Norwich Western Link

Sustainable Transport Strategy Appendix 2 – Complementary Measures Shortlisting

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Contents

1 Wider Complementary Measures Shortlisting – Shortlisting and Sifting Process 3

Tables

Table 1-1 – Existing population catchment – 400m buffer 11
Table 1-2 – Calculation of trip rates and mode shares for the Do Minimum (without Proposed Scheme) 13
Table 1-3 – Calculation of trip rates and mode shares for the Do Something (with Proposed Scheme) scenario 14
Table 1-4 – Comparison of Do Minimum and Do Something scheme benefits 15
Table 1-5 – High level option connectivity with local facilities 17
Table 1-6 – Scheme ranking against appraisal criteria 20

Figures

Figure 1-1 – Sustainable transport strategy improvements 5
Figure 1-2 – Local access consultation response by postcode location 6
Figure 1-3 – Wider sustainable transport options 8
Figure 1-4 – Propensity to cycle tool website extract 12
Figure 1-5 – Wider sustainable transport interventions – preferred options 21

1 Complementary Measures Shortlisting – Shortlisting and Sifting Process

1.1.1 A document that sets out the shortlisting and sifting process undertaken to reach the final Complementary Sustainable Transport Measures, presented in the Sustainable Transport Strategy. It should be noted that this shortlisting work was carried out in late 2020/early 2021.

1.2 Cycle-Friendly Options – Shortlisting and Sifting Process

1.2.1 Building upon the opportunities identified through the Walking, Cycling and Horse Riding Assessment (WCHAR) and via stakeholder workshops, additional options for creating Cycle Friendly Routes and improved crossing facilities on the A1067 were included in the 2020 Local Access Consultation. The ideas for the sustainable transport improvements included suggestions from local parish councils and user groups, which were intended to support more people to walk, cycle and use public transport across the wider area around the Proposed Scheme. The potential measures consulted on were:

- 1 - Create a new crossing facility on the A1067 Fakenham Road at Attlebridge to help pedestrians and cyclists cross safely and confidently;
- 2 - Create a new pedestrian crossing on the A1067 Fakenham Road to connect Ringland Footpath 1, south of the A1067, with Attlebridge Restricted Byway 4, north of the A1067;
- 3 - Create a new pedestrian and cycle crossing of Drayton High Road to improve connectivity with the Marriott's Way;
- 4 - Create a cycle-friendly on-road link towards central Norwich from Weston Longville via Ringland and Taverham - improving cycle priority at junctions and on bridges on this lower traffic route would enhance access to school and workplaces on the western edge of Norwich and

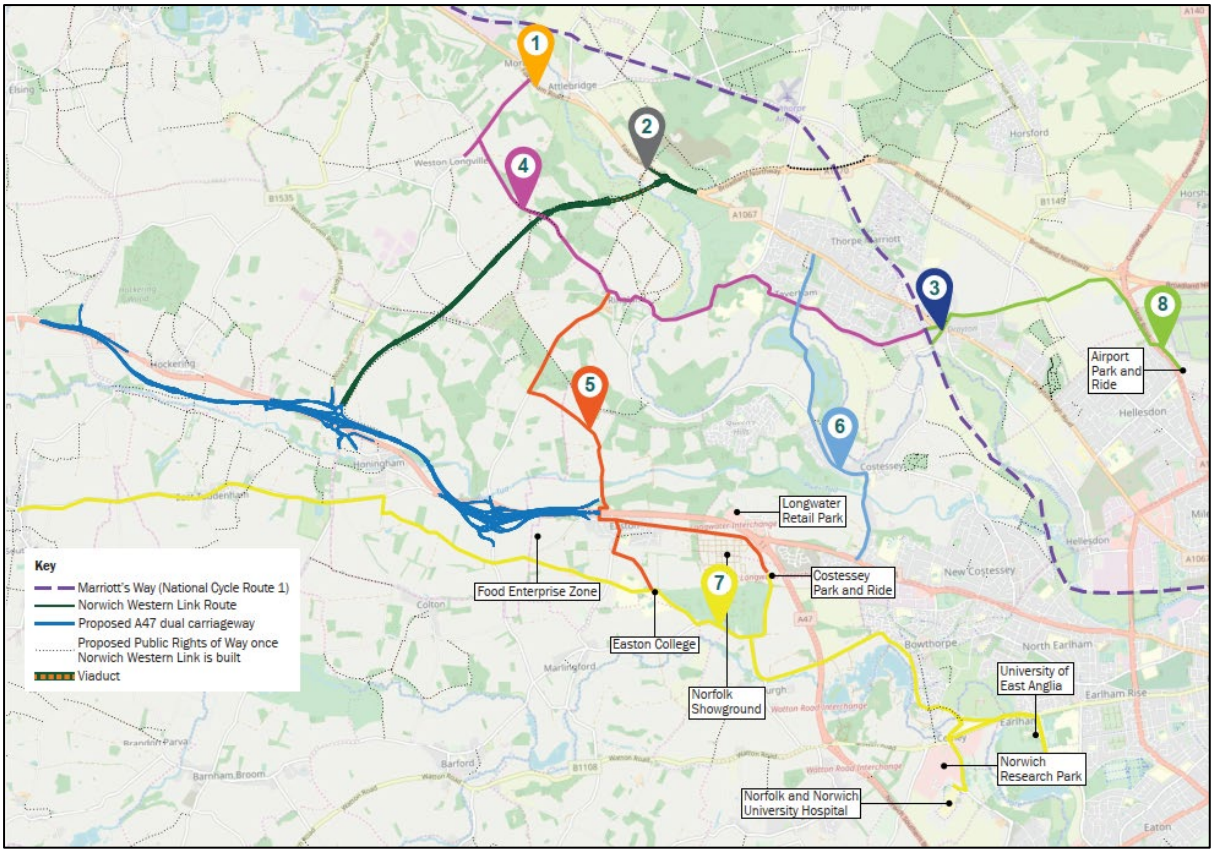
improve connectivity to the Marriott's Way (part of National Cycle Network 1);

