Final Report - Appendices

Thetford Loops Stage 2

For: Breckland Council

December 2010

Thetford Loops Stage 2

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TI Checking and sign off	
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Rob Marshall *for and on behalf of Transport Initiatives LLP*	
Signed 	*Date 17/12/10*
Checked by:	
	*Date 17/12/10*

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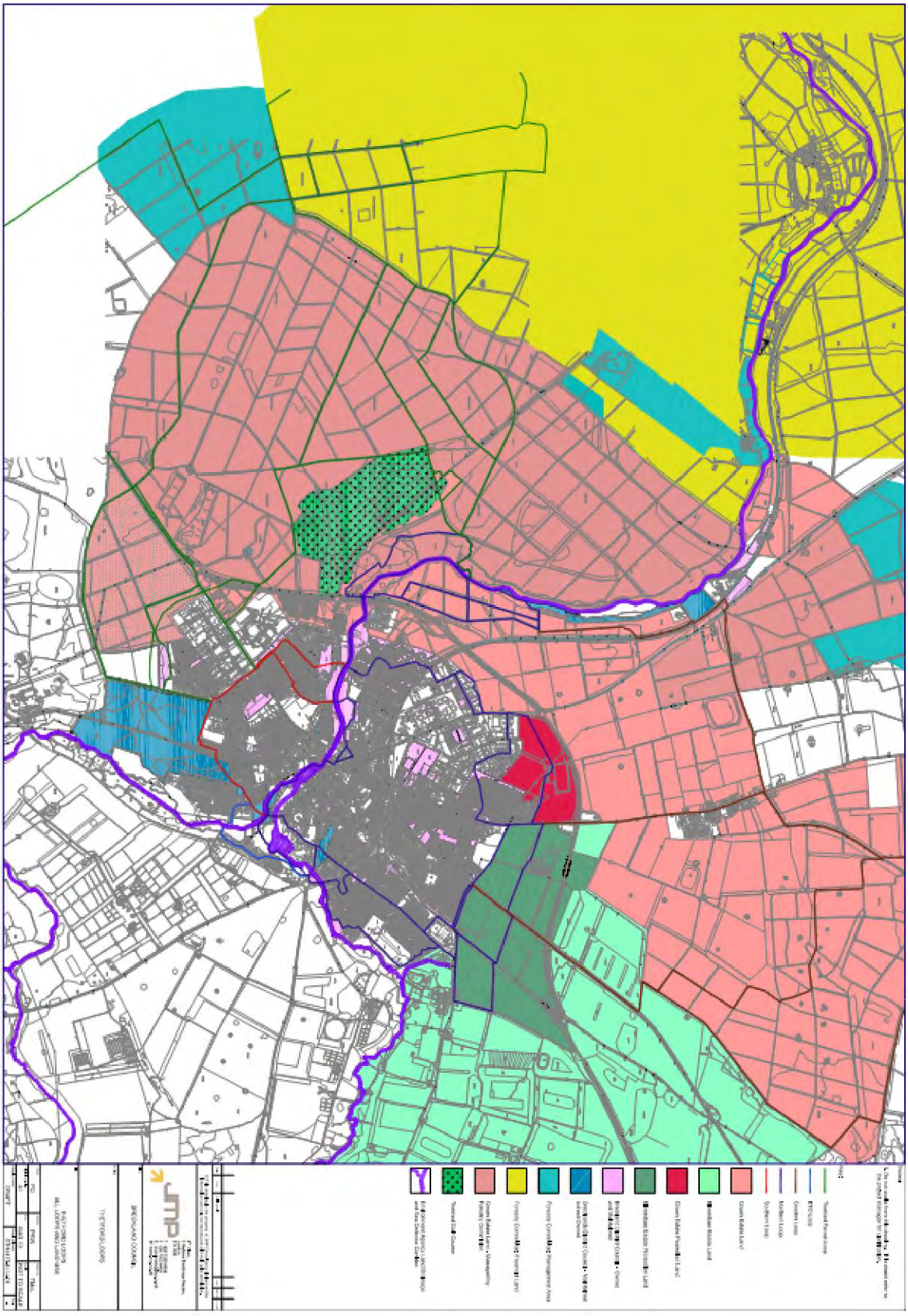
Contents

Appendix A

Thetford Loops: Land Ownership

A4 plan below - A0 plan sent separately



Appendix B
Thetford Loops: Data sheets

Key to Loops:

FL1: Forest Loop High Lodge to Centre Parcs/A11

Forest path between High Lodge and B1106 and continuation along B1106 to A11
Grid Refs High Lodge TL 811 851, B1106 (north)TL 809 807, B1106/A11 TL 816 794

Description

The Vehicular Track with gravelled surface along firebreak at High Lodge changes slowly to grass & bracken covered, barely discernable footpath by B1106 crossing. B1106 has a 5.9m wide carriageway and relatively high traffic speeds (60mph current speed limit).

Location Plan *Scheme shown in blue*

Route near High Lodge

Track deteriorates heading away from High Lodge

East-west section at south end of Forest

B1106 near Centre Parcs

Land Owner

Forestry Commission. Northern section freehold southern section managed area.

Use

North – south section of path used for forest walks and signed cycle route. Away from that no users observed with little evidence of use.

Issues

South of fire route 9 the path will need surfacing.
The B1106 is not suitable for less experienced cyclists (i.e. Bikeability Level 2 - the National Standard Cycle Training level commonly taught at age 11 giving skills suitable for cycling on lightly trafficked roads) hence significantly limiting the usefulness of this route. Verge space is available but the case for a new off-road shared-use path will be hard to justify.

Opportunities

Recommend abandoning this route as an aspiration. It duplicates much of the route to Olleys Farm.

Options		**Budget Cost :**
1	Options not costed since the route is not recommended for further consideration	**n/a**

Recommendation with reasons:

Abandon this route.

FL2: Forest Loop High Lodge to Olleys Farm / A11

Forest path between High Lodge and A11
Grid Refs High Lodge TL 811 851, A11 842 812

Description PRIORITY ROUTE

Vehicular forest track with gravelled surface linking Santon Downham High Lodge to Olleys Farm at the A11.

Location Plan *Scheme shown in blue*

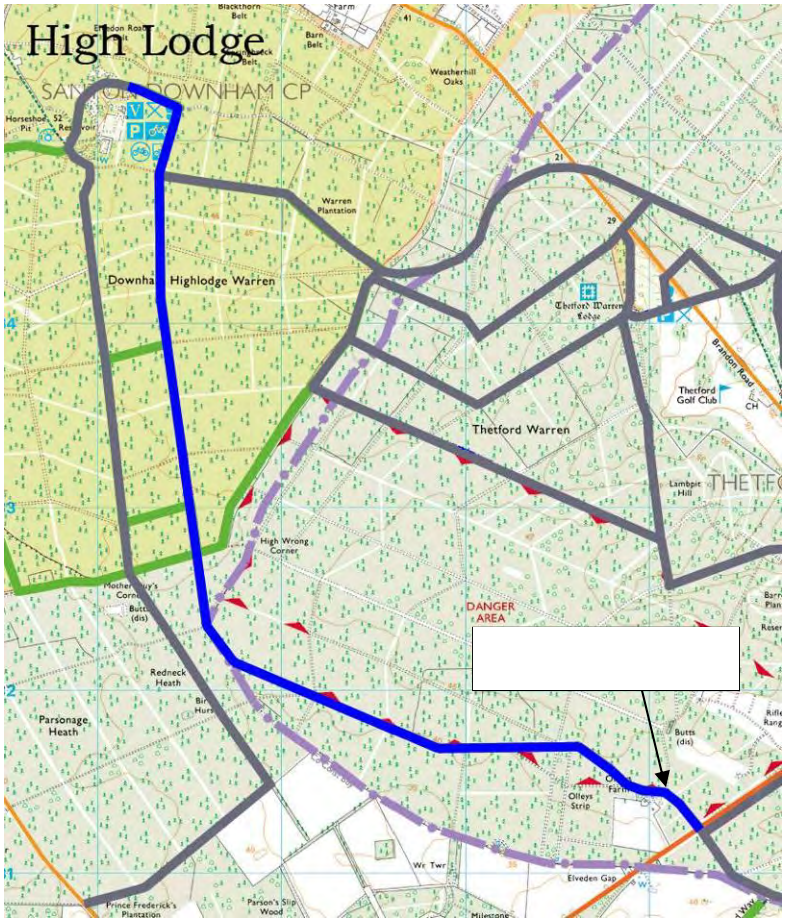


Diagram based on OS mapping. Licence number 100019535 2010

Near High Lodge – shared with Forestry Commission's 'Green Cycle Route'

Near firing range

Near Olleys Farm

Olleys Farm

A11 junction at Olleys Farm

Land Ownership
Northern section Forestry Commission freehold, short section in middle Forestry Commission managed land, southern section Crown Estates (but managed by Forestry Commission)

Use
Some sections of path are used for forest walks and as a signed internal cycle route. Regular use observed and evident here. Some cyclists and dog walking pedestrians seen at south end.

Issues
A11 is virtually impossible to cross and so a crossing will be needed here. An underpass would seem the most appropriate crossing method, which would also enable use by horse riders. Proximity to MOD 'Danger Area'.

Orders
A Variation Order should be sought to provide an underpass crossing as part of the future A11 Improvement scheme.

Council and Police observations
Suffolk County Council would like to see a crossing here. Plans for the A11 Improvement scheme do not include any crossing provision. Strong representations should be made to the Highways Agency to recommend that an underpass be considered and included in the final scheme design.

Constraints
Lack of crossing of A11 at Olleys Farm. Proximity to military training area and associated activities, though it is an established, existing path. Proximity to MOD 'Danger Area' – it is presumed that this route has been agreed with the FC and the MOD since the route is signed and in use by the public using High Lodge forest routes.

