

# Wakefield Local Cycling and Walking Infrastructure Plan: Phase 1



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# 1 Introduction

## Background

- 1.1 In 2017 the Government published its first Cycling and Walking Investment Strategy, which sets out an ambition to make cycling and walking the natural choices for shorter journeys or as part of a longer journey. The Strategy's objectives are to:
- Increase cycling activity; doubling the number of cycle stages made each year from 0.8 billion in 2013 to 1.6 billion in 2025
  - Increase walking activity to 300 walking stages per person per year
  - Reduce the rate of cyclists being killed or seriously injured on England's roads
  - Increase the percentage of children aged 5 to 10 that usually walk to school from 49 per cent in 2014 to 55 per cent in 2025
- 1.2 Local Cycling and Walking Infrastructure Plans (LCWIPs) form part of the Strategy and set out a new, strategic approach to identifying cycling and walking improvements required at the local level. They enable a long-term approach to developing cycling and walking networks so that the Government's objectives can be achieved. The key outputs of LCWIPs are:
- A network plan for cycling and walking, which identifies preferred routes and core zones for further development;
  - A prioritised programme of infrastructure improvements for future investment; and
  - A report that sets out the underlying analysis carried out and a narrative to support the identified improvements.

## The West Yorkshire LCWIP

- 1.3 Development of the West Yorkshire LCWIP has been co-ordinated by West Yorkshire Combined Authority (The Combined Authority), which has commissioned Steer to support the process. Steer has worked with The Combined Authority, the five West Yorkshire districts, and project partners Mobycon and Living Streets to develop this LCWIP.
- 1.4 Development of LCWIPs in West Yorkshire forms part of objectives and proposed policies to increase levels walking and cycling set out in the West Yorkshire Transport Strategy. This includes a target of increasing levels of cycling by 300 per cent by 2027 and a target of increasing walking by 10 per cent by 2027.
- 1.5 LCWIPs also support Transport Strategy Road Network Policy 11 to provide improved cycling infrastructure, and Places to Live and Work Policy 28 to provide safe and convenient walking and cycling networks. The West Yorkshire LCWIP is made up of individual LCWIPs for the five West Yorkshire Partner Councils. They will function and act as standalone LCWIPs, and be brought together into the West Yorkshire LCWIP.

1.6 The West Yorkshire and constituent Partner Council LCWIPs are expected to meet the following overarching objectives:

- To identify the highest-priority local cycling and walking improvements within target areas to enable subsequent scheme development and delivery, as part of a long-term approach to developing local cycling and walking networks
- To support investment that will:
  - help achieve Transport Strategy targets to increase the numbers of people walking and cycling and enable people to make shorter journeys on foot or by bike, offering convenient, healthy and affordable travel options as part of healthy living plans.

1.7 The full development of a comprehensive West Yorkshire LCWIP, with five constituent LCWIPs covering the urban and rural areas of the region, will involve a significant amount of resource and time to deliver. **The resources currently available (including support from DfT) will enable some, but not all, of the work required to carry out the development of a comprehensive Network Plan that provides networks of suitable density and coverage for the whole of West Yorkshire. Development of a West Yorkshire and individual Partner Council LCWIPs is therefore expected to be delivered through several phases of work.**

1.8 This initial phase will focus on specific geographic areas of each Partner Council area, within which Core Walking Zones, routes and cycling network desire lines will be identified, and resulting schemes assessed.

### LCWIP phase 1: focus

1.9 A separate scoping report is available which outlines the process undertaken to identify the initial areas of focus for phase 1 of LCWIP development in Wakefield.

1.10 Identifying an area of focus for cycling was informed by initial analysis using the Propensity to Cycle Tool (PCT) and Steer's Cycling Potential Index (CPI).

1.11 The PCT assumes potential levels of cycling based on trip distances, hilliness and age profiles. It does not take account of existing or planned infrastructure and therefore to achieve the potential indicated, the necessary quality of cycling infrastructure would need to be in place.

1.12 The PCT can also map different scenarios of change. The "Go Dutch" scenario was used for initial scoping to understand which areas of Wakefield district have the greatest potential to increase cycling. This scenario assumes that people will be willing to travel a wider range of trip distances and that greater numbers of old and young people will cycle, which is likely to result from cycling infrastructure being introduced to Dutch standards. The key inputs to this tool developed for the DfT are origin destination journey to work data from the 2011 census, route distance and hilliness.

1.13 The Cycling Potential Index takes into account the socio-demographic profile of the population, as well as hilliness and trip length. This was used to identify the population segments that are most likely to take up cycling in Wakefield.

1.14 The scoping also considered the nature of Wakefield's urban and natural form and future growth proposals. The urban and natural form effectively creates funnels into the city centre from the north and the south. These funnel routes offer potential gateways

into the city from a number of areas of Wakefield city and from other areas of the district. To the north there are proposals for a mixed use development at Snow Hill, which could provide an opportunity to provide high quality cycling infrastructure to connect a new community, as well as a potential funding source for improvements identified by the LCWIP.

- 1.15 To the south there is a traffic “pinch point” at the A61 New Wakefield Bridge over the river Calder, which forms the access point to Wakefield city centre for traffic from the south of Wakefield and the five towns to the east. There is also a parallel traffic free bridge (Chantry Bridge) which could be an interchangeable option for a cycle route south of the city centre.
- 1.16 Therefore, for cycling this LCWIP focused on the key routes into Wakefield city centre from the north and the south of the city.
- 1.17 The LCWIP process requires the identification of a ‘Core Walking Zone’ which should typically include significant trip generators such as key employment sites and transport interchanges. For walking journeys, distances travelled are short (typically up to 2km). The scoping discussion sought to define a suitable Core Walking Zone of around 400 metres in diameter that could be connected by key walking routes of up to 2km in length.
- 1.18 Initial mapping of trip generators confirmed that they are clustered in the more densely populated areas. Wakefield city centre has the greatest density, with the “five towns” of Pontefract, Castleford, Featherstone, Normanton and Knottingley having a lower concentration of trip generators, as well as Ossett. All could form future Core Walking Zones in Wakefield district.
- 1.19 As such, Wakefield City Centre was chosen as the Core Walking Zone for phase 1 of the Wakefield LCWIP. A particular focus was placed on walking journeys from the Eastmoor community and Pinderfields Hospital, which is a significant trip generator within 2km of the city centre.
- 1.20 Within this city centre area there is physical severance of communities, with railways, the river and road infrastructure acting as real and perceived barriers to walking journeys from inner urban areas. A particular issue that needed to be addressed was severance of communities to the north east of Wakefield by the A61, which acts as a ring road / bypass around the city centre.

## Structure of this report

- 1.21 Section 2 provides the main body of this LCWIP. Mapping has been provided to Wakefield Council separately, in order that it can be incorporated into the Council’s plans and policy documents. Section 2 incorporates:
  - For north and south Wakefield, the initial area for LCWIP development in this first phase:
    - A cycling network map showing prioritised desire lines and proposed route alignments for the high priority desire line(s) identified;
    - An initial prioritised list of potential improvements for these routes to help guide future investment when opportunities arise; and
    - Core design outcomes for cycling network development

- For Wakefield city centre, the Core Walking Zone in this first phase of LCWIP development:
  - A walking network map showing key walking routes in to and around the city centre;
  - An initial prioritised list of potential improvements for these routes to help guide future investment when opportunities arise; and
  - Core design outcomes for walking infrastructure.

1.22 Section 3 presents the stages of analysis that informed the proposed cycling and walking network maps.

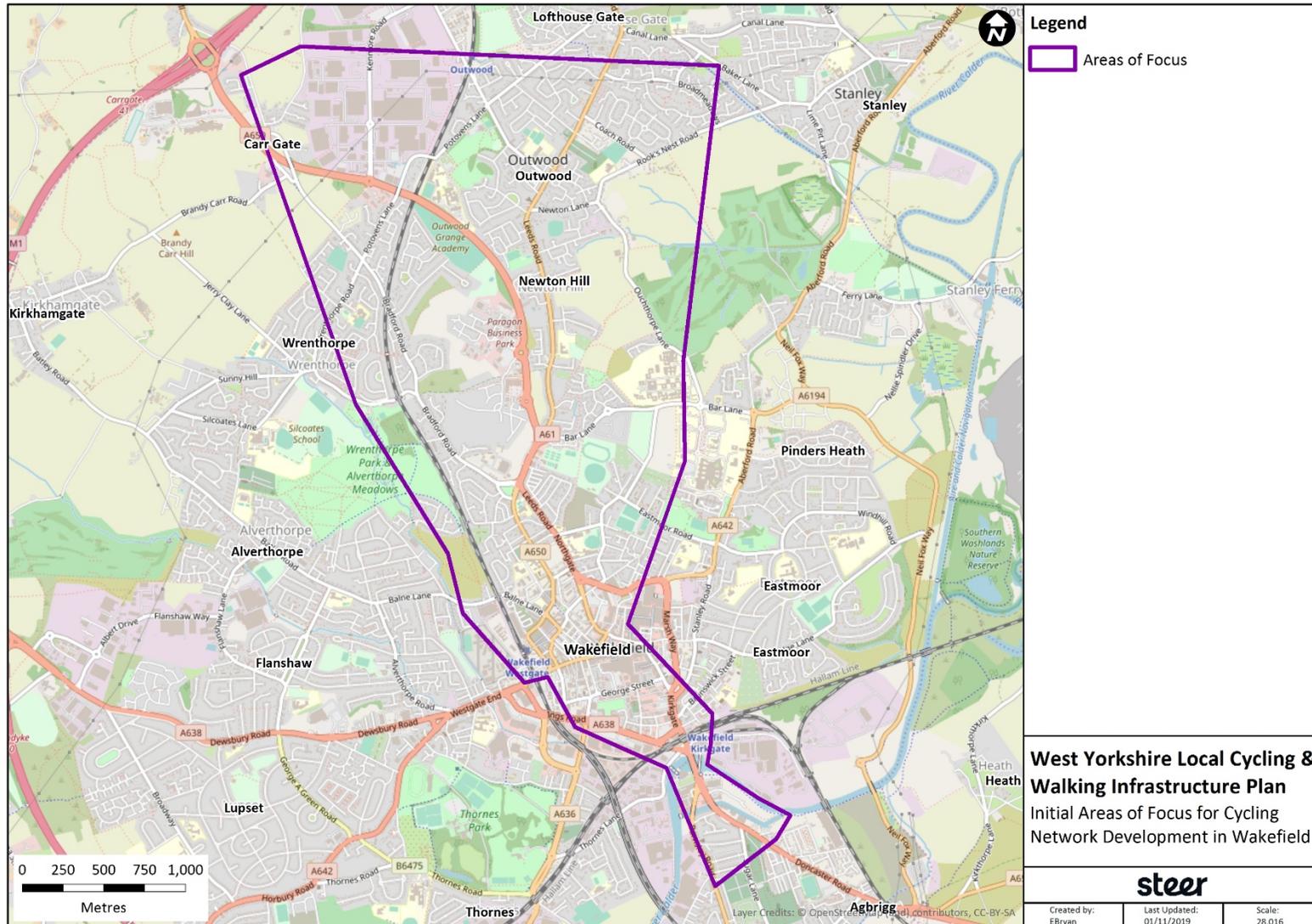
## 2 Wakefield LCWIP: Phase 1

2.1 The first phase of the Wakefield LCWIP covers:

- An initial area of cycling network development in north and south Wakefield; and
- A Core Walking Zone in Wakefield city centre
- Lists of potential infrastructure improvements for walking and cycling

