Report to	Norwich Highways Agency Committee	**Item**
	24 November 2016	
Joint Report of	Head of city development services and Executive director of community and environmental services	9
Subject	Transport for Norwich - A11 Newmarket Road project (Daniels Road to Hanover Road)	

Purpose

To agree proposals for a segregated inbound cycleway and associated highway alterations between the Daniels Road roundabout and the footpath link to Hanover Road.

Recommendation

That the committee:

(1) Agree to consult on the scheme to provide an inbound cycling facility segregated from vehicles and pedestrians between the Daniels Road roundabout and the footpath link to Hanover Road, improving the provision for cyclists on this section of Newmarket Road.

(2) Ask the Head of development services to advertise the necessary notices to implement any raised tables required as part of the scheme, pedestrian crossings and for conversion of the existing footway into a shared use footway/cycleway facility where required.

(3) Note that any objections received will be considered by a future meeting of the Committee.

Corporate and service priorities

The scheme helps to meet the corporate priority to provide a safe, clean and low carbon city and the service plan priority to implement the Local Transport Plan and Norwich Area Transportation Strategy.

Financial implications

The scheme has been allocated funding of £800,000 from the Department for Transport Cycle City Ambition Grant.

Ward/s: Eaton, Town Close

Cabinet member: Councillor Bremner – Environment and sustainable development

Contact Officers

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Background documents

None

Report

Strategic Objectives

1. Norwich and its surrounding area is becoming an increasingly popular area to live, work and visit. It is the number one shopping destination in the Eastern Region and becoming one the Nation's premier cultural centres. To ensure the Greater Norwich Area continues to be popular and grow, the transport systems need to be able to cope with the increased demand.

2. Norwich is a medieval city with a narrow road system; incorporating a 21st century transport system to cope with the increased demand without sacrificing highway space for a particular transport mode or at the expense of green space and historic buildings is challenging.

3. The Norwich area Transportation Strategy (NATS) now more widely known as Transport for Norwich (TfN), is the adopted strategy which will deliver the transport improvements needed over the next 15 plus years. The strategy recognises everybody's journeys are different and does not look to force people to use one particular mode. It does look to give people viable options on how they choose to travel and actively promote sustainable transport. To do this in some areas of the network there needs to be a re-balance of the highway space available.

4. The Strategy details the plan for future delivery of improvements in order to develop sustainable transport, reduce congestion and improve air quality within the Greater Norwich area. The strategy has already delivered key improvements such as the award winning Norwich Bus Station, St Augustine's Gyratory, a network of Park & Ride facilities, St Stephens and Chapel Field North and various Bus Rapid Transit (BRT) improvements. It also includes the recently completed Postwick hub and the Northern Distributor Road which is due for completion late 2017.

5. The implementation plan for the Norwich Area Transportation Strategy (NATSIP) was agreed by Norfolk County Council in April 2010 and updated in November 2013 (see link for updated implementation plan http://www.norfolk.gov.uk/view/NCC158241) . The plan sets out the range of transport measures, together with their general intended phasing, for delivery over the short to medium term.

6. The plan has now been updated to take account of what has been delivered since 2010, and to reflect the latest position on future scheme delivery, given progress with implementation, and now that the growth plans for the area are more clear (see joint core strategy document: http://www.greaternorwichgrowth.org.uk/dmsdocument/1953).

7. Cycling is on the increase for both recreation and commuting nationally and the area has a thriving cycling community. The implementation of a City wide cycling network (see link to cycle map http://www.norwich.gov.uk/TransportAndStreets/Transport/Cycling/Documents/CyclingMapFront.pdf) is a key part of the Transport for Norwich Strategy as by delivering a comprehensive city network this reduces a number of short distance car journeys removing pressure on the network, as well as offering improving quality of life and the health benefits that have been well documented.

8. The Greater Norwich area is one of eight urban areas across the country that has been successful in bidding for Cycle Ambition funding from the Department for Transport to comprehensively improve the quality of cycling infrastructure across the Norwich cycle network a copy of the application documents can be found here http://www.norwich.gov.uk/TransportAndStreets/Transport/Cycling/Pages/CycleCityAmbitionGrant2015.aspx.

Background

9. Newmarket Road forms one of the main sections of the Blue pedalway which connects Wymondham, Hethersett and Cringleford to the city centre. The Blue pedalway connects with the orbital purple route in Eaton Village, and all other routes in the City Centre. The A11 / Newmarket Road corridor is also designated a bus rapid transit route. Newmarket road is also a designated Conservation Area with protected trees along its entire length on the south side of the road.

10. Considerable housing development is planned for Cringleford, Hethersett and Wymondham. The Joint Core Strategy allocated 1,200 homes to Cringleford, 1,000 to Hethersett and 2,200 to Wymondham. This will be combined with employment development around the Norwich Research Park to place pressure on the transport network. Part of the strategy for dealing with this pressure is to try and divert many of the journeys that would otherwise involve a car onto public transport and bicycles.

11. The current level of service for cyclists on the blue pedalway has been assessed using the method contained within the London Cycling Design Standards (LCDS), which is seen as the most up to date guidance for cycling infrastructure design. The inner section between the outer ring road and Hanover Road has an overall score of 35 points out of a possible 100. The inner section also scores particularly badly in the safety category, earning 12 points out of 48. A location plan is provided as appendix 1.