Opportunities
This route is direct and easy to follow. It will require no surfacing or have no maintenance obligations over and above the present arrangements carried out by the FC. It directly links to routes south of the A11 although a crossing of the A11 would be essential. There is a strong case for an underpass which would be extended with the proposed A11 Improvement works. The route would need either works alongside the A11 to Thetford or work on the Forest Loop south of the A11 to complete a useable route.

Other than the need to cross the A11 the route is a very pleasant one to use and one that has considerable potential and attractiveness.

Options		Budget Cost :
1	Provide seven finger post signs (need to accommodate Forest routes) and 8 repeaters on wooden posts.	£2.0K
2	Build underpass	Highways Agency
3	Build reusable bridge with straight ramps	Highways Agency

Recommendation with reasons:

This route should be included as part of the Priority Loops network. Press for inclusion of an underpass at Olleys Farm, included in the A11 Trunk Road Improvement Scheme.

FL3: Forest Loop – London Road

Converted footways alongside London Road between St Martin's Way and A11
Grid Refs A11 TL 852 818, St Martin's Way TL 860 824 Surveyed 17th August 2010

Description PRIORITY ROUTE

London Road is straight, slopes gently north east and has an approximately 9.5m wide carriageway – evidence of its former use as the A11 trunk road prior to the bypass. There is one running lane in each direction. Parts of the central area of carriageway are hatched or have right turn lanes. There are refuges along its length; the one at the retail park (A11 end) being 2.5m wide and thus suitable for a cyclists' crossing. There are footways on both sides varying between 0.9m up to 2.5m. The road has three accesses to industrial areas, a retail park service access and access to the retail park car park.

Location Plan *Scheme shown in blue*

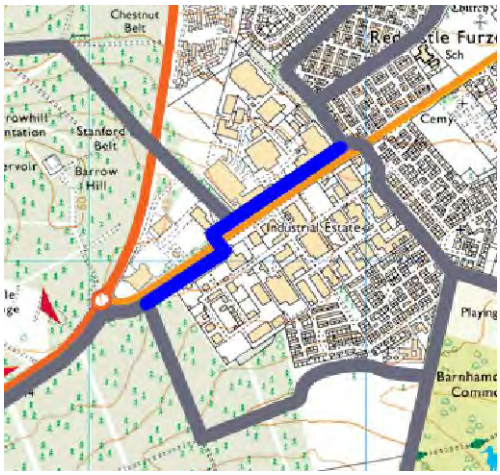


Diagram based on OS mapping. Licence number 100019535 2010

Approaching A11 and Loop to Thetford Heath

Burrell Way

2.5m wide refuge island near retail park

Retail Park service access

Narrow footway section near Caxton Way

Caxton Way

North east of Caxton Way

South west of St Martin's Way. Emergency access

Use
Low use by cyclists and pedestrians. Of the seven cyclists observed on London Road, 6 were using the footway.

Issues
Limited width on carriageway due to centre hatching and right turn facilities. The footways are narrow, the retail park access is busy, the industrial accesses have very wide junction mouths and refuge islands are small.

Orders
Footways will need to be converted to joint pedestrian and cycle use

Land
Appears to be within the public highway but exact boundary will need checking. Norfolk County Council.

Council and Police observations

Constraints
Use of footways

Opportunities

Given current use and how the proposed route along London Road is to link a route based on low flow roads and paths (Southern Loop) to off-highway paths (Forest Loops) it seems appropriate to look for an off-carriageway solution. To this end, the most suitable and deliverable route is:

From St Martins Way use the north west footway crossing Caxton Way and the retail park service access. Via a new 2.5m wide island cross to the south eastern footway, cross Burrell Way and continue to A11. Improvements should be made to the crossing of Caxton Way, the service access and Burrell Way; widening the refuge islands, providing wider footways on the approach, wider flush dropped crossings with perhaps a coloured (red surfaced) highlighted crossing area.

A link could be made to the retail park car park. Some sections of footway will ideally need widening. Some sections will need resurfacing.

The proposal links to the footway alongside the A11 (also on south east side) and the Forest Loop from Thetford Warren Lodge – if a bridge is provided.

The route will stand-alone as a useful link in the wider Thetford Connect network.

Options		**Budget Cost :**
1	Provide four refuge islands. Two will require new electrical connections.	**£13.7K**
2	Widen / provide 9 flush dropped crossings at least 3 dropped sections of kerb long	**£9.4K**
3	Provide approx 20m of 2.5m wide pedestrian / cycle path	**£3.5K**
4	Widen approximately 250m of footway by 1m.	**£14.1K**
5	Supply and install 4 finger posts with three arms each	**£1.9K**
6	Supply and install approximately 10 repeater signs	**£3.2K**
7	Supply and install approximately 10 non illuminated signs to diagram 956, preferably on non illuminated bollards.	**£3.2K**
8	Convert footways to joint pedestrian and cycle use.	**£5.0K**

Recommendation with reasons:

Include in the Priority Route network. This route is required to link the Southern Loop and residential areas in Thetford to Thetford Forest. The Thetford Forest Loops are designed to be safe to use and are likely to attract (judging by cyclists seen in the Forest) families and less experienced or confident 'road hardened' cyclists. The route should therefore be suitable for such cyclists to use. The proposed route connects the potential loops on both sides of the A11.

The route would also serve the retail park near the A11 / London Road junction and employment areas around Caxton Way, Stephenson Way and Burrell Way

FL4: Forest Loop – A11 London Road – Olleys Farm

Converted footway alongside A11

Grid Refs London Road TL 852 818, Olleys Farm entrance TL 842 812 Surveyed 17/08/10

Description

As a trunk road the A11 is extremely busy and a hostile environment for pedestrians and cyclists. Here it has a single carriageway with a 1.5m wide footway on its south east side. Part of this footway has a verge and part is immediately adjacent to the kerb, the latter is a very uncomfortable walking and cycling environment with passing, high speed HGVs. There is a layby with a tea van on the south east side near the Olleys Farm entrance.

Location Plan *Scheme shown in blue*

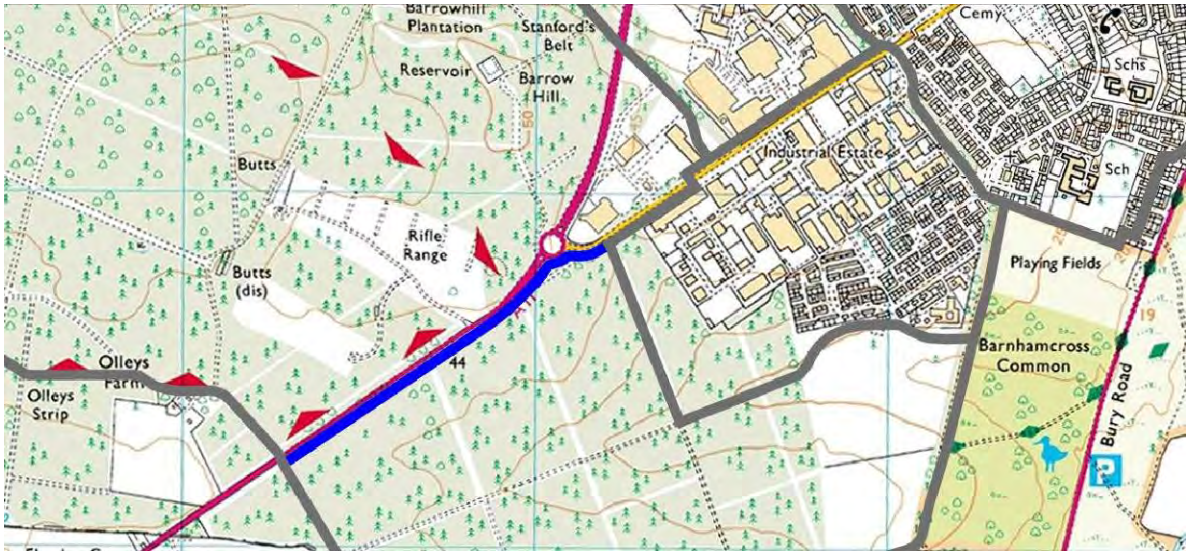


Diagram based on OS mapping. Licence number 100019535 2010

Footway where London Road prepares to join the A11

Initial section along the A11 – footway protected to some extent by a narrow verge

Footway transition to a position next to the kerb

Tape set to one metre (including body)

Layby – wheel marks from the tea van

Layby and tea van – note lorry door obscuring path

Use
No users observed

Issues
The A11 is not suitable for on-road cycling even by highly experienced cyclists (i.e. the skill level required exceed Bikeability Level 3 - the highest National Standard Cycle Training level giving skills suitable for cycling on most roads) hence significantly limiting the usefulness of this route.
Narrow footway, proximity to the carriageway. Layby.

Orders
Footway. Will need converting to a joint use footway

Land
Highways Agency land

Council and Police observations:

Constraints
Unattractive walking and cycling environment alongside A11. Future A11 Trunk Road scheme. This means that the proposed widening should be to 3.0m rather than 2.5m.

Opportunities
Associated with A11 Trunk Road Improvement. Funding from this scheme should be required to cover the costs of any post-bypass remedial works – as this is. This 1.1km length of route would link the Olleys Farm Forest Loop directly to the western end of Thetford.
Approximately 500m of footway is adjacent to the kerb and would need widening.
A 320m section of the original London Road seems to still exist but is overgrown. It should be possible to use this and construct a new 780m length of path in the band of deciduous trees bordering the A11. The A11 dualling scheme will make provision for a link to Elveden.