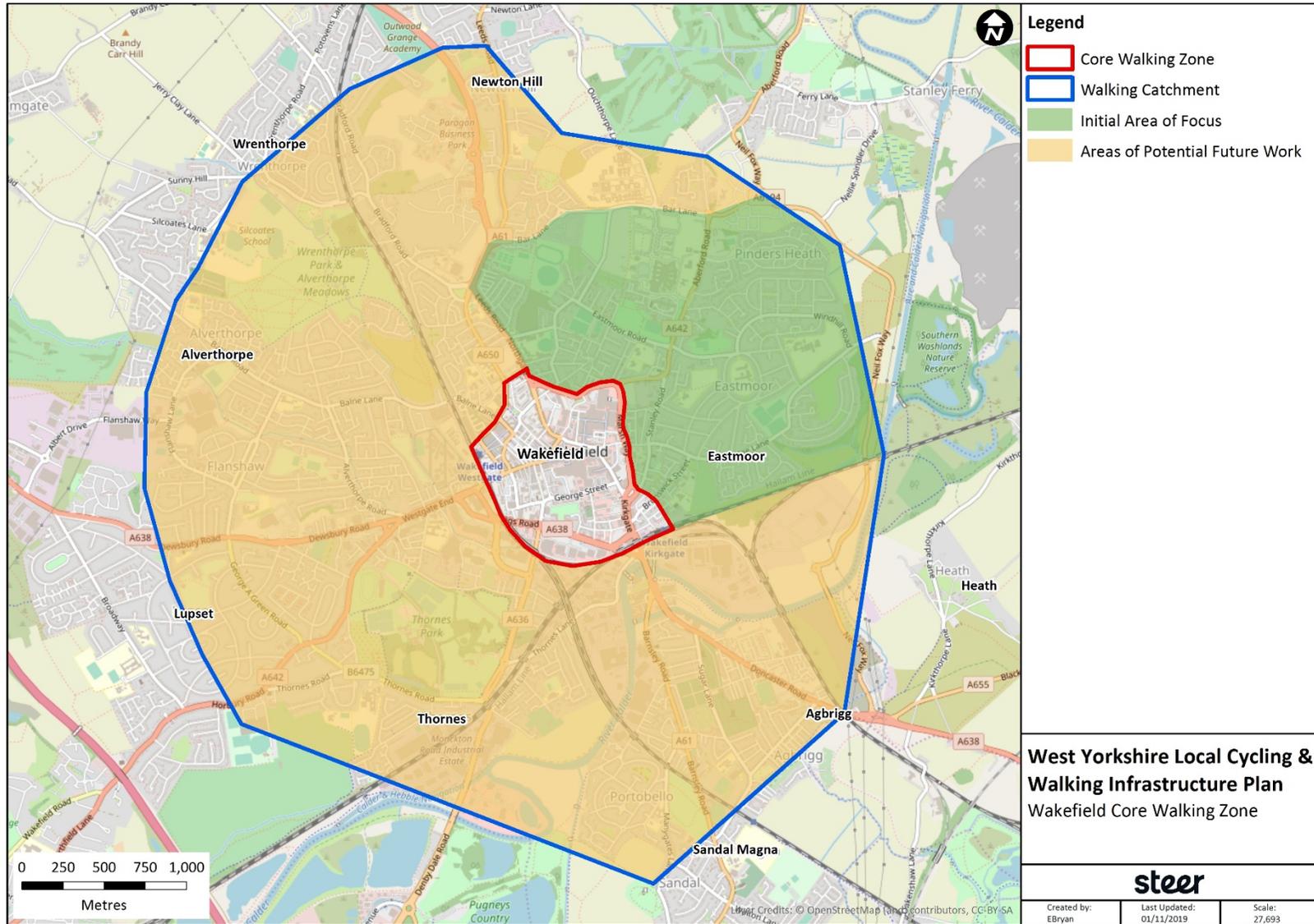
2.2 Figure 2.1 below shows the initial areas of focus for cycling and Figure 2.2 shows the initial area of focus for walking.

Figure 2.1: Wakefield LCWIP area of focus for cycling



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Figure 2.2: Wakefield LCWIP area of focus for walking



## Cycling

### Identifying desire lines

- 2.3 To develop a cycling network, the first step was to identify the key desire lines between the places that people want and need to travel in Wakefield. It should be noted that these are not routes themselves, simply an indication of the most important trip origins and destinations. There may be various possible route alignments between them that should be considered at a subsequent stage of analysis.
- 2.4 The desire lines identified for north and south Wakefield shown in Figure 2.3. These reflect data analysis and stakeholder input to identify existing demand for cycling, potential demand for cycling and links to future growth sites within the cycling catchment area (as described in the supporting analysis section later in this document).
- 2.5 Data analysis included consideration of population density, employment density, car ownership, journeys to work under 5km proposed growth areas, location and clustering of key trip generators, propensity and potential for cycling, existing and proposed cycling network provision and results of a stakeholder network planning workshop. Table 3.3 in the supporting analysis provides a full account of the data used to identify and prioritise desire lines.

### Prioritising desire lines

- 2.6 The same data was used to rank these desire lines from 1 to 14 (1 being the highest priority) in order of both existing and potential cycle demand.
- 2.7 In order to determine routes to take forward for further analysis, it was necessary to consider where desire lines might converge. For example, many desire lines run closely in parallel and will therefore use the same corridors to cater for cycling demand in some locations.

### Selection of desire lines for detailed assessment

- 2.8 Two priority cycle routes were selected for further investigation in Wakefield, based on consideration of the analysis and Wakefield Council's aspirations:
1. Wakefield to Newton Bar (to meet desire lines 5, 6 and 10)
  2. Wakefield to Sandal and Agbrigg (to meet desire lines 1 and 3)
- 2.9 Two alignment options were identified for each of these potential routes, which are shown in Figure 2.4 and Figure 2.5. Option 1 provides the most direct alignment, which normally utilises primary transport corridors and requires a higher level of intervention. Option 2 provides a less direct route – or route sections – that makes use of secondary transport corridors, back streets, green spaces and waterways.
- 2.10 Proposed cycling infrastructure improvements and indicative costs for each of these routes and alignment options are provided in Table 2.1. These provide an initial understanding of requirements, based on a desktop review and site visit at key locations. **Delivery of proposed infrastructure will require further feasibility and detailed design work to be undertaken to develop more accurate costs.**
- 2.11 For the desktop review, the proposed cycling infrastructure required was informed by Table 1.3 of LTN 2/08, which is an approximation based on traffic volumes and

speeds. Transport engineers from Steer and Wakefield Council then assessed potential requirements at key locations, such as critical junctions.

- 2.12 Estimated infrastructure costs were informed by Taylor and Hiblin (2017) *Typical costs of cycling interventions: interim analysis of Cycle City Ambition schemes*, which provides guidance on the typical costs of implementing various types of cycling infrastructure in towns and cities across the UK. It was this research that informed the costs provided in the LCWIP guidance. Local costs were used for reference where available.
- 2.13 Professional judgement was used to gauge the level of intervention required and the associated costs, based on the guidance. Until further feasibility and design work is carried out, these costs should be treated as estimates only, which could be higher or lower when taken forward for delivery. In this document, cost estimates of individual infrastructure elements have been rounded to the nearest £10k and total costs have been rounded to the nearest £100k, which was seen as a suitable level of estimation until further work is carried out.
- 2.14 It should be noted that costs may differ depending on whether the infrastructure is being delivered as a stand-alone project or as part of a wider package of measures. For instance, there may be cost-savings by delivering complementary schemes at the same time to minimise project management and construction costs. This is beyond the scope of the LCWIP and should be considered when proposals are taken forward for delivery.
- 2.15 The proposed cycling infrastructure may also be accompanied by a range of complementary measures to be defined in further stages of LCWIP development. Complementary measures may include:
- New waiting/loading restrictions
  - Improved enforcement of existing waiting/loading restrictions
  - Behaviour change programmes to raise awareness of infrastructure improvements and encourage walking and cycling
  - Restrictions to general traffic
  - Improved landscaping and lighting
  - New and improved cycle parking.
- 2.16 The core design outcomes for cycling infrastructure set out in the DfT's LCWIP guidance have been provided in Table 2.2. These are well established principles for cycling infrastructure set out in the LCWIP guidance, which have informed the proposed infrastructure improvements and associated cost estimates, to ensure that proposals meet the appropriate quality of infrastructure provision needed to increase cycling. A set of principles for walking and cycling design is being developed locally by West Yorkshire partners which will form the basis of development of the schemes identified through this LCWIP.
- 2.17 More detail on each stage of this process is provided in section 3 – Supporting Analysis.