12. It has been identified that there are three critical safety factors that need to be resolved through delivery of the cycling improvements. These are;

    - A feeling of being unsafe as a result of 85th percentile speeds greater than 30mph.
    - A feeling of being unsafe as a result of there being over 1,000 vehicles per hour without separation for cyclists.
    - A risk of left/right hook collisions at junctions, resulting from heavy streams of traffic cutting across the main cycling stream.

13. Accident data shows that there have been 17 accidents on this section of Newmarket Road over the last 5 years - 3 accidents were categorised as “serious” and 14 as “slight”, 5 of which involved a cyclist.

14. Traffic counts were taken on Newmarket Road over a 12 hour period (07:00 to 19:00) on 12 April 2016. Peak traffic and cycle flows at three junctions are summarised in Table 01. Data shows that traffic flows at peak times exceed 1000 vehicles per hour. LCDS advises that “where volume is above 1,000 vehicles during the peak hour, separation for cyclists or reduction of traffic volume is required” (LCDS Chapter 4, page 8) and that cycle flows are currently categorised by LCDS guidance as low flow (LCDS Chapter 4, page 54).

Table 01 : Traffic Counts	*0800-0900*	*1700-1800*
Average peak hour traffic flow (A11/Lime Tree Rd/Christchurch Rd junction)	1339	1605
Average peak hour cycle flow (A11/Lime Tree Rd/Christchurch Rd junction)	111	86
Average peak hour traffic flow (A11/Albermarle Rd junction)	1053	1278
Average peak hour cycle flow (A11/Albermarle Rd junction)	74	67
Average peak hour traffic flow (A11/Town Close Rd/Mount Pleasant junction)	1232	1429
Average peak hour cycle flow (A11/ Town Close Rd/Mount Pleasant junction)	91	78

Table 01: Peak traffic and Cycle Flows on Newmarket Road

15. There is currently a lack of cycling space that is separate from vehicles on the carriageway and from pedestrians on the footway.

    - Cycling provision between the Daniels Road roundabout and Brunswick Road is currently on the carriageway. There is a narrow, below standard cycle lane, between the roundabout and Mount Pleasant, which is interrupted by a bus stop and keep clear zig-zag markings outside Norwich High School for Girls. This lane stops just before Mount Pleasant and guides cyclists into a position on the carriageway very close to the kerb.
    - Cycling provision between Mount Pleasant and Brunswick Road is provided by a narrow shared bus and cycle lane. The bus lane is 3.0m wide which does not provide sufficient space for a bus to pass a cyclist within the bus lane. This means cyclists using the bus lane can feel intimidated by buses and buses are delayed by cyclists who are riding in the primary position in the middle of the bus lane to maximise their safety.

16. The main project objective as identified in the design brief is to redesign Newmarket Road between the outer ring road and Hanover Road so that the standard of cycling infrastructure offers a high level of service as measured using the LCDS analytical method. In numerical terms the score should be raised to at least 70 points by addressing the problems mentioned above.

17. The scheme extends as far as Hannover Road because Newmarket Road narrows north of Hannover Road to the extent that it is not possible to continue a segregated cycle track or lane beyond this point without seriously reducing traffic capacity on the approach to the junction with Ipswich Road. It is planned that following the completion of the project the blue pedalway will be rerouted to access the city centre via Hannover Road and Fellowes Plain rather than via Grove Road.

Scheme Proposals

18. In order to provide the level of service required it is necessary for the inbound cycling facility to have the following characteristics:

    - Separate protected space for cyclists that is not entered by vehicles (so the route is safe and feels safe).
    - The space for cycling is sufficiently wide for one cyclist to pass another without needing to enter the space for vehicles (to avoid delays for cyclists).
    - Cyclists should not need to ride in the bus lane (to ensure cyclists feel safe and bus passengers are not delayed behind cyclists).
    - Cyclists should not be sharing space with pedestrians.

19. In order to address the above issues and to provide a cycling facility that offers a higher level of service a design has been developed that provides an off carriageway, one-way, kerb segregated stepped in-bound cycle facility between Daniels Road roundabout and the Hanover Road link. This design includes the removal of the traffic signals at the Christchurch Road/Lime Tree Road junction, relocation the existing pedestrian crossing at Lime Tree Road, construction of a new toucan crossing at the Hanover Road link (east of the Eagle Public House) and provision of new bus stop bypasses at three locations. This design is shown on the plan PE4120-HP-0100-104 attached in Appendix 2.

20. The construction disruption and cost of this option is currently being assessed in relation to alternative approaches that would be less costly and disruptive (e.g. a wide mandatory cycle lane or a widened pavement with separate areas for cyclists and pedestrians). The level of service offered by these alternative approaches would be lower but might be better overall taking into account value for money and the desire to minimise construction disruption. The outcome of this work will be reported to committee along with feedback on the consultation of the segregated cycle track.

21. The following sections of the report describe the issues concerning the stepped segregated cycle track but it is important for members to appreciate that the planned consultation will seek feedback on the core design principals in paragraph 18, that the proposals described below and illustrated on plan PE4120-HP-0100-104 are one way of fulfilling them and that further consultation may be needed if another design approach emerges as offering better value for money.

Early Consultation

22. Early consultation was held with key stakeholders in October 2016, prior to any public consultation. The purpose of this early consultation was to present initial proposals and seek feedback to identify potential issues which could then be dealt with through the design stages of the project. A summary of stakeholder feedback can be seen below:

- Norwich Cycling Campaign:

  Proposals were generally well received. Feedback on the segregated cycle track was positive.