		Budget Cost :
1	Widen 500m length of footway from approximately 1.5m to 3.0m	**n/a**
2	Construct separate 500m long 2.5m wide cycletrack with verge between it and the existing footway.	**n/a**
3	Reuse old road and construct 780m length of 2.0m wide soft surfaced cycle path. This could be upgraded to a 2.5m wide machine laid bitmac path with the A11 upgrading.	**n/a**
4	Manufacture and erect two three arm fingerposts and 6 signs to diagram 956 mounted on wooden posts.	**n/a**

Recommendation with reasons:

This link proposal is unfeasible in the short to medium term since it relies upon the future A11 Trunk Road scheme improvement. Not included in the links recommendations but one to raise with the Highways Agency and the future A11 scheme.

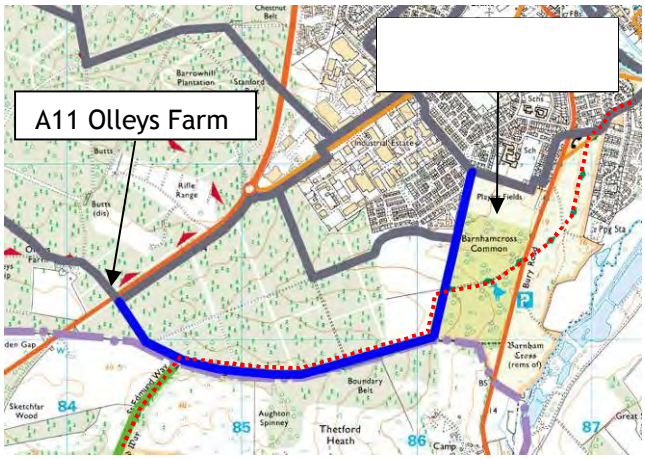
FL5: Forest Loop – A11 / Olleys Farm to Barnham Cross Common

Forest paths
Grid Refs TL 843 812 – TL 863 819 Surveyed 17th August 2010

Description PRIORITY ROUTE

Unused vehicular track with grassy surface, worn footpath in grass, wider unsurfaced path under trees. Provides a traffic-free link from the A11 to Barnham Cross Common. The majority of the route follows the existing St Edmund Way, a National Trail route.

Location Plan



Scheme shown in blue

Line of St Edmund Way National Trail shown dotted red

Diagram based on OS mapping. Licence number 100019535 2010

Near to A11

Grid ref TL 845 809

Grid ref TL 847 808

Grid ref TL 850 807

Grid ref TL 858 809

Grid ref TL 858 809

Grid ref TL 860 809

Grid ref TL 862 814

Land Ownership Western side Crown Estates Promotion Land. Section next to residential areas and Barnham Cross Common is "Custodian Asset Responsibility"

Use
No users observed, although evidence of people travelling between Barnham Cross Common and St Edmund Way National Trail.

Issues
Mainly surfacing and accessibility. Barnham Cross Common is SSSI. Route proposals suggested along a combination of existing path alignments.

Orders
Barnham Cross Common status may require negotiations though route proposals are possible along existing paths.
Formal path conversions may not be required as there appear to be no public rights of way.

Council and Police observations:
No police observations but they might request access controls.

Constraints
Crossing of A11, National Trail status. Barnham Cross Common.

Opportunities
This has potential for a useful link to High Lodge and an orbital Thetford Loops route. This path requires either the Olleys Farm to High Lodge path or the path along the A11 to be implemented to complete an important loop. A11 crossing could be provided as part of Trunk Road Improvement.

Options		Budget Cost :
1	Construct 450m long 2.0m wide soft surfaced path (shared with Barnham Cross Common to London Road path)	£27.5K
2	Construct 3km long 2.0m wide soft surfaced path.	£187.0K
3	Manufacture and erect four three arm fingerposts	£1.5K

Recommendation with reasons:

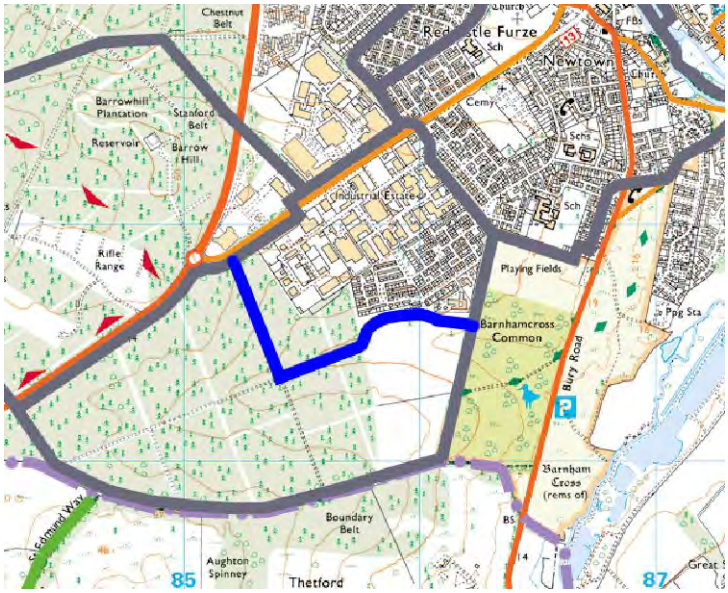
This link should be included as part of the Priority Loop network. It provides a natural and logical loop connection to the south of Thetford and uses available existing tracks. Due to the requirement for a crossing of the A11 (though not confirmed as part of the proposed Trunk Road Improvement) this route is unlike to be implemented in the short to medium term. Therefore it is seen as a long term aspiration.

FL6: Forest Loop – Barnham Cross Common to London Road

Forest paths and paths on open land
Grid Refs TL 862 816 – TL 852 818 Surveyed 17th August 2010

Description PRIORITY ROUTE

Informal worn path through woodland and over playing field, unused vehicular track with mostly grassy surface and some gravel sections in forest. Follows edge of the Fir Road Estate. Link to Barnham Cross Estate at Elm Road



Location Plan

Scheme shown in blue

Diagram based on OS mapping. Licence number 100019535 2010

Barnham Cross Playing Fields

Grid ref TL862 816

Grid ref TL862 816

Grid ref TL860 816

Grid ref TL860 816

Access to Elm Road

Elm Road – note access control

Behind Elm road

Ex play area behind Elm Road

Grid ref TL 857 814

Grid ref TL 857 814

London Road entrance grid ref TL 857 814

Land Ownership Western half Crown Estates Promotion Land section south of housing area "Custodian Asset Responsibility"

Use
No users observed though likely to be local children and dog walkers.

Issues

Mainly surfacing. No police observations but they could require access controls.

Orders

Council and Police observations

Constraints
Route permissions from landowner. Link along London Road. Barnhamcross Common, including this area near Elm Road, has special designation and protection (SSSI).

Opportunities
Requires path along London Road to complete a logical Loop. Makes a strategic route with the London Road to Thetford Warren Lodge path. Provides for local utility trips to the supermarket.

Options		Budget Cost :
1	Construct 450m long 2.0m wide soft surfaced path (shared with A11 Olleys Farm – Barnham Cross Common path)	£27.5K
2	Construct 1km long 2.0m wide soft surfaced path.	£39.5K
3	Manufacture and erect four three arm fingerposts and one two arm fingerpost.	£1.5K

Recommendation with reasons:

Recommended for inclusion in the Priority Loops network. The route provides an edge of town traffic-free path useful for local journeys. Due to its relatively high cost and the need for landowner permissions it is considered to be a longer term aspiration. However it enables:

- Users to make shorter circuits than the longer loops towards High Lodge provide. For example Barnham Cross Common – A11/Sainsburys – A11/Olleys Farm – Barnham Cross Common. This length route may be popular with joggers as well as for families with younger children.
- Better access to the network from the Elm Road estate.
- A future route Barnham Cross Common – potential green bridge – High Lodge.

FL7A: Forest Loop – High Lodge to B1107 (part)

Forest paths and tracks
Grid Refs TL 811 851 – TL 825 842 Surveyed 12th August 2010

Description PRIORITY 1 ROUTE

The first common section of the route proposal between High Lodge and the B1107 Brandon Road. Informal worn path through woodland, ravely forest track.

Location Plan

Diagram based on OS mapping. Licence number 100019535 2010

Near High Lodge

Near High Lodge

TL 815 847

TL 822 845

TL 822 845

TL 823 844

TL 825 842

Use
Low use by cyclists and pedestrians.
Forms part of the Forestry Commission "Green" cycle route. Cyclists were observed using it but none observed on this section.

Issues

Orders
N/A

Land
Forestry Commission Freehold

Council and Police observations

Constraints
SPA

Opportunities
Existing FC promoted and maintained traffic-free route. The whole length is deemed suitable for cycling by inexperienced cyclists and so little needs to be done.

Options		**Budget Cost :**
1	Manufacture and erect three fingerpost signs, say ten arms in total	**1.1K**

Recommendation with reasons:

Include as part of the Priority Loops network. Existing specification requires no additional improvement measures.

FL7B: Forest Loop – High Lodge to B1107 (part)

Forest paths and tracks
Grid Refs TL 825 842 – TL 842 840 Surveyed 12th August 2010

Description

This is a section with a number of options, and whether it is progressed depends on which crossing option is chosen for the B1107 Brandon Road. The western part is used by the Forestry Commission "Green" cycle route. Surfaces comprise: a grassy ride, grassy track, gravelled track.

Location Plan

Diagram based on OS mapping. Licence number 100019535 2010

TL 824 839, part of Forestry Commission cycleroute.

TL 824 838

TL 827 836

TL 831 835

TL 834 837

TL 838 840 near Thetford Warren Lodge

Thetford Warren Lodge

TL 840 840 approaching car park

Use
Western part will have cyclists as part of Forestry Commission route. Walkers use car park at Warren Lodge. Unlikely to have more than occasional pedestrian in central section.

Issues
Grass tracks will require surfacing.