Figure 2.3: Cycling desire lines in north and south Wakefield

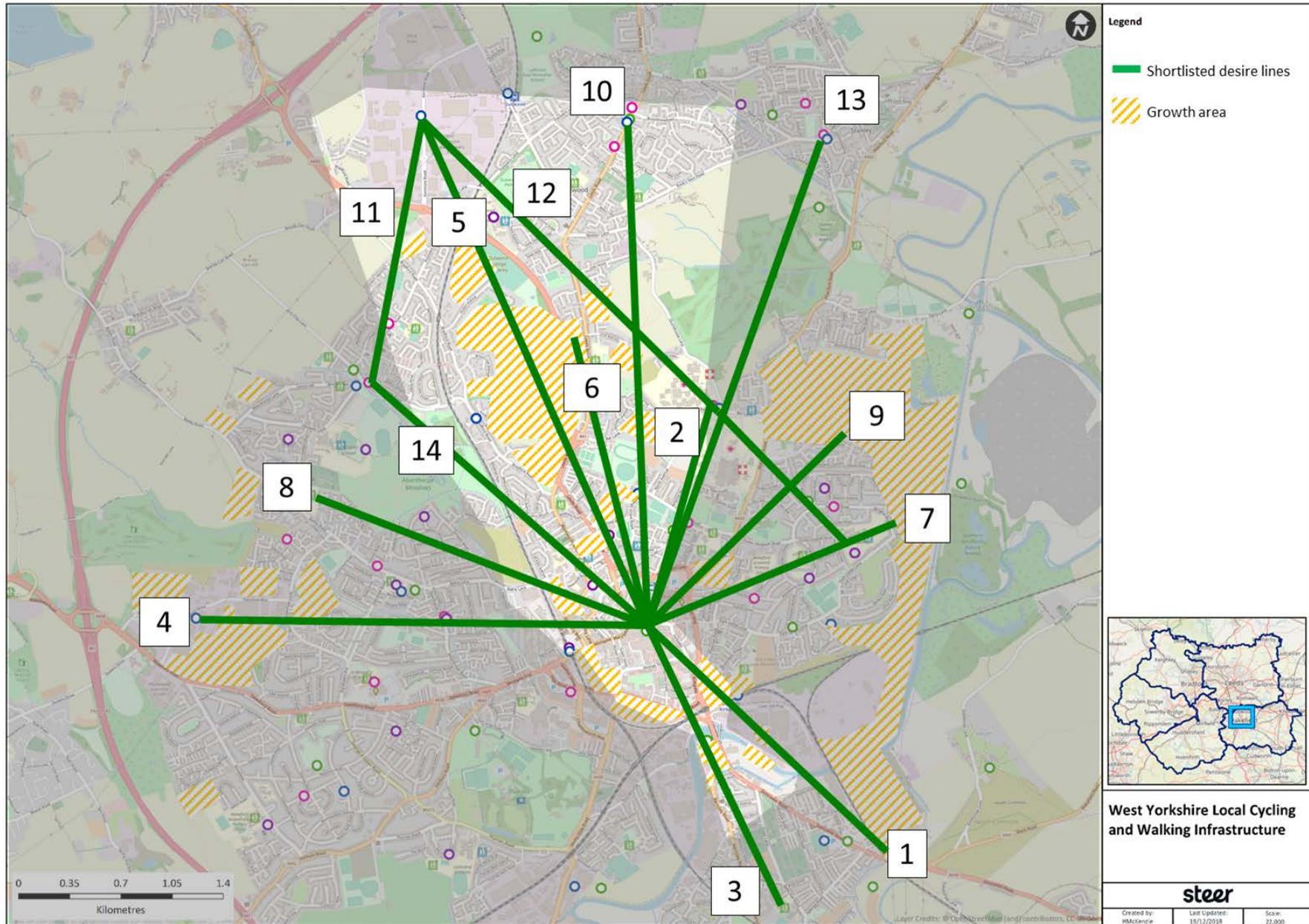


Figure 2.4: Priority cycle route 1: Wakefield to Newton Bar

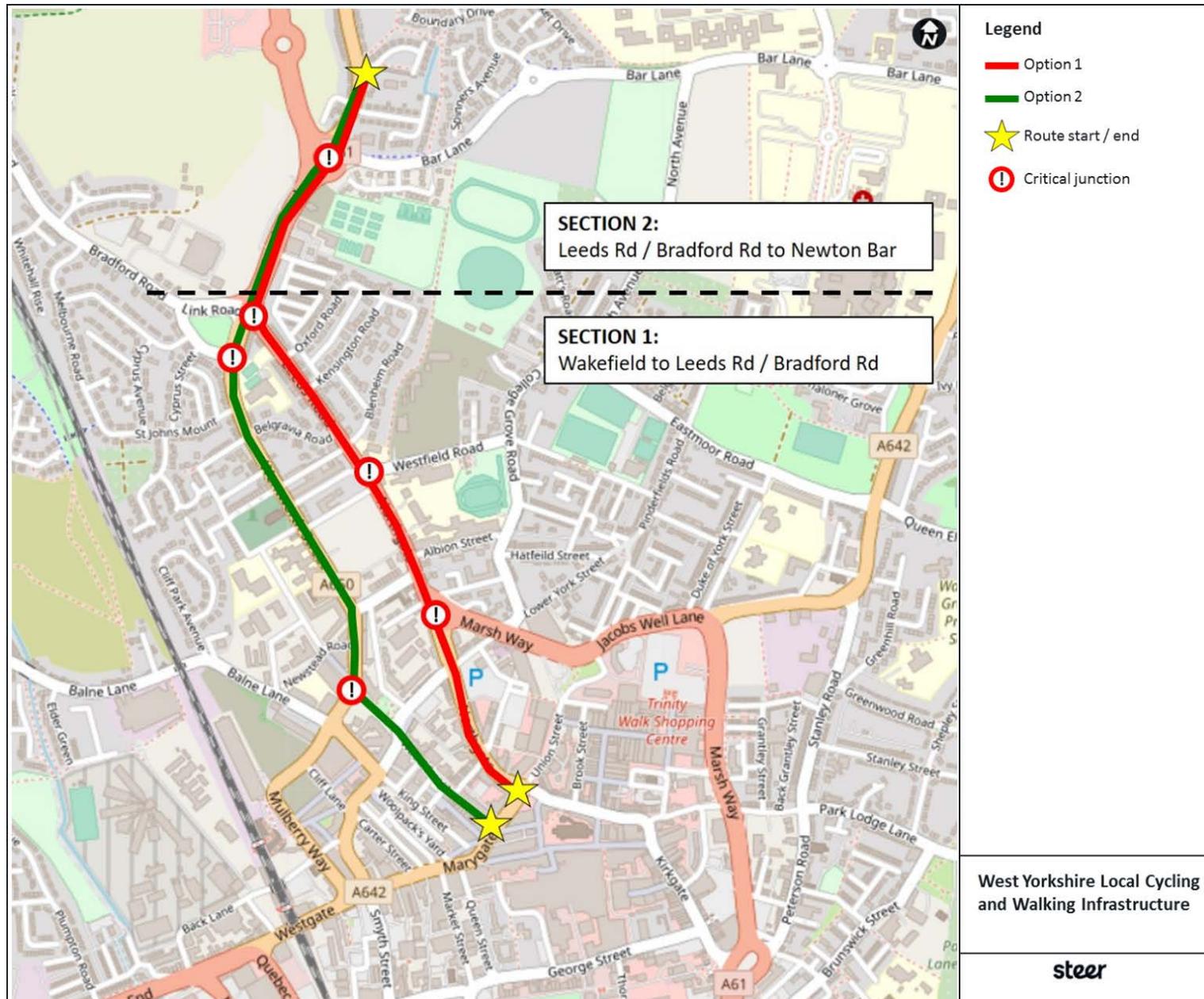
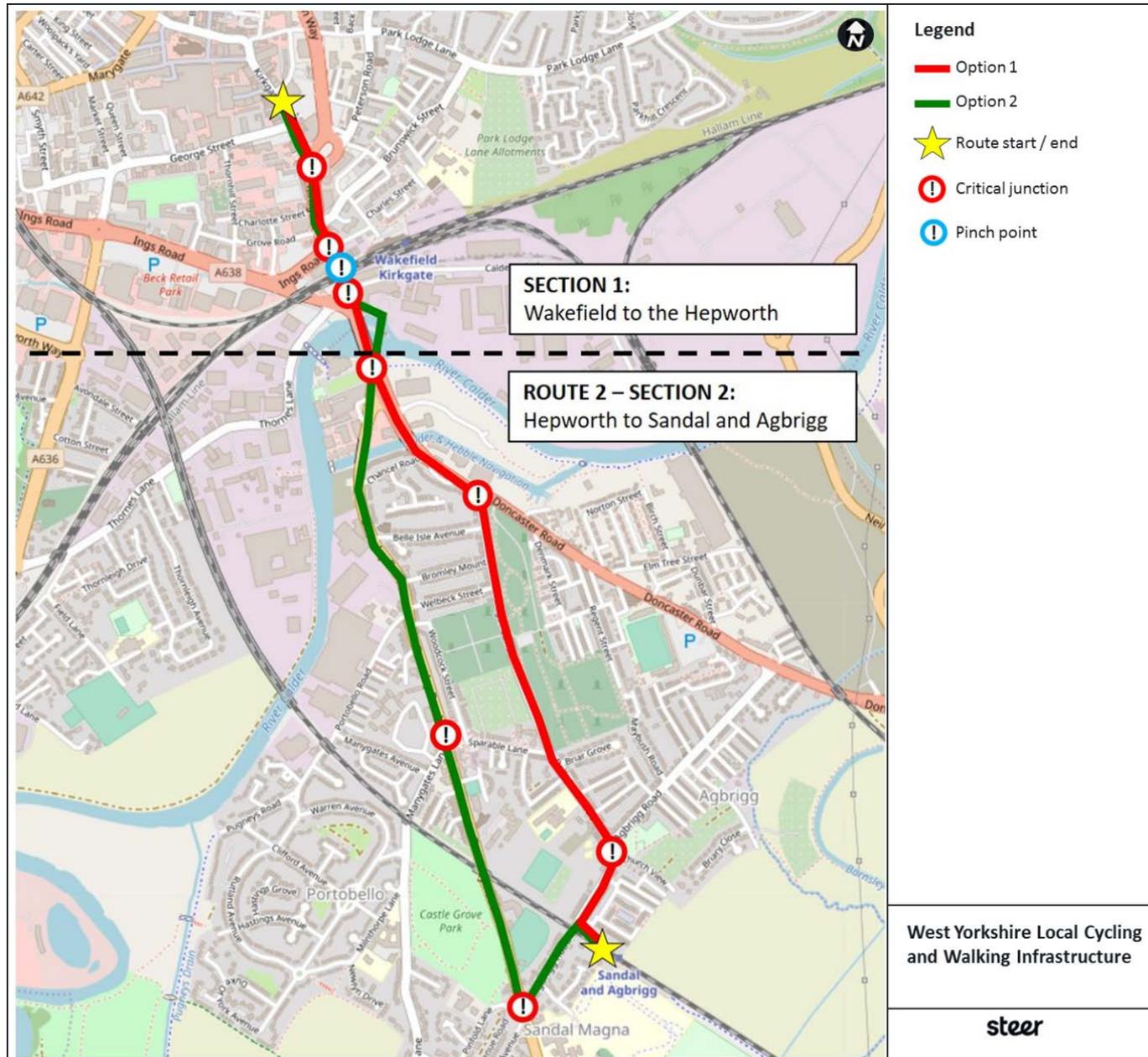


Figure 2.5: Priority cycle route 2: Wakefield to Sandal and Agbrigg



**Table 2.1: Proposed cycling infrastructure improvements**

| Route section                                      | Infrastructure   | Indicative cost* (£m) | Infrastructure   | Indicative cost* (£m) |
|--|--|-----------------------|--|-----------------------|
|  | Option 1   |                       | Option 2   |                       |
| <b>Wakefield to Newton Bar</b>                     |  |                       |  |                       |
| <b>1. Wakefield to Leeds Road / Bradford Road</b>  | Cycle Superhighway-level provision – 1.11km from Bull Ring to A61/Bradford Rd  | 1.61                  | Mixed strategic cycle route – 400m from Bull Ring to A650                      | 0.28                  |
|  | Remodelling of two major junctions – 61/Northgate, A61/Bradford Rd             | 3.20                  | Cycle Superhighway-level provision – 838m from A650 to A61/Bradford Rd         | 1.22                  |
|  |  |                       | Remodelling of one major junction – A61/Bradford Road                          | 1.60                  |
|  | SUBTOTAL   | 4.81                  | SUBTOTAL   | 3.10                  |
| <b>2. Leeds Road / Bradford Road to Newton Bar</b> | Cycle Superhighway-level provision – 540m from A61/Bradford Rd to Newton Close | 0.78                  | Cycle Superhighway-level provision – 512m from A61/Bradford Rd to Newton Close | 0.74                  |
|  | Remodelling of one major junction – Newton Hill roundabout                     | Already funded        | Remodelling of one major junction – Newton Hill roundabout                     | Already funded        |
|  | SUBTOTAL   | 0.7                   | SUBTOTAL   | 0.74                  |
| <b>TOTAL</b>                                       |  | <b>3.0</b>            | <b>TOTAL 3.8</b>   |                       |
| <b>Wakefield to Sandal and Agbrigg</b>             |  |                       |  |                       |
| <b>1. Wakefield to the Hepworth</b>                | Cycle Superhighway-level provision – 655m from Kirkgate to The Hepworth        | 0.95                  | Cycle Superhighway-level provision – 500m from Kirkgate to Calder Vale Road    | 0.73                  |
|  |  |                       | Mixed strategic cycle route – 240m via Calver Vale Road and Chantry bridge     | 0.17                  |
|  |  |                       | Improved link from Chantry bride to River Calder cycle track                   | Already funded        |

| Route section                                | Infrastructure   | Indicative cost* (£m) | Infrastructure   | Indicative cost* (£m) |
|--|--|-----------------------|--|-----------------------|
|  | <b>Option 1</b>  |                       | <b>Option 2</b>  |                       |
|  | SUBTOTAL   | 0.95                  | SUBTOTAL   | 0.90                  |
| <b>2. The Hepworth to Sandal and Agbrigg</b> | Cycle Superhighway-level provision – 445m from The Hepworth to Sugar Lane  | 0.65                  | Cycle Superhighway-level provision – 1.65km from A638/Calder Vale Road to Agbrigg Road | 2.39                  |
|  | Mixed strategic cycle route – 1.25km from Sugar Lane to Sandal and Agbrigg | 0.88                  | Mixed strategic cycle route – 260m from A61 to Sandal and Agbrigg via Agbrigg Road     | 0.13                  |
|  | Remodelling of one major junction – A61/A638                               | 3.00                  | Remodelling of one major junction – A61/A638   | 3.00                  |
|  | SUBTOTAL   | 4.53                  | SUBTOTAL   | 5.52                  |
|  | <b>TOTAL</b>   | <b>4.5</b>            | <b>TOTAL</b>   | <b>5.5</b>            |

\*Indicative costs were informed by Taylor and Hiblin (2017) *Typical costs of cycling interventions: interim analysis of Cycle City Ambition schemes*, which provides guidance on the typical costs of implementing various types of cycling infrastructure in towns and cities across the UK.

Local reference costs were used where available.

All cost estimates are subject to further feasibility and detailed design, and may be higher or lower when taken forward for delivery.

Costs are based on delivery of individual schemes, which may change if delivered as part of a wider programme of works. £100k

‘Cycle Superhighway-level provision’ is defined as an extended cycle route that enables direct, rapid, safe cycle trips largely segregated from traffic along an arterial route (e.g. a 10km route following an A-road from outer suburbs to a city centre).

‘Mixed strategic cycle route’ is defined as an extended cycle route to facilitate cycling along a strategic corridor, comprising a mixture of: signed route without dedicated lanes along quieter roads; on-road lanes without physical segregation; physically segregated cycle lanes along busier roads; marked cycle routes away from roads where such alignments are available.

**Table 2.2: Core Design Outcomes for cycling infrastructure**

The Core Design Outcomes are well established principles for cycling infrastructure set out in the LCWIP guidance, which have informed the proposed infrastructure improvements and associated cost estimates, to ensure that proposals meet the appropriate quality of infrastructure provision needed to increase cycling.

| Core Design Outcome | Description   |
|---------------------|---|
| <b>Coherent</b>     | The network must be coherent: it must link all the places cyclists want to start and finish their journeys with a route quality that is consistent and easy to navigate. Abrupt changes in the level of provision for cyclists will mean that an otherwise serviceable route becomes disjointed and unusable by the majority of potential users   |
| <b>Direct</b>       | Routes for cyclists must provide direct and fast routes from origin to destination. In order to make cycling preferable to driving, routes for cyclists must be at least as direct – and preferably more direct – than that available for private motor vehicles.<br>And indirect route for cyclists may result in some of them choosing the more direct, faster route, even if it is unsuitable for cycling.                                   |
| <b>Safe</b>         | Cycle networks must not only improve cyclists' safety, but also their feeling of how safe the environment is. Consideration must be given to reducing the speeds of motor vehicles to acceptable levels, particularly when cyclists are expected to share the carriageway. The needs for cyclists to come into close proximity and conflict with motor traffic must be removed, particularly at junctions, where the majority of crashes occur. |
| <b>Comfortable</b>  | Smooth surfaces, with minimal stopping and starting, without the need to ascend or descend steep gradients and which present few conflicts with others users creates comfortable conditions that are more conducive to cycling. The presence of high speed, high volume motor traffic affects both the safety and the comfort of the user.  |
| <b>Attractive</b>   | Cyclists are more aware of the environment they are moving through than people in cars or other motor vehicles. Cycling is a pleasurable activity, in part because it involves such close contact with the surroundings. The attractiveness of the route itself will therefore affect whether users choose to cycle.  |

Source: Local Cycling and Walking Infrastructure Plans Guidance, Department for Transport (2017)

## Walking

- 2.18 The LCWIP process aims to identify infrastructure improvements to create a safe, coherent and pleasant walking environment. It includes the creation of a walking network, identification of the issues that prevent people walking and development of specific interventions to overcome local issues.
- 2.19 In order to identify the interventions required, it is essential that the environment is analysed from a perceptual, human perspective, which accounts for issues such as personal safety. This means that the remit of what constitutes 'infrastructure' for walking needs to be wider than traditional engineering approaches. It will include infrastructure such as pedestrian crossings and footway improvements but might also need to include elements such as lighting, wayfinding, removal of graffiti/litter, accessible seating, public realm improvements and planting.
- 2.20 To provide this human perspective, the Wakefield LCWIP was informed by a street audit led by Steer and Living Streets, the national walking charity. Street audits are a tool for facilitating a roving public consultation whilst walking with audit participants around a pre-defined route. This allows participants to comment on and capture their live experience of walking the route. A follow up session afterwards with a large-scale map captures the most salient points and allows participants to comment on wider areas beyond the audit route.
- 2.21 Comments from participants are then used to capture the main barriers to walking and to translate these observations into recommendations for infrastructure improvements that will enhance the walkability of the area. The proposed walking network and infrastructure improvements were also informed by data analysis (as described in the supporting analysis section) and additional expert site visits.
- 2.22 This LCWIP identifies a proposed walking network, proposed intervention sites and a list of proposed infrastructure improvements for Wakefield.

