North Yorkshire County Council

SCARBOROUGH CYCLING AND WALKING INFRASTRUCTURE PLAN

Phase 2 Project Report

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CONFIDENTIAL

North Yorkshire **County Council**

SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN

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North Yorkshire **County Council**

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Phase 2 Project Report

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1. INTRODUCTION

1.1. BACKGROUND

1.1.1. WSP were commissioned by North Yorkshire County Council (NYCC) to develop a Local Cycling and Walking Infrastructure Plan (LCWIP) for Scarborough. Local Cycling and Walking Infrastructure Plans, as set out in the Government's Cycling and Walking Investment Strategy (CWIS), are a new, strategic approach to identifying cycling and walking improvements required at the local level. They enable a long-term approach to developing local cycling and walking networks, typically over a 10-year period, and form a vital part of the Government's strategy to increase the number of trips made on foot or by cycle.

1.1.2. The key outputs of an LCWIP are:

- a network plan for walking and cycling which identifies preferred routes and core zones for further development;
- a prioritised programme of infrastructure improvements for future investment; and
- a report which sets out the underlying analysis carried out and provides a narrative which supports the identified improvements and network.

1.1.3. By taking a strategic approach to improving conditions for cycling and walking, LCWIPs will assist Local Authorities (LAs) to:

- identify cycling and walking infrastructure improvements for future investment in the short, medium and long term;
- ensure that consideration is given to cycling and walking within both local planning and transport policies and strategies; and
- make the case for future funding for walking and cycling infrastructure.

1.1.4. The Scarborough LCWIP is be split into two distinct phases:

- The Phase 1 project report details the evidence review and network development process, broadly reflecting Stages 1 to 4 of the LCWIP guidance.
- The Phase 2 project report details the development of network priorities into 'bid-ready' schemes, in line with Stage 5 of the LCWIP guidance.

1.1.5. The two project reports are to be taken forward for integration and application (Stage 6 of the LCWIP guidance) by NYCC and Scarborough Borough Council as appropriate.

1.1.6. NYCC received an Access Fund contribution to deliver soft transport measures in the Scarborough area through to 2020 as part of the 'Open North Yorkshire' project. The development of the Scarborough LCWIP will support the aims of the 'Open Scarborough' element of the project, as well as setting out a comprehensive action plan for cohesive cycle and walking networks in Scarborough over the coming decade and beyond.

REPORT STRUCTURE

1.1.7. This Project Report presents the work undertaken in Phase 2 of the LCWIP development, and is structured as follows:

- Section 2 – Priority Corridors;
- Section 3 – Route Selection;
- Section 4 – Walking Route Audits
- Section 5 – Option Generation;

- Section 6 – Option Development;
- Section 7 – Cost Estimates;
- Section 8 – Economic Appraisal; and
- Section 9 – Summary and Next Steps.

2. PRIORITY CORRIDORS

2.1. INTRODUCTION

2.1.1. Phase 1 of the Scarborough LCWIP involved the development of network plans for cycling and walking across the urban area of Scarborough.

2.1.2. The network maps were informed by a comprehensive evidence base and a programme of stakeholder engagement. The final network maps are displayed in Appendix A.

2.1.3. Whilst the long-term shared aspiration of NYCC is to deliver the proposed cycling and walking networks in their entirety, it is recognised that this will not be financially viable in the short term.

2.1.4. Informed by the evidence base and stakeholder engagement, a long list of priority corridors were identified for potential development in the short term (should funding become available).

2.1.5. A prioritisation exercise was undertaken with NYCC on the long list of schemes, considering:

- the propensity for the corridors to increase the number of cycling and walking trips;
- alignment of the corridors with other ongoing workstreams (whether ongoing, completed or aspirational);
- the deliverability of improvements to the corridor; and
- likelihood of securing funding to bring forward the recommended interventions.

2.1.6. The results of the assessment enabled the identification of a short-list of four priority corridors to be taken forward for feasibility assessment in Phase 2 of the LCWIP

2.3. PRIORITIES

2.3.1. Four priority corridors have been identified for feasibility assessment as part of Phase 2. These are:

- Corridor 1: Eastfield to Scarborough;
- Corridor 2: Eastfield & Cayton Central Spine;
- Corridor 3: Cinder Track Connections; and
- Corridor 4: Scarborough Central Corridor.

2.3.2. The rationale for the selection of each corridor is presented below.

Table 2-1 – Scarborough Priorities: Eastfield to Scarborough

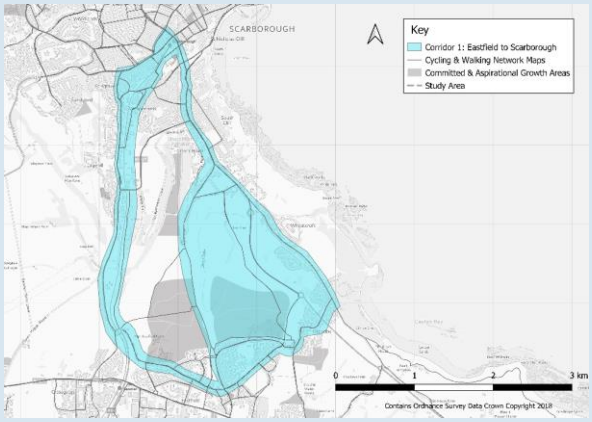
Corridor 1: Eastfield to Scarborough	Rationale
	

Table 2-2 – Scarborough Priorities: Eastfield & Cayton Central Spine

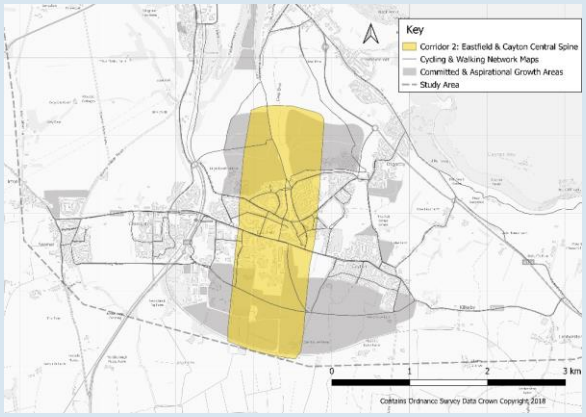
Corridor 2: Eastfield & Cayton Central Spine	Rationale
	▪ Stakeholder input; ▪ The need to ensure integration of new development into the existing urban area was highlighted as a key priority; ▪ Such a corridor would link committed and aspirational development with a key local employment centre, as well as help connect existing ODs such as Eastfield High Street; ▪ Aligns with Eastfield Paths Strategy (2014); and ▪ Development sites present a funding opportunity through contributions.

Table 2-3 – Scarborough Priorities: Cinder Track Connections

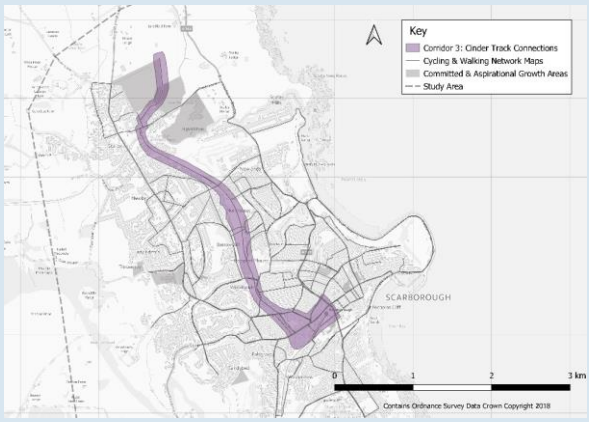
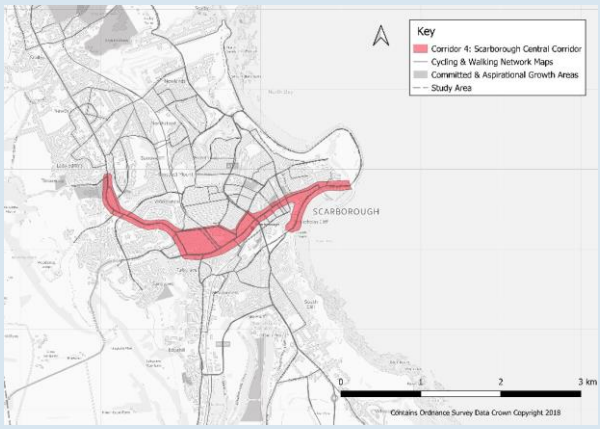
Corridor 3: Cinder Track Connections	Rationale
	▪ Stakeholder input; ▪ Aligns with the Scarborough Local Plan and is of strategic ▪ This route encompasses both Prestige and Primary walking / ▪ The central location of the corridor means many trips will ▪ The route provides an opportunity to alleviate the lack of permeability between the various residential estates in central and northern Scarborough.

Table 2-4 – Scarborough Priorities: Scarborough Central Corridor

Corridor 4: Scarborough Central Corridor	Rationale
	▪ Stakeholder input; ▪ Key destinations such as the South Bay, Scarborough town centre, Falsgrave, and Scarborough General Hospital are located along this corridor, with various other retail, employment and educational ODs; ▪ PCT outputs identified elements of this corridor as potentially being some of the highest trafficked cycle routes in Scarborough; ▪ Overlapping desire lines and walking isochrones from Core Walking Zones suggest this route sees some of the highest current usage; ▪ This route encompasses both Prestige and Primary walking / cycling routes; ▪ The central location of the corridor means many trips will either end within or make use of any associated interventions.

2.4. ACTIVE TRAVEL CORRIDORS

2.4.1. A consistent theme amongst the suite of North Yorkshire LCWIPs is to identify and develop priorities as ‘active travel corridors’. The rationale for this is to ensure that both cycling and pedestrian infrastructure is brought up to a high standard as a combined active modes route, in order to support key policy objectives, maximise synergies between cycling and pedestrian infrastructure proposals and create a stronger case for investment.

2.4.2. Given the longer average trip length for cyclists, priority routes are identified from a cycling perspective using the route selection tool, as detailed in Section 3.

2.4.3. Once a preferred routing option has been identified, an audit is undertaken to assess the condition and potential of the pedestrian infrastructure, as detailed in Section 4.

2.4.4. This enables both sets of interventions to be considered as a package in the design stage (Section 5).

3. ROUTE SELECTION

3.1. INTRODUCTION

3.1.1. The route selection process involves the identification of the preferred routing to accommodate a priority desire line. In most cases, there will be a clear preferred cycle route, which is usually the most direct. However, in some cases there may be more than one potential route between origin and destination points or a reason why the most direct route is not suitable for cycling.

3.1.2. Once a preferred route has been identified, it should be assessed against the core design outcomes and its ability to cater for the anticipated levels of cycling. If a route is not suitable in its present condition, a preliminary audit should be undertaken to identify what measures are required to improve it. If it is not possible to improve the preferred route to an acceptable level, due to physical constraints or operational requirements, such as junction capacities and kerbside activities, then the next most direct route should be assessed.

3.1.3. There will always be conflicting demands when it comes to selecting routes. As such, it is important that the needs of all users are considered when selecting routes, and that the wider transport priorities for specific roads, junctions and spaces are understood in unison. Both the wider opportunities and challenges of selecting particular routes should also be considered, with important direct routes only being replaced with an alternative route in exceptional circumstances.

3.1.4. The route selection process utilises the DfT Route Selection Tool (RST)[1] that has been produced to support the development of Local Cycle and Walking Infrastructure Plans (LCWIPs)[2].

3.2. ROUTE SELECTION PROCESS

3.2.1. Figure 3-1 illustrates the typical process whereby decisions are made by the tool user to ultimately determine which links are included within the LCWIP network.

3.2.2. The RST scores routes against the five criteria that determine which routes people choose when travelling by bicycle:

- Directness;
- Gradient;
- Safety;
- Connectivity; and
- Comfort.

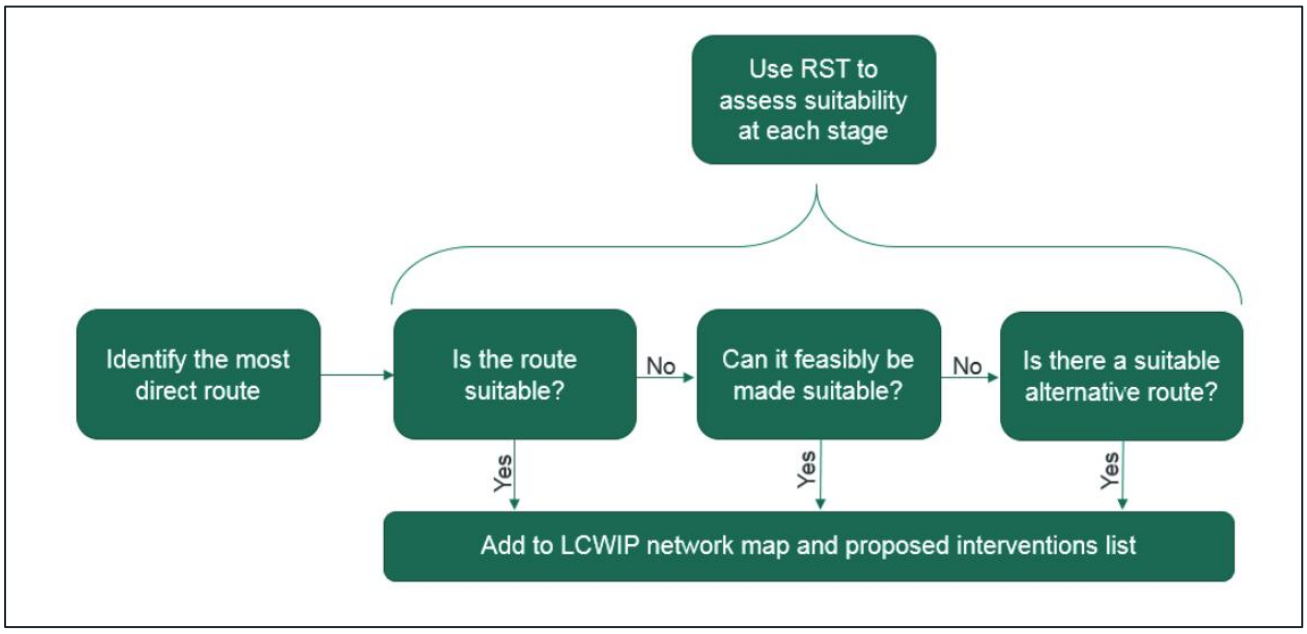
3.2.3. The tool also considers the number of ‘critical junctions’ to allow for both links and junctions to be reviewed through the process.

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/602530/route-selection-tool.xls

[2] https://www.gov.uk/government/publications/local-cycling-and-walking-infrastructure-plans-technical-guidance-and-tools

The RST provides a score out of five for each of the categories above and, as a result, each route is scored out of a maximum of 25. The 'critical junctions' criteria also provides additional data without being included in the scoring assessment.

Figure 3-1 – Route Selection Tool Process[3]



3.2.4. As with all the tools that are used as part of the LCWIP process, the RST is not designed to provide definitive answers. For example, the RST will not, on its own, tell the user which route to ultimately choose; the tool is designed to help inform the process but, ultimately, other objectives or priorities may mean a route that does not score the highest is selected. The RST is also subjective to the user and may result in slightly different outcomes when administered by different reviewers. Experience of using the tool suggests that these differences tend to be minor with little or no impact on the overall scoring.

3.2.5. In summary, the RST provides a framework from which to assess different routes in a consistent manner. It may not directly link to the routes that are ultimately taken forward, as more qualitative factors are introduced and considered, such as policy objectives or decision-maker input; however, it allows for a transparent approach to determining the potential for different routes, and for informing initial comparison.

3.2.6. The Scarborough LCWIP uses the tool in a modified format, to help determine which routes from the aspirational Cycle Network Map best fit a broad priority corridor, as opposed to the more traditional method of assessing all potential links before adding to the network map which would be both resource intensive and require regular review.

[3] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/602528/cycling-walking-infrastructure-tools.pdf

3.3. ROUTE SELECTION BY CORRIDOR

3.3.1. As set out in Section 2, four priority corridors were selected as part of Phase 1, to be taken forward for further work in Phase 2:

- Corridor 1: Eastfield to Scarborough;
- Corridor 2: Eastfield & Cayton Central Spine;
- Corridor 3: Cinder Track Connection; and
- Corridor 4: Scarborough Central Corridor.

3.3.2. The most direct route was identified for each corridor, influenced by the using the Phase 1 Cycle Network Plan, Propensity to Cycle Tool, desire lines, trip attractors/generators and stakeholder input. These are referred to as the 'existing route' on the corridor plans below.

3.3.3. This route acts as the 'baseline' or 'reference case' assessed using the RST. The RST was also used to assess the potential impact that feasible improvements would have on the route.

3.3.4. A similar process was then used to identify further broadly parallel routes through the four corridors to be assessed against the baseline as alternative options.

3.3.5. The results of the route selection assessment are summarised below for each of the four corridors, along with explanations of the preferred route options for each. Full RST outputs are included in a technical note that can be found in Appendix B.

3.3.6. Note that the routes that have not been progressed could still feature as part of the long-term network and may be developed at a later stage.

3.3.7. While Eastfield and Scarborough are within a desirable cycling distance, the existing highway network provides two circuitous routes that are unconducive to cycling, via either the A64 Seamer Road or the A165 Filey Road. However, the Scarborough LCWIP Phase 1 report identified an opportunity to align an improved and cohesive route via the Deepdale Bridleway and the extensive Middle Deepdale development, as well as potentially promote improvements along the existing highway links. As such, a broad area of search was indicated as a recommended priority route, considering all potential options.

3.3.8. At the inception stage of Phase 2, a high-level sifting exercise was undertaken, filtering out a number of routes that posed immediate significant issues and constraints to implementing high-quality cycling infrastructure. This sifting effectively removed the following routes from the study:

- A64 Seamer Road (Queen Margaret's Rd to Falsgrave Road);
- Osgodby Bypass; and
- Filey Road.

3.3.9. The study does not consider the possibility of improvements to the signalised junctions between Valley Bridge/Westwood and Northway/Victoria Road (including the rail station plaza). While there are aspirations to improve this area, such a scheme is beyond the scope of the LCWIP Phase 2 project.

3.3.10. Figure 3-2 displays the route options considered in the route selection process for the Eastfield to Scarborough corridor. Results of the RST assessment are displayed in Table 3-1. The assessed routes are summarised as:

- Route 1a: Existing – the assessed route encompasses the existing route from Westborough (the main shopping district) to Middle Deepdale via Ramshill, the A165 Filey Road, and the Deepdale Bridleway;
- Route 1a: Proposed – the assessed route quantifies the likely impact of any potential improvement scheme to Route 1a;
- Route 1b: Proposed – The assessed route quantifies the likely impact of parallel routing choices to Route 1a, including sections which are currently impassable to cycle users, hence the lack of an 'existing' score. Note some sections of the route remain the same as Route 1a, following the same alignment along the Deepdale Bridleway in Figure 3-2;
- Route 2: Existing – the assessed route considers an alternative existing route to Route 1a, running via the new college and university campus and following the A64 to Musham Bank roundabout;
- Route 2: Proposed - Any significant improvements to the existing route are considered to be impracticable in the short-term. Instead, a parallel off-road route is proposed via the Mere. This route is currently impassable to cycle users (and difficult for pedestrians) and is therefore compared against Route 2: Existing.

Figure 3-2 – Corridor 1: Identified Routes

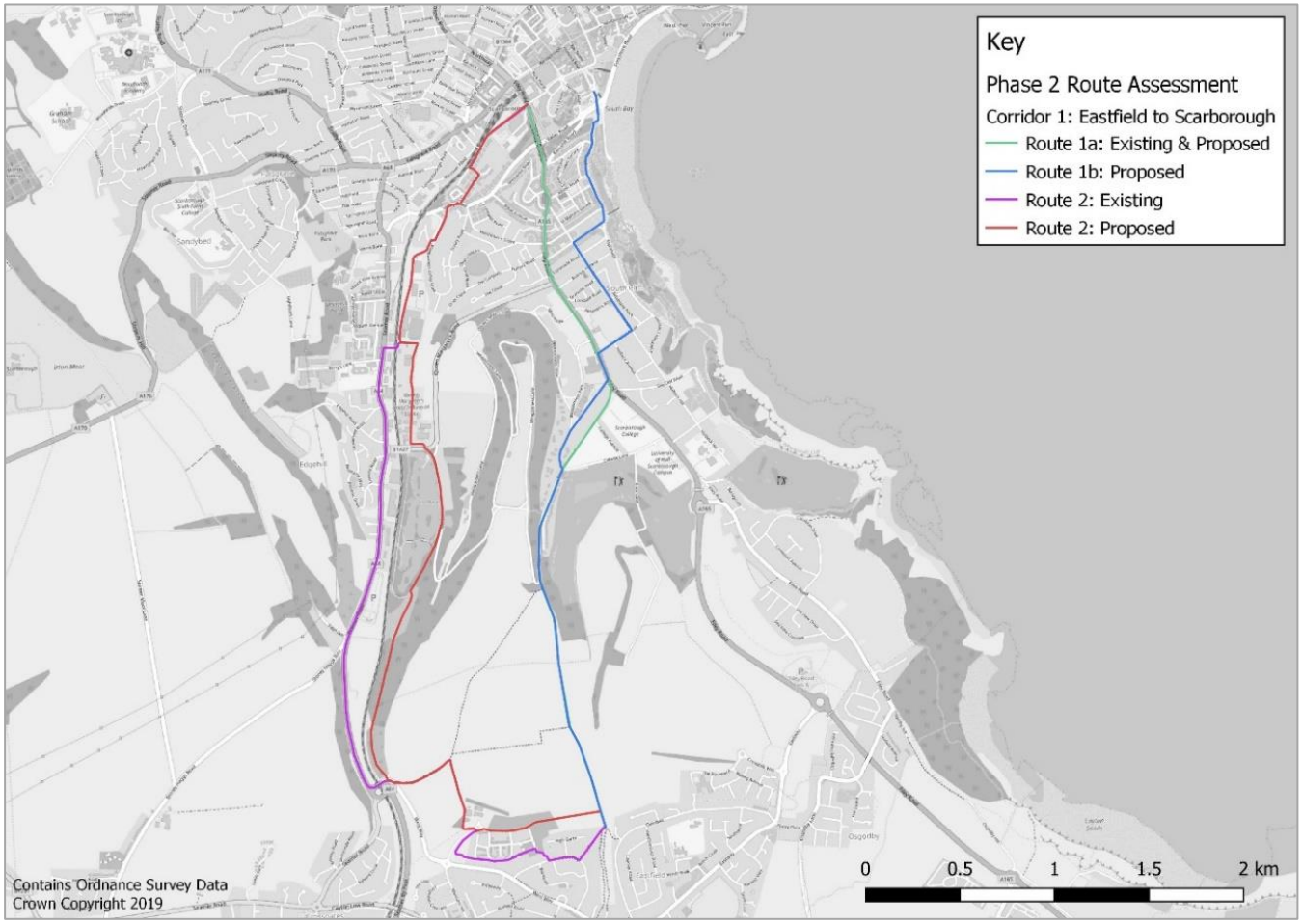


Table 3-1 – Corridor 1: RST Scoring

	Route 1a		Route 1b	Route 2	
	Existing	Proposed	Proposed	Existing	Proposed
Length (km)	4.06	4.10	4.42	6.05	5.51
Length comparison (with existing route)	1.00	1.01	1.09	4.00	5.00
Directness	5.00	5.00	5.00	2.44	2.77
Gradient	0.25	0.62	1.27	3.59	3.62
Safety	2.83	4.00	4.41	3.38	1.69
Connectivity	3.35	4.25	4.30	2.24	2.67
Comfort	0.80	3.10	4.10	4.00	5.00
Total (out of 25)	**12.23**	**16.96**	**19.08**	**15.64**	**15.74**

3.3.11. There are significant constraints where Route 1a passes through Ramshill local centre, and particularly to the north between Ramshill and Valley Bride, where the existing carriageway is narrow, and the route is on a severe gradient. To make this area conducive to cycling, a significant package of work would be required to limit speeds and create an 'Enhanced Street'.

3.3.12. Given the potential difficulties in incorporating infrastructure along Ramshill Road between Queen Margaret Road and Valley Bridge (Route 1a), Route 1b assesses a parallel route along the primarily residential roads along the South Cliff, as well as connectivity via Cliff Bridge; the only other

immediately obvious route to the town centre that would not necessitate a circuitous deviation from the desire line. This route also aligns with Sustrans' proposed realignment of the National Cycle Network Route 1 (part of the North Sea Cycle Route) along the esplanade, potentially unlocking alternative funding streams associated with leisure uses.

3.3.13. Route 2 was considered unviable when assessed against the scheme's primary objective to connect Eastfield with Scarborough town in a direct manner. Despite this, both the existing and proposed alignments should be considered for improvement and implementation in the future as significant parts of the network.

3.3.14. Route 1b scored the highest and was taken forward for further development as the preferred routing option.

CORRIDOR 2 – EASTFIELD & CAYTON CENTRAL SPINE

3.3.15. Corridor 2 is a relatively short corridor in Eastfield that is focused on connecting Middle Deepdale with the Scarborough Business Park and Cayton Strategic Growth Area. The 'existing route' reflects the current most direct route and acts as the baseline against which other potential options are assessed.

3.3.16. Figure 3-3 displays the route options considered in the route selection process for the Eastfield and Cayton central spine corridor. Results of the RST assessment are summarised in Table 3-2.

3.3.17. The assessed routes are summarised as:

- Route 1: Existing – The assessed route incorporates the existing route along the Deepdale bridleway from Middle Deepdale to Westway, following Holme Hill to Cayton Low Road.
- Route 1: Proposed – the assessed route quantifies the likely impact of any potential improvement scheme to Route 1;
- Route 2: Proposed – the assessed route quantifies the likely impact of a new route between Lowfield and Cayton Low Road. Note this route is currently inaccessible for cycle users, and is therefore only assessed as 'proposed';
- Route 3: Existing – the assessed route incorporates the nearest parallel alternative to the Deepdale bridleway, considering the existing route along Overdale and Moor Lane;
- Route 3: Proposed – the assessed route quantifies the likely impact of any potential improvement scheme to Route 3.

Figure 3-3 – Corridor 2: Identified Routes

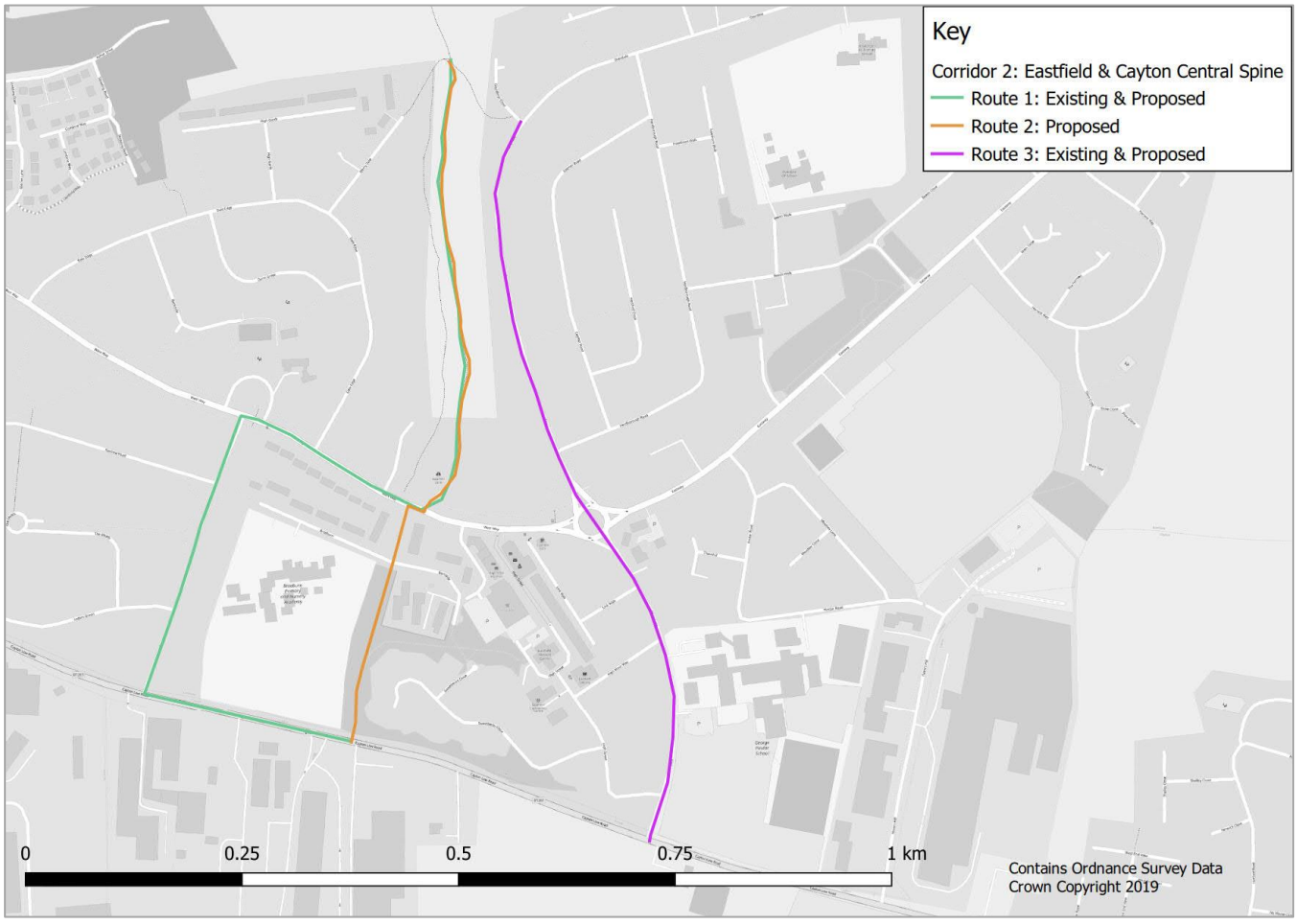


Table 3-2 – Corridor 2: RST Scoring

	Route 1		Route 2	Route 3	
	Existing	Proposed	Proposed	Existing	Proposed
Length (km)	1.13	1.13	0.83	0.85	0.85
Length comparison (with existing route)	1.00	1.00	0.73	1.00	1.00
Directness	5.00	5.00	5.00	5.00	5.00
Gradient	3.23	3.23	3.49	3.30	3.30
Safety	2.67	4.08	4.00	2.80	2.80
Connectivity	3.81	3.81	5.00	5.00	5.00
Comfort	0.00	3.36	4.12	0.00	0.30
Total (out of 25)	**14.71**	**19.48**	**21.61**	**16.40**	**16.40**

3.3.18. Improving Route 1 would deliver a route that scores well against all the criteria in the RST. However, the delivery of some of the highway interventions on Westway may not be achievable in the short term and the route is less direct than Route 2.

3.3.19. Route 2 offers an opportunity for a short-term intervention that does not significantly impact on the existing highway network. The new link will improve connections to existing land uses and will link in with the longer-term development of Middle Deepdale and the Cayton Strategic Growth Area.

3.3.20. Route 3 in its existing condition offers a route that performs well against all criteria apart from comfort, scoring better than Route 1 in its existing condition. However, potential improvements to Route 3 are limited due to current traffic levels which results in the potential score being the same as the existing score.

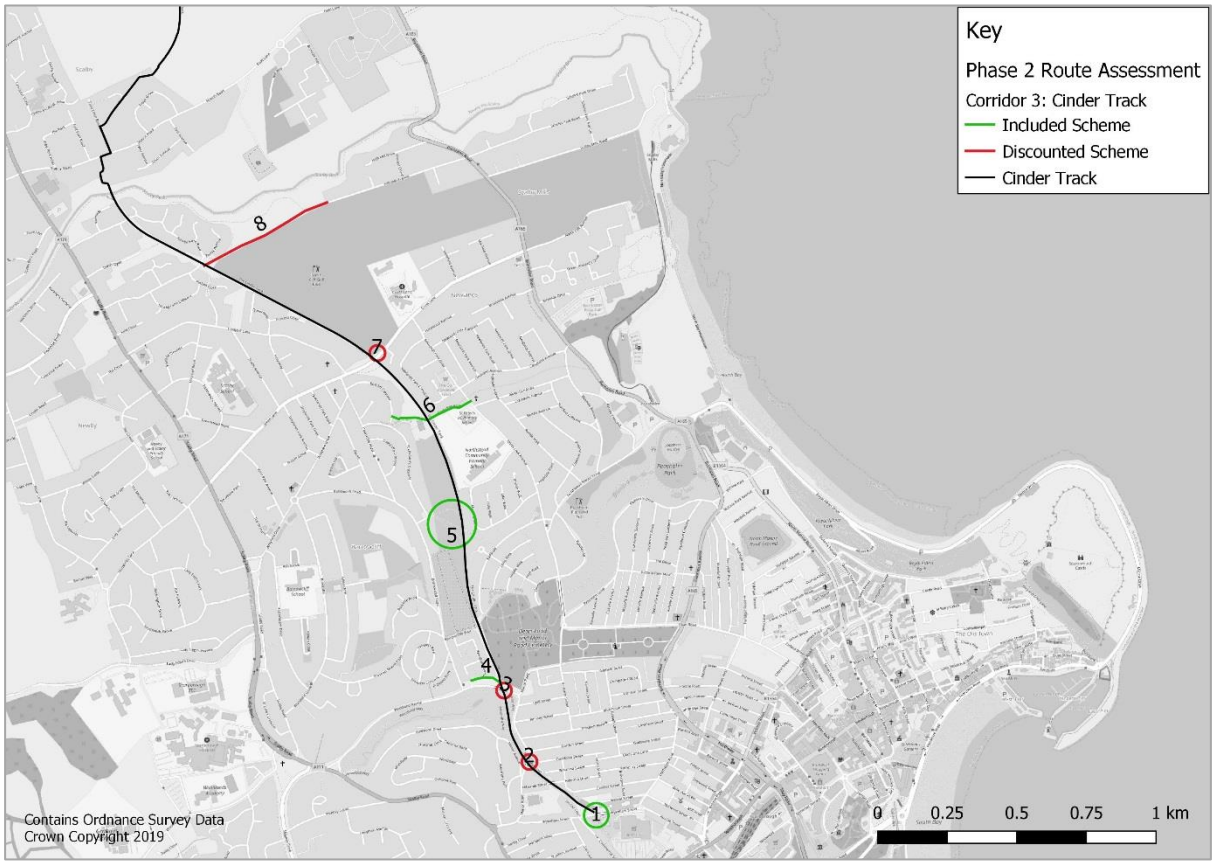
3.3.21. Route 2, which scored the highest among these options, was taken forward for further development.

CORRIDOR 3 – CINDER TRACK CONNECTION

3.3.22. Corridor 3 focuses on an existing active travel route along the former Scarborough to Whitby railway line which has been converted into a walking and cycling route called the 'Cinder Track'. The Cinder Track provides a north-south route from near the town centre to Scalby predominantly catering for leisure trips. While not considered a primary route for utility trips as it is off-highway it still provides valuable connectivity along its alignment.

3.3.23. Figure 3-4 displays the route options considered in the route selection process for the Cinder Track Connection.

Figure 3-4 – Corridor 3: Identified Routes



3.3.24. While the route will remain focused on leisure trips, it has been identified through the development of the LCWIP that enhancements to the route and the connections to/from the route could increase utility trips. As such, at the route selection stage, the purpose is to identify the possible enhancements and prioritise which ones to take forward for further development.

3.3.25. Route selection on the other corridors has involved use of the DfT Route Selection Tool. However, as the options under consideration for Corridor 3 are not routes in their own right but rather enhancements to an existing route and connections to it, the route selection involves a high-level qualitative appraisal of options.

3.3.26. Table 2-4 presents the options that have been identified along with details of whether or not the options are being progressed as part of this LCWIP Phase 2 project.

Table 3-3 – Corridor 3: Cinder Track Connectivity Improvement Options

Option No.	Location	Option	Progress in Phase 2	Details
1	Wykeham Street	A new pedestrian and cycle link from Wykeham Street to the Cinder Track at Sainsbury's Park. Enhancements to Wykeham Street to improve provision for cycling.	Yes	Wykeham Street is part of the secondary network and an important connection between the Cinder Track and the surrounding residential community. The link would also improve cycle and walking access to Sainsbury's.
2	Manor Avenue	Improved access from Manor Avenue, including new provision for cycle users.	No	The level difference from Manor Avenue would be challenging and there is a nearby alternative connection from Manor Road (see below).
3	Manor Road	Improved cycle access from Manor Road.	Yes	Manor Road and the adjacent Prospect Road are part of the secondary network. They are also included within the selected route for the Scarborough Central Corridor which connects the town centre with the Hospital (see Corridor 4 below).
4	Woodland Avenue	Improved access from Woodland Avenue, widening the existing footpath.	Yes	Existing cycle access to the Cinder Track from Woodland Ravine is only from the south side of the road. This requires cycle users to cross Woodland Ravine and pass back underneath the road to travel north along the Cinder Track. An improvement to the link from Woodland Avenue would provide a shorter route. It would also link with the potentially improved route along Woodland Ravine (Corridor 4) if this is taken forward.
5	Maple Drive/St. Leonards Crescent	Improved access to and across the Cinder Track from the communities either side.	Yes	An improved connection to the Cinder Track from the communities either side would also create an east-west link in the network where there is currently a gap.
6	Endcliffe Crescent/North Leas Avenue	Improved access to and across the Cinder Track from the communities either side.	Yes	As with no. 5 above this would create linkages to the Cinder Track and between communities.
7	Cross Lane	Improved access from north side of Cross Lane.	No	Cross Lane is part of the secondary network but as it is not included for development through this current project the improvements to this connection are also not shortlisted.
8	Hillcrest Avenue	Improved access from Hillcrest Avenue.	No	Hillcrest Avenue is not part of the LCWIP network and there are gradient issues between the Cinder Track and Hillcrest Avenue.

CORRIDOR 4 – SCARBOROUGH CENTRAL CORRIDOR

3.3.27. The Scarborough Central Corridor focuses on improving connections between the town centre, the hospital and the communities in between.

3.3.28. Figure 3-5 displays the three route options considered in the route selection process for the Scarborough Central corridor. Results of the RST assessment are displayed in Table 3-4. The assessed routes are summarised as:

- Route 1: Existing / Proposed – this route is the main vehicular corridor between the hospital and the town centre, but was effectively sifted out initially due to deliverability issues in the short-term. Nevertheless, the corridor has been assessed to indicate the current level of service and quantify the level of improvements that could be expected if this route were taken forward in the mid / long term;
- Route 2: Existing – the assessed route considers the closest existing parallel route to Route 1 via quieter residential streets;
- Route 2: Proposed - the assessed route quantifies the likely impact of any potential improvement scheme to Route 2.
- Route 3: Existing – the assessed route considers the desire line directly between the hospital and town centre. Note this route does not directly serve the Falsgrave local centre, but offers synergies with the Cinder Track Corridor in order to do so;
- Route 3: Existing – the assessed route quantifies the likely impact of any potential improvement scheme to Route 3.

Figure 3-5 – Corridor 4: Identified Routes

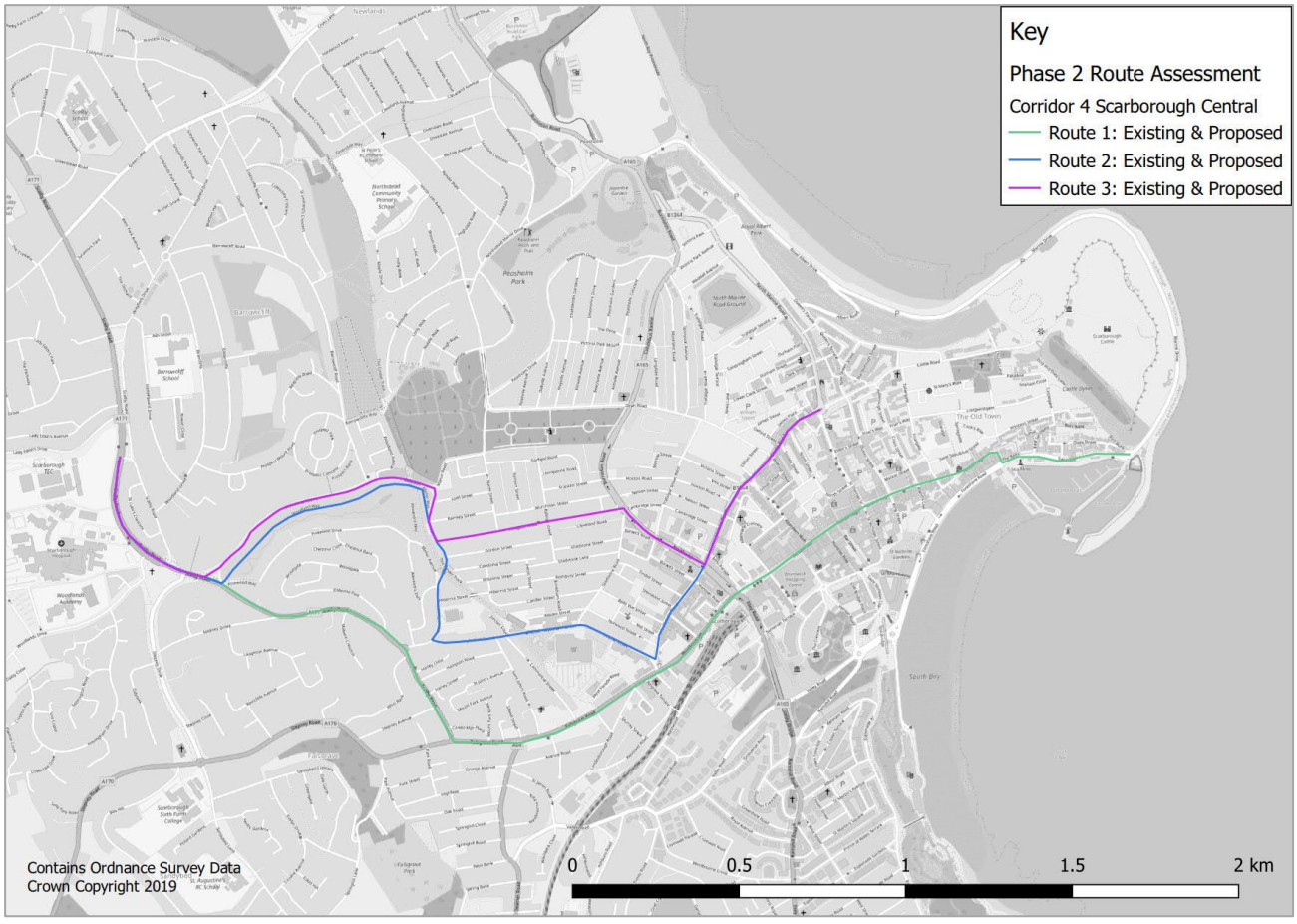


Table 3-4 – Corridor 4: RST Scoring

	Route 1		Route 2		Route 3	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Length (km)	3.79	3.79	2.94	3.26	2.96	2.96
Length comparison (with existing route)	1.00	1.00	1.00	1.11	1.00	1.00
Directness	5.00	5.00	5.00	4.00	5.00	5.00
Gradient	3.45	3.45	4.11	4.11	2.37	2.37
Safety	1.51	4.42	1.54	3.38	1.36	4.69
Connectivity	5.00	5.00	4.74	4.74	5.00	5.00
Comfort	0.00	2.32	0.52	1.56	0.29	3.78
Total (out of 25)	**14.96**	**20.19**	**14.91**	**17.79**	**14.03**	**20.84**

3.3.29. Based upon the high-level review of route options and feasibility for the Central Corridor, Route 3 will be taken forward for concept and option development. While not scoring as well regarding gradient, the route offers potential to improve other scores to desirable levels and is considered more deliverable in the short-term.

3.3.30. Route 1 had a potential score similar to that of Route 3, however, there are significant deliverability issues with this route. Route 1 is an important route within the LCWIP network and should therefore be revisited for improvements in the future as part of facilitating cycling as a significant mode.

3.3.31. Route 2 is also hindered by deliverability issues in the short-term and this assessment identified it as not obtaining as high a potential score as Routes 1 and 3.

3.4. SUMMARY

3.4.1. The route selection process has allowed for an evidence-based decision to be made as to which routes to take forward to be considered in greater detail as part of the option generation stage. This will then enable the identification of potential interventions to be delivered along the routes and the subsequent development of concept plans.

3.4.2. The preferred routes for each of the four corridors are displayed Figure 3-6.

Figure 3-6 – Preferred Route Options

4. WALKING ROUTE AUDITS

4.1. INTRODUCTION

4.1.1. An audit of pedestrian walking infrastructure along the preffered route corridor was undertaken in to inform potential walking interventions. The assessment utilised the DfT's Walking Route Audit Tool (WRAT) to assess the existing level and quality of walking infrastructure provision[4].

4.1.2. The WRAT uses a 40-point assessment which makes it too detailed to use on long corridors such as that being assessed in this project. Additionally, as the proposed schemes are more closely related to the provision of cycling infrastructure, it was not considered appropriate and proportionate to undertake highly detailed walking audits. As such, WSP adopted a high-level version of the WRAT that assesses the routes across the five core design criteria for pedestrian schemes:

- Attractiveness;
- Comfort;
- Directness;
- Safety; and
- Coherence.

4.1.3. The adapted tool adopts a red, amber or green (RAG) score for each criterion which follows the principles of the scoring criteria in the orginal WRAT tool.

4.2. WALKING ROUTE AUDITS BY CORRIDOR

4.2.1. The tables in this section present the outcome of the walking assessment for the four corridors with each section assessed in terms of attractiveness, comfort, directness, safety and coherence. Observations are provided justifying the scores by route section. These observations will inform potential walking infrastructure interventions at the design stage.

[4] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/602528/cycling-walking-infrastructure-tools.pdf

CORRIDOR 1: EASTFIELD TO SCARBOROUGH (ROUTE 1B)

Table 4-1 – Corridor 1: Eastfield to Scarborough Route 1b Walking Assessment

	Assessment					Notes
	Attractiveness	Comfort	Directness	Safety	Coherence	
Cliff Bridge & Terraces						– Severe gradient along the terraces; – High activity and lighting; promotes perceptions of safety.
Esplanade, West Street & Holbeck Road						– Wide side road junctions; – No priority for peds and cycle users; – High numbers of parked cars.
Filey Road						– Wide side road junctions; – No priority for peds and cycle users; – Shared use path is narrow; – Some minor maintenance issues; – Limited crossing points.
Jackson Road						– Inconsistent footway width; – Minor maintenance issues (overgrown, tree roots causing undulations); – Wide carriageway (note low vehicular movements) .
Deepdale Bridleway						– Surface unconducive to commuter/utility trips; – Negative perceptions of safety; – Evidence of fly tipping and anti-social behaviour.

CORRIDOR 2: EASTFIELD &CAYTON CENTRAL SPINE (ROUTE 2)

Table 4-2 – Corridor 2: Eastfield & Cayton Central Spine Route 2 Walking Assessment

Section	Assessment					Notes
	Attractiveness	Comfort	Directness	Safety	Coherence	
'The Dell' path						– Off-highway path; – Narrow widths; – Surface needs improving; unconducive to utility trips.
Lowfield						– Narrow footway widths; – Crossing provision across; Westway needs improving.
Lowfield/Burnside-Cayton Low Road	n/a					– This section does not currently exist as a route and as such cannot be assessed.

CORRIDOR 3: CINDER TRACK CONNECTIONS

Table 4-3 – Corridor 3: Cinder Track Connections Walking Assessment

Section	Assessment					Notes
	Attractiveness	Comfort	Directness	Safety	Coherence	
Sainsbury's Park/Wykeham Street – Woodland Ravine						– Section by the games court is constrained and dark at night; – Widths are good on this section; – Issues with lack of surveillance.
Woodland Ravine – Endcliffe Crescent/North Leas Avenue path						– Path is narrow across the field; – Existing paths do not meet desire lines.
Endcliffe Crescent/North Leas Avenue path – Station Road, Scalby						– Section south of Cross Lane has particular issues with the lack of natural surveillance; – Lack of access/egress points into nearby residential areas.
Station Road, Scalby – Study area extent (south of Burniston)						– Rural feel to this section; – Surface may cause issues in winter months.

CORRIDOR 4: SCARBOROUGH CENTRAL CORRIDOR (ROUTE 3)

Table 4-4 – Corridor 4: Scarborough Central Corridor Route 3 Walking Assessment

Section	Assessment					Notes
	Attractiveness	Comfort	Directness	Safety	Coherence	
Castle Road/Victoria Road						– Some narrow sections; – Guard railing reducing effective width; – Lack of side road crossing provision; – Some drop kerbs not present; – Some crossing desire lines not met.
Northway						– Tactile paving not in place in some locations; – Crossing desire lines not fully provided for; – Desire lines and provision at roundabout not fully catered for.
Prospect Road						– Tactile paving not in place in some locations; – Crossing desire lines generally good but could do with additional provision in some locations.
Manor Road						– No crossing provision at the roundabout; – No pedestrian priority at side roads.
Woodland Ravine						– Footway on northern side of the link is narrow (1m); – Footway on southern side is wider (1m-2m); – No pedestrian provision at side roads; – Wide side road entry widths.
Scalby Road						– Some narrow sections; – Lack of side road crossing provision; – High traffic volume and speeds; – Wide side road entry widths.

5. OPTION GENERATION

5.1. INTRODUCTION

5.1.1. Following the audit stage, the four preferred route corridors were taken forward for the generation of scheme options and conceptual designs.

