car park was still at capacity.

[5] https://mappinggm.org.uk/gmodin/?lyrs=baseline_housing_land_supply#os_maps_light/14/53.4247/-2.4028

Figure 6-4 Irlam Station - Car Park

A cycle Hub is located to the rear of the station building, allowing cyclists to securely leave bikes at the station.

An alternative off road access to Irlam station is available via a subway that passes underneath the railway tracks, access is obtained from Liverpool Road. However, the subway only provides stepped access to the platforms. Both existing routes into the station are illuminated by streetlights.

Figure 6-5 Access to Irlam Station from Liverpool Road

Figure 6-6 Alternative Access to Irlam Station from Liverpool Road

6.7 Access and connectivity to Irlam station

There are three possible routes to get NMUs from New Moss Road (bridge) to Irlam train station via an off-road route, as shown in Figure 6-7:

- Northern link – Route running parallel north of the existing rail line (red line)
- Southern Link – Route running parallel south of the existing rail line (blue line)
- Combination of the Northern and Southern Link – route changes from Southern link to Northern link by introducing a dedicated NMU bridge over the railway line (green line)

All proposed routes could require a PRoW to be created and / or may require land take.

The northern route (red) provides the more direct route into Irlam Station and reduces the conflict point with other road users near Irlam Station, if access can be gained to the station car park by the most easterly point. However, this option will need careful consideration on how to get NMUs across the New Moss Road Rail Bridge.

The southern route could provide a link to the existing subway, which provides access to the station, however the access to the station is stepped. Cyclists or pedestrians with mobility issues would have to utilise the footway or on road cycle facility on Liverpool Road. This option removes the need to get NMUs across the New Moss Road Rail Bridge.

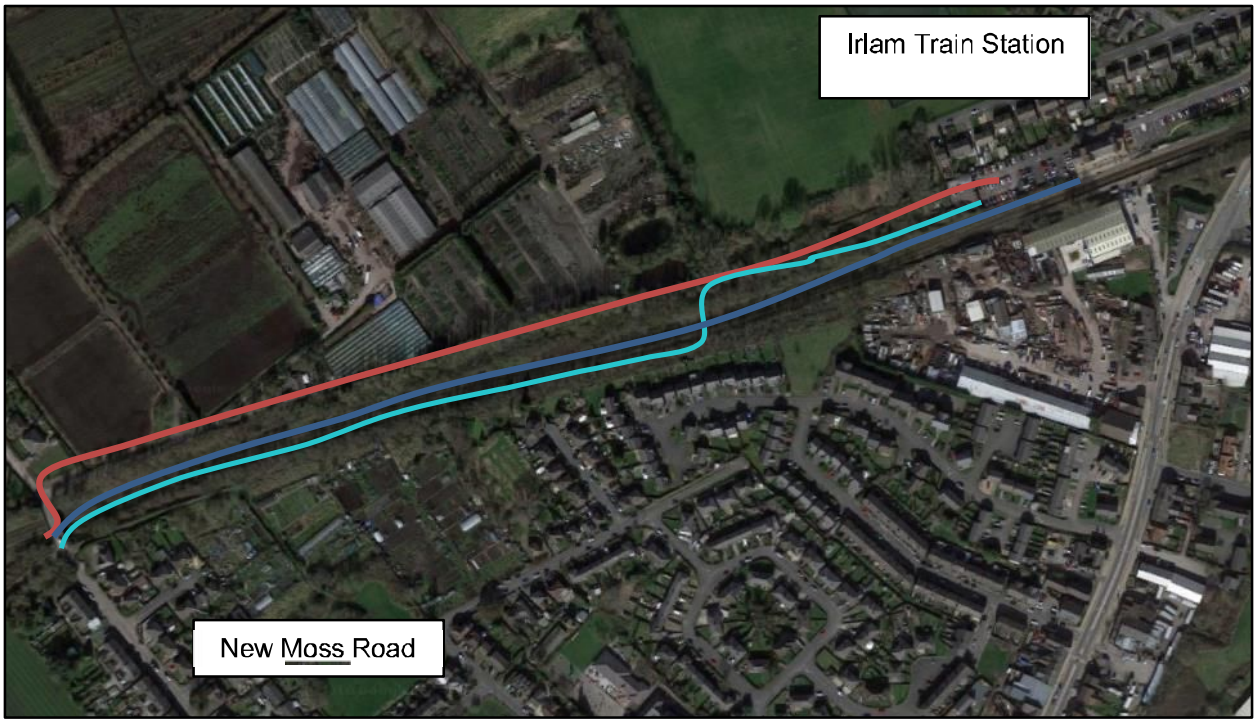


Figure 6-7 Access and Connectivity to Irlam Station

The combination of the northern and southern links with a new NMU bridge removes the need to cross New Moss Road Rail Bridge and allows the same access into Irlam Train Station as the northern option.

All three options will need to be further investigated to ascertain if there is enough land to provide the required width for a 4m shared path. The site team were unable to gain access to determine if the required space is available, as access is prohibited as the land is on the top of a live rail embankment, permission would need to be granted to assess all the viable options.

TfGM have recently submitted a nomination to the DfT for Irlam Station to be made step free in Control Period 6 (CP6), and the outcome of this will be known in April.

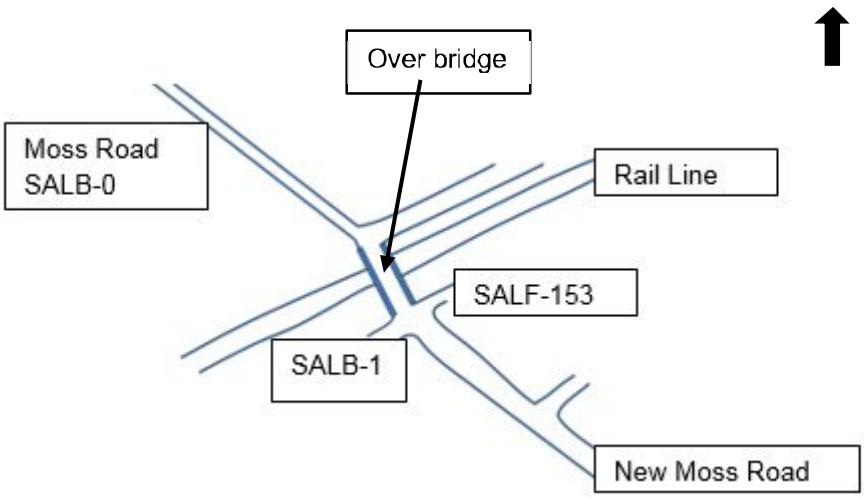


Figure 6-8 New Moss Road Bridge

The carrigeway over the bridge is narrow, where an informal one way is likely to operate. There is an existing narrow footpath on the eastern side of the bridge structure and there is a raised hard standing which protects the bridge structure from vehicle strikes on the western side of the structure. Visbility is poor due to the vertical alignment of the bridge deck. The bridge parapets appear to have been retrospectively hightened to prevent falls from the bridge.

Figure 6-9 Northbound approach to New Moss Road Over bridge

Figure 6-10 Southbound approach to New Moss Road Over bridge

There are two options for continuing the scheme in an easterly direction across New Moss Road,

- South of the Train Line: NMUs would travel across New Moss Road between SALB-1 and SALF-153. SALF-153 would need to be realigned or a new path created, running parallel to the southern side of the railway line.
- North of the Train Line: NMUs travelling west to east would have to travel over New Moss Road, then crossing the bridge before travelling east on a new path running in parallel with the railway line.

Constraints

- Narrow footway over the bridge is not wide enough (less than 2m wide) to accommodate pedestrians / cyclists on a continuous shared used facility. For an unsegregated shared use path, a preferred minimum width of 3m is required, although 4m should be provided on busier routes. A minimum width of 2m may be acceptable on less important links in rural areas, provided there are no side constraints. As a result pedestrian /cycle movements would be on carriageway;
- The vertical alignment of the bridge deck affords poor visibility for NMUs;
- Inadequate visibility for NMU users when crossing New Moss Road due to vegetation;

All of which could result in potential conflict between different road users on the approaches to the bridge or on the bridge.

Options at this location

- Provide an alternative NMU Structure;
- Widen the existing structure;
- Widen the footway and provide priority working with traffic signals (space permitting);
- Introduce Vehicles Activated Warning Signs on New Moss Road that highlight to the driver the presence of pedestrians/ cyclists accessing the bridge;
- Introduce a controlled crossing point to assist NMUs cross the road.

Nature / Extent of Future Work

A feasibility design needs to be drawn up to taking into account accurate measurements to determine if the existing structure can be utilised to accommodate NMUs or whether an additional structure is required. Automatic Traffic Counters or Video Surveys should be commissioned to determine existing traffic and NMU movements, potential NMU movements / vehicular movements also need calculating.

6.8 Opportunities for connectivity to other cycle routes at each end of corridor

The proposed route has potential to connect to the National Cycle Network route 62 at Dairy House Lane and route 82 at Bridgewater Way. In addition to this there is potential to provide a connection at Cadishead Way where there is an off road shared use path that connects into Liverpool Road.

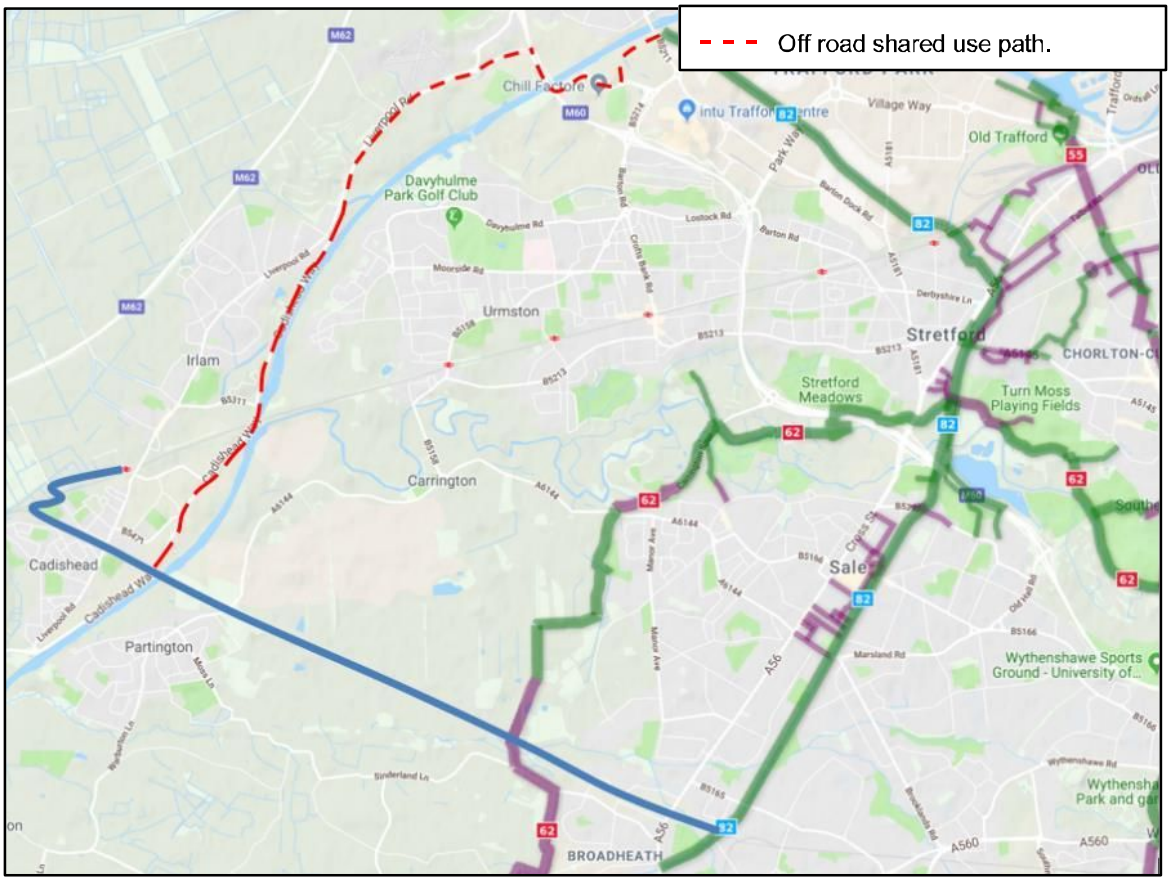


Figure 6-11 Option for Connectivity

6.9 Identification of engineering constraints along the route

- Tf M's aspiration is to provide a facility which is m in width, although a full survey would be required to ascertain if this is possible, the site team observed that a number of existing structures could result in pinch points resulting in narrower sections of the scheme;

- Sections of the route are potentially at height (top of embankment), which will result in fencing being required to prevent falls from height, at these points the width would need to be greater than the 4m width, this could potentially result in pinch points;

- Existing footpaths that could potentially become the access points onto the scheme are below 4m in width, each of these would need to be looked into to determine if they could be improved to provide a cycle / pedestrian access, to ensure good connectivity;

- Parapet heights – depending on whether the provision is to include equestrians, or the proposed route is for pedestrians and cyclists, parapet heights on bridges:
    - Parapet height for new bridges is normally 1.15m for pedestrians, 1.4m for cyclists, or 1.8m for equestrians.

    - LTN2/08[6] indicates that raising the parapet height might not always be necessary: "Bridges for cyclists should ideally have a parapet height of 1.4 metres (1.8 metres if also providing for equestrian use). On existing structures this cannot always be achieved, but it should not necessarily preclude their use as crossings for cyclists" (10.8.2).

- Head clearance on structures where NMU provision is permitted:

[6] https://www.sustrans.org.uk/sites/default/files/images/files/migrated-pdfs/Technical%20Note%2030%20-%20Parapet%20Heights.pdf

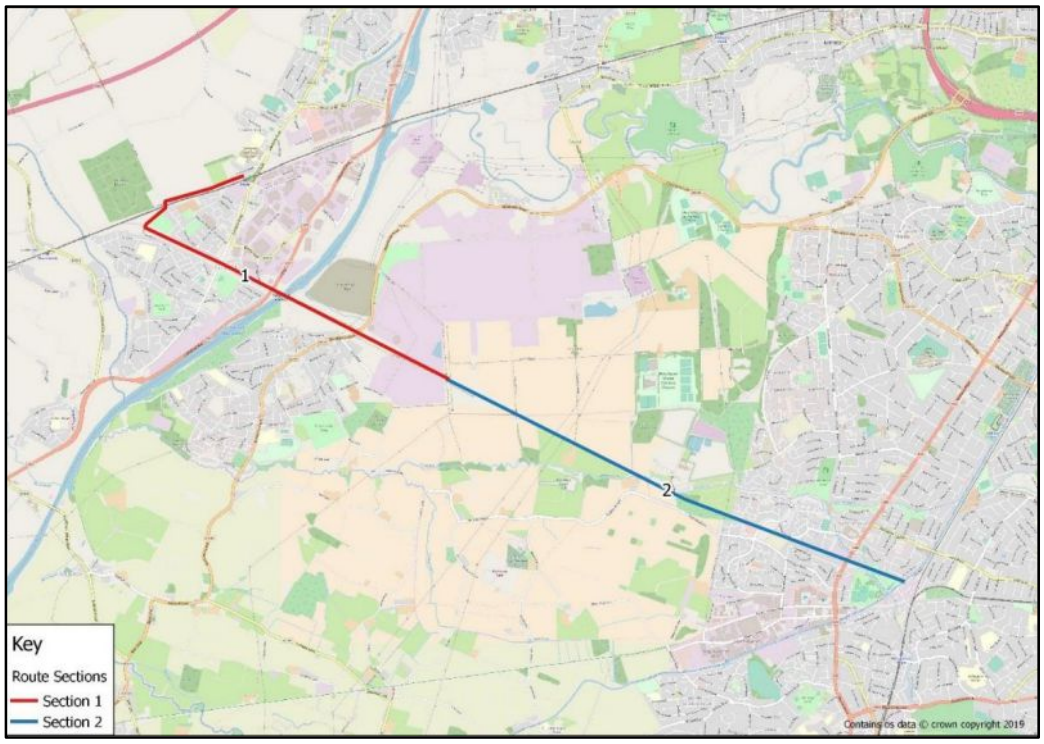
  - Pedestrian only 2.3m, Pedestrian and Cyclist 2.4m, Equestrian (dismounting provisions provided) 2.7m and Equestrian (mounted) 3.7m. Height constraints were not evaluated on site.
- Accessing the disused rail line from eastern side of the scheme there two levels and two structures over Liverpool Road, the two levels allow access from the communities north and south of the disused railway. Consideration will be required on how to connect the two paths to ensure these is no severance.
- Proposed accesses around existing structures that are grade separated could be difficult due to changes in levels.
- The scheme will need to be able to accommodate all NMUs, including people with mobility issues and visual impairments etc, therefore the changes in levels along the Greenway route and grade separated accesses will need to be accessible, well signed and include dropped kerbs and tactile paving etc.
- New Moss Road bridge structure does not provide an adequate facility to safely promote NMU use across it.
- During the walkover it was observed that there is an existing platform which will need to be considered.
- The proposed greenway in many sections is elevated, therefore consideration must be given to how to protect NMUs from falling down embankments.

7. Costs and Benefits

7.1 Introduction

This section of the report presents the order of magnitude costs and benchmark structures maintenance costs of the route, broken down into two sections. Indicative economic analysis of the route has been undertaken to estimate the number of users that would be needed to deliver a cost-beneficial scheme. The route sections are outlined in Figure 7-1.

Figure 7-1 Route Sections



The route has been broken down into two sections. These have been chosen for the high-level breakdown of estimated costs and benefits. As most of the growth nearby to the route is expected around the centre of the route, as shown in Figure 2-5, this is the area where it is expected that a majority of new trips and therefore benefits will come from. This is discussed further throughout this section.

7.2 Costs

The high-level costs for the scheme are presented in this section. Section 7.2.1 outlines the Structural Maintenance Works Cost and Section 7.2.2 outlines the remainder of the scheme costs. 7.3.3 summarises these costs.

7.2.1 Structures Maintenance Works Costs

As outlined in Section 5.3, there are costs for maintenance of existing structures along the route. These costs are high-level costs based on similar structural costs from other projects.

These are summarised in Table 7-1 according to section of route. Please note, a price range of +/- 50% should be applied to these costs at this stage based on the level and quality of information available to generate the estimated figures, in keeping with Jacobs Standard Operating Procedure SOP 211.

Table 7-1 Structures Cost

Section	Section 1	Section 2	Total
Cost	£2,864,000	£166,100	**£3,030,100**

The highest structural maintenance cost is for Cadishead Viaduct, which is estimated at approximately £2,000,000 and is located in Section 1 of the route (this cost is included in the costs presented in the table above). Further detail on this structure is detailed in Section 5.2.

7.2.2 Scheme Costs

The Cheshire Lines Greenway Order of Magnitude Estimate is included as Appendix G. Table 7-2 below summarises the scheme costs in Q1. 2019 values.

A price range of +/- 50% has been applied to the overall total cost based on the level and quality of information available to generate the estimated figures, in keeping with Jacobs Standard Operating Procedure SOP 211. SOP 211 states an assumed level of accuracy of -50% to +50% should be assumed from this estimate from a 0% to 2% level of project definition.