### Proposed walking network

- 2.23 Department for Transport LCWIP guidance recommends identification of primary and secondary walking routes within a 2km catchment of the Core Walking Zone. The proposed network and classification of walking routes to serve the Core Walking Zone is shown in Figure 2.6. The routes were identified through consideration of:
- Permeability of the Core Walking Zone from surrounding residential areas
  - Addressing key severance points for local communities
  - Addressing key safety concerns, including both road and personal safety
  - Key corridors that link residential areas to the Core Walking Zone

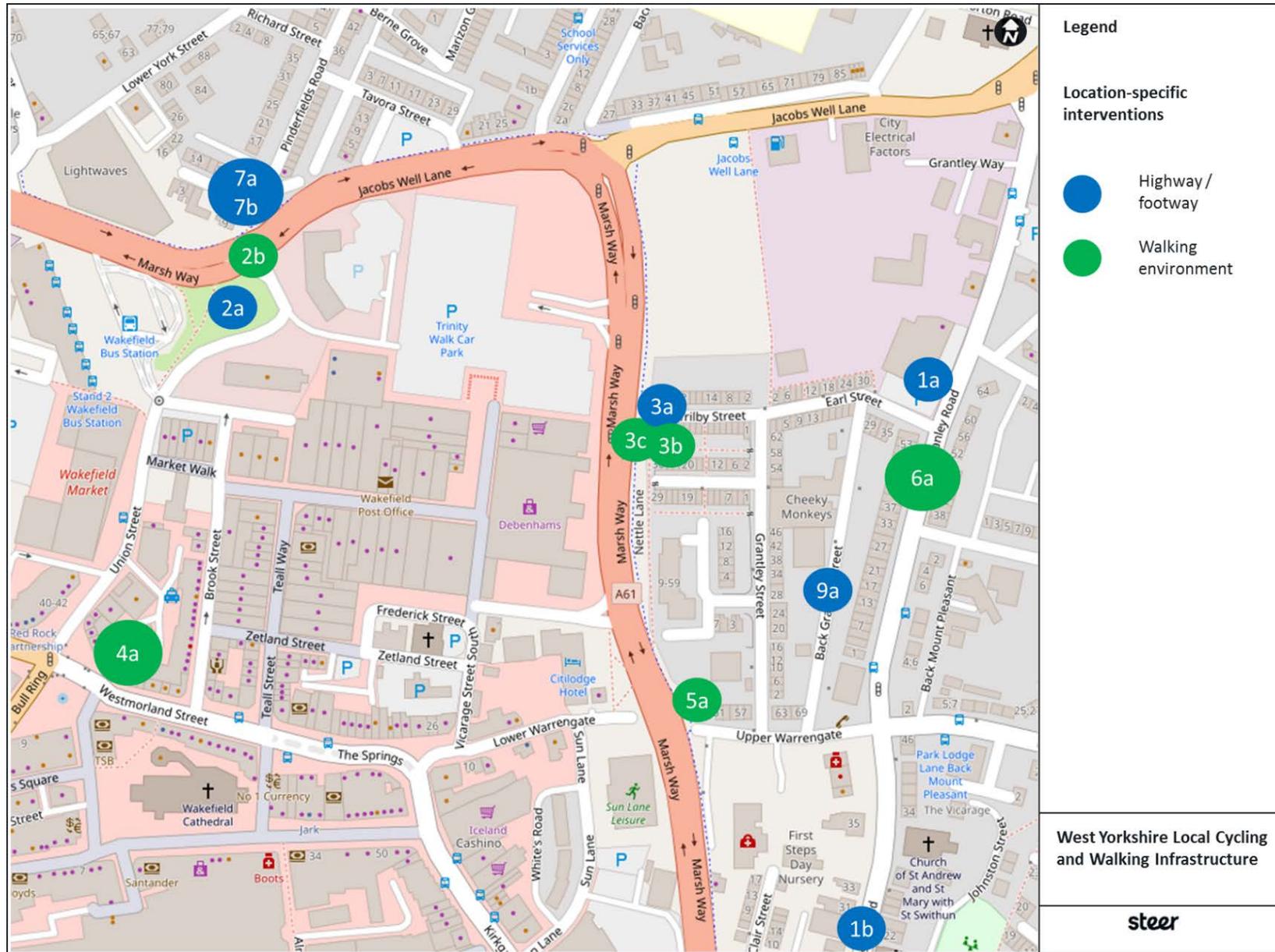
### Proposed infrastructure improvements

- 2.24 Unlike cycling, the existing walking network is generally comprehensive in terms of provision of segregated routes. Infrastructure interventions focus on improving the walking environment on primary and secondary walking routes into the Core Walking Zone across the outer ring road to the north east of the city centre, between Pinderfields General Hospital and Eastmoor community, respectively.

- 2.25 The locations of proposed infrastructure improvements are shown in Figure 2.7 with the detail of the proposals shown in Table 2.3. The table includes location-specific interventions referenced to the numbered interventions areas and area-wide infrastructure improvements across the Core Walking Zone and its catchment.
- 2.26 The proposed walking infrastructure may also be accompanied by a range of complementary measures to be defined in further stages of LCWIP development. Complementary measures may include:
- New waiting/loading restrictions
  - Improved enforcement of existing waiting/loading restrictions
  - Behaviour change programmes to raise awareness of infrastructure improvements and encourage walking and cycling
  - Restrictions to general traffic
  - Improved landscaping and lighting
  - Accessible seating.
- 2.27 Core Design Outcomes for walking infrastructure, based on walking audit tools provided by government as part of the LCWIP guidance, are shown in Table 2.4. These have informed the proposed infrastructure improvements and associated cost estimates. A set of principles for walking and cycling design is being developed locally by West Yorkshire partners which will form the basis of development of the schemes identified through this LCWIP.



Figure 2.7: Wakefield Core Walking Zone and proposed intervention areas



**Table 2.3: Wakefield proposed walking infrastructure improvements**

| Intervention  | Intervention scale | Intervention  | Intervention type      | Cost estimate                    | Timescale |
|---|--------------------|---|------------------------|----------------------------------|-----------|
| <b>1. Stanley Road / Peterson Road crossing points</b>  | Location-specific  | a. Install signalised (puffin) crossing at Earl Street  | a. Highway / footway   | a. £50k-£60k                     | Medium    |
|   |                    | b. Install zebra crossing at Berners Street   | b. Highway / footway   | b. £20k-£35k                     | Medium    |
|   |                    | c. Traffic reduction along Stanley Road / Peterson Road as part of area-wide treatment                    | c. Walking environment | c. Subject to local study        | Medium    |
| <b>2. Installation of additional pedestrian crossing over Marsh Way at Union Street and northern arm of Kirkgate roundabout</b> | Location-specific  | a. Install sealed paths along the clear desire lines at Union Street                                      | a. Highway / footway   | a. £200/m                        | Short     |
|   |                    | b. Install a pedestrian phase and appropriate signals at the existing signalised junction at Union Street | b. Highway / footway   | b. £50k-£60k                     | Short     |
|   |                    | c. Install puffin crossing at northern arm of Kirkgate roundabout   | c. Highway / footway   | c. £50k-£60k                     | Medium    |
| <b>3. Nettle Lane / Marsh Way access via Trilby Street</b>  | Location-specific  | a. Remove steps and install ramped access at Trilby Street  | a. Highway / footway   | a. Subject to local study        | Short     |
|   |                    | b. Reduce the height of wall along Nettle Lane or take down entirely                                      | b. Walking environment | b. Subject to local study        | Short     |
|   |                    | c. Reduce severance caused by noise screen  | c. Walking environment |                                  | Short     |
|   |                    | d. Seal desire line paths or open out Trilby Street access entirely                                       | d. Highway / footway   |                                  | Short     |
|   |                    | e. Improve street lighting  | e. Walking environment | c. Subject to local study        | Medium    |
|   |                    | f. Seal the surface of Nettle Lane and add drainage   | f. Highway / footway   | d. £200/m                        | Medium    |
|   |                    |   |                        | e. £2,600-£3,200 per lamp column |           |
|   |                    |   |                        | f. £200/m                        |           |

| Intervention  | Intervention scale | Intervention  | Intervention type                            | Cost estimate  | Timescale      |
|---|--------------------|---|--|--|----------------|
| <b>4. Enforcement of pedestrian zone through Westmoreland Street / Union Street</b>             | Location-specific  | a. Consider enforcement options, including cameras  | a. Walking environment                       | a. Subject to local study                              | Short          |
| <b>5. Create park or garden in green area opposite Sun Lane Leisure Centre</b>                  | Location-specific  | a. Install accessible community garden or other green space   | a. Walking environment                       | a. Subject to local study                              | Short          |
| <b>6. Improve pedestrian comfort on Stanley Road / Peterson Road through parking management</b> | Location-specific  | a. Parking management scheme to protect footway space from parked cars on the western side  | a. Walking environment                       | a. Subject to local study                              | Medium         |
| <b>7. Completion of pedestrian access to ring road from streets north of ring road</b>          | Location-specific  | a. Perform maintenance on footways along residential streets to north of ring road<br>b. Pave desire line paths connecting to ring road from streets to the north | a. Highway / footway<br>b. Highway / footway | a. £200/m for new footway<br>b. £200/m for new footway | Short<br>Short |
| <b>8. Wayfinding</b>  | Area-wide          | a. Extend wayfinding beyond ring road   | a. Walking environment                       | a. £1k per finger post                                 | Medium         |
| <b>9. Speed calming along residential streets</b>   | Area-wide          | a. Install speed calming measures, including build outs and raised tables   | a. Highway / footway                         | a. Subject to local study                              | Medium         |

\*The proposed interventions are intended to be used for prioritising schemes to take forward for delivery, with full design and costing to be done at a later stage. There is no national guidance on cost estimates for walking infrastructure as there is for cycling infrastructure. Indicative cost estimates were informed by Wiltshire Council Highways (2017) *Costs of highway works*, which provides guidance on the typical costs of implementing various types of highway infrastructure. All cost estimates subject to feasibility and design and may be

higher or lower when taken forward for delivery. In some instances, cost efficiencies might be found by delivering schemes as part of a holistic area-based approach, rather than on a scheme-by-scheme basis.

**Table 2.4: Core Design Outcomes for Walking**

| Design outcome        | Description   |
|-----------------------|---|
| <b>Comfort</b>        | Footways level and in good condition, with no trip hazards.   |
|                       | Footway widths generally in excess of 2m effective width  |
|                       | Width on staggered crossings/pedestrian islands/refuges able to accommodate all users without 'give and take' between users or walking on roads. Widths generally in excess of 2m to accommodate wheel-chair users. |
|                       | No instances of vehicles parking on footways.   |
|                       | Clearance widths generally in excess of 2m between permanent obstructions.  |
| <b>Directness</b>     | Footways are provided to cater for pedestrian desire lines (e.g. adjacent to road).   |
|                       | Crossings follow desire lines.  |
|                       | Crossing of road easy, direct, and comfortable and without delay (< 5s average).  |
|                       | Crossings are single phase pelican/puffin or zebra crossings.   |
|                       | Diagonal crossing (pedestrian and all-green phase) available at intersections   |
|                       | Green man time is of sufficient length to cross comfortably (presume 0.8m/s)  |
| <b>Coherence</b>      | Walking network developed to link key trip generators, public transport and residential areas   |
|                       | Adequate dropped kerb and appropriate tactile paving provision.   |
|                       | Comprehensive wayfinding with walking times installed throughout core walking zone and along key routes   |
|                       | Footway and crossing materials consistent throughout core walking zone and along key walking routes   |
| <b>Safety</b>         | Appropriate formal crossing points installed at all major road crossings  |
|                       | Continuous network of footway available throughout core walking zone and along key walking routes   |
|                       | Appropriate street lighting installed along all key routes  |
|                       | Footway network maintained to avoid trip hazards  |
|                       | Traffic calming measures in place in areas of higher pedestrian vulnerability e.g. schools, residential care homes, hospitals etc   |
| <b>Attractiveness</b> | Footway and street furniture maintained to a good standard (clean, safe and accessible)   |
|                       | Regular litter and waste collection to ensure clean street  |
|                       | Planting and greenery installed where possible, also to provide shade   |

Source: adapted from Walking Route Audit tool (WRAT), developed by Local Transport Projects as part of the Welsh Active Travel Guidance.

# Supporting analysis

## 3 Supporting analysis

### Cycling network analysis

#### The LCWIP process and cycle network development good practice

- 3.1 LCWIP Technical Guidance sets out a recommended approach to developing a cycle network and the data and tools available to do so. Emphasis is placed on using evidence to plan a cycle network that connects places that people need to get to, whether for work, education, shopping or for other reasons.
- 3.2 As noted earlier, the key outputs for the LCWIP include a cycling network map and a programme of cycling infrastructure improvements
- 3.3 A review of good practice in cycling network planning, including the LCWIP Technical Guidance (DfT, 2017), London Cycling Design Standards (TfL, 2018) and Strategic Cycling Analysis (TfL, 2017) indicates that cycling networks should be planned to:
- Serve the highest number of current trips;
  - Enable the highest number of potentially cyclable trips; and
  - Connect the network to areas experiencing high growth.
- 3.4 For this reason, network development has focused on analysis existing cycling demand, potential cycling demand and growth areas. The methodology, identified cycle network and prioritised infrastructure improvements for Wakefield are outlined below.

#### Methodology

- 3.5 The following seven steps were taken to develop the cycling network with each step described in further detail below:
1. Data analysis
  2. Stakeholder engagement
  3. Classifying desire lines
  4. Prioritising shortlisted desire lines
  5. Identifying a high priority route
  6. Selecting route alignment options
  7. Appraising route alignment options

#### Data analysis

- 3.6 To ensure an evidence-based approach, a wide range of data was gathered and is presented in a background report that forms part of phase 1 of this LCWIP. The data were analysed to understand existing and potential demand for cycling in Wakefield (see Table 3.1 and Table 3.2 for a comprehensive list, the insights provided and how they were applied). Analysis focused on four areas:

### *Local population*

- 3.7 Understanding the characteristics and travel behaviours of the local population, as well as planned development. This information was used to gauge the propensity of people to cycle and the journeys that people are likely to make now and in the future.