- Norfolk & Norwich Association for the Blind:

  (i) Concerns expressed about the proposed floating bus stops and a feeling that waiting on an island with traffic going past could feel uncomfortable.
  (ii) Concerns about changing the southern footpath to a shared use cycleway/footway.
  (iii) Preferred bus stops with shelters as this gave a place to wait and helped with navigation.

- Norwich City College:

  (i) Proposals were well received. Feedback was given that the proposals represent a positive step in assisting students and staff to access the college through sustainable methods.

- A meeting was held with Norwich High School for Girls on 10 November.

  (i) Feedback was generally supportive for the scheme, with the timing of works the main concern. Their preference would be for any works to be undertaken in the summer school holiday period.
  (ii) Slight concerns were raised regarding removal of the signalised junction at Christchurch Rd/Lime Tree Road. The feeling was that this could make it more difficult for traffic turning right out of Christchurch Road towards the roundabout.

- Town Close School

  (i) The response from the school was extremely positive. They were very encouraged that improved facilities for cyclists were to be provided along the length of Newmarket Road and hoped that it would encourage more parents and pupils to cycle to the school.
  (ii) The school supported the stepped segregated cycle facility was well thought out and an appropriate method of providing a safer cycle route to the school.
  (iii) They also supported the conversion of the southern footway to a shared use facility and provision of a new toucan crossing at the Hanover Road link.

Detailed Scheme Proposals

In-bound segregated cycleway

23. An off carriageway, one-way, kerb segregated stepped cycle facility could be provided between the Daniels Road roundabout and the Hanover Road link. This would be constructed by narrowing the existing footway to a nominal width of 2.0m by setting back the kerb line and building out into the existing carriageway to provide additional width to construct a 2.2m wide cycleway. Carriageway lane widths would be slightly reduced to accommodate the new footway and cycleway but in general these would not be reduced to below 3.0m wide. The existing inbound bus lane would remain and operate more effectively without cyclists delaying buses. Construction of a segregated facility would offer a higher level of service for cyclists because it removes cyclists from the carriageway, lessening the feeling of being unsafe that currently results from sharing space with large numbers of buses travelling around 30mph.. An on-carriageway facility provides no separation for cyclists and as such offers no real

protection from high volumes of traffic. A segregated facility also offers a better level of protection for pedestrians compared to foot/cycleway separated by a solid white line, where both cyclists and pedestrians could wander into the space reserved for each other and where two way use on the foot/cycleway requires more space than one way use on a segregated cycle track. As stated in paragraph 14 of LCDS guidance advises that if traffic volumes are greater than 1,000 vehicles per hour, which is the case on Newmarket Road, that separation of cyclists or reduction of traffic volume is required. The latter is not possible due to the fact that Newmarket Road is a principal primary route in the city centre, meaning the only viable option for providing a cycling facility that will achieve the national and local targets to double usage within ten years is to segregate cyclists from the carriageway.

24. It is proposed to have a level difference between the footway and cycleway which would be separated by a kerb line, similar to the existing facility on Newmarket Road at the Eaton slip road (see photograph 1 below), but without the cobble edging strip and requiring one way use.

Photograph 1: Example of stepped segregated cycle path on Newmarket Road

The cycleway would also be kerbed and raised above the carriageway level. A recently completed scheme at Huntingdon Road in Cambridge adopts this approach. They developed a kerb that is shaped to provide an easy transition from carriageway to cycleway and vice versa – see photograph 2 for details. The footway and cycleway would possibly be finished in contrasting surfacing materials to denote the different spaces for walking and cycling, an example of which can also be seen in photograph 2.

Photograph 2: Example of stepped segregated cycle path including floating bus stop in Cambridge

25. An integral part of the proposed cycleway is the provision of bus stop bypasses at the three existing stops on this section of Newmarket Road. At these locations the cycleway will be located between the footway and the bus boarding area. This would remove the need for cyclists to go around stationary buses at the stops and execute a potentially dangerous manoeuvre involving mixing with motor traffic. The footway and cycleway would be narrowed to a width of 1.5m in order to provide sufficient width to construct a bus boarder with a minimum width of 2.0m. The cycleway will be tapered on the approach to the bus stop in an attempt to reduce cyclists speed and potential conflict with pedestrians. A ramped pedestrian crossing point will also be provided linking the footway to the floating bus stop. This will be surfaced in the same material as the footway to reinforce to cyclists that they are entering an area in which pedestrians are present. Tactile paving will be provided on the footpath and bus boarder to ensure that visually impaired pedestrians do not miss the crossing point, which will be positioned downstream of the bus boarding area so that pedestrians are facing the correct way to see oncoming cyclists when dismounting form the bus. Please see drawing PE4120-HP-0100-105 for details of the proposed bus stop bypass.

26. Similar floating bus stops have been installed in Manchester and Cambridge as part of their respective Cycling Ambition schemes and by Transport for London. Reports have been produced following implementation of the floating stops by the Cycle Ambition Grant Cities and Sustrans. The report written by the Cycle Ambition Grant Cities details key lessons learned from a trial site containing a one way bus stop bypass, with feedback obtained from bus passengers, cyclists and pedestrians, as set out below;

- *Usage by cyclists* – the entry alignment (1 in 3 taper with the cycle lane approach directing cyclists towards the bus stop bypass lane) is such that the majority of cyclists were observed to make use of the bus stop bypass lane.