Table 7-2 Costs (Q1, 2019 values)

Element	Section 1	Section 2
Construction Works	£2,921,558	£3,544,860
Main Contractor's Overheads and Profit	£300,249	£363,310
Preliminaries & Other Fees	£1,844,891	£2,222,687
Risk Allowances	£1,013,340	£1,226,171
Cost Limit	**£6,080,038**	**£7,357,028**
Price Range +/- 50%	£3,040,019 to £9,120,057	£3,678,514 to £11,035,542

As presented in Table 7-2, the total 'cost limit' for the whole route in Q1. 2019 values is £13,437,066, with Section 1 a cost of £6,080,038 and Section 2 a cost of £7,357,028. Please note, these costs do not include the structures maintenance costs which are shown in Table 7-1.

7.2.3 Total Costs

The table below outlines the total costs by adding the scheme costs 'cost limit' and the structures maintenance works costs from the previous two sections. These are presented in Q1 2019 values with a price range of +/- 50%. They are also shown in 2010 values which is the current WebTAG base year and these are used for the benefits calculations in section 7.4.

Table 7-3 Costs (Q1, 2019 values)

Year	Section 1	Section 2	Total Cost
2019	£8,944,038	£7,523,128	**£16,467,166**
2019 (price range +/- 50%)	£4,472,019 to £13,416,057	£3,761,564 to £11,284,692	**£8,233,583 to £24,700,749**
2010	£5,554,958	£4,672,460	**£10,227,417**

7.3 Route Benefit Calculations

This section outlines the approach taken to estimate the indicative benefits associated with the route.

The total benefits have been calculated as the sum of two components: the Marginal External Cost (MEC) and the World Health Organisation (WHO) Health Economic Assessment Tool (HEAT) benefit. The methodologies to calculate these two elements are described in the following sections.

7.3.1 External Marginal Costs (MEC) Calculation Methodology

The MEC technique considers the benefits resulting from the number of saved car kilometres, known as the 'decongestion benefit', which is estimated as a result of cycling and walking.

The use of road vehicles incurs both private costs, borne by the individual traveller (such as fuel costs and personal travel time) and external costs borne by others. For car use, these external costs include congestion, air pollution, noise, infrastructure and accident costs. The MEC method is based on the change in these external costs arising from an additional (or removed) vehicle (or vehicle km) on the network.[7]

The calculation starts with the estimation of the change in car km due to a specific intervention (in this case investment in walking and cycling routes) by road type, area type and congestion level. These can then be used with the marginal external costs given in the TAG databook, disaggregated in the same way, to estimate the decongestion benefits in the opening year and forecast year. The MEC are presented per km in real, undiscounted market prices.

In order to obtain the final overall benefit, the benefit is multiplied by the change in car km, the number of years of the appraisal period, and should be discounted to the standard webTAG base year (2010).

7.3.2 Estimation of the change in car kilometres (km)

As outlined above, the estimation of the change in the car km due to the provision of facility is the base for the calculation of the external marginal benefit. The assumptions used for the calculation are outlined in Table 7-4 below.

Table 7-4 Decongestion Benefit Assumptions

Average trip length (km)	Proportion of new cyclists who would have driven	Working days per year
5.5 / 4.15 / 4.45	75%	261

To note the average trip length for cyclists according to the National Travel Survey 2017 (5.5 km), has been used when assessing the whole route. When assessing each section the route length has been used (4.15 km and 4.45 km).

[7] DfT, TAG UNIT A5.4. Marginal External Costs. Dec 2015

The proportion of new cyclists who would have driven is based on the modal share for motorised vehicles within the area surrounding the route from the 2011 Census.

7.3.3 Walking Benefits Calculations

The benefits and car km for walking have been calculated using the assumptions outlined in Table 7-5.

National Travel Survey 2017 [8]data shows that on average, each person per year completes 33.8 km in motorised vehicles for trips under one mile and 219.3 km for trips between one to two miles. For the calculations, it has been assumed that for those travelling distances less than one mile, 60% of these trips could shift from car use to walking. For trips between one to two miles, a 40% modal shift could be assumed.

These modal shift percentages assume that there is a higher likelihood that people would switch to walking for a shorter distance, for example there would be a greater modal shift for journeys under one mile than for one to two miles. Also, there would not be any modal shift to walking for journeys that are currently undertaken by private vehicle for a distance over two miles as this is considered to be too far to walk.

Table 7-5 Walking Assumptions

Trip Mode	Under 1 Mile	1 to 2 Miles
Car / Motorcycle / other private vehicles km travelled per person	33.8	219.3
Capture rate (from car to walking)	60%	40%

7.3.4 World Health Organisation (WHO) Health Economic Assessment Tool (HEAT) for cycling and walking

The World Health Organisation (WHO) has developed an online tool to estimate the value of reduced mortality that results from regular walking or cycling (http://www.heatwalkingcycling.org/).

The HEAT tool is intended to be part of comprehensive cost–benefit analysis of transport interventions and infrastructure projects and complements the benefit calculation based on emission or congestion described in the previous sections.

HEAT calculates the answer to the following question:

"if x people cycle or walk y distance on most days, what is the economic value of mortality rate improvements?"

The HEAT tool has five steps:

1. Defining the assessment;
2. Inputting data;
3. Data adjustments;
4. Review of calculation parameters; and
5. Results.

Many of "the variables HEAT uses are estimates, and the results are therefore liable to some degree of error". It is also important to note that knowledge of the health impacts of walking and cycling is constantly being developed. The website notes that "the accuracy of the results of the HEAT calculations should therefore be understood as estimates of the order of magnitude". The most important assumptions underlying the HEAT impact assessment

[8] https://www.gov.uk/government/statistics/national-travel-survey-2017

approach are described on the HEAT website[9]. The outputs from HEAT in Table 7-6 are presented in 2010 values.

Walking and cycling provides a broad range of benefits to both the users of the new infrastructure, and the communities in which the infrastructure is built. In general, the benefits of cycling and walking investment include:

- Improvements to the health and productivity of users through higher levels of physical activity.
- Creating more capacity on highway networks as a result of a modal shift to sustainable modes for local journeys.
- Improving air quality as a result of this modal shift.
- Economic benefits to the local economy – help to aid growth in the areas close to the routes and attract additional people into the area as a result of a more pleasant urban environment.

7.4 Cost Effectiveness

As described previously, the total benefits are calculated as the sum of two components: the 'external marginal costs' benefit and the WHO HEAT benefit. Following the approaches described in Section 1.3 and Section 1.4 above, the number of walking and cycling trips that would generate the benefits to demonstrate a BCR of 1 have been calculated. This is shown in Table 7-6. For this purpose, all benefits and costs are presented in 2010 values (webTAG base year) in order to show a direct comparison between the benefits and costs.

A majority of transport schemes funded from central Government funding sources require a BCR in the region of 1.5 to 2. The information in Table 1-5 shows that due to the high costs of infrastructure required for the route, that in order to achieve a BCR of 1 or above for the whole route, a high demand would be required. A total of 1400 people cycling and 300 people walking per day, each making two trips, would be needed for a BCR of 1. This, set against the demand on the high-quality route at Oxford Road in the city centre, where daily demand is 1200 trips in each direction on average[10], the numbers for this route could be seen as high.

In addition to this, the two Sections of route have been assessed individually. The number of trips that would be required for a BCR of 1 for Section 1 has been calculated; 1000 people cycling and 250 people walking per day, each making two trips, would be needed per day to achieve a BCR of 1. Although this is still a relatively high demand in comparison with the Oxford Road route, Section 1 would be the best opportunity to generate new walking and cycling trips. This is due to a reduction in severance as the route enables connectivity over the Manchester Ship Canal, so would encourage new trips from the Partington area to Cadishead and Irlam Station. In addition, the walking and cycling route would allow connectivity from the New Carrington development site to Cadishead and Irlam Station. These could result in a high number of additional people choosing to cycle and walk.

The number of trips that would be required for a BCR of 1 for Section 2 has been calculated; 750 people cycling and 200 people walking per day, each making two trips, would be needed per day to achieve a BCR of 1. Although number of users to achieve a BCR of 1 is less than Section 1, it is anticipated that it would be more difficult to achieve these numbers in this Section because a majority of development expected in the area is closer to Section 1.

Table 7-6 Number of Cycling and Walking benefits to achieve a BCR of 1 (2010 values)

Section	Section 1	Section 2	Total
Number of People Cycling	1000	750	1400
Number of People Walking	250	200	300

[9] https://www.heatwalkingcycling.org/#assumptions
[10] http://eco-public.com/ParcPublic/?id=4586

Section	Section 1	Section 2	Total
Marginal External Benefit (10 Years) (£)	£926,906	£745,308	£1,700,260
HEAT Benefit (10 Years) (£)	£4,742,704	£3,812,526	£8,596,220
Total Benefit	£5,669,610	£4,557,834	£10,296,480
Total Cost (2010 values)	£5,554,958	£4,672,460	£10,227,417
BCR	1.0	1.0	1.0

Opportunities could be explored to fund aspects of the infrastructure through developer contributions. Should any future schemes come forward e.g. Bus Rapid Transit, there may be opportunities to deliver this walking and cycling route alongside new infrastructure associated with Rail or Tram.

The benefits presented are indicative high-level estimations and would require further detailed analysis in order to be presented as evidence for a Business Case. A particular area for future study/research would be the potential increase in people cycling and walking on an induvial route section basis. Also, the cost figures that have been used at this stage order of magnitude costs and benchmark costs; these would require further refinement as the scheme definition progresses.

Further detailed work will be required as part of developing a Business Case to assess the value for money associated with the potential scheme, and further development of the cost benefits of the scheme would require a more defined set of scheme benefits and constraints, and a more detailed economic analysis.

8. Summary and Conclusions

8.1 Summary

Jacobs UK Ltd was commissioned by Transport for Greater Manchester (TfGM) to undertake a feasibility study for a disused section railway between Timperley and Irlam into use initially as a Greenway to provide benefits to local communities. The aim of the study was to gain a better understanding of the suitability of this route as a Greenway including a cycleway and footway, with consideration of potential limitations including: connectivity to Irlam station and existing cycle routes, ground conditions, land ownership, ecological issues and the identification of Network Rail structures. To assess this, the report has presented the analysis and findings of multiple disciplines that have inputted into this feasibility study.

A summary of the report sections is provided below.

Section 2 – Transport Planning:

- There is significant development proposed around the route (existing planning applications and GMSF) that would benefit from improved walking and cycling links in addition to existing residents and businesses. The route is referenced in GMSF housing allocations for both GMA45 (Carrington) and GMA32 (North of Irlam Station).

- Improved walking and cycling facilities would enable modal shift to sustainable modes and improve the likelihood of people choosing to interchange from public transport to sustainable modes. This would have a positive impact on health and potentially improve AQMAs as a result of reduced car trips undertaken.

- The route would improve the existing network of PRoW and cycle network within the area and could contribute towards the plans for a Bee Network.

- It is a risk that the land owner, Network Rail, might not agree to change of use of the corridor due to potential future rail-related plans.

Section 3 – Land Quality:

A desktop study was undertaken based a number of sources which indicated that sections of the route have been used for a variety of local industries, such as the former railway and gasworks, which may have resulted in residual contaminants. The following comments were made following this initial review:

- If soil within the study site is found to have potentially harmful level of contaminants, then these materials may need to be removed and replaced. Removal of former track bed material in this manner will incur associated material excavation, replacement and disposal costs. If material is hazardous, this is likely to be a higher cost.

- An alternative to disposal might be to incorporate appropriate design measures so that materials were not disturbed during construction.

- If unexpected contamination is found during construction this will lead to unforeseen costs associated with time delay and material removal.

- Land quality is a material consideration within the planning process and requirements in this respect should be anticipated.

Section 4 – Ecology:

A high-level desk and field-based study was undertaken to establish an ecological baseline for the Scheme. This included an ecological walkover survey to record broad habitat types.

- Further consideration of designated sites is recommended, in further consideration of the likely impacts of the Scheme.

- Depending on the nature of the Scheme proposals and consideration of ecological opportunities, a full and comprehensive Extended Phase 1 Habitat survey may be recommended for the Scheme. This may include securing landowner access to survey habitats beyond the dis-used railway line.

- Further survey may be recommended for the following ecological features: badger, bats, great crested newts (GCN) and other amphibians, otter and water vole, non-native invasive species and reptiles.

Section 5 – Rail Structures:

A site walkover was undertaken along with a desktop study, a high-level review of Cadishead Viaduct was also completed.

- The section of closed track between Irlam and the Bridgewater Canal features 24 structures and some remaining elements of the former stations.

- The majority of the structures currently remain in the ownership of Network Rail.

- It is envisaged that, in developing the Greenway, TfGM may be required to take on ownership of the structures which would support the Greenway.

- Retaining the ownership of the route may be strategically important to Network Rail as it has the potential to be developed into a rail freight path to avoid the congested lines in central Manchester.

- The Greenway route is crossed by 5 overbridges.

- The most significant and highest risk structure on the route is the Cadishead Viaduct.

Section 6 – Highway Engineering:

A site visit was carried out to observe the route in relation to the existing walking and cycling routes identified. Potential opportunities to improve connectivity are highlighted.

- Twenty-one existing walking, cycling and equestrian routes were identified that dissect or are near the proposed Greenway scheme. In addition, 'unofficial' access points were identified. Observations and opportunities for improvement have been identified.
- There are three possible routes to get NMUs from New Moss Road (bridge) to Irlam train station via an off-road route. New Moss Road bridge structure does not provide an adequate facility to safely promote NMU use across it.

- Accessing the disused rail line from eastern side of the scheme there two levels and two structures over Liverpool Road, the two levels allow access from the communities north and south of the disused railway. Consideration will be required on how to connect the two paths to ensure these is no severance.

- Proposed accesses around existing structures that are grade separated could be difficult due to changes in levels.

- The scheme will need to be able to accommodate all NMUs.

- The proposed greenway in many sections is elevated, therefore consideration must be given to how to protect NMUs from falling down embankments.

Section 7 – Costs and Benefits

Section 7 of the report presents the order of magnitude costs and benchmark structures maintenance costs of the route. Indicative economic analysis of the route has been undertaken to estimate the number of users that would be needed to deliver a cost-beneficial scheme.

- The total 'cost limit' for the whole route in . values is , , , and an additional £3,030,100 for structural maintenance costs, based on benchmark structural maintenance costs. The total cost for the route is £16,467,166. SOP 211 states an assumed level of accuracy of -50% to +50% should be assumed from this estimate.

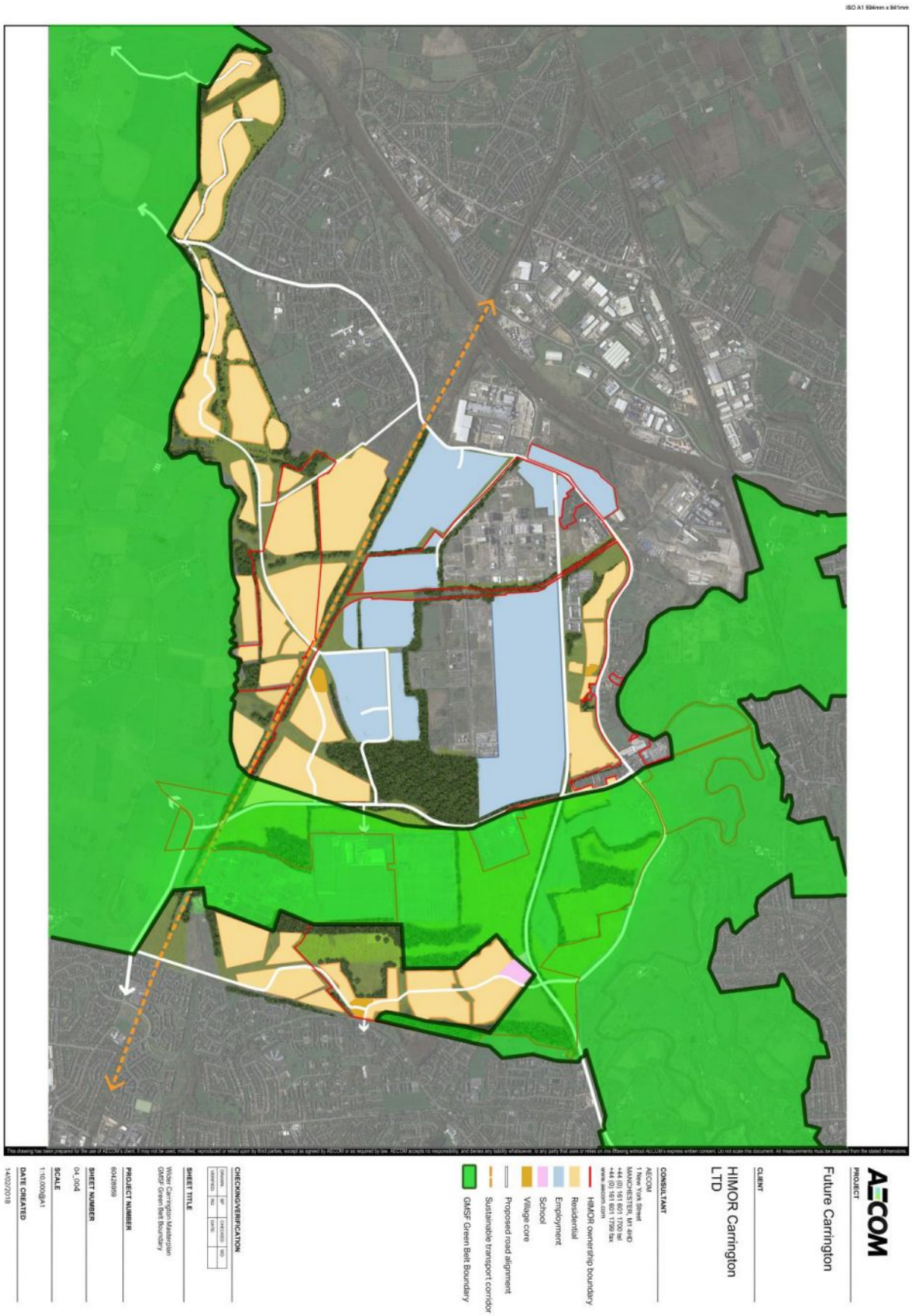
- Indicative economic analysis of the route suggests that the number of users that would be needed to deliver a cost-beneficial scheme with a BCR of 1 are:
    - Whole route - a total of 1400 people cycling and 300 people walking per day, each making two trips.
    - Section 1 – a total of 1000 people cycling and 250 people walking per day, each making two trips.
    - Section 2 – a total of 750 people cycling and 200 people walking per day, each making two trips.

- An area for future study would be more detailed work on the potential increase in people cycling and walking on an induvial section basis. The cost figures that have been used at this stage are order of magnitude costs and benchmark costs; these would require further refinement as the scheme definition progresses.