### *Points of interest*

- 3.8 Identifying key destinations that people need to get to – such as schools, hospitals, employment sites, leisure facilities and bus or train stations. When considering that journeys begin at home in residential areas, identifying key destinations and the likely routes between them provide the desire lines for local journeys. These destinations – or points of interest – were also clustered to indicate where they are located in high densities, which is likely to attract more journeys.

### *Existing cycle demand:*

- 3.9 Understanding where people currently cycle, so that the network can be planned to serve the highest number of current trips by ensuring that these routes are safe and attractive to use. This can be understood by using the Propensity to Cycle Tool (PCT), which shows existing cycle journeys to work using 2011 Census data, as well as the Strava global heatmap, which shows where users of the Strava app currently cycle for all journey purposes. Though the Strava app does not provide a fully representative population sample (it is skewed towards the demographic that uses the app), the data still provides valuable insight, especially as it includes all trip purposes.

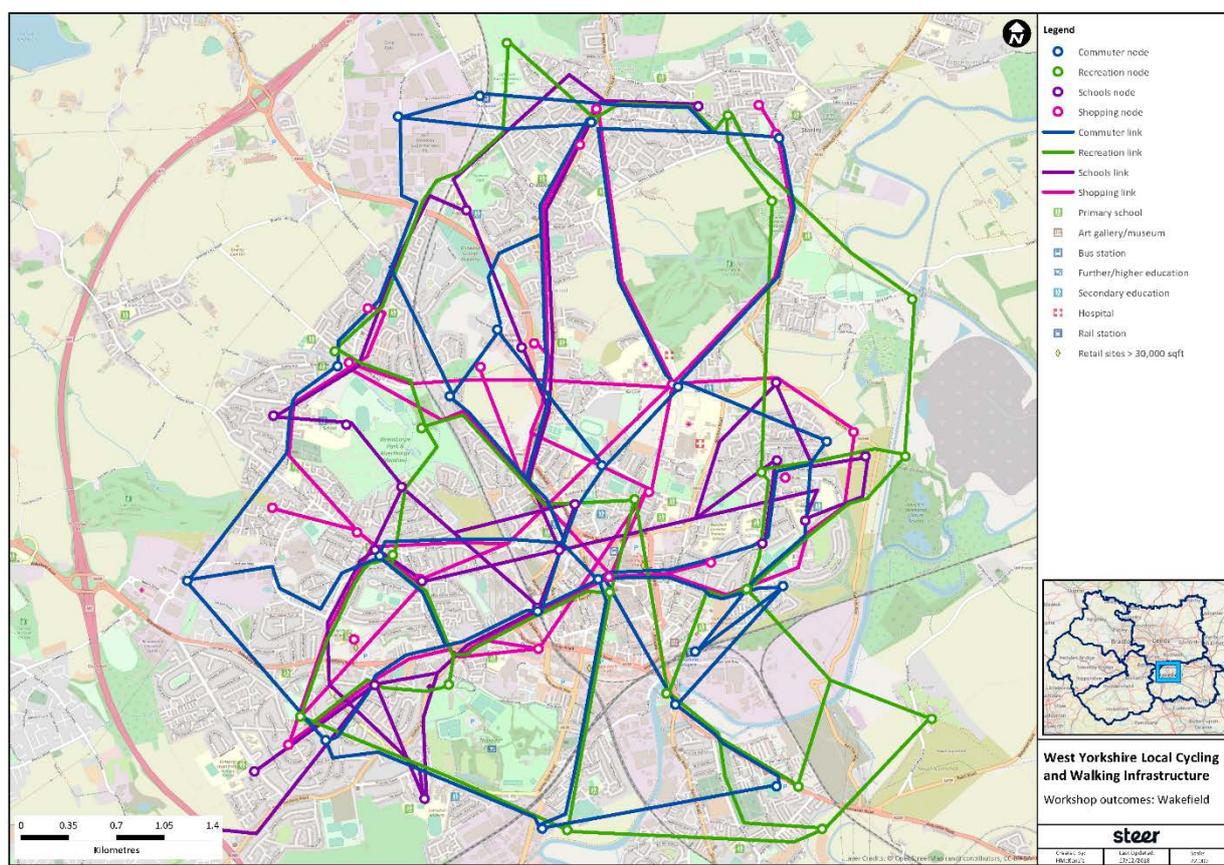
### *Potential cycle demand*

- 3.10 Understanding where there is the highest potential to switch trips made by other modes – especially by private car, so that infrastructure investment can be targeted to locations that will reduce car use and enable the highest number of cycle trips. The PCT ‘Go Dutch’ modelling data can be used to show where people would be likely to cycle if a safe and attractive cycling environment was provided, based on reasonable cycle trip distances and hilliness, as well as encouraging a wider age range of people to do so. This data is especially useful for identifying the highest potential cycling desire lines and route alignment options.
- 3.11 Steer’s Cycling Potential Index can also show where people are more likely to cycle based on social demographics, which is important to understand so that investment is made in places where people that do not currently cycle are most likely to take up cycling as a result. These factors have also been cross-referenced with Wakefield Council’s planned future cycle network to take in to account local knowledge of where future potential is situated

### **Stakeholder engagement**

- 3.12 In November 2018, Steer held a workshop with local stakeholders in Wakefield, who took part in a hands-on, interactive workshop to give local knowledge and expertise to shape the future cycle network. Dutch consultancy Mobycon facilitated the workshop, bringing insights from their experience of cycle network planning in the Netherlands.
- 3.13 In the first part of the exercise, the Mobycon team worked with workshop participants to identify key origins and destinations for local trips to help identify important cycling desire lines. The results of this exercise are shown in Figure 3.1.

Figure 3.1: Wakefield city cycle network workshop outputs – unprioritised desire lines



- 3.14 The second part of the exercise looked in more detail at the area of focus to identify the most desirable corridors and routes in this area.
- 3.15 The results provide a visual clue to the importance of specific streets and other traffic-free routes for cycling, which has implications for the type of facility (infrastructure) that's required there.
- 3.16 Taking into account origins and destinations identified by local stakeholders, and the desire lines between them, Mobycon analysed the results and identified:
- Wakefield to Agbrigg
  - Wakefield to Outwood
  - Wakefield to Pinders Heath / hospitals
  - Wakefield to Alverthorpe
  - Lupset to Eastmoor

**Table 3.1: Population and points of interest data analysed in developing the cycle network in Wakefield**

| Theme                     | Source                      | Insight  | LCWIP application  |
|---------------------------|-----------------------------|--|--|
| <b>Local population</b>   | Population density          | Identifying trip origins and areas most needing to be served by the network    | Provided confidence in identified desire lines and informed alignment optioneering   |
|                           | Employment density          | Identifying trip origins and areas most needing to be served by the network    | Provided confidence in identified desire lines and informed alignment optioneering   |
|                           | Car ownership               | Potential for switchable trips by location                                     | Relatively high car ownership across the area, therefore no specific insights  |
|                           | Journeys to work under 5km  | Identifying proportion of journeys within reasonable cycling distance, by area | Supports rationale to link to various large employment sites, the city centre and its two stations, as there are a mixture of short and long journeys to work in the catchment |
|                           | Growth areas                | Identifying areas that need to be served by the network in future              | Informed shortlisting and prioritisation of desire lines   |
| <b>Points of interest</b> | GIS-identified destinations | Identifying key destinations   | Informed plotting / selection of OD mapping  |
|                           | GIS clustering              | Identifying key clusters of destinations                                       | Informed plotting / selection of OD mapping  |
|                           | POI density                 | Identifying POI densities to be served by network                              | Provided confidence in identified desire lines   |

**Table 3.2: Cycle demand data and stakeholder engagement inputs used**

| Theme                  | Source                          | Insight  | LCWIP application  |
|------------------------|---------------------------------|--|--|
| Existing cycle demand  | PCT 2011 Census (LSOA)          | Identifying existing cycling demand for journeys to work                               | Used to identify and quantify desire lines for existing cycling  |
| Existing cycle demand  | Strava                          | Identifying existing demand for a wider range of trips                                 | Used to identify existing demand for cycling and highlight gaps in Census data   |
|                        | Existing cycling infrastructure | Identifying existing network to build on   | Identified a gap in provision linking to the city centre and across the River Calder in the south                              |
| Potential cycle demand | PCT Go Dutch (LSOA)             | Identifying potential cycling demand for journeys to work                              | Used to identify and quantify desire lines and alignment options for potential demand  |
|                        | CyIPT                           | Checking for recommended infrastructure improvements and sourcing traffic count data   | Used to cross-reference LTN 2/08 guidance on required cycle provision – by traffic volume and speed                            |
|                        | Local planned cycle network     | Identifying planned network  | Identified various planned improvements that could be linked to from proposed routes in future                                 |
|                        | Cycling Potential Index         | Hex mapping to show demographic propensity to cycle                                    | Used to sense-check and inform desire line identification and prioritisation   |
| Stakeholder engagement | Workshop nodes                  | Identifying key POIs for employment, leisure, education and utility                    | Added to base maps, along with GIS-identified destinations   |
|                        | Workshop desire lines           | Joining nodes to identify desire lines   | Provided confidence in identified desire lines and suggests future route extensions  |
|                        | Mobycon interpretation          | Expert input for desire lines, based on interpretation of stakeholder-identified nodes | Put forward stakeholder-identified desire lines, which provided confidence in identified desire lines and offered alternatives |

## Classifying and prioritising cycling desire lines in Wakefield

3.17 LCWIP guidance states that desire lines should be identified and then classified.

3.18 All desire lines – identified through analysis of existing cycle demand, potential cycle demand and the stakeholder workshop – were mapped alongside the growth areas and classified (see Figure 3.2). The desire line analysis can be compared with existing segregated cycling infrastructure in the area of focus shown in Figure 3.3, which shows that existing infrastructure does not align with the desire lines identified.

3.19 Desire lines were then classified as shortlisted (for further consideration) or longlisted (de-prioritised at this stage).

### *Classifying desire lines*

3.20 Desire lines were classified in consideration of:

- **Trip distance** – journeys beyond 5km were longlisted, as they are less likely to be cycled in terms of distance
- **Existing and potential demand** – desire lines with the highest existing and potential demand were shortlisted
- **Links to growth areas** – desire lines that connect to, or would serve journeys from growth areas were prioritised
- **Network density** – a 400m mesh density (distance between routes in a cycle network) is recommended and therefore routes should not be too close together or far apart
- **Contribution to a coherent network** – where possible, routes should connect to one another and serve key movements. North-south and east-west routes are often the foundation of a coherent network and joining up routes across a town centre to form longer routes can benefit the network

### *Prioritising shortlisted desire lines*

3.21 To inform future investment and network development decisions, the shortlisted desire lines were assessed against available evidence and placed in priority order as shown in Table 3.3.

3.22 The desire lines were prioritised in consideration of:

- **Existing cycle demand** – evidence and scale of existing demand from the PCT and Strava;
- **Potential cycle demand** – evidence and scale of potential demand from the PCT and Cycling Potential Index;
- **Workshop output** – identification of desire line by local stakeholders and/or prioritised cycle movement by Mobycon; and
- **Links to growth areas** – whether a direct link to a growth area, or serving a growth area by being situated on a future desire line or within 400m of a growth area.

Figure 3:2: Wakefield cycling desire line map, including short and longlisted desire lines