- *Interaction between bus users, pedestrians and cyclists* – there were no recorded "incidents" even during the busiest times indicating that in general terms there is sufficient time and space for bus users, pedestrians and cyclists to interact with each other safely within the bus stop bypass arrangement.

- *Capacity of bus stop island* – the 2.7m island width appeared to be sufficient to accommodate waiting and alighting bus passengers including those with disabilities without interfering with the operation of the cycle track. The video footage obtained supported this view.

- *Cycle track width* – whilst some stakeholders were of the view that the width of the cycle bypass lane should be 2.5m in order to allow cyclists to ride two abreast without difficulty or to allow cyclists to swerve if needed, overall the 1.8m width at the trial site was found to be appropriate as it made overtaking difficult for cyclists and therefore helped to control cycling speeds. The bypass lane width provided adequate capacity when being used by the largest number of cyclists at any one time.

- *Speed of cyclists* – concern regarding the speed of cyclists along the bus stop bypass lane was cited as one of the top five issues raised during the perception surveys. The average recorded cycle speed along the bus stop bypass throughout the survey period was 12.7 mph which is considered to be at the upper end of the acceptable speed range for this facility.

- *Recognition of the cycle track* – feedback from the perception surveys was that the use of coloured surfacing (orange) and a level difference helped to clearly demark the cycle track. This was substantiated by CCTV analysis which indicated that in general pedestrians kept out of the cycle bypass lane apart from when crossing to/from the bus stop island.

- *Overall satisfaction* - the majority of stakeholders were positive when discussing the segregation between buses, cyclists, and pedestrians that the design at the trial site provides. Over 90% of bus users stated that they would be happy to use the stop again, with a similar percentage of pedestrians reporting no difficulties when using the footways around the bus stop. In total 77% of cyclists stated that they would feel confident in using the cycle bypass again, with approximately 18% stating that they would use it with caution.

Figure 01: Cycle Ambition Grant Cities & Transport for London Working Together - Cycling Infrastructure Technical Note Series – Version 1 Page 3, Jan 2016

27. The Sustrans report concentrates on the Cambridge bus stops and specifically on the interaction between users of the stops, the main findings of which are:

- Levels of interaction between cyclists and pedestrians at the floating bus stops are generally infrequent and of low severity. These interactions achieved a low score in the range of 1 to 2 which is generally considered safe and normal behaviour.
- The low scoring suggests that the floating bus stops pose minimal risk to users with pedestrians and cyclists appearing to take normal and safe precautionary actions when interacting at the site.

Details of the scoring method used by Sustrans can be found in Appendix 3.

Amendments to the existing signalised junction and pedestrian crossings

28. It is proposed to remove the existing signalised junction at the Christchurch Road/Lime Tree Road junction and relocate the pedestrian crossing further northeast.

29. The current operation of the junction consists of 3 stages, Newmarket Road, staggered pedestrian crossings and then the side roads (Christchurch Road & Lime Tree Road). The traffic signals were originally installed in 1996 as part of a previous Norwich City cycle route scheme, providing advanced cycle stop lines on Christchurch Road and Lime Tree Road. The recent traffic survey for this junction suggests that this route has not been adopted by cyclists as their numbers are low.

30. The signals have however attracted more use by motorised traffic as an alternative orbital route to the outer ring road. This effect has been encouraged by increases made to signal maximums set for side road green periods. On site observations have shown that queuing often reaches back into the outer ring road roundabout during the AM peak period as a result of the amount of time given to releasing traffic from the side roads.

31. The service to pedestrians wishing to cross Newmarket Road is currently poor due to the maximum wait time of almost 2 minutes due to the cycle time of the signal junction.

32. Removing the signalisation of Christchurch Road and Lime Tree Road and replacing the existing junction with a mid-block straight across Toucan crossing would provide multiple benefits:

    - Provide better service for pedestrians/cyclists wishing to cross Newmarket Road by reducing the maximum wait time and providing a single crossing movement
    - Reduce the level of rat-running traffic on Christchurch Road & Lime Tree Road, providing a better environment for residents and for cyclists
    - Reduce the risk of queuing traffic on Newmarket Road reaching the outer ring road roundabout
    - Lower the risk of further cycling accidents

33. In order to provide the additional space for a segregated cycle facility it will be necessary to remove the existing refuge island at the pedestrian crossing at the junction of Lime Tree Road. The crossing would be relocated further northeast and would be improved to a signalised straight across toucan crossing. The smaller pedestrian refuges at the uncontrolled crossing points near Albermarle Road and Mount Pleasant are unaffected by the proposals and would remain in-situ.

34. It is also proposed to provide a new signalised toucan crossing on Newmarket Road at the Hannover Road link to provide a route across the carriageway for outbound cyclists.

Side Road junctions

35. It is proposed to continue the cycleway across the side road junctions of Christchurch Road, Albermarle Road and Mount Pleasant. Cyclists will have priority at these locations and it is intended that motorists give way to cyclists using the facility. There is an expectation that the levels of cycling will rise significantly if facilities are improved, and providing priority to cyclists is necessary to achieve the improvement in quality on this route. Drivers leaving the side streets are having to pause anyway to join the main carriageway, and are unlikely to be inconvenienced.