8.2 Conclusion

In conclusion, an initial review of the route has been undertaken by core disciplines within Jacobs. This review has identified a range of potential risks and constraints to delivery of the scheme which would require further investigation, including input from further disciplines. The primary risks identified relate to the remediation of structures, particularly the Cadishead Viaduct, and ensuring appropriate access agreements with landowners, particularly Network Rail. Subject to these caveats, the review at this stage has not identified any constraints that would definitively prohibit delivery of a Greenway scheme. An indicative cost:benefit analysis has identified reference levels of modal shift which may support the viability of the scheme from an economic perspective, and such analysis may be reconsidered to continue to evaluate the scheme as a design progresses.

Appendix A. HIMOR Masterplan



Appendix B. Ecology Figures

FIGURE 1.1

LEGEND

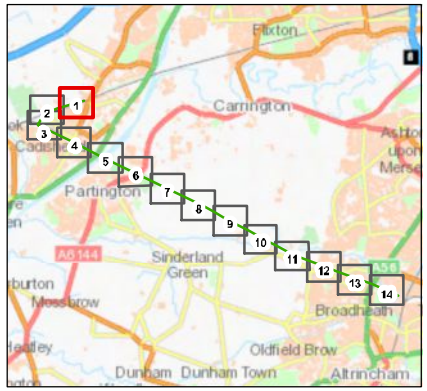
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Points

- A2.2 - Scrub - scattered
- A3.1 - Broadleaved Parkland/scattered trees

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B2.2 - Neutral grassland - semi-improved
- G1.2 - Standing water - mesotrophic
- J1.1 - Cultivated/disturbed land - arable
- J1.2 - Cultivated/disturbed land - amenity grassland
- J3.6 - Buildings
- J5 - Other habitat



Rev.	Date	Purpose of revision	Drawn	Checked	Reviewed	Approved
0	20/12/2018	Initial Issue	JRG	GR	ZG	DD

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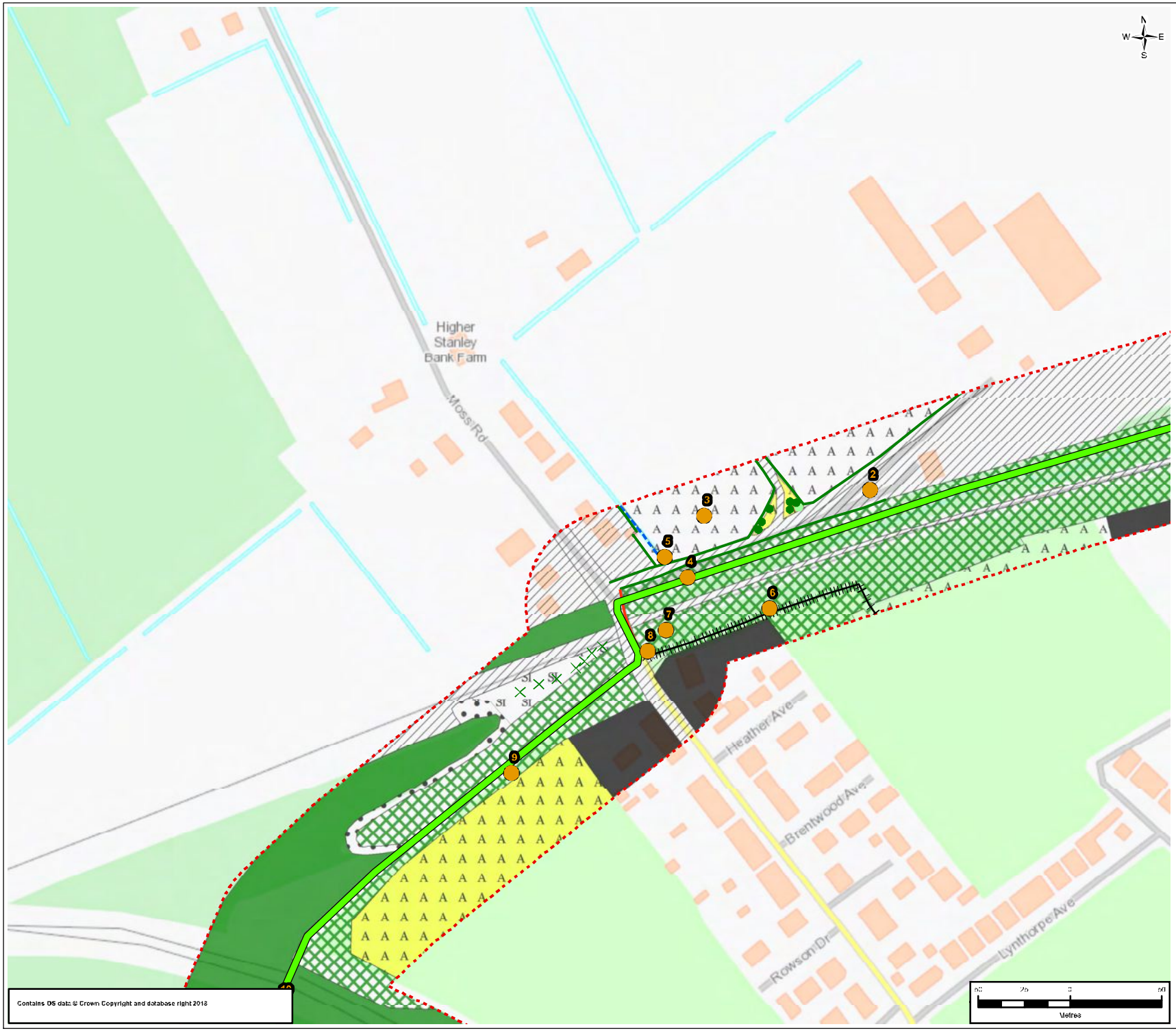
Client: Cheshire East Council

Project: CHESHIRE GREENWAYS

Drawing Title: TIMPERLEY TO IRLAM
PHASE 1 HABITATS MAP
(Page 1 of 14)

Scale @ A3	1:2,000	DO NOT SCALE
Jacobs No.	B7GM7006	
Client No.		
Drawing No.	B GML008_LC_0101_0114_Phase1HabitatsMap	Rev 0

FIGURE 1.2



LEGEND

Timperley to Irlam Route

Timperley to Irlam Route 50m Buffer

Target Notes

Phase 1 Habitat Points

A2.2 - Scrub - scattered

A3.1 - Broadleaved Parkland/scattered trees

A3.2 - Coniferous Parkland/scattered trees

Phase 1 Habitat Lines

G1.1 - Standing water - eutrophic

J2.1.2 - Intact hedge - species-poor

J2.4 - Fence

J2.5 - Wall

Phase 1 Habitat Polygons

A1.1.1 - Broadleaved woodland - semi-natural

A2.1 - Scrub - dense/continuous

B6 - Poor semi-improved grassland

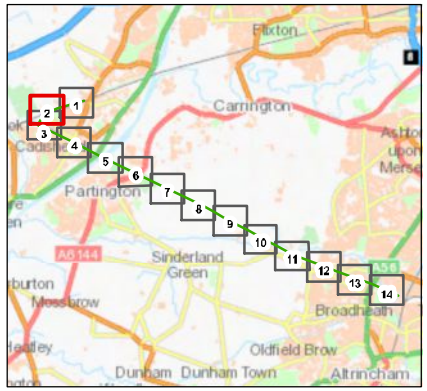
J1.1 - Cultivated/disturbed land - arable

J1.2 - Cultivated/disturbed land - amenity grassland

J4 - Bare ground

J3.6 - Buildings

J5 - Other habitat



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0	20/12/2018	Initial Issue	JRG	GR	ZG	DD

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Project: CHESHIRE GREENWAYS

Drawing Title:

TIMPERLEY TO IRLAM
PHASE 1 HABITATS MAP
(Page 2 of 14)

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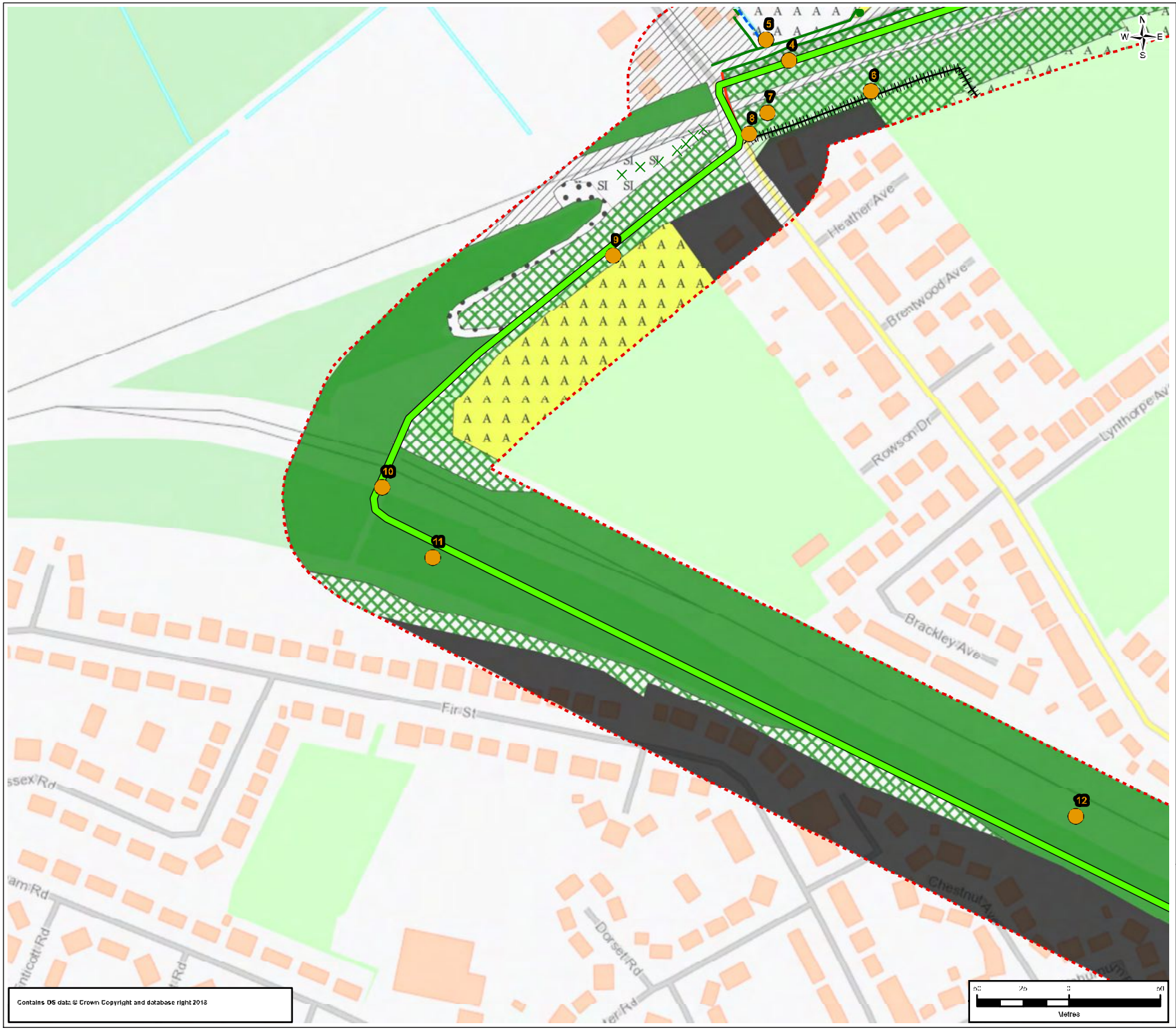
FIGURE 1.3



LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Points

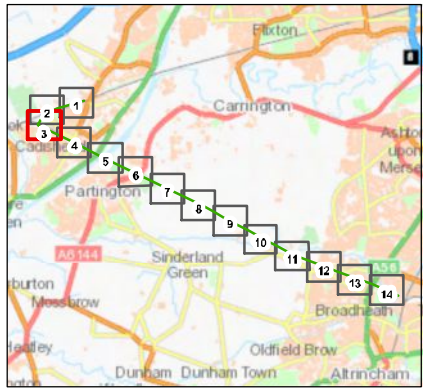
- A2.2 - Scrub - scattered
- A3.1 - Broadleaved Parkland/scattered trees

Phase 1 Habitat Lines

- G1.1 - Standing water - eutrophic
- J2.1.2 - Intact hedge - species-poor
- J2.4 - Fence
- J2.5 - Wall

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B6 - Poor semi-improved grassland
- J1.1 - Cultivated/disturbed land - arable
- J1.2 - Cultivated/disturbed land - amenity grassland
- J4 - Bare ground
- J3.6 - Buildings
- J5 - Other habitat



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PHASE 1 HABITATS MAP
(Page 3 of 14)

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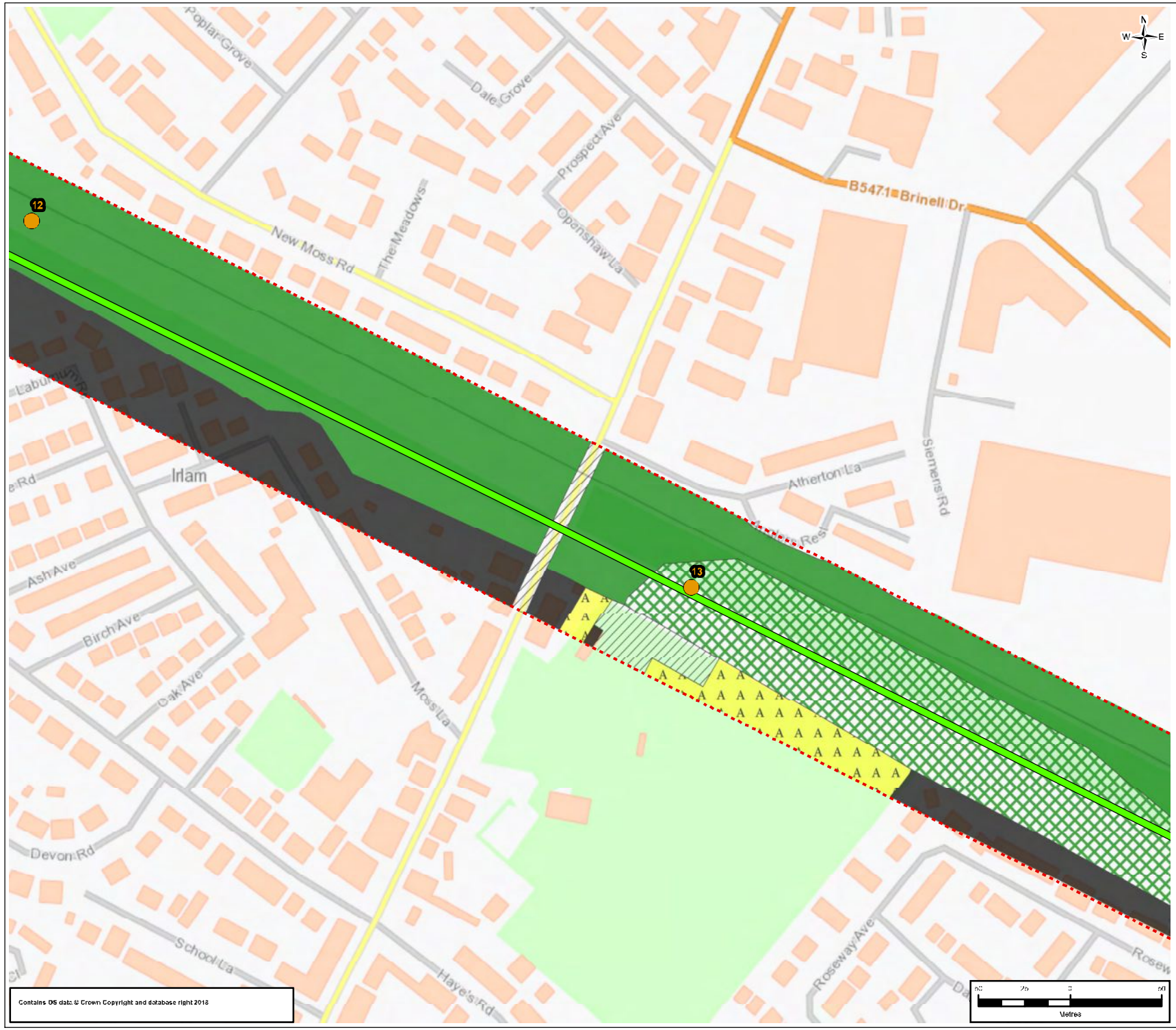
FIGURE 1.4

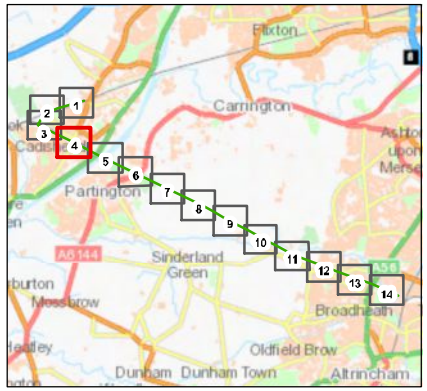


LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- J1.2 - Cultivated/disturbed land - amenity grassland
- J3.6 - Buildings
- J5 - Other habitat



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PHASE 1 HABITATS MAP
(Page 4 of 14)

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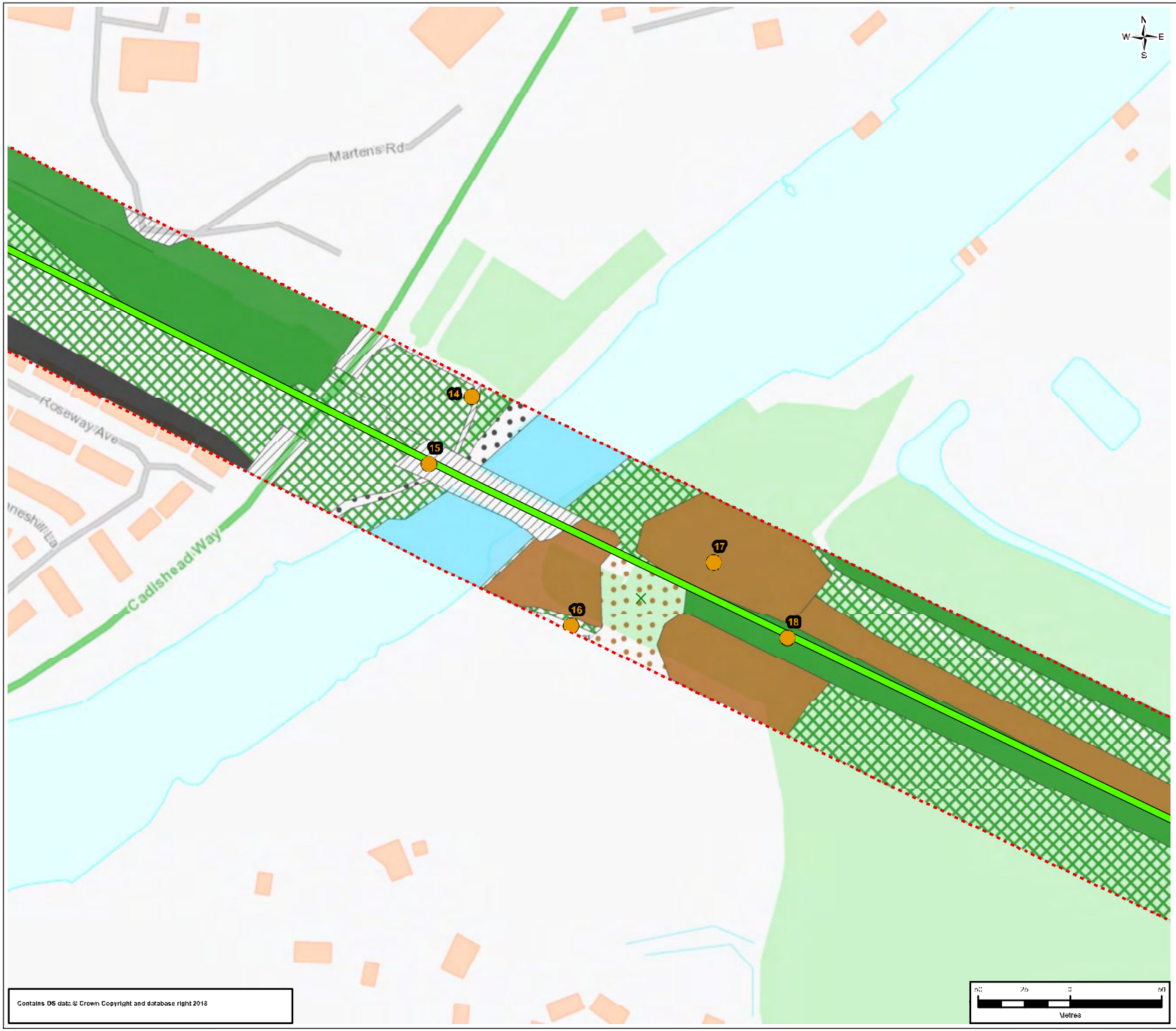
FIGURE 1.5