5.1.2. The development of these concept designs was informed by the following:

- **Site visits** – To provide an understanding of the current situation and an initial assessment of potential interventions.
- **Guidance** – Several published guidance documents were used to inform the option generation design process while taking into account understanding of the local conditions in the study area. The guidance documents utilised included:
  - London Cycle Design Standards (LCDS) (TfL, 2014);
  - Transport for West Midlands Cycle Design Guidance (TfWM, 2019)
  - City Connect Cycle Superhighway Design Guidance (WSP/Leeds City Council, 2017);
  - Design Manual for Roads and Bridges (DMRB) - Interim Advice Note 195/16: Cycle Traffic and the Strategic Road Network (Highways England, 2016);
  - Designing for Cycle Traffic: International principles and practice (John Parkin, ICE, 2018)
  - Creating better streets: Inclusive and accessible places – Review shared space (CIHT, 2018);
  - Streetscape Guidance (TfL, 2016);
  - Designing for Walking (CIHT, 2015);
  - Planning for Walking (CIHT, 2015);
  - Design Guidance: Active Travel (Wales) Act 2013 (Welsh Government, 2014);
  - Local Transport Note 1/12: Shared Use Routes for Pedestrians and Cyclists (Department for Transport, 2012);
  - Manual for Streets 2 (CIHT, 2010); and
  - Providing for Journeys on Foot (CIHT, 2000)
- **Good practice** – In addition to the guidance documents above, the option generation process drew on best practice from across the UK and Europe, including schemes that WSP have been directly involved in delivering.
- **NYCC LCWIP network hierarchy** – Phase 1 of the Scarborough LCWIP adopted a network hierarchy that defined the characteristics for different parts of the cycle and walking network. These characteristics have been set by NYCC and are consistent across their programme of LCWIPs. These have helped to define the options generated along the routes. The network hierarchies are presented in Table 5-1 and Table 5-2 for reference.
- **Phase 1 intervention types** – the Scarborough LCWIP Phase 1 report also included a method for defining the types of interventions to be considered for different parts of the network, and these are presented in Table 5-3 and
- Table 5-5 for cycling and walking respectively..
- The interventions types have then been considered with regards to the function of a link on the place-movement spectrum. The intervention types for different parts of the network considering place and movement are presented in Table 5-4 and Table 5-6.

Table 5-1 – Cycle Network Hierarchy Definitions

Network element	Characteristics
Primary	▪ Different cycle users, based on confidence level, experience, age, demographics, trip purpose; ▪ Different types of bikes, including standard, recumbent, trailers, cargo bikes, disabled user cycles; ▪ High volumes of bicycle traffic; ▪ Through, internal and inbound-outbound traffic; ▪ Cater for existing non-cycle users; ▪ Cater for people aged '8-80' to be able to cycle safely; ▪ Direct, following the shortest possible route; and ▪ Low gradients where possible.
Secondary	▪ Lower volumes of bicycle traffic than Primary; ▪ Increase density of network; ▪ Ensure local access to origins and destinations from the primary network; and ▪ Provide quieter routes for less confident cycle users (while primary network is being developed).
Town Centre Cores	▪ High levels of permeability and priority for cycle users and pedestrians; and ▪ High levels of cycle parking availability.

Table 5-2 – Walking Network Hierarchy definitions

Name	Description
Prestige Walking Zones	Very busy areas of towns and cities, with high public space and street scene contribution.
Primary Walking Routes	Busy urban shopping and business areas, and main pedestrian routes
Secondary Walking Routes	Medium usage routes through local areas feeding into primary routes, local shopping centres, etc.
Link Footways	Linking local access footways through urban areas and busy rural footways.

Table 5-3 – Intervention Types: Cycling

Reference	Type of intervention	Details
A	Full segregation	Cycle track with continuous physical segregation from carriageway and footway.
B	Hybrid segregation	Cycle track vertically segregated from the carriageway and footway.
C	Dedicated lanes and light segregation	Mandatory or advisory cycle lanes; Intermittent physical segregation; Reduced general traffic speeds; Centreline removal; Parking removal; and Buffer lane at parking locations.
D	Sharing with other modes	Reduced general traffic speeds; Filtered permeability to restrict general traffic movements; Cycle symbols; and Contraflow cycling permissions.

Table 5-4 – Cycle Interventions by Network Characteristics

	Place				Movement			
	Town square	Town street	High street	Local street	Rural road	Off-highway path	Connector	Arterial road
Primary	D	C, D	B, C, D	C, D	—	—	B, C, D	A, B
Secondary (on highway)	D	C, D	B, C, D	C, D	C, D	—	B, C, D	—
Secondary (off highway)	—	—	—	—	—	C, D	—	—
Town centre core	D	D	D	—	—	—	—	—

Table 5-5 – Interventions Types: Walking

Ref	Type of Intervention	Details
A	Full Pedestrianisation	Exclusion or temporal limit on other vehicle access. High quality pedestrian environment with significant place function.
B	Pedestrian enhanced streets / shared space / home zones	Reduction in formal traffic controls; Reduced general traffic speeds, Restricted interaction with other modes; Typically less differentiation between footway and carriageway.
C	Footway / footpath enhancements	Improved surfacing; Increased footway widths; Adequate crossing facilities proportionate to function of link; De-cluttering of route; Minimal gradients for duration of link; Direct routes; Dropped kerbs and tactile paving.
D	Shared use pedestrian / cycle routes	Improved at-level surface conditioning; Improved signage; Segregated or unsegregated; Potential widening of route.

Table 5-6 – Walking Interventions by Network Characteristics

	Place							
Movement	Town square	Town street	High street	Local street	Rural road	Off-highway path	Connector	Arterial road
Prestige Walking Zones	A, B, C	A, B, C	A, B, C	-	-	-	-	
Primary Walking Routes	B	B, C	B, C, D	-	-	C, D		
Secondary Walking Routes	-	-	-	C, D	C, D	C, D	C, D	C, D
Link Footways	-	-	-	C, D	C	C, D	C, D	

5.2. INTERVENTION TYPES

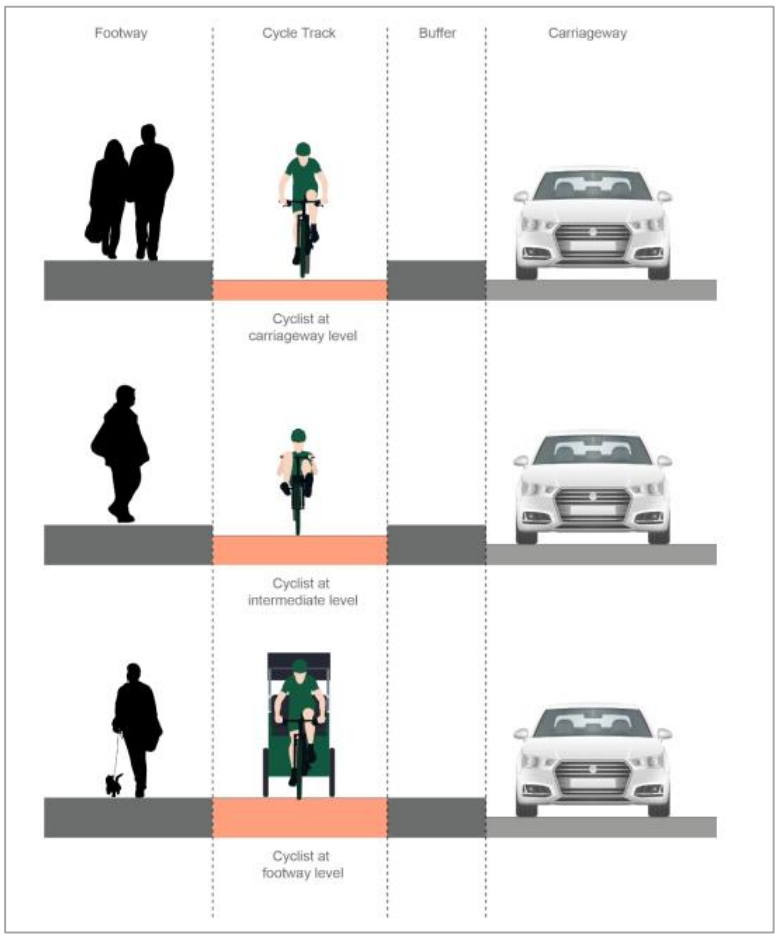
5.2.1. This sub-section presents details on the types of intervention that are proposed for each of the five corridors; relevant guidance documents are referred to, in addition to information on application of the interventions in the study area.

5.2.2. The information presented for each type of infrastructure is based on the latest guidance and good practice, many of which is recent and emerging in the UK. Due to the novel nature of this type of infrastructure, there are few examples that have been implemented in the UK thus far.

FULL SEGREGATION – KERBED CYCLE TRACKS

5.2.3. Fully kerbed cycle tracks provide the highest level of provision for cycle users with separation from both the carriageway and footway; this is shown illustratively in Figure 5-1.

Figure 5-1 – Cycle Track Separation from Other Modes (TfWM, 2019)



5.2.4. As Figure 5-1 shows, the cycle track can be positioned at the same level as the carriageway, at an intermediate level between the footway and the carriageway, or at footway level.

5.2.5. Separation from the carriageway can be provided by a kerb or with softer interventions, such as verges, tree planting or sustainable drainage systems (SUDS). Provided they are well constructed and maintained, segregated tracks offer a high degree of comfort for cycle users.

Figure 5-2 – Kerbed Cycle Track Example

5.2.6. Figure 5-3 presents an example of where Sustainable Drainage System (SUDS) and tree planting have been used to separate the carriageway from the cycle track and footway on either side. The use of softer buffers contributes to the aesthetics of the street as well as having environmental benefits.

Figure 5-3 – Kerbed Cycle Track Separated from the Carriageway with SuDS Example

5.2.7. All types of cycle tracks should be clearly distinguishable from the footway. This is a critical principle of design in regards to cycle infrastructure, clearly defining the different characteristics and requirements of each mode and understanding that cannot be treated interchangeably. Historically, cycling has been either provided for through the same infrastructure as motor vehicles, or the same as pedestrians, leading to a widespread belief that shared use footways offer a high standard of provision; the latest guidance provides design standards for infrastructure that separates cycle users in time and space from other modes, moving away from the provision of simple shared use footways, which can be particularly dangerous for blind and partially sighted users.

5.2.8. In order to safely accommodate the needs of those with mobility impairments, particularly blind and partially sighted road users, a level difference between cycle track and footway is recommended as the

most easily detectable form of separation. A kerb of at least 50mm high that can be recognised with a cane helps blind and partially sighted users to detect and negotiate the track.

5.2.9. The use of a raised trapezoidal strip can achieve this where footway and cycle track are at the same level; an example is displayed in Figure 5-4 with different surface materials also used to distinguish between the footway and cycle track.

Figure 5-4 – Trapezoidal strip between footway and cycle track

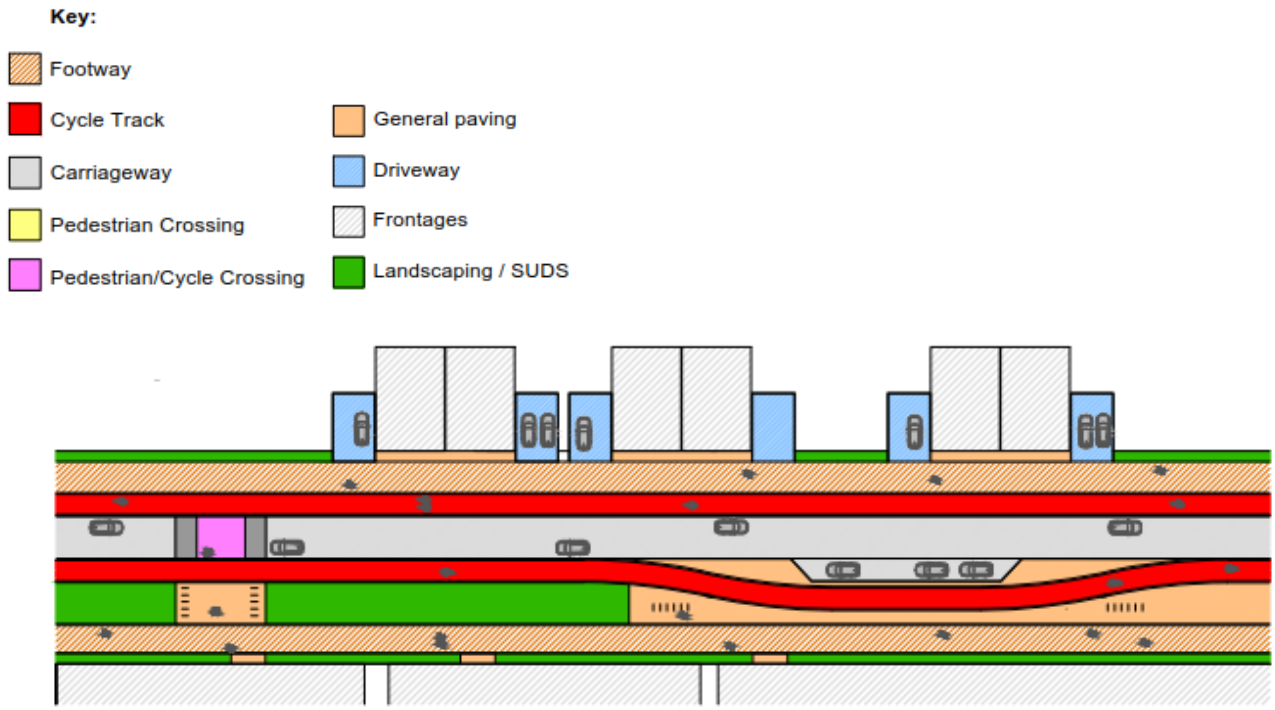
HYBRID SEGREGATION – STEPPED CYCLE TRACKS

5.2.10. Stepped cycle tracks are vertically separated from the carriageway and footway, this provides less separation and protection than a fully segregated cycle track, however, they provide easier and more flexible access to the kerbside.

5.2.11. Stepped cycle tracks are advantageous where separation from motor traffic is required but the street has high pedestrian flows, more active frontages and/or more kerbside activity (TfL, 2016).

5.2.12. An example of a stepped cycle track layout can be seen in Figure 5-5.

Figure 5-5 – Indicative Layout for a Stepped Cycle Track



5.2.13. Stepped cycle tracks require marginally less width than fully kerbed tracks would require due to the lack of a buffer between the cycle track and carriageway. The height difference between the carriageway and the cycle track should be a minimum of 50mm with at least a further 50mm difference to an adjacent footway so they are detectable by visually impaired users.

Figure 5-6 – Stepped Cycle Track, Cambridge

5.2.14. Quiet Mixed Traffic Streets are appropriate where there is less need for segregated cycle facilities, typically where average vehicular speeds are below 20mph and flows are below 2,500 vehicles per day. Residential and local streets are typical examples of these, as the majority of traffic on the streets will have a destination or origin in the near vicinity.

5.2.15. Design techniques are therefore required that can be used to prevent higher speeds by motor vehicle traffic in order to ensure that these streets are safe for cycling amongst motor vehicle traffic.

5.2.16. Single carriageway widths of 7.3m are often the standard approach to designing new roads, in line with the Design Manual for Roads and Bridges. However, for streets designed for mixed bicycle and motor vehicle traffic, this width can create poor conditions for cycling due to the potential for dangerously close overtaking of bicycles, while associated perceptions of safety can promote car users to travel faster than a 20mph speed limit.

5.2.17. Narrower carriageways have been shown to reduce speed and induce traffic calming, while the use of different non-typical surfaces can increase this effect. The use of median or edge strips can be used for this purpose, helping to provide a slower environment for mixed traffic conditions while still allowing some overtaking width for motor vehicles when it is safe to do so.

5.2.18. Figure 5-7 and Figure 5-8 present two layout options for implementing a Quiet Mixed Traffic Street that uses visual narrowing of the carriageway. Option 1 applies the narrowing to the edge of the carriageway, creating an apparently narrow carriageway with no centreline. Option 2 applies the narrowing through a median strip that divides the carriageway into two apparently narrow lanes.

Figure 5-7 – Option 1: Indicative Quiet Mixed Traffic Street with Edge Strip

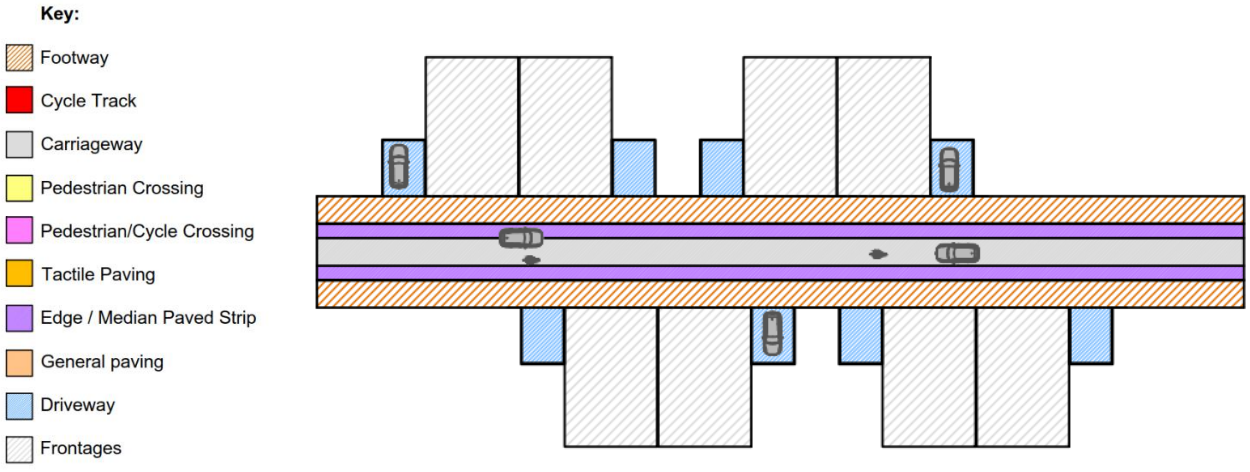
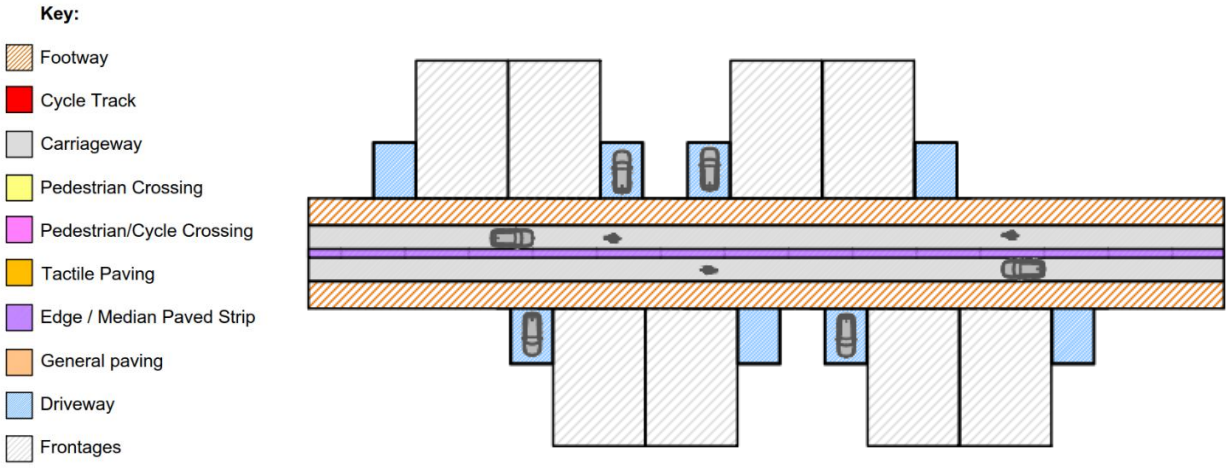
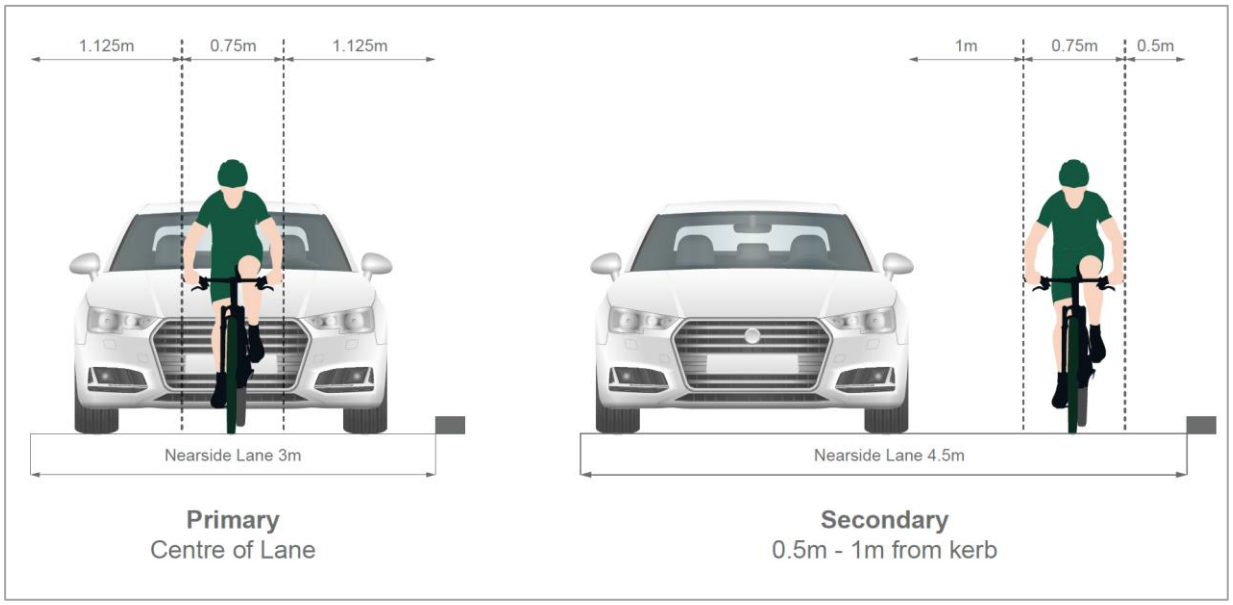


Figure 5-8 – Option 2 – Indicative Quiet Mixed Traffic Street with Median Strip



5.2.19. Both types of narrowing are accompanied by cycle symbols on the carriageway that indicate that cycle users should take the primary cycling position in the centre of the lane, as depicted in Figure 5-9. The primary position makes cycle users more visible to drivers and encourages drivers to adopt slower speeds.

Figure 5-9 – Primary and Secondary Cycling Positions



5.2.20. Many people, particularly vulnerable users, will only feel comfortable adopting the primary position where the speed and volume of motor traffic is very low. Additionally, drivers are more likely to only accept short delays on quiet streets where they are not perceived to be delaying other motor traffic. Such measures are therefore only considered appropriate for short distances (typically circa 400m).

SHARING WITH OTHER MODES – CYCLE STREETS

5.2.21. There are various definitions of 'Cycle Streets'; however, they are all designed based on a principle of prioritising cycle movement over that of motor vehicles, without physical segregation, placing cycle users at the top of the street hierarchy. Streets with this definition are typically identified through changes in paving material, planting or other design changes so that they are understood as being principally for cycling (as well as walking) (TfWM, 2019).

5.2.22. As with Quiet Mixed Traffic Streets, Cycle Streets rely on bicycles mixing with motor vehicle traffic, with low average speeds and flows of motor vehicles. Bicycle users are expected to cycle in the primary position. However, successful Cycle Streets are considered to promote cycle usage beyond that of a Quiet Mixed Traffic Street, resulting in bicycle traffic appearing to have priority over motor vehicle traffic – quite literally, motorised vehicles are 'guests' on a Cycle Street.

5.2.23. While no formal definition of a UK cycle street has been developed, the DfT has indicated that a standard definition could include an advisory 15mph speed limit, and a design that prevents or strongly discourages motorised vehicles from overtaking bicycles (TfL, 2016).

5.2.24. Low vehicle speeds are achieved through visual narrowing of the carriageway through edge or median strips, as is the approach for Quiet Mixed Traffic Streets. Meanders and restrictions in horizontal visibility can also reduce speeds, while filtered permeability can limit through traffic and ensure that motorised vehicles use streets designed specifically for them, avoiding Cycle Streets.

5.2.25. Figure 5-10 shows examples of Cycle Streets with edge strip carriageway narrowing, while Figure 5-11 shows examples of Cycle Streets with median strip carriageway narrowing.

Figure 5-10 – Cycle Street Example with Edge Strip Narrowing

Figure 5-11 – Cycle Street Example with Median Strip Narrowing

SHARING WITH OTHER MODES – SHARED USE FACILITIES

5.2.26. Shared use facilities are not currently recommended due to issues with pedestrian comfort, particularly for blind and partially sighted users (TfL, 2016), largely due to perceptions of safety. They can also cause issues for cycle users due to the ambiguity of the space and the potential for conflict with pedestrians moving at different speeds and changing direction unexpectedly.

5.2.27. However, it is acknowledged that physical constraints and specific user needs may dictate that shared use facilities are the only way of providing an important link in the cycle network. In this context, it is important that all user needs are balanced, which requires an understanding of the function of an area. For example, some areas may have a greater 'place' function than 'movement' where people are likely to dwell or there could be locations that are busier at certain times of the day or year due to nearby attractors. Shared use facilities should be sensitively designed in collaboration with appropriate accessibility groups. The inclusion of full height kerbs and traditional crossing points should be considered as essential features to allow all users to interpret their environment.

MODAL FILTERING

5.2.28. In low-traffic areas, such as residential streets, permeability for walking and cycling should be maximised while the through movement of motorised vehicles should be managed, with streets designed to serve a purpose within a network. Restricting the through movements for vehicles while retaining the connections for cycling and walking can increase the convenience and comfort for both pedestrians and cycle users.

5.2.29. An example of modal filtering is shown in Figure 5-12.

Figure 5-12 – Modal Filtering

INTEGRATION WITH BUSES

5.2.30. Several of the proposed cycle routes follow existing bus routes and there are therefore bus stops adjacent to the carriageway. Buses pulling in to and out of bus stops can create a hazard for cycle users, while cycle users can present a hazard to pedestrians alighting. It is therefore important to consider integration of the various modes.

5.2.31. The preferred solution is the introduction of a bus stop bypass where the off-road cycle track continues along the rear of the bus stop area, effectively creating an island for passengers boarding and alighting from buses (LCDS).

5.2.32. Due to the requirement for pedestrians to cross the cycle track to access the bus stop, consideration needs to be given to all types of users; for example, those with mobility and sensory impairments or people with prams, push-chairs or carrying large luggage. The design therefore needs to encourage cycle users need to act courteously and to slow down on approaches to formal crossing points.

5.2.33. Figure 5-13 illustrates a typical bus stop bypass layout.

Figure 5-13 – Bus Stop Bypass

SIDE ROADS AND ACCESSES

5.2.34. The provision for cycle traffic across side roads and private accesses is important in terms of maintaining a safe and continuous cycle route. It should be noted that each specific side road and access point will need to be considered in conjunction with the highway authority and other relevant stakeholders if the proposed routes are progressed to detailed design; typically, this assessment could consider the following criteria:

- Traffic volumes on the main road and side road;
- Available space at the junction, including turning requirements and visibility; and
- Speed limits on the main road.

5.2.35. At this early feasibility stage, cycle tracks across access points have been considered based on three typical layouts, as illustrated in Figure 5-14. These options include returning the track to the carriageway to maintain priority over side roads / turning vehicles, directly continuing the cycle track over the side road, with complementary traffic calming measures, and 'bending out' the cycle track to provide waiting space for turning vehicles to give priority to cycle users. Figure 5-15 illustrates a continuation of a cycle track across a private access point.

Figure 5-14 – Cycle Track Across Side Road

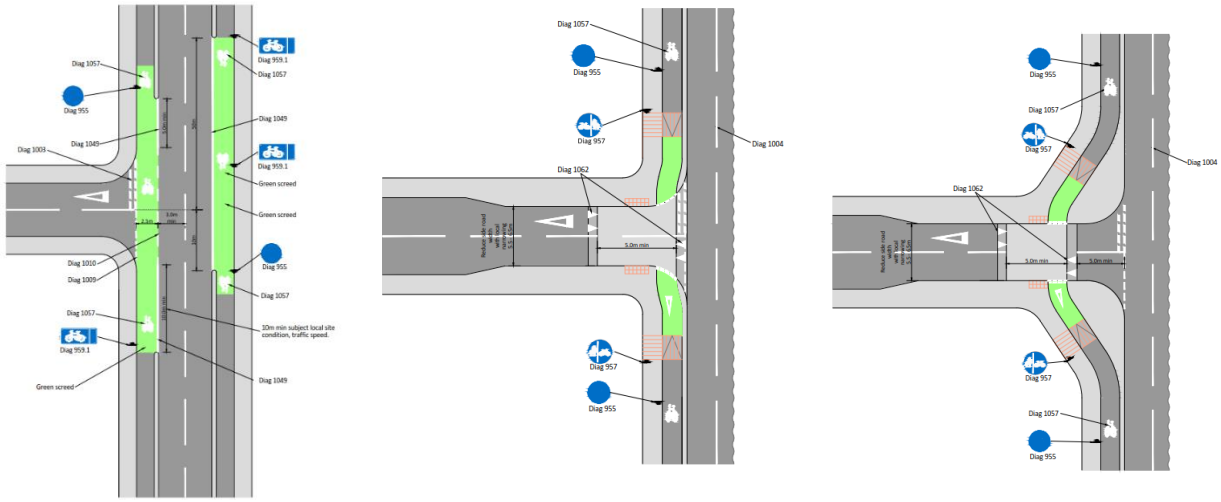


Figure 5-15 – Cycle track across private access

CRITICAL JUNCTIONS

5.2.36. Although the majority of the schemes occur within the existing highway and are intended to have minimal direct impact on vehicular capacity, it is inevitable that certain sections of the route will interact with more complex junctions, where the needs of all users will need to finely balanced. Busy junctions are often key conflict points and can pose significant risk of injury, and any design needs to particularly consider the safety implications.

5.2.37. At this stage of the study, all junction designs are presented as concepts, and it should be noted that the following further steps should be taken to determine junction layout at detailed design:

- Traffic Impact Assessment, including modelling with appropriate tools;
- Consideration of geometry, vehicle tracking, and visibility; and
- Road Safety Audits.

'Dutch Roundabouts'

5.2.38. It should be noted from the outset that the term 'Dutch Roundabout' is a misnomer; there are many different designs of roundabout in the Netherlands, many of which perform different functions and have

different characteristics. Nevertheless, the term is generally understood in this country to refer to a roundabout which gives priority to cycle users over motor vehicles. In the Netherlands, this form of design is generally adopted in urban areas, whereas rural roundabouts maintain priority for vehicles. The design also continues to maintain the principle of segregation from other road users (whether it be pedestrians or vehicles), providing a segregated cycle track around the circulatory - cycle users are not typically expected to mix with vehicles within the junction.

5.2.39. As of the time of writing, there is only one example of a 'Dutch' style roundabout currently under construction in the UK: the Queen Edith Way roundabout in Cambridge. The roundabout design provides a segregated circulatory for cyclists, including parallel priority crossings on entry and exit lanes over each arm (only recently been permitted in UK legislation). Vehicles entering or exiting the roundabout therefore must give priority to pedestrians and cyclists negotiating the junction. The roundabout functions through geometry that induces slow speeds and provides excellent visibility for all users.

Figure 5-16 – Cambridge 'Dutch' Roundabout

CYCLOPS Signals

5.2.40. The Cycle Optimised Protected Signals design (Cyclops) is a recent innovation in signalised junction design pioneered by JCT Consultancy, and is intended to become an integral part of Greater Manchester's extensive 'Beelines' cycle network. The principle feature of a Cyclops junction is an orbital cycle route that separates cyclists from motor traffic, in a similar manner to a 'Dutch' roundabout. This reduces the possibility of collisions and conflicts within the junction footprint, particularly 'left hooks', and mitigating the inherent dangers of cycle user having to turn right, especially at multi-lane approaches.

5.2.41. In the Cyclops design, cycle signal crossings are separately signalised from both pedestrians and vehicles, rather than being typically being associated with pedestrians on either parallel or toucan facilities. This segregation in space can allow cyclists to cross in different phases or stages than pedestrians, and reduce waiting time within the junction.

Figure 5-17 – Visulisation of a CYCLOPS Junction

5.2.42. Other forms of cyclist provision have also been considered at signalised junctions, which can create better and safer conditions for on-road cyclists. These include a number of features trialled across London and other cities with a high proportion of cyclists, such as:

- Hold-the-left-turn: separate signalling for cyclists and left-turning motor traffic, requiring a dedicated left-turning lane for general traffic and islands for signal infrastructure, and provision for cyclists turning right;
- Early release: allows cyclists to proceed ahead of general traffic at signalised junctions. In most circumstances, early release must be applied to a layout with an advanced stop line (ASL), using a low level cycle signal mounted under the associated primary traffic signal on a high-level signal pole;
- Two-stage turns: enable cyclists to make an opposed turn in two stages, i.e. without having to cross conflicting streams of traffic. This generally means a right turn from the nearside or a left turn across general traffic lanes from a two-way track on one side of the carriageway. Two-stage turns are often associated with hold-the-left and early release facilities; and

5.2.43. Cycle gates: gives cyclists some time and space to move through a junction ahead of motorised vehicles. Current guidance recommends this technique as an option where there are a large number of turning movements by motorised vehicles, predominantly left turning.

FEATURES FOR GREENWAYS

5.2.44. The purpose of a greenway is to encourage the public to walk and cycle for all trip purposes. Greenways have the potential to be more than just a convenient transport link – the more attractive or interesting the route is and the more destinations it connects to, the more people will use it. With increased popularity, the route will have more natural surveillance, which results in greater feeling of security for users.

5.2.45. The popularity of a greenway is reinforced through improvements in the travelling landscape. These improvements can be summarised by the following five categories:

- Matters promoters can do;
- The attractive elements, which the greenway passes or might make use of;
- Popularisation of the route;

- Community and local support; and
- Wider town planning and development issues.

Access Controls

5.2.46. Access controls are often required as a measure at the interface between paths and public roads and are seen as a default solution where there are significant problems concerning anti-social behaviour and illegal use of motorbikes. However, installing access controls should be avoided wherever possible as a number of negative impacts can stem from it, including: inconvenience; clutter; discrimination; cost; anti-social behaviour; and ineffectiveness. Access controls may not be effective in deterring anti-social behaviour and could even exacerbate the problem by deterring legitimate path users from gaining access.

5.2.47. Access controls, such as barrier designs or bollard layout, funnel all path users to a point where path width is compromised. This can produce delays as many designs only permit one user at a time and may become a point of conflict between users. Many access controls become ineffective because fencing along a traffic free corridor is missing, broken or subsequently vandalised. Therefore, the boundaries of the path should be fenced off or otherwise restricted to ensure that illegitimate users cannot simply enter the route through a non-entrance.

5.2.48. Access controls add additional costs to the infrastructure plan. Purchase, installation and future maintenance costs need to be included in the budget. Costs vary between £500 and £4000, depending on the type of access control.

5.2.49. Access controls also require inspection and maintenance for their safe and effective implementation. Examples for such would be painting, repairing or even removing if no longer effective. Additionally, debris and vegetation can accumulate, so hand sweeping may be needed to clean the area around the access control for its easy access and visibility.

5.2.50. Additionally, many traffic free paths require access for maintenance and other vehicles - the design of any barrier control should take this into consideration.

5.2.51. The objective of a greenway is to provide features that can highlight a path's existence and, in this way, result in greater public awareness of the existence of the route. Increasing the legitimate use of the route is a natural way to increase natural surveillance, which (combined with targeted police enforcement) may prove just as effective as access controls.

5.2.52. In some instances, alternative measure could be more effective at mitigating the issues, associated with the misuse of paths, other than access controls. Such could be:

- Seating
- Signing and mapping
- Archways
- Mileposts
- Vegetation management
- Lighting
- Increased legitimate use
- Public or remote surveillance
- Police enforcement

5.2.53. While some designs and features will be costly, they can successfully help promote the route and how it should be used.

5.2.54. Any proposals for access controls should be actively discussed with the according inconvenienced parties who have legitimate rights to use the path, such as mobility impaired users. The affected parties should be able to have an actual impact on the design of those controls from an early stage, to ensure they are minimally affected.

5.2.55. Barrier controls should be visible to all path users. Where the route links to the public highway, any control measures should ideally be visible to drivers, however, it is necessary to provide sufficient space for path users to wait safely. Access controls should remain visible at all times of the day, and should be capable of reflecting torch or cycle lights.

Seating

5.2.56. Stopping for a rest is a part of walking and cycling activities – particularly leisure orientated ones. Seats should be suitably and purposefully positioned, so that they have particular view, are under a shadow or a shelter, are around a destination where people want to reach or to gather with friends. Considering the needs of elderly or disabled people, seats should be more regularly positioned at entrances, no more than 200-300 metres apart. Seats could be considered as an anti-social behaviour measure since their very presence could serve as an informal surveillance to the path. Each can be designed to be a feature, and are an excellent opportunity for engendering community participation and ownership.

Signing and Mapping

5.2.57. Signing and mapping have three main functions – they are a confirmation to those who are following a route, an advice on distances to destinations that could be reached by following the route, and an advertisement of the route to non-users. The key objective though is to make it clear that the route is an integral part of the local transport network and the links between the two. The signing strategy must be able to clearly show passing motorists that they are excluded from using the path and there are different routes that they can pass through. Points of access are normally a good place for locating information about the route.

Arches

5.2.58. Arches are an attractive passageway that could signify an entrance or an exit of a route. By drawing attention, archways can potentially increase interest and promote a path. It is a convenient way for access for legitimate path users and does not require additional manoeuvring.

Mileposts

5.2.59. Mileposts function as markings for the distance travelled, but also act as a reassurance that the user is still on the route. They can give additional local information about the history and character of the area.

Vegetation

5.2.60. Planting of vegetation is a natural boundary of the path that restricts access of illegitimate users. Additionally, it can shield the path from excessive noise levels, which improves the quality and the overall experience of the path. However, vegetation needs to not obscure natural surveillance and create unoverlooked areas that could be associated with the perception of danger.

Lighting

5.2.61. Lit routes could encourage greater numbers of walking and cycling trips involving commuters. Levels of lighting aid personal security, give greater confidence to users, and should be sufficient to discourage anti-social behaviour. In relation to the LCWIP, it is recommended that any greenway standard off-road routes are fully lit, although paths used mainly for leisure purposes do not necessarily need to be fully lit - lighting at key junctions and access points should be considered instead.

5.2.62. In order to promote the route, it is essential to encourage local people to walk and cycle more. Ideally, a common message with common images will be distributed through different means such as leaflets promoting for change, travel information in new homeowners' starter packs, newspaper stories, on all maps including advertising maps used by hoteliers and tourist information providers, bicycle and walking shops, and for events on the path itself.

5.2.63. Another way for raising awareness for using the path can be through schools. Students should be acquainted with the path and how it should be used as this could be a potential route to school. Additionally, artists working locally with schools could create site specific works for the route, such as mileposts and sculptures, which would involve the community and promote feeling of ownership of the path.

5.3. CONCEPT PLANS

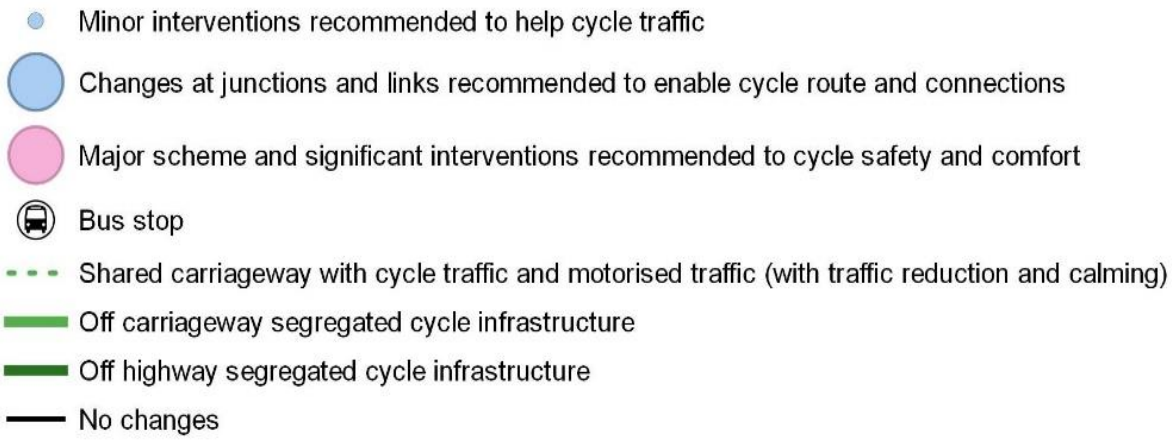
5.3.1. Each of the five preferred route options have been broken down into more manageable sub-sections with options for intervention identified for each. As described in Section 5.1, the proposed scheme options were informed by a variety of sources relative to the function of the link in the network. The initial concept designs were presented for discussion at an internal workshop held jointly by NYCC and SBC on 26th September 2019 as part of the option development stage of the project, which helped refine the concepts into those presented here.

5.3.2. The corridors presented are:

- Corridor 1: Eastfield to Scarborough;
- Corridor 2: Eastfield and Cayton Central Spine;
- Corridor 3: Cinder Track Connection; and
- Corridor 4: Scarborough Central Corridor.

5.3.3. Each of the concept plans adopt the key shown in Figure 5-18.

Figure 5-18 – Concept Plan Key



CORRIDOR 1 – EASTFIELD TO SCARBOROUGH

5.3.4. The concept plan for Corridor 1 is displayed in Figure 5-19 to Figure 5-22 below; the route has been split into four sections with intervention options for each listed in Table 5-7 to Table 5-10

Figure 5-19 – Corridor 1: Eastfield to Scarborough (Concept Plan 1)

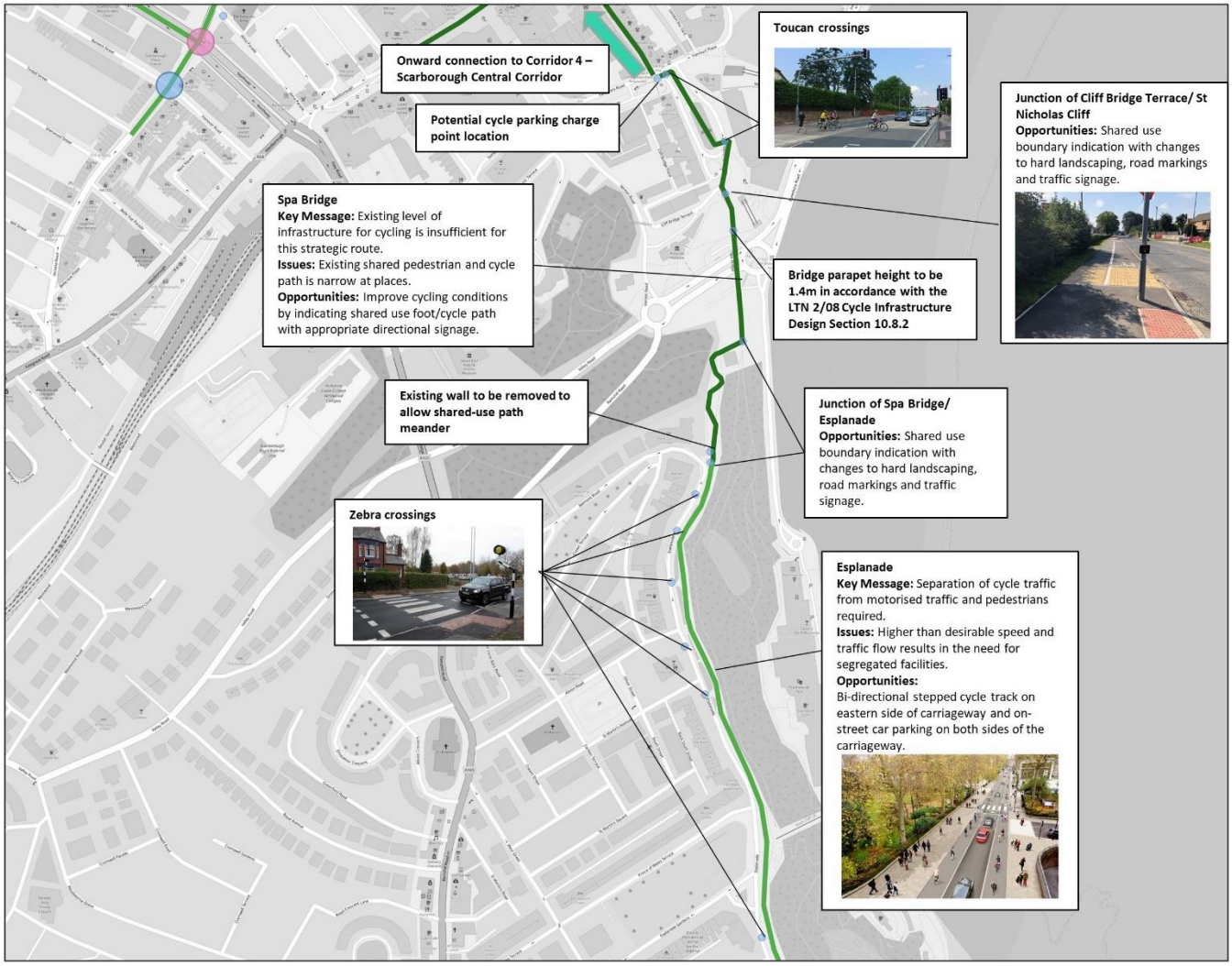


Table 5-7 – Corridor 1: Eastfield to Scarborough (Concept Plan 1)

Section/Junction	Designed Option	Potential Design
Junction of Huntriss Row/ Harcourt Place	Potential cycle and pedestrian crossing location (Note cyclists are currently banned from Huntriss Row as part of Vehicle Restricted Area).	
Junction of St Nicholas Cliff / Harcourt Place	Potential cycle parking location.	
Junction of Cliff Bridge Terrace / St Nicholas Cliff	Shared use boundary indication with changes to hard landscaping, road markings and traffic signage. Toucan crossing.	 
Spa Bridge	Permit and improve cycling conditions by indicating shared use foot/cycle path with appropriate directional signage. Bridge parapet height to be 1.4m in accordance with the LTN 2/08 Cycle Infrastructure Design Section 10.8.2	 
Junction of Spa Bridge / Esplanade	Shared use boundary indication with changes to hard landscaping, road markings and traffic signage.	

Esplanade	Bi-directional stepped cycle track on eastern side of carriageway maintaining on-street car parking on both sides of the carriageway. Existing pedestrian facilities to be retained and formalised as priority crossing points. Conversion to Parallel crossings where potential exists for cycle infrastructure on western side of the highway.	 

Figure 5-20 – Corridor 1: Eastfield to Scarborough (Concept Plan 2)

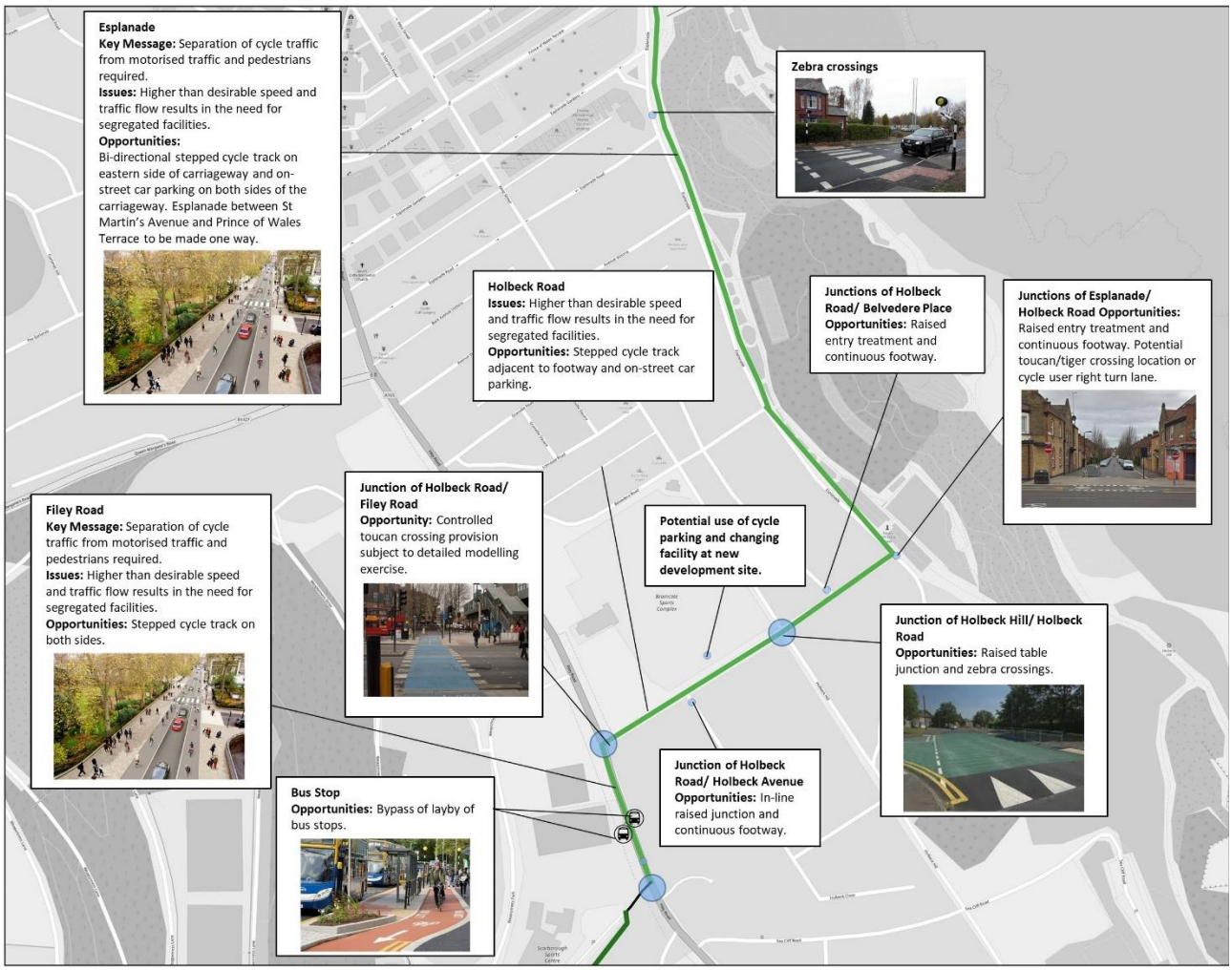


Table 5-8 – Corridor 1: Eastfield to Scarborough (Concept Plan 2)

Section/Junction	Designed Option	Potential Design
Esplanade between St Martin's Avenue and Prince of Wales Terrace	The section of the Esplanade between St Martin's Avenue and Prince of Wales Terrace to be made one way (maintaining existing temporary restrictions), allowing additional highway for reallocation to active modes.	 
Junction of Esplanade / Holbeck Road	Raised entry treatment and potential toucan/tiger crossing location or cycle user right-turn lane.	 
Holbeck Road	Stepped cycle track adjacent to footway and on-street car parking from both sides between Esplanade and Holbeck Hill and on the south side only between Holbeck Hill to Filey Road. Private accesses to be considered.	
Junction of Holbeck Road/ Belvedere Place	Raised entry treatment and continuous footway.	