- 5 - Create a cycle friendly on-road link from Ringland to Easton. Once the Easton roundabout is removed as part of the A47 upgrade, this route would have lower traffic. Cycle safety could be improved at key junctions and pinch points. This would help to improve access to educational sites, such as Easton College, and Costessey Park and Ride site;
- 6 - Create a cycle friendly on-road link from Taverham to Dereham Road - with the Norwich Western Link in place, this route would have reduced traffic. Creating section of cycle lane and introducing cycle priority measures at junctions would improve access to schools, shops and medical facilities and link to existing cycle paths on Dereham Road;
- 7 - Create a cycle friendly on-road link south of A47 from Mattishall to the Norfolk and Norwich University Hospital and University of East Anglia - this route would benefit from reduced traffic once the nearby A47 is dualled. Introducing cycle priority measures would improve access between residential areas, medical facilities and employment areas, including the Food Enterprise Zone at Easton, Norwich Research Park and Costessey Park and Ride site; and
- 8 - Improve cycle parking at and access to the Airport Park and Ride site from Drayton - this would provide opportunities to access Park and Ride bus services by cycling and improve connectivity to the Marriott's Way and onward destinations in the western fringe of Norwich.

1.2.2 **Figure 1-1** shows the locations of the eight potential sustainable transport interventions.