LEGEND

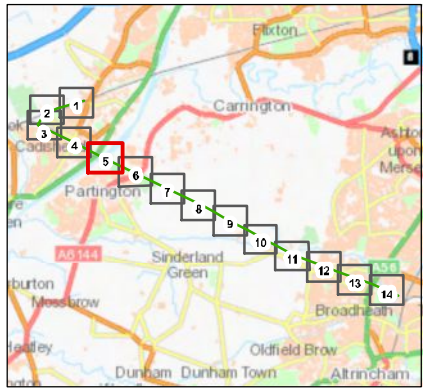
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Points

- A2.2 - Scrub - scattered

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A2.2 - Scrub - scattered
- B6 - Poor semi-improved grassland
- C1.1 - Bracken - continuous
- C3.2 - Other tall herb and fern - non ruderal
- G2.2 - Running water - mesotrophic
- J4 - Bare ground
- J3.6 - Buildings
- J5 - Other habitat



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PHASE 1 HABITATS MAP
(Page 5 of 14)

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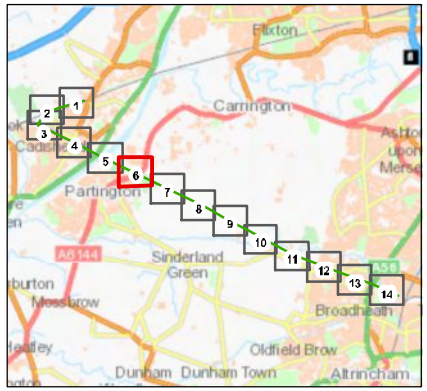
FIGURE 1.6

LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- C1.1 - Bracken - continuous
- C3.1 - Other tall herb and fern - ruderal
- J5 - Other habitat



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PHASE 1 HABITATS MAP
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FIGURE 1.7

LEGEND

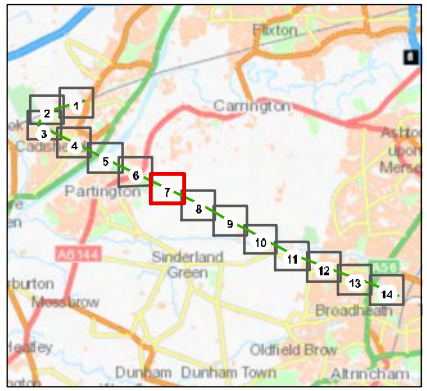
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Lines

- G2.2 - Running water - mesotrophic

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural



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TIMPERLEY TO IRLAM
PHASE 1 HABITATS MAP
(Page 7 of 14)

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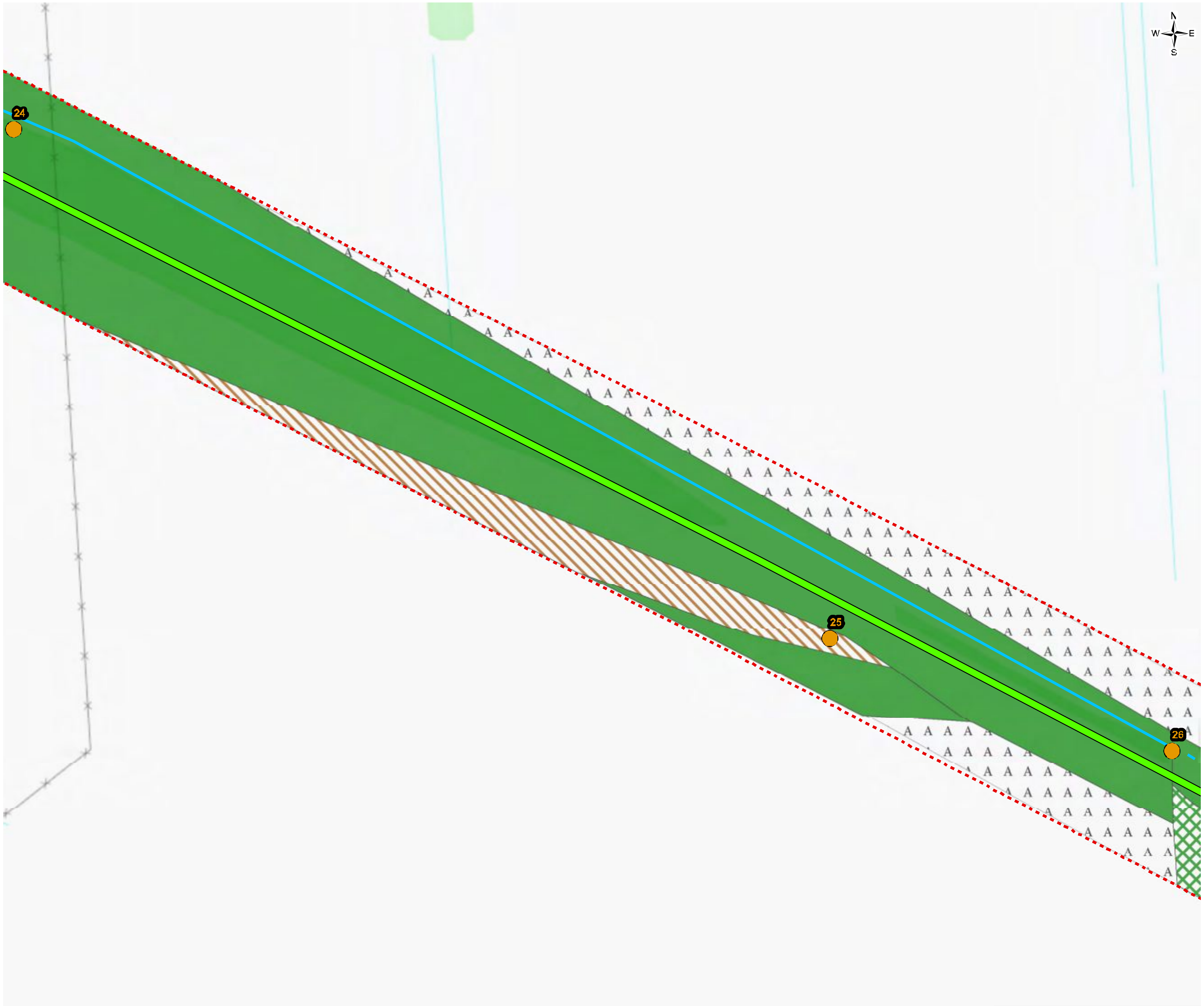

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FIGURE 1.8

LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Lines

- G2.2 - Running water - mesotrophic
- J2.6 - Dry ditch

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- C3.1 - Other tall herb and fern - ruderal
- J1.1 - Cultivated/disturbed land - arable

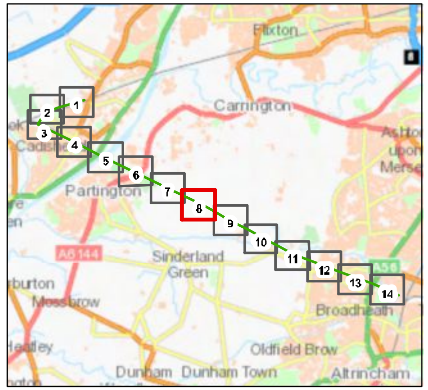

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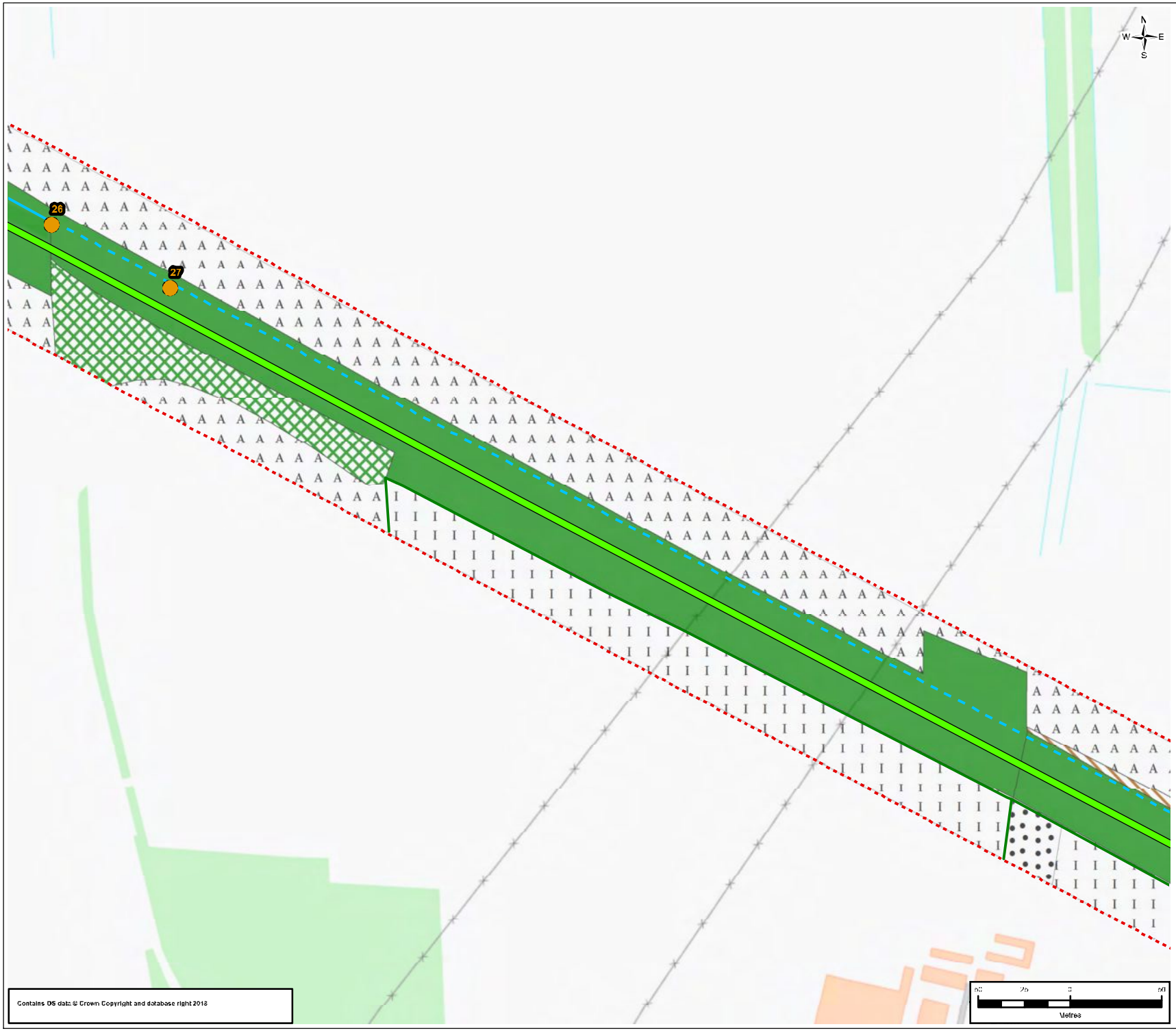
FIGURE 1.9



LEGEND

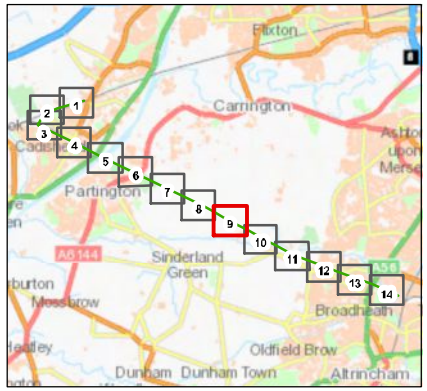
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Lines

- G2.2 - Running water - mesotrophic
- J2.1.2 - Intact hedge - species-poor
- J2.6 - Dry ditch

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B4 - Improved grassland
- C3.1 - Other tall herb and fern - ruderal
- J1.1 - Cultivated/disturbed land - arable
- J4 - Bare ground



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PHASE 1 HABITATS MAP
(Page 9 of 14)

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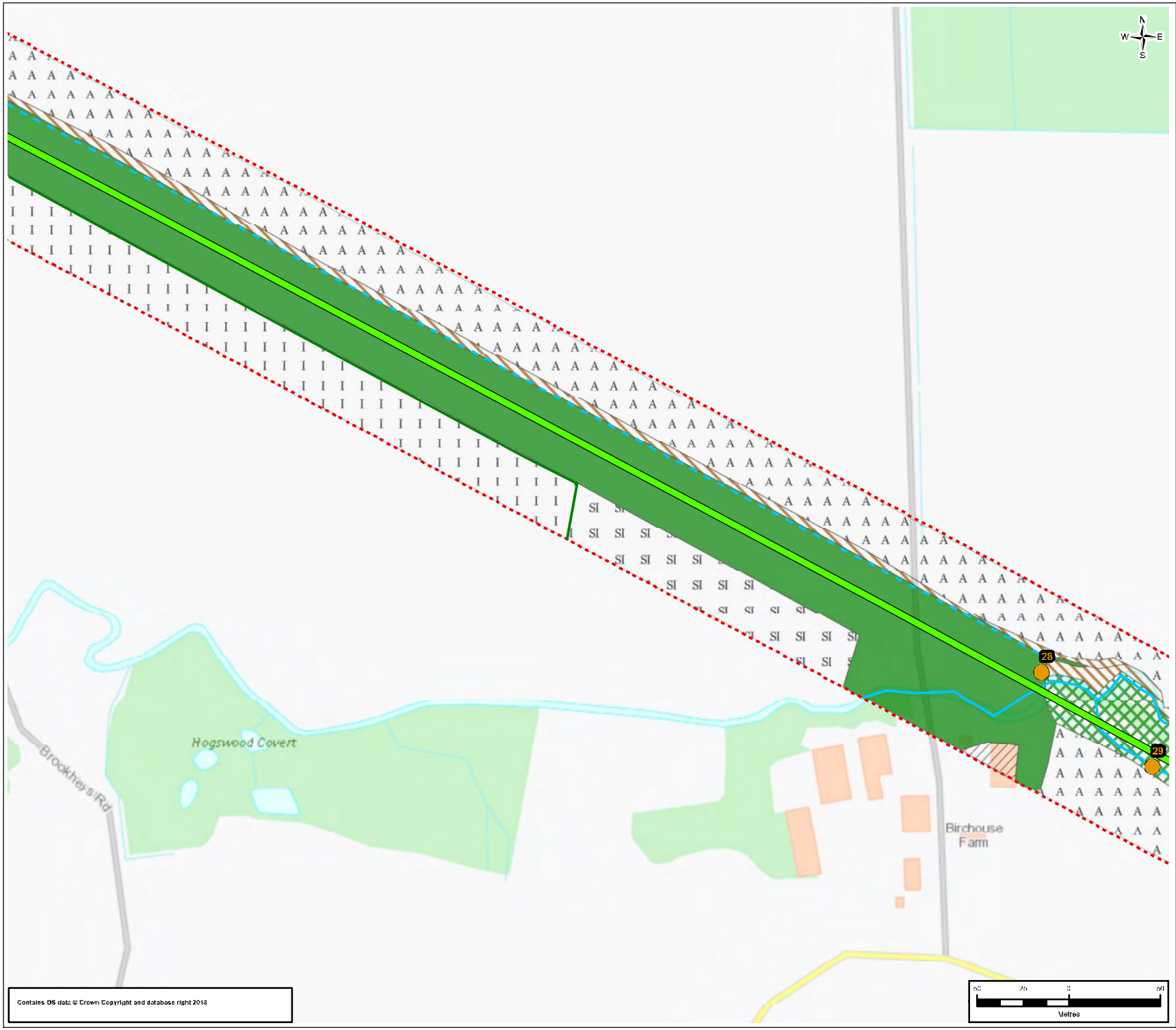
FIGURE 1.10



LEGEND

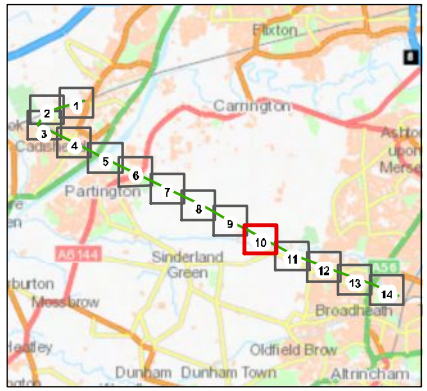
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Lines

- G2.2 - Running water - mesotrophic
- J2.1.2 - Intact hedge - species-poor
- J2.6 - Dry ditch

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B4 - Improved grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- J1.1 - Cultivated/disturbed land - arable
- J5 - Other habitat



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PHASE 1 HABITATS MAP
(Page 10 of 14)