Junction of Holbeck Hill / Holbeck Road	Raised table junction and zebra crossings.	 
New development site	Potential introduction of cycle parking and changing facilities at new development site.	
Junction of Holbeck Road / Holbeck Avenue	Raised entry treatment and continuous footway.	
Junction of Holbeck Road / Filey Road	Controlled toucan crossing provision subject to detailed modelling exercise.	
Filey Road	Stepped cycle track on both sides. Private accesses to be considered. Bypass of layby of bus stops. Existing pedestrian crossing to be removed.	 
Side Road Treatments (Pedestrian)	Access roads and low traffic / speed side roads to include raised entry treatment with continuous footway (exact design to be determined). Also provides priority for cycle users on shared use facilities.	

Side Road Treatments (Cycle User)	Side roads to offer continuous priority for active modes, including straight across cycle track priority or 'bent out' crossings depending on specific circumstances	 

Figure 5-21 – Corridor 1: Eastfield to Scarborough (Concept Plan 3)

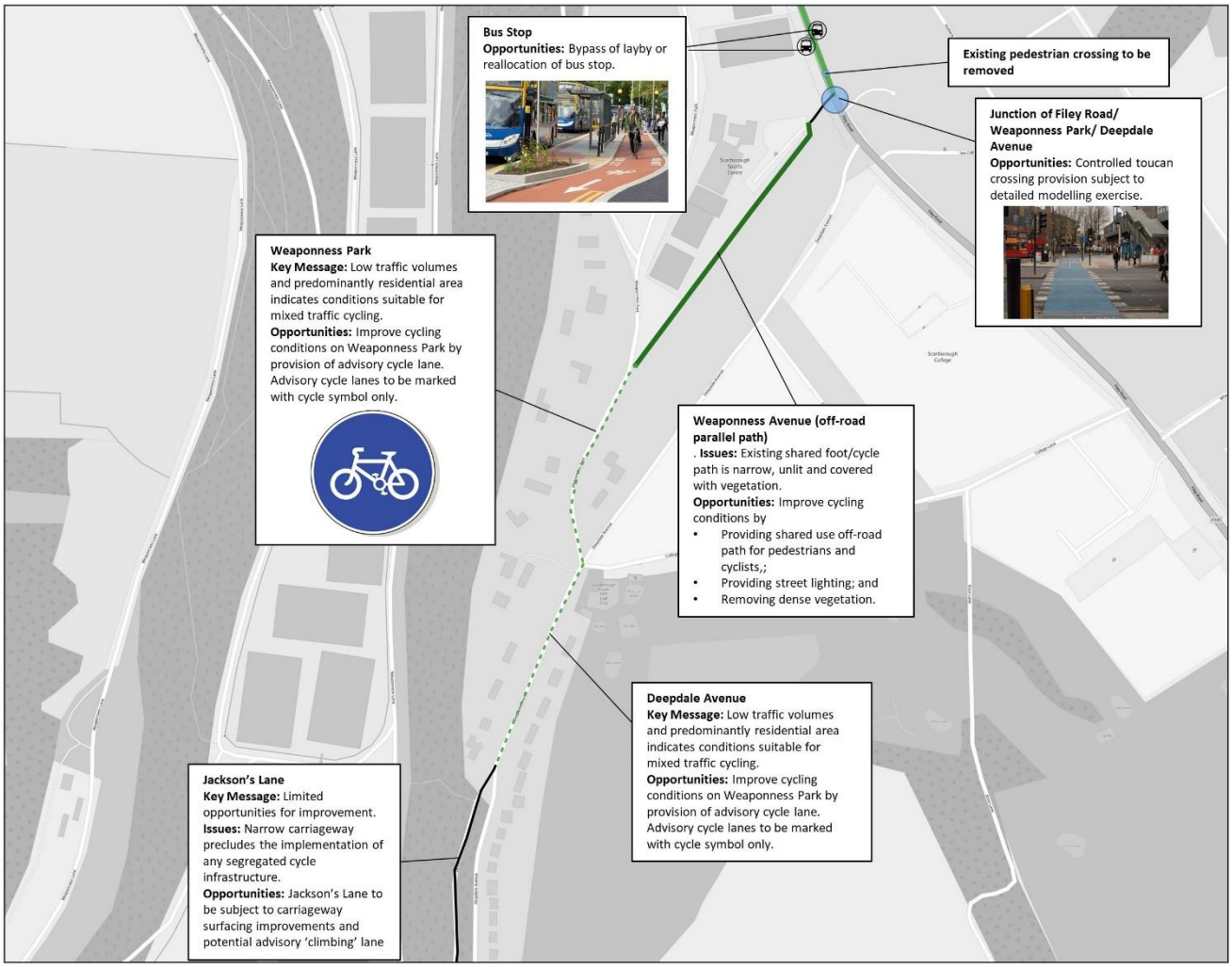


Table 5-9 – Corridor 1: Eastfield to Scarborough (Concept Plan 3)

Section/Junction	Designed Option	Potential Design
Junction of Filey Road / Weaponness Park / Deepdale Avenue	Controlled toucan crossing provision subject to detailed modelling exercise.	
Weaponness Avenue (south) path	Provision of off-road shared use path for pedestrians and cyclists. Includes street lighting and removal of dense vegetation to promote natural surveillance.	
Weaponness Park	Improve cycling conditions on Weaponness Park through provision of advisory cycle lane. Advisory cycle lanes to be marked with cycle symbol only – no linear markings.	
Deepdale Avenue	Improve cycling conditions on Deepdale Avenue through provision of advisory cycle lane. Advisory cycle lanes to be marked with cycle symbol only – no linear markings.	
Jackson's Lane	Jackson's Lane to be subject to carriageway surfacing improvements. Potential for south bound (uphill) advisory cycle lane to denote 'climbing lane' for cycle users. (note Jackson's Lane currently closed due to subsidence).	

Figure 5-22 – Corridor 1: Eastfield to Scarborough (Concept Plan 4)

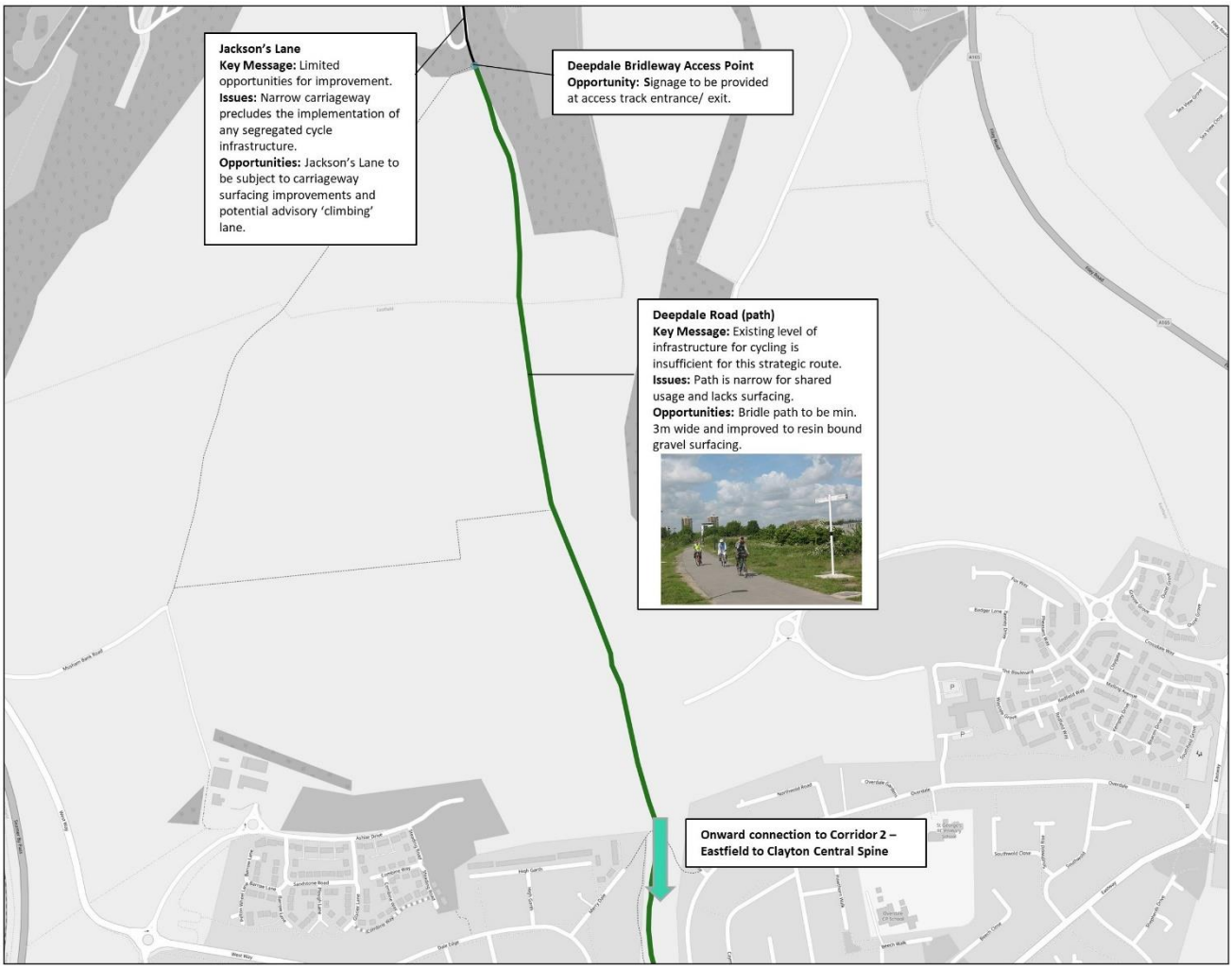


Table 5-10 – Corridor 1: Eastfield to Scarborough (Concept Plan 4)

Section/Junction	Designed Option	Potential Design
Deepdale Bridleway Access Point	Road signage to be provided at access track entrance / exit. Note improvements should be consistent with Cinder Track and other greenways across the borough.	 
Deepdale Bridleway	Bridle path to be min 3m wide and improved to resin bound gravel surfacing.	

CORRIDOR 2 – EASTFIELD & CAYTON CENTRAL SPINE

5.3.5. The concept plan for Corridor 2 is displayed in Figure 5-23 below. The intervention options for the route are listed in Table 5-11.

Figure 5-23 – Corridor 2: Eastfield and Cayton Central Spine

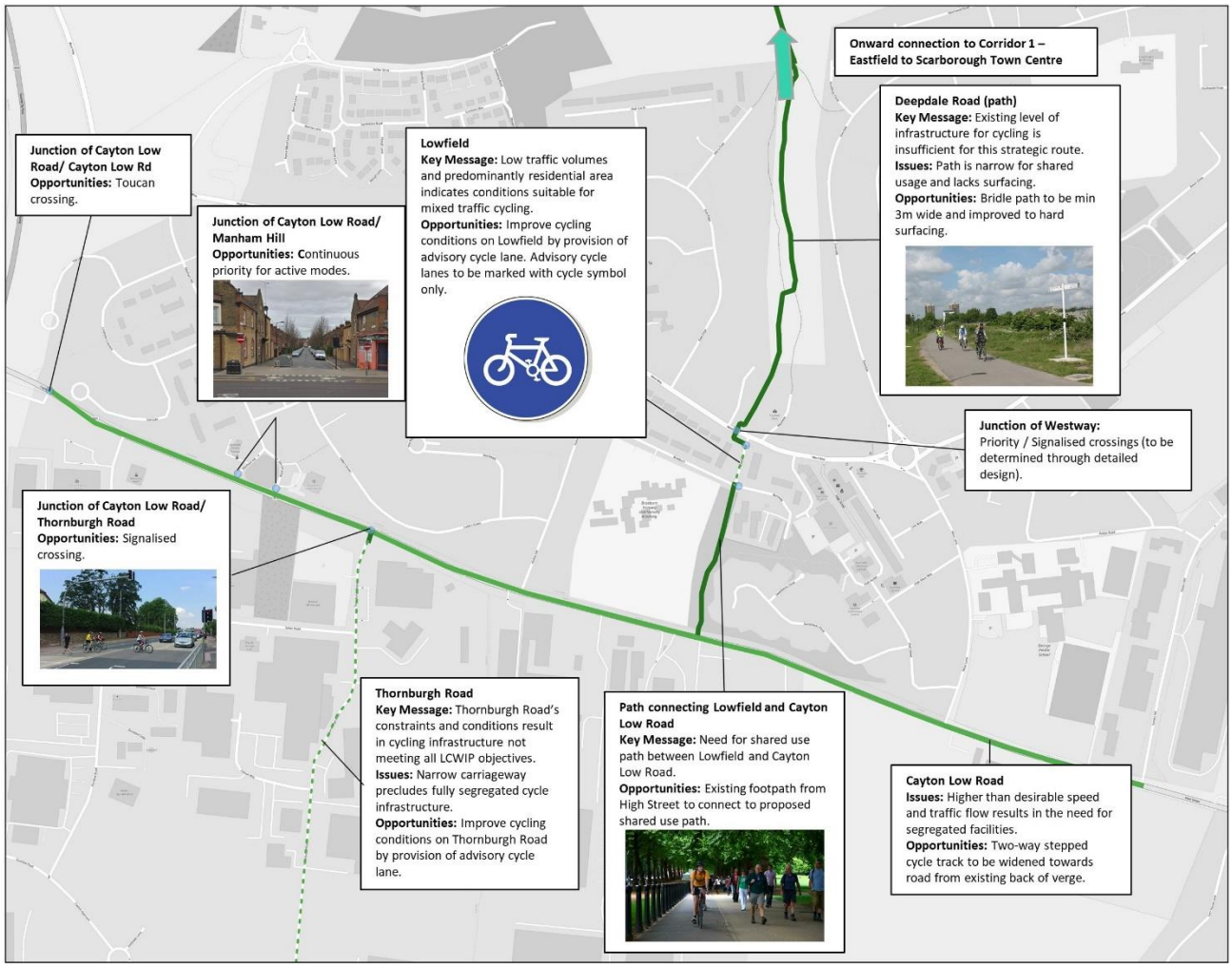


Table 5-11 – Corridor 2: Eastfield and Cayton Central Spine

Section/Junction	Designed Option	Potential Design
Deepdale Bridleway	Bridle path to be min 3m wide and improved to resin bound gravel surfacing.	
Junction of Westway	Priority / Signalised crossings (to be determined through detailed design).	
Lowfield	Improve cycling conditions on Lowfield by provision of advisory cycle lane. Advisory cycle lanes to be marked with cycle symbol only.	
Lowfield to Cayton Low Road	Existing footpath from High Street to connect to proposed shared use path.	
Cayton Low Road	Two-way stepped cycle track on the north side to be widened towards road from existing back of verge.	
Junction of Cayton Low Road / Thornburgh Road	Toucan crossing.	
Side Road Treatments (Pedestrian)	Access roads and low traffic / speed side roads to include raised entry treatment with continuous footway (exact design to be determined). Also provides priority for cycle users on shared use facilities.	

Side Road Treatments (Cycle User)	Side roads to offer continuous priority for active modes, including straight across cycle track priority or 'bent out' crossings depending on specific circumstances	 
Junction of Cayton Low Road / Cayton Low Road	Signalised crossing (type of cycle provision to be determined through detailed design).	
Thornburgh Road	Minor improvements to cycling conditions on Thornburgh Road by provision of advisory cycle lane.	

CORRIDOR 3 – CINDER TRACK CONNECTION

5.3.6. The concept plans for Corridor 3 are displayed in Figure 5-24 to Figure 5-26 below; the route has been split into three sections with intervention options for each listed in Table 5-12 to Table 5-14.

Figure 5-24 – Corridor 3: Cinder Track Connection (Concept Plan 1)

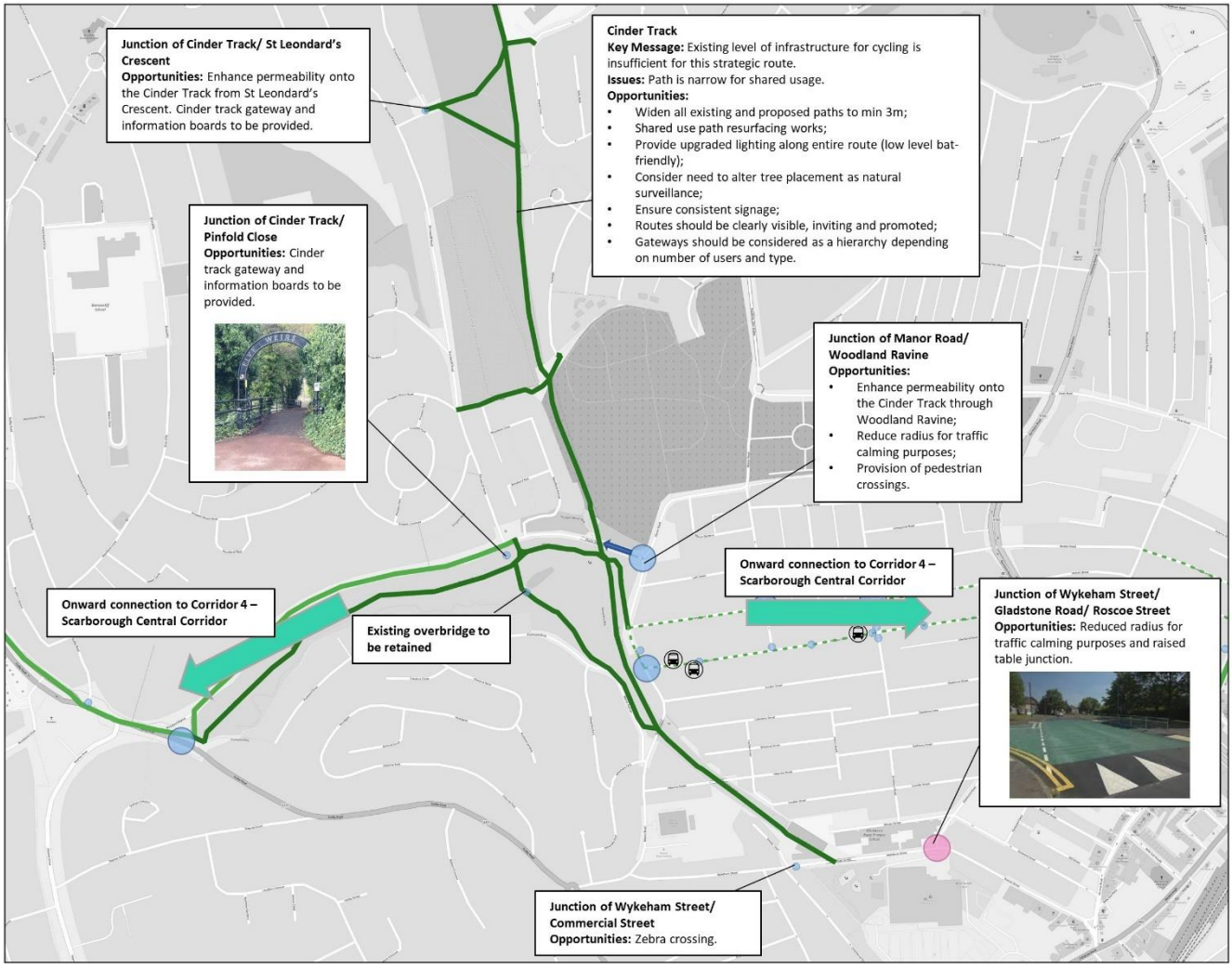


Table 5-12 – Corridor 3: Cinder Track Connection (Concept Plan 1)

Section/Junction	Designed Option	Potential Design
Junction of Wykeham Street / Gladstone Road / Roscoe Street	Reduced radius for traffic calming purposes and raised table junction with zebra crossings.	 
Junction of Wykeham Street / Commercial Street	Zebra crossing.	
Cinder Track	Widen all existing paths to min 3m; Shared use path resurfacing to provide sealed surface; Provide upgraded lighting along entire route (low level bat-friendly); Consider need to alter tree placement as natural surveillance; Ensure consistent signage; Routes should be clearly visible, inviting and promoted; Gateways should be considered as a hierarchy depending on number of users and type.	  
Junction of Manor Road / Woodland Ravine	Enhance permeability onto the Cinder Track through Woodland Ravine; Reduce radius for traffic calming purposes; Provision of pedestrian crossings.	

		
Junction of Cinder Track / Pinfold Close	Cinder Track gateway and information boards to be provided.	 
Junction of Cinder Track / St Leondard's Crescent	Enhance permeability onto the Cinder Track from St Leondard's Crescent. Cinder track gateway and information boards to be provided. Existing track to return to soft landscape.	 

Figure 5-25 – Corridor 3: Cinder Track Connection (Concept Plan 2)

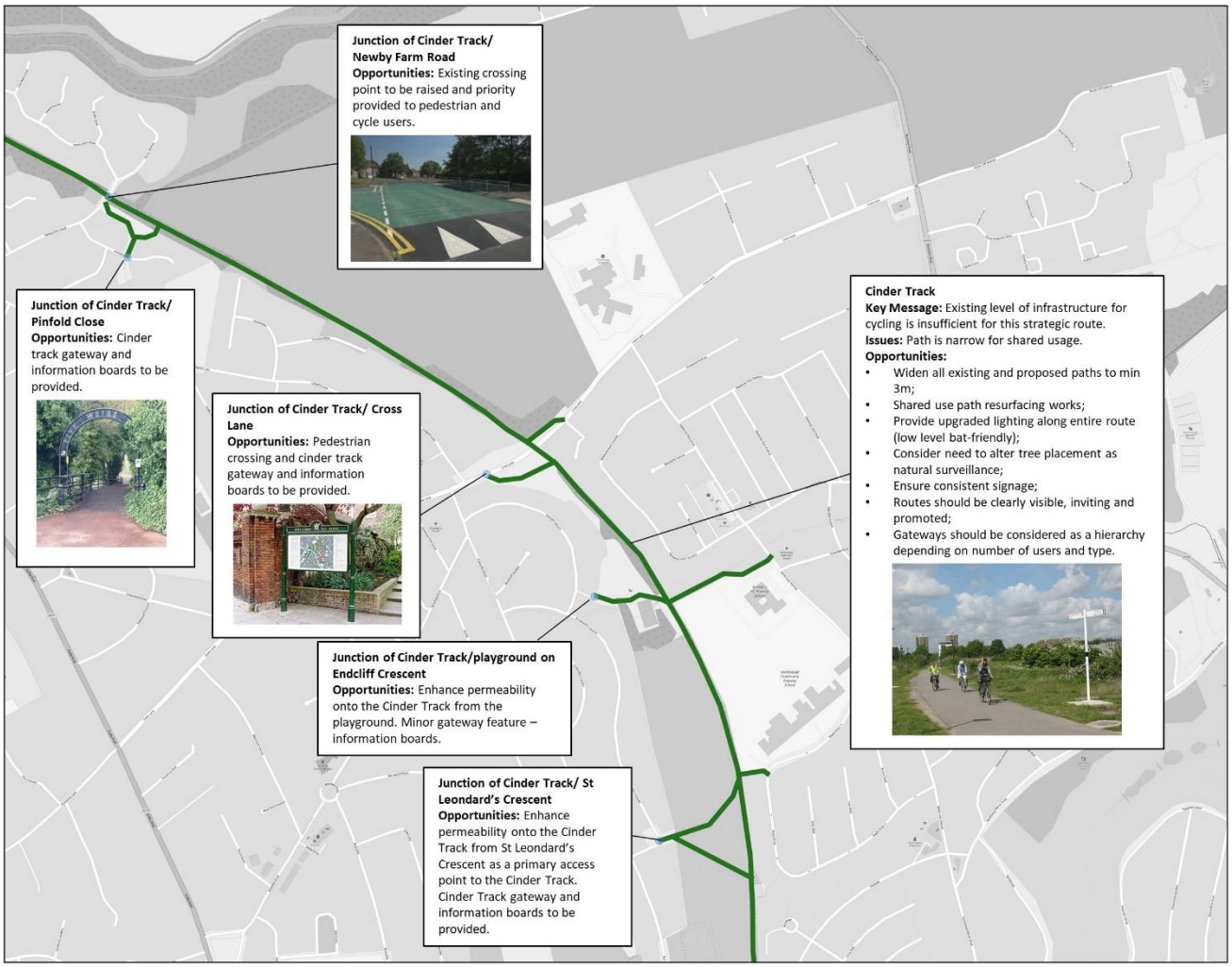


Table 5-13 – Corridor 3: Cinder Track Connection (Concept Plan 2)

Section/Junction	Designed Option	Potential Design
Junction of Cinder Track / playground on Endcliff Crescent	Enhance permeability onto the Cinder Track from the playground. Minor gateway feature – information boards.	
Junction of Cinder Track / Cross Lane	Pedestrian crossing and Cinder Track gateway and information boards to be provided. Carriageway narrowing through markings and buildouts around parking bays, formalising existing parking.	  
Junction of Cinder Track / Pinfold Close	Cinder Track gateway and information boards to be provided.	 

Figure 5-26 – Corridor 3: Cinder Track Connection (Concept Plan 3)

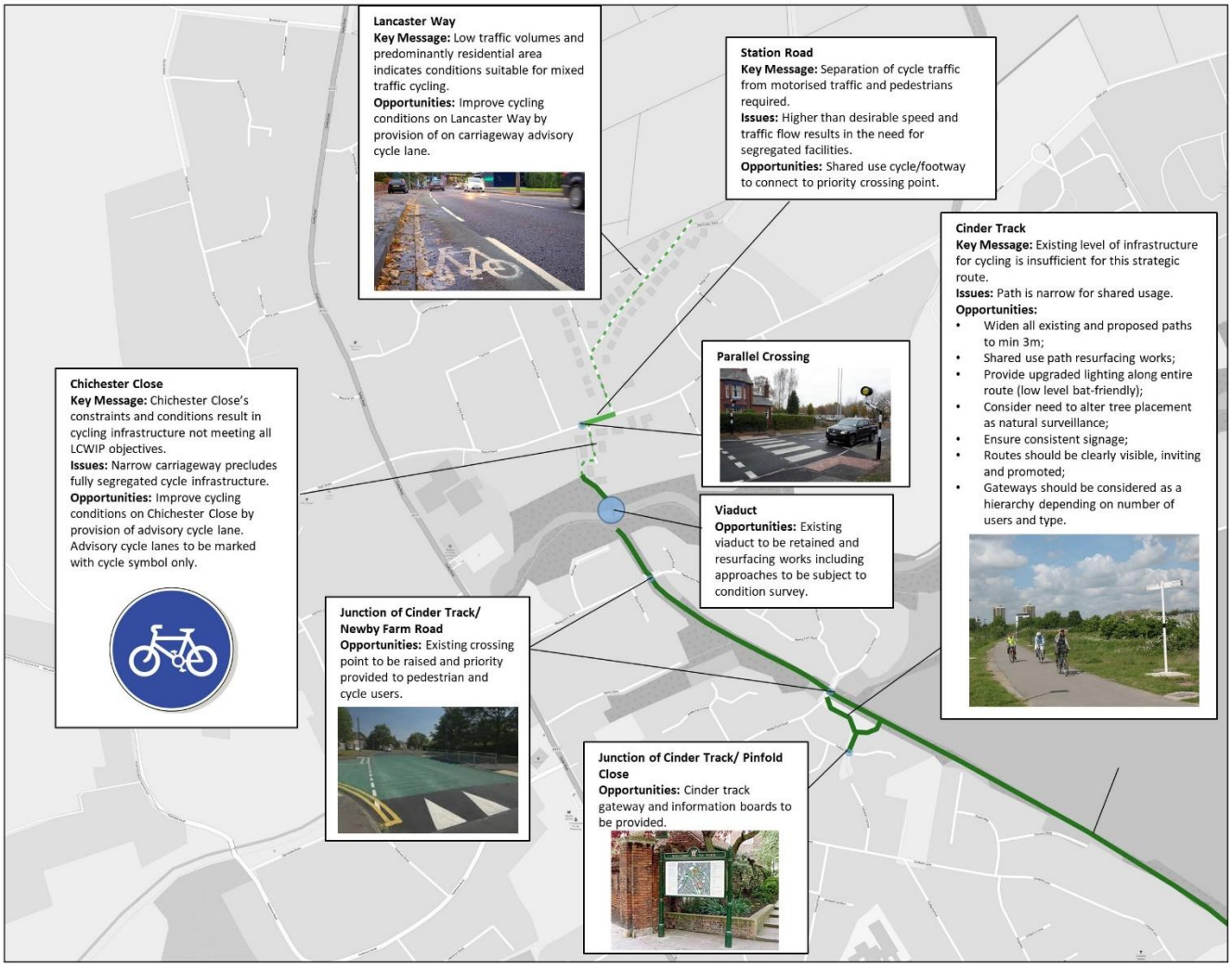


Table 5-14 – Corridor 3: Cinder Track Connection (Concept Plan 3)

Section/Junction	Designed Option	Potential Design
Junction of Cinder Track / Newby Farm Road	Existing crossing point to be raised and priority provided to pedestrian and cycle users. Removal of existing chicane and access controls, with new provision determined through detailed design.	
Chichester Close	Improve cycling conditions on Chichester Close by provision of advisory cycle lane. Advisory cycle lanes to be marked with cycle symbol only.	
Station Road	Shared use cycle/footway and parallel crossing.	 
Lancaster Way / Field Close Road	Improve cycling conditions on Lancaster Way and Field Close Road by provision of on carriageway advisory cycle lane.	

CORRIDOR 4 – SCARBOROUGH CENTRAL CORRIDOR

5.3.7. The concept plan for corridor 4 is displayed in Figure 5-27 to Figure 5-32 below; the route has been split into six sections with intervention options for each listed in Table 5-15 to Table 5-20.

Figure 5-27 – Corridor 4: Scarborough Central Corridor (Concept Plan 1)

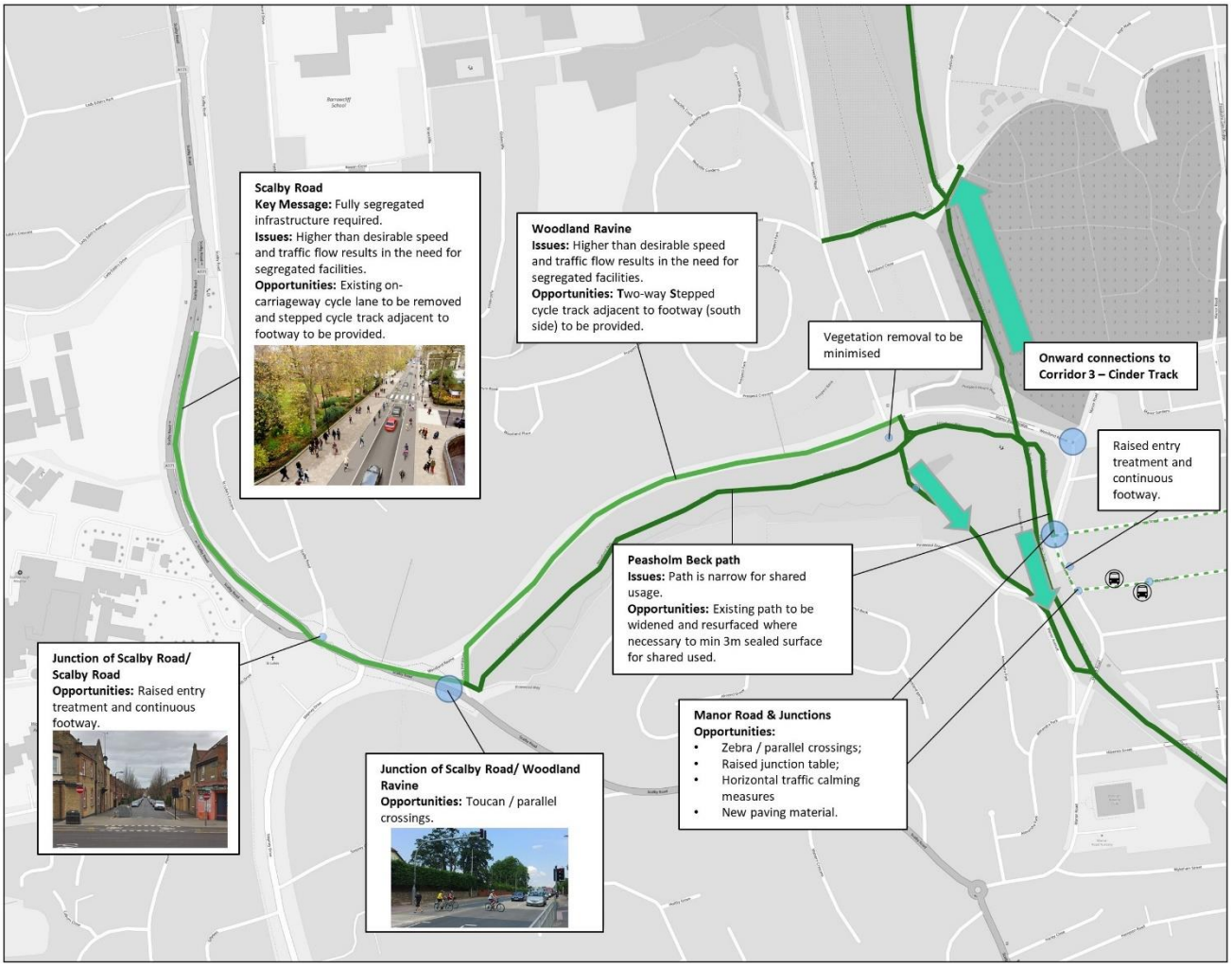


Table 5-15 – Corridor 4: Scarborough Central Corridor (Concept Plan 1)

Section/Junction	Designed Option	Potential Design
Scalby Road	Existing on-carriageway cycle lane to be removed and stepped cycle track adjacent to footway to be provided. Note cycle provision is already planned to be improved through Scarborough Critical Junctions project	
Side Road Treatments (Pedestrian)	Access roads and low traffic / speed side roads to include raised entry treatment with continuous footway (exact design to be determined). Also provides priority for cycle users on shared use facilities.	
Side Road Treatments (Cycle User)	Side roads to offer continuous priority for active modes, including straight across cycle track priority or 'bent out' crossings depending on specific circumstances	 
Woodland Ravine	Stepped cycle track adjacent to footway (south side) to be provided.	
Peasholm Beck path	Existing footpath to be widened for shared used facility. Vegetation removal to be minimised and compensated for.	
Manor Road and Associated Junctions	Detailed design to determine exact provision, likely to include: Shared use or stepped cycle tracks; Zebra / parallel crossings; Raised junction table; Horizontal traffic calming measures; New paving material.	

Figure 5-28 – Corridor 4: Scarborough Central Corridor (Concept Plan 2)

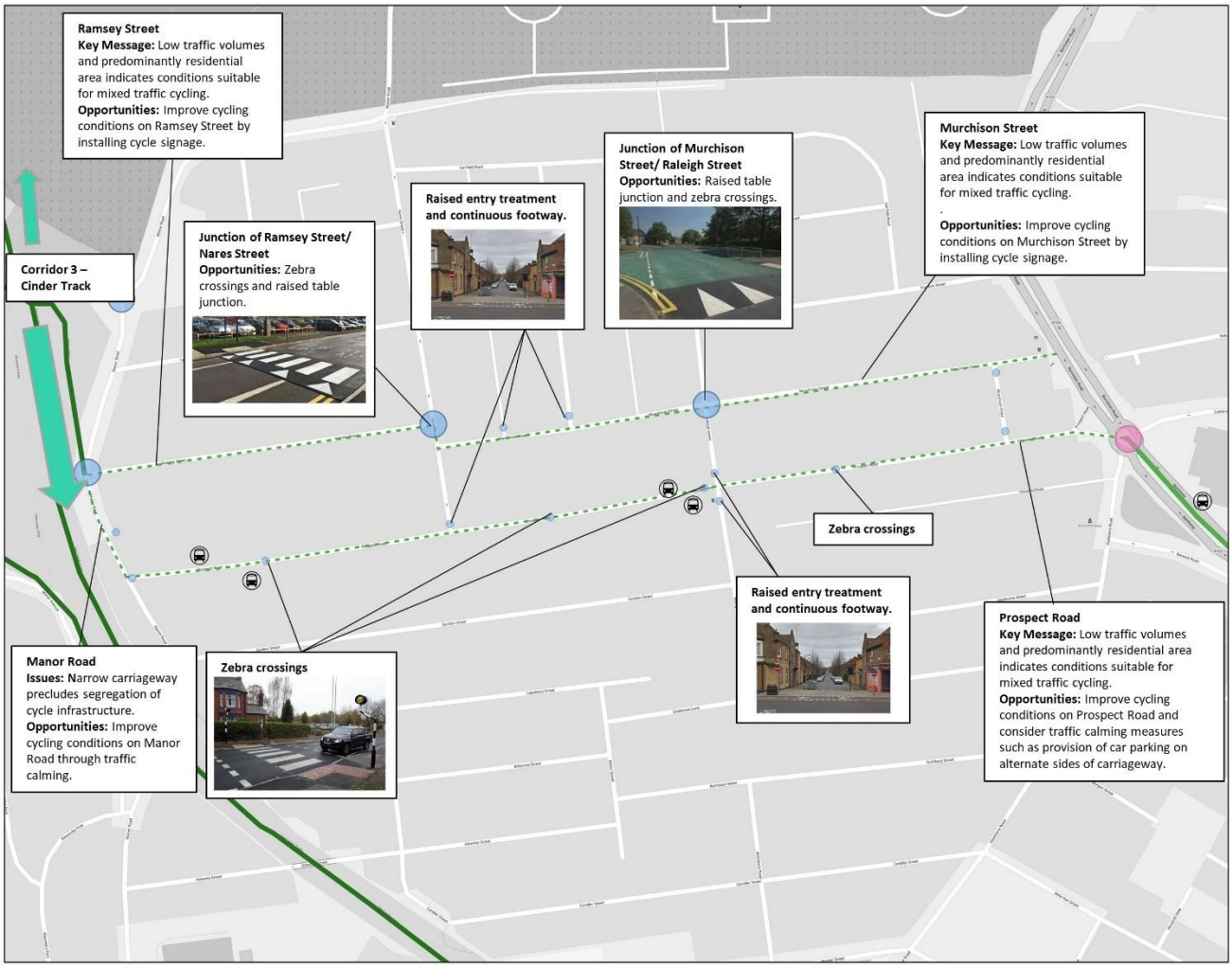


Table 5-16 – Corridor 4: Scarborough Central Corridor (Concept Plan 2)

Section/Junction	Designed Option	Potential Design
Manor Road	Improve cycling conditions on Manor Road by installing cycle signage and traffic calming measures, such as: Raised table junctions; Chicanes; Carriageway narrowing; and Priority crossing points. Implement shared-use or stepped cycle track where width allows with changes to hard landscaping, road markings and traffic signage.	 
Ramsey Street / Murchison Street	Minor improvements to on-road cycling conditions on Ramsey Street by installing cycle signage. Geometry remains as existent.	
Side Road Treatments (Pedestrian)	Access roads and low traffic / speed side roads to include raised entry treatment with continuous footway (exact design to be determined). Also provides priority for cycle users on shared use facilities.	
Side Road Treatments (Cycle User)	Side roads to offer continuous priority for active modes, including straight across cycle track priority or 'bent out' crossings depending on specific circumstances	 

Section/Junction	Designed Option	Potential Design
Prospect Road	Improve cycling conditions on Prospect Road and consider traffic calming measures such provision of car parking on alternate sides of carriageway. Install zebra crossings along Prospect Road.	

Figure 5-29 – Corridor 4: Scarborough Central Corridor (Concept Plan 3)

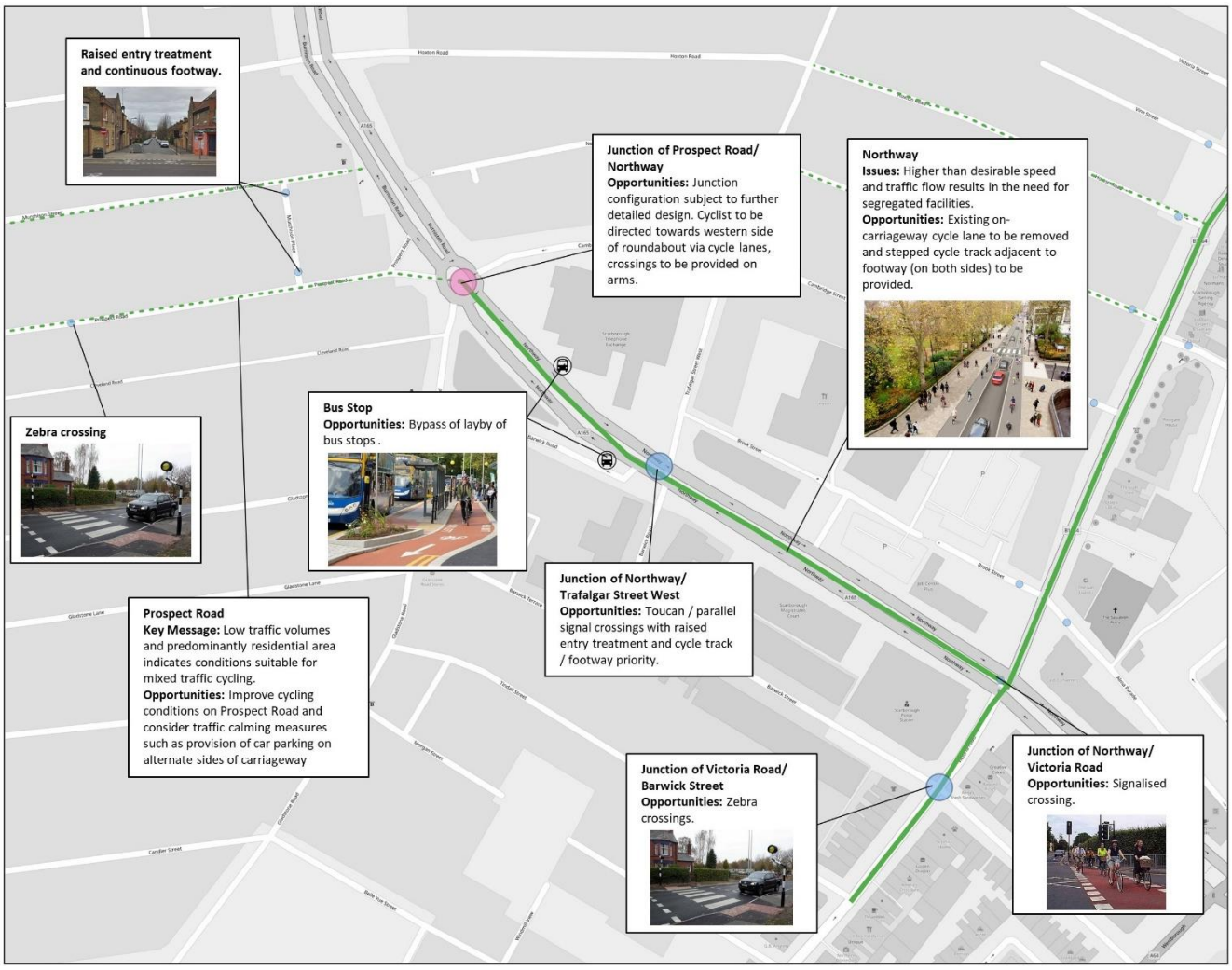


Table 5-17 – Corridor 4: Scarborough Central Corridor (Concept Plan 3)

Section/Junction	Designed Option	Potential Design
Junction of Prospect Road / Northway	Junction configuration subject to further detailed design. Cyclist to be directed towards western side of roundabout via cycle lanes, crossings to be provided on arms.	
Northway	Existing on-carriageway cycle lane to be removed and stepped cycle track adjacent to footway (on both sides) to be provided. Bypass of layby of bus stops where required.	 
Junction of Northway / Trafalgar Street West	Toucan / parallel signalised crossings and raised entry treatment and continuous footway.	 
Junction of Northway / Victoria Road	Parallel signalised crossing.	
Junction of Victoria Road / Barwick Street	Zebra crossings.	

Figure 5-30 – Corridor 4: Scarborough Central Corridor (Concept Plan 4)

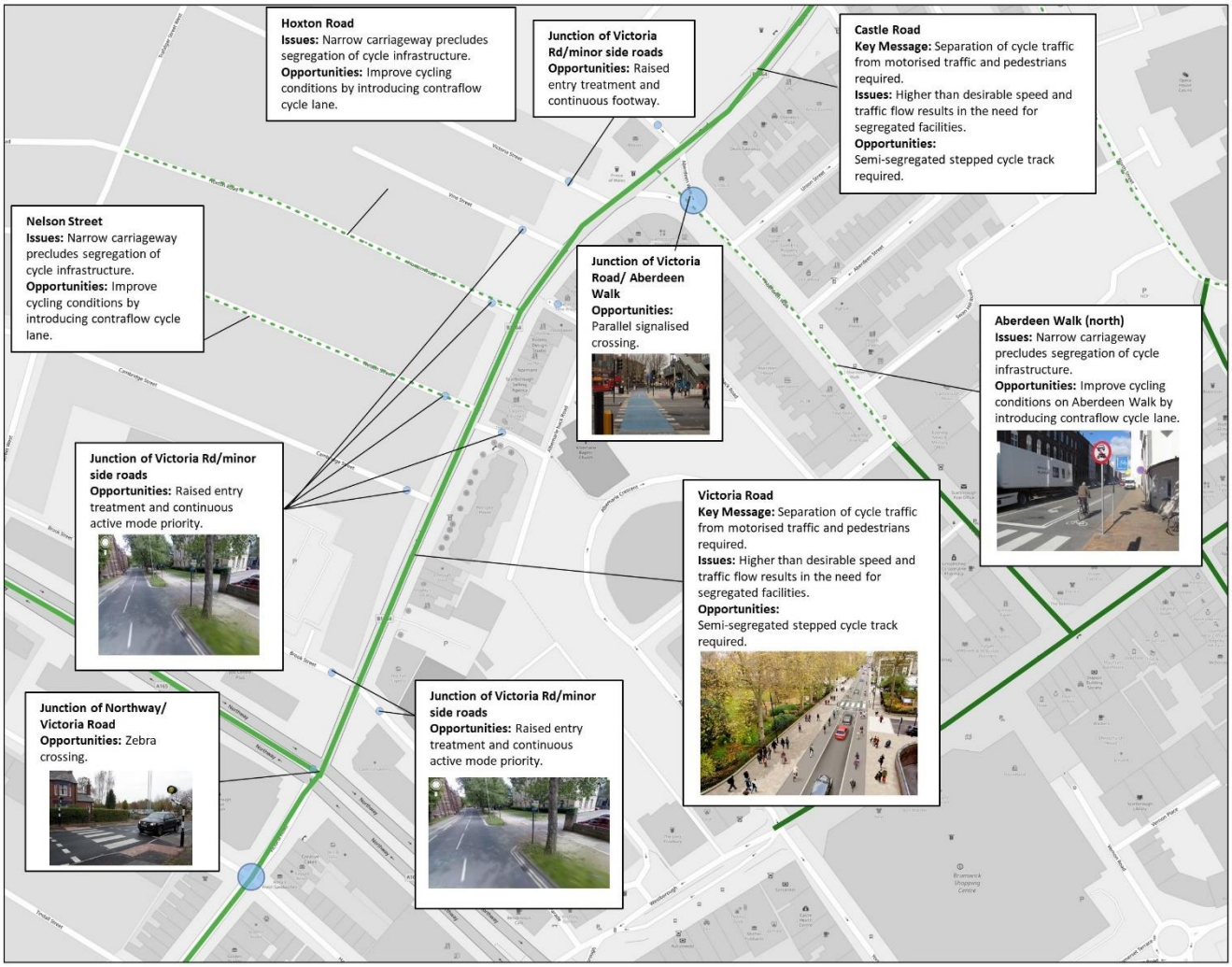


Table 5-18 – Corridor 4: Scarborough Central Corridor (Concept Plan 4)

Section/Junction	Designed Option	Potential Design
Victoria Road / Castle Road	Semi-segregated stepped cycle track on both sides.	
Side Road Treatments (Pedestrian)	Access roads and low traffic / speed side roads to include raised entry treatment with continuous footway (exact design to be determined). Also provides priority for cycle users on shared use facilities.	
Side Road Treatments (Cycle User)	Side roads to offer continuous priority for active modes, including straight across cycle track priority or 'bent out' crossings depending on specific circumstances	 
Nelson Street / Hoxton Road / Aberdeen Walk	Improve cycling conditions by introducing contraflow cycle lane.	
Junction of Victoria Road / Aberdeen Walk	Parallel signalised crossing.	