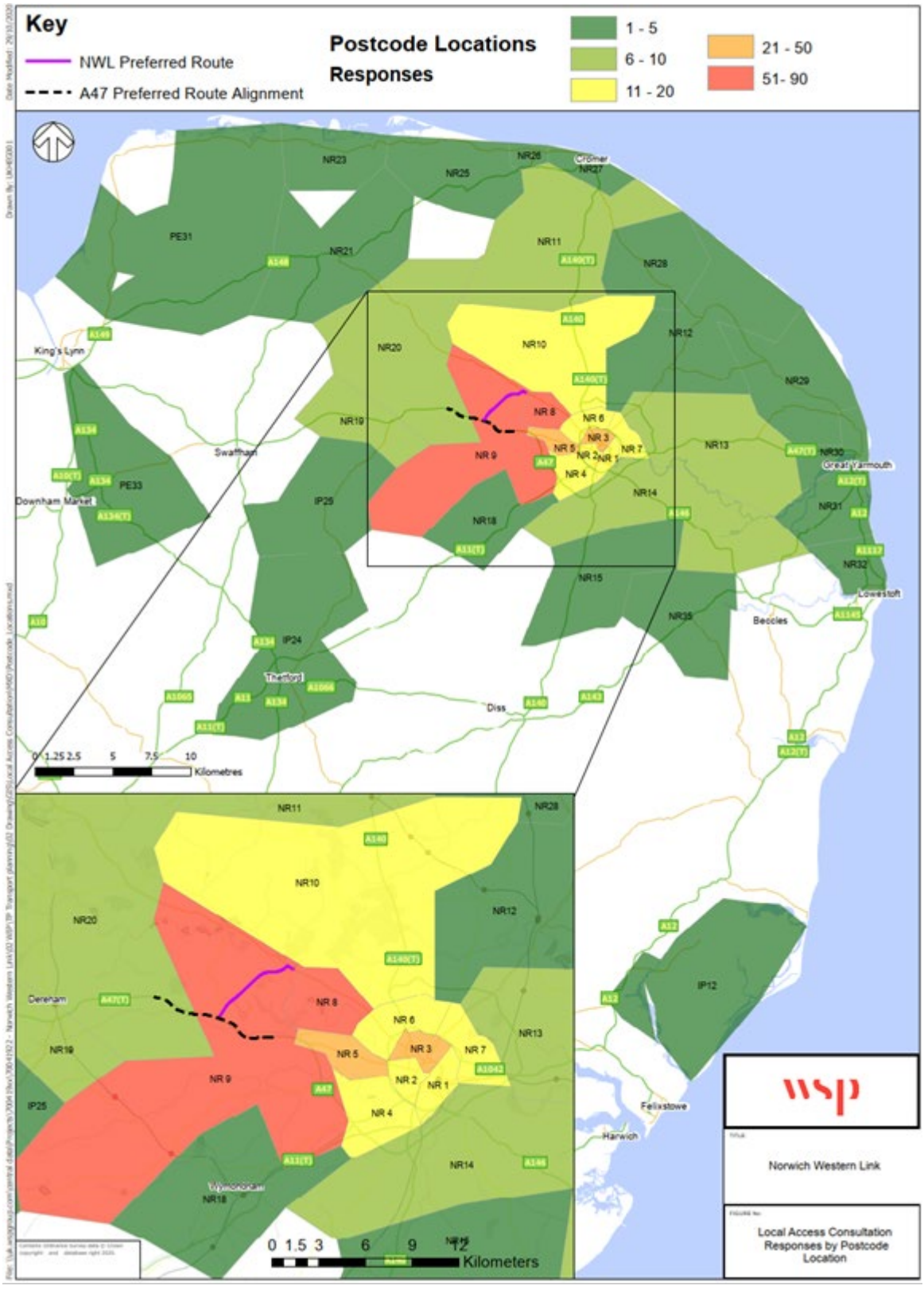
1.2.3 Respondents to the consultation were asked to select up to three of the above interventions that they believe would best support people to walk / or cycle in the area to the west of Norwich.

Figure 1-1 – Sustainable transport strategy improvements



1.2.4 438 people responded to the Local Access Consultation, where almost three-quarters (316) of respondents noted that they were responding as 'a local resident' and a further 40 responses received from those replying on behalf of a local business, organisation or community group and provided the organisation name. Postcode data was collected from respondents, and their location in proximity to the scheme is shown in **Figure 1-2**.

Figure 1-2 – Local access consultation response by postcode location



1.2.5 The plan shows that the greatest volume of responses was received from the NR8 and NR9 postcodes, which is where the Proposed Scheme will be routed, and therefore residents in these areas will be more directly affected. All responses were received through Citizen Space (NCC's online consultation tool), apart from 36 by email and 35 by letter.

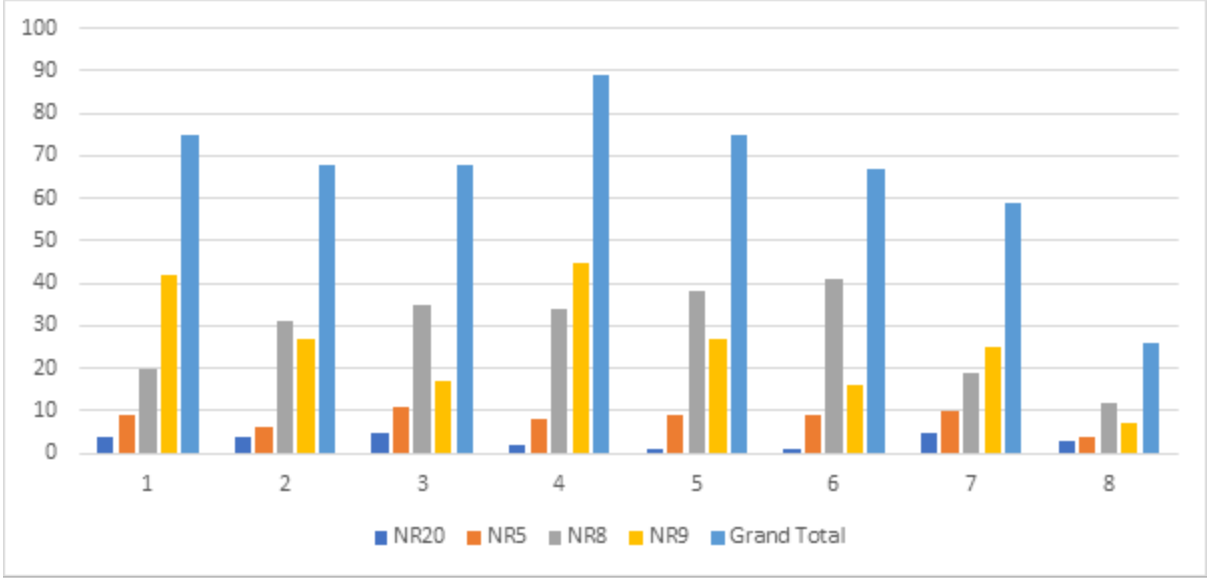
1.2.6 The overall feedback indicates very similar levels of support for options 1-7 (ranging from 145 responses to 114) but a noticeably lower level of support (65 responses) for option 8. The top four options were as follows:

- Option 4: Create a cycle friendly on-road link from Attlebridge and Weston Longville and towards Norwich via Ringland and Taverham (145 responses)
- Option 3: Create a new pedestrian and cycle crossing on Drayton High Road to improve connectivity with the Marriott's Way (139 responses)
- Option 7: Create a cycle-friendly on-road link south of A47 from Mattishall to the Norfolk and Norwich University Hospital & University of East Anglia (131 responses).
- Option 1: Create a new pedestrian and cycle crossing on the A1067 Fakenham Road at Attlebridge (130 responses)

1.3 Shortlisting

1.3.1 The consultation results have been checked against a more localised view based on responses from residents stating that their home postcodes were located in NR5, NR8, NR9 or NR20 only. The results are summarised below.

Figure 1-3 – Wider sustainable transport options



1.3.2 Whilst Option 4 is again the top ranked option amongst local residents in the west of Norwich and Option 8 was again least popular, this more localised view provides a slightly different picture of feedback with Options 1 and 5 in joint second place and Options 2 and 3 in joint third place. Option 6 also had very similar response levels to those in joint third place.

1.3.3 Since the top 3-4 priorities from public consultation, (other than the top and bottom ranking options), are not clearly defined, it is recommended that other performance criteria also need to be taken into account when prioritising a shortlist of 3-4 options, which include:

- Traffic changes as a result of the Proposed Scheme;
- Existing Catchment and Future Propensity to Walk and Cycle (National Travel Survey);
- Connectivity with key employment sites and non-residential land uses;
- Synergy with other proposals (A47 scheme, TfN, proposed developments) and Proposed Scheme options; and
- Cost of proposed options.

1.4 Traffic Changes

1.4.1 The opening year forecast Traffic Model results were reviewed to understand which routes would be more attractive for cycling and walking with the Proposed Scheme in place. The Do Something scenario from the updated NATS model has been used to represent the situation with the Proposed Scheme in place.

1.4.2 For the cycle friendly routes those with the lower levels of future traffic would create more attractive conditions for cyclists. Based on maximum and minimum flows, the top three routes are Options 4, 7 and 5 with AADTs less than 2,500 per day expected with the Proposed Scheme in place, along the majority of the route length. Figure 4.1 of LTN 1/20 also notes that "In rural areas …shared routes with speeds of up to 30mph will be generally acceptable with motor vehicle flows of up to 1,000 pcu per day."

1.4.3 A proportionate approach is assumed to be acceptable in relation to the application of the new LTN 1/20 guidance in rural locations. Active Travel England have also stated that they are not a statutory consultee for major infrastructure proposals such as the Proposed Scheme unless they are directly linked to major developments of commercial and residential uses. Going forward there will be further opportunity to adapt the Cycle Friendly Route design in response to feedback from local communities.

1.4.4 The more urban routes 6 and 8 currently have lower speed limits but higher traffic volumes, so are likely to require segregation which would have a higher infrastructure cost. A section of Marl Hill Road (which connects Weston Longville with Attlebridge) and part of the Option 5 route between Honingham Lane and Ringland Road were assumed to include potential segregated facilities due to traffic volumes and/or vehicle speeds.