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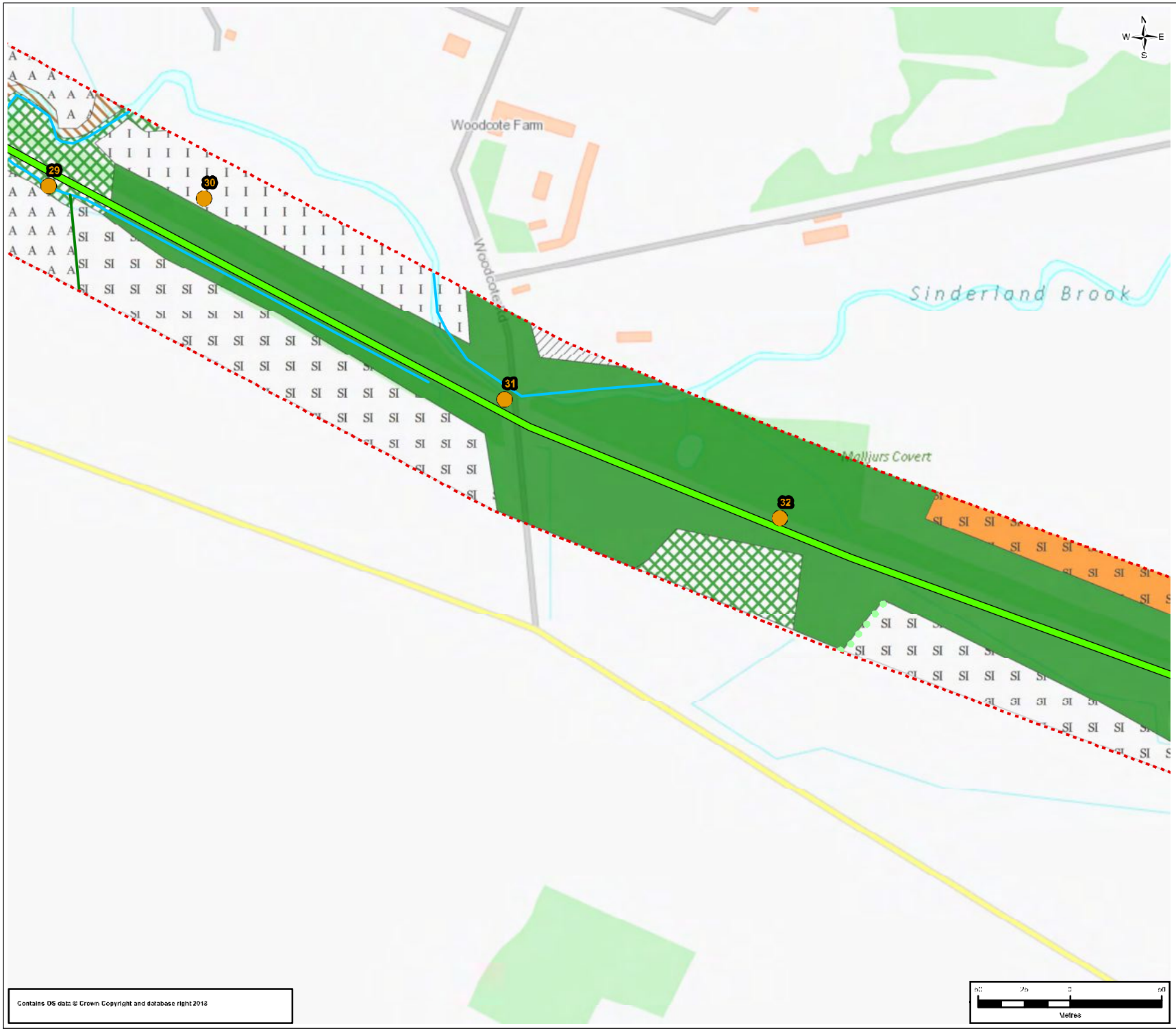
FIGURE 1.11



LEGEND

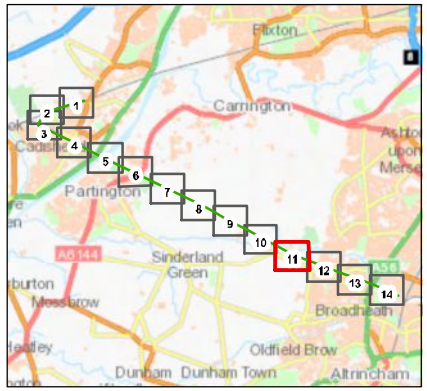
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Lines

- A3.2 - Coniferous Parkland/scattered trees
- G2.2 - Running water - mesotrophic
- J2.1.2 - Intact hedge - species-poor

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- J1.1 - Cultivated/disturbed land - arable
- J5 - Other habitat



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PHASE 1 HABITATS MAP
(Page 11 of 14)

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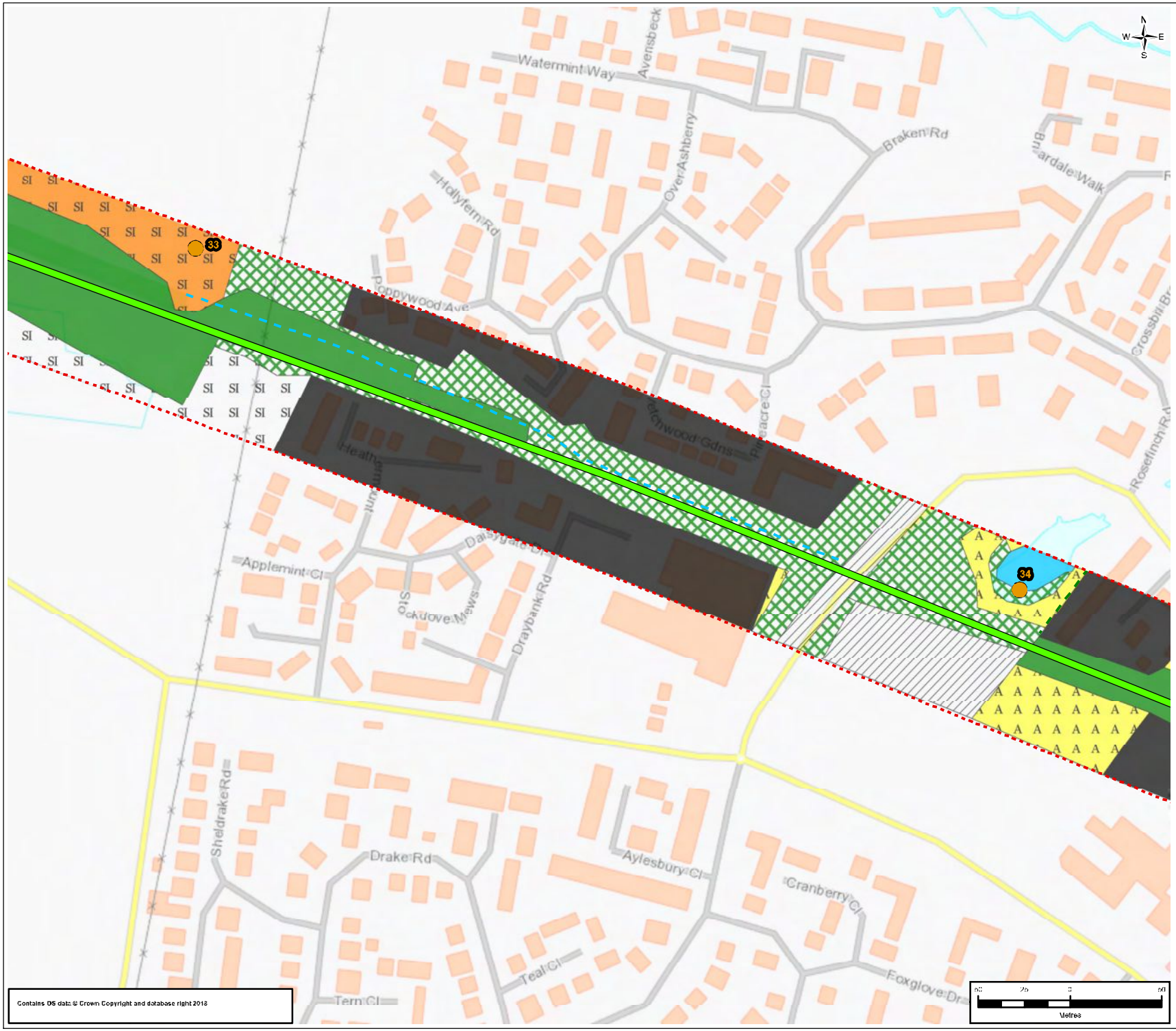
FIGURE 1.12



LEGEND

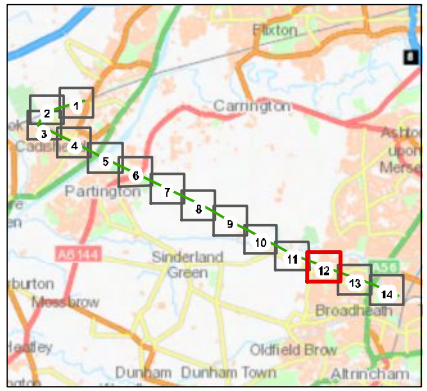
- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Lines

- J2.2.2 - Defunct hedge - species-poor
- J2.6 - Dry ditch

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- B2.2 - Neutral grassland - semi-improved
- B6 - Poor semi-improved grassland
- G1.2 - Standing water - mesotrophic
- J1.2 - Cultivated/disturbed land - amenity grassland
- J3.6 - Buildings
- J5 - Other habitat



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PHASE 1 HABITATS MAP
(Page 12 of 14)

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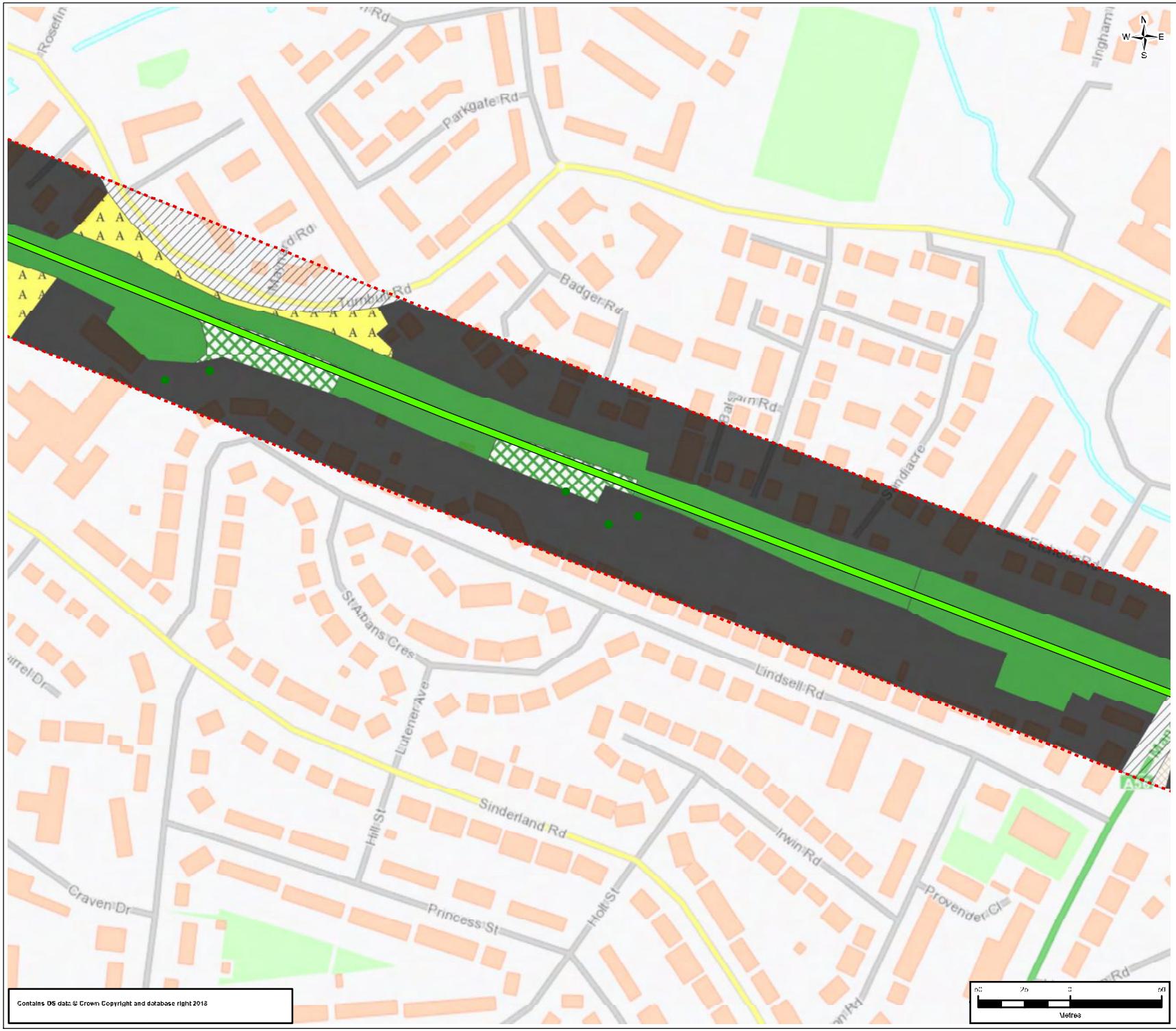
FIGURE 1.13



LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Points

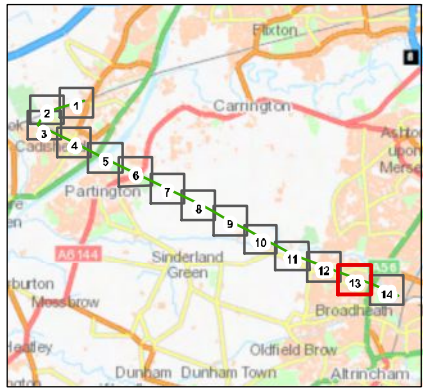
- A3.1 - Broadleaved Parkland/scattered trees

Phase 1 Habitat Lines

- J2.2.2 - Defunct hedge - species-poor

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- J1.2 - Cultivated/disturbed land - amenity grassland
- J1.4 - Introduced shrub
- J3.6 - Buildings
- J5 - Other habitat



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PHASE 1 HABITATS MAP
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FIGURE 1.14

LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 50m Buffer
- Target Notes

Phase 1 Habitat Points

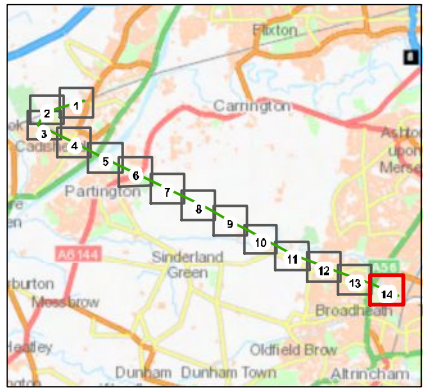
- A3.1 - Broadleaved Parkland/scattered trees

Phase 1 Habitat Lines

- G2.2 - Running water - mesotrophic

Phase 1 Habitat Polygons

- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- C3.1 - Other tall herb and fern - ruderal
- G1.2 - Standing water - mesotrophic
- G2.2 - Running water - mesotrophic
- J1.3 - Cultivated/disturbed land - ephemeral/short perennial
- J1.4 - Introduced shrub
- J4 - Bare ground
- J3.6 - Buildings
- J5 - Other habitat



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PHASE 1 HABITATS MAP
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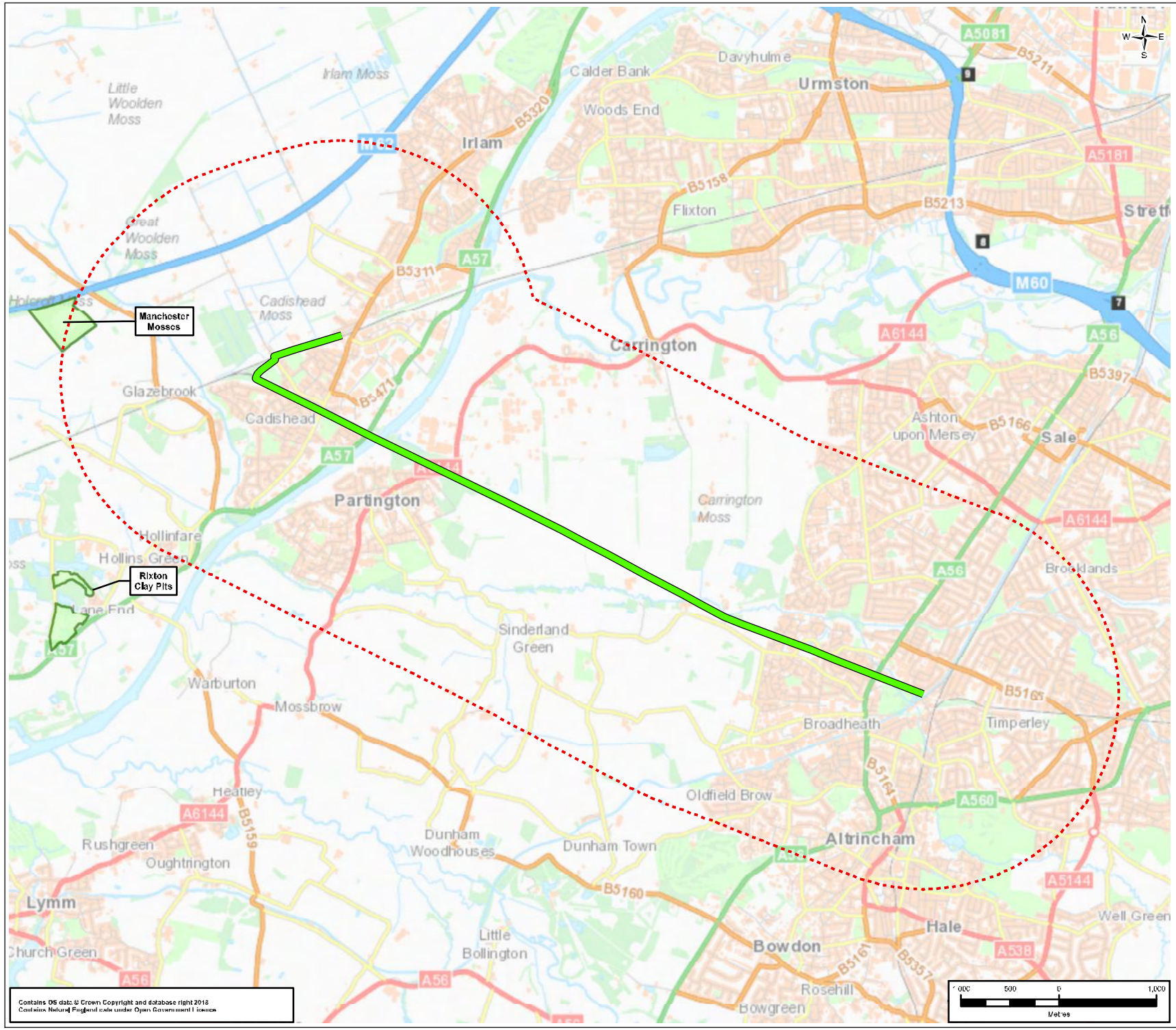
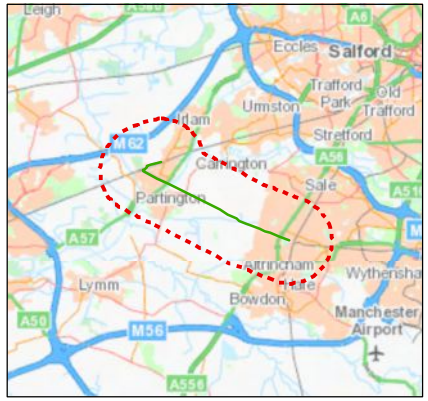
FIGURE 2



LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 2km Buffer
- Special Areas of Conservation



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WITHIN 2 KILOMETRES

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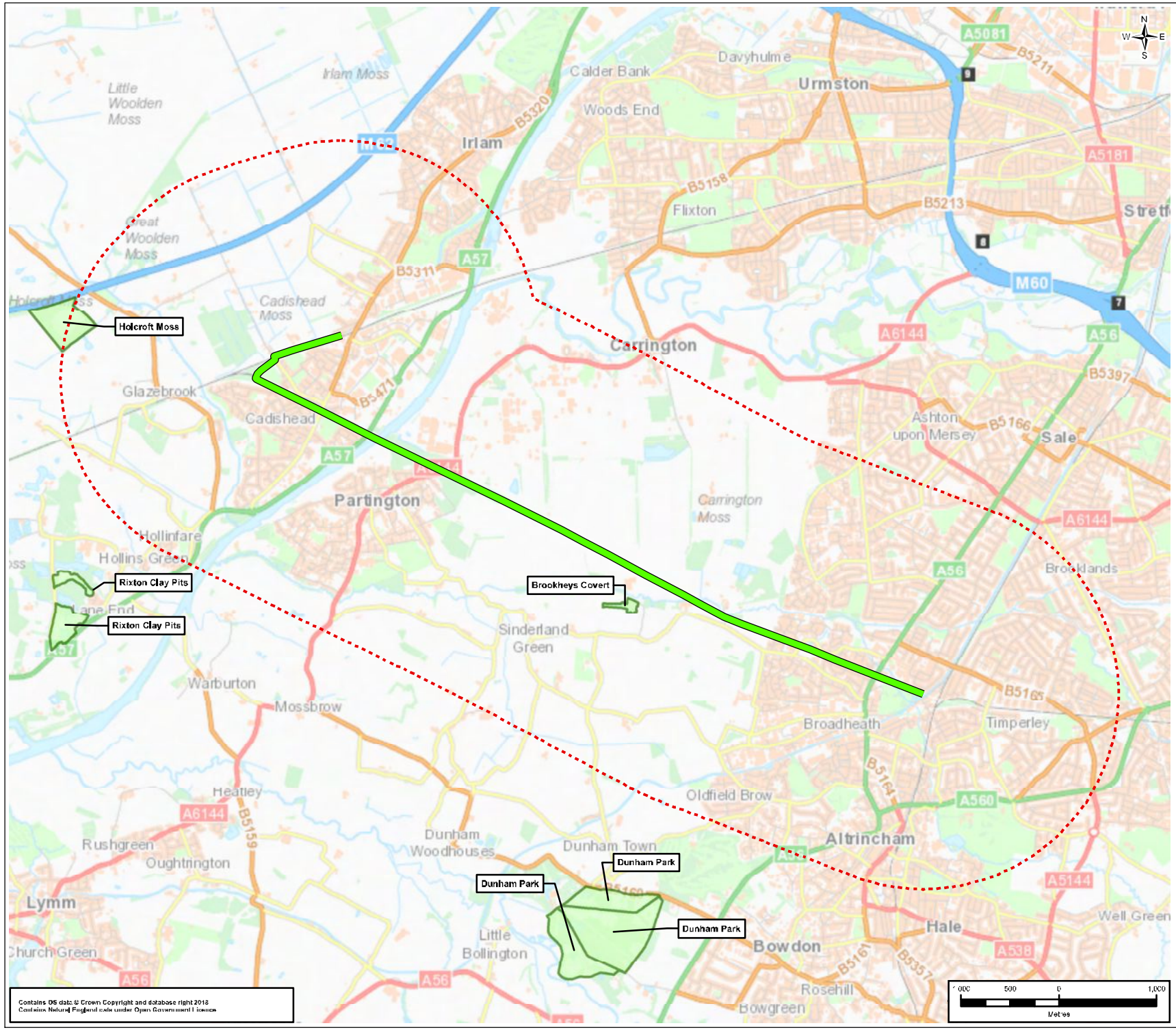
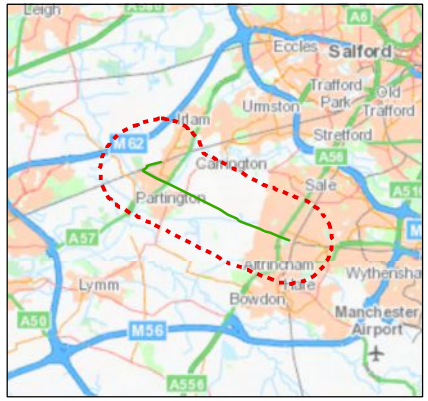
FIGURE 3



LEGEND

- Timperley to Irlam Route
- Timperley to Irlam Route 2km Buffer
- Sites of Special Scientific Interest



Rev.	Date	Purpose of revision	Drawn	Checked	Appvd
0	20/12/2018	Initial Issue	JRG	GR	ZG	DD

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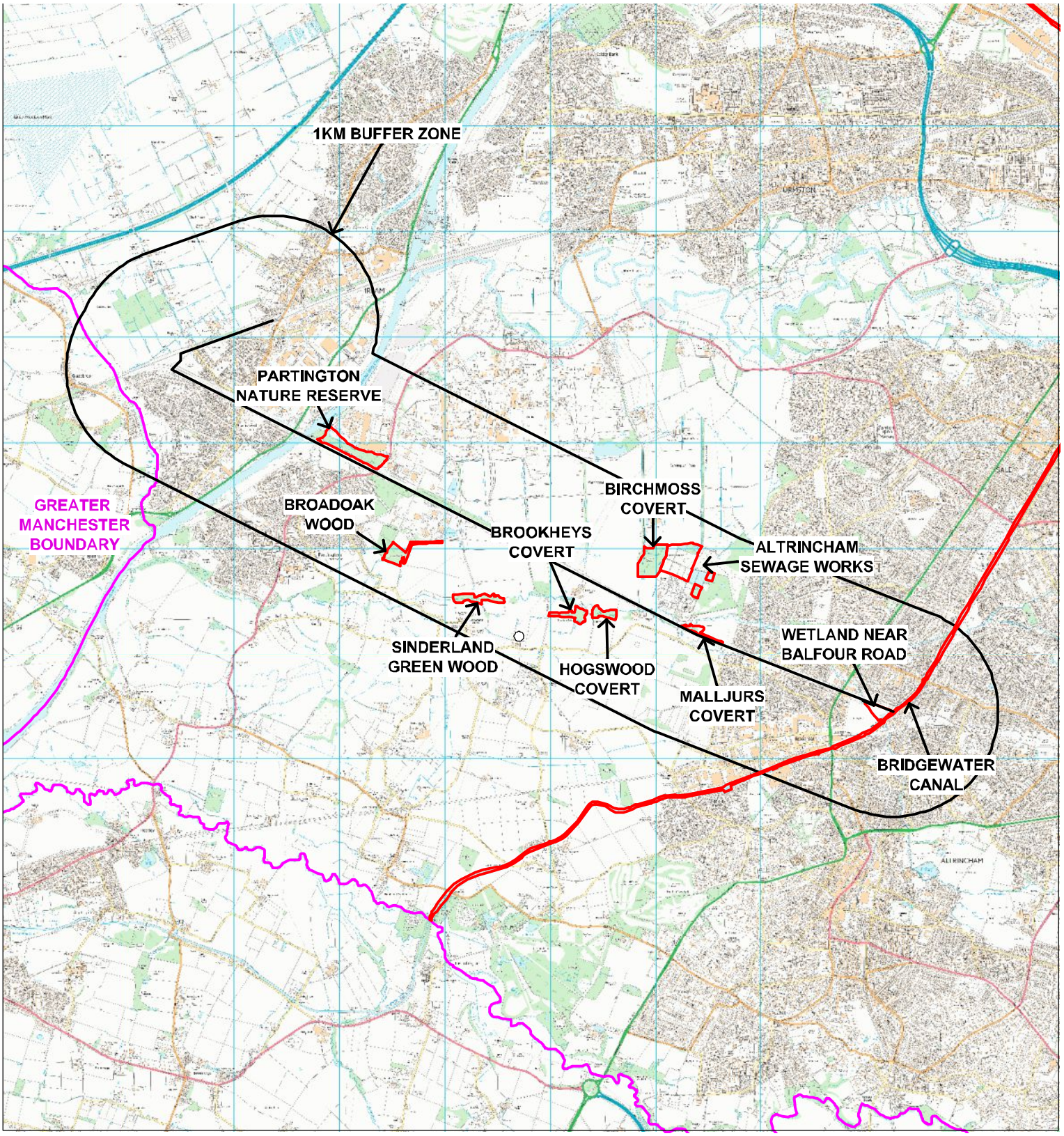
Project: CHESHIRE GREENWAYS

Drawing Title: TIMPERLEY TO IRLAM
NATIONAL STATUTORY DESIGNATED SITES
WITHIN 2 KILOMETRES

Scale @ A0	1:37,500 DO NOT SCALE
Jacobs No.	BTGM1006
Client No.	
Drawing No.	B GML008_LC_0300_NationalStatutoryDesignatedSites
Rev	0

Figure 4. Local Wildlife Sites (LWSs - formerly known as Sites of Biological Importance) within 1km



KEY

SITE OF BIOLOGICAL IMPORTANCE

SBI BOUNDARY

GREATER MANCHESTER ECOLOGY UNIT
ECOLOGICAL SEARCH - SJ 7370 9016
CHESHIRE LINES GREENWAY - MAP 1

SCALE 1:10,000

Greater Manchester Ecology Unit
Telephone 0161 342 4409
Email: gmeu@tameside.gov.uk

Date Produced: 29/11/2018

Appendix C. Ecology Target Notes and Photographs

Target Note	Target Note Description	Photograph
1	Strip of neutral semi-improved grassland between the railway platform and carpark. Composition was dominated by a mixture of fine grasses, Yorkshire fog (*Holcus lanatus*), ribwort plantain (*Plantago lanceolata*), nettle (*Urtica dioica*), creeping thistle (*Cirsium arvense*), common cleavers (*Galium aparine*), broadleaved dock (*Rumex obtusifolius*), meadow vetchling (*Lathyrus pratensis*), yarrow (*Achillea millefolium*), oxeye daisy (*Leucanthemum vulgare*) and chickweed (*Stellaria media*). Buddleja (*Buddleja davidii*) present. Three immature cherry trees (*Prunus* sp.) planted within.	

Target Note	Target Note Description	Photograph
2	Ornamental hedgerows on either side of road surrounding tree nursery and residential property. Species included Himalayan cotoneaster (*Cotoneaster simonsii*), rhododendron (*Rhododendron* sp.), holly (*Ilex aquifolium*) and privet (*Ligustrum ovalifolium*).	

Target Note	Target Note Description	Photograph
3	Arable land consisting of tree nurseries surrounded by beech (*Fagus* sp.) hedgerows.	

Target Note	Target Note Description	Photograph
4	Dead tree covered with thick ivy on railway embankment. May have bat roost potential.	

Target Note	Target Note Description	Photograph
5	Deep ditch with steep banks. Eutrophic and choked with duckweed (*Lemna* sp.). Low potential for water vole as little fodder available. The channel was 2m deep and 1m wide. Bankside vegetation was poor semi-improved grassland with abundant bramble (*Rubus fruticosus* agg.) and great willowherb (*Epilobium hirsutum*). No flow at the time of survey. Water less than 1m deep.	

Target Note	Target Note Description	Photograph
6	Dense/continuous scrub dominated by bramble with occasional cherry, elder (*Sambucus nigra*), common nettle, common reed (*Phragmites australis*) and willow (*Salix* sp.).	

Target Note	Target Note Description	Photograph
7	Railway embankments comprised of dense/continuous willow dominated scrub with abundant silver birch (*Betula pundula*). Scattered trees were occasional, and species included cherry, silver birch and beech.	

Target Note	Target Note Description	Photograph
8	Himalayan balsam (*Impatiens glandulifera*) present on railway embankment.	

Target Note	Target Note Description	Photograph
9	Dense/continuous scrub dominated between footpath and playing field with areas dominated by bramble and bracken (*Pteridium aquifolium*).	

Target Note	Target Note Description	Photograph
10	Footbridge over disused railway. Gaps in stonework rare and generally in good condition. May have bat roost potential.	

Target Note	Target Note Description	Photograph
11	Semi-natural broadleaved woodland dominated by willow and silver birch. The scrub layer was dominated by bramble with occasional cherry, sycamore (*Acer pseudoplanatus*), ash (*Fraxinus excelsior*), oak (*Quercus robur*). Ground flora species included common nettle, knapweed (*Centaurea nigra*) and broadleaved dock (*Rumex obtusifolius*).	

Target Note	Target Note Description	Photograph
12	Open area in woodland which has been inundated and dominated by bracken. Represents an area of habitat which could benefit from management and enhancement.	

Target Note	Target Note Description	Photograph
13	Bramble dominated scrub with abundant bracken, occasional hawthorn (*Crataegus monogyna*) and frequent willow.	

Target Note	Target Note Description	Photograph
14	Area of hardstanding adjacent to Manchester ship canal and viaduct surrounded by bramble and birch dominated scrub. Other species included common nettle, pendulous sedge (*Carex pendula*), hawthorn, berberis (*Berberis* sp.), rosebay willowherb (*Chamaenerion angustifolium*). Scrub continues up onto road bridge and disused railway embankment, dominated by willow and bramble, with occasional male fern (*Dryopteris filix-mas*), abundant ivy (*Hedera* sp.) and frequent great willowherb. Road bridge is relatively new with no significant bat roost potential	

Target Note	Target Note Description	Photograph
15	Viaduct over canal. Arches are approximately 25m high. Well maintained with no obvious holes in brickwork. Central grooves within arches where pipework would have been situated may offer bat roost potential. Similarly, on southern aspect, gaps around pipework may offer a potential roost feature.	

Target Note	Target Note Description	Photograph
16	Large expanse of poor semi-improved grassland used by the community for walking and cycling which could be enhanced. Species present included Yorkshire fog, broadleaved dock, creeping buttercup (*Ranunculus repens*), ribwort plantain, common cleavers, nettle, red fescue (*Festuca rubra*) and comfrey (*Symphytum officinale*). Scattered hawthorn and bramble scrub was occasional. A large area of bare ground present, likely due to trail bikes. Represents an area of habitat which could benefit from management and enhancement.	

Target Note	Target Note Description	Photograph
17	Partington Nature Reserve LWS. A steep slope from the disused railway formed a valley. The area had become inundated and dominated by bracken with occasional scattered willow and hawthorn scrub. Old rail arches provide opportunity for enhancement for bats.	

Target Note	Target Note Description	Photograph
18	Disused railway line with sloping embankments forming a footpath through semi-natural broadleaved woodland. The woodland was dominated by birch with abundant willow. The understory was dominated by bracken and bramble with rare sycamore and cherry scrub. Further west through the woodland, rare whitebeam (*Sorbus* sp.), oak, frequent hawthorn and rare ash were present where the disused railway embankment became covered in dense/continuous scrub to the south. The embankment to the north was dominated by bracken. Herb species such as Coltsfoot (*Tussilago farfara*) and ragwort (*Jacobaea vulgaris*) were present in the ground layer.	

Target Note	Target Note Description	Photograph
19	Localised patch of Himalayan balsam within dense scrub on south embankment. Likely more widespread.	

Target Note	Target Note Description	Photograph
20	Woodland east of Manchester Road was dominated by silver birch with occasional oak, willow, ash and rare beech. The understory was dominated by bramble with ash saplings, occasional hogweed (*Heracleum sphondylium*), common nettle, great willowherb, ferns, bracken and rare hart's-tongue fern (*Asplenium scolopendrium*). Himalayan balsam was widespread throughout this stretch of woodland. The woodland became wet woodland from Heath Farm Lane until Brookheys Farm.	

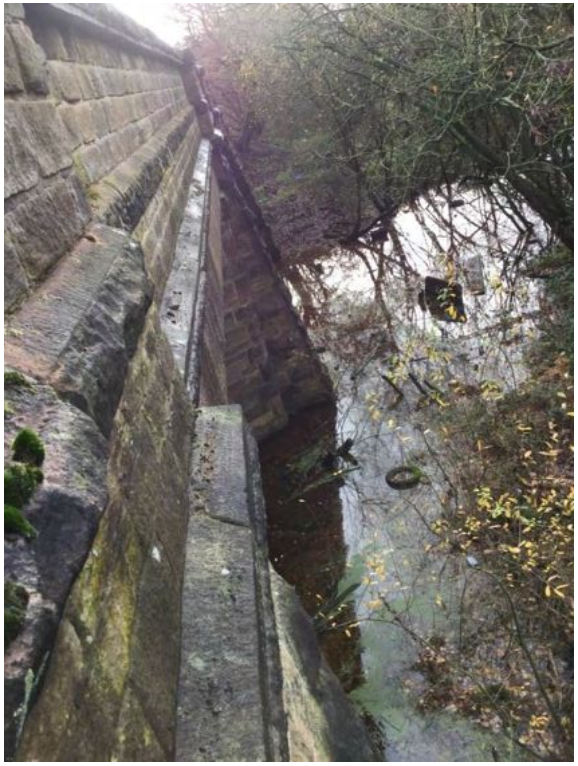
Target Note	Target Note Description	Photograph
21	Tunnel under railway bridge inaccessible at time of survey. May have bat roost potential and further investigation is recommended.	

Target Note	Target Note Description	Photograph
22	Old rail bridge. Southern side did not appear to have any sigificant bat roost potential due to concrete construction. However, the north side of the structure may be more suitable for roosting bats where the bed met the piers. Wing walls were well maintained.	

Target Note	Target Note Description	Photograph
23	Townsend Farm Lane road bridge over the disused railway was made of concrete and large bricks. Gaps between the bed and pier offer potential for roosting bats.	

Target Note	Target Note Description	Photograph
24	A brook was culverted under an arable field into the woodland. It was moderately flowing north to south. The channel was 1m wide, banks 1.5 m high and water less than 20cm deep. Merged with another ditch flowing eat to west with same dimensions. Both were culverted under farm track and opened adjacent to bridge. Flowed into wet woodland, opened into a wider channel and pooled. No aquatic macrophytes were present. Bankside vegetation was the same as woodland understory with abundant Himalayan balsam.	

Target Note	Target Note Description	Photograph
		
25	Open area on southern edge of woodland had a ballast substrate and was extremely wet. Tall ruderal vegetation covered the area dominated by great willow herb with occasional hard rush (*Juncus inflexus*), soft rush (*Juncus effusus*) and abundant mosses.	

Target Note	Target Note Description	Photograph
26	Dunham Road road bridge over disused railway may have bat roost potential but could not be accessed at the time of survey.	

Target Note	Target Note Description	Photograph
27	A dry ditch ran alongside woodland and arable field boundary. Ditch was 1m wide, 1m high, with steep banks. No aquatic vegetation present. Likely to be permanently dry or frequently dry. Bankside vegetation was dominated by bramble with abundant Himalayan balsam and reed canary grass (*Phalaris arundinacea*).	