Conversion of the southern footpath

36. An additional measure being proposed is to convert the wide footway on the southern side of Newmarket Road to a shared use footway/cycleway from the Hannover Road link to the existing shared use facility which currently terminates at Lime Tree Road. This section of footpath is very wide and could easily accommodate a shared use facility and would provide an alternative outbound route for cyclists not wishing to travel on the carriageway. There is insufficient space to build a segregated cycle facility for outbound cyclists without removing the bus lane.

Traffic Regulation Orders and notices

37. Legal orders may be required to create the designated cycle track and to convert pedestrian only routes to shared use.

Traffic Impacts

38. Traffic management will be required during the works and delays to traffic are likely. It is intended to issue a press release for information closer to the start of construction. Work will be programmed to minimise impact on the road network where possible.

Environment

39. The city council's Design, Conservation and Landscape manager has offered advice and guidance in relation to the proposed design. A landscape architect is on the design team

Accident Reduction

40. There have been 17 accidents in the vicinity of the proposed scheme in the last 5 years - 5 of these involved a cyclist. By providing an off carriageway route for cyclists this scheme will reduce the potential for conflict with vehicles and resulting accidents.

Timescales

41. Subject to legal processes and approval the scheme is provisionally planned to commence construction in summer 2017, following completion of phase 1 from Unthank Road to Daniels Road

Conclusions

42. The proposals will meet the requirements of the brief by providing benefit to both cyclists and pedestrians and will contribute to the objectives of the cycling ambition programme. The proposals as presented would provide the next phase of improvement on the blue pedalway and will represent significant improvements to the existing cycling infrastructure on Newmarket Road that will make it safer, more coherent and easier to use. It is especially important that this inner section of the blue pedalway is designed to a high standard because a poor quality link would undermine the value of the investment that is being made further out (e.g. Wymondham – Hethersett, Eaton and Cringleford. Detailed design work will formalise the proposals, resolve any outstanding issues and establish the cost and level of construction disruption taking into account any responses received as a result of the consultation. The results of the consultation will be reported back to the committee in March 2017 alongside a review of the value for money (level of service vs cost and disruption) of this proposal compared to other ways of achieving the core design requirement listed in paragraph 18

Resource Implications

43. Finance: The TfN programme forms an integral part of strategic infrastructure as set out in the Joint Core Strategy. The delivery of this works is funded by government grants by way of the City Cycle Ambition programme.

44. Staff: The project will be delivered through joint team working involving both county council and city council officers.

45. Property: The proposals can be delivered within the existing highway boundary so there is no requirement for land acquisition.

Other Implications

46. Legal Implications: None.

47. Human Rights: None.

48. Communications: The Communications Project Manager for Transport for Norwich schemes will manage publicity and enquiries.