1.4.5 For the pedestrian / cycle crossing options (1-3), the proposed interventions would potentially have a more beneficial effect in mitigating severance issues caused by road traffic where flows are highest. Opening year AADT (Annual Average Daily Traffic) flows for the Do Minimum Forecast year have been

compared with Do Something flows for each of the option locations. The Proposed Scheme increases traffic more significantly at the Option 3 location than at Option 2 or Option 1 locations. This suggests that Option 3 would have a more beneficial effect in mitigating severance issues in the Do Something scenario by making it easier to cross the road. Despite this, Options 1 and 2 would have higher traffic speeds, as well as forecast traffic flows on A1067 in excess of 10,000 AADT, and there have been road traffic accidents close to the Option 1 and Option 3 locations in the last five years, so new crossings in these locations would potentially provide additional safety benefits.

1.5 Existing Population Catchment

1.5.1 In order to identify the likely number of people the proposed interventions may benefit; GIS analysis was used to identify a 400m buffer around each of the option locations or routes to create a catchment buffer (this is equivalent to a 5-minute walk). Census 2011 data by Output Area on population has been overlaid and interrogated. The approximate total population within each catchment has been tabulated below. Since Option 7 is a substantially longer route, this route has been split into two sections – east and west of Easton.

1.5.2 The crossing options ranked lowest for this metric as they have the smallest footprint and therefore the smallest scheme catchment. However, within this group, Option 3 had more catchment population (as shown in **Table 1-1**) than Options 1 and 2, but Option 2 had more catchment than Option 3, so Options 1 and 3 would provide greater benefit to more users. For the cycle-friendly route options, Option 7 has more than double the catchment of any other option, but this is also the longest route option with the largest footprint and geographic catchment area. Option 7 has therefore been split into an eastern and western section (east and west of Easton where the route meets Option 5). Options 7E, 6 and 4 have the biggest catchment and would potentially offer more benefit to more people, creating wider opportunities for mode shift.

Table 1-1 – Existing population catchment – 400m buffer

Option	Population	Rank
Option 1	200	2
Option 2	23	1
Option 3	1,272	3
Option 4	7,420	7
Option 5	5,122	6
Option 6	9,504	8
Option 7W	4,134	4
Option 7E	14,320	9
Option 8	5,095	5

1.6 Future Propensity to Walk and Cycle

Propensity to Cycle Tool

1.6.1 Mode share assumptions used within the Propensity to Cycle Tool (PCT) have been applied to understand the number of potential future trips that could benefit from each of the proposed options, based on forecast commuting patterns. For this analysis, there are several scenarios available within the PCT. The Government Target (Equality) scenario within the PCT assumes that active travel in the UK is doubled by 2025, in line with the recently published 2020 Gear Change guidance. For high level assessment purposes, this is taken as the proposed situation with the STS interventions in place. This is compared with the Do Minimum scenario which takes observed NMU mode share uplifts between 2011 and 2018 from NTS (East of England Region data) and extrapolates them to the opening year of 2025 (equivalent to a 15% increase on current levels). The changes in mode shares as a result of the various scenarios are shown on the PCT bike website – the below extract shows the mode shares predicted for the Norfolk area as follows.

Figure 1-4 – Propensity to cycle tool website extract

Scenario	% cyclists	% walking	% car drivers	% all other modes
Census 2011	4.9 %	11.8 %	68.8 %	14.5 %
Government Target (equality)	8.2 %	11.1 %	66.6 %	14.1 %
Government Target (near market)	8.3 %	10.9 %	66.7 %	14.1 %
Gender Equality	7.2 %	11.3 %	67.4 %	14.1 %
Go Dutch	20.3 %	8.4 %	59.0 %	12.3 %
Ebikes	25.7 %	7.8 %	55.1 %	11.4 %

Source: Propensity to Cycle Tool, www.PCT.bike, January 2021

1.6.2 Population data from the 2011 Census was used as the starting point, with an assumption of household occupancy of 2.3 people per dwelling (based on the average household size for the Norfolk area, E10000020, taken from Table HO1UK from the 2011 UK Census), along with an assumed trip rate of 8 trips per household per day (Data on all day trip rates per household taken from TRICS 7.7.4 2021 with residential sites selected in England outside London, excluding town centre sites and excluding sites with population of more than 20,000 residents within 1 mile).

1.6.3 The Walking and Cycling mode shares from the above PCT table for Norfolk were used for the three crossing options (1-3) and the cycling mode shares only have been used for the cycle friendly route options (4-8). For the crossing options, 40% of NMU trips are assumed to be on routes that would be catered for and for the cycle route options, 30% of trips are assumed to be on the desire line. Trip rates and mode shares for the baseline (Do Minimum) scenario are shown in **Table 1-2**.