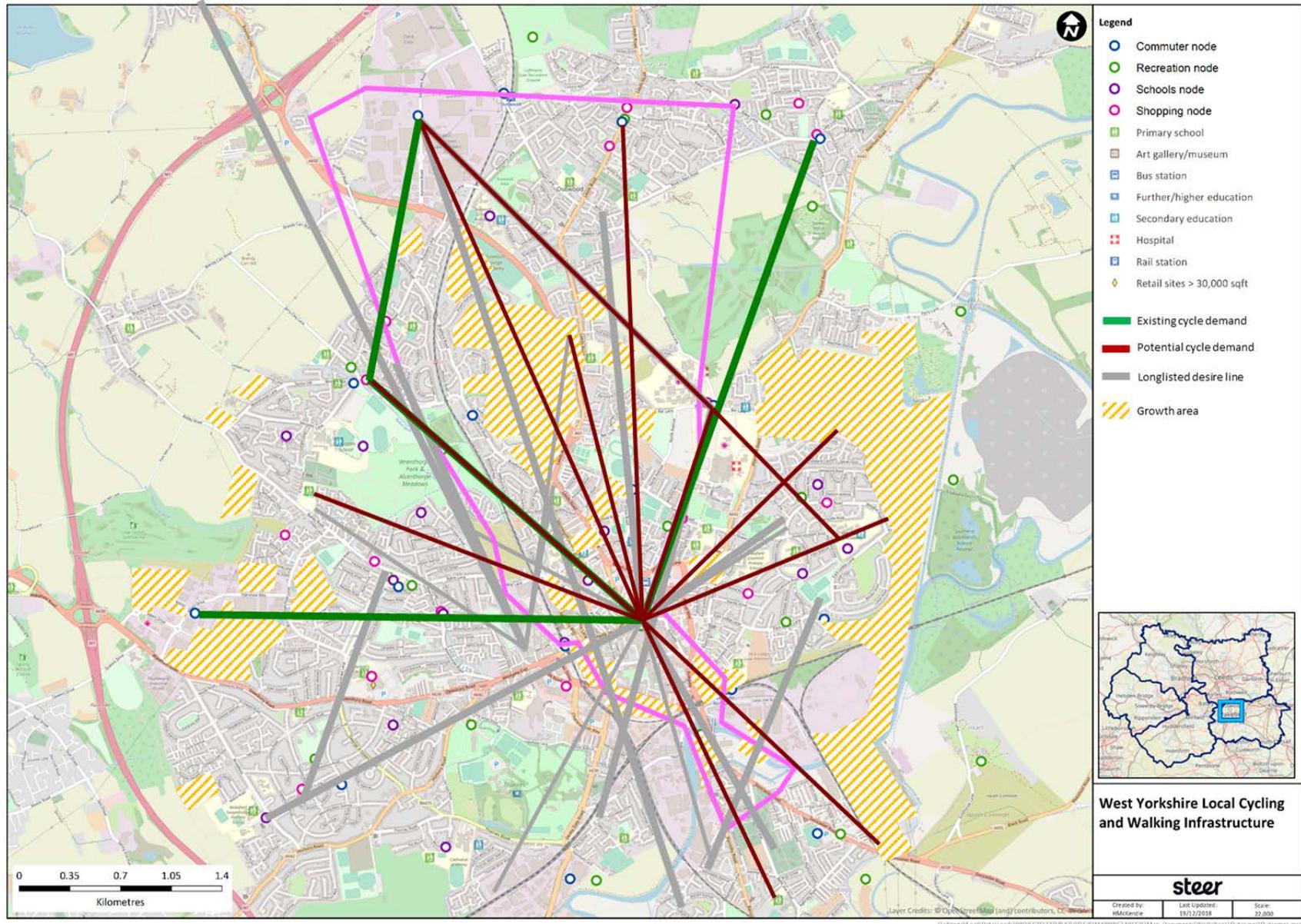
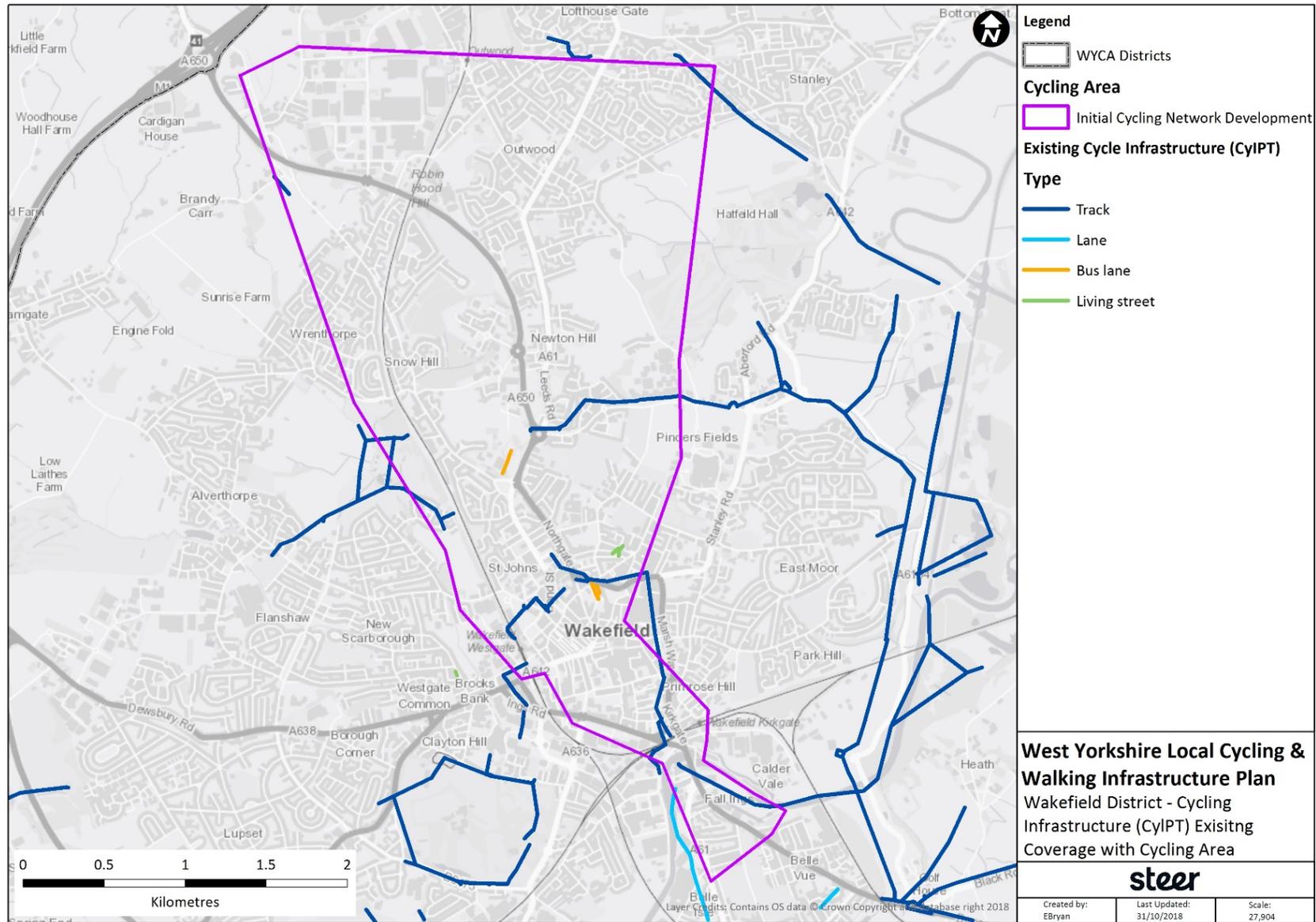


Figure 3.3: Existing cycling infrastructure



\\sdgworld.net\Data\Leeds\PROJECTS\232\8\42\01\GIS\MAPPING\ARCGIS\Map\_Documents\Cycling and Walking Areas Combo Maps\03\_Cycling\_Infrastructure\_...

**Table 3.3: Shortlisted desire lines in Wakefield, in order of priority**

| Desire lines |                            | Existing demand      |                       |        | Potential demand     |                       |       | Demographics       |                    | Growth area | Workshop priority | Rationale   |
|--------------|----------------------------|----------------------|-----------------------|--------|----------------------|-----------------------|-------|--------------------|--------------------|-------------|-------------------|---|
|              |                            | PCT (OD desire line) | PCT (on route sample) | Strava | PCT (OD desire line) | PCT (on route sample) | CPI   | Population density | Employment density |             |                   |   |
| 1            | Wakefield to Agbrigg       | 2                    | 69                    | H      | 30                   | 864                   | H     | M                  | M / H              | Yes         | Yes               | High existing and potential demand, links to growth area and identified as stakeholder priority                     |
| 2            | Wakefield to Hospitals     | 6                    | 26                    | M / L  | 40                   | 370                   | M / H | M                  | H                  |             | Yes               | High existing and potential demand, identified as stakeholder priority, links to two hospitals                      |
| 3            | Wakefield to Sandal        | 4                    | 24                    | H      | 32                   | 332                   | H     | M                  | M / H              |             |                   | High existing and potential demand  |
| 4            | Wakefield to Flanshaw      | 4                    | 24                    | M / H  | 32                   | 138                   | M / H | M / H              | M / H              | Yes         |                   | Mid-high existing and potential demand, links to growth area and large employment site                              |
| 5            | Wakefield to Carr Gate     | 1                    | 49                    | H      | 20                   | 483                   | M / H | M / L              | M / H              | Yes         |                   | Mid-high existing and potential demand, runs through large growth area, links to large employment site              |
| 6            | Wakefield to Newton Hill   | N/A                  | 56                    | H      | 15                   | 727                   | M     | M                  | M                  | Yes         |                   | Mid-high existing and potential demand, links to large growth area  |
| 7            | Wakefield to Eastmoor      | 2                    | 13                    | M / L  | 23                   | 110                   | M / H | M / H              | M / H              | Yes         | Yes               | Mid-low existing demand, mid-level potential demand, link to large growth areas, identified as stakeholder priority |
| 8            | Wakefield to Alverthorpe   | 1                    | 14                    | M / H  | 20                   | 345                   | M     | M / H              | M                  |             | Yes               | Mid-low existing demand, mid-level potential demand, identified as stakeholder priority                             |
| 9            | Wakefield to Pinders Heath | 2                    | 5                     | M / L  | 21                   | 101                   | M / H | M / H              | M                  | Yes         |                   | Mid-level existing and potential demand, links to large growth area   |

| Desire lines |                         | Existing demand      |                       |        | Potential demand     |                       |       | Demographics       |                    | Growth area | Workshop priority | Rationale  |
|--------------|-------------------------|----------------------|-----------------------|--------|----------------------|-----------------------|-------|--------------------|--------------------|-------------|-------------------|--|
|              |                         | PCT (OD desire line) | PCT (on route sample) | Strava | PCT (OD desire line) | PCT (on route sample) | CPI   | Population density | Employment density |             |                   |  |
| 10           | Wakefield to Outwood    | 2                    | 15                    | H      | 14                   | 294                   | M     | M / H              | M / H              |             | Yes               | Mid-level existing and potential demand, mid-high demographic densities, identified as stakeholder priority      |
| 11           | Wrenthorpe to Carr Gate | 2                    | N/A                   | M / H  | 20                   | 377                   | M / H | M                  | M                  |             |                   | Mid-high existing and potential demand, does not link to growth area and not identified as stakeholder priority  |
| 12           | Eastmoor to Carr Gate   | 1                    | 26                    | M / H  | 15                   | 100-400               | M / H | M                  | M                  |             |                   | Mid-level existing and potential demand, does not link to growth area and not identified as stakeholder priority |
| 13           | Wakefield to Stanley    | 1                    | 26                    | M / H  | 11                   | 386                   | M     | M / L              | M / H              |             |                   | Mid-low existing and potential demand, does not link to growth area and not identified as stakeholder priority   |
| 14           | Wakefield to Wrenthorpe | 1                    | 26                    | M / H  | 12                   | 314                   | M     | M                  | M                  |             |                   | Mid-low existing and potential demand, does not link to growth area and not identified as stakeholder priority   |

### Identifying priority routes

3.23 Two priority routes were identified for Wakefield. This was informed by the prioritisation of shortlisted desire lines and consideration of desire line convergence, where two or more run closely in parallel and may cater for greater cycling demand together as a result. Wakefield Council's aspirations were also factored in to decision, notably the desire to connect to future growth areas and to improve cycling links to the north and south of the city centre. The following two routes were chosen:

- Wakefield to Newton Bar
- Wakefield to Sandal and Agbrigg

3.24 Wakefield to Newton Bar sees the convergence of desire lines to Carr Gate (5), Newton Hill (6) and Outwood (10). It also complements planned investment to improve Newton Bar roundabout and links to the large Snow Hill development.

3.25 Wakefield to Sandal and Agbrigg sees the convergence of desire lines to Agbrigg (1) and Sandal (3), making it the route that may cater for the highest potential number of people cycling in Wakefield. It would also provide links to future growth sites and improve cycling connectivity to the city centre from the south more generally.

3.26 The two priority routes connect to Wakefield city centre. It is proposed that the city centre itself is improved for cycling in the form of an area-wide approach to improve safety and permeability. This is essential for increasing cycling and creating a coherent cycle network.

3.27 The routes and their alignment options are shown in Figure 3.4 and Figure 3.6.

3.28 Route alignment appraisal is shown in Figure 3.5 and Figure 3.7.

### Selecting route alignment options

3.29 To identify alignment options and to assist in appraisal, the routes were split in to two sections. For each route, alignment Option 1 provides the most direct alignment, which normally utilises primary transport corridors and requires a higher level of intervention. Option 2 provides a less direct route – or route sections – that normally also makes use of secondary transport corridors, back streets, green spaces and waterways.

3.30 The two alignment options were then appraised to inform decision makers as to which might be taken forward for delivery in the future. In some cases, route sections may be interchangeable – such as the A61 or Chantry Bridge crossing of the River Calder – which means that there is some flexibility in options.

### Appraising route alignment options

#### *Optioneering*

3.31 To appraise the alignment options, some of the indicators featured in the Department for Transport's *Route Selection Tool* were considered and assessed to compare options in each route section and across the route as a whole. The key indicators, measurements, sources of data and LCWIP application are outlined in Table 3.4 below.