Figure 5-31 – Corridor 4: Scarborough Central Corridor (Concept Plan 5)

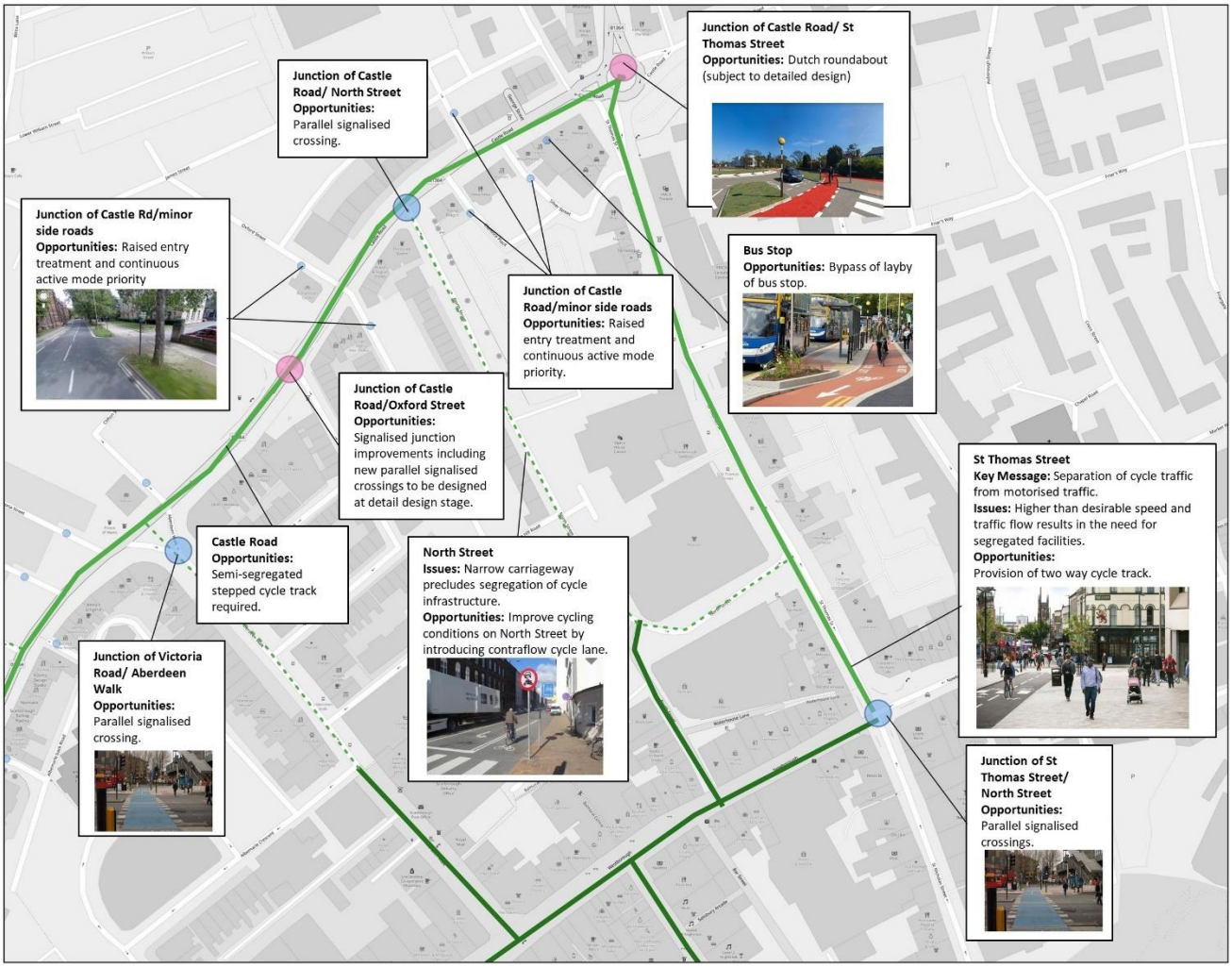


Table 5-19 – Corridor 4: Scarborough Central Corridor (Concept Plan 5)

Section/Junction	Designed Option	Potential Design
Castle Road	Semi-segregated stepped cycle track required. Bypass of layby of bus stop.	 
Junction of Castle Road / Oxford Street	Signalised junction improvements to be designed at detail design stage, including new parallel crossing facilities and widening of footway / cycleway.	
Side Road Treatments (Pedestrian)	Access roads and low traffic / speed side roads to include raised entry treatment with continuous footway (exact design to be determined). Also provides priority for cycle users on shared use facilities.	
Side Road Treatments (Cycle User)	Side roads to offer continuous priority for active modes, including straight across cycle track priority or 'bent out' crossings depending on specific circumstances	 
Junction of Castle Road / North Street	Parallel signalised crossing.	

Junction of Castle Road / St Thomas Street	Dutch roundabout (to be designed at detail design stage).	
North Street	Improve cycling conditions on North Street by introducing contraflow cycle lane	
St Thomas Street	Provision of two-way cycle track on the east side.	
Junction of St Thomas Street / North Street	Parallel signalised crossings.	

Figure 5-32 – Corridor 4: Scarborough Central Corridor (Concept Plan 6)

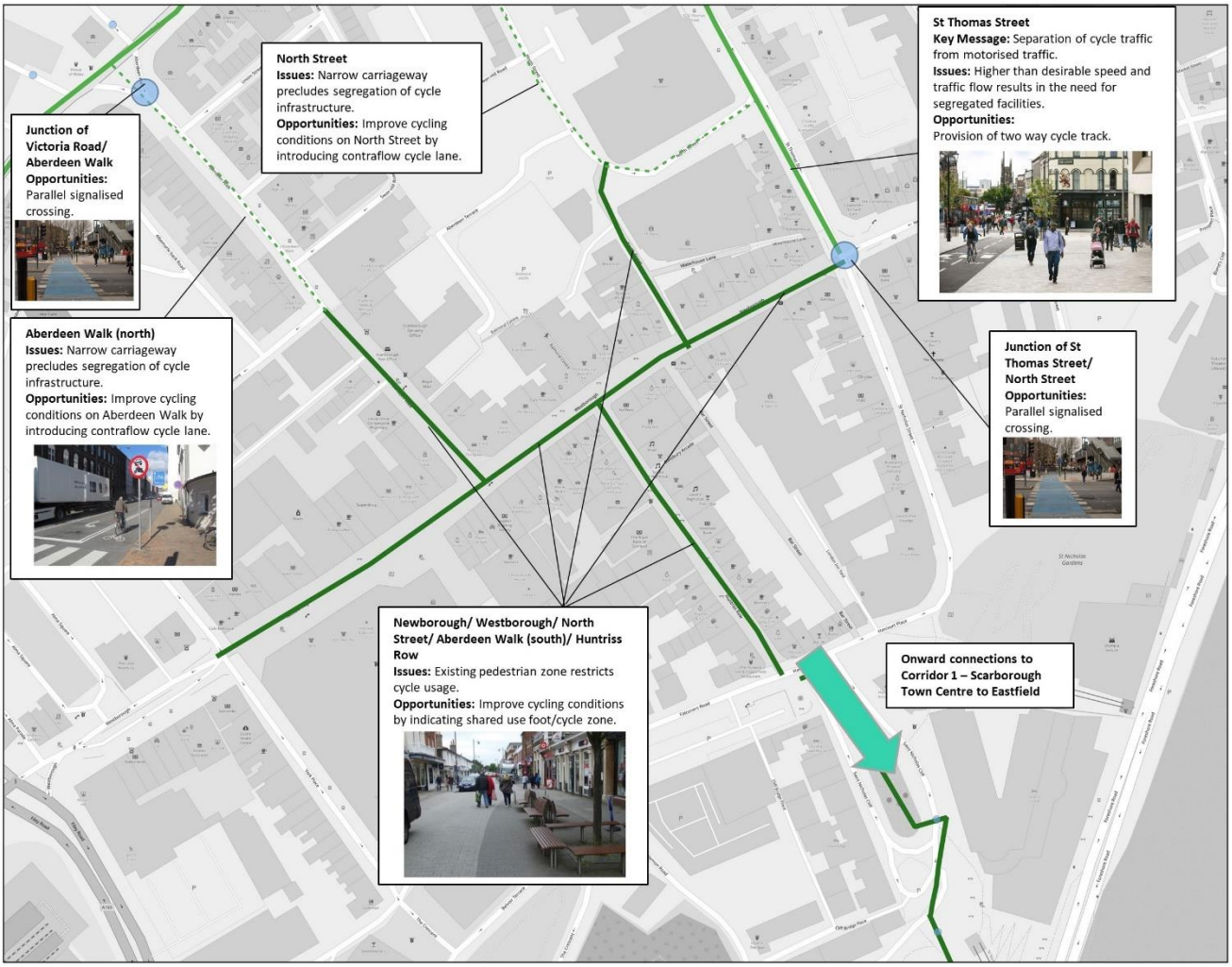


Table 5-20 – Corridor 4: Scarborough Central Corridor (Concept Plan 6)

Section/Junction	Designed Option	Potential Design
Scarborough Town Centre	Current Vehicle Restricted Area (VRA) excludes cycle users from town centre and key routes across Scarborough. Permitting cycle users could be done in conjunction with new signage and designated paths across the central plaza, denoted though new alternative pavers and light segregation if required.	  

5.4. SUMMARY

5.4.1. The option generation process – including significant engagement with NYCC and SBC officers – resulted in the production of these final concept plans for each route, including a list of potential options where appropriate. These were taken forward to inform the production of preliminary designs, which is discussed in the subsequent chapter.

6. OPTION DEVELOPMENT

6.1. INTRODUCTION

6.1.1. The final concept plans produced as part of the option generation process were taken forward to create preliminary designs, which in turn are used to generate associated costs and benefits.

6.1.2. This section of the report presents the final preliminary designs, describes the process followed in determining the preferred options, and presents alternative options for schemes/sections where applicable.

6.2. PREFERRED OPTIONS

6.2.1. The concept plans were reviewed and updated as part of an iterative process of workshops and meetings with the core stakeholder team, with the final versions used to inform the production of preliminary designs.

6.2.2. The preliminary designs were also subjected to further scrutiny and review as part of the quality assurance process through engagement with the project team and wider liaison with appropriate stakeholders.

6.2.3. The final preliminary designs are presented in Appendix C.

6.2.4. It should be noted that the preliminary designs are intended as feasibility drawings only, to present the potential of what could be delivered to support the aims of the LCWIP at this early stage of development. The proposals have been developed to sufficient detail as to allow for high level cost estimates to be developed.

6.2.5. The designs plans are therefore produced under the assumption that, should the corridors or elements of such be taken forward for further development (for example as a detailed business case submission), they would be reviewed and more detailed design undertaken.

6.3. ALTERNATIVE OPTIONS

6.3.1. Where feasible, alternative scheme options have also been identified for the priority corridors.

6.3.2. The alternative options would not be included within the preliminary designs, but would be outlined to provide a reference for further development should any of the corridors be progressed at any point in the future.

6.3.3. Typically, these alternative options are of lower standard than the preferred options, but could be delivered as a short-term improvement, a ‘quick win’ or address an immediate gap in provision. These are typically lower cost interventions.

6.3.4. Alternative options are set out for each of the routes in Table 6-1 to Table 6-4.

CORRIDOR 1 – MIDDLE DEEPDALE TO SCARBOROUGH TOWN CENTRE

Overview of Proposals

6.3.5. Corridor 1 seeks to connect the extensive new development occurring at Middle Deepdale to Scarborough town centre; despite the proximity, this journey is hampered by the lack of direct and desirable routes, requiring a circuitous journey via the A64 to the west or use of the network of PROWs across the Deepdale.

6.3.6. The proposals look to improve the central Deepdale Bridleway as the most direct route between the key ODs, and then uses the proposed realignment of the NCN Route 1 via the Esplanade through the scenic South Cliff area, avoiding the pinch point at Ramshill.

Alternative Options

6.3.7. Table 6-1 below lists the alternative options proposed along the route where applicable, as well as rationale describing why this option was sifted out.

Table 6-1 – Corridor 1: Summary of Alternative Options

Section/Junction	Designed Option	Commentary and Alternative Option
Side Road Treatments	Prelim Designs include various standards of side road treatment, including: ▪ Raised junction with set-back; ▪ Raised junction; ▪ Mandatory lanes; and ▪ Blended footways (Inc. shared use footway)	While the most applicable option has been selected based on engineering judgement, these options require further investigation in each case, ensuring the correct conditions can be met in (e.g. speeds and visibility).
Esplanade	Prelim designs include a two-way stepped cycle track along the eastern side of the carriageway.	Provision of this infrastructure is dependent on land acquisition in certain locations, and will require highway currently used as grass verge. Such a scheme may be subject to objection from the public. Narrowed widths and provision of shared use footways could minimise this, but reduce associated benefits. A two-way track is significantly more feasible and require less alteration to the highway than provision on either side. The eastern side is also more scenic; an important factor in the realignment of the NCN. However, connectivity from the western side of the carriageway will need to determined through detailed design. Fully segregated tracks would increase amenity for both users, but would be less in keeping with the heritage of the area, requiring more space and being more visually obtrusive. Also note that while the scheme as proposed leaves the Esplanade to head towards Middle Deepdale at Holbeck Road, there is opportunity for the proposals to extend further along The Esplanade and continue the route of the NCN.
Holbeck Road	Prelim designs indicate sufficient width to continue	Provision of this infrastructure is reliant on available widths, which in itself may be reliant on retention of existing parking. This should be determined though a

	stepped track on either side of the carriageway.	topographical survey and consultation with residents and other relevant stakeholders. Given the low traffic volumes and speeds that should be present on this residential road, it may be possible to provide a lower cost option of on-street provision with associated traffic calming measures. Junction design will need to be determined at the detailed design stage, with options for altering priority at side streets, or informal junctions such as an implied roundabout.
A165 Filey Road	Prelim designs include a stepped cycle track on either side of the carriageway.	Provision of this infrastructure is dependent on land acquisition in certain locations, and will require highway currently used as grass verge. Such a scheme may be subject to objection from the public Filey Road currently features a shared use cycleway on either side of the carriageway, although the provision on the eastern side is not contiguous, and the route lacks priority over side streets, access points, and crossings. The existing shared use facility could be improved through targeted improvements at these pinch points, although the path itself would remain narrow and below the latest standards.
Deepdale Bridleway	Prelim design includes resurfacing and lighting of the Deepdale Bridleway in order to provide a more desirable link that would be used in all conditions.	The usage of this route will depend on much more than it's surfacing and lighting. The bridleway is part of a network of PROWs across the unbuilt area, with opportunities for access to the route from a number of points. The new development at Middle Deepdale should ensure that the route has good natural surveillance from new dwellings, that access points are obvious and safe, and that the route is promoted and signed as the most direct active travel link to Scarborough.

CORRIDOR 2 – EASTFIELD & CAYTON CENTRAL SPINE

Overview of proposals

6.3.8. Corridor 2 extends the link from Middle Deepdale proposed in Corridor 1 into the existing urban area of Eastfield / Cayton, provising a connection to Cayton Low Road to the very south of the Scarborough urban area and the extensive development currently occurring and proposed along this corridor.

6.3.9. Although a number of route options were explored, the most direct route is also the most feasible and practicable. However, there is some merit in extending a scheme eastward towards Eastfield high street, and aligning such proposals with the regeneration of this area.

6.3.10. It is also noted that the scheme has the potential to extend into the Cayton Strategic Area of Search housing allocation, should this site come forward. Any connections into new development should be led by the developer in conjunction with NYCC and SBC, led by the LCWIP and the latest design guidance.

Alternative Options

6.3.11. Table 6-2 below lists the alternative options proposed along the route where applicable, as well as rationale describing why this option was sifted out.

Table 6-2 – Corridor 2: Summary of Alternative Options

Section/Junction	Designed Option	Commentary and Alternative Option
Side Road Treatments	Prelim Designs include various standards of side road treatment, including: ▪ Raised junction with set-back; ▪ Raised junction; ▪ Mandatory lanes; and ▪ Blended footways (Inc. shared use footway).	While the most applicable option has been selected based on engineering judgement, these options require further investigation in each case, ensuring the correct conditions can be met in (e.g. speeds and visibility).
Cayton Low Road	Prelim designs include a two-way segregated cycle track on the northern side of the carriageway. The proposals extend from McCains in the east to Seamer rail station in the west.	The scheme concepts explored the potential for provision on either side of the carriageway, but noted the multiple access points for HGV / LGVs associated with the various business and industrial units on the southern side of the carriageway. A two-way cycle track to the north is more feasible and practicable, although is dependent on available carriageway widths, including
Access features	Prelim and concept designs indicate enhancements to the TPT access points that will highlight the entry points and help the route become part of the transport network in the urban area.	Engagement with the C&RT identified the need to ensure any access feature (particularly in regards to archways) were at a minimum clearance of 2.7m to facilitate horse riders.

CORRIDOR 3 – CINDER TRACK CONNECTIONS

Overview of proposals

6.3.12. Corridor 3 looks to enhance access to the Cinder Track within the Scarborough urban area, seeking to make greater use of its central location and off-highway benefits. The route has already been the subject of a recent improvement study by Sustrans; the LCWIP seeks to promote these improvements and enhance them in order to encourage cycling and walking for all journey purposes, not only leisure and tourism.

Alternative Options

6.3.13. Table 6-3 below lists the alternative options proposed along the route where applicable, as well as rationale describing why this option was sifted out.

Table 6-3 – Corridor 3: Summary of Alternative Options

Section/Junction	Designed Option	Commentary and Alternative Option
Cinder Track Width & Surface	Prelim design include a min 3m sealed surface, to be agreed in consultation with relevant stakeholders.	The initial concepts proposed a 4.5m sealed surface along the track itself (with 3m along access points) in accordance with the London Cycle Design Standards for an off-road route. Consultation suggested that this was too wide given the desire to preserve a green setting, and the proposed width was reduced. The potential to widen the route further should be considered following a period of post-scheme monitoring and evaluation.
Station Road	Prelim design includes minor traffic calming elements such as narrowing of the carriageway on the approach to the junction, and widens the footway to provide a shared area and parallel crossing for peds and cyclists that connects to on-road provision.	The exact layout of this junction will need to be determined through detailed design. Anecdotal evidence suggests that safely crossing this road and interpreting the route of the Cinder Track can be difficult, necessitating a formalised crossing point and better signage. However, this design will need to consider coherence with on-road provision along the route on Chichester Close / Field Close Road.

CORRIDOR 4 – SCARBOROUGH CENTRAL CORRIDOR

Overview of proposals

6.3.14. The Scarborough Central Corridor is not likely to be a single corridor to accommodate a journey made across its entire length; the route bisects the urban area of Scarborough, passing many significant OD points including residential estates, the hospital, and the town centre. The schemes also connect with the other LCWIP Phase 2 schemes, creating an east to west axis to complement the northerly direction of the Cinder Track and the southerly route to Middle Deepdale and Eastfield.

6.3.15. The proposals include significant changes to a number of busy junctions; it is envisaged that the feasibility of these proposals would need to be investigated in more detail via a traffic impact assessment, including modelling and a Road Safety Audit.

Alternative Options

6.3.16. Table 6-4 below lists the alternative options proposed along the route where applicable, as well as rationale describing why this option was sifted out.

Table 6-4 – Corridor 4: Summary of Alternative Options

Section/Junction	Designed Option	Commentary and Alternative Option
Side Road Treatments	Prelim Designs include various standards of side road treatment, including: ▪ Raised junction with set-back; ▪ Raised junction; ▪ Mandatory lanes; and ▪ Blended footways (Inc. shared use footway)	While the most applicable option has been selected based on engineering judgement, these options require further investigation in each case, ensuring the correct conditions can be met in (e.g. speeds and visibility).
Scalby Road (Scarborough General Hospital)	Prelim designs include significant alterations to the existing mix of on-road and off-road infrastructure, including cycle priority over side streets and new signalised crossings over the main junction.	This junction is currently undergoing detailed design relating to the Scarborough Critical Junctions project to support the growth aspirations of the Local Plan. It is understood that these proposals already include the majority of the LCWIP proposals, with some small potential enhancements including ped /cycle priority over the residential side streets.
Woodland Ravine / Peasholme Beck	Prelim designs include a stepped cycle track on the southern side of the carriageway, running parallel to Peasholme Beck.	It is noted that Peasholme Beck has an existing shared use off-road path that could be enhanced through minor improvements such as widening. However, the lack of natural surveillance is unlikely to make this route desirable all year round and in all conditions, hence the parallel proposals on Woodland Ravine.
Woodland Ravine / Manor Road Junction	Prelim designs indicate this junction could be subject to minor improvements through alteration to a standard priority junction, or through geometric constraints to the existing layout, making	The exact scheme at this location would need to be determined through detailed design. Ideally, fully segregated provision for cyclists would be provided, potentially through shared-use areas and parallel priority crossings on all arms (similar to a 'Dutch' roundabout), although this would be dependent on exact available space.

	conditions safer for on-road cycling.	
Manor Road	Prelim designs include an extension of the existing path from the Cinder Track to opposite Prospect Road using stepped infrastructure on the highway. The proposals feature a number of traffic calming initiatives designed to facilitate crossing between the off-road infrastructure and the on-road route along Prospect Road.	The exact layout of the junctions between Manor Road and Prospect Road / Ramsey Street will need to be considered in the detailed design stage. The constraints of the build environment and narrow highway are unlikely to allow for segregated infrastructure on both sides of the carriageway, and the transition between on-road and off-road (Manor Rd) could become less coherent. The proposals should aim to make Manor Road more suitable for on-road mixed use cycling and facilitating turning movements between the side streets.
Northway / Prospect Road / Gladstone Road junction	Prelim designs indicate a significant change in the junction layout to be determined in the detailed design stage. The designs highlight that any scheme will include segregated cycle infrastructure and crossing points to tie in with on road mixed traffic cycling on local streets and segregated infrastructure along Northway.	This junction is a relatively difficult layout, with numerous arms reaching the junction from different directions and angles. The existing roundabout relies on painted markings to aid user perception, which are worn and illegible in places. The most likely layout would be a 'Dutch' style roundabout, providing segregated infrastructure for pedestrians and cyclists.
Northway / Victoria Road Junction	Prelim designs indicate a controlled crossing point between Northway and Victoria Road (northeast), facilitating travel along the proposed corridor.	The proposed scheme includes the bare minimum provision, which accommodates movements along the corridor only. The exact junction design should be determined through detailed design, and should also consider long term aspirations for Northway towards Scarborough Rail Station and provision on all arms. The junction is likely to include a mix of segregated and shared provision, including parallel signal crossings where possible.
Victoria Road / Castle Road	Prelim designs include a stepped cycle track, providing segregation for each mode with the potential to contribute to the streetscape through use of materials and landscaping.	The exact width available for the scheme will need to be determined through a topographical survey, as well as consultation with stakeholders and business owners regarding parking requirements.
Castle Road / Dean Road Junction	Prelim designs indicate that the exact layout of this junction will be subject to detailed design.	This junction is relatively constrained by the urban area, and any proposals for incorporating controlled cycle crossings will need to determine exact available widths through a topographical survey, as well as considering turning requirements and junction capacity. As a minimum, any design should consider provision of shared use areas around the junction footprint, as well as removal of the existing guard railing where possible.

Castle Road / St Thomas St junction	Prelim designs indicate that the exact layout of this junction will be subject to detailed design.	The most likely layout would be a 'Dutch' style roundabout, providing segregated infrastructure for pedestrians and cyclists.
Scarborough town centre VRA	Prelim designs include a number of routes through Scarborough town centre, which would require a relaxation in the current Vehicle Restriction Area (VRA)	The VRA excludes cycle users from using a number of desirable routes across the town centre, forcing cycle users onto circuitous routes with no cycle infrastructure and higher than desirable vehicle flows / speeds. While relaxing these restrictions may require significant stakeholder and public engagement, the proposed schemes are unlikely to obtain the maximum benefits without this link.

7. COST ESTIMATES

7.1. INTRODUCTION

7.1.1. Once determined, the preliminary designs have been issued to a WSP Quantity Surveyor (QS) in order to develop indicative cost estimates for each of the distinct routes.

7.1.2. This section of the report sets out the cost estimates for each of the agreed schemes and details any assumptions underpinning these.

7.2. SCHEME COST ESTIMATES

7.2.1. It should be noted that, given the early stage of work, order of magnitude cost estimates have been developed to reflect scheme preparation and construction (development and delivery); ongoing maintenance and renewal costs have not been considered, which is considered to be commensurate with the current stage of the study.

7.2.2. Cost estimates for the four corridor routes are presented in 2020 Q1 rates and are set out in Table 7-1; full cost estimate build-ups are presented in Appendix E. It is important to note that, due to the stage of the study, it has been necessary to make various assumptions in deriving cost estimates for each of the interventions. Basic construction cost assumptions have been informed from a variety of sources, including WSP's QS historic database for similar schemes and standard industry price books.

7.2.3. Construction cost comprises of costs for roadworks and structures. Assumptions for items such as contingencies general allowances, preliminaries and traffic management are assumed to be a percentage of the construction cost build ups. These are also based on typical percentage uplifts commensurate for this early stage of study, based on previous experience.

7.2.4. The indicative nature of these costs is considered appropriate for this current early stage of the study; should any future package formation be taken forward to business case preparation, these costs would need to be considered and refined at each stage of the process.

Table 7-1 – Scheme Cost Estimates

Item	Description	Corridor 1	Corridor 2	Corridor 3	Corridor 4
A	Construction Cost	£2,540,000	£1,575,000	£1,075,000	£4,645,000
B	Allowance for the effects of constrained/restrictive working times (assumed 7.5% of A)	£190,000	£120,000	£80,000	£350,000
C	Preliminaries and traffic management (assumed 25% of A+B)	£685,000	£425,000	£290,000	£1,250,000
D	Works for and by Statutory Undertakers, assumed not significant as works not too intrusive (assumed 7% of A)	£190,000	£120,000	£80,000	£350,000
E	Options studies, investigations, surveys, design, preparation, documentation, procurement, management, administration & supervision (assumed 14% of A+B+C+D)	£505,000	£315,000	£215,000	£925,000
F	**Total: estimated design & construction costs (inc work by other parties but excluding risk allowance) (Sum of A:E)**	**£4,110,000**	**£2,555,000**	**£1,740,000**	**£7,520,000**

COST RISK

7.2.5. A figure of 20% has been applied to the design and construction costs to account for risk, prior to the preparation of a scheme specific Quantified Risk Assessment (QRA). This is set out in Table 7-2.

Table 7-2 – Risk Assumption and Costs before Optimism Bias and Inflation

Item	Description	Corridor 1	Corridor 2	Corridor 3	Corridor 4
G	Risk Allowance - arbitrary allowance prior to scheme specific QRA (20% of F)	£825,000	£510,000	£350,000	£1,505,000
H	**Indicative likely Design & Construction Costs before Optimism Bias and Inflation**	**£4,935,000**	**£3,065,000**	**£2,090,000**	**£9,025,000**

OPTIMISM BIAS

7.2.6. As outlined WebTAG Unit A1.2, the DfT recommend that an adjustment to scheme cost estimates is made to account for optimism bias. Optimism bias is an allowance designed to compensate for the systematic tendency for appraisers to be overly optimistic about key parameters.

7.2.7. As a project develops, the cost estimates are refined and, as project-specific risks become better understood, quantified and valued, the factors that contribute to optimism bias are better captured within the risk management process. Therefore, as risk analysis improves, it is expected that the risk-adjusted scheme cost estimate will become more certain, whilst the applicable level of optimism bias will decrease.

7.2.8. As per the guidance in WebTAG Unit A1.2, it is expected that more specific optimism bias figures for each route corridor will be added as the schemes are progressed to a more detailed stage of scheme development. As such, optimism bias of costs has been determined by summing 44% of the cost for roadwork and 66% of the cost for structures. This figure is shown in Table 7-3.

Table 7-3 – Optimism Bias

Item	Description	Corridor 1	Corridor 2	Corridor 3	Corridor 4
I	Optimism Bias (44% of roadworks and 66% of structures)	£2,210,000	£1,350,000	£920,000	£3,970,000

INFLATION

7.2.9. Inflation has been forecasted for the years between 2020-2026 by considering the different elements contributing to the cost estimates (SUM A:E, G), excluding optimism bias. An indicative spend profile was made for each in the period indicated in Table 7-4.

Table 7-4 – Inflation

Item	Description	Corridor 1	Corridor 2	Corridor 3	Corridor 4
J	Inflation (excluding Optimism Bias)	£190,000	£115,000	£80,000	£345,000

TOTAL

7.2.10. The total for each of the corridors is a sum of construction, constrained / restrictive working times, preliminaries and traffic management, statutory undertakers, preparation and supervision, risk, optimism bias and inflation (SUM A:E, G, I, J). The total costs are indicated in Table 7-5.

Table 7-5 – Total Costs

Item	Description	Corridor 1	Corridor 2	Corridor 3	Corridor 4	Total
K	**Total**	**£7,335,000**	**£4,530,000**	**£3,090,000**	**£13,340,000**	**£28,295,000**

8. ECONOMIC APPRAISAL

8.1. INTRODUCTION

8.1.1. The cost estimates for each of the four routes designed have been used to enable an initial economic appraisal to be undertaken, considering the potential benefits and deriving a Benefit to Cost Ratio (BCR) against the estimated scheme costs.

8.1.2. This chapter of the report details this process, describing the methodology employed, tools used and the approach taken to calculating a BCR for each corridor. The production of a BCR for each route is intended to inform decision making on next steps for the Scarborough LCWIP, linked to the potential for attracting funding from DfT (and/or other potential sources) in the future.

8.2. ACTIVE MODE APPRAISAL TOOLKIT

8.2.1. The DfT's Active Mode Appraisal Toolkit (AMAT) has been utilised to appraise each of the proposed schemes. The tool streamlines the process set out in the DfT's Transport Analysis Guidance (TAG) Unit A5-1 'Active Mode Appraisal'[5]., ensuring that the calculation of benefits is in accordance with DfT guidance and its value for money can be consistently compared against other proposed schemes.

8.2.2. The DfT AMAT calculates impacts linked to an increase in cycle and walking use; these benefits relate to three key areas:

- Mode shift
- Health and;
- Journey quality.

8.2.3. In order to calculate the impacts, the AMAT requires the user to input a number of scheme specific variables:

- Scheme opening year;
- Last year of funding;
- Type of area scheme is located;
- Number of walking and cycle journeys per day without the proposed scheme;
- Number of walking and cycle journeys per day with the proposed scheme;
- The average proportion of a trip which uses the scheme infrastructure;
- Current walking and cycling infrastructure for the route;
- Proposed new walking and cycling infrastructure;
- Average length of journey;
- Proportion using the walking and cycling scheme to commute to work;
- Appraisal period; and

[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/275394/webtag-tag-unit-a5-1-active-mode-appraisal.pdf

- Number of days the scheme data is applicable.

8.2.4. A number of assumptions are also included within the AMAT where the DfT has provided default values based on DfT defined sources and research, such as:

- The decay rate (0.00%);
- The average cycling speed (15km/h) and walking speed (5km/h);
- The proportions otherwise using a car (11%) and a taxi (8%);
- The percentage of return trips (90%); and
- The background growth rate in trips and the period over which this growth rate applies (0.75% per year for 20 years).

8.2.5. These values were retained unless specified elsewhere as part of the appraisal.

8.2.6. The methodology for calculating the scheme specific inputs is set out in the following section. The outputs of the AMAT will feed into an initial BCR focussing on the value for money of the active mode infrastructure.

8.3. BENEFIT CALCULATION METHODOLOGY

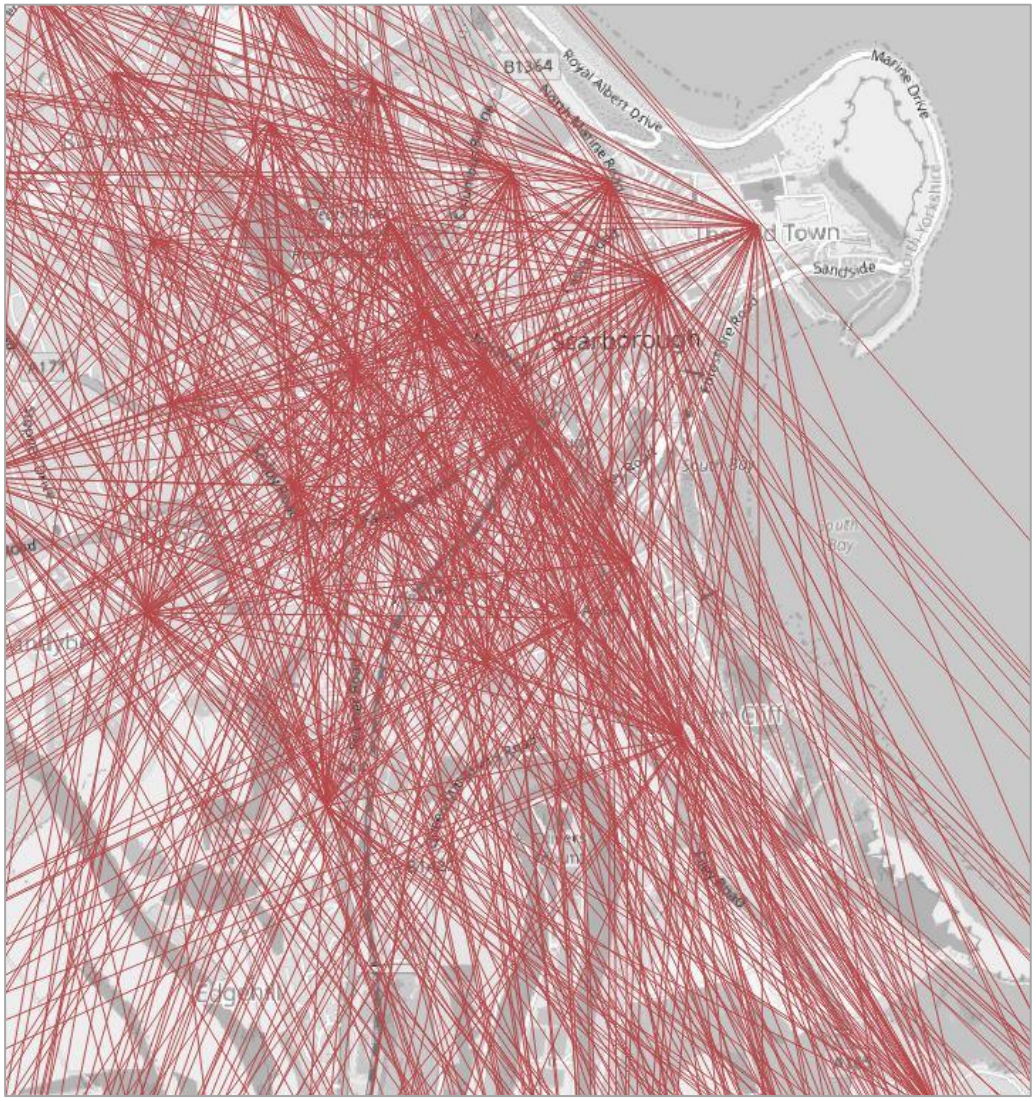
CALCULATING BASE DEMAND

Baseline Commuting Trip Estimation

8.3.1. Census 2011 Journey to Work data at Lower-Super Output Area (LSOAs) level was analysed to establish the baseline number of walking and cycling trips that may use the existing and proposed pedestrian and cycle facilities.

8.3.2. Census 2011 Journey to Work data for the North Yorkshire County Council area was obtained from the DfT Propensity to Cycle Tool (PCT). The base demand has been obtained by downloading the straight-line commuting flows at LSOA-level and plotting these in a GIS. The data contains information about commuters' origin and destinations, visualised by straight lines between these, as represented in Figure 8-1.

Figure 8-1 – Straight Line Data in PCT



8.3.3. Spatial analysis has been undertaken in a GIS in order to identify the baseline demands for cycling and walking commuting trips. The PCT straight lines in the near vicinity of each proposed route have been selected, followed by a manual desktop process in order to determine which commuters could potentially use sections of the corridor as part of their journey to work. When entirely new routes are proposed, such as a bridge, underpass, or off-highway route, the straight lines intersecting the new link have been selected. Those straight line represent existing commuters who have the potential to change their route to work.

8.3.4. All input data behind the filtered journeys is then extracted for further calculations, such as mode of travel and average distance travelled. Where new network is proposed as part of a specific corridor, there is a potential issue related to double counting origin-destination pairs on a single corridor; these duplicates have been removed for precision of the demand calculations. Summation of all these journeys gives the total number of existing cycle and pedestrian users that could reasonably be expected to utilise the route.

8.3.5. Average trip lengths for cycling and walking have been calculated and further divided by the full distance of the proposed corridor. These proportions were used as corridor-specific values for the average proportion of a trip which uses the scheme infrastructure. In the case when the average distance between the origin-destination points is larger than the full length of the corridor, the average proportion of a trip which uses the scheme infrastructure has been capped at 100%, as per best practice.

8.3.6. This process estimates the number of one-way commuting trips travelling by foot or bicycle. However, the AMAT requires the total number of all trips to calculate the total benefits, including return, for all purposes; as such, this number needs to be converted to total number of trips, where the outbound and the inbound journeys are counted as separate trips.

8.3.7. DfT's guidance in TAG Unit A5.1 sets out an assumption that 90% of trips are part of a return journey using the same route, and to avoid double counting when converting the number of trips to commuting individuals the formula below is used:

$$((No.\,of\ Trips\ * 90\%)/2) + (No.\,of\ Trips * 10\%)$$

8.3.8. Therefore, to ensure consistency with this assumption, the reverse of the formula was used to convert the identified one-way trips into two-way; this is equivalent to dividing the number of individuals by 0.55 to provide a total number of commuting trips.

Trip Purpose Ratio

8.3.9. The methodology set out above calculates the number of commuting trips that could be expected to occur. However, the scheme also aims to improve the walking and cycling experience for all trip purposes and therefore consideration of the number of other trips need to be included in the base demand.

8.3.10. To calculate the ratio of trips for each purpose, National Travel Survey (NTS) 2018 data has been utilised; the NTS breaks down trip purpose into the following categories:

- Commuting;
- Business;
- Education/escort education;
- Shopping;
- Other escort;
- Personal business;
- Leisure; and
- Other (including just walk).

8.3.11. By calculating the proportion of trips used for each purpose, a ratio of commuting trip to other non-commuting trip purposes can be determined. Non-commuting trips have been considered as a combination of business, education/escort education, shopping, other escort, personal business, leisure and other (including just walk) trips.

8.3.12. The following ratios were therefore determined:

- Cycling commuting trips to other purposes: **1: 2.0**
- Walking commuting trips to other purposes: **1:13.1**

8.3.13. These ratios were applied to the estimated number of commuting trips to determine the number of non-commuting trips that could be expected to occur on the proposed routes. The commuting and non-commuting trips have then been summed to give the base demand for both walking and cycling.

Annualisation

8.3.14. To account for the fact that some active mode trips being assessed are commuter trips and, therefore, do not occur every day, an annualisation factor is applied to the trip estimation, determining an average number of days over which the data is applicable. Since the schemes are designed to benefit all trip purposes, rather than just commuting, simply using the average number of working days for an individual is not considered appropriate, and instead used as a starting point in the calculation of an annualisation factor.

8.3.15. The number of working days has been estimated by excluding all 52 weekends throughout the year and the assumed 25 days of annual leave, thus, becoming 236 working days of the year. This can be represented by the following equation:

$$236 = 365 - 52 * 2 - 25$$

8.3.16. This number has been multiplied by the proportion of commuting trips expected based on the National Travel Survey (2018), which is 0.3 for cycling and 0.1 for walking respectively. However, since the scheme considers all types of trips, the remaining proportions of non-commuting trips, i.e. 0.7 for cycling and 0.9 for walking, have been multiplied by a full year, assumed to be 365 days. The number for commuting and non-commuting trips have then been summed for cycling and walking and an average of the two figures was calculated, giving an average of 336 days during which the scheme will be applicable. This can be represented by the following equation:

$$336 = ((236 * 0.3 + 365 * 0.7) + (236 * 0.1 + 365 * 0.9))/2$$

'Without Scheme' Demand

8.3.17. The approach set out above provides the estimated number of trips for all purposes on an average day currently being undertaken by active modes on the corridor routes without the scheme proposals. Table 8-1 presents the base demand inputted into the AMAT based on the above methodology.

Table 8-1 – Scarborough Estimated Active Mode Base Demand (Trips)

Town	Location	Walking Demand	Cycling Demand
Scarborough	Corridor 1: Eastfield to Scarborough	6,828	422
	Corridor 2: Eastfield to Cayton	5,006	227
	Corridor 3: Cinder Track	12,887	688
	Corridor 4: Scarborough Central Corridor	15,942	780

CALCULATING CHANGE IN ACTIVE MODE DEMAND

Approach

8.3.18. WebTAG Unit A5.1 sets out three different approaches that can be taken in estimating the change in demand as a result of active mode infrastructure interventions including:

- Approach 1 – Comparative Study: this includes researching other schemes that have been implemented elsewhere to see what level of impact they had in terms of uplifts in walking and cycling trip numbers.
- Approach 2 - Estimating from Disaggregate Mode Choice Models: uses a model to forecast the impacts of improvements in the attractiveness of cycling for commuting trips of 7.5 miles or less.
- Approach 3 – Sketch Plan Method: this considers the approximate elasticity estimate for the change in demand for cycling in a district, based on a change in the proportion of route that has facilities for cycle traffic.

8.3.19. For the purposes of this study, 'Approach 1 – Comparative Study' was deemed to be the most applicable for forecasting changes in active mode demand, based upon the baseline data available and the type of proposed infrastructure included within the scheme.

8.3.20. Approach 1 is explained as follows in TAG Unit A5.1:

> *"The least complex and costly approach to estimating future levels of cycling and walking is through comparisons with similar schemes. Larger proposals are likely to have greater demand changes and afford better potential for comparison with existing schemes. Examples could include river crossings or the creation of other significant links in a network that reduce time and distance, or comprehensive urban centre networks that significantly change the balance between motor traffic and walking and cycling generalised costs.*
>
> *The difficulty with this method is the many other transport system and socio-economic differences and changes that may exist between the two study areas. Forecasting and valuing benefits form only part of the decision-making process and, depending on other*

policy aspirations, there may be sufficient confidence in an approach based on comparative study."

8.3.21. Within the AMAT, the key factors that the appraisal considers are changes in infrastructure provision along each route, and how these are likely to impact on demand for walking and cycling trips in that location. The active mode facilities proposed in Scarborough comprise a mix of interventions along linear routes, and also enhancements within core central destination locations and areas of pedestrianised public realm that will cater for all types of journey (e.g. commuting, business, leisure).

8.3.22. Given the multi-faceted nature of the scheme proposals, it was considered that comparison with similar schemes implemented elsewhere would provide the most realistic level of change estimates for both walking and cycling. Approach 2 and Approach 3 were not considered appropriate, as these focus on either just commuting trips or just changes in overall facilities for cyclists.

Forecasting Future Numbers of Cycling Trips

8.3.23. In order to estimate the uplift in demand resulting from the implementation of the scheme, a desktop research exercise reviewing comparative studies was conducted. This sought to find appropriate and comparable packages of interventions that had been implemented in other relevant locations in order to gauge the level of uptake that may be possible following such interventions.

8.3.24. Desk-based research on cycling uplifts post-implementation of cycle infrastructure schemes was undertaken which identified a range in uplifts achievable; a summary of some of the findings are set out below:

- Post implementation of the London Greenway cycle routes through parks, green spaces and lightly trafficked streets showed an average of 18% increase in cycling between 2010-2013.
- A study of the implementation of cycle infrastructure in Copenhagen showed that the construction of off-road segregated cycle tracks resulted in 18-20% increase in cycle/moped traffic and a decrease of car traffic on those roads, whereas cycle lanes resulted in a 5-7% increase.
- There is generally a 48% increase in cycle usage due to implementation of off-road cycle tracks.
- Evaluation of the Government's 'Sustainable Travel Towns' project, implemented in Darlington, Peterborough and Worcester, showed an average of 26% to 30% increase in cycling trips resulting from improved infrastructure.
- Similarly, the Cycling Towns initiative evaluation indicated a 27% increase in cycling from the baseline cycling numbers and a 4% increase per annum.
- A public realm improvement in Darlington town centre, referred to in Manual for Streets 2 also showed the number of cyclists to have increased by 30%.
- Data relating to the Skellingthorpe Sustrans Cycle Route in Lincoln showed a 25% increase in cycle numbers over a two-year period (2012-14).
- There is generally 10% increase in cycle rates due to implementation of 20mph zone.
- An update report on a cycle schemes within Lincoln showed a 92% increase in cyclist numbers on Doddington Road and 97% increase on Station Road following improvements to infrastructure.
- Norwich Pink Pedalway 17% to 29% across the route which is a mixed strategic 'pedalway' route including a contraflow route into the city centre, new on-road cycle lanes and cycle tracks, and sections of roads closed to vehicular traffic.
- The Pont y Werin Bridge connecting Cardiff and Penarth carries over 1,300 journeys every day, with a growth in trips across the scheme network of 86% following the opening of the bridge.

- General improvements such as resurfacing on the A452 North Solihull Network, the Riverside Path, the Silkin Way, the Birmingham towpaths, have resulted in an average of 137% increase in cycling.
- Improvements and provision of new bridge infrastructure with examples like the Reading Thames Bridge, the Millennium Bridge York and Glasgow bridge have shown an increase in cycling of averagely 31%.

8.3.25. Based on the above findings and considering how comparable they are with the proposals for provision of infrastructure on the specified cycle corridors, the core scenario uplifts that were considered most appropriate for each element of the proposals are set out in Table 8-2, together with the resulting increase in cycle demand, recognising that there will be a greater propensity for cycling if appropriate cycle facilities are provided.

Table 8-2 – Estimated Uplifts in Cycling Demand – Trips

Scheme Element	Core Scenario		
-	Uplift	Increase in Demand	Notes
Corridor 1: Eastfield to Scarborough	68%	287	Percentage change is based on the average percentage increase following implementation an off-road segregated cycle tracks, general improvements (resurfacing, etc.) and mixture of quiet routes through parks, green spaces and lightly trafficked streets.
Corridor 2: Eastfield to Cayton	48%	17	Percentage change is based on the average percentage increase in demand following implementation of off-road segregated cycle track.
Corridor 3: Cinder Track	57%	392	Percentage change is the average increase in demand due to general improvements (resurfacing, etc.), off-road segregated cycle track, mixture of quiet routes through parks, green spaces and lightly trafficked streets and shared space.
Corridor 4: Scarborough Central Corridor	55%	429	Percentage change is the average increase in demand due to general improvements (resurfacing, etc.), off-road segregated cycle track, on-road non-segregated cycle lane and 'Sustainable Travel Towns' project.

Forecasting Future Numbers of Walking Trips

8.3.26. The same approach that was used for estimating uplifts in cycling trips (set out above) was used for estimating future walking trips. The findings included:

- The evaluation of the Government's 'Sustainable Travel Towns' project showed a 13% to 18% increase in walking trips as a result of improved pedestrian facilities, resulting in an average of about 16%.
- The Living Streets report "The Pedestrian Pound" stated that evaluations of pedestrian improvements in Coventry and Bristol showed a 25% increase in footfall on Saturdays. In Wanstead, a 98% increase in trips was due to enhancement of walking routes between its two

stations, bus terminus, library and high street. In Kelso, there was a 28% increase in trips due to better placement of street furniture and general public realm improvements)

- Pedestrianisation and public realm improvements in Exeter city centre saw footfall increase by around 30% between 2002 and 2010.
- Sheffield city centre public realm improvements saw a 35% increase in footfall.
- There is generally a 29% increase of walking demand following public realm improvements.
- The target of the scheme in Wilcox Road, Lambeth, London was to improve pedestrian journey experience by improving the public realm. This included ensure the footways were paved with higher quality materials and removing obstructive street furniture. Between 2009 and 2011 the number of pedestrians using the footways on Wilcox Road increased by 57%.
- The New Road development in Brighton and Hove was designed to increase shared space in the city centre. This included widening paths and improving the public realm by providing more outdoor private and public seating. Between 2007 and 2010 there was a huge shift in pedestrians and cyclists with a 162% increase of people walking and 22% of people cycling. The reduction in traffic volumes was recorded to be 93%.

8.3.27. Therefore, it can be assumed that improvements proposed as part of any public realm improvements will also be beneficial in increasing pedestrian trips. The schemes also included a number of measures designed specifically for the benefit of pedestrians. Table 8-3 sets out the percentage and numerical trip uplifts applied to each corridor based on the proposed infrastructure provision.