Table 1-2 – Calculation of trip rates and mode shares for the Do Minimum (without Proposed Scheme)

Option	Population	Households	All trips per day	% trips on Desire Line	%NMU PCT census	NMU trips per day	2025 NTS forecast (+15%) DM
Option 1	200	87	696	40%	17%	46	53
Option 2	23	10	80	40%	17%	5	6
Option 3	1,272	553	4,424	40%	17%	296	340
Option 4	7,420	3,226	25,809	30%	5%	379	436
Option 5	5,122	2,227	17,816	30%	5%	262	301
Option 6	9,504	4,132	33,057	30%	5%	486	559
Option 7W	4,134	1,797	14,379	30%	5%	211	243
Option 7E	14,320	6,226	49,809	30%	5%	732	842
Option 8	5,095	2,215	17,722	30%	5%	261	300

1.6.4 For comparison, the process has been repeated for the Do Something scenario, taking the PCT forecast mode shares for Government Target scenario as shown below in **Table 1-3**.

Table 1-3 – Calculation of trip rates and mode shares for the Do Something (with Proposed Scheme) scenario

Option	Population	Households	All trips per day	% trips on Desire Line	%NMU PCT census	NMU trips per day	2025 NTS forecast (+15%) DM
Option 1	200	87	696	40%	19%	54	62
Option 2	23	10	80	40%	19%	6	7
Option 3	1,272	553	4,424	40%	19%	342	393
Option 4	7,420	3,226	25,809	30%	8%	635	730
Option 5	5,122	2,227	17,816	30%	8%	438	504
Option 6	9,504	4,132	33,057	30%	8%	813	935
Option 7W	4,134	1,797	14,379	30%	8%	354	407
Option 7E	14,320	6,226	49,809	30%	8%	1,225	1,409

Option	Population	Households	All trips per day	% trips on Desire Line	%NMU PCT census	NMU trips per day	2025 NTS forecast (+15%) DM
Option 8	5,095	2,215	17,722	30%	8%	436	501

1.6.5 Comparing the Do Something and Do Minimum scenarios shows the following changes in daily trip making as a result of the options as shown in **Table 1-4**.

Table 1-4 – Comparison of Do Minimum and Do Something scheme benefits

Option	2025 DM	2025 DS	2025 DS New Trips	Rank
Option 1	53	62	+8	2
Option 2	6	7	+1	1
Option 3	340	393	+53	3
Option 4	436	730	+294	7
Option 5	313	524	+203	6
Option 6	559	935	+376	8
Option 7W	253	423	+164	4
Option 7E	842	1,409	+567	9
Option 8	300	501	+202	5

1.6.6 The above results show that of the proposed crossings Option 3 is likely offer benefit to more users than Options 1 and 2. Whilst for the cycle friendly routes, Option 7E, 6 and 4 are likely to cater for more users.

1.7 Connectivity with key land uses in the west of Norwich

1.7.1 Whilst all options were developed with a key objective of improving connectivity to schools, shops, jobs and the Marriott's Way, some offer more connections to non-residential land uses than others. A high-level review of the connectivity benefits has been carried out and surmised in Table 1-5 below.

1.7.2 **Table 1-5** below has been filled in with either 'yes' or 'no' responses, to note where each option is likely to improve access to key facilities.

Table 1-5 – High level option connectivity with local facilities

Option	Schools	Shops	Jobs	Medical Facilities	Village Hall	Marriott's Way	PROW Network	Bus Stops	Park and Ride	Total	Rank
Option 1	Yes	No	No	No	Yes	Yes	Yes	Yes	No	5	5
Option 2	No	No	No	No	No	No	Yes	No	No	1	4
Option 3	Yes	Yes	Ynes	Yes	No	Yes	No	Yes	No	6	6
Option 4	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	7	7
Option 5	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	6	6
Option 6	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	7	6
Option 7W	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	6	6
Option 7E	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	6	6
Option 8	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	8	8

1.7.3 Of the cycle route options, Option 8 and 4 offer the best opportunity for connectivity improvements with various land uses along each of these routes, with options 5, 6, 7 and 3 also offering good connections.

1.7.4 Option 8 connects to key employment areas and the Airport, the Park and Ride site, schools, shops and medical facilities near Drayton High Road, The Marriott's Way and cycleways alongside the A1270 Broadland Northway.

1.7.5 Option 4 connects the villages of Attlebridge, Weston Longville and Ringland, and their village halls as well as onward routes to schools, shops, a medical centre and local jobs in Taverham and Drayton in addition to the Marriott's Way.