Orders
N/A

Land
Small section at western end Forestry Commission Freehold, rest Crown Estates (managed by Forestry Commission)

Council and Police observations

Constraints
Surface quality, requires extensive improvements for cycling use but walking OK.

Opportunities
Traffiic-free, attractive forest environment. Link to Warren Lodge.

	Options	**Budget Cost :**
1	Construct sections of new 2.0m wide soft surfaced path (approx 400m)	**£25.0K**
2	manufacture and erect two three arm fingerposts and 10 repeater signs on wooden posts	**£3.6K**

Recommendation with reasons:

Include as a low priority Loop route. Could be offered as a pedestrian route due to the surface quality problems for use by cyclists. It can only be used by cyclists if the surface is improved in places such as around Thetford Warren Lodge.

FL7C: Forest Loop – High Lodge to Abbey Heath

Forest paths and tracks
Grid Refs TL 825 842 – TL 847 843 Surveyed 18th August 2010

Description PRIORITY 1 ROUTE

This is a section where a number of options have been investigated, being dependent upon which crossing option is chosen for the B1107 Brandon Road. A crossing to the north of the surveyed section is recommended and shown on the Location Plan below. It makes use of existing reasonably surfaced forest track between the B1107 and New Plantation to the east. The crossing options are included in the separate B1107 Brandon Road crossing options note. To the west of the B1107 there are informal forest tracks available but which will require surface improvements.
General specification of the current link is of a gravelled track, grassy track with bracken and fallen trees, scrub woodland.

Location Plan Route shown in blue. (NB section in New Plantation part of Northern Loop 4d in brief)

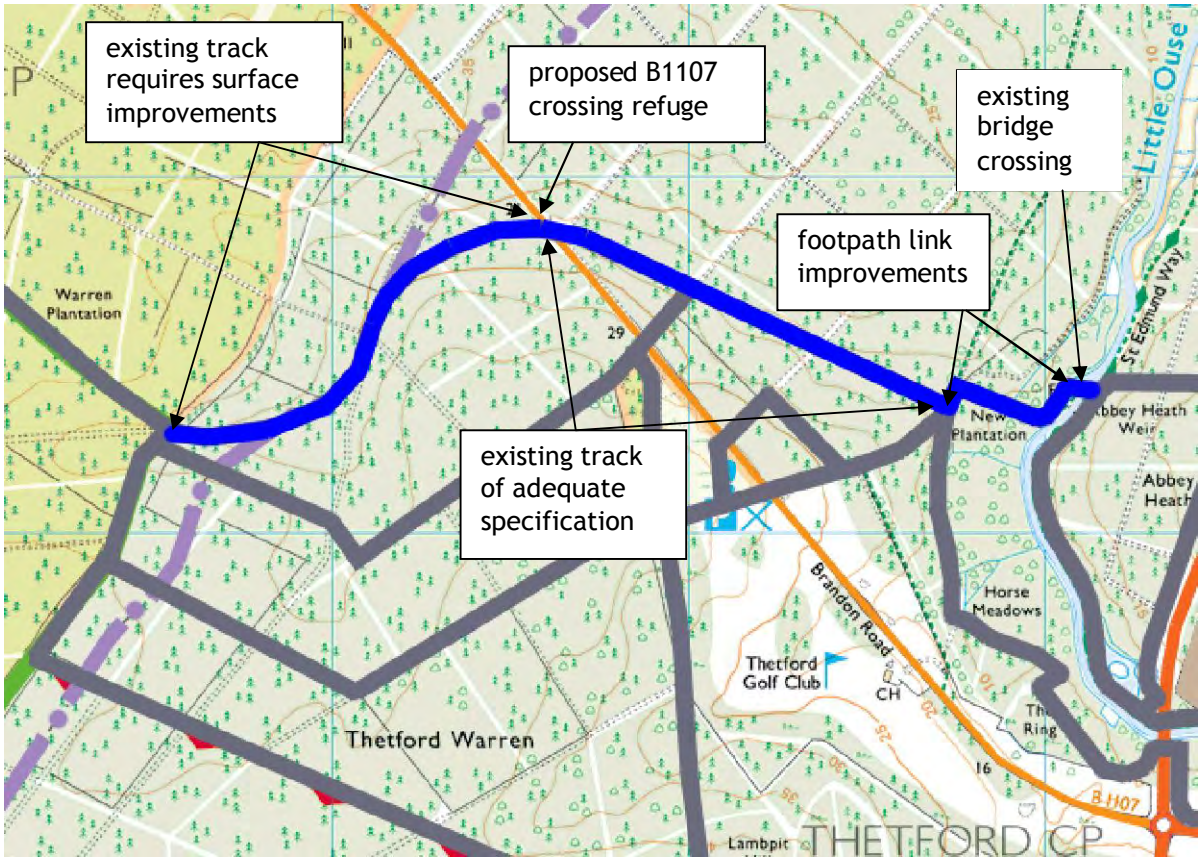


Diagram based on OS mapping. Licence number 100019535 2010

TL 834 848 Forestry Commission "Red" mountain bike route in foreground

TL 835 848 near B1107

TL 835 848 Thin band of woodland alongside B1107

TL 836 848 track from B1107 crossing point towards Abbey Heath

Footpath approximately 200m from river

Footpath approximately 150m from river

Footpath near to Abbey Heath Weir

Footpath near to Abbey Heath Weir

Use

Walkers use informal car park in dip on B1107. Unlikely to have more than occasional pedestrian in central section. Crosses mountain bike route and cyclists seen here.

Issues

Grass tracks west of B1107 will require surfacing. However there is felling scheduled for this area in 2010 and appropriate resurfacing could be undertaken as part of contract or afterwards. Section from B1107 to approximately 200m from Abbey Heath Weir has a gravely surface which is a similar standard to parts of the Forestry Commission “Green” route and thus is deemed to be adequate for cyclists and pedestrians. The last 200m (approx) to the footbridge at Abbey Heath Weir needs new construction. The footbridge at Abbey Heath is straight and flat but has a step at each end. It is 1.35m wide with a 1.06m balustrade.

Orders

The section nearest the river is a public footpath and will need conversion using a cycle tracks order.

Land

West of B1107 Crown Estates Promotion Land (managed by Forestry Commission ?), east of B1107 Crown Estates Promotion Land.

Council and Police observations

Constraints
Crossing of B1107 required. Surface improvements to FC track west of B1107. Surface improvements to short track link to footbridge. SPA.

Opportunities
Attractive, traffic-free route and safer crossing opportunity on B1107. New forest track construction as part of imminent FC felling proposals west of B1107.

Options		**Budget Cost :**
1	Clear bracken and undergrowth say 5.0m x 500m	**£7.4K**
2	Construct new 2.0m wide soft surfaced path approx 620m long	**£32.3K**
3	Convert footpath link and improve with 'soft surface' approx 400m	**£45.0K**
4	Crossing refuge B1107 Brandon Road	**£28.0K**
5	manufacture and erect one four arm fingerpost and 8 repeater signs on wooden posts	**£1.5K**

Recommendation with reasons:

Include as part of primary Loops network. This link is a vital connection between High Lodge and Thetford, with no other deliverable options possible in the short to medium term. This link coincides with the recommended crossing location of the B1107 Brandon Road. Existing FC track to the east requires minimal works. Short footpath link to bridge over Little Ouse River requires conversion and surface improvements. FC track to west of B1107 requires resurfacing (suggest when future tree felling and forest management takes place – proposed in 2011). All improvement options recommended.

FL7D: Forest Loop – High Lodge to B1107 (part)

Forest paths and tracks
Grid Refs TL 825 842 – TL 840 846 Visited 18th August 2010

Description

This is an section where there are a number of options, and whether it is progressed depends on which crossing option is chosen for the B1107 Brandon Road. Crossing described separately. Gravelled track, grassy track with bracken and fallen trees, scrub woodland.

Location Plan

Diagram based on OS mapping. Licence number 100019535 2010

Between TL 840 846 and B1107, which is in the belt of trees in the distance.

Use
Light pedestrian use.

Issues
Grass tracks will require surfacing

Orders
N/A

Land
Crown Estates Promotion Land. West of B1107 managed by Forestry Commission

Council and Police observations

Constraints

Opportunities
From aerial photos (out of date) estimate is for about 900m of soft surfaced path with maybe 100m of scrub clearance.

Options		**Budget Cost :**
1	Options not costed since link proposal rejected	**N/A**

Recommendation with reasons:

Do not include in the Theford Loops network. May be retained as a pedestrian route.

FL7E: Forest Loop – High Lodge to B1107 (part)

Forest paths and tracks between Warren Lodge and Abbey Heath
Grid Refs TL 841 842 – TL 847 843 Surveyed 11th August 2010

Description

This is a section where there are a number of options, and whether it is progressed depends on which crossing option is chosen for the B1107 Brandon Road.
Crossing described separately.
Gravelled track, grassy track with bracken and fallen trees, scrub woodland.