Table 8-3 – Estimated Uplifts in Walking Demand – Trips

Scheme Element	Core Scenario		
-	Uplift	Increase in Demand	Notes
Corridor 1: Eastfield to Scarborough	23%	1,571	Percentage change is based on the average increase in walking trips recorded as part of the 'Sustainable Travel Towns' and due to public realm improvements.
Corridor 2: Eastfield to Cayton	16%	801	Percentage change is based on the average increase in walking demand recorded due to the 'Sustainable Travel Towns' project.
Corridor 3: Cinder Track	16%	2,062	Percentage change is based on the average increase in walking demand recorded due to the 'Sustainable Travel Towns' project.
Corridor 4: Scarborough Central Corridor	16%	2,551	Percentage change is based on the average increase in walking demand recorded due to the 'Sustainable Travel Towns' project.

8.3.28. Using the approaches and uplifts set out above the total number of additional cycle and walking trips is then input into the AMAT to represent the 'with scheme demand'.

Sensitivity Tests for Demand

8.3.29. Changes in the levels of uplift could be expected from the scheme proposals due to uncertainty over the schemes' impact. In order to illustrate the sensitivity of the forecast uplifts, three different scenarios have been investigated:

- Core - which is used within the AMAT calculations for BCR;
- Low -which presents a 'worst case' scenario of low forecast uplift with the proposed infrastructure; and
- High - which presents an optimistic scenario of high demand increase

8.3.30. The High and Low scenarios are estimated to assess the level of change in benefits, by deviating the Core scenario uplift by +/-50% respectively.

CALCULATION OF BENEFITS

8.3.31. The AMAT calculates benefits in relation to a range of impacts linked to an increase in active mode use; these benefits relate to three key areas: mode shift, health and journey quality.

8.3.32. Table 8-4 presents each of these indicators and the way in which they are appraised based upon their impacts.

Table 8-4 – Impacts appraised using the Active Mode Appraisal Toolkit

Benefit Area	Benefit	Impacts Assessed
Health	Reduced risk of premature death	Improved health and gaining life years due to increased physical activity.
	Absenteeism	Reduced levels of absenteeism from employment due to increased physical activity.
Journey Quality	Journey Ambience	Improved experience due to the provision of cycle infrastructure and the environmental conditions on route.
Mode Shift	Congestion benefit	Reduced vehicle kilometres reduce the level of congestion experienced by road users.
	Infrastructure	Reduced vehicle kilometres travelled reducing the impact on infrastructure.
	Accidents	This reflects the effect of reducing vehicle kilometres on road safety. It is not the direct benefit of increased cycle safety.
	Local Air Quality	Reflects a reduction in vehicle kilometres resulting in less pollutants emitted.
	Noise	Reflects a reduction in vehicle kilometres resulting in reduced environmental noise, impacting on annoyance, sleep disturbance and health.
	Greenhouse gases	Reflects a reduction in vehicle kilometres resulting in reduced greenhouse gases emitted.
	Indirect tax	Reflects a reduction in vehicle kilometres resulting in decrease of indirect tax revenue, such as fuel duty. This number will be negative.

8.3.33. The majority of benefits are typically attributed to health; this refers to how increased physical activity through walking and cycling can have a significant positive impact on health, on an individual and wider-society basis. Individual health benefits are calculated along with the economic benefits of reduced absenteeism from work; the latter is based upon research which shows that people who regularly travel via active modes have fewer short-term illness related absences from work and thus increased output. As such, absenteeism benefits are only applied to the proportion of trips associated with commuter journeys.

8.3.34. Journey quality, in the context of the AMAT, relates primarily to the perception of safety. For pedestrians, the values related to increased journey quality include provision of street lighting, kerb level, crowding, pavement evenness, information panels, benches, and directional signage. For cyclists, new infrastructure results in large benefits, particularly if predominantly segregated provision is proposed.

8.3.35. Mode shift reflects the economic benefits that can be realised as a result of reduced car kilometres resulting from the scheme proposals. These comprise of estimates related to decongestion, collisions, greenhouse gas, air quality, noise, infrastructure and indirect tax benefits.

Appraisal Period

8.3.36. WebTAG Unit A5.1 recommends that it is not appropriate to adopt a typical 60-year appraisal period (recommended for large-scale infrastructure projects) due to the typically shorter project lives of cycling and walking schemes. A more realistic appraisal period of 20 years has therefore been assumed in accordance with the AMAT default value.

Present Value Benefits

8.3.37. The summation of the benefits, associated with the provision of new active mode infrastructure, provides the Present Value Benefits (PVB) of a scheme which is then considered against the Present Value Costs (PVC) to provide a resulting BCR. The Present Value Costs are obtained from the cost estimates in Chapter 7.

8.4. ECONOMIC APPRAISAL RESULTS

8.4.1. The Benefit Cost Ratio (BCR) summarises the relationship between the relative costs and benefits of the proposed scheme. If a BCR is greater than 1.0, this means that the benefits exceed the costs. For example, a BCR of 2.0 means that for every £1 spent on the scheme, £2 of benefits will be realised.

8.4.2. Table 8-5 presents the outputs of the AMA, setting out the BCRs for each corridor based upon the core uplift scenario for all user trips. BCR categories as defined in TAG are shown in Table 8-6.

Table 8-5 – Scheme BCRs

Corridor	Core scenario
	All users
Corridor 1	3.35
Corridor 2	2.20
Corridor 3	8.27
Corridor 4	2.32

Table 8-6 – BCR categories

BCR	BCR categories
Equal to 4 or above	Very high
Between 2 and 4	High
Between 1.5 and 2	Medium
Between 1 and 1.5	Low
Between 0 and 1	Poor

8.4.3. It can be seen from the resulting BCRs that the proposals for all corridors result in high or very high scenarios, which indicates positive returns on investments.

8.4.4. The scheme on Corridor 3 (Cinder Track Connections) results in a very high BCR, representing significant returns on investments. This is likely due to the off-road nature of the scheme, central location, and multiple connection points, which could reassign trips from other routes.

8.4.5. Analysis of Monetised Costs and Benefits (AMCB) tables (output from the AMAT) are included in Appendix E and provide more detail regarding the division of benefits.

SENSITIVITY TESTING

8.4.6. TAG A5.1 recommends undertaking sensitivity testing, due to the fact that appraisal of cycling and walking schemes can be highly sensitive to the forecasts and assumptions used. High and Low demand scenarios have been tested in order to understand the difference in BCRs if the schemes do not deliver the uplifts as predicted, or if uplift is considerably higher than what could be typically expected.

8.4.7. An additional 'Seasonal Uplift' scenario has also been tested, considering how the potential change in the population of Scarborough in the summer peak season would subsequently affect the predicted demand increase.

Table 8-7 – Scheme BCRs (Sensitivity Tests)

Corridor	Low scenario	High scenario	Seasonal scenario
	All users	All users	All users
Corridor 1	1.92	4.78	4.35
Corridor 2	1.22	3.19	2.87
Corridor 3	4.72	11.82	10.76
Corridor 4	1.35	3.28	3.01

8.4.8. While the BCR varies with the change in demand, the low demand scenario still gives BCR values with positive returns for all 4 corridors. The high demand scenario indicates very high benefits for Corridor 1 and Corridor 3 and high benefits for Corridor 2 and Corridor 4. Corridor 4 records a very high BCR ratio in all scenarios, including the low demand scenario.

8.4.9. Due to the general population increase in Scarborough during peak holiday season, it is anticipated that more individuals will use the proposed scheme infrastructure. The seasonal uplift scenario gives higher BCRs than the core scenario and indicates very high benefits for Corridor 1 and Corridor 3 and high benefits for Corridor 2 and Corridor 4.

8.4.10. Overall, the sensitivity test shows that the BCRs remain robust and that the schemes would deliver positive value for money, particularly in relation to Corridor 1 and Corridor 3 where the BCRs remain medium, high or very high in all uplift scenarios.

8.5. SUMMARY

8.5.1. The Economic Appraisal has identified that all of the proposed routes could achieve a BCR above 1, demonstrating that they would generate a positive return on investment.

8.5.2. Corridors 1 and Corridor 3 are shown to provide the highest level of benefits even when sensitivity testing is carried out.

8.5.3. The sensitivity testing has positive results even in the low uplift scenario as BCRs of all corridors remain higher than 1, indicating that all schemes deliver more benefits than costs.

8.5.4. The seasonal sensitivity test indicates very high overall returns to investments of the scheme, indicating that the schemes could return greater value for money due to seasonal usage fluctuations.

9. SUMMARY AND NEXT STEPS

9.1. SUMMARY

9.1.1. Phase 1 of the Scarborough LCWIP project involved the development of a cycle network, informed by a detailed evidence review and key stakeholder engagement. Whilst the long-term aspiration for NYCC and SBC is to deliver the entirety of the network, it is recognised that in the short term this will not be financially viable. As such, four priority corridors were identified for further development work during the first 2-3 years of the network plan, should funding become available. These were:

- Corridor 1: Eastfield to Scarborough;
- Corridor 2: Eastfield & Cayton Central Spine
- Corridor 3: Cinder Track Connection; and
- Corridor 4: Scarborough Central Corridor.

9.1.2. This report has detailed the development of these priority corridors identifying preferred routing alignments and developing concepts leading to the production of preliminary designs, high-level cost estimates and initial value for money assessment.

9.2. NEXT STEPS

FURTHER DEVELOPMENT OF SCHEME OPTIONS

9.2.1. Phase 2 of the Scarborough LCWIP has developed schemes up to the feasibility stage; should funding be made available, the scheme options should be taken forward to the detailed design stage, in line with WebTAG guidance, with cost estimates reforecast to account for greater certainty in regard to design, delivery and maintenance. Likewise, economic appraisal should be revisited, following greater certainty of costs and inputs.

9.2.2. Synergies with ongoing workstreams should be explored and considered in further detail, particularly the Future High Streets Fund, Scarborough Critical Junctions project, the Cinder Track and South Cliff improvement schemes, and the realignment of the NCN Route 1. Other immediate opportunities include a number of proposed and committed developments, particularly Middle Deepdale.

PHASING AND REVIEWING OF THE SCARBOROUGH LCWIP NETWORK

9.2.3. As agreed during Phase 1, the identification of these four priority corridors acts as the first phase of network development under the Scarborough LCWIP, assumed to cover the first 2-3 year period of the plan, which ultimately seeks to provide a delivery programme for cycle an pedestrian infrastructure in alignment with the Local Plan period.

9.2.4. It is recommended that additional corridors from the LCWIP are taken forward for development under future phases of the plan, commensurate to the level of detail provided in this report. As in this instance, these corridors should be identified using appropriate stakeholder engagement processes.

9.2.5. It is also recommended that the Scarborough LCWIP be reviewed and updated where necessary every four to five years to reflect progress made with implementation. The LCWIP should also be updated should there be significant changes in local, regional (LEP, County, etc), or national circumstances, such as the publication of new policies or strategies, major new development sites, or new sources of funding made available.

FUNDING MECHANISMS

9.2.6. High level consideration has been given to the potential funding sources that could be pursued in the delivery of the Scarborough LCWIP. The schemes identified could potentially be supported by multiple funders and future funding opportunities including, but not limited to:

- Private developer contributions (e.g. Section 106);
- Future High Streets Fund;
- Towns Fund;
- Future iterations of Access Fund-type funding;
- Integrated Transport Block;
- Maintenance funding;
- Local Growth Fund and synergies with potential large local major schemes;
- National Productivity Investment Fund (NPIF);
- Housing Infrastructure Fund (HIF);
- Pinch Point Funding;
- Private financing initiatives;
- Other innovative fiscal mechanisms to help fund investment in infrastructure, including:
  - Business rates retention;
  - Reprioritisation of Vehicle Excise Duty; and
- Other government funding streams not yet announced.

INTEGRATION AND APPLICATION

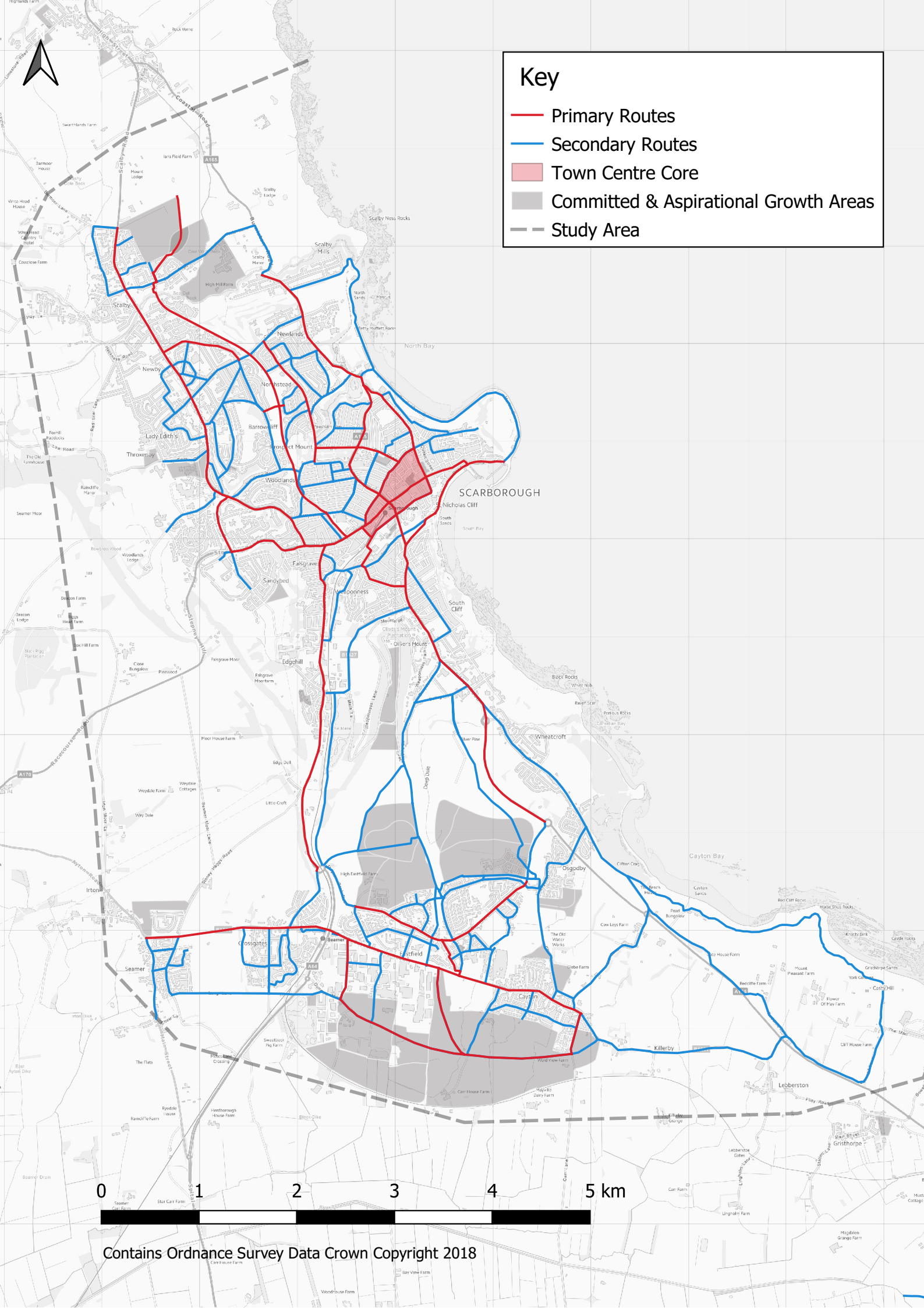
9.2.7. For the Scarborough LCWIP to be successful it is essential that it forms part of an integrated response to creating better places, safer streets and more reliable journeys. There should be a clear link between the LCWIPs and other strategic transport planning documents, such as NYCC's Local Transport Plan, and local cycling strategies.

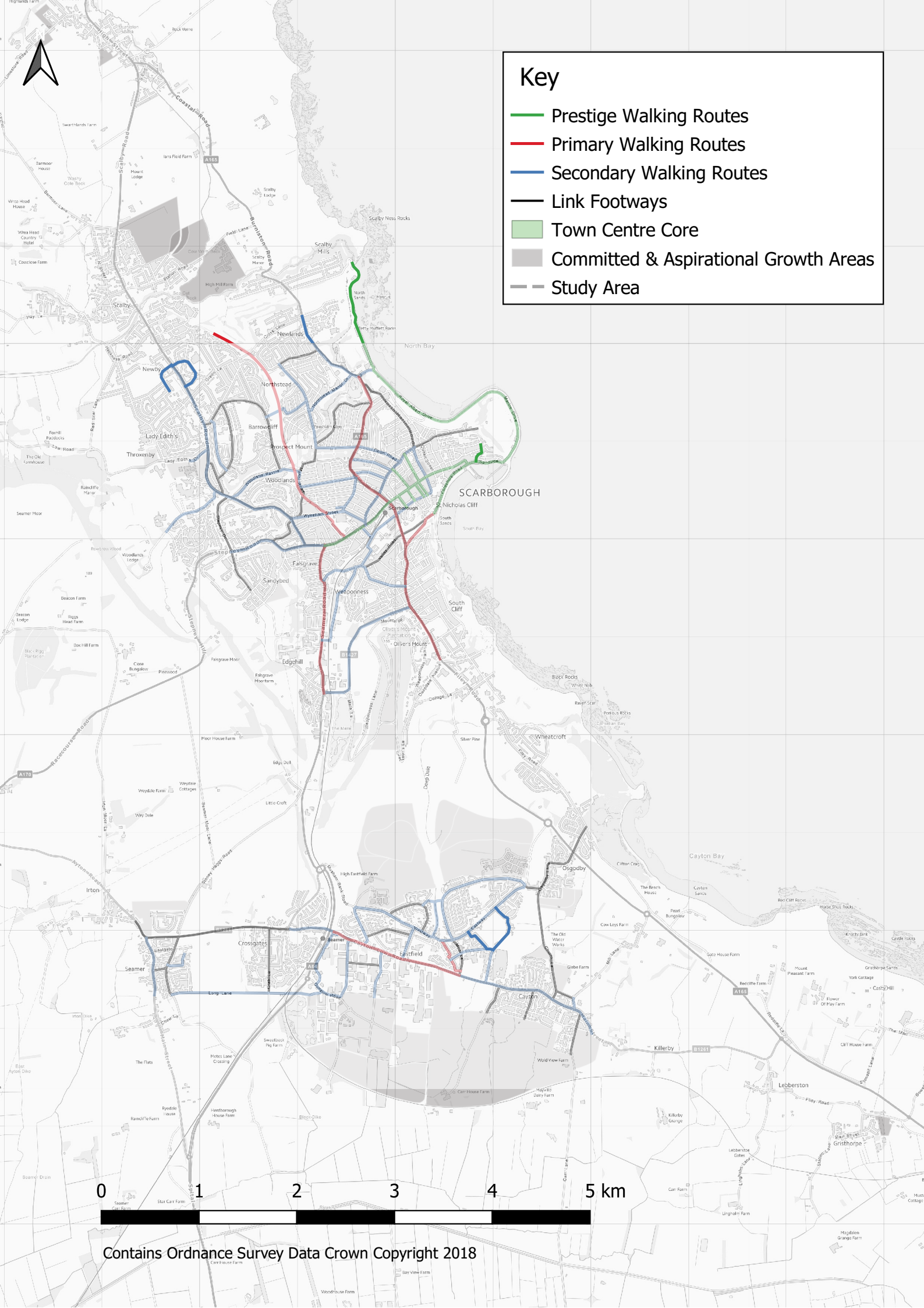
9.2.8. It is also recommended that SBC consider incorporating the Scarborough LCWIP into their Supplementary Planning Documents (SPDs) where this would build upon and provide more guidance on the policies in the Local Plan. Likewise, SBC should also consider referring to the LCWIP in relevant Area Action Plans and Neighbourhood Plans.

9.2.9. The LCWIP should also help NYCC and SBC consider the impact of planning applications and other proposed land use changes on existing and planned cycle infrastructure. This has been considered in the development of the network in the evidence base and in the identification of corridor priorities, but should also be considered in regards to potentially securing funding from developers, aiding the identification of further development sites and supporting active travel throughout the town (including references to the Scarborough LCWIP in travel plans and transport assessments).

Appendix A

LCWIP NETWORK PLANS




Key
Prestige Walking Routes
Primary Walking Routes
Secondary Walking Routes
Link Footways
Town Centre Core
Committed & Aspirational Growth Areas
Study Area
SCARBOROUGH
Scalby
Newlands
Newby
Northstead
Barrowcliff
Prospect Mount
Throxenby
Lady Edith's
Woodlands
Falsgrave
Sandybed
Weaponness
South Cliff
Oliver's Mount
Edgehill
Wheatcroft
Osgodby
Cayton
Eastfield
Seamer
Crossgates
Irton
Killerby
Lebberston
Gristhorpe
Cayton Bay
North Bay
0
1
2
3
4
5 km
Contains Ordnance Survey Data Crown Copyright 2018

Appendix B

ROUTE SELECTION TOOL OUTPUTS

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:
- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

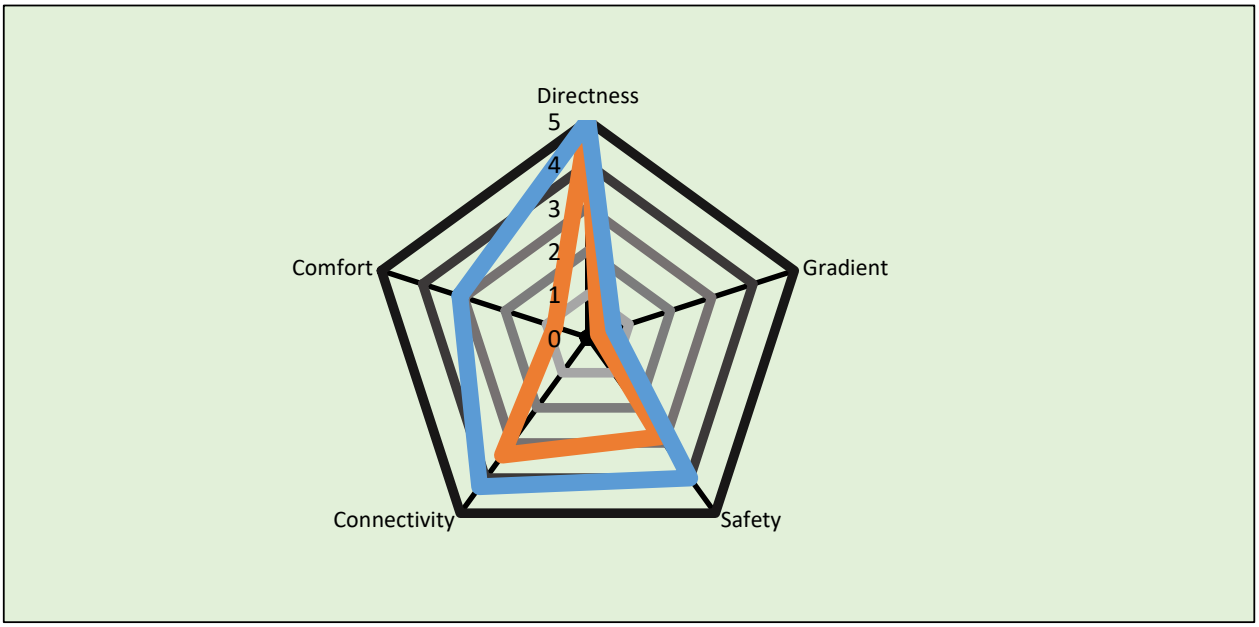
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Middle Deepdale Connections Route 1a - Existing and potential improvements
Overall Length	4.06km
Name of Assessor(s)	Howard Kinneavy
Date of Assessment	11 April 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	0.25	0.62
Safety	2.83	4.00
Connectivity	3.35	4.25
Comfort	0.80	3.10



Number of Existing Critical Junctions/Crossings	64
Number of Potential Critical Junctions/Crossings	50
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	5.27	5.27
Cycle Route Length (km)	4.06	4.10
Ratio	0.77	0.78
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	100	12.2	0	0.32	100	12.2	0
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	186	8.2	0	0.21	186	8.2	0
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	15	11.8	0	0.46	15	11.8	0
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	64	7.6	1	0.63	64	7.6	1
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	100	7.1	0				
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	50	8.1	1	0.41	50	8.1	1
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	22	11.1	0	0.79	22	11.1	0
8	Middle Deepdale (upper)	Merry Dale	0.56	50	12	0	0.56	50	12	0
9	Filey Rd (alt section 5)	Jackson's Lane					0.77	40	8.1	2
10										

Gradient Score for Route	**Existing**	**Potential**
	0.25	0.62

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table						
Maximum Grade along each section (%)	**Maximum slope (m)**					
	15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2	5	5	5	5	5	5
2	5	5	5	5	5	4
3	5	5	5	5	4	3
4	5	5	5	4	3	2
5	5	5	4	3	2	1
6	5	4	3	2	1	0
7	4	3	2	1	0	0
8	3	2	1	0	0	0
9	2	1	0	0	0	0
10	1	0	0	0	0	0
> 10	0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each

AADT - Average Annualised Daily Traffic

			Existing Route				Potential Route				
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Proposed intervention**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	30	>5000	1	0.32	20	>5000	2	Cycle Street
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	30	>5000	1	0.21	20	>5000	2	Cycle Street
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	30	>5000	1	0.46	20	>5000	2	Permit cycling
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	N/A	N/A	5	0.63	N/A	N/A	5	Segregated cycle track
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	30	<2500	3					Segregated cycle track
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	30	<2500	3	0.41	20	<2500	4	Segregated cycle track
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	N/A	N/A	3	0.79	N/A	N/A	4	Segregated cycle track
8	Middle Deepdale (upper)	Merry Dale	0.56	N/A	N/A	3	0.56	N/A	N/A	5	
9	Filey Rd (alt section 5)	Jackson's Lane					0.77	N/A	N/A	5	
10											

Safety Score for Route	**Existing**	**Potential**
	2.83	4.00

Safety Scores Table			**Motor Traffic Speed**		
			20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores	**Motor Traffic Volume**	**<2500**	4	3	2
		2500-5000	3	2	1
		>5000	2	1	0
Route physically protected from motor vehicles or off highway completely	n/a		5		
Unlit routes	n/a		Deduct 1 point		
Routes without passive surveillance	n/a		Deduct 1 point		

Notes: Speed - Measured 85th percentile speed if known, otherwise speed limit

Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	3	9.4	5	0.32	3	9.4	5
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	3	14.3	5	0.21	3	14.3	5
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	13	28.3	5	0.46	13	28.3	5
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	6	9.5	5	0.63	6	9.5	5
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	2	2.7	3			#DIV/0!	
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	1	2.4	3	0.41	1	2.4	3
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	0	0.0	0	0.79	4	5.1	5
8	Middle Deepdale (upper)	Merry Dale	0.56	2	3.57	4	0.56	6	10.71	5
9	Filey Rd (alt section 5)	Jackson's Lane					0.77	1	1.30	2
10										

Connectivity Score for Route	**Existing**	**Potential**
	3.35	4.25

Connectivity Scores Table	
Number of Accesses/ Connections per Km	**Score**
> 4	5
> 3, < 4	4
> 2, < 3	3
> 1, < 2	2
> 0, < 1	1
0	0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	*Smooth, Machine-laid bituminous or similar*	0	0	0.32	*Smooth, Machine-laid bituminous or similar*	0	0
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	*Smooth, Machine-laid bituminous or similar*	0	0	0.21	*Smooth, Machine-laid bituminous or similar*	0	0
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	*Smooth, Machine-laid bituminous or similar*	0	0	0.46	*Smooth, Machine-laid bituminous or similar*	0	0
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	*Smooth, Machine-laid bituminous or similar*	1.5	2	0.63	*Smooth, Machine-laid bituminous or similar*	1.8/2	4
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	*Smooth, Machine-laid bituminous or similar*	0	0				
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	*Smooth, Machine-laid bituminous or similar*	0	5	0.41	*Smooth, Machine-laid bituminous or similar*	0	5
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	*Unbound graded aggregate*	< 2.5m, ≥ 2m	0	0.79	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	5
8	Middle Deepdale (upper)	Merry Dale	0.56	*Unbound graded aggregate*	< 2.5m, ≥ 2m	0	0.56	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	5
9	Filey Rd (alt section 5)	Jackson's Lane					0.77	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	2
10										

Comfort Score for Route	**Existing**	**Potential**
	0.80	3.10

Comfort Scores Table		**Available Width**				
One-Way Track/Lane		≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane		≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type	**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
	Hand-laid bituminous or similar	4	3	2	1	0
	Concrete/stone paviours with filled level joints	3	2	1	0	0
	Concrete/stone flags	2	1	0	0	0
	Unbound graded aggregate	1	0	0	0	0
	Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m

Mixed traffic streets carrying more than 2500 vehicles per day score zero

Scores for Shared Use Paths (with pedestrians) are reduced:

By 1 where pedestrian flows exceed 100 per hour

By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)	23	23
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph	0	0
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)	7	6
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes	11	2
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes	4	0
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance	0	0
Congested conditions restriction visibility to cyclists passing stationary traffic	19	19
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority	0	0
Multi-lane roundabout where cycles mix with traffic	0	0

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**64**	**50**

Note 1 – ‘In potential conflict with’ means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:

- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

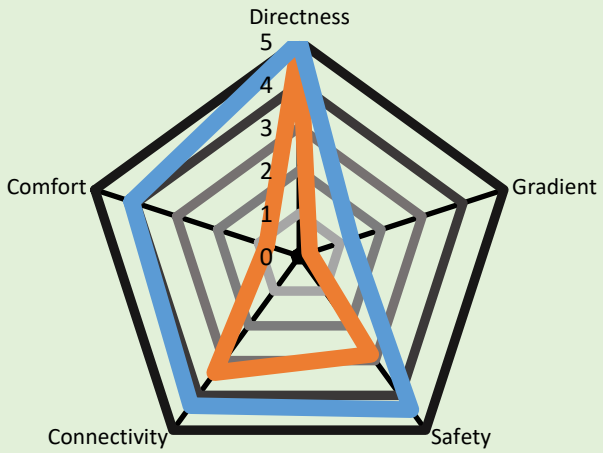
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	epdale Connections Route 1b - potential improvements (assessed against 1a)
Overall Length	4.06km
Name of Assessor(s)	Howard Kinneavy
Date of Assessment	11 April 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	0.25	1.27
Safety	2.83	4.41
Connectivity	3.35	4.30
Comfort	0.80	4.10



Number of Existing Critical Junctions/Crossings	64
Number of Potential Critical Junctions/Crossings	7
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	5.27	5.27
Cycle Route Length (km)	4.06	4.42
Ratio	0.77	0.84
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	100	12.2	0				
1.1	*Grand Hotel*	*Spa Chalet*					0.16	70	5	4
1.2	*Spa Chalet*	*Esplanade*					0.14	140	5	2
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	186	8.2	0				
2.1	*Esplanade*	*Esplanade Gardens*					0.45	120	6	1
2.2	*Esplanade Gardens*	*West Street*					0.19	190	<2	5
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	15	11.8	0				
3.1	*West Street*	*Holbeck Rd / Filey Rd*					0.79	150	6	1
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	64	7.6	1				
4.1	*Holbeck Rd / Filey Rd*	*Filey Rd / Deepdale Ave*					0.2	50	6	3
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	100	7.1	0				
5.1	Filey Rd (alt section 5)	Jackson's Lane					0.77	40	8.1	2
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	50	8.1	1	0.41	50	8.1	1
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	22	11.1	0	0.79	22	11.1	0
8	Middle Deepdale (upper)	Merry Dale	0.56	50	12	0	0.56	50	12	0

Gradient Score for Route	**Existing**	**Potential**
	0.25	1.27

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table						
Maximum Grade along each section (%)	**Maximum slope (m)**					
	15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2	5	5	5	5	5	5
2	5	5	5	5	5	4
3	5	5	5	5	4	3
4	5	5	5	4	3	2
5	5	5	4	3	2	1
6	5	4	3	2	1	0
7	4	3	2	1	0	0
8	3	2	1	0	0	0
9	2	1	0	0	0	0
10	1	0	0	0	0	0
> 10	0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each
AADT - Average Annualised Daily Traffic

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	30	>5000	1				
1.1	*Grand Hotel*	*Spa Chalet*					0.16	0	0	5
1.2	*Spa Chalet*	*Esplanade*					0.14	0	0	5
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	30	>5000	1				
2.1	*Esplanade*	*Esplanade Gardens*					0.45	20	<2500	4
2.2	*Esplanade Gardens*	*West Street*					0.19	20	<2500	4
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	30	>5000	1				
3.1	*West Street*	*Holbeck Rd / Filey Rd*					0.79	20	<2500	4
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	N/A	N/A	5				
4.1	*Holbeck Rd / Filey Rd*	*Filey Rd / Deepdale Ave*					0.2	N/A	N/A	5
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	30	<2500	3				
5.1	*Filey Rd (alt section 5)*	*Jackson's Lane*					0.77	N/A	N/A	5
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	30	<2500	3	0.41	20	<2500	4
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	N/A	N/A	3	0.79	N/A	N/A	4
8	Middle Deepdale (upper)	Merry Dale	0.56	N/A	N/A	3	0.56	N/A	N/A	5

Safety Score for Route	**Existing**	**Potential**
	2.83	4.41

Safety Scores Table			**Motor Traffic Speed**		
			20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores	**Motor Traffic Volume**	**<2500**	4	3	2
		2500-5000	3	2	1
		>5000	2	1	0
Route physically protected from motor vehicles or off highway completely	n/a		5		
Unlit routes	n/a		Deduct 1 point		
Routes without passive surveillance	n/a		Deduct 1 point		

Notes: Speed - Measured 85th percentile speed if known, otherwise speed limit
Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	3	9.4	5				
1.1	*Grand Hotel*	*Spa Chalet*					0.16	2	12.5	5
1.2	*Spa Chalet*	*Esplanade*					0.14	3	21.4	5
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	3	14.3	5				
2.1	*Esplanade*	*Esplanade Gardens*					0.45	5	11.1	5
2.2	*Esplanade Gardens*	*West Street*					0.19	2	10.5	5
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	13	28.3	5				
3.1	*West Street*	*Holbeck Rd / Filey Rd*					0.79	15	19.0	5
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	6	9.5	5				
4.1	*Holbeck Rd / Filey Rd*	*Filey Rd / Deepdale Ave*					0.2	2	10.0	5
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	2	2.7	3				
5.1	*Filey Rd (alt section 5)*	*Jackson's Lane*					0.77	1	1.3	2
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	1	2.4	3	0.41	1	2.4	3
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	0	0.0	0	0.79	4	5.1	5
8	Middle Deepdale (upper)	Merry Dale	0.56	2	3.57	4	0.56	6	10.71	5

Connectivity Score for Route	**Existing**	**Potential**
	3.35	4.30

Connectivity Scores Table	
Number of Accesses/ Connections per Km	**Score**
> 4	5
> 3, < 4	4
> 2, < 3	3
> 1, < 2	2
> 0, < 1	1
0	0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Valley Bridge Parade / Westwood	Valley Bridge Parade / Belmont Road	0.32	*Smooth, Machine-laid bituminous or similar*	0	0				
1.1	*Grand Hotel*	*Spa Chalet*					0.16	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	3
1.2	*Spa Chalet*	*Esplanade*					0.14	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	3
2	Valley Bridge Parade / Belmont Road	Ramshill Road / Albion Road	0.21	*Smooth, Machine-laid bituminous or similar*	0	0				
2.1	*Esplanade*	*Esplanade Gardens*					0.45	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	3
2.2	*Esplanade Gardens*	*West Street*					0.19	*Smooth, Machine-laid bituminous or similar*	Mixed	5
3	Ramshill Road / Albion Road	Filey Rd / Queen Margeret Rd	0.46	*Smooth, Machine-laid bituminous or similar*	0	0				
3.1	*West Street*	*Holbeck Rd / Filey Rd*					0.79	*Smooth, Machine-laid bituminous or similar*	Mixed	5
4	Filey Rd / Queen Margeret Rd	Filey Rd / Deepdale Ave	0.63	*Smooth, Machine-laid bituminous or similar*	1.5	2				
4.1	*Holbeck Rd / Filey Rd*	*Filey Rd / Deepdale Ave*					0.2	*Smooth, Machine-laid bituminous or similar*	1.8/2	4
5	Filey Rd / Deepdale Ave	Jackson's Lane	0.74	*Smooth, Machine-laid bituminous or similar*	Mixed	0				
5.1	*Filey Rd (alt section 5)*	*Jackson's Lane*					0.77	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	2
6	Jackson's Lane	Middle Deepdale Bridleway	0.41	*Smooth, Machine-laid bituminous or similar*	Mixed	5	0.41	*Smooth, Machine-laid bituminous or similar*	Mixed	5
7	Middle Deepdale Bridleway	Middle Deepdale (upper)	0.79	*Unbound graded aggregate*	< 2.5m, ≥ 2m	0	0.79	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	5
8	Middle Deepdale (upper)	Merry Dale	0.56	*Unbound graded aggregate*	< 2.5m, ≥ 2m	0	0.56	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	5

Comfort Score for Route	**Existing**	**Potential**
	0.80	4.10

Comfort Scores Table		**Available Width**				
One-Way Track/Lane		≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane		≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type	**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
	Hand-laid bituminous or similar	4	3	2	1	0
	Concrete/stone paviours with filled level joints	3	2	1	0	0
	Concrete/stone flags	2	1	0	0	0
	Unbound graded aggregate	1	0	0	0	0
	Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m

Mixed traffic streets carrying more than 2500 vehicles per day score zero

Scores for Shared Use Paths (with pedestrians) are reduced:

By 1 where pedestrian flows exceed 100 per hour

By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)	23	0
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph	0	0
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)	7	0
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes	11	2
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes	4	5
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance	0	0
Congested conditions restriction visibility to cyclists passing stationary traffic	19	0
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority	0	0
Multi-lane roundabout where cycles mix with traffic	0	0

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**64**	**7**

Note 1 – ‘In potential conflict with’ means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:
- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

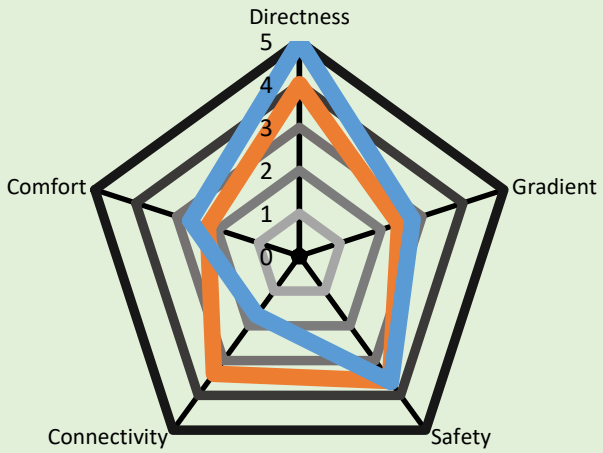
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Middle Deepdale Connections Route 2 - Existing and Parallel Route
Overall Length	4.06km
Name of Assessor(s)	Howard Kinneavy
Date of Assessment	11 April 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	4.00	5.00
Gradient	2.44	2.77
Safety	3.59	3.62
Connectivity	3.38	1.69
Comfort	2.24	2.67



Number of Existing Critical Junctions/Crossings	45
Number of Potential Critical Junctions/Crossings	5
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	5.79	5.79
Cycle Route Length (km)	6.05	5.51
Ratio	1.04	0.95
Directness Score for Route	4	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each
AADT - Average Annualised Daily Traffic

			Existing Route				Potential Route				
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Proposed intervention**
1	Westwood / Valley Bridge	Tesco access	0.26	30	2500-5000	2	0.26	20	2500-5000	3	Mandatory Cycle Lanes, Chicanes
2	Tesco access	Westwood Road / Valley Road	0.41	30	2500-5000	2	0.41	20	2500-5000	3	Cycle Street
3	Westwood Road / Valley Road	Valley Road	0.06	30	2500-5000	2	0.06	20	2500-5000	3	Cycle Street
4	Valley Road	Weaponess Valley Road	0.25	30	2500-5000	2	0.25	20	2500-5000	3	Cycle Street
5	Weaponess Valley Road	A64 (Peugeot)	0.66	30	<2500	3					
5.1	*Weaponess Valley Road*	*Queen Margaret Ind Estate*				3	0.62	20	<2500	4	Cycle Street
6	A64 (Peugeot)	A64 / Queen Margaret Rd	0.55	30	>5000	1					
6.1	*Queen Margaret Ind Estate*	*Mere Lane*					0.61	20	<2500	4	
7	A64 / Queen Margaret Rd	A64 P&R	0.94	N/A	N/A	5					
7.1	*Mere Lane*	*Musham Footpath*					0.82	20	<2500	4	
8	A64 P&R	Musham Bank Rbt	1	N/A	N/A	5					
8.1	*Musham Footpath*	*Musham Bank Rbt*					1	N/A	N/A	3	
9	Musham Bank Rbt	Capella Home Rbt	0.81	N/A	N/A	3	0.81	N/A	N/A	3	
10	Capella Home Rbt	Dale Edge	0.87	N/A	N/A	5					
10.1	*Capella Home Rbt*	*Merry Dale*					0.67	N/A	N/A	5	
11	Dale Edge	Merry Dale	0.24	30	2500-5000	3					

Safety Score for Route	**Existing**	**Potential**
	3.59	3.62

Safety Scores Table			**Motor Traffic Speed**		
			20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores	**Motor Traffic Volume**	**<2500**	4	3	2
		2500-5000	3	2	1
		>5000	2	1	0
Route physically protected from motor vehicles or off highway completely	n/a		5		
Unlit routes	n/a		Deduct 1 point		
Routes without passive surveillance	n/a		Deduct 1 point		

Notes: Speed - Measured 85th percentile speed if known, otherwise speed limit
Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Westwood / Valley Bridge	Tesco access	0.26	80	7.5	1	0.26	80	7.5	1
2	Tesco access	Westwood Road / Valley Road	0.41	50	12	0	0.41	50	12	0
3	Westwood Road / Valley Road	Valley Road	0.06	65	2.1	5	0.06	65	2.1	5
4	Valley Road	Weaponess Valley Road	0.25	254	2.3	4	0.25	254	2.3	4
5	Weaponess Valley Road	A64 (Peugeot)	0.66	25	7.1	3				
5.1	*Weaponess Valley Road*	*Queen Margaret Ind Estate*					0.62	100	2	5
6	A64 (Peugeot)	A64 / Queen Margaret Rd	0.55	125	3.5	4				
6.1	*Queen Margaret Ind Estate*	*Mere Lane*					0.61	40	6	3
7	A64 / Queen Margaret Rd	A64 P&R	0.94	55	5.2	3				
7.1	*Mere Lane*	*Musham Footpath*					0.82	170	1.5	5
8	A64 P&R	Musham Bank Rbt	1	30	4.1	5				
8.1	*Musham Footpath*	*Musham Bank Rbt*					1	230	2.5	4
9	Musham Bank Rbt	Capella Home Rbt	0.81	250	8	0	0.81	250		
10	Capella Home Rbt	Dale Edge	0.87	45	9.1	0				
10.1	*Capella Home Rbt*	*Merry Dale*					0.67	80	7	1
11	Dale Edge	Merry Dale	0.24	70	2.5	5				

Gradient Score for Route	**Existing**	**Potential**
	2.44	2.77

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table						
Maximum Grade along each section (%)	**Maximum slope (m)**					
	15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2	5	5	5	5	5	5
2	5	5	5	5	5	4
3	5	5	5	5	4	3
4	5	5	5	4	3	2
5	5	5	4	3	2	1
6	5	4	3	2	1	0
7	4	3	2	1	0	0
8	3	2	1	0	0	0
9	2	1	0	0	0	0
10	1	0	0	0	0	0
> 10	0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	Westwood / Valley Bridge	Tesco access	0.26	1	3.8	4	0.26	1	3.8	4
2	Tesco access	Westwood Road / Valley Road	0.41	4	9.8	5	0.41	4	9.8	5
3	Westwood Road / Valley Road	Valley Road	0.06	2	33.3	5	0.06	2	33.3	5
4	Valley Road	Weaponess Valley Road	0.25	1	4.0	4	0.25	1	4.0	4
5	Weaponess Valley Road	A64 (Peugeot)	0.66	0	0.0	0				
5.1	*Weaponess Valley Road*	*Queen Margaret Ind Estate*					0.62	0	0.0	3
6	A64 (Peugeot)	A64 / Queen Margaret Rd	0.55	3	5.5	5				
6.1	*Queen Margaret Ind Estate*	*Mere Lane*					0.61	1	1.64	5
7	A64 / Queen Margaret Rd	A64 P&R	0.94	3	3.2	4				
7.1	*Mere Lane*	*Musham Footpath*					0.82	0	0.0	0
8	A64 P&R	Musham Bank Rbt	1	3	3.0	4				
8.1	*Musham Footpath*	*Musham Bank Rbt*					1	0	0.00	0
9	Musham Bank Rbt	Capella Home Rbt	0.81	0	0.0	0	0.81	0		
10	Capella Home Rbt	Dale Edge	0.87	7	8.0	5				
10.1	*Capella Home Rbt*	*Merry Dale*					0.67		0.0	
11	Dale Edge	Merry Dale	0.24	4	16.7	5				

Connectivity Score for Route	**Existing**	**Potential**
	3.38	1.69

Connectivity Scores Table	
Number of Accesses/ Connections per Km	**Score**
> 4	5
> 3, < 4	4
> 2, < 3	3
> 1, < 2	2
> 0, < 1	1
0	0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Westwood / Valley Bridge	Tesco access	0.26	*Smooth, Machine-laid bituminous or similar*	0	0	0.26	*Smooth, Machine-laid bituminous or similar*	0	0
2	Tesco access	Westwood Road / Valley Road	0.41	*Smooth, Machine-laid bituminous or similar*	0	0	0.41	*Smooth, Machine-laid bituminous or similar*	0	0
3	Westwood Road / Valley Road	Valley Road	0.06	*Smooth, Machine-laid bituminous or similar*	0	0	0.06	*Smooth, Machine-laid bituminous or similar*	0	0
4	Valley Road	Weaponess Valley Road	0.25	*Smooth, Machine-laid bituminous or similar*	0	0	0.25	*Smooth, Machine-laid bituminous or similar*	0	0
5	Weaponess Valley Road	A64 (Peugeot)	0.66	*Smooth, Machine-laid bituminous or similar*	0	5				
5.1	*Weaponess Valley Road*	*Queen Margaret Ind Estate*					0.62	*Smooth, Machine-laid bituminous or similar*	0	5
6	A64 (Peugeot)	A64 / Queen Margaret Rd	0.55	*Smooth, Machine-laid bituminous or similar*	0	0				
6.1	*Queen Margaret Ind Estate*	*Mere Lane*					0.61	*Smooth, Machine-laid bituminous or similar*	0	5
7	A64 / Queen Margaret Rd	A64 P&R	0.94	*Smooth, Machine-laid bituminous or similar*	< 2m	0				
7.1	*Mere Lane*	*Musham Footpath*					0.82	*Smooth, Machine-laid bituminous or similar*	≥ 3.5m	5
8	A64 P&R	Musham Bank Rbt	1	*Smooth, Machine-laid bituminous or similar*	< 2.1m, ≥ 1.8m	4				
8.1	*Musham Footpath*	*Musham Bank Rbt*					1	*Unbound graded aggregate*	< 3m, ≥ 2.5m	0
9	Musham Bank Rbt	Capella Home Rbt	0.81	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	3	0.81	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	3
10	Capella Home Rbt	Dale Edge	0.87	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	3				
10.1	*Capella Home Rbt*	*Merry Dale*					0.67	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	3
11	Dale Edge	Merry Dale	0.24	*Smooth, Machine-laid bituminous or similar*	0	5				

Comfort Score for Route	**Existing**	**Potential**
	2.24	2.67

Comfort Scores Table		**Available Width**				
One-Way Track/Lane		≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane		≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type	**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
	Hand-laid bituminous or similar	4	3	2	1	0
	Concrete/stone paviours with filled level joints	3	2	1	0	0
	Concrete/stone flags	2	1	0	0	0
	Unbound graded aggregate	1	0	0	0	0
	Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m

Mixed traffic streets carrying more than 2500 vehicles per day score zero

Scores for Shared Use Paths (with pedestrians) are reduced:

By 1 where pedestrian flows exceed 100 per hour

By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)	9	2
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph	0	0
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)	4	0
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes	11	2
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes	3	1
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance	1	0
Congested conditions restriction visibility to cyclists passing stationary traffic	17	0
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority	0	0
Multi-lane roundabout where cycles mix with traffic	0	0

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**45**	**5**

Note 1 – 'In potential conflict with' means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:

- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

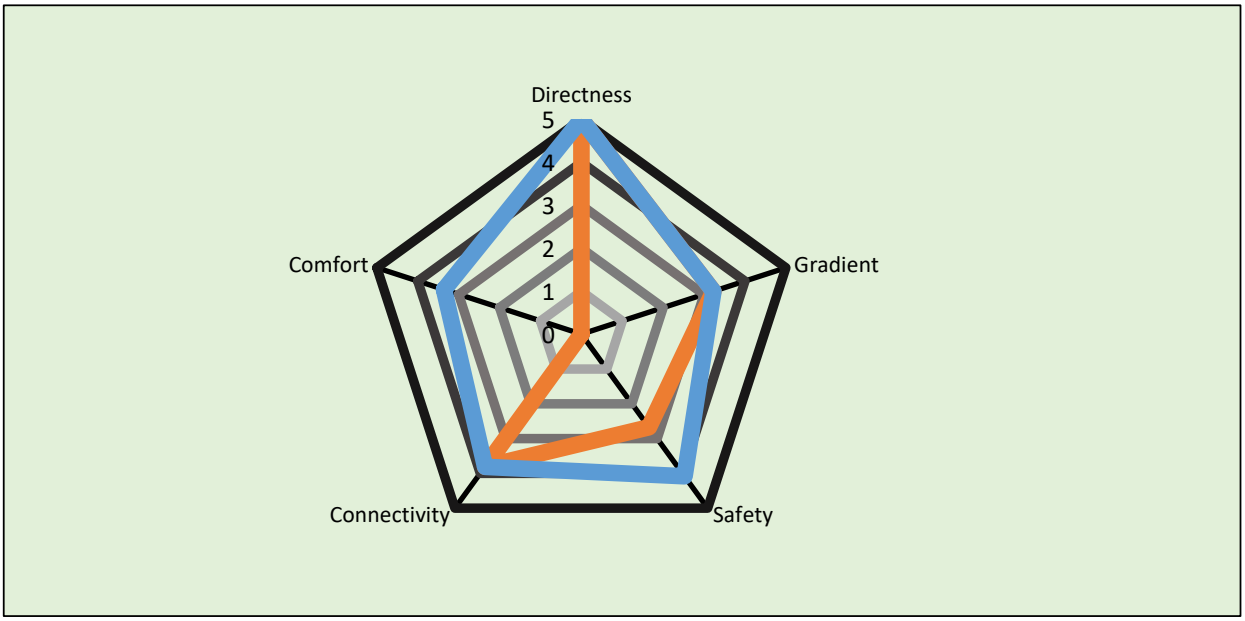
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Eastfield & Cayton Central Spine Route 1
Overall Length	1.13 km
Name of Assessor(s)	Andy Binder
Date of Assessment	16 April 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	3.23	3.23
Safety	2.67	4.08
Connectivity	3.81	3.81
Comfort	0.00	3.36



Number of Existing Critical Junctions/Crossings	14
Number of Potential Critical Junctions/Crossings	2
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	1.13	1.13
Cycle Route Length (km)	1.13	1.13
Ratio	1.00	1.00
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	154	4.4	3	0.52	154	4.4	3
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	202	3.5	2	0.2	202	3.5	2
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	344	3.2	3	0.34	344	3.2	3
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	248	0.8	5	0.25	248	0.8	5
5											
6											
7											
8											
9											
10											
11											
12											
13											

Gradient Score for Route	**Existing**	**Potential**
	3.23	3.23

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table

Maximum Grade along each section (%)		**Maximum slope (m)**					
		15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2		5	5	5	5	5	5
2		5	5	5	5	5	4
3		5	5	5	5	4	3
4		5	5	5	4	3	2
5		5	5	4	3	2	1
6		5	4	3	2	1	0
7		4	3	2	1	0	0
8		3	2	1	0	0	0
9		2	1	0	0	0	0
10		1	0	0	0	0	0
> 10		0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each
AADT - Average Annualised Daily Traffic

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	n/a	n/a	4	0.52	n/a	n/a	4
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	28	4,670	2	0.2	28	4,670	5
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	20	2,500-5,000	3	0.34	20	2,500-5,000	3
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	41	13,400	0	0.25	41	13,400	5
5											
6											
7											
8											
9											
10											

Safety Score for Route	**Existing**	**Potential**
	2.67	4.08

Safety Scores Table				**Motor Traffic Speed**		
				20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores		**Motor Traffic Volume**	**<2500**	4	3	2
			2500-5000	3	2	1
			>5000	2	1	0
Route physically protected from motor vehicles or off highway completely		n/a		5		
Unlit routes		n/a		Deduct 1 point		
Routes without passive surveillance		n/a		Deduct 1 point		

Notes:
Speed - Measured 85th percentile speed if known, otherwise speed limit
Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

				Existing Route				Potential Route			
Section Number	Link name	Section start point	Section end point	Section Length (km)	Total Connections (No.)	Connections per km	Score	Section Length (km)	Total Connections (No.)	Connections per km	Score
1	Dell path	Middle Deepdale path	Westway	0.52	1	1.9	2	0.52	1	1.9	2
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	4	20.0	5	0.2	4	20.0	5
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	3	8.8	5	0.34	3	8.8	5
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	3	12.0	5	0.25	3	12.0	5
5											
6											
7											
8											
9											
10											

Connectivity Score for Route	Existing	Potential
	3.81	3.81

Connectivity Scores Table		
Number of Accesses/ Connections per Km		Score
> 4		5
> 3, < 4		4
> 2, < 3		3
> 1, < 2		2
> 0, < 1		1
0		0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	*Unbound graded aggregate*	1.5	0	0.52	*Smooth, Machine-laid bituminous or similar*	3.5	5
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	*Smooth, Machine-laid bituminous or similar*	7	0	0.2	*Smooth, Machine-laid bituminous or similar*	2	4
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	*Smooth, Machine-laid bituminous or similar*	7	0	0.34	*Smooth, Machine-laid bituminous or similar*	n/a	0
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	*Smooth, Machine-laid bituminous or similar*	7	0	0.25	*Smooth, Machine-laid bituminous or similar*	2	4
5	Lowfield										
6	Burnside-Cayton Low Road path										
7											
8											
9											
10											

Comfort Score for Route	**Existing**	**Potential**
	-	3.36

Comfort Scores Table			**Available Width**				
One-Way Track/Lane			≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane			≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type		**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
		Hand-laid bituminous or similar	4	3	2	1	0
		Concrete/stone paviours with filled level joints	3	2	1	0	0
		Concrete/stone flags	2	1	0	0	0
		Unbound graded aggregate	1	0	0	0	0
		Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m
Mixed traffic streets carrying more than 2500 vehicles per day score zero
Scores for Shared Use Paths (with pedestrians) are reduced:
By 1 where pedestrian flows exceed 100 per hour
By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)	2	0
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph	2	0
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)	2	1
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes	4	0
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes	1	1
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance	2	0
Congested conditions restriction visibility to cyclists passing stationary traffic	1	0
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority	0	0
Multi-lane roundabout where cycles mix with traffic	0	0

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**14**	**2**

Note 1 – ‘In potential conflict with’ means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:

- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
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Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

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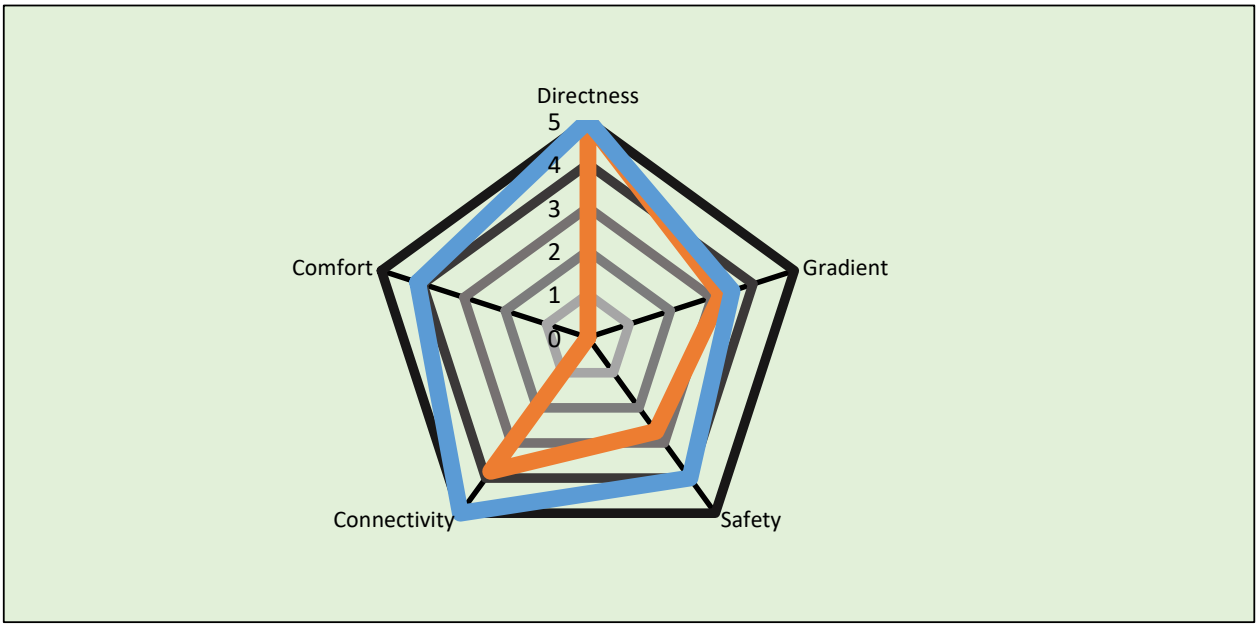
Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Eastfield & Cayton Central Spine Route 2
Overall Length	0.83 km
Name of Assessor(s)	Andy Binder
Date of Assessment	16 April 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	3.23	3.49
Safety	2.67	4.00
Connectivity	3.81	5.00
Comfort	0.00	4.12



Number of Existing Critical Junctions/Crossings	14
Number of Potential Critical Junctions/Crossings	2
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	1.13	1.13
Cycle Route Length (km)	1.13	0.83
Ratio	1.00	0.73
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	154	4.4	3	0.52	154	4.4	3
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	202	3.5	2				
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	344	3.2	3				
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	248	0.8	5				
5	Lowfield	Westway	Burnside					0.1	0	0	5
6	Burnside-Cayton Low Road path	Burnside	Cayton Low Road					0.21	206	1.6	4
7											
8											
9											
10											
11											
12											
13											

Gradient Score for Route	**Existing**	**Potential**
	3.23	3.49

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table							
Maximum Grade along each section (%)		**Maximum slope (m)**					
		15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2		5	5	5	5	5	5
2		5	5	5	5	5	4
3		5	5	5	5	4	3
4		5	5	5	4	3	2
5		5	5	4	3	2	1
6		5	4	3	2	1	0
7		4	3	2	1	0	0
8		3	2	1	0	0	0
9		2	1	0	0	0	0
10		1	0	0	0	0	0
> 10		0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each
AADT - Average Annualised Daily Traffic

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	n/a	n/a	4	0.52	n/a	n/a	4
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	28	4,670	2				
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	30	2,500-5,000	3				
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	41	13,400	0				
5	Lowfield	Westway	Burnside					0.1	20	<2,500	4
6	Burnside-Cayton Low Road path	Burnside	Cayton Low Road					0.21	n/a	n/a	4
7											
8											
9											
10											

Safety Score for Route	**Existing**	**Potential**
	2.67	4.00

Safety Scores Table				**Motor Traffic Speed**		
				20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores		**Motor Traffic Volume**	**<2500**	4	3	2
			2500-5000	3	2	1
			>5000	2	1	0
Route physically protected from motor vehicles or off highway completely		n/a		5		
Unlit routes		n/a		Deduct 1 point		
Routes without passive surveillance		n/a		Deduct 1 point		

Notes:
Speed - Measured 85th percentile speed if known, otherwise speed limit
Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	1	1.9	2	0.52	3	5.8	5
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	4	20.0	5				
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	3	8.8	5				
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	3	12.0	5				
5	Lowfield	Westway	Burnside					0.1	1	10.0	5
6	Burnside-Cayton Low Road path	Burnside	Cayton Low Road					0.21	2	9.5	5
7											
8											
9											
10											

Connectivity Score for Route	**Existing**	**Potential**
	3.81	5.00

Connectivity Scores Table		
Number of Accesses/ Connections per Km		**Score**
> 4		5
> 3, < 4		4
> 2, < 3		3
> 1, < 2		2
> 0, < 1		1
0		0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Dell path	Middle Deepdale path	Westway	0.52	*Unbound graded aggregate*	1.5	0	0.52	*Smooth, Machine-laid bituminous or similar*	3.5	4
2	Westway	West Way/Westway	Westway/Holme Hill	0.2	*Smooth, Machine-laid bituminous or similar*	7	0				
3	Holme Hill	Westway/Holme Hill	Holme Hill/Cayton Low Road	0.34	*Smooth, Machine-laid bituminous or similar*	7	0				
4	Cayton Low Road	Holme Hill/Cayton Low Road	Cayton Low Road/Burnside-Cayton Low Road path	0.25	*Smooth, Machine-laid bituminous or similar*	7	0				
5	Lowfield	Westway	Burnside					0.1	*Smooth, Machine-laid bituminous or similar*	7	5
6	Burnside-Cayton Low Road path	Burnside	Cayton Low Road					0.21	*Smooth, Machine-laid bituminous or similar*	3.5	4
7											
8											
9											
10											

Comfort Score for Route	**Existing**	**Potential**
	-	4.12

Comfort Scores Table			**Available Width**				
One-Way Track/Lane			≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane			≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type		**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
		Hand-laid bituminous or similar	4	3	2	1	0
		Concrete/stone paviours with filled level joints	3	2	1	0	0
		Concrete/stone flags	2	1	0	0	0
		Unbound graded aggregate	1	0	0	0	0
		Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m
Mixed traffic streets carrying more than 2500 vehicles per day score zero
Scores for Shared Use Paths (with pedestrians) are reduced:
By 1 where pedestrian flows exceed 100 per hour
By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)	2	0
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph	2	0
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)	2	1
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes	4	0
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes	1	1
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance	2	0
Congested conditions restriction visibility to cyclists passing stationary traffic	1	0
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority	0	0
Multi-lane roundabout where cycles mix with traffic	0	0

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**14**	**2**

Note 1 – ‘In potential conflict with’ means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:
- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

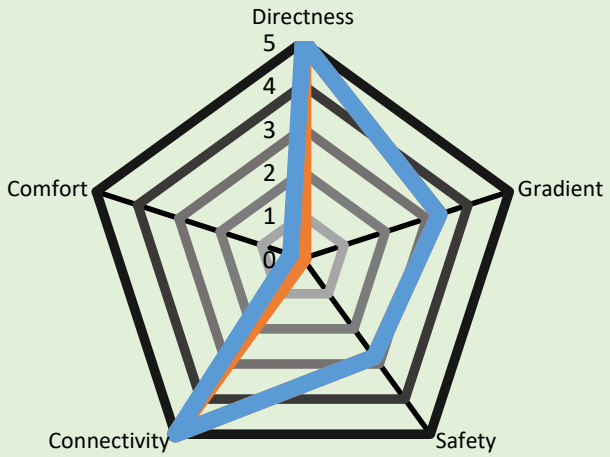
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Eastfield & Cayton Central Spine Route 3
Overall Length	0.83 km
Name of Assessor(s)	Andy Binder
Date of Assessment	16 April 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	3.30	3.30
Safety	2.80	2.80
Connectivity	5.00	5.00
Comfort	0.00	0.30



Number of Existing Critical Junctions/Crossings	5
Number of Potential Critical Junctions/Crossings	3
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	1.01	1.01
Cycle Route Length (km)	1.01	1.01
Ratio	1.00	1.00
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Dell path	Middle Deepdale path	Gouldings Close / Overdale	0.1	50	3.5	5	0.1	50	3.5	5
2	Overdale	Gouldings Close / Overdale	Overdale / Eastway / Westway	0.5	500	2	4	0.5	500	2	4
3	Moor Lane	Overdale / Eastway / Westway	Moor Lane / Cayton Low Road	0.4	250	4.5	2	0.4	250	4.5	2
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											

Gradient Score for Route	**Existing**	**Potential**
	3.30	3.30

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table

Maximum Grade along each section (%)		**Maximum slope (m)**					
		15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2		5	5	5	5	5	5
2		5	5	5	5	5	4
3		5	5	5	5	4	3
4		5	5	5	4	3	2
5		5	5	4	3	2	1
6		5	4	3	2	1	0
7		4	3	2	1	0	0
8		3	2	1	0	0	0
9		2	1	0	0	0	0
10		1	0	0	0	0	0
> 10		0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each
AADT - Average Annualised Daily Traffic

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	Dell path	Middle Deepdale path	Gouldings Close / Overdale	0.1	n/a	n/a	5	0.1	n/a	n/a	5
2	Overdale	Gouldings Close / Overdale	Overdale / Eastway / Westway	0.5	30	<2500	3	0.5	30	<2500	3
3	Moor Lane	Overdale / Eastway / Westway	Moor Lane / Cayton Low Road	0.4	30	2,500-5,000	2	0.4	30	2,500-5,000	2
4											
5											
6											
7											
8											
9											
10											

Safety Score for Route	**Existing**	**Potential**
	2.80	2.80

Safety Scores Table				**Motor Traffic Speed**		
				20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores		**Motor Traffic Volume**	**<2500**	4	3	2
			2500-5000	3	2	1
			>5000	2	1	0
Route physically protected from motor vehicles or off highway completely		n/a		5		
Unlit routes		n/a		Deduct 1 point		
Routes without passive surveillance		n/a		Deduct 1 point		

Notes:
Speed - Measured 85th percentile speed if known, otherwise speed limit
Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	Dell path	Middle Deepdale path	Gouldings Close / Overdale	0.1	3	30.0	5	0.1	3	30.0	5
2	Overdale	Gouldings Close / Overdale	Overdale / Eastway / Westway	0.5	4	8.0	5	0.5	4	8.0	5
3	Moor Lane	Overdale / Eastway / Westway	Moor Lane / Cayton Low Road	0.4	7	17.5	5	0.4	7	17.5	5
4											
5											
6											
7											
8											
9											
10											

Connectivity Score for Route	**Existing**	**Potential**
	5.00	5.00

Connectivity Scores Table		
Number of Accesses/ Connections per Km		**Score**
> 4		5
> 3, < 4		4
> 2, < 3		3
> 1, < 2		2
> 0, < 1		1
0		0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Dell path	Middle Deepdale path	Gouldings Close / Overdale	0.1	*Unbound graded aggregate*	1.5	0	0.1	*Smooth, Machine-laid bituminous or similar*	< 3m, ≥ 2.5m	3
2	Overdale	Gouldings Close / Overdale	Overdale / Eastway / Westway	0.5	*Smooth, Machine-laid bituminous or similar*	7	0	0.5	*Smooth, Machine-laid bituminous or similar*	7	0
3	Moor Lane	Overdale / Eastway / Westway	Moor Lane / Cayton Low Road	0.4	*Smooth, Machine-laid bituminous or similar*	7	0	0.4	*Smooth, Machine-laid bituminous or similar*	7	0
4											
5											
6											
7											
8											
9											
10											

Comfort Score for Route	**Existing**	**Potential**
	-	0.30

Comfort Scores Table			**Available Width**				
One-Way Track/Lane			≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane			≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type		**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
		Hand-laid bituminous or similar	4	3	2	1	0
		Concrete/stone paviours with filled level joints	3	2	1	0	0
		Concrete/stone flags	2	1	0	0	0
		Unbound graded aggregate	1	0	0	0	0
		Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m
Mixed traffic streets carrying more than 2500 vehicles per day score zero
Scores for Shared Use Paths (with pedestrians) are reduced:
By 1 where pedestrian flows exceed 100 per hour
By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)	1	1
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph	0	0
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)	2	1
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes	0	0
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes	1	1
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance	0	0
Congested conditions restriction visibility to cyclists passing stationary traffic	0	0
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority	1	0
Multi-lane roundabout where cycles mix with traffic	0	0

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**5**	**3**

Note 1 – 'In potential conflict with' means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:

- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

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Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

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Further Information

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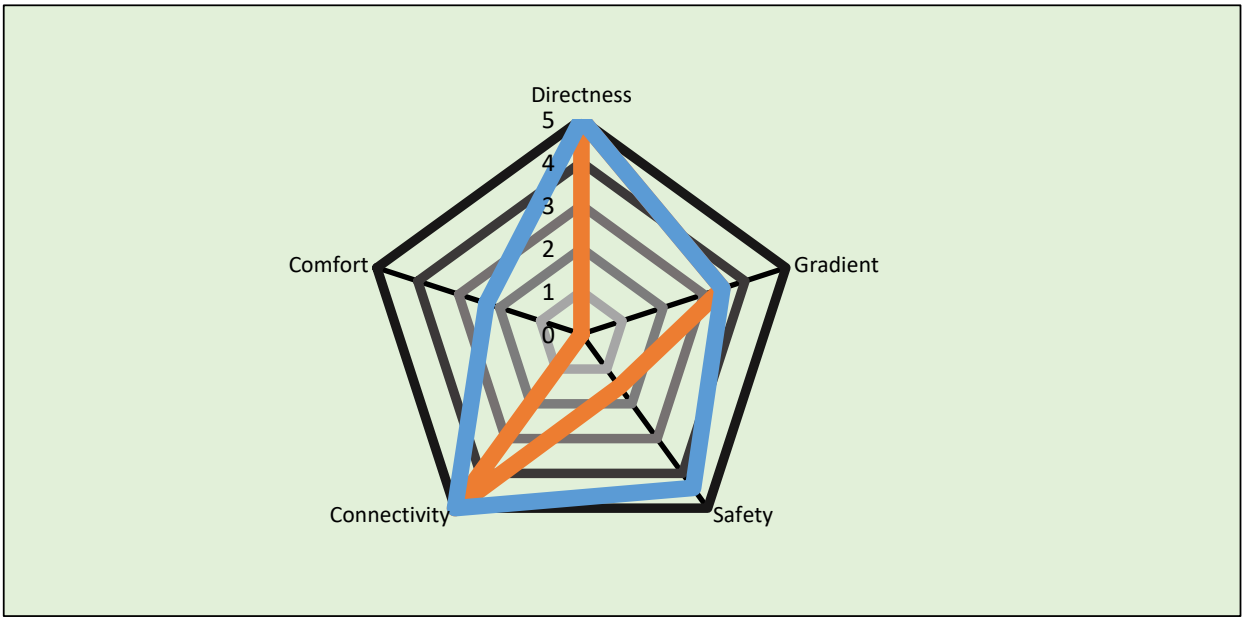
Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Central Corridor Route 1
Overall Length	3.79km
Name of Assessor(s)	Andy Binder
Date of Assessment	07 March 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	3.45	3.45
Safety	1.51	4.42
Connectivity	5.00	5.00
Comfort	0.00	2.32



Number of Existing Critical Junctions/Crossings	0
Number of Potential Critical Junctions/Crossings	0
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	3.79	3.79
Cycle Route Length (km)	3.79	3.79
Ratio	1.00	1.00
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	Sandside/Marine Drive island	Sandside/Eastborough	0.38	43	3.3	5	0.38	43	3.3	5
2	Sandside/Eastborough	Eastborough/St. Nicholas Street	0.48	235	8.5	0	0.48	235	8.5	0
3	Eastborough/St. Nicholas Street	Westborough/Valley Bridge Road	0.46	164	2.5	3	0.46	164	2.5	3
4	Westborough/Valley Bridge Road	A64/Commercial Street	0.62	54	3.4	5	0.62	54	3.4	5
5	A64/Commercial Street	A64/Manor Road island	0.69	50	3.1	5	0.69	50	3.1	5
6	A64/Manor Road island	Woodland Ravine/Scalby Road	0.64	113	6.1	1	0.64	113	6.1	1
7	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	71	3.3	5	0.52	71	3.3	5
8										
9										
10										

Gradient Score for Route	**Existing**	**Potential**
	3.45	3.45

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table						
Maximum Grade along each section (%)	**Maximum slope (m)**					
	15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2	5	5	5	5	5	5
2	5	5	5	5	5	4
3	5	5	5	5	4	3
4	5	5	5	4	3	2
5	5	5	4	3	2	1
6	5	4	3	2	1	0
7	4	3	2	1	0	0
8	3	2	1	0	0	0
9	2	1	0	0	0	0
10	1	0	0	0	0	0
> 10	0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each

AADT - Average Annualised Daily Traffic

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	Sandside/Marine Drive island	Sandside/Eastborough	0.38	30	<2,500	3	0.38	30	<2,500	3
2	Sandside/Eastborough	Eastborough/St. Nicholas Street	0.48	30	2,500-5,000	2	0.48	30	2,500-5,000	2
3	Eastborough/St. Nicholas Street	Westborough/Valley Bridge Road	0.46	0	0	5	0.46	0	0	5
4	Westborough/Valley Bridge Road	A64/Commercial Street	0.62	26	14,775	1	0.62	0	0	5
5	A64/Commercial Street	A64/Manor Road island	0.69	26	16,618	1	0.69	0	0	5
6	A64/Manor Road island	Woodland Ravine	0.64	32	14,353	0	0.64	0	0	5
7	Woodland Ravine	Old Scalby Road (opposite hospital)	0.52	31	18,803	0	0.52	0	0	5
8										
9										
10										

Safety Score for Route	**Existing**	**Potential**
	1.51	4.42

Safety Scores Table			**Motor Traffic Speed**		
			20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores	**Motor Traffic Volume**	**<2500**	4	3	2
		2500-5000	3	2	1
		>5000	2	1	0
Route physically protected from motor vehicles or off highway completely	n/a		5		
Unlit routes	n/a		Deduct 1 point		
Routes without passive surveillance	n/a		Deduct 1 point		

Notes: Speed - Measured 85th percentile speed if known, otherwise speed limit

Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	Sandside/Marine Drive island	Sandside/Eastborough	0.38	2	5.3	5	0.38	2	5.3	5
2	Sandside/Eastborough	Eastborough/St. Nicholas Street	0.48	5	10.4	5	0.48	5	10.4	5
3	Eastborough/St. Nicholas Street	Westborough/Valley Bridge Road	0.46	3	6.5	5	0.46	3	6.5	5
4	Westborough/Valley Bridge Road	A64/Commercial Street	0.62	8	12.9	5	0.62	8	12.9	5
5	A64/Commercial Street	A64/Manor Road island	0.69	10	14.5	5	0.69	10	14.5	5
6	A64/Manor Road island	Woodland Ravine	0.64	4	6.3	5	0.64	4	6.3	5
7	Woodland Ravine	Old Scalby Road (opposite hospital)	0.52	4	7.7	5	0.52	4	7.7	5
8										
9										
10										

Connectivity Score for Route	**Existing**	**Potential**
	5.00	5.00

Connectivity Scores Table	
Number of Accesses/ Connections per Km	**Score**
> 4	5
> 3, < 4	4
> 2, < 3	3
> 1, < 2	2
> 0, < 1	1
0	0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	Sandside/Marine Drive island	Sandside/Eastborough	0.38	*Smooth, Machine-laid bituminous or similar*	0	0	0.38	*Smooth, Machine-laid bituminous or similar*	0	0
2	Sandside/Eastborough	Newborough/St. Nicholas Street	0.48	*Smooth, Machine-laid bituminous or similar*	0	0	0.48	*Smooth, Machine-laid bituminous or similar*	0	0
3	Newborough/St. Nicholas Street	Westborough/Valley Bridge Road	0.46	*Smooth, Machine-laid bituminous or similar*	7.5	0	0.46	*Smooth, Machine-laid bituminous or similar*	7.5	3
4	Westborough/Valley Bridge Road	A64/Commercial Street	0.62	*Smooth, Machine-laid bituminous or similar*	0	0	0.62	*Smooth, Machine-laid bituminous or similar*	1.5	3
5	A64/Commercial Street	A64/Manor Road island	0.69	*Smooth, Machine-laid bituminous or similar*	0	0	0.69	*Smooth, Machine-laid bituminous or similar*	1.5	3
6	A64/Manor Road island	Woodland Ravine	0.64	*Smooth, Machine-laid bituminous or similar*	0	0	0.64	*Smooth, Machine-laid bituminous or similar*	1.5	3
7	Woodland Ravine	Old Scalby Road (opposite hospital)	0.52	*Smooth, Machine-laid bituminous or similar*	1.5	0	0.52	*Smooth, Machine-laid bituminous or similar*	1.5	3
8										
9										
10										

Comfort Score for Route	**Existing**	**Potential**
	-	2.32

Comfort Scores Table		**Available Width**				
One-Way Track/Lane		≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane		≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type	**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
	Hand-laid bituminous or similar	4	3	2	1	0
	Concrete/stone paviours with filled level joints	3	2	1	0	0
	Concrete/stone flags	2	1	0	0	0
	Unbound graded aggregate	1	0	0	0	0
	Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m

Mixed traffic streets carrying more than 2500 vehicles per day score zero

Scores for Shared Use Paths (with pedestrians) are reduced:

By 1 where pedestrian flows exceed 100 per hour

By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)		
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph		
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)		
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes		
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes		
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance		
Congested conditions restriction visibility to cyclists passing stationary traffic		
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority		
Multi-lane roundabout where cycles mix with traffic		

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**0**	**0**

Note 1 – 'In potential conflict with' means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:

- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

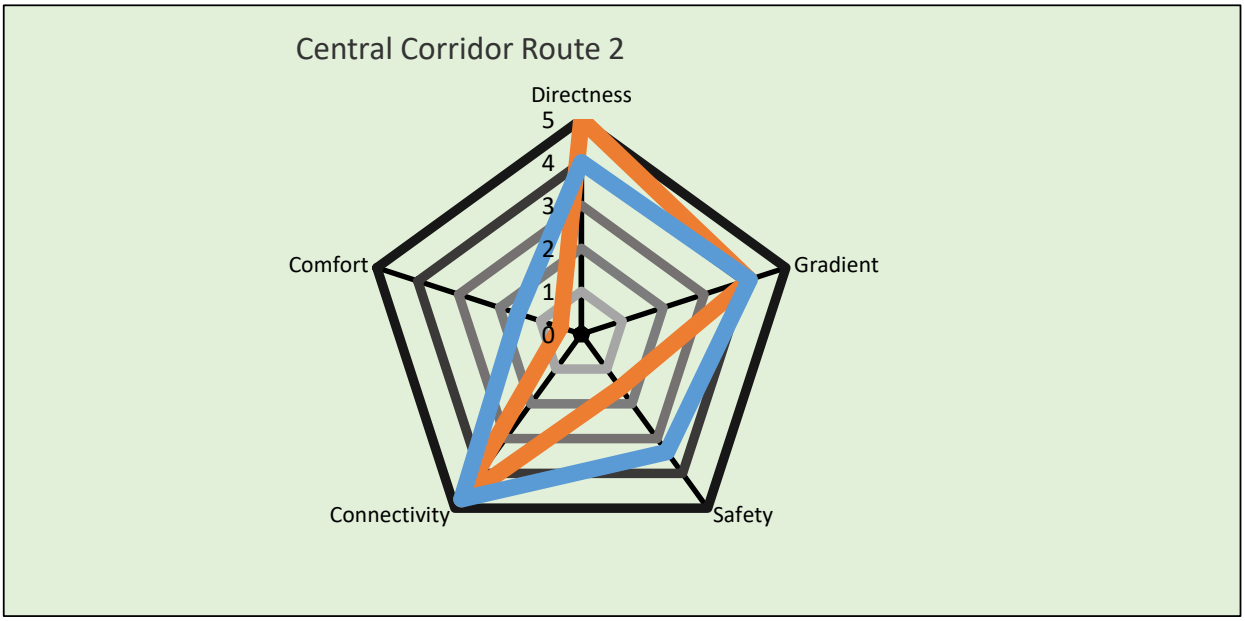
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Central Corridor Route 2
Overall Length	3.26km
Name of Assessor(s)	Andy Binder
Date of Assessment	07 March 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	4.00
Gradient	4.11	4.11
Safety	1.54	3.38
Connectivity	4.74	4.74
Comfort	0.52	1.56



Number of Existing Critical Junctions/Crossings	0
Number of Potential Critical Junctions/Crossings	0
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	2.94	2.94
Cycle Route Length (km)	2.94	3.26
Ratio	1.00	1.11
Directness Score for Route	5	4

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	St. Thomas Street/North Marine Road island	Victoria Road/Northway	0.61	220	3.2	3	0.61	220	3.2	3
2	Victoria Road/Northway	Victoria Road/Roscoe Street	0.32	60	3.1	5	0.32	60	3.1	5
3	Victoria Road/Roscoe Street	Manor Road/Wykeham Street	0.69	51	4.4	5	0.69	51	4.4	5
4	Manor Road/Wykeham Street	Manor Avenue/off-highway path	0.28	60	2	5	0.28	60	2	5
5	Manor Avenue/off-highway path	Woodland Ravine/Scalby Road	0.84	74	5.1	3	0.84	74	5.1	3
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	71	3.3	5	0.52	71	3.3	5
7										
8										
9										
10										

Gradient Score for Route	**Existing**	**Potential**
	4.11	4.11

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table						
Maximum Grade along each section (%)	**Maximum slope (m)**					
	15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2	5	5	5	5	5	5
2	5	5	5	5	5	4
3	5	5	5	5	4	3
4	5	5	5	4	3	2
5	5	5	4	3	2	1
6	5	4	3	2	1	0
7	4	3	2	1	0	0
8	3	2	1	0	0	0
9	2	1	0	0	0	0
10	1	0	0	0	0	0
> 10	0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each

AADT - Average Annualised Daily Traffic

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	St. Thomas Street/North Marine Road island	Castle Road/Valley Bridge Road	0.61	26	9,065	1	0.61	0	0	5
2	Castle Road/Valley Bridge Road	Victoria Road/Roscoe Street	0.32	20	4,479	2	0.32	20	4,479	2
3	Victoria Road/Roscoe Street	Manor Road/Wykeham Street	0.69	27	6,115	1	0.69	20	6,115	2
4	Manor Road/Wykeham Street	Manor Avenue/off-highway path	0.28	30	2,500-5,000	2	0.28	20	2,500-5,000	3
5	Manor Avenue/off-highway path	Woodland Ravine/Scalby Road	0.84	0	0	3	0.84	0	0	3
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	31	18,803	0	0.52	0	0	5
7										
8										
9										
10										

Safety Score for Route	**Existing**	**Potential**
	1.54	3.38

Safety Scores Table			**Motor Traffic Speed**		
			20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores	**Motor Traffic Volume**	**<2500**	4	3	2
		2500-5000	3	2	1
		>5000	2	1	0
Route physically protected from motor vehicles or off highway completely	n/a		5		
Unlit routes	n/a		Deduct 1 point		
Routes without passive surveillance	n/a		Deduct 1 point		

Notes: Speed - Measured 85th percentile speed if known, otherwise speed limit

Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	St. Thomas Street/North Marine Road island	Castle Road/Valley Bridge Road	0.61	8	13.1	5	0.61	8	13.1	5
2	Castle Road/Valley Bridge Road	Victoria Road/Roscoe Street	0.32	5	15.6	5	0.32	5	15.6	5
3	Victoria Road/Roscoe Street	Manor Road/Wykeham Street	0.69	3	4.3	5	0.69	3	4.3	5
4	Manor Road/Wykeham Street	Manor Avenue/off-highway path	0.28	2	7.1	5	0.28	2	7.1	5
5	Manor Avenue/off-highway path	Woodland Ravine/Scalby Road	0.84	3	3.6	4	0.84	3	3.6	4
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	4	7.7	5	0.52	4	7.7	5
7										
8										
9										
10										

Connectivity Score for Route	**Existing**	**Potential**
	4.74	4.74

Connectivity Scores Table	
Number of Accesses/ Connections per Km	**Score**
> 4	5
> 3, < 4	4
> 2, < 3	3
> 1, < 2	2
> 0, < 1	1
0	0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	St. Thomas Street/North Marine Road island	Castle Road/Valley Bridge Road	0.61	*Smooth, Machine-laid bituminous or similar*	7	0	0.61	*Smooth, Machine-laid bituminous or similar*	1.5	3
2	Castle Road/Valley Bridge Road	Victoria Road/Roscoe Street	0.32	*Smooth, Machine-laid bituminous or similar*	7	0	0.32	*Smooth, Machine-laid bituminous or similar*	7	0
3	Victoria Road/Roscoe Street	Manor Road/Wykeham Street	0.69	*Smooth, Machine-laid bituminous or similar*	7	0	0.69	*Smooth, Machine-laid bituminous or similar*	7	0
4	Manor Road/Wykeham Street	Manor Avenue/off-highway path	0.28	*Smooth, Machine-laid bituminous or similar*	7	0	0.28	*Smooth, Machine-laid bituminous or similar*	7	0
5	Manor Avenue/off-highway path	Woodland Ravine/Scalby Road	0.84	*Hand-laid bituminous or similar*	3	2	0.84	*Hand-laid bituminous or similar*	3	2
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	*Smooth, Machine-laid bituminous or similar*	1.5	0	0.52	*Smooth, Machine-laid bituminous or similar*	1.5	3
7										
8										
9										
10										

Comfort Score for Route	**Existing**	**Potential**
	0.52	1.56

Comfort Scores Table		**Available Width**				
One-Way Track/Lane		≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane		≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type	**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
	Hand-laid bituminous or similar	4	3	2	1	0
	Concrete/stone paviours with filled level joints	3	2	1	0	0
	Concrete/stone flags	2	1	0	0	0
	Unbound graded aggregate	1	0	0	0	0
	Unsurfaced	0	0	0	0	0

Notes:

Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m

Mixed traffic streets carrying more than 2500 vehicles per day score zero

Scores for Shared Use Paths (with pedestrians) are reduced:

By 1 where pedestrian flows exceed 100 per hour

By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)		
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph		
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)		
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes		
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes		
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance		
Congested conditions restriction visibility to cyclists passing stationary traffic		
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority		
Multi-lane roundabout where cycles mix with traffic		

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**0**	**0**

Note 1 – 'In potential conflict with' means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Local Cycling and Walking Infrastructure Plans

Route Selection Tool

Overview

The primary function of the Route Selection Tool (RST) is to assess the suitability of a route against a set of core design outcomes. The RST enables a route to be assessed in both its existing state and potential future state, if improvements were made.

Route Selection Tool Criteria

The RST uses a range of criteria to assess how well a route meets the core design outcomes, with scoring ranging from 5, being the highest, to 0, being the lowest.

The criteria are:
- directness
- gradient
- safety
- connectivity
- comfort

The number of 'critical junctions' are also recorded to enable a high-level evaluation of both links and junctions within one tool. A 'critical junction' is defined as one that has characteristics that are hazardous for cyclists e.g. high traffic volumes, lack of priority or segregation, crossing high speed on-off slip roads or large roundabouts.

How to use the RST

Criteria tabs contain:

Orange coloured fields require data to be inputted for reference.
Yellow coloured fields require scores to be calculated using data from the orange fields and by referring to the blue scoring tables.
Blue coloured fields contain the data required for scoring.
All other cells are protected to prevent deletion of formulas.

Summary tab

General information regarding the route can be entered at the top of the summary tab. The remaining fields will automatically be populated with the information from criteria tab. A description of improvements and indicative costs can be entered at the bottom summary tab. All other cells are protected.

Further Information

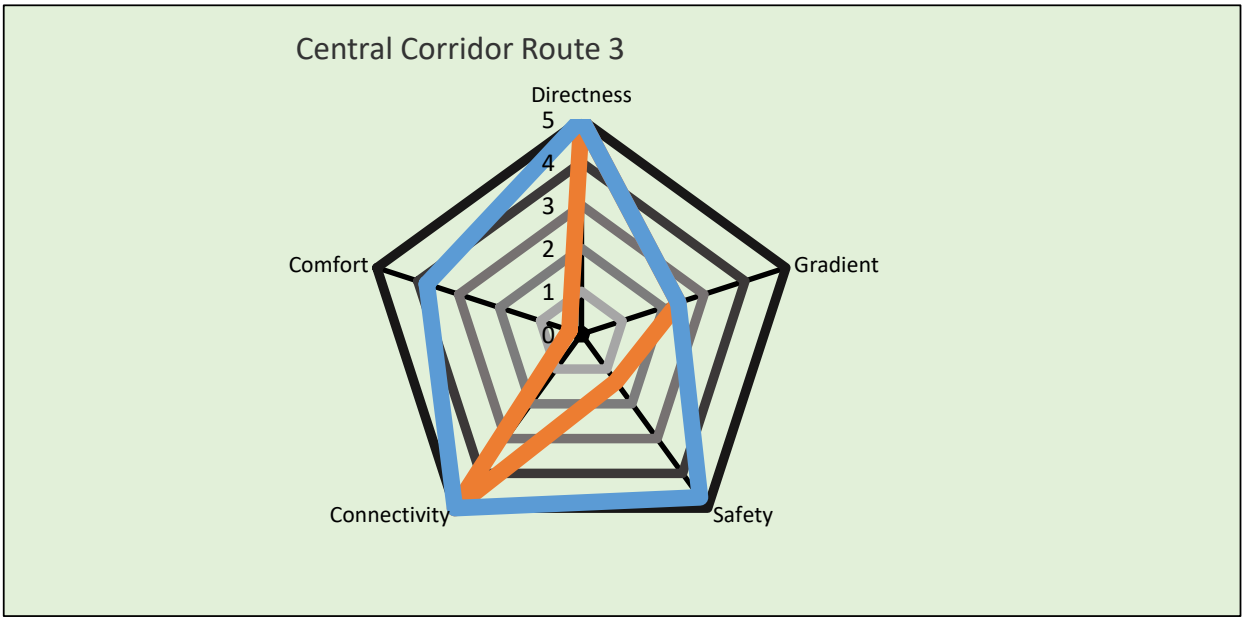
LCWIP Guidance (Annex B) provides a step-by-step guide on how to use the RST.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

ROUTE SUMMARY

Route Name	Central Corridor Route 3
Overall Length	3.26km
Name of Assessor(s)	Andy Binder
Date of Assessment	07 March 2019

	Performance Scores	
Criterion	**Existing**	**Potential**
Directness	5.00	5.00
Gradient	2.37	2.37
Safety	1.36	4.69
Connectivity	5.00	5.00
Comfort	0.29	3.78



Number of Existing Critical Junctions/Crossings	0
Number of Potential Critical Junctions/Crossings	0
Description of Improvements	See Section 5.3 of the Scarborough LCWIP Phase 2 project report
Indicative Cost	See Section 7.2 of the Scarborough LCWIP Phase 2 project report

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

DIRECTNESS

Assessed for the entire route length

	Existing Route	Potential Route
Motor Vehicle Route Length (km)	2.96	2.96
Cycle Route Length (km)	2.96	2.96
Ratio	1.00	1.00
Directness Score for Route	5	5

Directness Scores Table	
Length Factor	**Score**
≤ 1.0	5
> 1.0, ≤1.2	4
>1.2, ≤1.4	3
>1.4, ≤1.6	2
>1.6, ≤1.8	1
>1.8	0

Length Factor: Length of the cycle route divided by the corresponding shortest motor vehicle route

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

GRADIENT

Assessed for sections of route of similar characteristics - max 1km each

Google Earth elevation profile is a useful tool for obtaining data for this section

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**	**Section Length (km)**	**Max Slope (m)**	**Max Grade (%)**	**Score**
1	St. Thomas Street/North Marine Road island	Victoria Road/Northway	0.61	220	3.2	3	0.61	220	3.2	3
2	Victoria Road/Northway	Northway/Prospect Road	0.29	51	4.5	4	0.29	51	4.5	4
3	Northway/Prospect Road	Prospect Road/Manor Road	0.57	118	6.1	1	0.57	118	6.1	1
4	Prospect Road/Manor Road	Manor Road/Woodland Ravine	0.17	81	<1	5	0.17	81	<1	5
5	Manor Road/Woodland Ravine	Woodland Ravine/Scalby Road	0.8	120	6.8	0	0.8	120	6.8	0
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	71	3.3	5	0.52	71	3.3	5
7										
8										
9										
10										

Gradient Score for Route	**Existing**	**Potential**
	2.37	2.37

Note - Gradient may vary between existing and proposed (e.g. if zig-zag ramps are introduced to reduce gradient)

Gradient Scores Table

Maximum Grade along each section (%)	**Maximum slope (m)**					
	15m	**30m**	**50m**	**80m**	**150m**	**exceeds 150m**
<2	5	5	5	5	5	5
2	5	5	5	5	5	4
3	5	5	5	5	4	3
4	5	5	5	4	3	2
5	5	5	4	3	2	1
6	5	4	3	2	1	0
7	4	3	2	1	0	0
8	3	2	1	0	0	0
9	2	1	0	0	0	0
10	1	0	0	0	0	0
> 10	0	0	0	0	0	0

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

SAFETY

Assessed for sections of route of similar characteristics - max 1km each

AADT - Average Annualised Daily Traffic

				Existing Route				Potential Route			
Section Number	**Link name**	**Section start point**	**Section end point**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**	**Section Length (km)**	**Motor Traffic Speed (mph)**	**Motor Traffic Volume (AADT)**	**Score**
1	Victoria Road/Castle Road	St. Thomas Street/North Marine Road island	Victoria Road/Northway	0.61	26	9,065	1	0.61	0	0	5
2	Northway	Victoria Road/Northway	Northway/Prospect Road	0.29	28	5,879	2	0.29	0	0	5
3	Prospect Road	Northway/Prospect Road	Prospect Road/Manor Road	0.57	20	2,500-5,000	3	0.57	20	<2,500	4
4	Manor Road	Prospect Road/Manor Road	Manor Road/Woodland Ravine	0.17	30	2,500-5,000	2	0.17	20	2,500-5,000	3
5	Woodland Ravine	Manor Road/Woodland Ravine	Woodland Ravine/Scalby Road	0.8	33	4,763	1	0.8	0	0	5
6	Scalby Road	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	31	18,803	0	0.52	0	0	5
7											
8											
9											
10											

Safety Score for Route	**Existing**	**Potential**
	1.36	4.69

Safety Scores Table				**Motor Traffic Speed**		
				20 mph	**30 mph**	**>30 mph**
Mixed Traffic Table Scores		**Motor Traffic Volume**	**<2500**	4	3	2
			2500-5000	3	2	1
			>5000	2	1	0
Route physically protected from motor vehicles or off highway completely		n/a		5		
Unlit routes		n/a		Deduct 1 point		
Routes without passive surveillance		n/a		Deduct 1 point		

Notes:

Speed - Measured 85th percentile speed if known, otherwise speed limit

Volume - AADT, two way on single carriageways, one way on dual carriageways.