1.7.6 Option 7E offers enhanced connections to major employment sites at NRP and NNUH as well as higher and further education facilities at Easton College and UEA. This route also includes Easton where housing development and the Food Enterprise Zone are planned.

1.7.7 Option 7W connects residential areas south of A47 to local facilities such as GP surgery and schools in Mattishall.

1.7.8 Option 5 links Lower Easton and Ringland villages with Easton including Easton College and Costessey Park and Ride.

1.7.9 Option 6 would improve links between Taverham and Costessey which include schools, shops and village halls. Costessey also includes Roundwell Medical Centre.

1.7.10 Of the crossing locations, Option 3 at Drayton High Road is at a key intersection of routes at a busy junction which is difficult for pedestrians and cyclists to negotiate. The location is surrounded by land uses on both sides of A1067 which creates desire lines crossing the busy road. It is also located on a desire line close to the Marriott's Way. This option offers much greater connectivity enhancement than the other two crossing options and links well with Option 4. However, Option 1 provides onward linkage to the Marriott's Way.

1.8 Synergy with Other Options and Wider Schemes

1.8.1 The way in which the cycle friendly route options fit with other transport proposals and developments in the surrounding areas also needs to be taken into account.

1.8.2 Options 5 and the eastern part of Option 7 offer good synergy with the A47 North Tuddenham to Easton dualling scheme and the Food Hub, plus potential new housing developments at Easton. Option 6 also supports development at Taverham and Costessey and offers connectivity with Transforming Cities schemes at Dereham Road. Option 7W runs parallel with improvements being proposed by National Highways, so would potentially duplicate and reduce the benefit provided by the NH scheme.

1.8.3 The other cycle route options have less synergy with committed developments and wider transport investment schemes. Of the crossing options, Option 3 is located closer to new developments than Options 1 and 2.

1.8.4 In terms of synergy between the options to create a logical Sustainable Transport package, Option 4 connects directly with Options 1 and 3 and together these create a loop connecting to the Marriott's Way. Option 2 links directly with the Proposed Scheme works and NMU Provision, Option 5 connects with Option 4 and also Option 7.

1.8.5 All options fit well with Transport for Norwich strategic objectives by improving opportunities for walking and cycling, reducing air quality impacts of transport and reducing congestion. Those with higher concentrations of non-residential land uses and more densely populated catchments are likely to have the greatest synergy with the TfN aspirations. However, for recreational walking and cycling, the more rural routes benefitting from traffic reduction as a result of the scheme are also able to contribute by opening up new opportunities for walking and cycling on parts of the network that are currently intimidating for vulnerable users due to the presence of through-traffic. The Proposed Scheme will help to unlock this opportunity by providing a strategic road that

alleviates pressure on minor rural routes, making them more attractive for walking and cycling.

1.9 Scheme Prioritisation

1.9.1 In the event that delivering all options is not affordable a multi-criteria ranking system has been used to enable scheme options to be prioritised as explained above. A summary of the scheme option ranking is set out below in Table 1-6.

1.9.2 Options 4, 5, 6, 3 and 7E were the top ranked options taking into account all benefit factors. However, cost is expected to be a key consideration.