Target Note	Target Note Description	Photograph
28	Sinderland brook had a fast flow, east to west. The watercourse was suitable for otter with opportunities for holts, couches, and probably fish present for prey items. The brook maybe suitable for water vole in places but shading was high in the section within the survey area. The brook was 5-6m wide, water was likely up to 1m deep in centre. The banks were moderately sloped, above a 45 degrees gradient. Bankside vegetation was dominated by dense bramble north of bridge. South of bridge semi-natural broadleaved woodland continued including species such as holly, elder and sycamore with willow scrub and bramble understory. The bridge itself may warrant further assessment for bat roost potential, as the structure was not assessible from the footpath.	

Target Note	Target Note Description	Photograph
29	A wet ditch flowed (low-moderate) east to west into Sinderland brook. The channel was 2m wide and 2m high with a water depth of less than 20cm and steep banks. Bankside vegetation was dominated by bracken with occasional reed canary grass. No aquatic vegetation was present.	

Target Note	Target Note Description	Photograph
30	Area of improved grassland with tall ruderal edge between the disused railway woodland and Sinderland Brook. The vegetation was dominated by great willowherb with occasional hogweed and abundant reed canary grass. Represents an area of habitat which could benefit from management and enhancement.	

Target Note	Target Note Description	Photograph
31	Road bridge over brook and footpath. Arch was 5m high and made of stone bricks. The structure was in good condition with very few gaps. One large gap was identified above the keystone on the south arch, east aspect. There were gaps in wing wall on south east side.	

Target Note	Target Note Description	Photograph
32	Derelict railway structure. An old red brick wall which had several holes in the brickwork may offer bat roost potential. The holes were approximately 1m off the ground, were dry, and extended back quite a distance into the wall.	

Target Note	Target Note Description	Photograph
33	Semi-improved neutral grassland. Appeared to be associated with the neighbouring housing development. Wet plant species were present, and many tree species had been planted to encourage areas of woodland regeneration. Grassland species included hard rush, cocksfoot (*Dactylis glomerata),* creeping buttercup and broadleaved dock, tare (*Lolium* sp.), hogweed, creeping thistle. vetch (*Vicia* sp.), common reed and reed canary grass. Alder (*Alnus glutinosa*) was the dominant tree species, other planted species included guelder rose (*Viburnum opulus*) and rowan (*Sorbus aucuparia).*	
34	Man-made pond, approximately 50x15m surrounded by managed amenity grassland. Aquatic vegetation was dominated by Typha (*Typha* sp.) with abundant reed canary grass and common reed. Frequent willow scrub surrounded the pond on moderately sloped banks. Water quality was good. Approximately 25% of the pond was shaded. Waterfowl likely to be present.	N/A

Target Note	Target Note Description	Photograph
35	Large, mature sycamore (height 25m and 0.8m DBH) with dense ivy cover spanning whole tree. May provide bat roost potential.	

Target Note	Target Note Description	Photograph
36	Unnamed brook which was canalised, with stone block, wood, and concrete reinforced banks. Bankside vegetation was dominated by hawthorn scrub, occasional elder, abundant ferns and abundant bramble. Other species on the water's edge included abundant reed canary grass, frequent common nettle, and rare sedges (*Carex* sp.). The watercourse was suboptimal for water vole but had potential for commuting otter between the canal and the Mersey. The channel was 3m wide with water between 50cm and 1m deep. The banks were high and gradually sloped until the concrete reinforcement which created a hard edge to the bank. Aquatic vegetation was sparse but starwort (*Callitriche stagnalis*) was present and locally abundant.	

Target Note	Target Note Description	Photograph
37	Japanese knotweed (*Fallopia japonica*) was present. The stand was approximately 4m wide and extended along the disused railway embankment throughout the Wetlands near Balfour Road LWS.	

Target Note	Target Note Description	Photograph
38	Well maintained rail bridge. No obvious potential roost features. Negligible potential to support roosting bats.	

Target Note	Target Note Description	Photograph
39	Large mature crack willow (*Salix fragilis*) which had several broken limbs. There was one clear feature at approximately 4m on the northwest aspect. There was one hole near the base of tree on west aspect. The tree may offer some potential as a day roost for bats in the summer.	

Target Note	Target Note Description	Photograph
40	Non-native and invasive *Cotoneaster horizontalis* was present in a localised patch (2m x 2m) on the disused railway woodland.	

Target Note	Target Note Description	Photograph
41	Wetlands near Balfour Road LWS. The area comprised wet semi-natural broadleaved woodland characteristic of willow carr. The canopy was dominated by willow with cherry and hawthorn scrub. The understory was dominated by bramble with abundant hogweed and occasional broadleaved dock.	

Target Note	Target Note Description	Photograph
42	A large pond, in two sections which were continuous at time of survey. Water quality was poor and no macrophytes were present. The smaller section of the pond was shaded for the majority whilst the larger section was in a clearing with much less shade. Old fishing platforms were present. The presence of fish is likely, and the pond may be used by waterfowl. Terrestrial woodland habitat around the pond was suitable for great crested newts. The pond was in close proximity to the canal. Bankside vegetation consisted of willow wet woodland with occasional bramble and holly understory. Woodland was generally dominated willow however rare lime (*Tilia* sp.), field maple (*Acer campestre*) and red oaks (*Quercus rubra*) were present. Typha dominated the marginal vegetation around the large section of the pond. There was no aquatic vegetation in the smaller section.	

Appendix D. Relevant Ecological Legislation

1. The Wildlife & Countryside Act 1981

The Wildlife & Countryside Act 1981 (as amended) is the principal piece of UK legislation relating to the protection of wildlife. It consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Directive 2009/147/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain.

The Act makes it an offence (with exception to species listed in Schedule 2) to intentionally kill, injure, or take any wild bird or their eggs or nests. Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Special Protection Areas (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

The Act makes it an offence (subject to exceptions) to intentionally kill, injure, or take, possess, or trade in any wild animal listed in Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. Species listed on Schedule 5 include GCN, bats and otter. The Act also prohibits certain methods of killing, injuring, or taking wild animals listed in Schedule 6 such as bats, otter and badger.

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants.

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

2. The Protection of Badgers Act 1992

In the UK badgers are primarily afforded protection under the Protection of Badgers Act 1992. This makes it illegal to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so and to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it.

Badgers also receive limited protection under Schedule 6 of the Wildlife & Countryside Act 1981 (as amended). This outlaws certain methods of taking or killing animals.

Under Section 10 (1)(d) of the Protection of Badgers Act 1992, a licence may be granted by Natural England to interfere with a badger sett for the purpose of development, as defined by Section 55(1) of the Town & Country Planning Act 1990.

Section 3 of the Protection of Badgers Act 1992 defines interference as:

- Damaging a badger sett;
- Destroying a badger sett;
- Obstructing access to, or any entrance of, a badger sett;
- Causing a dog to enter a sett; or
- Disturbing a badger when it is occupying a badger sett.

3. The Wild Mammals (Protection) Act 1996

The Wild Mammals (Protection) Act 1996 makes it an offence for any person to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

4. The Countryside and Rights of Way Act 2000

The Countryside and Rights of Way Act 2000 (CRoW) was passed to provide additional levels of protection for wildlife whilst also strengthening the protection afforded to Sites of Special Scientific Interest.

Schedule 12 of the Act amends the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences a criminal offence, create a new offence of 'reckless' disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

5. Natural Environment & Rural Communities Act 2006

The Natural Environment & Rural Communities (NERC) Act 2006 is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy.

It was created to make provision in connection with wildlife, Sites of Special Scientific Interest, National Parks and the Broads; to amend the law relating to rights of way; to make provision as to the Inland Waterways Amenity Advisory Council; to provide for flexible administrative arrangements in connection with functions relating to the environment and rural affairs and certain other functions; and for connected purposes.

Section 40 under the NERC Act 2006 carries an extension of the earlier CRoW Act biodiversity duty to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. The Natural Environment and Rural Communities Act (Section 40) states:

'Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.'

Subsequent guidance issued to Public Bodies by DEFRA states that it is important that public authorities seek not only to protect important habitats and species, but actively seek opportunities to enhance biodiversity through development proposals, where appropriate.

Section 41 under the NERC Act 2006, requires the Secretary of State to publish a list of habitats and species of principal importance for the purpose of conserving biodiversity in England. Public bodies including local and regional authorities under Section 40 of NERC 2006 are required to have regard to the conservation of biodiversity in England in the exercising of their day to day duties. A total of 56 habitats and 943 species of principal important are included on the Section 41 list, as requiring action under the UKBAP. A high proportion of the Section 41 species, are invertebrates (379) and lower plants and fungi (250). The potential habitats and species that could be present in the site include: Ponds, rivers, hedgerows, lowland mixed deciduous woodland, house sparrow, dunnock, starling, song thrush, hedgehog, noctule bat, soprano pipistrelle bat, brown long-eared bat, and GCN.

6. Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 (as amended) (SI No. 2017/1012) update and supersede The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). The 2017 Regulations are the principal means by which the European Habitats Directive is transposed in England and Wales.

The Regulations provide for the designation and protection of a network of 'European Sites' termed Natura 2000, the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. The Regulations also provide for the control of potentially damaging operations, whereby consent from the country Agency (ie Natural England for England) may only be granted once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the European site.

The Conservation of Habitats and Species Regulations 2017 apply in the terrestrial environment and in territorial waters out to 12 nautical miles. The EU Habitats and Wild Birds Directives are transposed in UK offshore waters by separate regulations – The Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended).

Regulation 41 relates to the protection of European protected species listed under Schedule 2 of the Regulations. European protected species include great crested newt (GCN), bats and otter. Taken together it is an offence to undertake the following acts with regard to European protected species:

- deliberately capture, injure or kill any wild animal of a European protected species (listed in Schedule 2 of the Regulations);
- deliberately disturb animals of any such species in such a way as to be likely to;
- impair their ability to survive, breed, rear or nurture their young, hibernate or migrate;
- affect significantly the local distribution or abundance of the species to which they belong;
- deliberately take or destroy the eggs of such an animal or
- damage or destroy a breeding site or resting place of such an animal.

The disturbance offence is generally taken to refer to a discernible effect at population level and biogeographic level, rather than simply to an individual animal. However, in certain circumstances the disturbance of one individual animal may have population level effects.

The regulations also make it an offence (subject to exceptions) to deliberately pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5.

However, the actions listed above can be made lawful through the granting of licences (European Protected Species Licence) by the appropriate authorities (Natural England in England). Licences may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority has determined that the following regulations are satisfied:

- the works under the licence are being carried out for the purposes of 'preserving public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- there is 'no satisfactory alternative' and
- the action 'will not be detrimental to the maintenance of the population of the species concerned at favourable conservation status in their natural range'.

7. National Planning Policy Framework 2018

The National Planning Policy Framework 2018 (NPPF) and Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC), places a duty on all public bodies including local planning authorities to consider habitats and species of Principal Importance listed in Section 41 of the NERC Act and Priority Species/Habitats within Biodiversity Action Plans when considering a planning application.

It is recognised by the NPPF that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, recognising the benefits of ecosystem services, minimising impacts on biodiversity and providing net gain where possible by establishing coherent and resilient wildlife networks. Furthermore, it prevents both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, soil, air, water or noise pollution or land instability.

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following:

- If significant harm from a development cannot be avoided, mitigated or compensated, then planning should be refused;
- Development within or outside SSSIs should not normally be permitted;
- Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted as should those that encourage opportunities to incorporate biodiversity; and
- Development that would result in deterioration of irreplaceable habitats (such as ancient woodland etc) should be refused unless the benefits outweigh the loss

The NPPF states that protected species and habitats are a material consideration in the planning process. Under the NPPF, Local Planning Authorities in England are required to take measures to protect the habitats of such species from further decline, protect the species from the adverse effect of development and refuse planning permission for development that harms these species unless the need for, or benefit of the development clearly outweighs that harm.

8. Habitats and Species of Principal Importance

In addition to species protected by law, the Natural Environment and Rural Communities (NERC) Act, 2006 requires the Secretary of State to publish a list of Habitats and Species which are of Principal Importance for the conservation of biodiversity in England. There are 56 Habitats and 943 Species of Principal Importance which were initially identified as requiring conservation action under the UK Biodiversity Action Plan (BAP) and which continue to be regarded as priorities under the UK Post-2010 Biodiversity Framework.

Appendix E. Structures Figures

Figure 1. Bridge Map

Bridge No. WJP1/9A

Construction Material: Reinforced Concrete

Bridge No. WJP1/9B

Construction Material: Steel

Construction Material: Early steel

Bridge No. WJP1/1

Construction Material: Reinforced Concrete

Bridge No. WJP1/4A

Construction Material: Early steel

Bridge No. WJP1/6

Construction Material: Reinforced Concrete

Bridge No. WJP1/7

Construction Material: Cast Iron

Bridge No. WJP1/9

Construction Material: Cast Iron

Bridge No. WJP1/11

Construction Material: Reinforced Concrete

Bridge No. WJP1/15

Construction Material: Cast Iron

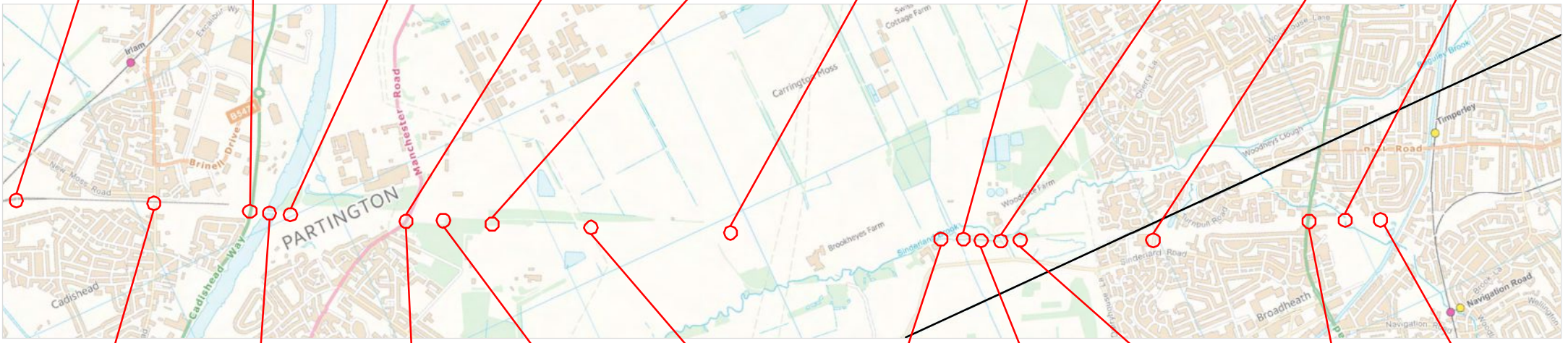
Bridge No. WJP1/16

Construction Material: Steel

Bridge No. WJP1/18

Construction Material: Brick

Bridge No. WJP1/20



Bridge No. WJP1/3

Construction Material: Brick

Bridge No. WJP1/5

Construction Material: Early steel

Bridge No. WJP1/7A

Construction Material: Reinforced Concrete

Bridge No. WJP1/8

Construction Material: Brick

Bridge No. WJP1/10

Construction Material: Pre-tensioned Concrete

Bridge No. WJP1/14

Construction Material: Clay pipe work and Brick

Bridge No. WJP1/15A

Construction Material: Mass Concrete

Bridge No. WJP1/17

Construction Material: Brick

Bridge No. WJP1/19

Construction Material: Steel

Bridge No. WJP1/21

Construction Material: Brick

Appendix F. Potential Access Points

Potential Access Points

A summary of the potential access points is listed in the table below. Please note that this is not an exhaustive list, and it is based upon potential locations identified on site and throughout the study. Please refer to Figure 6-3 in the main report where these are mapped.

Potential Access Points	New/ Existing/ Upgrade	Location	Constraints
1	New	Irlam Train Station	Access could be gained to the station car park by the most easterly point. This option will need careful consideration on how to get NMUs across the New Moss Road Rail Bridge.
2	Upgrade	SALB-0 bridleway and Moss Road Greenway	The carriageway over the bridge is narrow, where an informal one way is likely to operate. There is an existing narrow footpath on the eastern side of the bridge structure.
3	SALF-309	Marked bridleway	The marked bridleway is substandard in width for a Bridleway. There is scope to improve the path and link to the Greenway in close proximity to Fir Street.
4	New	Access off Fir Street marked as Bridleway	There is an existing path (Bridleway) that connects Fir Street to SALF-309. There is evidence of foot fall onto the proposed Greenway up a small embankment.
5	Existing	Access off Rowson Drive	There appears to be an existing footpath onto the proposed Greenway from Rowson Drive via the Cadishead Sports J.F.C., this could be potentially upgraded to a shared use access.
6	Existing	Access off Brackley Avenue	There is an existing pedestrian access between properties 38 and 40 on Brackley Avenue onto the proposed Greenway. The building lines prevent upgrading of this facility to a share use access.
7	New	Liverpool Road	Space limitations and the height difference between the Greenway and Liverpool Road will require engineering solutions to facilitate both cyclists and pedestrians.
8	Existing	Informal footpath along proposed Greenway route	Consideration should be given to how users of the current footpaths along the proposed Greenway route are accessing the facility.
9	New	Cadishead Way	Cadishead Way travels under the proposed Greenway. The height difference between the Greenway and Cadishead Way will require engineering solutions to facilitate both cyclists and pedestrians.

10	New	Tra-217	Tra-217 is a route which connects the A6144 to the Cadishead viaduct. This route is not surfaced and will require improvements to allow safe use by cyclists. The route is below the level of Cadishead viaduct, and so a structure will be required to facilitate access onto the proposed Greenway.
11	New	Manchester Road Shared use facility / separate NMU tunnel	On Manchester Road there is access onto the proposed Greenway route via an unmarked path on an embankment. It is likely that there will be a demand for access onto the cycle route at this location. There is scope to connect the existing shared use facility on Manchester Road to the proposed Greenway. Due to the difference in levels (grade separation), engineering solutions to facilitate both cyclists and pedestrian access would be required.
12	Upgrade	Heath Farm Lane	Gate facility with 'no entry'.
13	Upgrade	Tra-49 and Tra- 50	Tra-49 and Tra-50 are unsurfaced footpaths, which cross the proposed Greenway route via an overbridge on Dunham Road. There is available space along this route to be widened to make it suitable for cyclists.
14	Existing	Tra-51 and Tra-52	Tra-51 and Tra-52 connects Sinderland Lane in the south to Birch Road in the north, crossing the proposed Greenway at grade. Connectivity using this route for the public is by Public Right of Way (PRoW) footpaths. This can be used as a connection without the need for substantial engineering works.
15	New/ upgrade	Tra-84	Tra-84 is on tarmacked road with a bridge over the proposed route, this route is part of the National Cycle Network 62. Non-motorised Users are not provided a segregated path. As there is a riding school near this route, this path is potentially used by equestrians. Access for cyclists on this route is very important due to it being on the National Cycle Network 62.
16	Upgrade	Stamford Brook Community Woodland	There is a new NMU provision called Stamford Brook Community Woodland which is accessed from a new housing estate, this currently provides an at grade link to the proposed Greenway. There is an opportunity to upgrade the facility to a shared use facility.