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CONNECTIVITY

Assessed as connectivity for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**	**Section Length (km)**	**Total Connections (No.)**	**Connections per km**	**Score**
1	St. Thomas Street/North Marine Road island	Victoria Road/Northway	0.61	8	13.1	5	0.61	8	13.1	5
2	Victoria Road/Northway	Northway/Prospect Road	0.29	3	10.3	5	0.29	3	10.3	5
3	Northway/Prospect Road	Prospect Road/Manor Road	0.57	4	7.0	5	0.57	4	7.0	5
4	Prospect Road/Manor Road	Manor Road/Woodland Ravine	0.17	5	29.4	5	0.17	5	29.4	5
5	Manor Road/Woodland Ravine	Woodland Ravine/Scalby Road	0.8	4	5.0	5	0.8	4	5.0	5
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	4	7.7	5	0.52	4	7.7	5
7										
8										
9										
10										

Connectivity Score for Route	**Existing**	**Potential**
	5.00	5.00

Connectivity Scores Table	
Number of Accesses/ Connections per Km	**Score**
> 4	5
> 3, < 4	4
> 2, < 3	3
> 1, < 2	2
> 0, < 1	1
0	0

Note - Accesses to be suitable for cycling and barrier-free

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

COMFORT

Assessed for sections of route of similar characteristics - max 1km each

			Existing Route				Potential Route			
Section Number	**Section start point**	**Section end point**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**	**Section Length (km)**	**Surface Type**	**Available Width (m)**	**Score**
1	St. Thomas Street/North Marine Road island	Victoria Road/Northway	0.61	*Smooth, Machine-laid bituminous or similar*	7	0	0.61	*Smooth, Machine-laid bituminous or similar*	1.5	3
2	Victoria Road/Northway	Northway/Prospect Road	0.29	*Smooth, Machine-laid bituminous or similar*	1.5	3	0.32	*Smooth, Machine-laid bituminous or similar*	2	4
3	Northway/Prospect Road	Prospect Road/Manor Road	0.57	*Smooth, Machine-laid bituminous or similar*	7	0	0.69	*Smooth, Machine-laid bituminous or similar*	7	5
4	Prospect Road/Manor Road	Manor Road/Woodland Ravine	0.17	*Smooth, Machine-laid bituminous or similar*	7	0	0.28	*Smooth, Machine-laid bituminous or similar*	7	0
5	Manor Road/Woodland Ravine	Woodland Ravine/Scalby Road	0.8	*Smooth, Machine-laid bituminous or similar*	7	0	0.84	*Smooth, Machine-laid bituminous or similar*	3.5	5
6	Woodland Ravine/Scalby Road	Old Scalby Road (opposite hospital)	0.52	*Smooth, Machine-laid bituminous or similar*	1.5	0	0.52	*Smooth, Machine-laid bituminous or similar*	1.5	3
7										
8										
9										
10										

Comfort Score for Route	**Existing**	**Potential**
	0.29	3.78

Comfort Scores Table		**Available Width**				
One-Way Track/Lane		≥ 2.1m	< 2.1m, ≥ 1.8m	< 1.8m, ≥ 1.5m	< 1.5m, ≥ 1.2m	< 1.2m
Two-Way Track/Lane		≥ 3.5m	< 3.5m, ≥ 3m	< 3m, ≥ 2.5m	< 2.5m, ≥ 2m	< 2m
Surface Type	**Smooth, Machine-laid bituminous or similar**	5	4	3	1	0
	Hand-laid bituminous or similar	4	3	2	1	0
	Concrete/stone paviours with filled level joints	3	2	1	0	0
	Concrete/stone flags	2	1	0	0	0
	Unbound graded aggregate	1	0	0	0	0
	Unsurfaced	0	0	0	0	0

Notes:
Mixed traffic streets with less than 2500 vehicles per day should be assessed as two-way tracks with available width greater than 3.5m
Mixed traffic streets carrying more than 2500 vehicles per day score zero
Scores for Shared Use Paths (with pedestrians) are reduced:
By 1 where pedestrian flows exceed 100 per hour
By 2 where pedestrian flows exceed 300 per hour

Local Cycling and Walking Infrastructure Plan: Route Selection Tool

CRITICAL JUNCTIONS

Critical Junctions	Existing No. of Junctions	Potential No. of Junctions
Cycle movements in potential conflict with heavy motor traffic flows (>5000 vpd, or HGV/Bus >500 per day)		
Cycle movements mixed with or crossing traffic stream with 85th percentile speed >60kph		
Cycles need to cross more than one traffic lane to complete a movement (where the road has moderate or heavy traffic flows and where no refuge is provided)		
Cycle movement crosses very wide or flared side road junction, radii >9m, multi-lane entry, merge and diverge slip road, or acceleration and deceleration lanes		
Pinch points (widths between 3.2m and 3.9m inclusive) on junction entry or exit lanes		
Poor surface quality within path of cycle movement due to drainage grating, adverse camber, road debris, or poor reinstatement/maintenance		
Congested conditions restriction visibility to cyclists passing stationary traffic		
Any type of roundabout with >8000 vpd where cycles mix with traffic or cross without priority		
Multi-lane roundabout where cycles mix with traffic		

	Existing	Potential
Number of Critical Junctions/Crossings on Route with critical features requiring improvement	**0**	**0**

Note 1 – 'In potential conflict with' means where heavy motor traffic movements cross or run alongside cycle movements without being separated physically and/or in time

Note 2 – Moderate or heavy traffic flows are those above 2500 vehicles per day and / or 250 HGVs per day

Appendix C

FINAL OPTION DRAWINGS

Appendix C.1

CORRIDOR 1: EASTFIELD TO SCARBOROUGH

POTENTIAL CYCLE & PEDESTRIAN CROSSING LOCATION (HUNTRISS ROW CURRENTLY INACCESSIBLE FOR CYCLISTS)

POTENTIAL CYCLE PARKING CHARGE POINT LOCATION

SHARED USE BOUNDARY INDICATION WITH CHANGES TO HARD LANDSCAPING, ROAD MARKINGS AND TRAFFIC SIGNS

SHARED USE BOUNDARY INDICATION WITH CHANGES TO HARD LANDSCAPING, ROAD MARKINGS AND TRAFFIC SIGNS

6.85m

USE OF ROAD MARKINGS AND COLOURED SURFACING TO BE INVESTIGATED FURTHER DURING DETAILED DESIGN STAGES

BRIDGE PARAPET HEIGHT TO BE 1.4m IN ACCORDANCE WITH THE LTN 2/08 CYCLE INFRASTRUCTURE DESIGN SECTION 10.8.2

EXISTING LEVEL = 26.5m (APPROX)

SHARED USE BOUNDARY INDICATION WITH CHANGES TO HARD LANDSCAPING AND, ROAD MARKINGS AND TRAFFIC SIGNAGE

EXISTING FOOTPATH TO BE REMOVED AND RETURNED TO SOFT LANDSCAPING

6.50m

EXISTING STEPS TO BE REMOVED AND RETURNED TO SOFT LANDSCAPING

EXISTING LEVEL = 36.0m (APPROX)

POTENTIAL RESTING PLATFORMS TO BE CONSIDERED ON PEDESTRIAN ROUTE

TO ACHIEVE DDA COMPLIANT CYCLEWAY / FOOTWAY SIGNIFICANT BETWEEN ESPLANADE AND CLIFF BRIDGE FURTHER LAND AQUISITION INCLUDING ESPLANADE HOTEL GARDENS WILL BE REQUIRED

EXISTING WALL TO BE REMOVED AND ARE RE-LANDSCAPED TO ALLOW SHARED-USE PATH MEANDER

0.5m

6.5m

POTENTIAL AREA FOR PRIVATE CAR PARK EXTENSION

EXISTING LEVEL = 47.5m (APPROX)

SHARED USE BOUNDARY INDICATION WITH CHANGES TO HARD LANDSCAPING AND, ROAD MARKINGS AND TRAFFIC SIGNAGE

0.5m

3.0m

3.0m

6.5m

4.0m

EXISTING PEDESTRIAN FACILITIES TO BE RETAINED AND FORMALISED AS PEDESTRIAN CROSSING POINTS

0.5M BUFFER PROVIDED ADJACENT TO EXISTING FENCE

NOTES

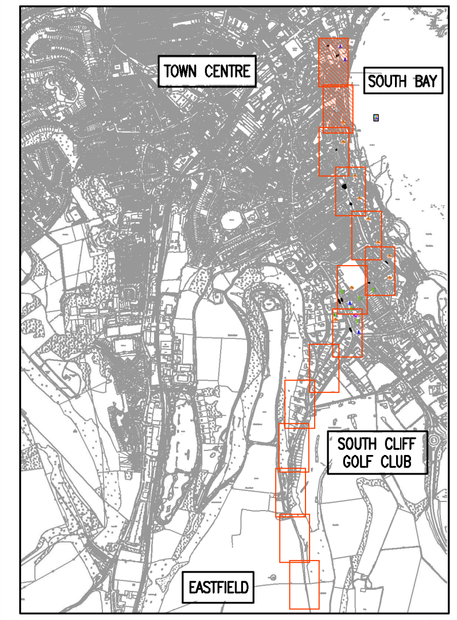
DO NOT SCALE

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SCARBOROUGH LCWIP PHASE 2 REPORT

KEY

- STEPPED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY
- FOOTWAY
- SIDE ROAD ACCESS
- PRIVATE ACCESS
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW ROAD KERB

LOCATION PLAN



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P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	RF	PWW
P01	13.12.2019	PWW	FOR INFORMATION	RF	PWW
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ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 1 - EASTFIELD TO SCARBOROUGH TOWN CENTRE GENERAL ARRANGEMENT (SHEET 1 OF 7)

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PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PWW	PWW	JULY 2019

DRAWING No: 53804-ETS-DR-GA-001 REV: P02

File name: UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70053804\700538XX\700538XX-NYCC - SCARBOROUGH LCWIP - PHASE 2\03 WIP\02 DEVELOPMENT INFRASTRUCTURE\DRAWINGS\53804-ETS-DR-GA-001.007.DWG, printed on 08 January 2020 10:55:58, by Fowkes, Reece

0.5M BUFFER PROVIDED ADJACENT TO EXISTING FENCE

GAPS IN EXISTING CAR PARKING PROVISION REQUIRED FOR PROPOSED PEDESTRIAN CROSSING FACILITIES

0.5m
3.0m
3.0m
6.5m

ESPLANADE BETWEEN ST MARTINS AVENUE AND PRINCE OF WALES TERRACE TO BE MADE ONE WAY

EXISTING PARKING REMOVED DUE TO SPATIAL CONSTRAINTS

NOTES

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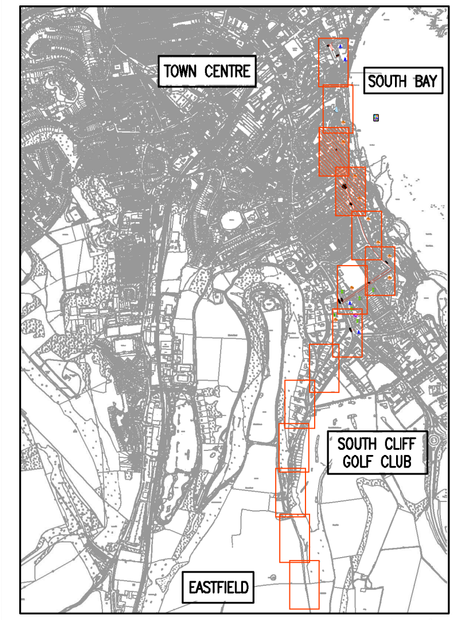
- SOFT LANDSCAPING
- NEW ROAD KERB

LOCATION PLAN



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70053804	PMW	PMW	JULY 2019

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TITLE:

CORRIDOR 1 - EASTFIELD TO
SCARBOROUGH TOWN CENTRE
GENERAL ARRANGEMENT
(SHEET 3 OF 7)

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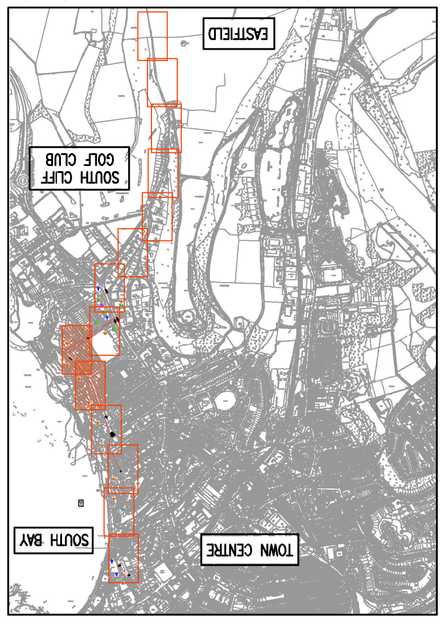

LOCATION PLAN

KEY

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- SHARED CYCLE / FOOTWAY
- FOOTWAY
- SIDE ROAD ACCESS
- PRIVATE ACCESS
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW ROAD KERB

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SCARBOROUGH LCWIP PHASE 2 REPORT

DO NOT SCALE

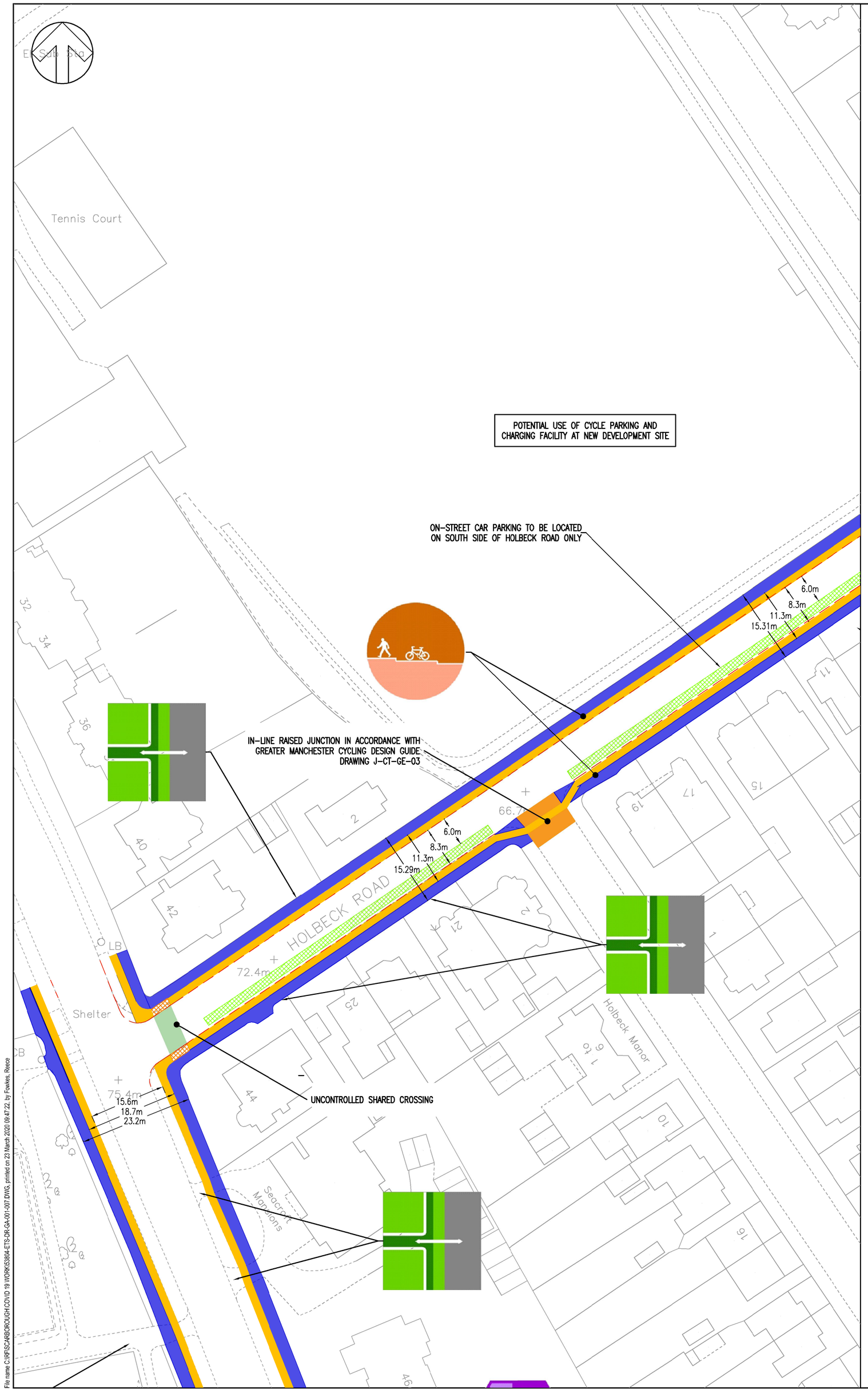
IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

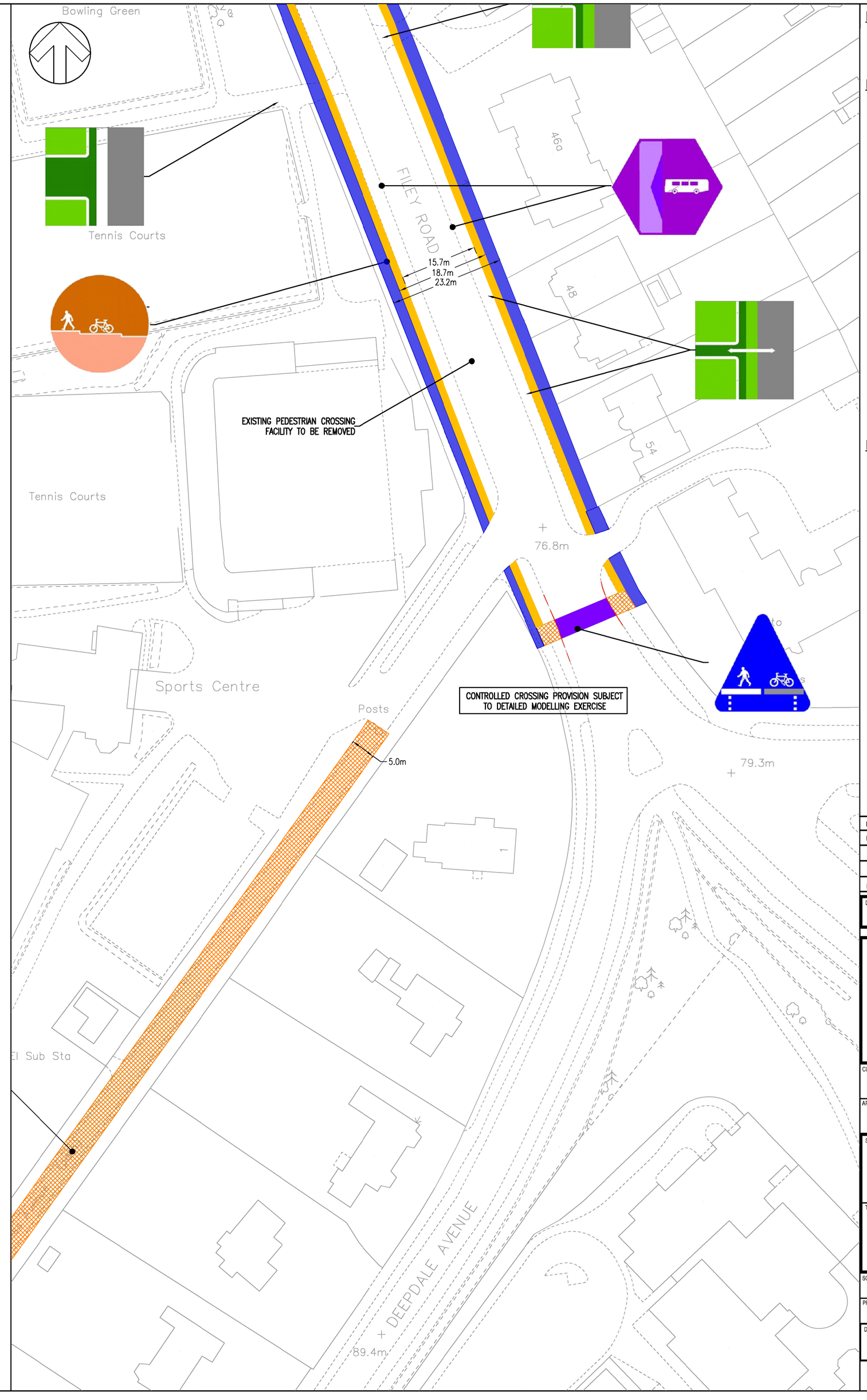
JUNCTION RAISED TO PROVIDE SAFER PEDESTRIAN AND CYCLING ACCESS

IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

POTENTIAL TOUCAN / TIGER CROSSING LOCATION OR CYCLE USER RIGHT-TURN LANE

POTENTIAL TO REMOVE PARKING TO REMAIN "GARDEN" SPACE





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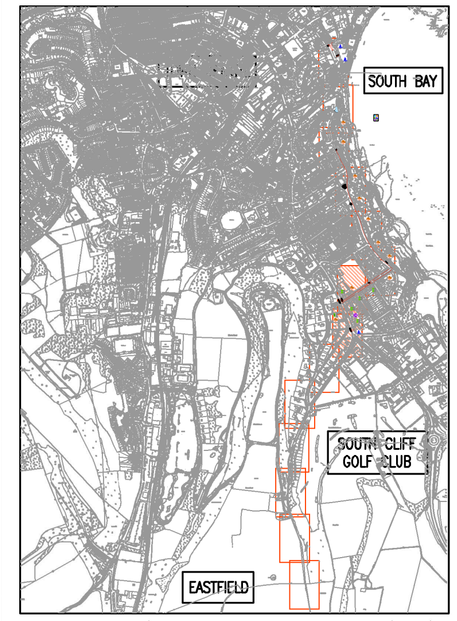
LOCATION PLAN



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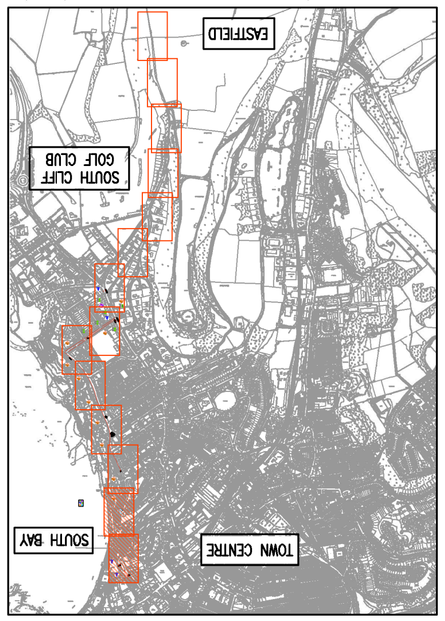

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NOTES

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ADVISORY CYCLE LANES TO BE MARKED WITH CYCLE SYMBOL ONLY – NO LINEAR MARKINGS

5.1m

WEAPONNESS PARK

Hawkwood Court

High Bank

Posts

Club H

Pavilion

Playing Fields

Tennis Courts

Tennis Courts

Track

Woodside

Oakmere

Laurelwood

El Sub Sta

LB

92.7m

92.8m

93.5m

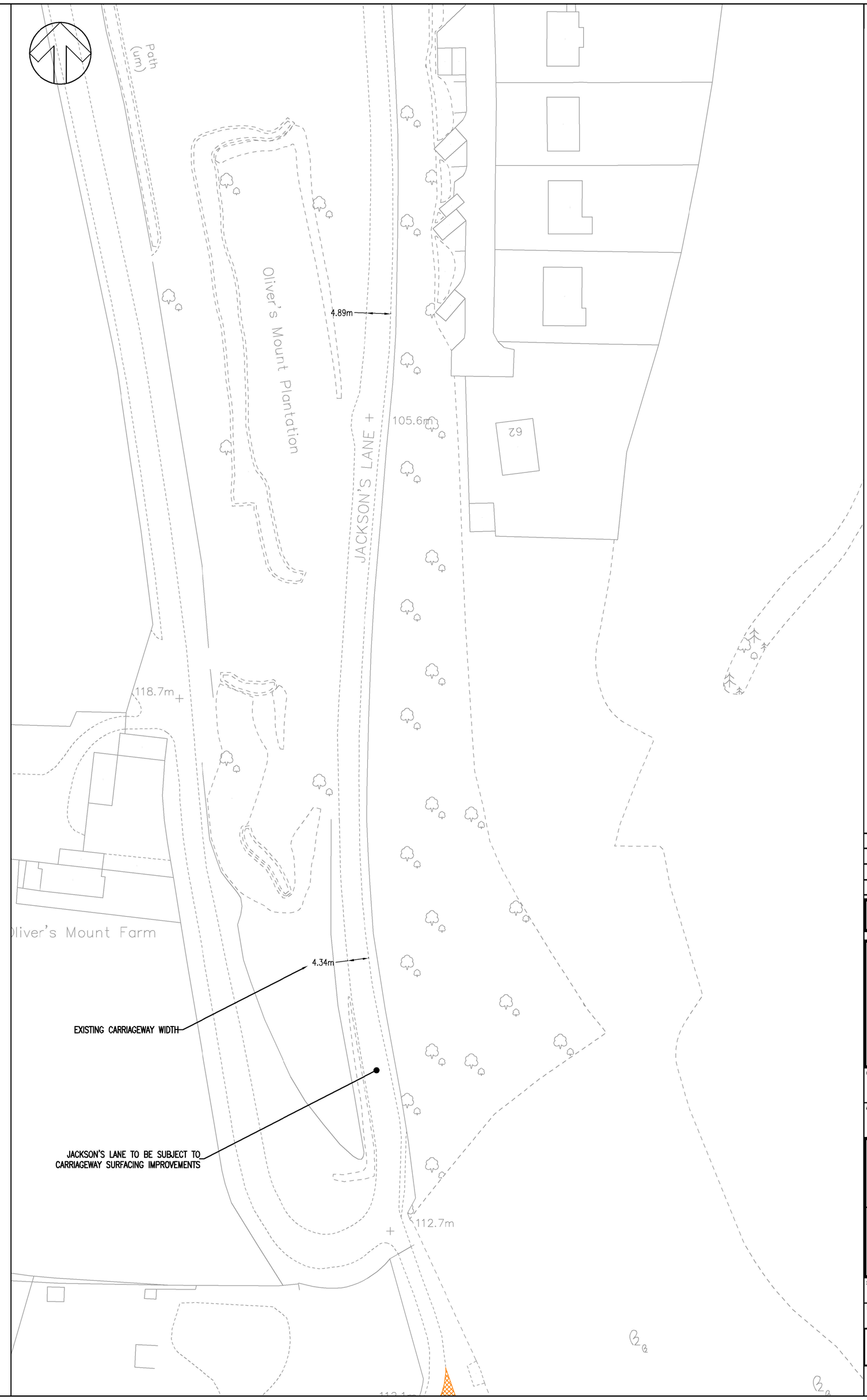
84.3m

88.1m

89.1m

DENSE VEGETATION REMOVAL TO BE MINIMISED

STREET LIGHTING TO BE PROVIDED ON WEAPONNESS AVENUE



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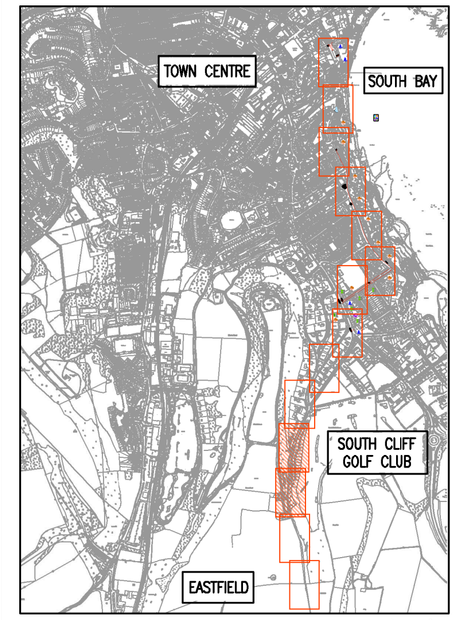
- NEW ROAD KERB

LOCATION PLAN



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P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	RF	PWW
P01	13.12.2019	PWW	FOR INFORMATION	RF	PWW
Dr	03.07.2019	PWW	DRAFT ISSUE	RF	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: NORTH YORKSHIRE COUNTY COUNCIL

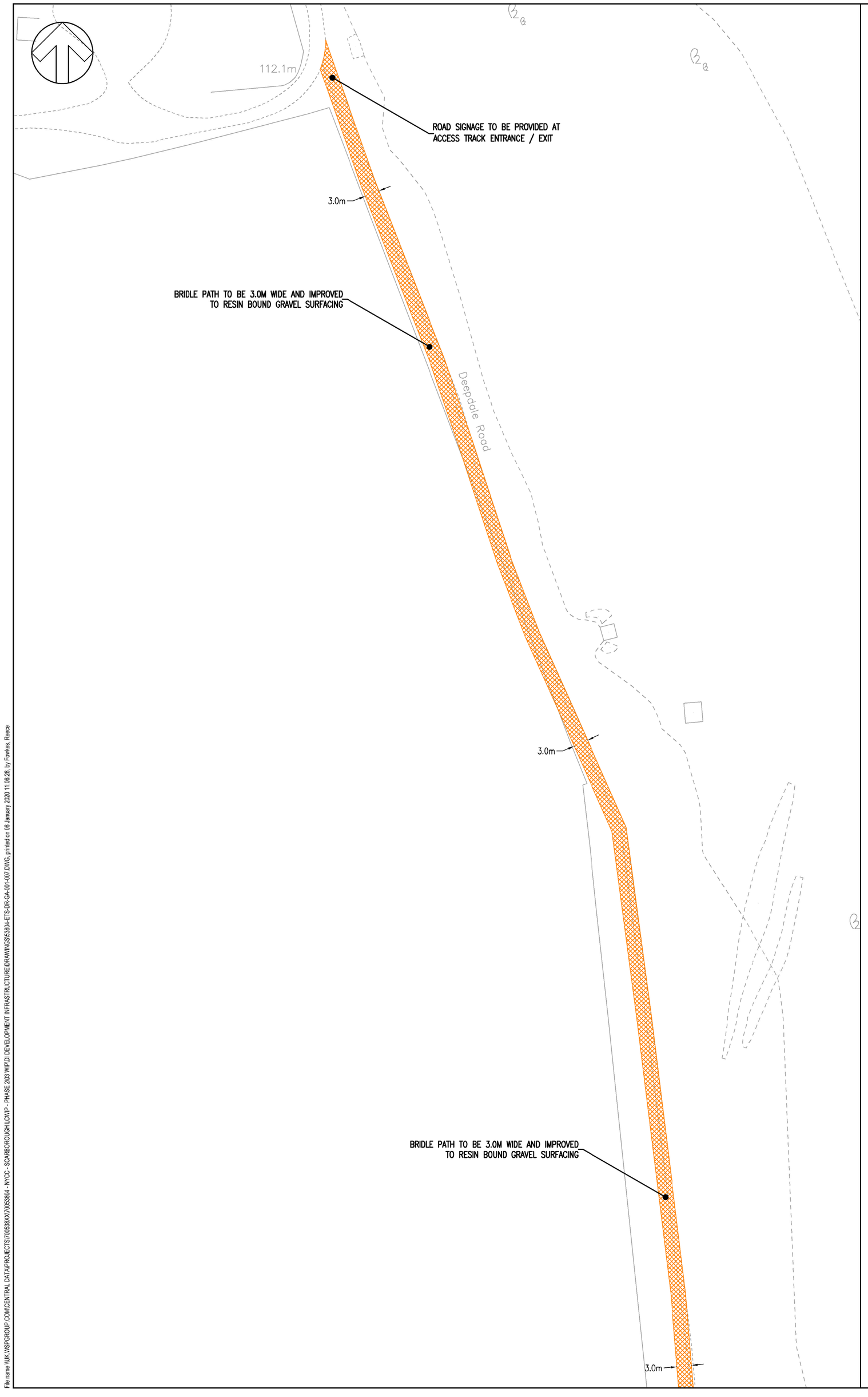
ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 1 - EASTFIELD TO SCARBOROUGH TOWN CENTRE GENERAL ARRANGEMENT (SHEET 6 OF 7)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PWW	PWW	JULY 2019

DRAWING No: 53804-ETS-DR-GA-006 REV: P02



NOTES

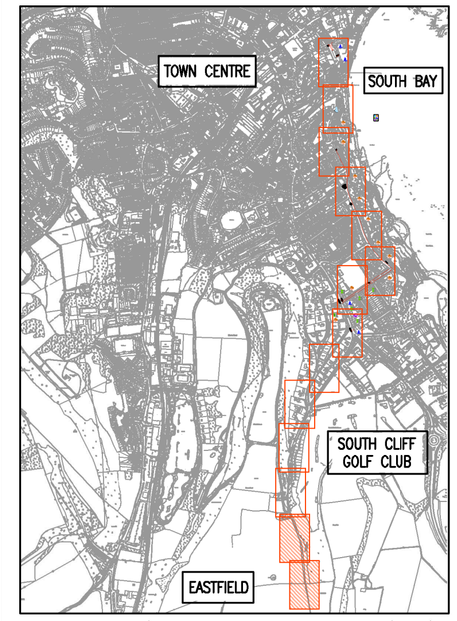
DO NOT SCALE

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SCARBOROUGH LCWIP PHASE 2 REPORT

KEY

- STEPPED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY
- FOOTWAY
- SIDE ROAD ACCESS
- PRIVATE ACCESS
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW ROAD KERB

LOCATION PLAN



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P01	13.12.2019	PWW	FOR INFORMATION	RF	PWW
Dr	03.07.2019	PWW	DRAFT ISSUE	RF	PWW

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CLIENT: NORTH YORKSHIRE COUNTY COUNCIL

ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 1 - EASTFIELD TO SCARBOROUGH TOWN CENTRE GENERAL ARRANGEMENT (SHEET 7 OF 7)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	RF		PWW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PWW	PWW	JULY 2019

DRAWING No: 53804-ETS-DR-GA-007 REV: P02

Appendix C.2

CORRIDOR 2: EASTFIELD & CAYTON CENTRAL SPINE

WORKS TO TIE INTO CORRIDOR 1 PROPOSALS TO NORTH WITH UPGRADED BRIDLE PATH

BRIDLE PATH TO BE 3.0M WIDE AND IMPROVED TO HARD SURFACING

BRIDLE PATH TO BE 3.0M WIDE AND IMPROVED TO HARD SURFACING

BRIDLE PATH TO BE 3.0M WIDE AND IMPROVED TO HARD SURFACING

ADVISORY CYCLE LANES TO BE CYCLE SYMBOL MARKINGS ONLY

5.5m

5.0m

10.5m

52.6m

42.2m

TCB

Clinic

Posts

GOULDINGS CL

DEEP DALE

OVERDALE

WESTWAY

LOWFIELD

Path

Path (um.)

NOTES

DO NOT SCALE

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KEY

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- FOOTWAY
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- BUS STOP BYPASS
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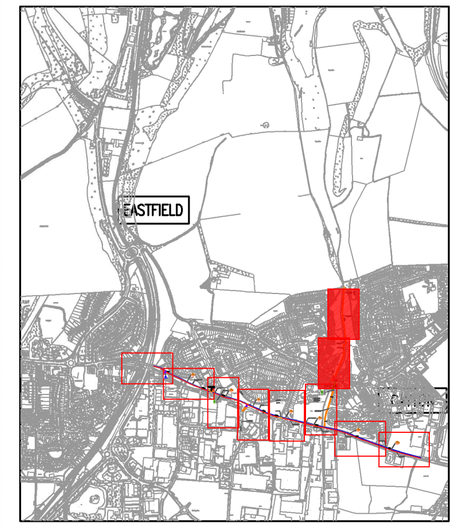
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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P01	13.12.2019	PWW	FOR INFORMATION	RF	PWW
Dr	03.07.2019	PWW	DRAFT ISSUE	RF	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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ARCHITECT: -

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TITLE: CORRIDOR 2 - EASTFIELD TO CAYTON CENTRAL SPINE GENERAL ARRANGEMENT (SHEET 1 OF 5)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	RF		PWW
PROJECT NO: 70053804	DESIGNED: PWW	DRAWN: EL / PWW	DATE: JULY 2019

DRAWING No: 53804-ETC-DR-GA-001 REV: P03

NOTES

DO NOT SCALE

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KEY

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- FOOTWAY
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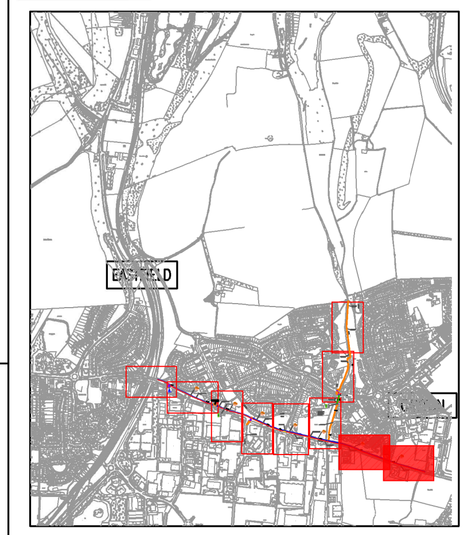
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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P01	13.12.2019	PWW	FOR INFORMATION	RF	PWW
Dr	03.07.2019	PWW	DRAFT ISSUE	RF	PWW

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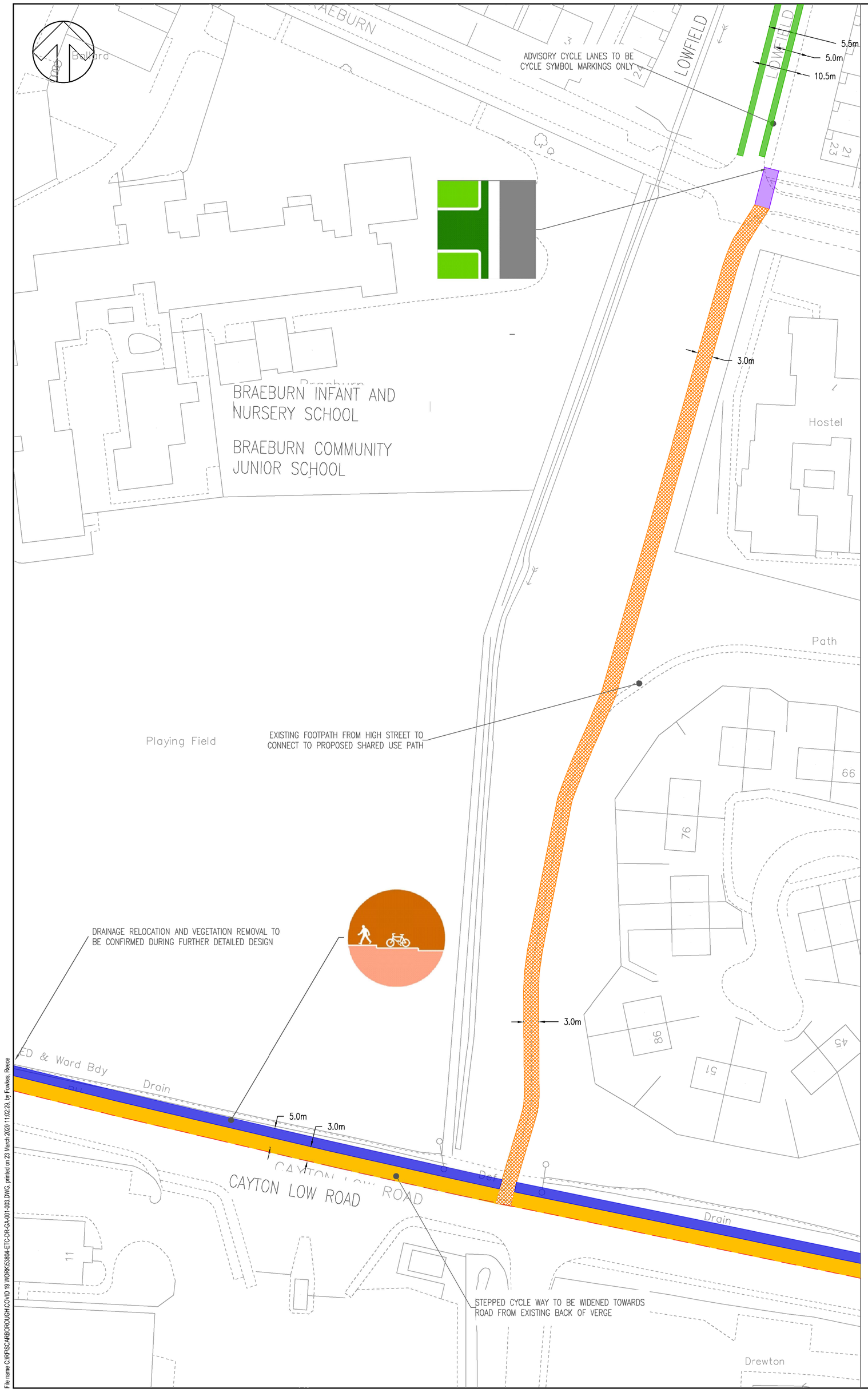
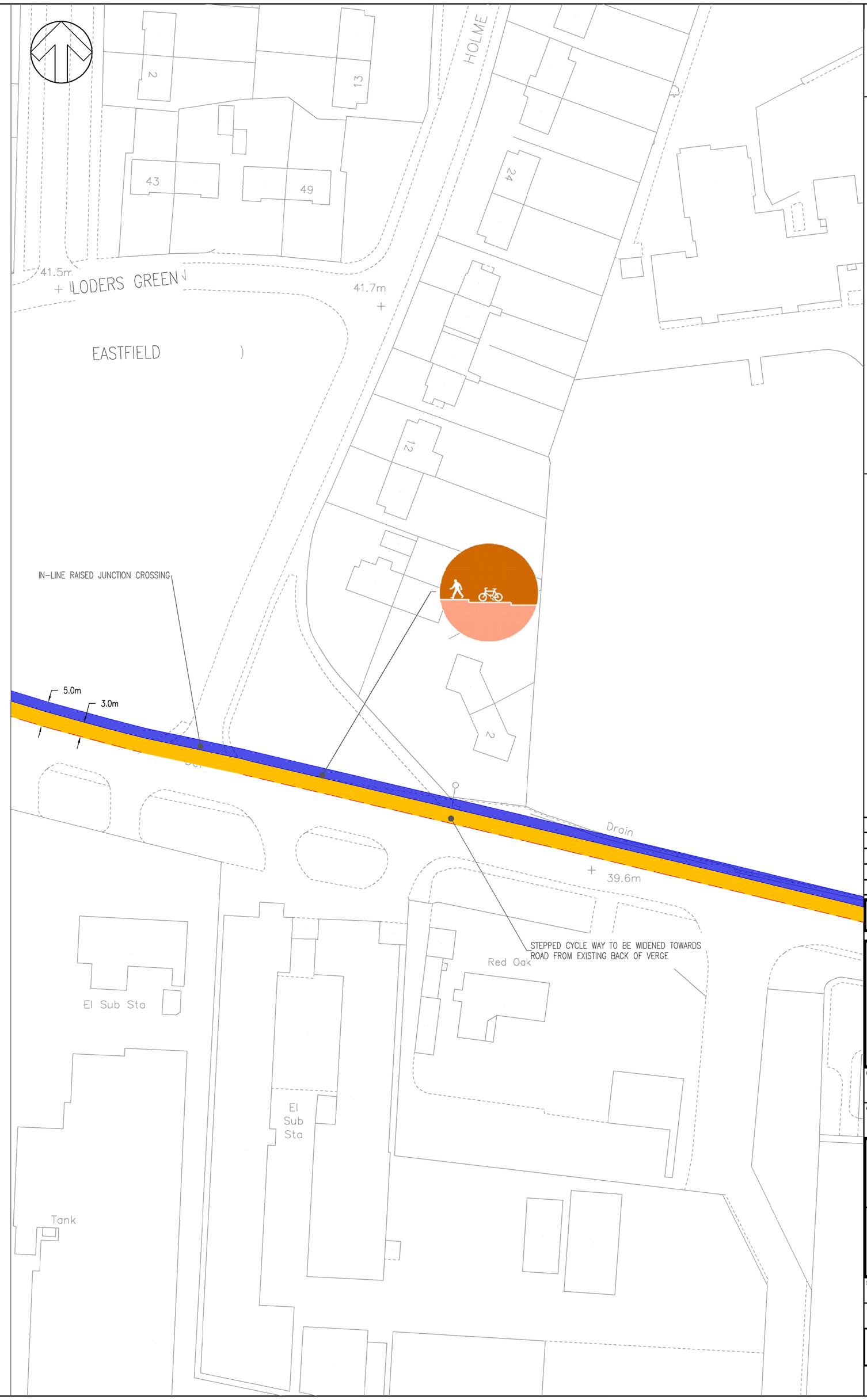
TITLE: CORRIDOR 2 - EASTFIELD TO CAYTON CENTRAL SPINE GENERAL ARRANGEMENT (SHEET 2 OF 5)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	RF		PWW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PWW	EL / PWW	JULY 2019

DRAWING No: 53804-ETC-DR-GA-002 REV: P03





NOTES

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- SHARED CYCLE / FOOTWAY
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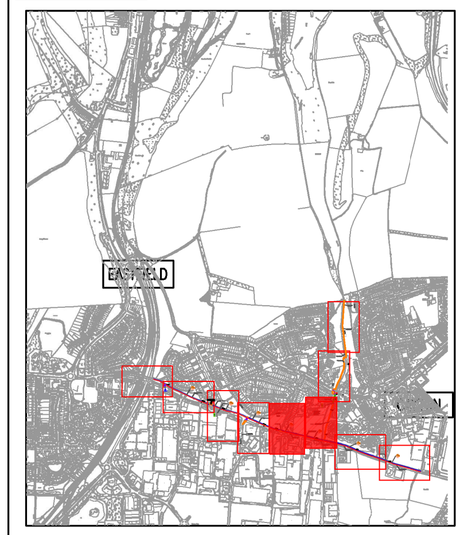
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P03	23.03.2020	RF	UPDATED FOLLOWING INTERNAL REVIEW	MD	PWW
P02	10.01.2020	PWW	UPDATED FOLLOWING TECHNICAL REVIEW	RF	PWW
P01	13.12.2019	PWW	FOR INFORMATION	RF	PWW
Dr	01.07.2019	PWW	DRAFT ISSUE	RF	PWW

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SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 2 - EASTFIELD TO CAYTON CENTRAL SPINE GENERAL ARRANGEMENT (SHEET 3 OF 5)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	RF		PWW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PWW	EL / PWW	JULY 2019

DRAWING No: 53804-ETC-DR-GA-003 REV: P03

File name: C:\NPS\CARBOROUGH\COVID 19 WORKS\53804-ETC-DR-GA-001-003.DWG, printed on 23 March 2020 11:02:29, by Fowkes, Reece

LODERS GREEN

13

25

37

STEPPED CYCLE WAY TO BE WIDENED TOWARDS ROAD FROM EXISTING VERGE

5.0m

3.0m

+ 44.1m

ED & Ward Bdy 1.22m RH

Def

Ventress House

Driving Test Centre

ADVISORY CYCLE LANES TO BE CYCLE SYMBOL MARKINGS ONLY

THORNBURGH ROAD

El Sub Sta

Goods Vehicle Testing Station

Tank

Tank

MANHAM HILL

4

2

IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

STEPPED CYCLE WAY TO BE WIDENED TOWARDS ROAD FROM EXISTING VERGE

IN-LINE RAISED JUNCTION CROSSING

1

The Eastfield (PH)

5.0m

3.0m

+ 45.6m

ED & Ward Bdy

CAYTON LOW ROAD

Def

Tank

Industrial Estate

Forest House

SALTER ROAD

NOTES

DO NOT SCALE

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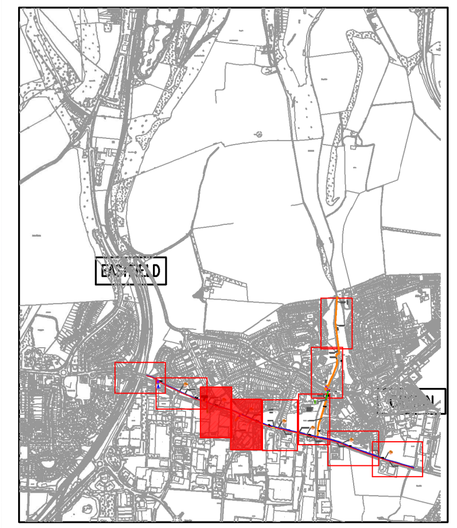
KEY

- STEPPED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY
- FOOTWAY
- SIDE ROAD ACCESS
- PRIVATE ACCESS
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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P01	10.01.2020	PWW	UPDATED FOLLOWING TECHNICAL REVIEW	RF	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

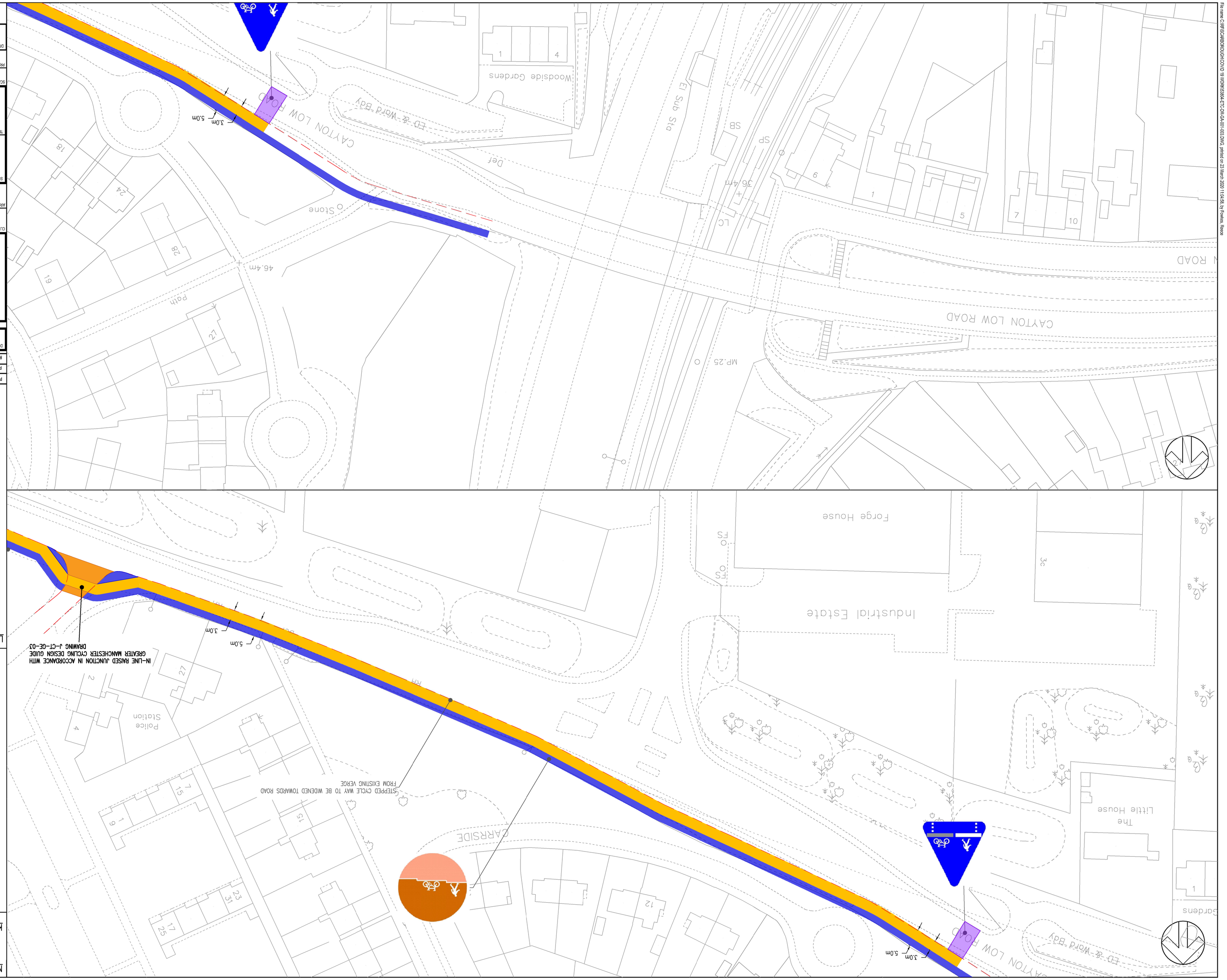
TITLE: CORRIDOR 2 - EASTFIELD TO CAYTON CENTRAL SPINE GENERAL ARRANGEMENT (SHEET 4 OF 5)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	RF	PWW

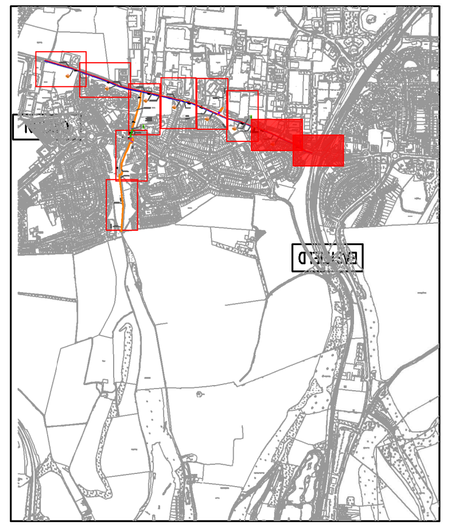
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PWW	RF	DECEMBER 2019

DRAWING No: 53804-ETC-DR-GA-004 REV: P02

File name C:\RFS\CARBOROUGH COVID 19 WORK\53804_ETC-DR-GA-001-0003.DWG, printed on 23 March 2020 11:04:00, by Fowles, Reece



LOCATION PLAN



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P01	10.01.2020	PMW	UPDATED FOLLOWING TECHNICAL REVIEW	RF	PMW

DRAWING STATUS:
S2 - FOR INFORMATION

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ARCHITECT:
-

SITE/PROJECT:
NORTH YORKSHIRE COUNTY COUNCIL
SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE:
CORRIDOR 2 - EASTFIELD TO CAYTON
CENTRAL SPINE
GENERAL ARRANGEMENT
(SHEET 5 OF 5)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	RF	PMW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	PMW	RF	DECEMBER 2019

DRAWING No.: 53804-ETC-DR-GA-005 | REV: P02

NOTES
DO NOT SCALE

KEY

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SCARBOROUGH LCWIP PHASE 2 REPORT

STEPPED CYCLE / FOOTWAY
SHARED CYCLE / FOOTWAY
FOOTWAY
SIDE ROAD ACCESS
PRIVATE ACCESS
BUS STOP BYPASS
TOUCAN CROSSING
PEDESTRIAN CROSSING
BLENDED CROSSING
ON-STREET CAR PARKING
SOFT LANDSCAPING
NEW KERB

Appendix C.3

CORRIDOR 3: CINDER TRACK CONNECTIONS

EXISTING CAR PARKING AREA TO BE RETAINED.