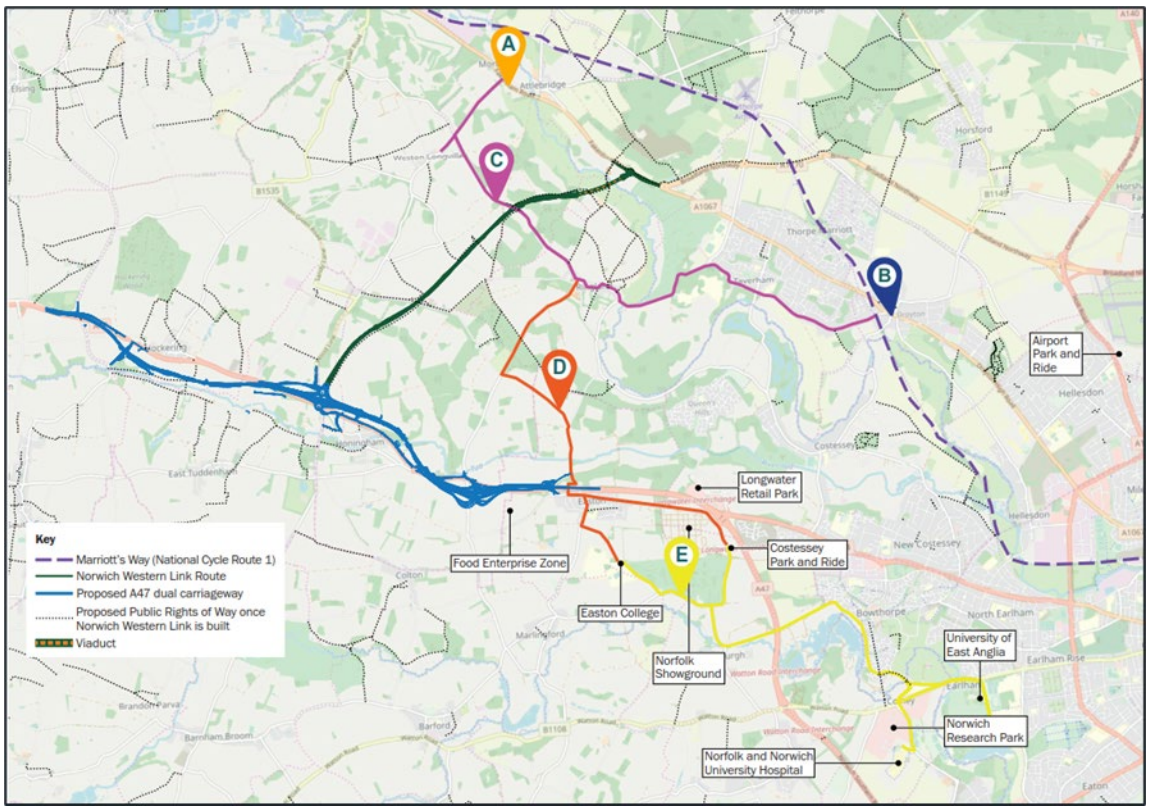
Table 1-6 – Scheme ranking against appraisal criteria

Option	**1**	**2**	**3**	**4**	**5**	**6**	**7W**	**7E**	**8**
Consultation (all)	5	3	7	8	2	4	6	6	1
Local Feedback	7	6	6	8	7	6	5	5	4
Severance (Peds)	6	7	8	N/A	N/A	N/A	N/A	N/A	N/A
Traffic Reduction (Cycles)	N/A	N/A	N/A	8	7	6	3	5	4
Connectivity	5	4	6	7	6	6	6	6	8
Synergy with NH Scheme & Development	3	3	5	4	8	6	7	2	4

Option	1	2	3	4	5	6	7W	7E	8
NMU Trips per Day	2	1	3	7	6	8	4	9	5
Total Benefit	**28**	**24**	**35**	**42**	**36**	**36**	**31**	**33**	**26**

1.9.3 The preferred options prioritised for inclusion in the Proposed Scheme are shown is **Figure 1-5** below.

Figure 1-5 – Wider sustainable transport interventions – preferred options



1.10 Next Steps

1.10.1 As set out above a multi-criteria high level appraisal has been used to identify the best performing options for shortlisting. The textual comments from public consultation we received in response to the July 2020 Local Access

Consultation also support this and have also helped guide the selection of shortlisted options.

1.10.2 It is proposed that further development of the shortlisted options (3, 4, 5 and 7E) is taken forward. It is also recommended that Option 1 is included as this would provide synergy with Option 4 and 3 offering improved connectivity with Marriott's Way. There was also local support from residents in the immediate vicinity of the scheme for Options 5, and Option 7 was generally well supported too. Option 5 has good synergy with the proposals that National Highways are bringing forward and offers connectivity to Easton College and the Costessey Park and Ride site. Option 7 (east of the Food Hub) has good synergy with Option 5 and was well supported in consultation, as well as offering connectivity to key land uses in the western fringe of Norwich such as the NNUH, NRP and UEA (amongst others). East of the Food Hub, this route has a more densely populated catchment and connects with the Wymondham circular route and Transport for Norwich strategy projects, as well as supporting new developments that are proposed in the local area.

1.10.3 The schemes which are proposed to be omitted from the next stage of work going forward are Options 2, 6 and 8, plus the western part of Option 7 (Mattishall to the Food Hub at Easton) which is less well populated. Options 2, 6 and 8 had lower levels of support in the public consultation and would have higher levels of traffic using the affected roads, so whilst they have good catchment and lower cost, they may be more efficiently served by bus.

1.10.4 Additionally, the current proposals for the Western Arc bus route duplicate part of the Option 6 route and a new bus service has recently commenced that caters for the desire line embodied within Option 8.