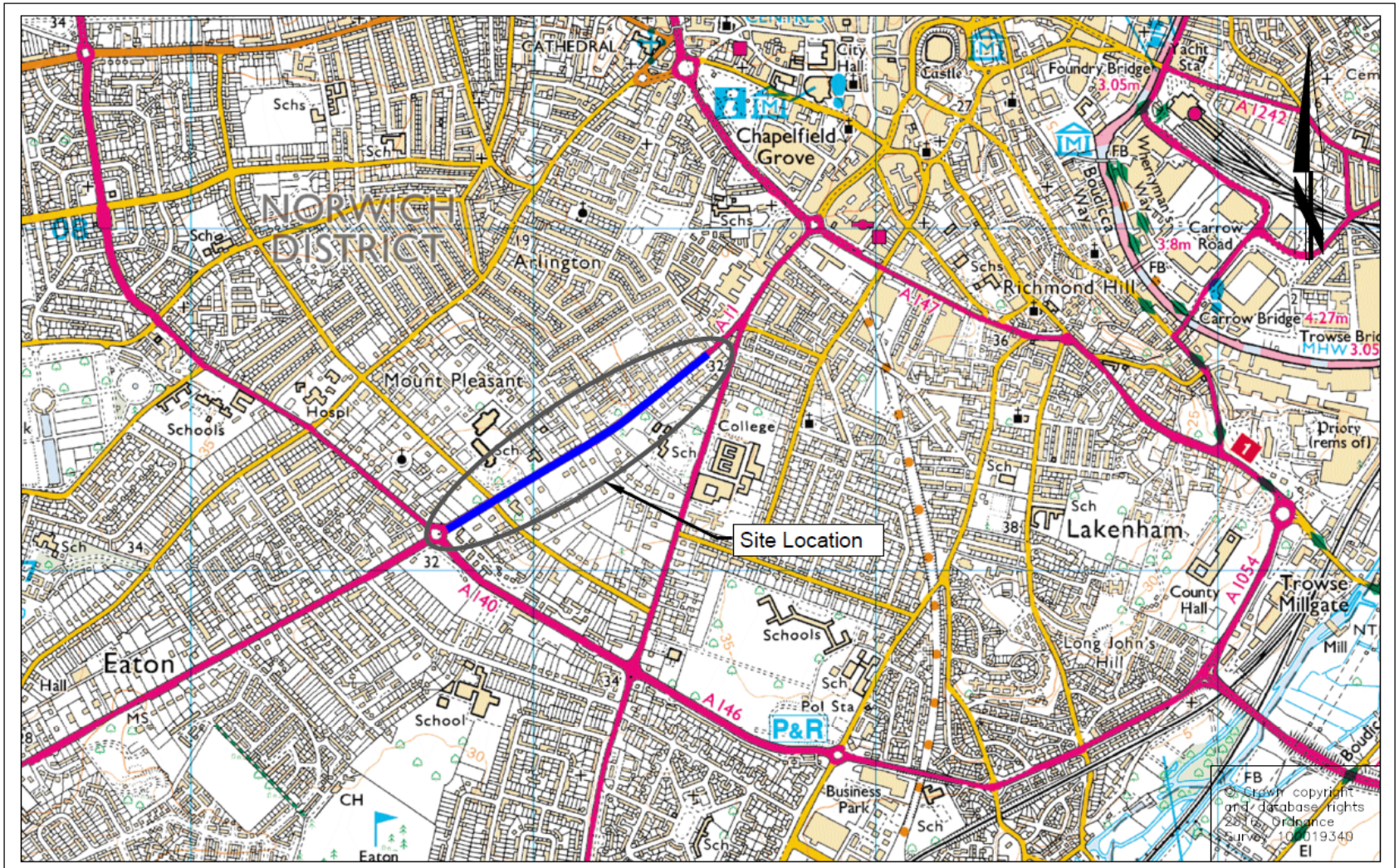
Section 17 – Crime & Disorder Act

49. The scheme will be designed to ensure it has a positive effect on crime and disorder where possible. Particular attention will be given to ensure that lighting levels are adequate and foliage trimmed back along both sides of Newmarket Road where appropriate. Care will be taken during construction to minimise opportunities for crime and disorder, for instance the secure storage of construction equipment and materials.

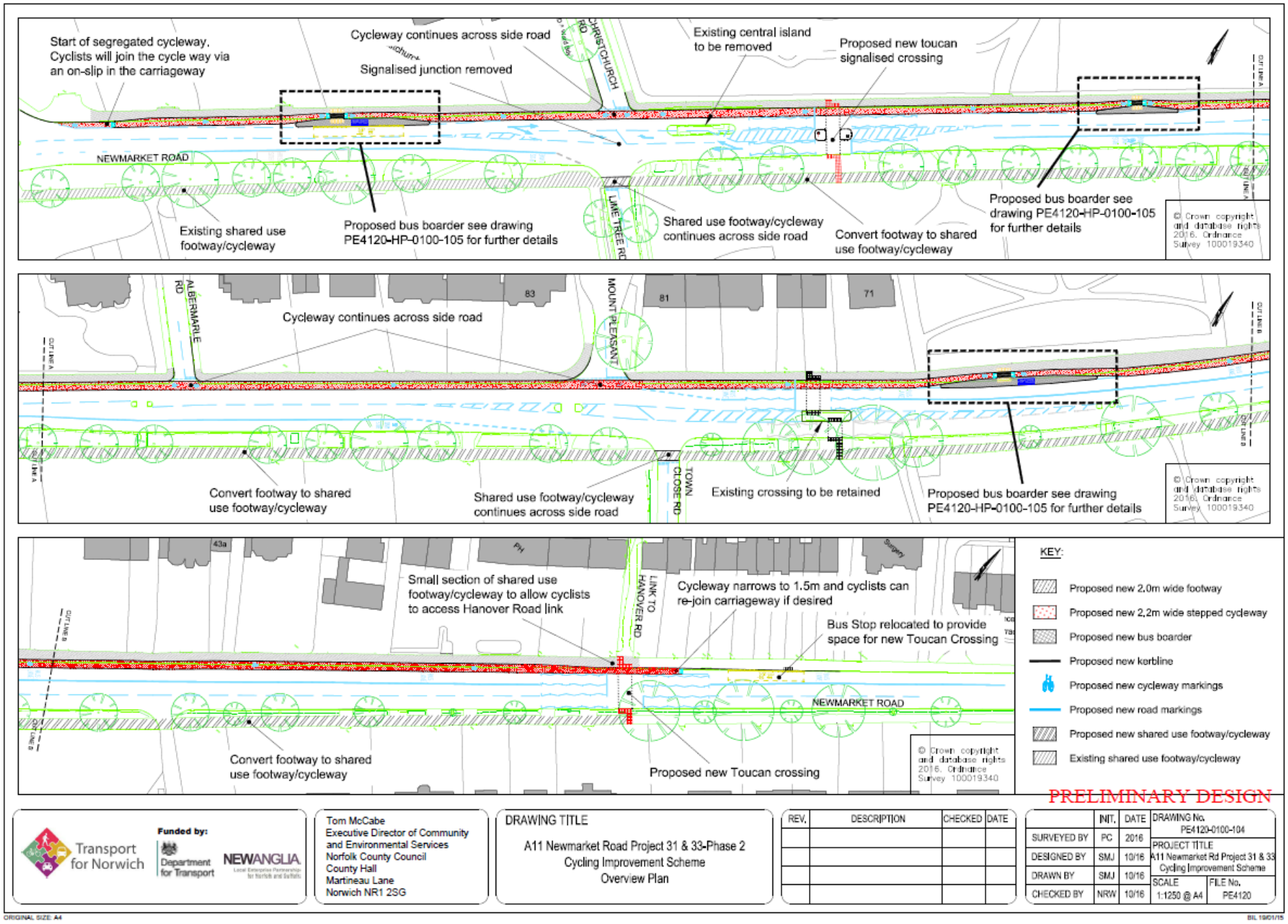
Risk Implications/Assessment

50. A risk assessment has been undertaken for the development of the NATS Implementation Plan (TfN). The key risks for delivering this are around funding, planning and timescales. These risks are being managed through active project management and ongoing engagement with stakeholders.