ON CARRIAGEWAY ADVISORY CYCLE–ROUTES

NARROW STREETS POTENTIAL ROAD MARKINGS ONLY

CYCLE TRAFFIC SIGNAGE TO BE PROVIDED

EXISTING VIADUCT TO BE RETAINED. RESURFACING WORKS, INCLUDING APPROACHES TO BE SUBJECT TO CONDITION SURVEY

5.000m

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

EXISTING CROSSING POINT TO BE RAISED AND PRIORITY PROVIDED TO PEDESTRIAN & CYCLE USERS

4.500m

MOTOR VEHICLE USERS TO GIVE WAY AND SURFACING CHANGE TO INDICATE CYCLE PRIORITY

NOTES

DO NOT SCALE

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KEY

- STEPPED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY (RETAINED WIDTH)
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- PEDESTRIAN CROSSING
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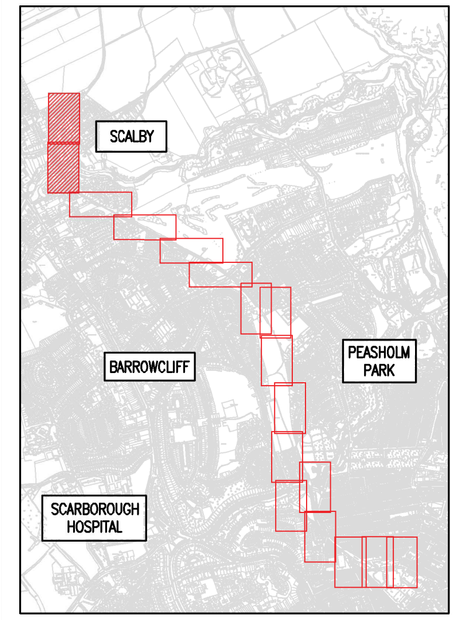
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 1 OF 9)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	MD	PWW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF	RF	DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-001 REV: P02

4.700m

EXISTING FOOTPATH WIDTH TO BE RETAINED FOR SHARED USE PATH

NEWBY FARM ROAD

BIELBY CLOSE

PORNIC AVENUE

Path (um)

El Sub Sta

Path

EXISTING PLANTERS TO BE RELOCATED

EXISTING CROSSING POINT TO BE RAISED AND PRIORITY PROVIDED TO PEDESTRIAN & CYCLE USERS

4.620m

MOTOR VEHICLE USERS TO GIVE WAY AND SURFACING CHANGE TO INDICATE CYCLE PRIORITY

4.620m

MOTOR VEHICLE USERS TO GIVE WAY AND SURFACING CHANGE TO INDICATE CYCLE PRIORITY

Shelter

Foot Bridge

Play Area

EXISTING FOOTPATH WIDENED TO 3.0M AND UPGRADED TO CINDER TRACK SURFACING STANDARDS IF REQUIRED

CINDER TRACK GATEWAY AND INFORMATION BOARDS TO BE PROVIDED

PINFOLD CLOSE

ED & Ward Bdy

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

Ramp

NOTES

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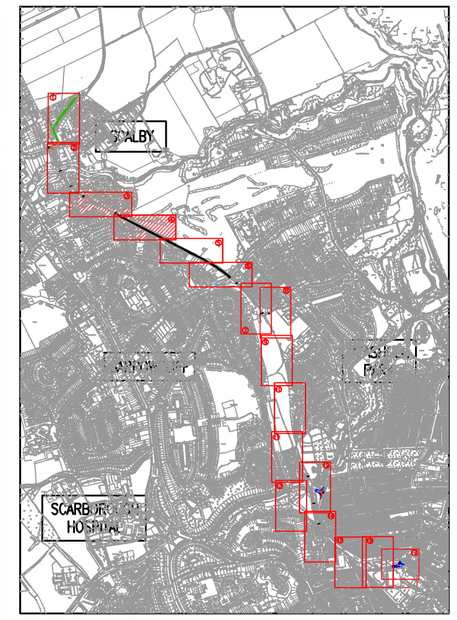
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
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DRAWING STATUS: S2 - FOR INFORMATION

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SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 2 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF	RF	DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-002 REV: P03

File name: C:\NPS\SCARBOROUGH\COVID 19 WORKS\53804-CTC-DR-GA-001-009.DWG, plotted on 23 March 2020 09:49:21, by Fowkes, Reece

4.610m

Path

1a

26

1

3

PRINCESS CLOSE

QUEENSWAY

2

12

22

109

111

119

44.0m

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

Path

5.000m

47.8m

159

110

St Mark's Church

173

Hall

TCP

53.7m

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

CINDER TRACK GATEWAY AND INFORMATION BOARDS TO BE PROVIDED

Coldyhill Bridge

CINDER TRACK TO CONTINUE BENEATH BRIDGE STRUCTURE

5.400m

52.6m

CROSS LANE

74

12

101

103

93

95

91

89

83

81

22

WIDENING OF SHARED USE FOOTPATH TO CINDER TRACK

5.500m

33

NOTES

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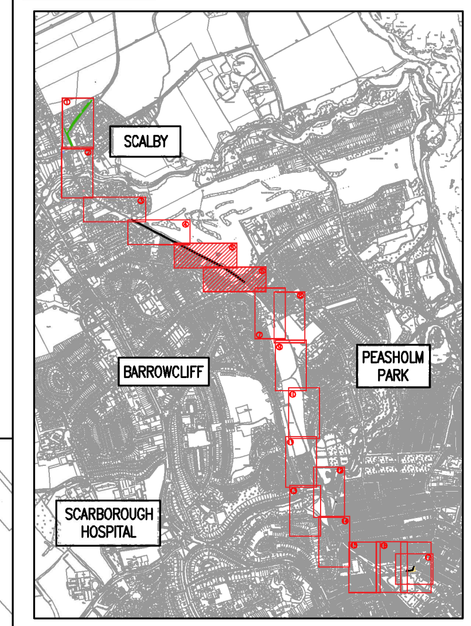
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

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CLIENT: NORTH YORKSHIRE COUNTY COUNCIL

ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 3 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-003 REV: P02

File name \\UK-WSPGROUP.COM\CENTRAL DATA\PROJECTS\70053804\70053804 - NYCC - SCARBOROUGH LCWIP - PHASE 2\03 WIP\DI DEVELOPMENT INFRASTRUCTURE\DRAWINGS\53804-CTC-DR-GA-001-003.DWG, printed on 08 January 2020 14:27:12, by Fowkes, Reece

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

TRACK TO BE WIDENED INTO DENSE VEGETATION

CINDER TRACK GATEWAY AND INFORMATION BOARDS TO BE PROVIDED

EXISTING FOOTPATH WIDENEND TO 3.0M AND UPGRADED TO CINDER TRACK SURFACING STANDARDS IF REQUIRED

EXISTING FOOTPATH WIDENEND TO 3.0M AND UPGRADED TO CINDER TRACK SURFACING STANDARDS IF REQUIRED

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

EXISTING FOOTPATH WIDENEND TO 3.0M AND UPGRADED TO CINDER TRACK SURFACING STANDARDS IF REQUIRED

EXISTING FOOTWAY TO BE WIDENED AND LEVELS TO BE REGRADED TO ACHIEVE DDA COMPLIANCE

SHARED USE PATH RESURFACING WORKS (OR CHANGES TO RESIN BOUND GRAVEL SURFACING, TO BE SUBJECT TO CONDITION SURVEY

NOTES

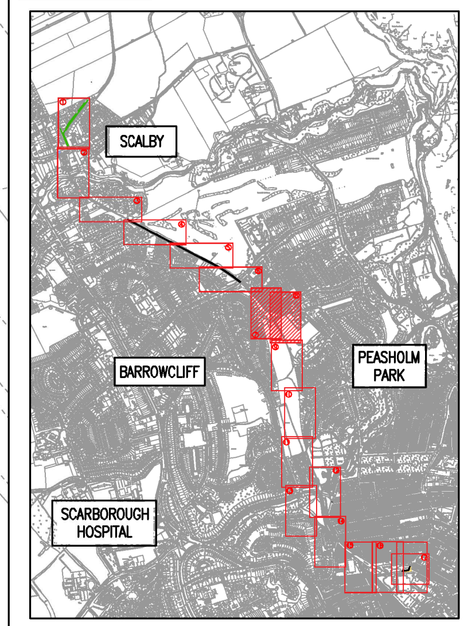
DO NOT SCALE

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SCARBOROUGH LCWIP PHASE 2 REPORT

KEY

- STEPPED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY (RETAINED WIDTH)
- FOOTWAY
- SIDE ROAD ACCESS
- PRIVATE ACCESS
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: NORTH YORKSHIRE COUNTY COUNCIL

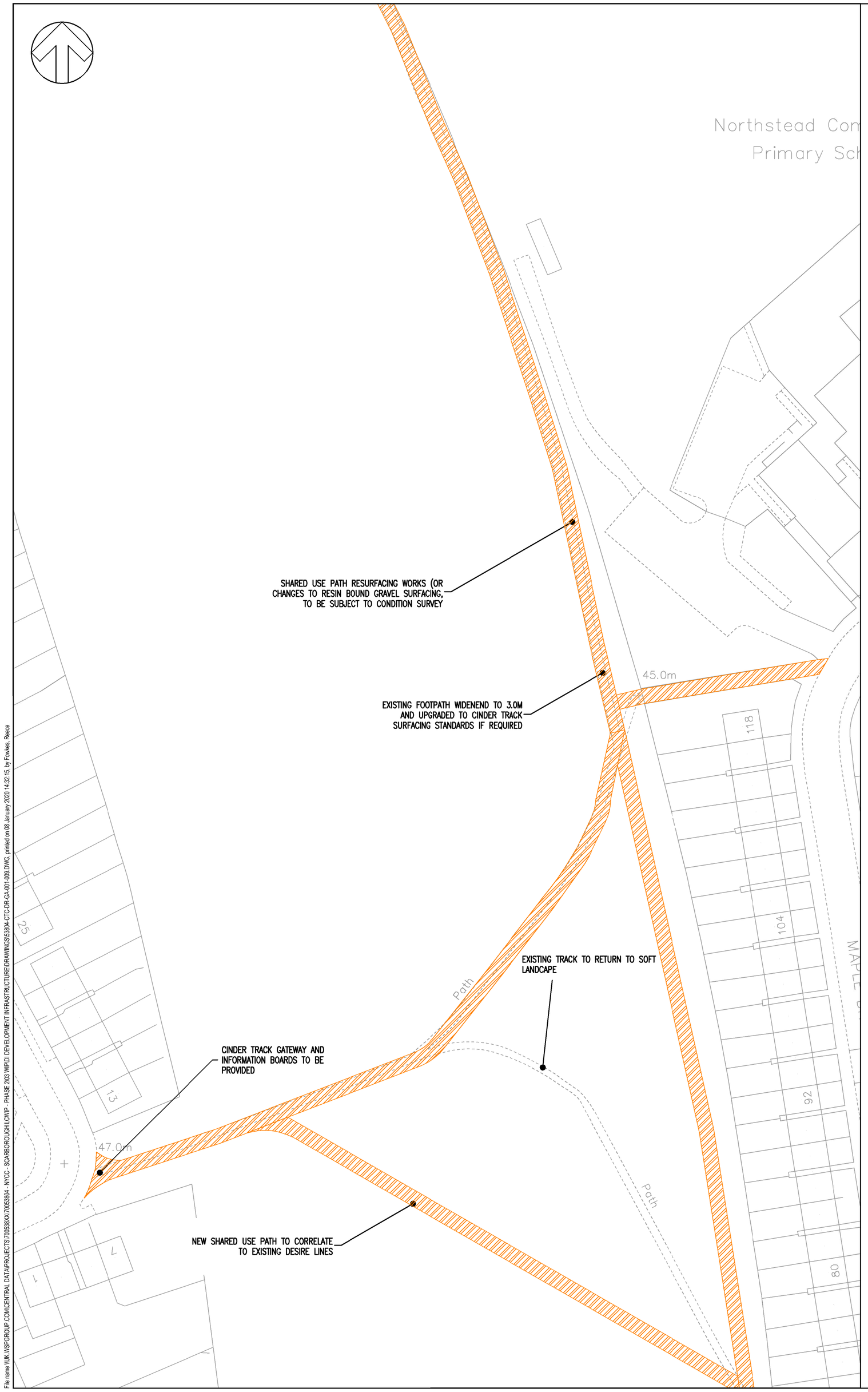
ARCHITECT: -

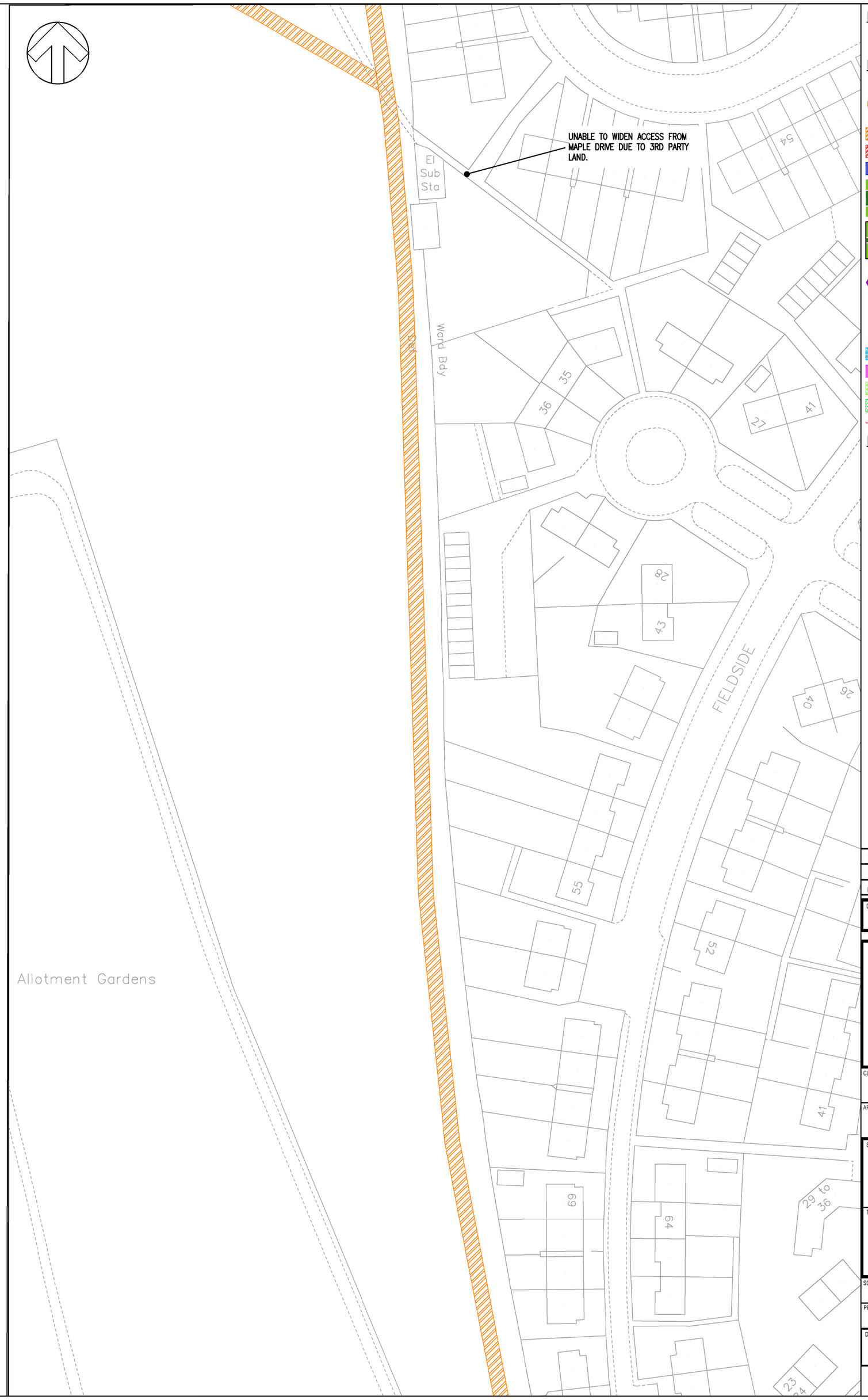
SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 4 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-004 REV: P02





NOTES

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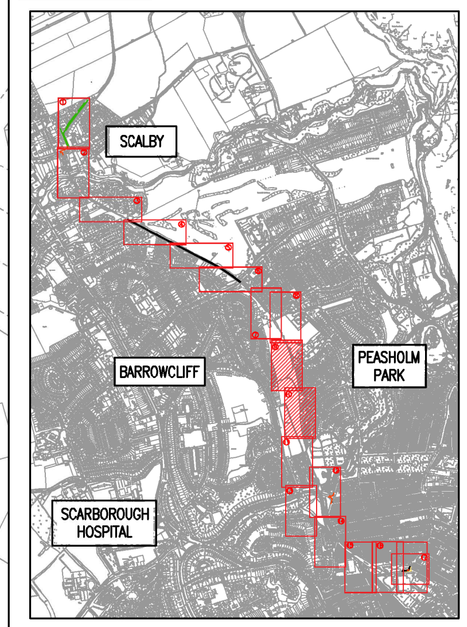
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 5 OF 9)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	MD	PWW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF	RF	DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-005 REV: P02

CURRENT: GRADE 1/8 @ 121m LENGTH

REQUIRED: GRADE 1/20 @ 300m LENGTH

POTENTIAL ACCESS TO CINDER TRACK FROM BARROWCLIFFE ROAD SUBJECT TO REGRADING EXERCISE.

CINDER TRACK TO CONTINUE BENEATH BRIDGE STRUCTURE

REDUCED RADIUS FOR TRAFFIC CALMING PURPOSES

R12.00

R12.00

ZEBRA CROSSING

5.00m

5.000m

NOTES

DO NOT SCALE

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- SHARED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY (RETAINED WIDTH)
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- BLENDED CROSSING
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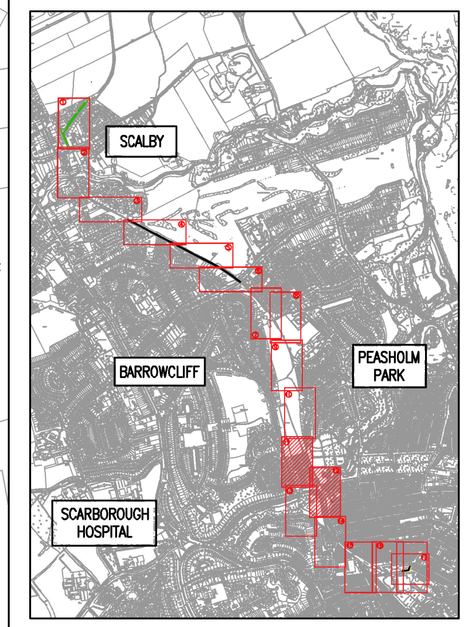
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

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ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 6 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-006 REV: P02

CINDER TRACK GATEWAY AND INFORMATION BOARDS TO BE PROVIDED

EXISTING OVERBRIDGE TO BE RETAINED

5.000m

Shelter

Ward Bdy

Sluice

Path

Arkendale

Manor Flats

White Gables

Poplar Court

MANOR AVENUE

ALEXANDRA PARK

MANOR ROAD

HIBERNIA STREET

CHESTNUT BANK

El Sub Sta

Bowling Green

ED & Ward Bdy

NOTES

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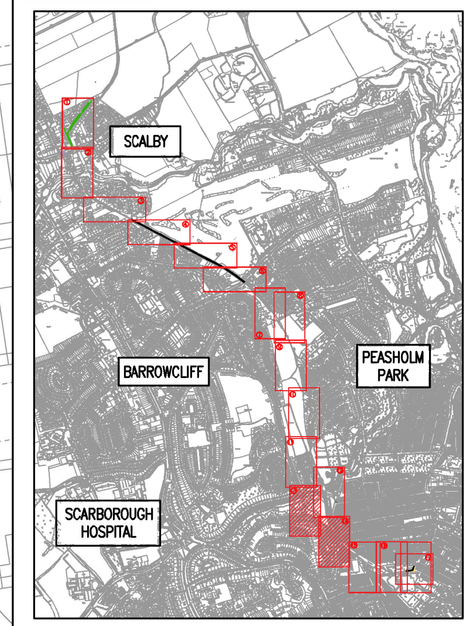
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

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SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 7 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-007 REV: P02

NOTES

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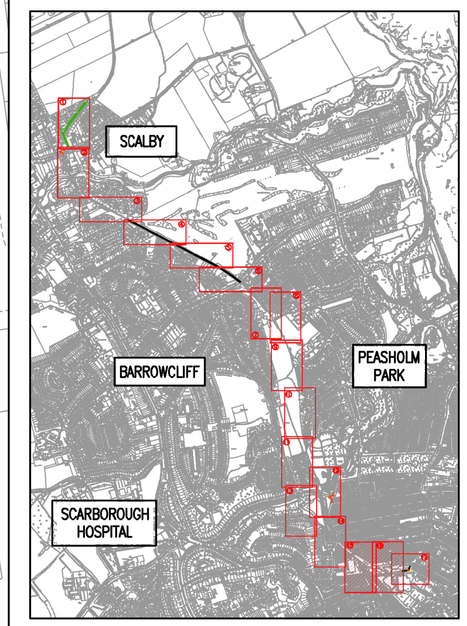
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

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SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 8 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-008 REV: P02

REDUCED RADIUS FOR TRAFFIC CALMING PURPOSES

RAISED JUNCTION EXTENT

Gladstone Road Infant School

St Saviour's Church Hall

NOTES

DO NOT SCALE

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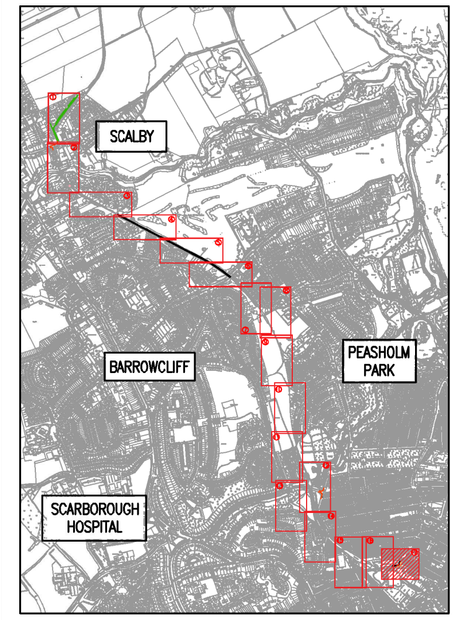
LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	10.01.2020	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.2019	RF	FOR INFORMATION	MD	PWW

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TITLE: CORRIDOR 3 - CINDER TRACK GENERAL ARRANGEMENT (SHEET 9 OF 9)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: DECEMBER 2019

DRAWING No: 53804-CTC-DR-GA-009 REV: P02

Appendix C.4

CORRIDOR 4: SCARBOROUGH CENTRAL CORRIDOR

SCALBY ROAD

57.2m +

6.50
3.50
3.00

EXISTING ON-CARRIAGEWAY CYCLE LANE TO BE REMOVED

STEPPED CYCLEWAY TO WIDEN INTO EXISTING CARRIAGEWAY

EXISTING STREET LIGHTING TO BE RELOCATED

58.3m +

ST LUKE'S CRESCENT

3.00

60.5m +

EXISTING STREET LIGHTING TO BE RELOCATED

EXISTING ON-CARRIAGEWAY CYCLE LANE TO BE REMOVED

3.00
3.50
6.19

STEPPED CYCLEWAY TO WIDEN INTO EXISTING CARRIAGEWAY

IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

54.6m +

St Catherine's Hospice

Friends Meeting House

St Luke's Church

53.6m +

Lagniappe

59.9m +

62.7m +

Mulraney Manor

NOTES

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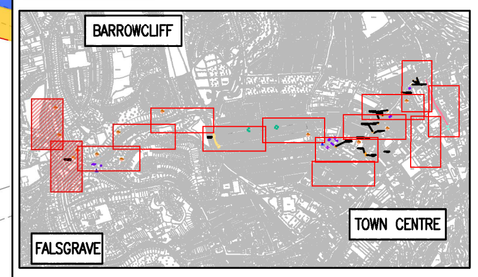
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P02	15.01.20	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.19	RF	FOR INFORMATION	MD	PWW
Dr	03.07.19	RF	DRAFT ISSUE	MD	PWW

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: NORTH YORKSHIRE COUNTY COUNCIL

ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 1 OF 8)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: JULY 2019

DRAWING No: 53804-SCC-DR-GA-001 REV: P02

NOTES

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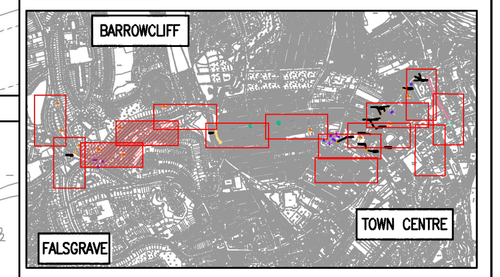

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	15.01.20	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
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TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 2 OF 8)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	MD	PWW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF	RF	JULY 2019

DRAWING No:	REV:
53804-SCC-DR-GA-002	P02

VEGATATION REMOVAL TO BE MINIMISED

EXISTING FOOTPATH TO BE WIDENED FOR SHARED USE FACILITY

EXISTING PATHS TO BE RETURNED TO SOFT

RAMSEY STREET GEOMETRY TO REMAIN AS EXISTING – CYCLE SIGNAGE TO BE INSTALLED ALONG EXTENT OF RAMSEY STREET

RAISED CROSSING

RAISED JUNCTION

ADVISORY CYCLE LANES TO BE MARKED WITH CYCLE SYMBOL ONLY – NO LINEAR MARKINGS

SHARED USE INDICATION WITH CHANGES TO HARD LANDSCAPING, ROAD MARKINGS AND TRAFFIC SIGNAGE

NEW PAVING MATERIAL

ON-STREET PARKING ON PROSPECT STREET TO ALTERNATE BETWEEN NORTH & SOUTH CARRIAGEWAY TO ACT AS TRAFFIC CALMING MEASURE

NOTES

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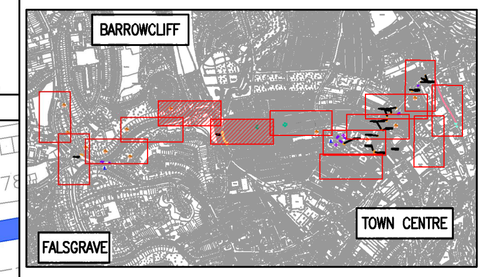

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TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 3 OF 8)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: JULY 2019

DRAWING No: 53804-SCC-DR-GA-003 REV: P02

RALEIGH STREET
MURCHISON STREET
MURCHISON PLACE
PROSPECT ROAD
RAISED CROSSING
JUNCTION RAISED TO PROVIDE SAFER PEDESTRIAN AND CYCLING ACCESS
BUS-STOP CONFIGURATION SUBJECT TO FURTHER DETAILED DESIGN
BUS-STOP CONFIGURATION SUBJECT TO FURTHER DETAILED DESIGN
JUNCTION CONFIGURATION SUBJECT TO FURTHER DETAILED DESIGN, CYCLISTS TO BE DIRECTED TOWARDS WESTERN SIDE OF ROUNDABOUT VIA CYCLE LANES, CROSSINGS TO BE PROVIDED ON ARMS.
4.00
4.02
2.00
3.00
TCBs
Posts
PH
Teleph
PROSPEC
Garage
Brook House
NORTHWAY
BROOK STREET
TRAFALGAR ST WEST
Health Centre
Trafalgar House
41 to 44
BARWICK TERRACE
Magistrates' Courts
Police Station
Inland Revenue Office
Car Park
Salvation Army Citadel
Offices
Postgate House
Alma Mews Cottage
Sub Sta
ALMA SQUARE
45.3m
45.6m
48.8m
IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-04
SET-BACK RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03
EXISTING BUILD-OUT SHOWN INDICATIVELY
EXISTING ON-CARRIAGEWAY CYCLE LANE TO BE REMOVED
IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-04
EXISTING ON-CARRIAGEWAY CYCLE LANE TO BE REMOVED
SET-BACK RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

NOTES

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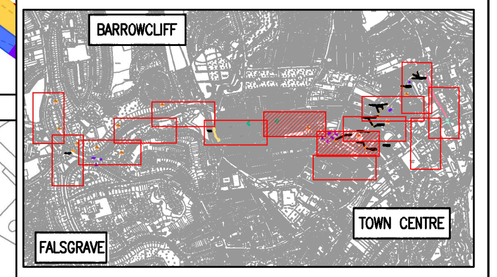
- NEW KERB

LOCATION PLAN



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P02	15.01.20	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.19	RF	FOR INFORMATION	MD	PWW
Dr	03.07.19	RF	DRAFT ISSUE	MD	PWW

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ARCHITECT: -

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TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 4 OF 8)

SCALE @ A1:	CHECKED:		APPROVED:
1:500	MD		PWW
PROJECT NO: 70053804	DESIGNED: RF	DRAWN: RF	DATE: JULY 2019

DRAWING No: 53804-SCC-DR-GA-004 REV: P02

File name: \\UK.WSPGROUP.COM\CENTRAL DATA\PROJECTS\70053804\70053804 - NYCC - SCARBOROUGH LCWIP - PHASE 2\03 WIP\DI REVELOPMENT INFRASTRUCTURE DRAWINGS\53804-SCC-DR-GA-001-008.DWG, printed on 15 January 2020 13:44:47, by: Lott, Emily

SET-BACK RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-04

EXISTING BUILD-OUT SHOWN INDICATIVELY

EXISTING ON-CARRIAGEWAY CYCLE LANE TO BE REMOVED

2.00

2.0m

1.5m

6.0m

NOTES

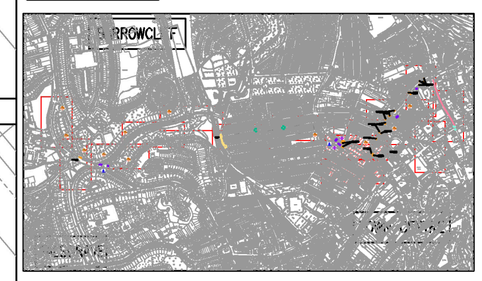
DO NOT SCALE

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH SCARBOROUGH LCWIP PHASE 2 REPORT

KEY

- STEPPED CYCLE / FOOTWAY
- SHARED CYCLE / FOOTWAY
- FOOTWAY
- SIDE ROAD ACCESS
- PRIVATE ACCESS
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



REV	DATE	BY	DESCRIPTION	CHK	APP
P03	23.03.20	RF	UPDATED FOLLOWING INTERNAL REVIEW	MD	PWW
P02	15.01.20	EL	UPDATED FOLLOWING TECHNICAL REVIEW	MD	PWW
P01	13.12.19	RF	FOR INFORMATION	MD	PWW
Dr	03.07.19	RF	DRAFT ISSUE	MD	PWW

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TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 5 OF 8)

SCALE @ A1:	CHECKED:	APPROVED:
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PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF / PWW	RF / PWW	JULY 2019

DRAWING No: 53804-SCC-DR-GA-005 REV: P03

NELSON STREET

CAMBRIDGE STREET

VICTORIA ROAD

ALBEMARLE BACK ROAD

ALBEMARLE CRESCENT

IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-04

CONTRAFLOW CYCLE LANE

2.0m

1.5m

SET-BACK RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

Warehouse

The Railings

Church

Church Cottage

Postgate House

Rowntree House

Cygnet Court

Car Park

El Sub Sta

CLIFTON STREET

Clifton Court

VICTORIA STREET

Garage

HOYTON ROAD

VINE STREET

St Thomas's Flats

UNION STREET

ABERDEEN STREET

CYCLOPS JUNCTION TO BE DESIGNED AT DETAIL DESIGN STAGE

PARALLEL CYCLE AND PEDESTRIAN CROSSING

Club

PH

LB

44.3m

38.3m

37.5m

NOTES

DO NOT SCALE

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KEY

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- SHARED CYCLE / FOOTWAY
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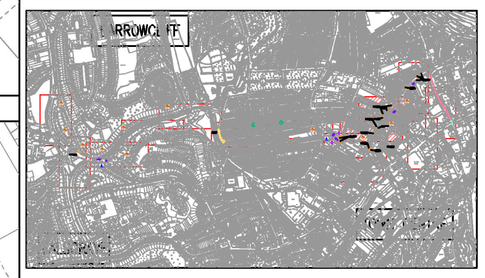
- BUS STOP BYPASS
- TOUCAN CROSSING
- PEDESTRIAN CROSSING
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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Dr	03.07.19	RF	DRAFT ISSUE	MD	PWW

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ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 6 OF 8)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	MD	PWW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF / PWW	RF / PWW	JULY 2019

DRAWING No: 53804-SCC-DR-GA-006 REV: P03

File name: C:\PROJECTS\SCARBOROUGH COVID 19 WORKS\53804-SCC-DR-GA-001-009.DWG, printed on 23 March 2020 12:23:10, by Fowkes, Reece

DUTCH ROUNDABOUT TO BE DESIGNED AT DETAIL DESIGN STAGE

FULLY SEGREGATED BI-DIRECTIONAL CYCLE LANE

IN-LINE RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-04

PARALLEL CYCLE AND PEDESTRIAN CROSSING

SET-BACK RAISED JUNCTION IN ACCORDANCE WITH GREATER MANCHESTER CYCLING DESIGN GUIDE DRAWING J-CT-GE-03

CONTRAFLOW CYCLE LANE

CONTRAFLOW CYCLE LANE

FULLY SEGREGATED BI-DIRECTIONAL CYCLE LANE

PARALLEL SIGNALISED CROSSING

NOTES

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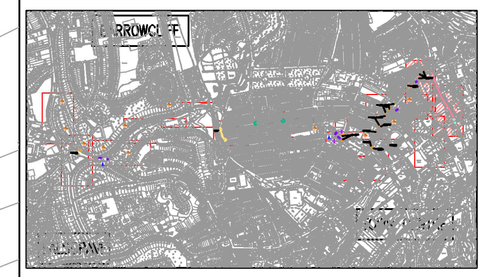
- BLENDED CROSSING
- ON-STREET CAR PARKING
- SOFT LANDSCAPING
- NEW KERB

LOCATION PLAN



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Dr	03.07.19	RF	DRAFT ISSUE	MD	PWW

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ARCHITECT:
-

SITE/PROJECT:
NORTH YORKSHIRE COUNTY COUNCIL
SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE:
CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR
GENERAL ARRANGEMENT
(SHEET 7 OF 8)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	MD	PWW
PROJECT NO: 70053804	DESIGNED: RF / PWW / DRAWN: RF / PWW	DATE: JULY 2019

DRAWING No: 53804-SCC-DR-GA-007 REV: P03

CONTRAFLOW CYCLE LANE

3.0m

FULLY SEGREGATED BI-DIRECTIONAL CYCLE LANE

PARALLEL SIGNALISED CROSSING

National Spiritualist Church

Waterhouse Lane

Newborough

Bar Street

London Inn Yard

Salisbury Arcade

ST NICHOLAS STREET

Tudor Court

HARCOURT PLACE

Falconers Square

Marine Parade

Royal Hotel

Bank

Club

PH

TCB

GP

ALBEMARLE CRESCENT

Aberdeen Lane

Aberdeen Place

Aberdeen Walk

Rowntree House

Head Post Office

Bar House

Westborough

YORK PLACE

Ramp to Roof Car Park

Shops (below)

Christchurch House

Brunswick Pavilion

Roof Car Park

TCBs

VERNON ROAD

Belvair Terrace

43.2m

38.9m

36.9m

NOTES

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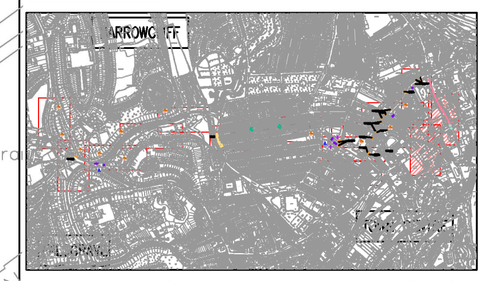

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P01	13.12.19	RF	FOR INFORMATION	MD	PWW
Dr	03.07.19	RF	DRAFT ISSUE	MD	PWW

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CLIENT: NORTH YORKSHIRE COUNTY COUNCIL

ARCHITECT: -

SITE/PROJECT: NORTH YORKSHIRE COUNTY COUNCIL SCARBOROUGH LOCAL CYCLING AND WALKING INFRASTRUCTURE PLAN (LCWIP)

TITLE: CORRIDOR 4 - SCARBOROUGH CENTRAL CORRIDOR GENERAL ARRANGEMENT (SHEET 8 OF 8)

SCALE @ A1:	CHECKED:	APPROVED:
1:500	MD	PWW

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70053804	RF / PWW	RF / PWW	JULY 2019

DRAWING No: 53804-SCC-DR-GA-008 REV: P03

File name:C:\RFS\CARBOROUGH\CIV\3D 19 WORKS\53804-SCC-DR-GA-001-008.DWG, printed on 23 March 2020 11:29:39, by Fowkes, Reece

Appendix D

SCHEME COST ESTIMATES

Project: **Scarborough LCWIP Priority Schemes**

Client: **North Yorkshire CC**

Title: **Initial Budget Estimates to design detail as at February 2020**

Price Base: **Approx Rating used deemed to be current at Q1 2020 approx**

Estimate Prepared: **Feb-20**

	Description	Total Scheme Cost Estimate	Sub total Corridor 1	Sub total Corridor 2	Sub total Corridor 3	Sub total Corridor 4
	For Cycle Corridors (Specific Items)					
Item	**Construction Costs by Work Heading**					
Corridor 1	**Brayton to Selby**					
1	To cover all construction details as drawings 53804-CTC-DR-GA-001 - Cinder Track Corridor to 53804-CTC-DR-GA-009 - Cinder Track Corridor	2,540,000	2,540,000			
Corridor 2	**Trans Pennine Trail**					
2	To cover all construction details as drawings 53804-ETC-DR-GA-001 - Eastfield To Cayton to 53804-ETC-DR-GA-005 - Eastfield To Cayton	1,575,000		1,575,000		
Corridor 3	**Selby South East Routes**					
3	To cover all construction details as drawings 53804-ETS-DR-GA-001 - Scarborough Town Centre to Eastfield to 53804-ETS-DR-GA-007 - Scarborough Town Centre to Eastfield	1,075,000			1,075,000	
Corridor 4	**Selby North Routes**					
4	To cover all construction details as drawings 53804-SCC-DR-GA-001 - Scarborough Central Corridor to 53804-SCC-DR-GA-008 - Scarborough Central Corridor	4,645,000				4,645,000
General Items						
Approx allowances only. EO where appropriate.	Included in cost ests above					
	Sub-Total Construction Cost	**9,835,000**	**2,540,000**	**1,575,000**	**1,075,000**	**4,645,000**
15	**Contingencies for measurable items likely but not currently detailed (5% minimal currently until exist to new further defined)**	**0**	**0**	**0**	**0**	**0**
	sub-total	**9,835,000**	**2,540,000**	**1,575,000**	**1,075,000**	**4,645,000**
16	**Allowance for the affects of constrained/restrictive working times (7.5%)**	**740,000**	**190,000**	**120,000**	**80,000**	**350,000**
	sub-total	**10,575,000**	**2,730,000**	**1,695,000**	**1,155,000**	**4,995,000**
17	**Preliminaries (25%) (inc TM 7.5%)**	**2,650,000**	**685,000**	**425,000**	**290,000**	**1,250,000**
	sub-total	**13,225,000**	**3,415,000**	**2,120,000**	**1,445,000**	**6,245,000**
18	**Allowance based on construction costs above(prior to obtaining more detailed SU estimates) For works for and by Statutory Undertakers, assumed not significant as works not too intrusive (7%)**	**740,000**	**190,000**	**120,000**	**80,000**	**350,000**
	sub-total	**13,965,000**	**3,605,000**	**2,240,000**	**1,525,000**	**6,595,000**
19	**Options studies, Investigations, Surveys, Design, Preparation, Documentation, Procurement, Management, Administration & Supervision (14%)**	**1,960,000**	**505,000**	**315,000**	**215,000**	**925,000**
	Sub total Estimated Design & Construction Costs and Work by other parties excl Risk Allowance	**15,925,000**	**4,110,000**	**2,555,000**	**1,740,000**	**7,520,000**
20	**Risk Allowance: arbitary allowance at this stage prior to a scheme specific QRA. (20%)**	**3,190,000**	**825,000**	**510,000**	**350,000**	**1,505,000**
	Indicative likely Design & Construction Costs	**19,115,000**	**4,935,000**	**3,065,000**	**2,090,000**	**9,025,000**
20	**Application of DfT recommended Optimism Bias appropriate at this stage of design development. 44% (Roadworks) & 66% (Structures)**	**8,450,000**	**2,210,000**	**1,350,000**	**920,000**	**3,970,000**
	Potential overall budget to allow for at this stage	**27,565,000**	**7,145,000**	**4,415,000**	**3,010,000**	**12,995,000**
Notes		**Total Scheme Cost Estimate**	**Total Corridor 1**	**Total Corridor 2**	**Total Corridor 3**	**Total Corridor 4**

1) This estimate contains items and allowances/no allowance as stated above and on attached quantity page as noted but excludes the following ;-
- inflation from estimate date to start of construction
- local authority charges
- VAT at current rate
- land purchases or associated legal costs
- compensation claims (i.e. through loss of business)

Prepared by Darren Wright 12/02/2020

Appendix E

ECONOMIC APPRAISAL

Appendix E1

Analysis of Monetised Costs and Benefits (in £'000s)

Scenario: Core Demand Scenario & 20 Year Design Life

		All Users			
		Corridor 1	Corridor 2	Corridor 3	Corridor 4
a	Congestion benefit	805.80	318.03	535.19	593.40
b	Infrastructure	7.67	3.03	5.09	5.65
c	Accident	230.03	90.78	152.78	169.39
d	Local Air Quality	1.09	0.43	0.73	0.80
e	Noise	15.34	6.05	10.19	11.29
f	Greenhouse Gases	41.79	16.49	27.75	30.77
g	Reduced risk of premature death	8716.42	4099.95	11581.45	13808.25
h	Absenteeism	5286.93	2089.89	3502.92	3888.76
i	Journey Ambience	3599.15	979.73	3563.33	4975.04
j	Indirect Taxation	-167.15	-65.97	-111.02	-123.09
k	Government costs	5542.33	3422.87	2334.81	10079.71
l	Private contribution	0.00	0.00	0.00	0.00
	PVB	18529.39	7535.38	19263.31	23354.62
	PVC	5534.66	3419.84	2329.71	10074.07
	BCR	**3.35**	**2.20**	**8.27**	**2.32**

Benefits by Type:

Mode Shift (a+b+c+d+e+f+j)	934.56	368.84	620.71	688.21
Health (g+h)	14003.35	6189.84	15084.37	17697.02
Journey Quality (i)	3599.15	979.73	3563.33	4975.04

Appendix E2

Analysis of Monetised Costs and Benefits (in £'000s)

Scenario: Sensitivity Test - Low Demand Scenario & 20 Year Design Life

		All Users			
		Corridor 1	Corridor 2	Corridor 3	Corridor 4
a	Congestion benefit	402.90	159.01	267.60	296.70
b	Infrastructure	3.83	1.51	2.55	2.82
c	Accident	115.01	45.39	76.39	84.70
d	Local Air Quality	0.55	0.22	0.36	0.40
e	Noise	7.67	3.03	5.09	5.65
f	Greenhouse Gases	20.89	8.25	13.88	15.39
g	Reduced risk of premature death	4358.21	2049.98	5790.72	6904.13
h	Absenteeism	2643.46	1044.94	1751.46	1944.38
i	Journey Ambience	3142.54	884.92	3168.17	4438.52
j	Indirect Taxation	-83.58	-32.99	-55.51	-61.55
k	Government costs	5542.33	3422.87	2334.81	10079.71
l	Private contribution	0.00	0.00	0.00	0.00
	PVB	10607.66	4162.75	11018.16	13628.31
	PVC	5538.50	3421.36	2332.26	10076.89
	BCR	**1.92**	**1.22**	**4.72**	**1.35**

Benefits by Type:

Mode Shift (a+b+c+d+e+f+j)	467.28	184.42	310.35	344.11
Health (g+h)	7001.67	3094.92	7542.19	8848.51
Journey Quality (i)	3142.54	884.92	3168.17	4438.52

Appendix E3

Analysis of Monetised Costs and Benefits (in £'000s)

Scenario: Sensitivity Test - High Demand Scenario & 20 Year Design Life

		All Users			
		Corridor 1	Corridor 2	Corridor 3	Corridor 4
a	Congestion benefit	1208.70	477.04	802.79	890.10
b	Infrastructure	11.50	4.54	7.64	8.47
c	Accident	345.04	136.18	229.17	254.09
d	Local Air Quality	1.64	0.65	1.09	1.21
e	Noise	23.00	9.08	15.28	16.94
f	Greenhouse Gases	62.68	24.74	41.63	46.16
g	Reduced risk of premature death	13074.63	6149.93	17372.17	20712.38
h	Absenteeism	7930.39	3134.83	5254.39	5833.15
i	Journey Ambience	4055.76	1074.54	3958.48	5511.56
j	Indirect Taxation	-250.73	-98.96	-166.53	-184.64
k	Government costs	5542.33	3422.87	2334.81	10079.71
l	Private contribution	0.00	0.00	0.00	0.00
	PVB	26451.12	10908.02	27508.46	33080.94
	PVC	5530.83	3418.33	2327.17	10071.24
	BCR	**4.78**	**3.19**	**11.82**	**3.28**

Benefits by Type:

Mode Shift (a+b+c+d+e+f+j)	1401.83	553.26	931.06	1032.32
Health (g+h)	21005.02	9284.76	22626.56	26545.53
Journey Quality (i)	4055.76	1074.54	3958.48	5511.56

Appendix E4

Analysis of Monetised Costs and Benefits (in £'000s)

Scenario: Sensitivity Test - Seasonal Uplift Scenario & 20 Year Design Life

		All Users			
		Corridor 1	Corridor 2	Corridor 3	Corridor 4
a	Congestion benefit	1047.54	413.43	695.75	771.42
b	Infrastructure	9.97	3.93	6.62	7.34
c	Accident	299.03	118.02	198.61	220.21
d	Local Air Quality	1.42	0.56	0.94	1.05
e	Noise	19.94	7.87	13.24	14.68
f	Greenhouse Gases	54.32	21.44	36.08	40.00
g	Reduced risk of premature death	11331.35	5329.94	15055.88	17950.73
h	Absenteeism	6873.01	2716.85	4553.80	5055.39
i	Journey Ambience	4678.90	1273.65	4632.32	6467.55
j	Indirect Taxation	-217.30	-85.76	-144.32	-160.02
k	Government costs	5542.33	3422.87	2334.81	10079.71
l	Private contribution	0.00	0.00	0.00	0.00
	PVB	24088.21	9796.00	25042.31	30361.01
	PVC	5532.36	3418.94	2328.19	10072.37
	BCR	**4.35**	**2.87**	**10.76**	**3.01**

Benefits by Type:

Mode Shift (a+b+c+d+e+f+j)	1214.92	479.49	806.92	894.68
Health (g+h)	18204.35	8046.79	19609.68	23006.12
Journey Quality (i)	4678.90	1273.65	4632.32	6467.55

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