Location Plan

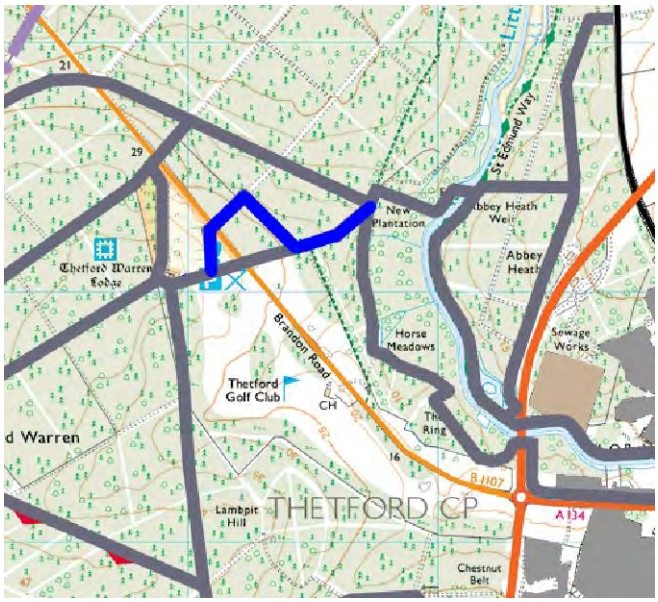


Diagram based on OS mapping. Licence number 100019535 2010

Typical of TL 847 843 to TL 844 841

Typical of TL 844 841 through Golf Course land to the B1107

Use
No users observed

Issues
New path would have to be made through Golf Course land

Orders
N/A

Land
Custodian Asset Leasehold west of B1107. Thetford Golf Club immediately east of B1107 and eastern end Crown Estates Promotion Land

Council and Police observations

Constraints
Both routes cross Golf Club land with the direct route crossing the course itself. Crossing of B1107.

Opportunities

Options		Budget Cost :
1	Clear 160m x 5m bracken and dead wood, construct 2.0m wide soft surfaced path for a distance of 400m (off set option) and provide 320m fencing.	£26.8K
2	Construct 2.0m wide soft surfaced path for a distance of 320m (direct line option) and provide gate and access controls between golf club land and forest.	£19.5K
3	Footpath only option provide three additional finger post signs and 8 waymarkers	£3.0K

Recommendation with reasons:

Do not include in the Theford Loops network. Alternative route recommended. May be retained as a pedestrian route. Clearance of undergrowth and route guidance will be necessary. Route guidance would consist of a fingerpost at each end, combined with signing for recommended loops, plus signs where it crosses the B1107 Brandon Road with waymarking between.

FL8: Forest Loop – Warren Lodge to Thetford (part)

Forest track from Warren Lodge and west Thetford including bridge over A11
Grid Refs TL 839 840 – TL 854 820 Surveyed 12th August 2010

Description

Gravelled track, grassy path, bridge, new path through scrub, existing carriageway.

Location Plan

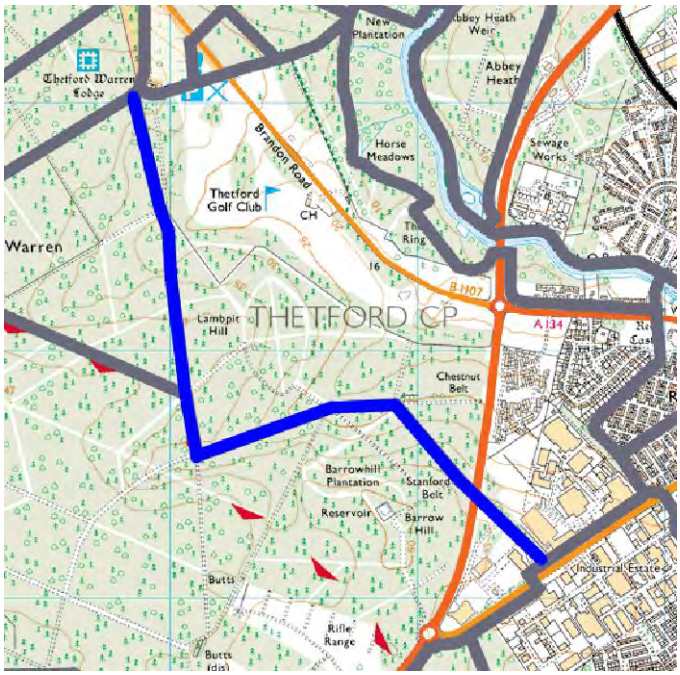


Diagram based on OS mapping. Licence number 100019535 2010

TL 838 839 just south of Warren Lodge

TL 839 835

TL 846 827 near rifle range

TL 852 824 Location for A11 bridge (note that the road is in a cutting)

Use
No users observed

Issues
Surfacing required on grassy paths. Most important issue is a new bridge over the A11 Trunk Road.

Orders
N/A

Land
Crown Estates Promotion Land (managed by Forestry Commission?) north of A11 Crown Estates Promotion Land south of A11

Council and Police observations

Constraints
Bridge over A11. Path surface improvements.

Opportunities
Attractive, relatively direct link to Thetford, if bridge crossing available over A11.

Options		Budget Cost :
1	Construct 2.0m wide soft surfaced path for a distance of 1.4km	**£85.3K**
2	Construct 3.0m wide level footbridge approx 50m long	**£500K**
3	Construct 2.5m wide bitmac path through scrub 80m long	**£11.3K**
4	Manufacture and erect one three arm fingerpost and 14 repeater signs on wooden post.	**£3.8K**

Recommendation with reasons:

A low priority loop route. If the opportunity arises a bridge should be constructed, but this is a less important crossing than the potential underpass at Olleys Farm. Given that the B1107 crossing is the most northerly option the path north of grid ref TL840 828 should not be built and the path from here to TL821 836 signed instead.

FL9: Forest Loop – High Lodge to Thetford (part)

Forest track from High Lodge and west Thetford including bridge over A11
Grid Refs TL840 828 to TL821 836 Surveyed 12th August 2010

Description

Gravelled track. Section with bridge discussed as part of Warren Lodge to Thetford.
No photos available.

Location Plan Scheme shown in solid blue. Dotted sections shared with other proposals but included to show complete route.

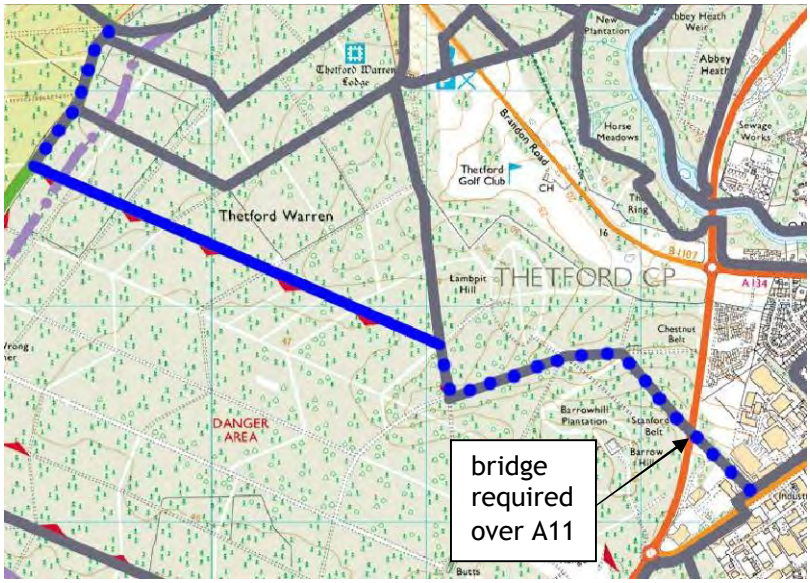


Diagram based on OS mapping. Licence number 100019535 2010

Use
No users observed

Issues

Orders

Land
Crown Estates Promotion Land (managed by Forestry Commission?)

Council and Police observations:

Constraints

Opportunities
If the bridge over the A11 is constructed, and the crossing of the B1107 is located at or near Warren Lodge then the path between the bridge and Warren Lodge should be constructed. This section of route will then be a cost-effective addition allowing a loop to the Forest from west Thetford. However if the most northerly crossing is recommended (now confirmed) then the path north of grid ref TL840 828 should not be built and this path becomes the main route.

Options:		**Budget Cost :**
1	Manufacture and erect two three arm fingerposts and 8 repeater signs on wooden post.	**£2.7K**

Recommendation with reasons:

Include as low priority Loop network route. May be retained as a walking route. Sign and improve the path as appropriate following construction of bridge over A11.

BTO1: BTO Loop

The BTO Loop is an existing signed route alignment that begins at Nunnery Place off Nun's Bridges Road. The Loop carries on off-carriageway along the Nunnery Fields Path towards Arlington Way. Grid Refs TL 87267 82368 – TL 87336 82193 Surveyed 17 August 2010

Description PRIORITY ROUTE

Nunnery Place provides the first section of this Loop. It provides vehicular access to a small residential estate and the link to the Nunnery Fields path. Nunnery Fields path is sufficiently wide and adequately surfaced for use by pedestrians and cyclists. There are two river crossings that have bridges that are of an adequate standard. There are approximately 30 metre sections of unmade but relatively smooth paths after both the first and second bridge. There is a dedicated high quality, surfaced link to Arlington Way. Arlington Way is a quiet, residential road with a high quality road surface and good footways. The route ends at Castle Street at a dropped kerb.