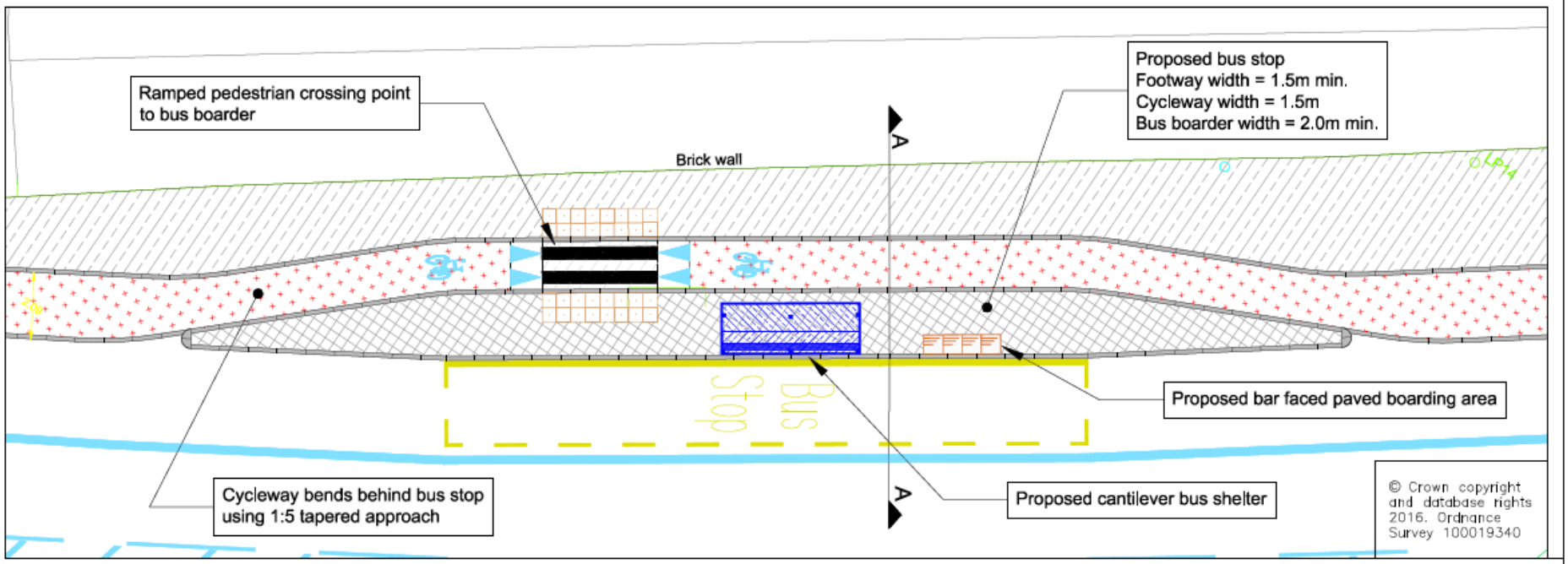
Appendix 1 – Location plan



Appendix 2 – Scheme proposals



Appendix 2 – Scheme proposals

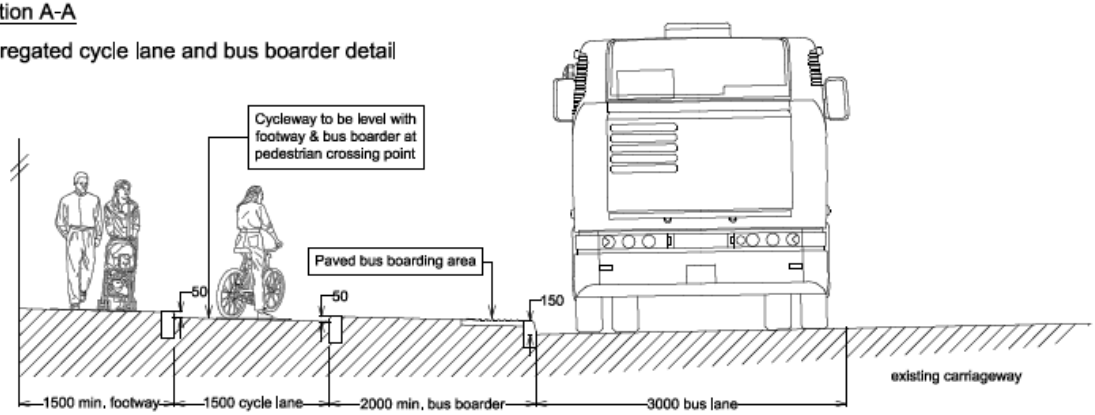


KEY

- Proposed new footway
- Proposed new stepped cycleway
- Proposed new bus boarder
- Proposed uncontrolled tactile paved crossing point
- Proposed bar-faced paving
- Proposed new kerbline
- Proposed new cycleway markings
- Proposed new road markings

Section A-A

Segregated cycle lane and bus boarder detail



PRELIMINARY DESIGN

Transport for Norwich

Funded by: Department for Transport, NEWANGLIA

Tom McCabe
Executive Director of Community and Environmental Services
Norfolk County Council
County Hall
Martineau Lane
Norwich NR1 2SG

DRAWING TITLE

A11 Newmarket Road Project 31 & 33-Phase 2
Cycling Improvement Scheme
Bus Stop Bypass Typical Detail