17	Upgrade	Tra-150	Shared pedestrian and cycle route connecting Sinderland Road in the south to Turnbull Road in the north. The route will likely need widening to safely accommodate both pedestrian and cyclists.
18	Upgrade	Tra-151	Footpath access connection Turnball Road in the north to Lindsell Road in the south. Both pedestrian and cycle access onto the proposed Greenway can be accommodated.
19	New	Hartington Road / Attenbury's Lane	At this location the disused rail line is grade separated, there is evidence of people climbing the embankment to access the proposed route
20	New	Bridgewater Way	The disused railway line is grade separated above the canal and would require a new link down to the existing route 82 cycle facility.

Appendix G. Order of Magnitude Estimate

Cheshire Lines Greenway Order of Magnitude Estimate

Cheshire Lines Greenway

1 | 2

24 January 2019

Document history and status

Revision	Date	Description	By	Review	Approved
0	10/01/2019	First Issue	Thomas Shippen	Tammy Harrison-Round	Tammy Harrison-Round
1	21/01/2019	Updated as per Principle Transport Planners Comments	Thomas Shippen	Tammy Harrison-Round	Tammy Harrison-Round
2	24/01/2019	Updated as per Transport Planners Comments	Thomas Shippen	Tammy Harrison-Round	Tammy Harrison-Round

Distribution of copies

Revision	Issue approved	Date issued	Issued to	Comments
0	TH-R	10/01/2019	Tammy Harrison-Round	Issued as back up for main feasibility report for Cheshire lines greenway cycleway
1	DB	21/01/2019	Daniel Bimpson	Updated as per Principle Transport Planners Comments
2	LO	24/01/2019	Laura Oliver	Updated as per Transport Planners Comments

Cheshire Lines Greenway Order of Magnitude Estimate

Project No:	BTGME008
Document Title:	Cheshire Lines Greenway
Document No.:	1
Revision:	2
Date:	24 January 2019
Client Name:	
Client No:	N/A
Project Manager:	Tammy Harrison-Round
Author:	Thomas Shippen
File Name:	\\europe.jacobs.com\leeds\Admin\Quantity Surveying MP-PMCM\Adhoc advice\BTGME008 - TfGM Greenway Study\Update 24.01.2019 as Laura Oliver Comments\BTGME008_QS_Cheshire lines Greenway ROM Estimates_Rev 2.docx

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Contents

Executive Summary

In order to produce an Order of Magnitude Cost Estimate for the proposed works to the Cheshire Lines Greenway, we have reviewed the total length of Greenway and split the potential works into three levels of construction work required. The options for constructing the proposed Cheshire Lines Greenway cycle path are as follows:

- Works to existing trainline - Site clearance, plastic coated chain-link fencing with concrete posts at 5m intervals, filter drainage, all necessary excavation, precast concrete edgings, bitumen macadam surfacing comprising 150mm type 1 sub-base, 40mm thick binder course and 20mm thick surface course, line painting and signage as necessary, street lighting.

- Do Minimum (works to existing hard surfaces) – Line painting, signage and street lighting.

- Do Something (works to existing bridleways) – Site clearance, all necessary excavation, precast concrete edgings, bitumen macadam surfacing comprising 150mm type 1 sub-base, 40mm thick binder course and 20mm thick surface course, line painting and signage as necessary, street lighting

- Do Maximum (works to existing footpaths) – Site clearance, plastic coated chain-link fencing with concrete posts at 5m intervals, filter drainage, all necessary excavation, precast concrete edgings, bitumen macadam surfacing comprising 150mm type 1 sub-base, 40mm thick binder course and 20mm thick surface course, line painting and signage as necessary, street lighting.

The table below shows a high-level summary of the costs associated with each section.

Element	Section 1	Section 2
Construction Works	2,921,558	3,544,860
Main Contractor's Overheads and Profit	300,249	363,310
Preliminaries & Other Fees	1,844,891	2,222,687
Risk Allowances	1,013,340	1,226,171
Cost Limit	**6,080,038**	**7,357,028**
Price Range +/- 50%	3,040,019 to 9,120,057	3,678,514 to 11,035,542

High level approximate costs have been calculated for each element of work based on approximate material quantities and approximate rates.

A percentage figure has been applied to each option for contractor's preliminaries and risk allowances. Percentages applied for each. The allowance applied can be seen noted under section '*2.2 Assumptions*' of this report.

A price range of +/- 50% has been applied to the overall total cost based on the level and quality of information available to generate the estimated figures, in keeping with Jacobs Standard Operating Procedure SOP 211. SOP 211 states an expected level of accuracy of -50% to +50% is expected to be achieved from this estimate from a 0% to 2% level of project definition.

1

1. Basis of Estimates

An "Order of Magnitude Cost" estimate has been prepared for the proposed Cheshire Lines Greenway Cycle route based on the details given and referred to below.

1.1 Sources of Information

- Jacobs Cheshire Lines Greenway Initial Feasibility Study draft report dated January 2019
- Jacobs Highway Engineering Site Observations report
- Industry published pricing information updated using BCIS all in Tender Price Index shown in *Appendix E*. Data download date: 10th January 2019.

1.2 Type of Estimate

This is a Jacobs Class 5 "Order of Magnitude" Cost Estimate, where the level of project definition very limited and is deemed to be between 0% and 2%.

Jacobs Class 5 estimates are typically used during the formative stages of a capital expenditure project or programme (regardless of size) when there is a lack of firm or verifiable information for the initial evaluation of the project.

The base date of the estimate is Q1.2019.

1.3 Range of Accuracy

All estimates are classified in accordance with Jacobs estimating matrix contained within Jacobs Standard Operating Procedure Document No SOP 211. Jacobs classify estimates based upon the amount and quality of the information available at the time the estimate is delivered.

This Class 5 Order of magnitude cost estimate has an expected overall range of accuracy of -50% to +50%.

2. Qualifications, Assumptions and Exclusions

2.1 Qualifications

Any measurement contained within this document should not be relied upon for any other purpose other than the formulation of this cost estimate.

2.2 Assumptions

- The following assumptions have been made regarding the scope of works required for each option. Based on a desktop study previously undertaken, multiple scope options are included in each phase. The costs for each scope have been separated out in each estimate and can be seen in *Appendix A* and *Appendix B* as appropriate.

Series Number	Do Minimum – Works to existing Hard Surfaces	Do Something – Works to existing Bridleways	Do Maximum – Works to existing Footpaths	Works to existing trainline
200 – Site clearance		X	X	X
300 – Fencing			X	X
500 – Drainage and Service ducts			X	X
600 - Earthworks	X	X	X	X
1100 – Kerbs, Footways and Paved Areas		X	X	X
1200 – Traffic Signs and Road Markings	X	X	X	X
1300 - Road Lighting Columns, Brackets and CCTV Masts	X	X	X	X
1400 – Electrical Work for Road Lighting and Traffic Signs	X	X	X	X
1700 – Structural Concrete	X	X	X	X

- Site conditions have been observed remotely with no ground investigation; actual conditions exposed during the work may differ and could affect costs.

- The Construction cost estimate is based on approximate measures and rates so may differ significantly from what is required by the Contractor at commencement of the project, e.g. creating site access, temporary works, transport and availability of materials and therefore a significant variance should be allowed for when budgeting.

- No allowance has been included for road closure and temporary diversion routes. Such considerations and cost allowances are to be made by others.

- For the purposes of this Order of Magnitude Cost Estimate, we have assumed the access to the proposed cycleway from Irlam station is to be North of the existing rail line. This is one of numerous possible access options being considered. A separate review of costs for the other access options can be undertaken should they be required.

- For the purposes of this Cost Estimate we have assumed the proposed footway is a 5m wide construction. At this stage there is no design however we understand the width of the construction will be 4m.
- With no clear details setting out the methodology for delivering the works or necessary welfare provisions required by the contractors, we have included high-level percentage allowances for Contractor's preliminaries and site setup costs as follows for each Scope of Works option:
    - Do Minimum – Works to Existing Hard Surfaces: **10%**
    - Do Something – Works to Existing Bridleways: **20%**
    - Do Maximum – Works to Existing Footpaths: **30%**
    - Works to Existing Trainlines: **30%**
- An overall allowance has been included for Main Contractor's Overheads and Profit of 8% to each phase.
- In the absence of any risk assessment an allowance of 20% has been included for site risk.
- Allowances for project/design team fees and other development/project costs have been included as 10% and 15% respectively.
- Works are priced at current Q1 2019 with no further allowance for future inflation.
- We have assumed for all schemes that there will be little to no access to existing services infrastructure. No allowance for temporary power units such as generators and other plant have been included, these are to be allowed for as necessary by the Contractor as required.
- All costs included in the allowances made have been based on fair weather working conditions, no additional allowances have been made for working in poor weather conditions.
- The Estimates are based on the limited site information provided in the Highway Engineering Site Observations produced by Jacobs.
- Access to the proposed cycle track in the location of the existing trainline has been assumed to be constructed of a steel framed footway for costing purposes only. These structures have been allowed for at the locations marked by blue circles on the below map. The footways have been assumed in lieu of raising the levels and grading land at the proposed locations to create a graded access track to the cycleway. If the desired option for the scheme is to be the graded access track, this would require a further assessment of costs.
- The works have been split down into two possible phases as shown in the image below. Phase one is to the West of the Cadishead Viaduct to Irlam Station, Phase 2 is to the East of the Cadishead Viaduct to the Bridgewater Canal. No works to make good the Cadishead Viaduct bridge have been included in this estimate.

2.3 Exclusions

The following are exceptions/exclusions to this order of cost estimate and it is recommended the items listed are fully understood by Transport for Greater Manchester, as some may need to be identified and covered by other funds, where appropriate.

- All other works not identified within this cost estimate
- Costs associated with structural repairs to any existing structures along the proposed route
- Costs associated with working on or below existing structures
- Contaminated land/environmental requirements
- Invasive plant species
- Ecological issues
- Land acquisition costs
- Inflation from base date
- Finance charges or costs
- Costs associated with road closure and temporary diversion routes
- Health & safety requirements
- Insurances other than required contractor work related insurances
- Legal fees
- Professional fees & expenses outside of design team fees
- Service diversion works
- Site surveys/ground investigations
- Statutory body fees
- Third party costs
- VAT

2.4 Baseline Control Document

Refer to sources of information stated above.

2.5 Approximate Project Programme

Currently unknown.

2.6 Design Development Provision

The "Design Development Provision" is a factor applied to a Jacobs estimate, after due consideration of the status of design, to cover quantity adjustments that are anticipated to occur during the detailed design. Design

development is in addition to Allowance for Unforeseen." At this stage we have assumed design development provisions are included in the 20% risk allowance.

2.7 Allowance for Unseen

The "Allowance for Unforeseen" is in addition to the Design Development provision and is part of the estimated job cost. It is to cover unusual weather conditions, labour problems, increases in costs not covered by contractual provisions, items which have been inadvertently left out of the estimate, delays in deliveries of equipment or materials, and the like. At this stage we have assumed "Allowance for Unforeseen provisions are included in the 20% risk allowance.

Appendix A. Section 1 Estimate

Ref	Description	Quantity	Unit	Rate	Total
	BCIS all in TPI calculation				
	((321-324) / 324) x 100 = 0.9259 (rounded to 0.93)				
A	Works to existing Trainline	3,047	m	524	1,597,880
B	Do minimum - works to existing hard surfaces	1,067	m	167	178,716
C	Do something - Works to existing bridleways	263	m	349	91,741
D	Do maximum - works to existing footpaths	1,208	m	522	631,005
E	Point 5 access/egress	27	m2	2,372	64,044
F	Point 17 access/egress	51	m2	2,372	120,972
G	Point 18 access/egress	100	m2	2,372	237,200
	SUB-TOTAL: PHASE 1 CONSTRUCTION COSTS				**2,921,558**
H	Main contractor's preliminaries: works to existing trainline @ 30%				479,364
I	Main contractor's preliminaries: works to existing hard surfaces @ 10%				17,872
J	Main contractor's preliminaries: works to existing bridleways @ 20%				18,348
K	Main contractor's preliminaries: works to existing footpaths @ 30%				189,302
L	Main contractor's preliminaries: works to access points @ 30%				126,665
	TOTAL: PHASE 1 CONSTRUCTION COSTS (including preliminaries)				**3,753,109**
M	Main contractor's overheads and profits @ 8%				300,249
	TOTAL: CONSTRUCTION WORKS ESTIMATE				**4,053,358**

Ref	Description	Quantity	Unit	Rate	Total
	PROJECT/DESIGN TEAM FEES AND OTHER DEVELOPMENT/PROJECT COSTS				
N	Project/design team fees @ 10%				405,336
O	Other development/project costs @ 15%				608,004
	TOTAL: PROJECT/DESIGN TEAM FEES AND OTHER DEVELOPMENT/PROJECT COSTS ESTIMATE				**1,013,340**
P	**BASE COST ESTIMATE**				**5,066,698**
Q	**TOTAL RISK ALLOWANCE @ 20%**				**1,013,340**
R	**TOTAL INFLATION ALLOWANCE**				**Excluded**
S	**COST LIMIT (excluding VAT assessment)**				**6,080,038**
T	**VAT ASSESSMENT**				**Excluded**

Appendix B. Section 2 Estimate

Ref	Description	Quantity	Unit	Rate	Total
	BCIS all in TPI calculation				
	((321-324) / 324) x 100 = 0.9259 (rounded to 0.93)				
A	Works to existing Train line	4,508	m	523	2,358,226
B	Do minimum - works to existing hard surfaces	912	m	143	130,359
C	Do something - Works to existing bridleways	1,141	m	358	408,719
D	Point 10 access/egress point	75	m2	2,372	177,900
E	Point 13 and 14 access/egress point	108	m2	2,372	256,176
F	Point 20 access/egress point	47	m2	2,372	111,484
G	Point 21 access/egress point	43	m2	2,372	101,996
	SUB-TOTAL: PHASE 2 CONSTRUCTION COSTS				**3,544,860**
H	Main contractor's preliminaries: works to existing train line @ 30%				707,468
I	Main contractor's preliminaries: works to existing hard surfaces @ 10%				13,036
J	Main contractor's preliminaries: works to existing bridleways @ 20%				81,744
K	Main contractor's preliminaries: works to access points @ 30%				194,267
	TOTAL: PHASE 2 CONSTRUCTION COSTS (including preliminaries)				**4,541,375**
L	Main contractor's overheads and profits @ 8%				363,310
	TOTAL: CONSTRUCTION WORKS ESTIMATE				**4,904,685**

Ref	Description	Quantity	Unit	Rate	Total
	PROJECT/DESIGN TEAM FEES AND OTHER DEVELOPMENT/PROJECT COSTS				
M	Project/design team fees @ 10%				490,469
N	Other development/project costs @ 15%				735,703
	TOTAL: PROJECT/DESIGN TEAM FEES AND OTHER DEVELOPMENT/PROJECT COSTS ESTIMATE				**1,226,172**
O	**BASE COST ESTIMATE**				**6,130,857**
P	**TOTAL RISK ALLOWANCE @ 20%**				**1,226,171**
Q	**TOTAL INFLATION ALLOWANCE**				**Excluded**
R	**COST LIMIT (excluding VAT assessment)**				**7,357,028**
S	**VAT ASSESSMENT**				**Excluded**

Appendix C. BCIS All in TPI Indices

BCIS®

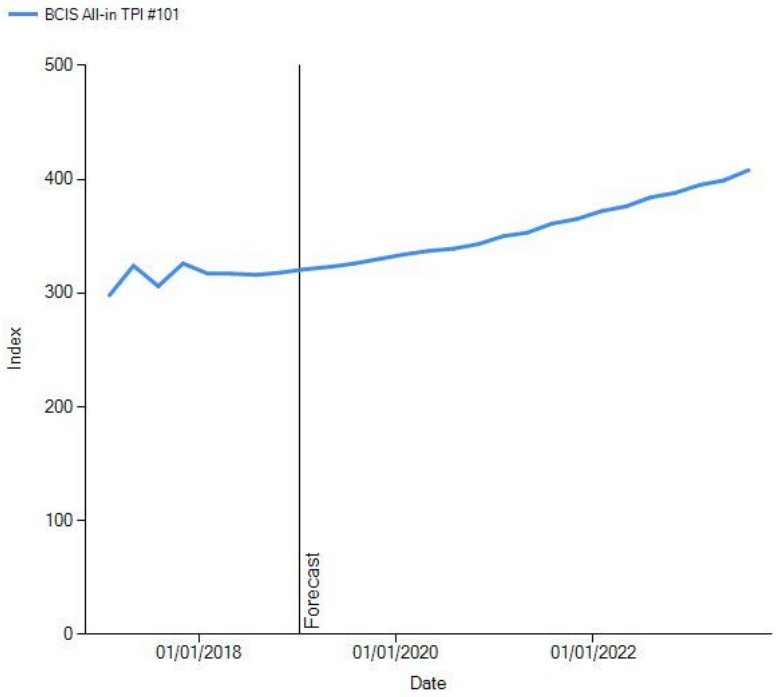
RICS®

BCIS All-in TPI #101

Base date: 1985 mean = 100 | Updated: 21-Dec-2018 | #101

			Percentage change		
Date	Index	Sample	On year	On quarter	On month
1Q 2017	298	27	8.4%	5.3%	
2Q 2017	324	23	14.9%	8.7%	
3Q 2017	306	Forecast 17	12.1%	-5.6%	
4Q 2017	326	Forecast 18	15.2%	6.5%	
1Q 2018	317	Forecast 8	6.4%	-2.8%	
2Q 2018	317	Forecast 6	-2.2%	0.0%	
3Q 2018	316	Forecast	3.3%	-0.3%	
4Q 2018	318	Forecast	-2.5%	0.6%	
1Q 2019	321	Forecast	1.3%	0.9%	
2Q 2019	323	Forecast	1.9%	0.6%	
3Q 2019	326	Forecast	3.2%	0.9%	
4Q 2019	330	Forecast	3.8%	1.2%	
1Q 2020	334	Forecast	4.0%	1.2%	
2Q 2020	337	Forecast	4.3%	0.9%	
3Q 2020	339	Forecast	4.0%	0.6%	
4Q 2020	343	Forecast	3.9%	1.2%	
1Q 2021	350	Forecast	4.8%	2.0%	
2Q 2021	353	Forecast	4.7%	0.9%	
3Q 2021	361	Forecast	6.5%	2.3%	
4Q 2021	365	Forecast	6.4%	1.1%	
1Q 2022	372	Forecast	6.3%	1.9%	
2Q 2022	376	Forecast	6.5%	1.1%	
3Q 2022	384	Forecast	6.4%	2.1%	
4Q 2022	388	Forecast	6.3%	1.0%	
1Q 2023	395	Forecast	6.2%	1.8%	
2Q 2023	399	Forecast	6.1%	1.0%	
3Q 2023	408	Forecast	6.3%	2.3%	

Index value over time



Percentage change over time

Percentage change: Year on year