Location Plan

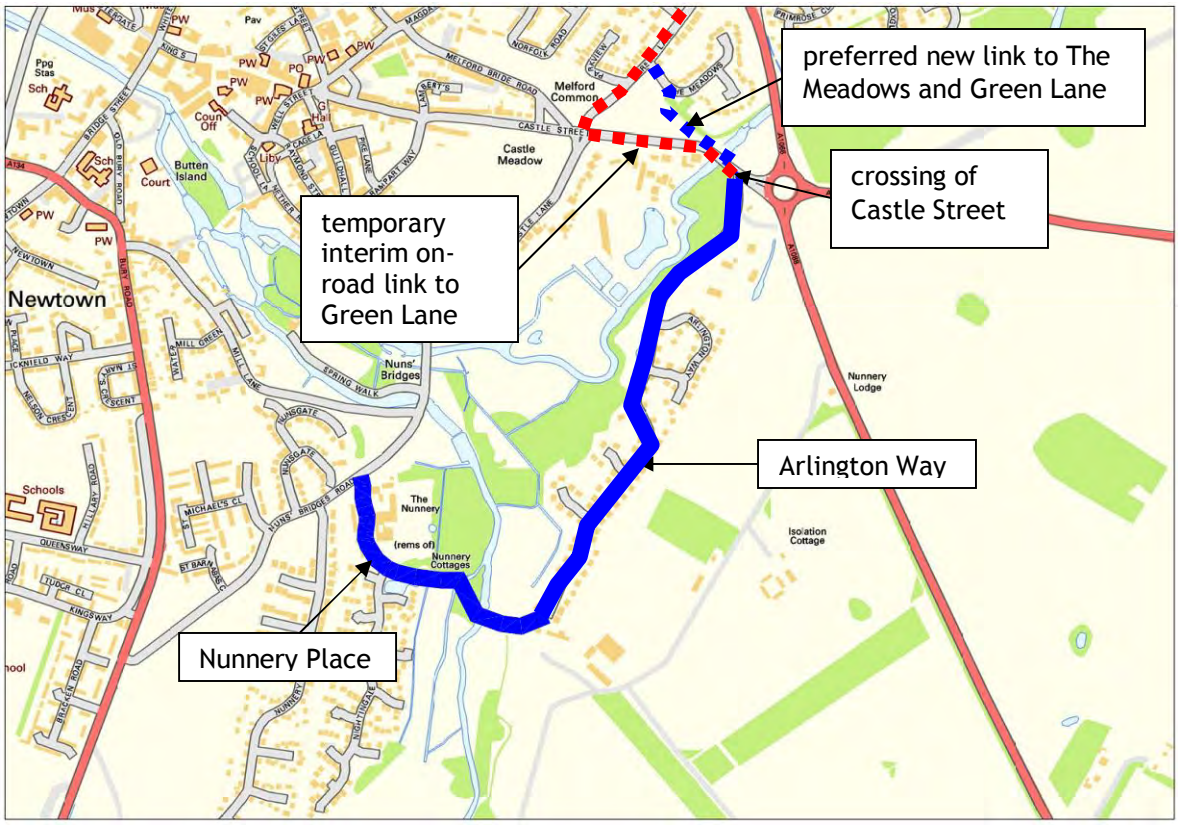


Diagram based on OS mapping. Licence number 100019535 2010

Facing east along Nunnery Fields path from Nunnery Place

Facing east along the second river crossing

Use

The Nunnery Fields paths appear well used by local residents walking their dogs the paths are generally in good condition although some are unmade but give an adequate level of service. The river crossings along the existing cycle route are wide and flat, suitable for cyclists. Both pedestrians and cyclists were observed using the route. Arlington Way functions as a quiet residential access road. Cyclists use the carriageway and pedestrians have good footways.

Issues

After the second bridge crossing the unmade path narrows and vegetation is overgrown. This reduces the effective width of the path and may provide difficulty for a cyclist to pass a pedestrian. The edges of the bridge decks are not flush with the path, some minor improvement work to rectify this will overcome the problems. Improved lighting might be considered as a future, longer term enhancement. The route needs a new link from Arlington Way to Green Lane for continuity and traffic-free convenience. An interim, on road, route via Castle Street will serve in the short term to link to Green Lane.

Orders

None

Land Ownership

Breckland District Council owned and maintained

Environment Agency Land Drainage and Sea Defence Corridor

Norfolk County Council (Highway Authority) for public highway elements

Constraints

Crossing of Castle Street is desirable. Existing flush kerb arrangement is inadequate and not even in line. New, surfaced link required to The Meadows to access Green Lane.

Opportunities

A useful, well-used link, encourages 'utility' trips to/from Arlington Way and town centre. Potential to provide a Loop route if continuity can be provided from Castle Street to Green lane. Minor improvements will bring the existing route up to an adequate standard. No measures are needed on Arlington Way, where existing footways are available and a good metalled surface for cyclists on the lightly trafficked residential road.

Options		**Budget Cost :**
1	Roll medium size aggregates into existing ground and compact.	**£2.5K**
2	Improve bridge deck to path transitions to create smoother, flush joins	**£2.0K**
3	Cutback vegetation at narrow sections	**£0.5K**
4	crossing refuge Castle Street near Melford Bridge	**£5.0K**
5	New 2.5m bitmac link path from Castle Street to The Meadows	**£30.0K**

Recommendation with reasons:

Confirm the link as a priority route. Its existing configuration means that little improvement work is needed apart from the items highlighted. Options 1, 2 and 3 will create an interim link. The route also avoids the more sensitive paths through the nearby Nunnery Lakes Nature Reserve. The second phase from Castle Street requires a crossing arrangement and a new link path around the existing open space.

CL1A: Croxton Loop Section 1 Option A

Route between Northern Loop (Joe Blunts Lane) running along Croxton Road, through Croxton Village leading up to the Devils Punch Bowl
Grid Refs TL 87464 84801 to TL 87781 88335 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route follows on from the northern loop on Croxton Road continuing north past the two junctions leading onto the A11, passing under the A11 and continuing through Croxton Village. The speed limit through the village is signed as 30mph whereas outside of the village, the 60mph national speed limit applies. Continuing north past Croxton Village the route turns right from The Street and continues in a northeast direction linking with Croxton Loop Section 2 Option A and Section 3 Option B. An additional on-road loop has been identified and included.

Location Plan

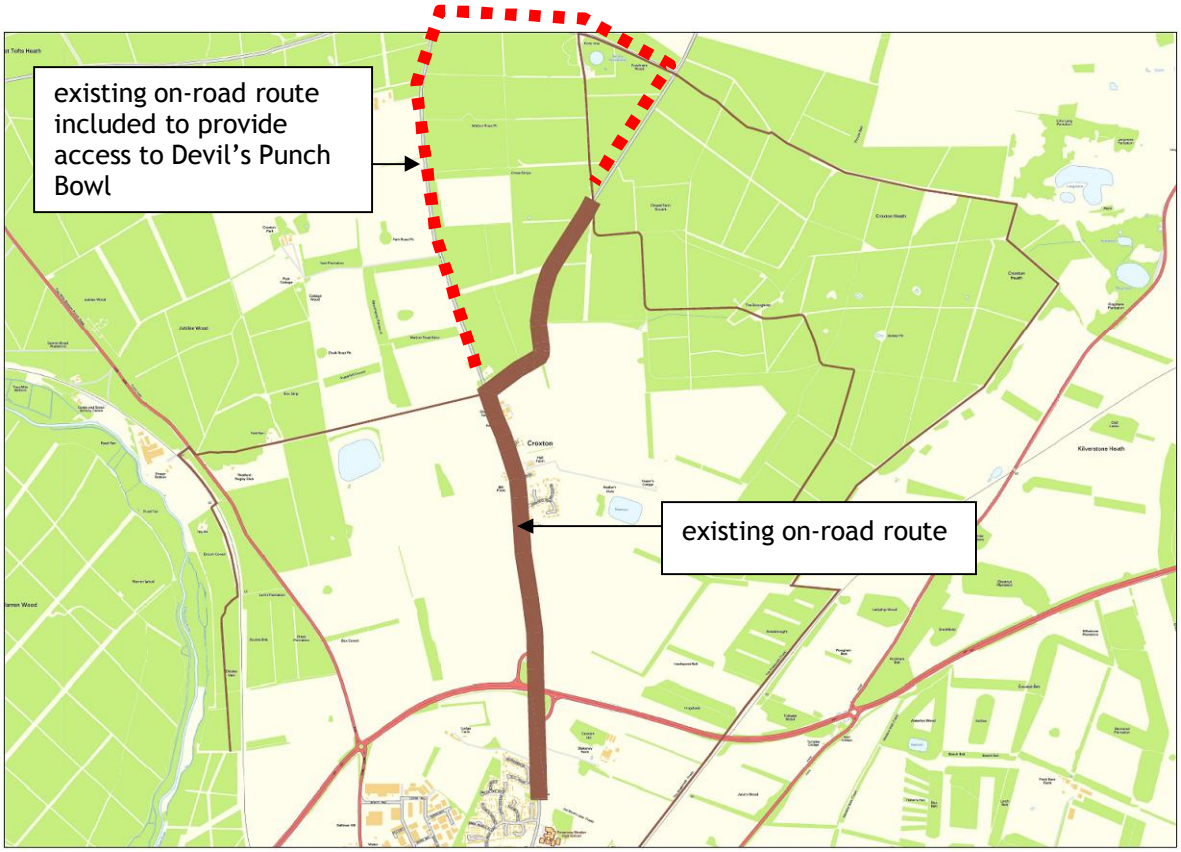


Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the southern end to the northern end).

Start of Section 1 facing north on Croxton Road

Existing gullies along route

Photo facing north on Croxton Road

Route through Croxton village.

Existing signs include national and local cycle routes. New signs could be made smaller.

Gravel track leading from rural road forming car park area for The Devil's Punch Bowl.

Use
There are no footways, only overgrown verges present either side of the carriageway except through Croxton Village. Cyclists and pedestrians are required to walk and cycle in the carriageway. Traffic volumes are likely to be very low throughout the day. Forward visibility throughout is very good and provides an acceptable walking and cycling environment.

Issues
Lack of footways requires pedestrians to walk in the carriageway. Beyond Croxton Village the speed limit is national speed limit (60mph). This is mitigated by low traffic flows and good forward visibility.

Orders
None required. Existing on-road cycle route using public highway.

Land Ownership:
Route runs along public highway. Norfolk County Council is the Highways Authority.

Constraints
There may be some reluctance to walk or cycle on local roads where there are no facilities. However, established, signed routes and their use for many years suggest that there are no significant safety problems along these roads.

Opportunities
Asphalt carriageway provides a smooth, direct surfaced route for pedestrians and cyclists and a direct route from Thetford up to The Devil's Punchbowl. Also directs cyclists through Croxton Village where the Post Office and village shop may be convenient. Shelter available at the church.