**Table 3.4: Route appraisal inputs and application**

| Key indicator              | Measurement   | Source                            | LCWIP application  |
|----------------------------|---|-----------------------------------|--|
| <b>Directness</b>          | Comparison between alignment lengths  | GIS/online mapping                | Measure alignments – the shortest is the most direct   |
| <b>Gradient</b>            | Profile of gradient   | Online cycle route planning tools | Note overall change in gradient and hilliness – the lowest incline and steepness is generally more cyclable  |
| <b>Connectivity per km</b> | Number of adjoining side roads  | GIS/online mapping                | Count side roads and note their quantity per km – a higher number is a general indication of higher connectivity   |
| <b>Critical junctions</b>  | Number across the route (including: potential conflict with heavy / fast traffic, pinch points at junctions, congested conditions reducing visibility, roundabouts without cycle provision) | GIS/online mapping                | Count all junctions that meet the critical junction criteria – a lower number means that the existing route is generally safer to cycle, whereas a higher number indicates that more difficult junctions need to be addressed to improve safety, which will impact on feasibility and cost |

Figure 3.4: Priority cycle route 1: Wakefield to Newton Bar

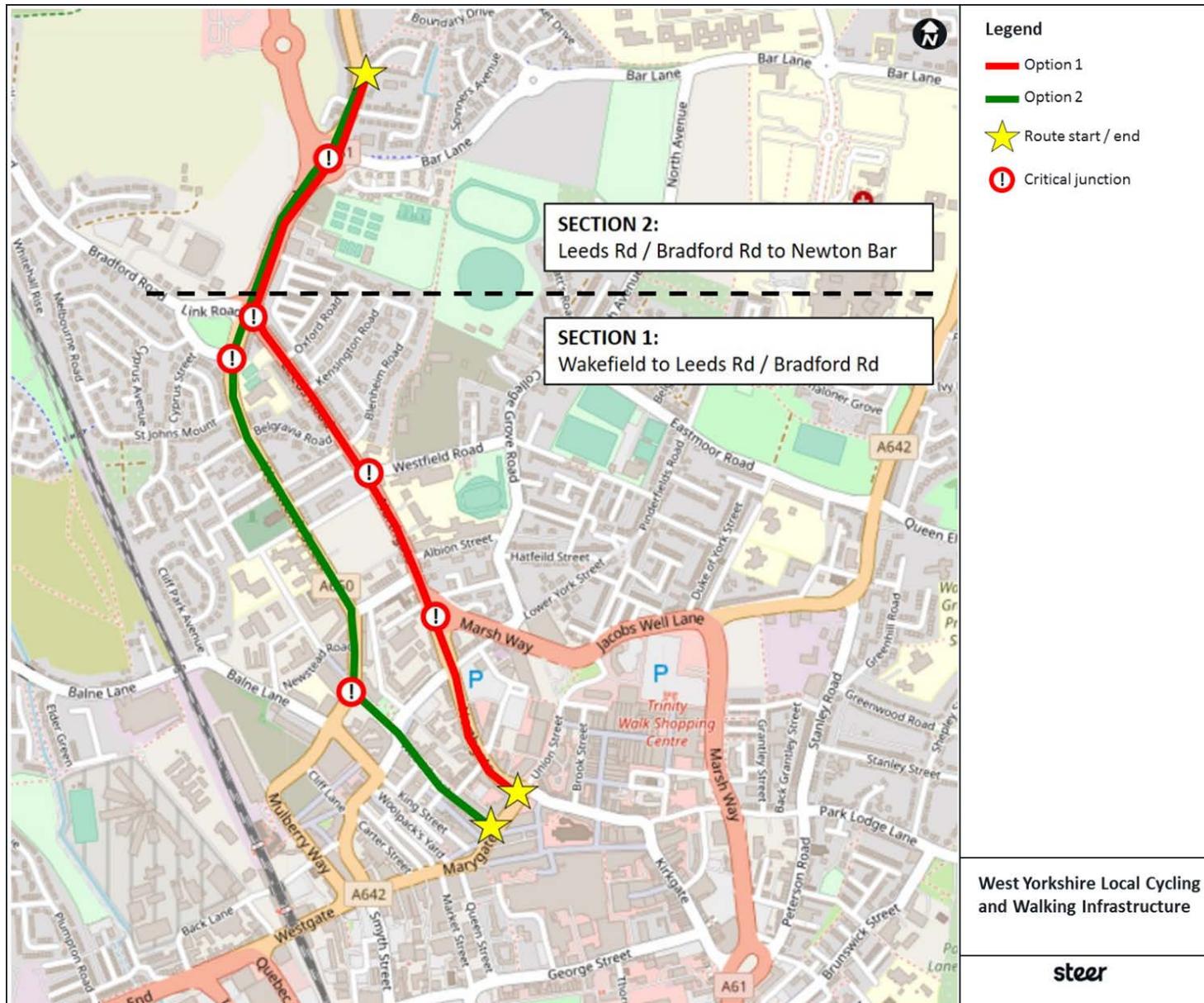


Figure 3.5: Priority cycle route 1 alignment appraisal

| FULL ROUTE      | Length (km) | Gradient  | Connections per km | Critical junctions |
|-----------------|-------------|---|--------------------|--------------------|
| <b>Option 1</b> | 1.65        | † 16 m · 4 0 m<br> | 18.8               | 4                  |
| <b>Option 2</b> | 1.75        | † 14 m · 4 0 m<br> | 14.9               | 4                  |

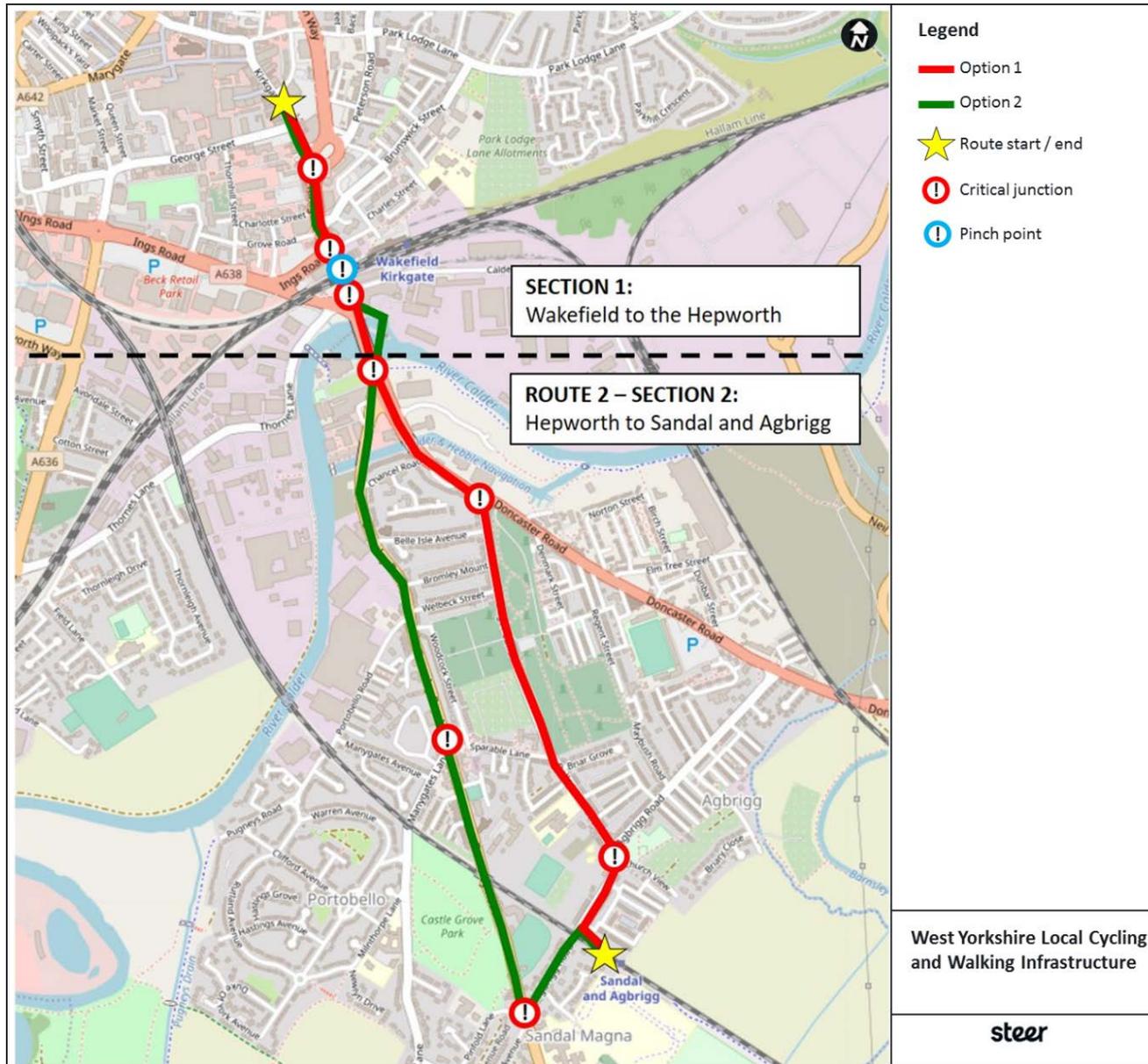
  

| SECTION 1       | Length (km) | Gradient   | Connections per km | Critical junctions |
|-----------------|-------------|--|--------------------|--------------------|
| <b>Option 1</b> | 1.15        | † 8 m · 4 0 m<br> | 20.9               | 3                  |
| <b>Option 2</b> | 1.25        | † 7 m · 4 0 m<br> | 15.2               | 3                  |

| SECTION 2       | Length (km) | Gradient   | Connections per km | Critical junctions |
|-----------------|-------------|--|--------------------|--------------------|
| <b>Option 1</b> | 0.50        | † 8 m · 4 0 m<br> | 14                 | 1                  |
| <b>Option 2</b> | 0.50        | † 8 m · 4 0 m<br> | 14                 | 1                  |

Figure 3.6: Priority cycle route 2: Wakefield to Sandal and Agbrigg



**Figure 3.7: Priority cycle route 2 alignment appraisal**

| FULL ROUTE      | Length (km) | Gradient   | Connections per km | Critical junctions |
|-----------------|-------------|--|--------------------|--------------------|
| <b>Option 1</b> | 2.35        | † 6 m · † 11 m<br>  | 12.1               | 6                  |
| <b>Option 2</b> | 2.65        | † 11 m · † 16 m<br> | 10.8               | 6                  |

| SECTION 1       | Length (km) | Gradient   | Connections per km | Critical junctions |
|-----------------|-------------|--|--------------------|--------------------|
| <b>Option 1</b> | 0.70        | † 6 m · † 1 m<br>     | 11.3               | 3                  |
| <b>Option 2</b> | 0.75        | † 36 ft · † 52 ft<br> | 11.3               | 3                  |

| SECTION 2       | Length (km) | Gradient  | Connections per km | Critical junctions |
|-----------------|-------------|---|--------------------|--------------------|
| <b>Option 1</b> | 1.65        | † 5 m · † 1 m<br>  | 13.1               | 3                  |
| <b>Option 2</b> | 1.90        | † 10 m · † 6 m<br> | 11.1               | 3                  |

## Walking network analysis

### The LCWIP process and walking network development good practice

- 3.32 LCWIP Technical Guidance sets out a recommended approach to developing a future walking network and identifying infrastructure improvements. It stresses that in many cases comprehensive walking networks already exist, but that people may be deterred from walking routes due to severance issues, such as the need to cross roads or because facilities are poorly designed or maintained.
- 3.33 The main focus of the LCWIP is to improve, and in some cases extend, the existing walking network to encourage more people to take short trips on foot.
- 3.34 The key outputs of the LCWIP process for walking are:
- A walking network map, showing preferred routes and zones for further development
  - A programme of walking infrastructure improvements required to achieve suitable standards

### Methodology

- 3.35 Overall, the steps taken to develop the walking network were:
1. Data analysis
  2. Stakeholder engagement
  3. Identifying key walking routes
  4. Auditing key walking routes and identifying barriers

### Data analysis

- 3.36 To ensure an evidence-based approach, a wide range of data were analysed to determine the key routes and zones for improvements to enable more walking trips (see Table 3.5 for a comprehensive list). Analysis focused on three areas:

#### *Local population*

- 3.37 Understanding the characteristics and travel behaviours of the local population, as well as planned development. This information was used to gauge the walking journeys that people are likely to make now and in the future.

#### *Points of interest*

- 3.38 Identifying key destinations that people need to get to – such as schools, hospitals, employment sites, leisure facilities and bus or train stations. When considering that journeys begin at home in residential areas, the likely walking routes between origins and destinations can be identified. They provide the desire lines for local journeys. These destinations – or points of interest – were also clustered to indicate where they are located in high densities, which is likely to attract more journeys.

#### *Existing walking demand*

- 3.39 Understanding where people currently walk, so that the network can be planned to improve conditions for those that already walk, while making it more attractive to encourage more walking trips. This can be understood by using 2011 Census data, which indicates walking trips to work.

### **Stakeholder engagement**

- 3.40 A stakeholder street audit was led out by Living Streets – the UK charity for everyday walking – in partnership with Steer. This also provided an opportunity for stakeholder input, which supported the process of developing key walking routes and recommendations for improvements.
- 3.41 The street audits are a roving consultation exercise, gathering feedback on the local walking environment while walking with local stakeholders. This allowed participants to comment on and capture their live experience of walking the route. A follow-up workshop captured the most salient points and allowed participants to comment on wider issues that might otherwise have been missed. Comments from participants were used to capture the main barriers to walking and to translate observations into recommendations for infrastructure improvements to enhance the walkability of the area as described later in this section.
- 3.42 The audit took place in December 2017, with attendees including representatives from Steer, Living Streets, Wakefield Council, West Yorkshire Combined Authority and various local stakeholders. The area of focus and route was agreed between all parties prior to the audit.