REV.	DESCRIPTION	CHECKED	DATE

	INIT.	DATE
SURVEYED BY	-	-
DESIGNED BY	DAG	10/16
DRAWN BY	DAG	10/16
CHECKED BY	NRW	10/16

DRAWING No. PE4120-HP-0100-105

PROJECT TITLE: A11 Newmarket Rd Project 31 & 33 Cycling Improvement Scheme

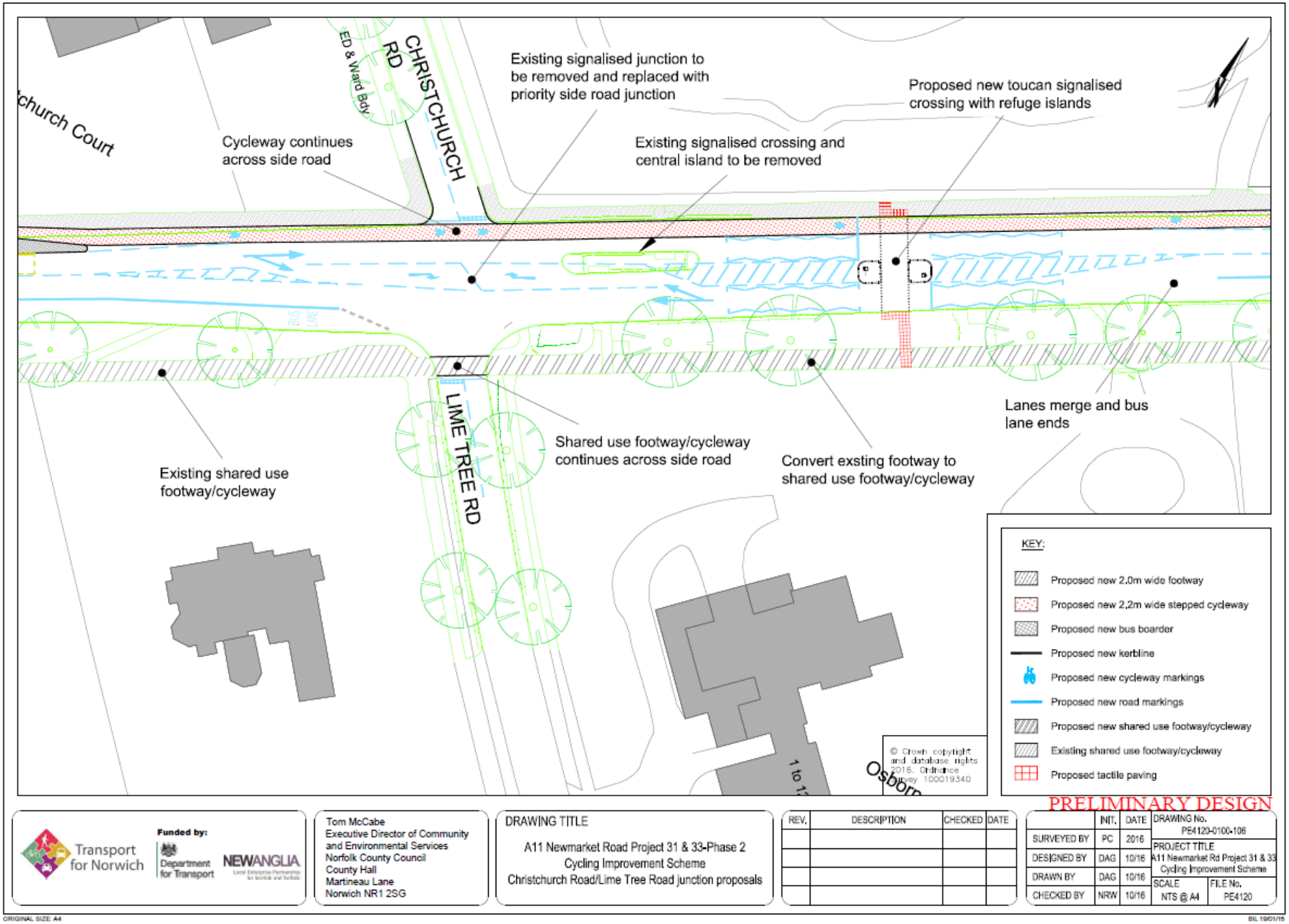
SCALE: NTS

FILE No. PE4120

ORIGINAL SIZE: A4

BIL 19/01/15

Appendix 2 – Scheme proposals



Appendix 3

	Description	Safety consideration
0	No response required by either road user	Green: Generally safe, normal behaviour
1	Precautionary or anticipatory braking/slowing down when risk of collision is minimal	
2	Controlled braking, slowing down or stepping aside to avoid collision (but with ample time for manoeuvre)	
3	Rapid deceleration, stopping or quickly moving aside to avoid collision, resulting in a near miss situation	Amber: Generally unsafe; near-miss situation
4	Emergency braking, violent serve or movement to avoid collision resulting in a near miss situation	
5	Emergency action followed by collision	Red: Collision

[2] **MVA Consultants, 2010** - 'No Entry Except Cycles' Signing Review.

Interaction Scores

Based upon techniques used by MVA Consultants in 2010 for a report commissioned by Transport for London using a scale of 1 to 5 to rank each interaction. The scale ranges from level 0; where two users pass each other on the route but do not have to change their behaviour at all, to level 5; where two users actually collide with each other. Some interactions are within the realms of normal behaviour exhibited while others give rise to varying degrees of conflicts that typically have varying degrees of safety implications.