Options		Budget Cost :
1	Provide signage to indicate Croxton Loop at every intersection with tracks and other roads. (Total 10 signs and posts).	£2.0K
2	Provide cycle symbols along carriageway to increase awareness of cyclists to motorised vehicles.	£1.7K
3	Provide more cycle-friendly gully covers with square gratings (Approx. 34)	£5.1K

Recommendation with reasons:

This route should be included on the Priority Loops network. Providing new signage and road markings will increase awareness of the route and cyclists to all road users. The provision of carriageway cycle symbol markings and the review and replacement of gully cover gratings is not considered a priority.

CL1B: Croxton Loop Section 1 Options B & C

Path linking the Northern Loop, west of railway line near Hawthorn Way to where Option B and C routes split through Croxton Heath.
Grid Refs TL 88013 84470 to TL 88945 86055 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route leaves the northern loop, Joe Blunt's Lane, running north-east along the western side of the railway line. The route runs through a field along a narrow track approximately 0.5m wide which has been created by pedestrians walking through the field. Entering into the next field, the route continues north-east along a wider track, named The Sheepwalk. The route continues travelling under an underpass for the A11 and continues north-east along a wide gravel track approximately 4m wide along its length. The route then continues west before splitting to continue along the two alternative routes, Options B & C.

Location Plan

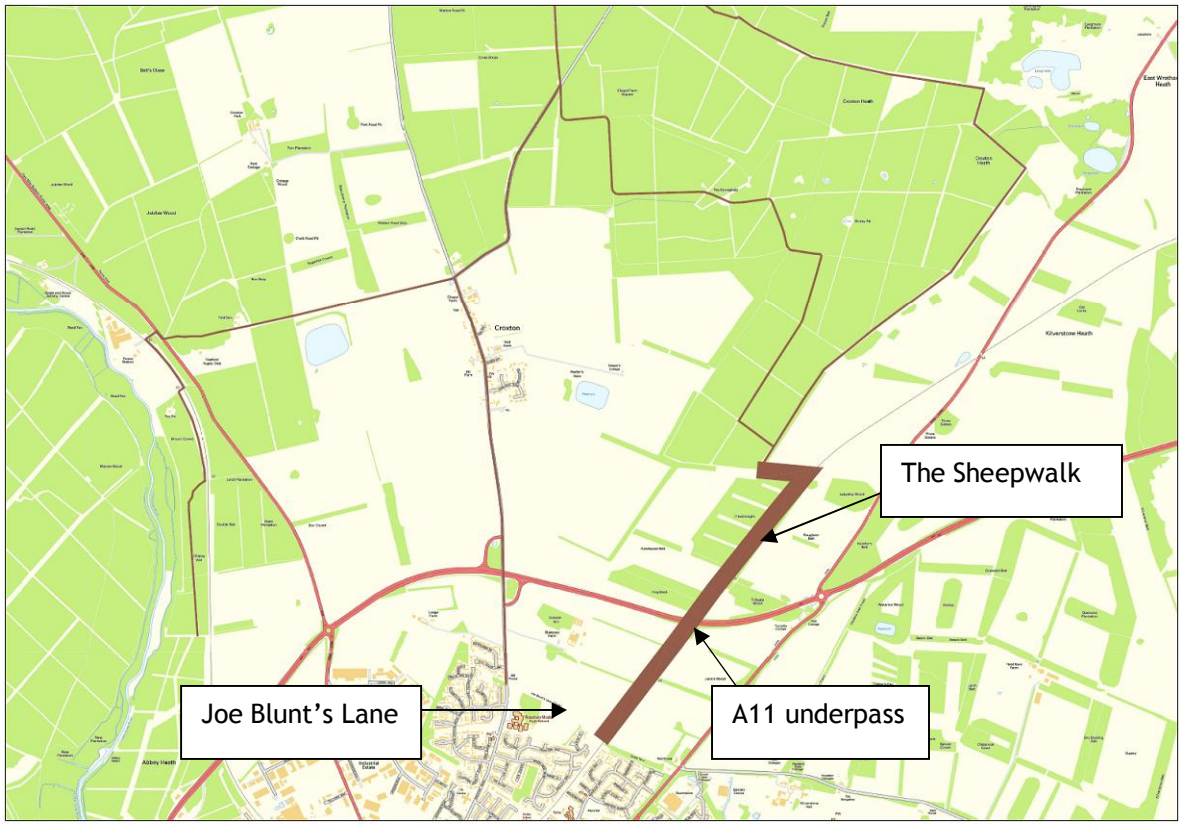


Diagram based on OS mapping. Licence number 100019535 2010

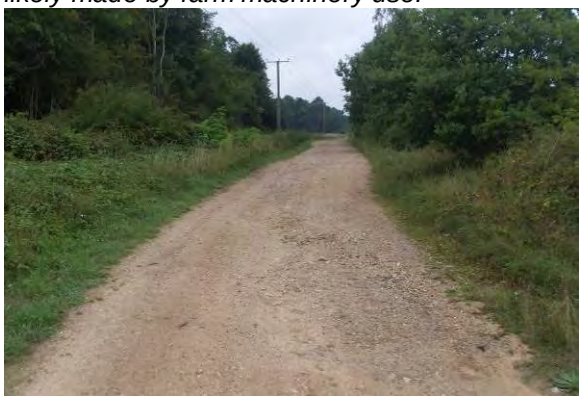
(Photos are shown along the route from the southern end to the northern end).

Start of Croxton Loop leaving northern loop – no formal path

No footpath present through field, only narrow 0.5m strip

No N-S footpath present through field – track likely made by farm machinery use.

Wide gravel underpass running under A11 provides a convenient, safe crossing.



Wide gravel track north-east of A11 running up to east-west section of route – The Sheepwalk.

Track leading up to Option B Section 2.

Use
The tracks appeared little used; during the site visit no path users were seen. The tracks were likely only used by farmers, serious walkers or people walking their dogs.

Issues
The track in the southern field was very narrow and not suitable for cyclists in its current form. The 'Sheepwalk' was poorly surfaced up to the underpass for A11 and has vegetation across the track. North of the A11 the track was suitable for cyclists.

Orders
Permissions from landowners will be required to develop a formal or permissive route.

Land Ownership
Between Joe Blunt's Lane and underpass for A11 area is covered by Kilverstone Estate Promotion Land. North of underpass land is owned by Kilverstone Estate.

Constraints
Informal tracks and paths, no ProW. Footpath construction is based on CBR > 2.5%. Testing would be required where if it was found less than 2.5%, further strengthening of sub-grade would be required. Agreement with land owner required. Forestry Commission view this link as less important than the route to High Lodge. SPA.

Opportunities
Very attractive route for cyclists, good for leisure cycling and a longer distance walking facility. The Loop will associate with future north Thetford residential development proposals (Thetford Urban Extension) where funding and permissions for this route should be derived.

Options		**Budget Cost :**
1	Provide a path along west side of railway where the 0.5m narrow track exists between Joe Blunt's Lane and The Sheepwalk, maintaining a minimum of 2.5m wide. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane. Further strengthening would be required where heavy farmer's machinery crosses the tracks.	**£14.5K**

2	Re-surface existing track along The Sheepwalk between the narrow section of track and A11 underpass. Widen to a minimum of 3m and construct with 50mm locally sourced self binding gravel, 250mm Type 1 material, laid over a separation membrane. (The additional Type 1 should be laid to allow for use by farmer's machinery).	**£24.8K**
3	Provide signage at start of route, where route turns into east-west section and at every intersection with other tracks (Total 5 signs and posts).	**£1.0K**

Recommendation with reasons:

This link should be included in the Priority Loops network. It is recommended that the associated Options 1, 2 and 3 are implemented. Providing a minimum of 2.5m wide track will permit cyclists and pedestrians to pass and due to the very low flows of pedestrians and cyclists this would suffice. At locations where farmer's machinery is likely to use the tracks deeper construction is recommended with a minimum of 3m width. Providing signage will encourage greater use of the route and assist those using it.

This route could be funded by the Thetford Urban Extension as it provides a benefit to future residents. As far as the future residents are concerned the route should be built no later than the Extension. However the Croxton Loop would also benefit existing residents as it extends the loop network from the mainly west side of the town around to the north. Thus if funding can be secured it should be built sooner and not be considered only as part of the urban extension.

CL2A 3B: Croxton Loop Section 2 Option A & Section 3 Option B

Path running north-west through Croxton Heath Forest towards The Devils Punchbowl
Grid Refs TL 87781 88335 to TL 87697 89614 Surveyed 17th August 2010

Description

The route follows on from Section 1 Option A and Section 2 Option B travelling north-west through Croxton Heath forest. The route initially travels across a gravel track continuing onto an unmade track, leading up to The Devil's Punch Bowl – an unusual local geological feature.