**Table 3.5: Data analysed in developing the walking network in Wakefield city centre**

| Theme                          | Source                        | Insight  | LCWIP application   |
|--------------------------------|-------------------------------|--|---|
| <b>Local population</b>        | Population density            | Identifying trip origins and areas most needing to be served by the network    | Provided confidence in identified routes  |
|                                | Employment density            | Identifying trip origins and areas most needing to be served by the network    | Provided confidence in identified routes  |
|                                | Car ownership                 | Potential for switchable trips by location                                     | Slightly lower car ownership to the east of the city centre, meaning that walking improvements could increase travel opportunities here in particular |
|                                | Journeys to work              | Identifying proportion of journeys within reasonable walking distance, by area | Provided confidence in identified routes and potential to switch trips to walking   |
|                                | Growth areas                  | Identifying areas that need to be served by the network in future              | Informed identification of barriers and programme of improvements needed  |
| <b>Points of interest</b>      | GIS-identified destinations   | Identifying key destinations   | Informed plotting / selection of OD mapping   |
|                                | GIS clustering                | Identifying key clusters and density of destinations                           | Informed plotting / selection of OD mapping   |
| <b>Existing walking demand</b> | 2011 Census                   | Identifying existing walking demand for journeys to work                       | Used to identify and quantify desire lines for existing walking trips to work, notably to the core walking zone                                       |
| <b>Stakeholder engagement</b>  | Key routes                    | Local knowledge of key routes for walking                                      | Incorporated in to network planning   |
|                                | Barriers                      | Local knowledge of barriers to walking   | Incorporated in to network planning and programme of improvements   |
|                                | Points of interest            | Local knowledge of key destinations in and around the core walking zone        | Incorporated in to network planning and programme of improvements   |
|                                | Living Streets interpretation | Expert development of key routes and programme of improvements                 | Provided confidence and input in to network planning and programme of improvements  |

## Developing the walking network in Wakefield

### Identifying key walking routes

- 3.43 Wakefield city centre forms the Core Walking Zone for this initial LCWIP phase. The focus is on key walking routes into Wakefield town centre and surrounding areas. As per the LCWIP Technical Guidance, all routes within the area of focus were considered within 2km of the core walking zone.
- 3.44 There are a number of radial routes linking residential areas to Wakefield city centre. In the north these need to cross Marsh Way, which acts as a point of severance, including from Union Street where there are unmet desire lines. In the east there are various crossings of Marsh Way via Trilby Street, Upper and Lower Warrengate and Kirkgate roundabout. In the west a main access route is Westgate.
- 3.45 One primary orbital route also emerged as important for the walking network, which was Preston Road / Stanley Road. This route has high traffic volumes and teachers were witnessed having to run groups of school children across the street during the audit.
- 3.46 The full list of walking routes were classified as follows:

| Walking route                   | Route type | Street                               |
|---------------------------------|------------|--------------------------------------|
| <b>Primary walking routes</b>   | Radial     | Pinderfields Road / Union Street     |
|                                 |            | Trilby Street / Earl Street          |
|                                 |            | Upper Warrengate / Park Lodge Lane   |
|                                 |            | Brunswick Street                     |
|                                 | Orbital    | Preston Road / Stanley Road          |
| <b>Secondary walking routes</b> | Radial     | Saville Street / College Grove Road  |
|                                 |            | A61 Northgate / Leeds Road           |
|                                 |            | A642 Stanley Road / Jacobs Well Lane |
|                                 |            | A61 / A638                           |
|                                 |            | A636 Denby Dale Road                 |
|                                 |            | Balne Lane                           |
|                                 |            | A638 / A642v                         |
|                                 | Orbital    | A61 Marsh Way / Jacobs Well Lane     |
|                                 |            | Greenwood Road                       |
|                                 |            | Grantley Street                      |
|                                 |            | Alverthorpe Road                     |

### Auditing key walking routes and identifying barriers

- 3.47 The key walking routes were first audited as part of the stakeholder route audit and workshop activity with additional auditing undertaken by Living Streets Technical Advisor. Local stakeholders and representatives from Steer, Living Streets, WYCA and Wakefield Council worked together to assess and agree the primary and secondary routes for Wakefield city centre. The group also provided qualitative assessments of

the current conditions for walking on each route, the barriers inhibiting more walking trips being made and suggestions for improvements.

3.48 When auditing walking routes, stakeholders were asked to consider attractiveness, comfort, directness, safety and coherence. By noting the nature of any instances where the routes or particular locations along routes did not perform well against these factors, we were able to establish the following main types of barrier:

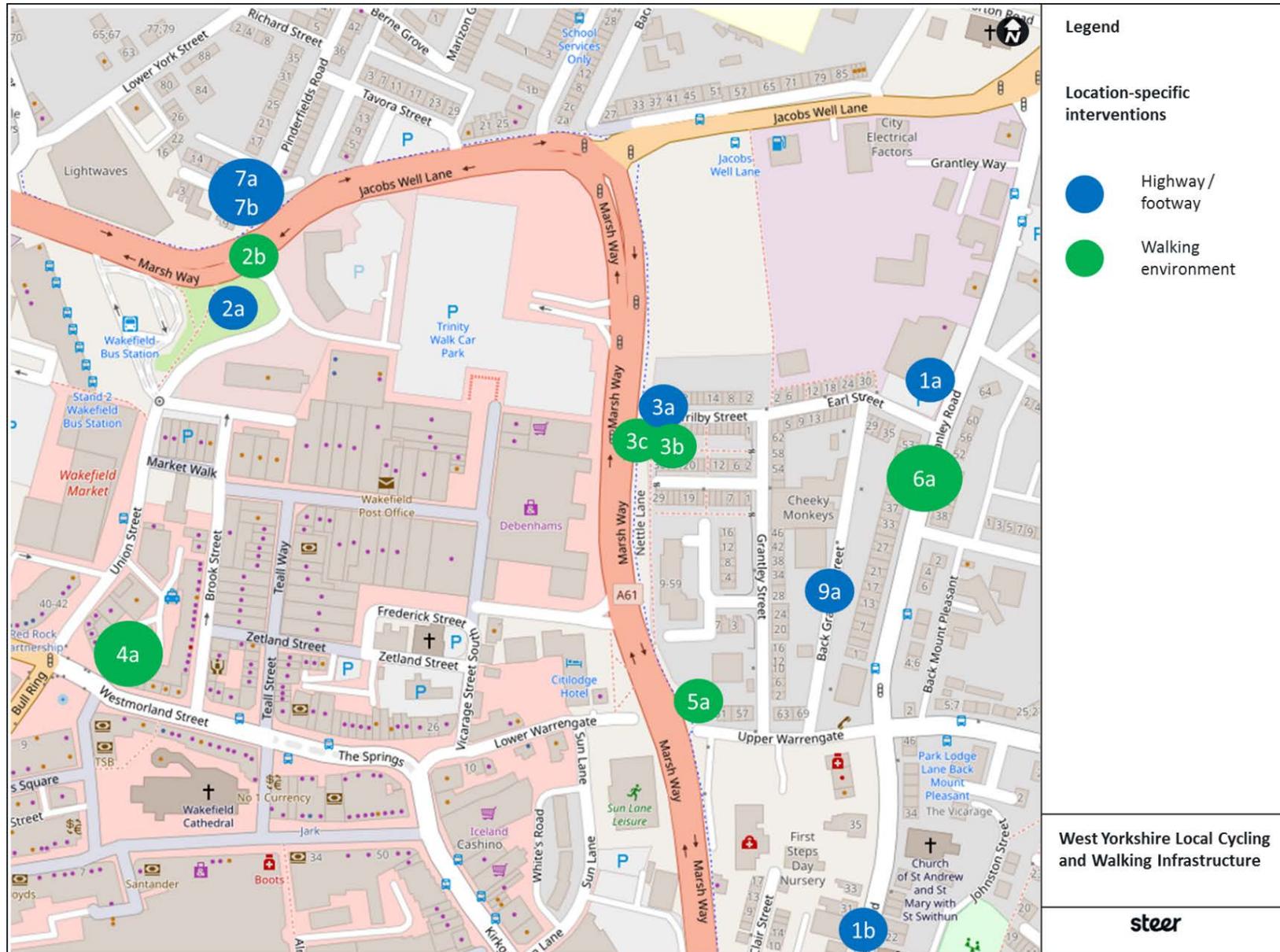
1. High traffic volumes
2. High traffic speeds, especially around corners
3. Poor pavement conditions and maintenance
4. Pavement obstructions
5. Poor or no formal crossing provision
6. Long wait times for crossing
7. Personal safety concerns, including poor lighting and visibility
8. An unattractive walking environment

3.49 On assessment of the identified barriers, the following key intervention sites were prioritised as follows:

1. Pedestrian crossing points across Marsh Way (north)
2. Pedestrian crossing points across Marsh Way (east)
3. Stanley Road / Peterson Road
4. City centre pedestrian zone

The key walking routes and intervention sites are shown in Figure 3.8.

Figure 3.8: Wakefield walking intervention sites



### **Programme of improvements for walking**

- 3.50 Nine different interventions have been suggested to improve conditions for walking across. For each intervention, recommended infrastructure has been outlined, as well as indicative costs and timescales for delivery.
- 3.51 Table 3.6 comprises a programme of infrastructure improvements for walking in Wakefield city centre in order to achieve suitable standards to encourage more walking trips.

**Table 3.6: Summary of proposed walking interventions with indicative costs and timescales**

| Intervention  | Intervention scale | Intervention  | Intervention type      | Cost estimate                              | Timescale |
|---|--------------------|---|------------------------|--|-----------|
| <b>1. Stanley Road / Peterson Road crossing points</b>  | Location-specific  | a. Install signalised (puffin) crossing at Earl Street  | a. Highway / footway   | a. £50k-£60k                               | Medium    |
|   |                    | b. Install zebra crossing at Berners Street   | b. Highway / footway   | b. £20k-£35k                               | Medium    |
|   |                    | c. Traffic reduction along Stanley Road / Peterson Road as part of area-wide treatment                    | c. Walking environment | c. Subject to local study                  | Medium    |
| <b>2. Installation of additional pedestrian crossing over Marsh Way at Union Street and northern arm of Kirkgate roundabout</b> | Location-specific  | a. Install sealed paths along the clear desire lines at Union Street                                      | a. Highway / footway   | a. £200/m                                  | Short     |
|   |                    | b. Install a pedestrian phase and appropriate signals at the existing signalised junction at Union Street | b. Highway / footway   | b. £50k-£60k                               | Short     |
|   |                    | c. Install puffin crossing at northern arm of Kirkgate roundabout   | c. Highway / footway   | c. £50k-£60k                               | Medium    |
| <b>3. Nettle Lane / Marsh Way access via Trilby Street</b>  | Location-specific  | a. Remove steps and install ramped access at Trilby Street  | a. Highway / footway   | a. Subject to local study                  | Short     |
|   |                    | b. Reduce the height of wall along Nettle Lane or take down entirely                                      | b. Walking environment | b. Subject to local study                  | Short     |
|   |                    | c. Reduce severance caused by noise screen  | c. Walking environment | c. Subject to local study                  | Short     |
|   |                    | d. Seal desire line paths or open out Trilby Street access entirely                                       | d. Highway / footway   | d. £200/m                                  | Short     |
|   |                    | e. Improve street lighting  | e. Walking environment | e. Subject to local study                  | Medium    |
|   |                    | f. Seal the surface of Nettle Lane and add drainage   | f. Highway / footway   | f. £2,600-£3,200 per lamp column<br>£200/m | Medium    |
| <b>4. Enforcement of pedestrian zone through Westmoreland Street / Union Street</b>   | Location-specific  | a. Consider enforcement options, including cameras  | a. Walking environment | a. Subject to local study                  | Short     |

| Intervention  | Intervention scale | Intervention  | Intervention type                            | Cost estimate  | Timescale      |
|---|--------------------|---|--|--|----------------|
| <b>5. Create park or garden in green area opposite Sun Lane Leisure Centre</b>                  | Location-specific  | a. Install community garden or other green space  | a. Walking environment                       | a. Subject to local study                              | Short          |
| <b>6. Improve pedestrian comfort on Stanley Road / Peterson Road through parking management</b> | Location-specific  | a. Parking management scheme to protect footway space from parked cars on the western side  | a. Walking environment                       | a. Subject to local study                              | Medium         |
| <b>7. Completion of pedestrian access to ring road from streets north of ring road</b>          | Location-specific  | a. Perform maintenance on footways along residential streets to north of ring road<br>b. Pave desire line paths connecting to ring road from streets to the north | a. Highway / footway<br>b. Highway / footway | a. £200/m for new footway<br>b. £200/m for new footway | Short<br>Short |
| <b>8. Wayfinding</b>  | Area-wide          | a. Extend wayfinding beyond ring road   | a. Walking environment                       | a. £1k per finger post                                 | Medium         |
| <b>9. Speed calming along residential streets</b>   | Area-wide          | a. Install speed calming measures, including build outs and raised tables   | a. Highway / footway                         | a. Subject to local study                              | Medium         |

\*The proposed interventions are intended to be used for prioritising schemes to take forward for delivery, with full design and costing to be done at a later stage. Indicative cost estimates were informed by Wiltshire Council Highways (2017) *Costs of highway works*, which provides guidance on the typical costs of implementing various types of highway infrastructure. All cost estimates subject to feasibility and design and may be higher or lower when taken forward for delivery. In some instances, cost efficiencies might be found by delivering schemes as part of an holistic area-based approach, rather than on a scheme-by-scheme basis.

## Control Information

### Prepared by

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Steer  
67 Albion Street  
Leeds LS1 5AA  
+44 113 389 6400  
www.steergroup.com

### Prepared for

---

West Yorkshire Combined Authority  
Wellington House  
40-50 Wellington Street  
Leeds LS1 2DE

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---

### Author/originator

---

Ian Bewick

### Reviewer/approver

---

Simon Hollowood

### Other contributors

---

Matt Higgins

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---

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