Location Plan

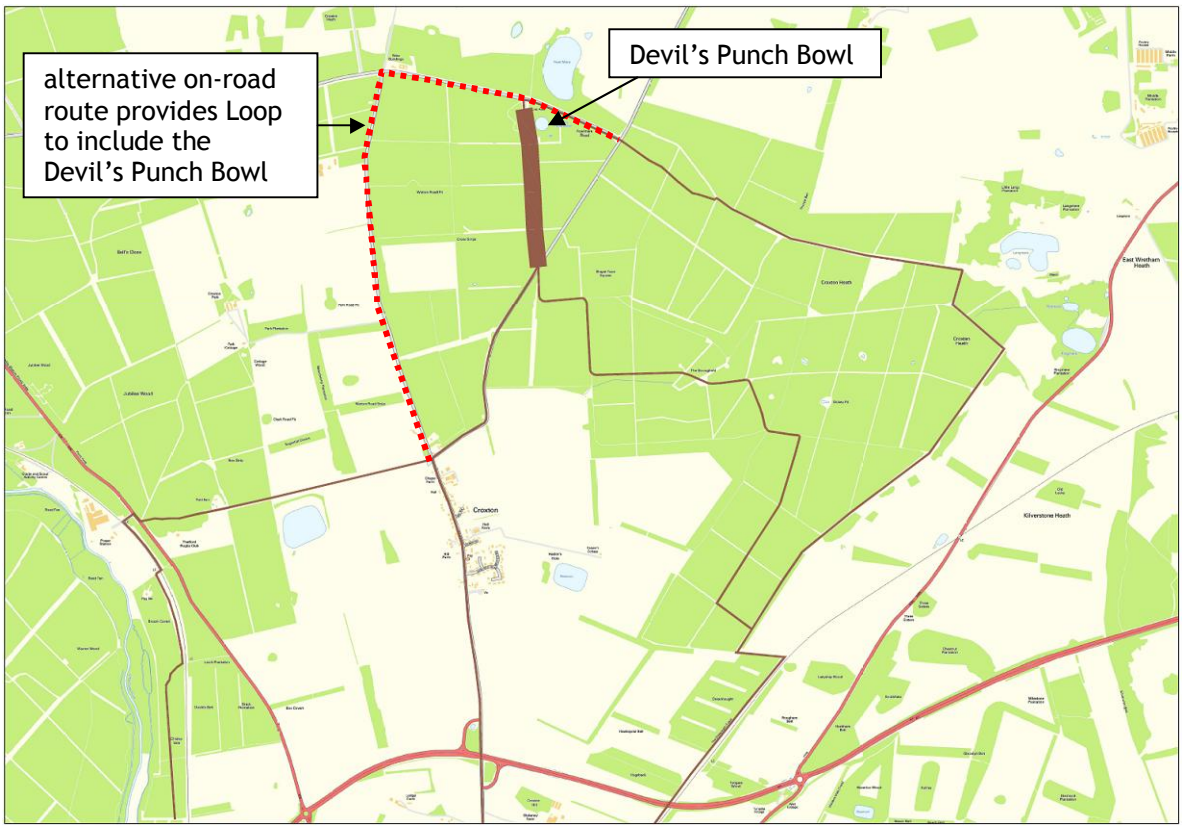


Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the southern end to the northern end).

Photo facing rural road (Option A enter from right and Option B enter from opposite track)

Gate to prevent vehicular access. Narrow gap provided for cyclists and pedestrians to pass.

Gravel track running through Croxton Heath forest

Unmade track running through Croxton Heath forest.

Unmade track running through Croxton Heath forest.

Gravel track leading from rural road into the car park for The Devil's Punch Bowl.

Use
The tracks appeared little used; during the site visit no path users were observed.
The tracks are likely to only be used by serious walkers, people walking their dogs or travelling to visit the Devil's Punchbowl.

Issues
This route makes used of a designated ProW. It is a Public Footpath. The majority of the section of route is formed by unmade tracks which will require path construction works to make it useable. A gate is provided to stop vehicles entering the forest with a narrow gap that makes it difficult for cyclists to pass.

Orders
A Footpath Conversion Order will need to be promoted and confirmed.

Land Ownership
Land is owned by Crown Estate.
Norfolk County Council is the responsible Highway Authority for ProW issues.

Constraints
The path is a Public Footpath.

Opportunities
Very attractive route for pedestrians and if better surfaced, a good route for cyclists too. Provides a convenient link to the interesting Devil's Punch Bowl geological feature.

Options		**Budget Cost :**
1	Provide footpath in unmade areas along route, maintaining a minimum of 3m wide. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£38.8K**
2	Maintain existing gravel track by removing any vegetation and infilling any gaps created by vegetation growth.	**£4.0K**
3	Remove vegetation at side of gates to allow cyclists to pass gate without difficulties.	**£0.5K**
4	Provide signage at start of section and where route changes direction. (Total 3 signs and posts).	**£0.6K**

5	Convert footpath to cycle track	**£5.0K**

Recommendation with reasons:
This route is not recommended for inclusion in the Priority Loops network. The availability of quiet, lightly trafficked, good surfaced local roads to get to the Devil's Punch Bowl suggests that this link is somewhat of a luxury. The Conversion Order and construction requirements mean that the link is not cost-effective or easily deliverable. The route can be retained and signed for pedestrians which means that no works are required other than signing. Signing for cyclists along the local road network will be required.

CL2B: Croxton Loop Section 2 Option B

Path running north-west through Croxton Heath Forest
Grid Refs TL 88945 86055 to TL 87781 88335 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route follows on from Section 1 Options B and C, travelling north-west through Croxton Heath forest. The route initially travels across an unmade track through the forest before leading onto a gravel track, approximately 3.5m – 4.0m wide, until reaching an asphalt road.

Location Plan

Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the south-eastern end to the north-western end).

Track closed temporarily through forest due to tree felling operations

Gravel track through Croxton Heath forest

Gravel track through Croxton Heath forest

Gravel track through Croxton Heath forest

Gravel track through Croxton Heath forest

Gravel track through Croxton Heath forest

Use
The tracks appeared little used; no path users observed during the site visits. The gravel road is likely to have been constructed to allow for forest management operations.

Issues
Unmade tracks exist at the southern end of the route through this section. Towards the northern end a gravel track exists, which has vegetation growing in some sections.

Orders
Informal tracks and paths. No public rights of way.

Land Ownership
Land is owned by the Crown Estate.

Constraints
Heavy vehicle / machinery use may damage tracks. Permissive path agreement required. SPA.

Opportunities
Very attractive route for cyclists, good for leisure cycling and longer distance walking on traffic-free path. Some of the tracks already are wide, with a compacted gravel surface making many of them available for use already. Associated with north Thetford development proposals. Funding and access agreements should be secured as part of planning agreements.

Options		**Budget Cost :**
1	Provide improved path in unmade areas along route, maintaining a minimum of 3m wide. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£65.3K**
2	Maintain existing gravel track by removing any vegetation.	**£2.0K**
3	Provide signage at start of section and where route changes direction / track splits into different directions. (Total 8 signs and posts).	**£1.6K**

Recommendation with reasons:

Include in Priority Loops network. It is recommended that all options are implemented. Providing a 3m wide track will provide a good specification, shared-use path, suitable for pedestrians and cyclists. Providing signage will augment the usefulness of the path.

CL2C: Croxton Loop Section 2 Option C

Path running to east of Croxton Heath forest.
Grid Refs TL 88945 86055 to TL 90264 88324 Surveyed 17th August 2010

Description

The route follows on from Section 1 Option C travelling north through a field along an unmade track. The route continues north keeping Croxton Heath forest on the left-hand side before entering into the forest. The route passes through two gates which are located to prevent vehicular access to the tracks, except for farmer's vehicles. Travelling through the forest the route continues in a north-west direction before coming to a T-junction where it turns north entering into Section 3 of Option C. Throughout this section the tracks are between 3 and 4m wide along the length.

Location Plan

Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the southern end to the northern end).

Track through field – track made by farm machinery

Track through field – track made by farm machinery

Track through field – track likely made by farm machinery

Gate to prevent vehicle access, overgrown at pedestrian / cyclist access point

Track between trees – track likely made by farm machinery

Tree fell into track – would require clearing

Use

The tracks appeared little used; no path users were observed during site visits. The tracks were likely only used by farmers, serious walkers or people walking their dogs.

Issues

The tracks are poorly surfaced and generally overgrown throughout. Gates are present to prevent vehicular access which of course causes an obstruction to cyclists.

Orders

No public rights of way.

Land Ownership

Land is owned by Crown Estate.

Constraints

Comprehensive surfacing works required to provide a useable surface. Path construction is based on CBR > 2.5%. Testing would be required where if it was found less than 2.5%, further strengthening of sub-grade would be required.

Opportunities

Very attractive route for cyclists, good for leisure cycling and longer distance walking. Links up with the Hereward Way (National Trail). A connection to Langmere, a Nature Reserve, is also possible.

Options		**Budget Cost :**
1	Provide a shared-use path (total length approx 3.2km) in unmade areas along route, maintaining a minimum of 3m wide. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane. Further strengthening, through increased depths of construction would be required where heavy farmer's machinery uses the tracks.	**£127.9K**
2	Remove existing gates and provide a more cycle-friendly access.	**£3.0K**
3	Retain existing gate and clear vegetation to provide a wider access to the side of the gate for improve access for cyclists.	**£0.5K**
4	Cutback overgrown areas and ensure path is kept clear of fallen trees.	**£2.5K**
5	Provide signage at start of section and where route changes direction. (Total 3 signs and posts).	**£0.6K**

Recommendation with reasons:
This route is not recommended for inclusion in the Priority Loops network. Path construction costs are considerable to provide a useful Loop. The route can be retained as a pedestrian facility, since it connects with the Hereward Way and Langmere Nature Reserve. If funding allows it can be improved for cyclists. If this is the case, it is recommended that Options 1, 3, 4 and 5 are implemented. Providing signage for pedestrians and the alternative route for cyclists will be required. The recommendation to construct the alternative shared-use path (as in CL2B) provides the 'Loop' element in the area.

CL3C: Croxton Loop Section 3 Option C

Croxton Heath Forest leading to Devils Punch Bowl.
Grid Refs TL 90264 88324 to TL 87697 89614 Surveyed 17th August 2010

Description

The route follows on from Section 2 travelling west through Croxton Heath forest along a track, which appears to have been made by vehicular use. The route continues west through Croxton Heath forest along Hereward Way before crossing over at a cross roads into a 6m wide rural road leading to the Devil's Punch Bowl. A short, on-road section west to the Devil's Punch Bowl is also included.

Location Plan

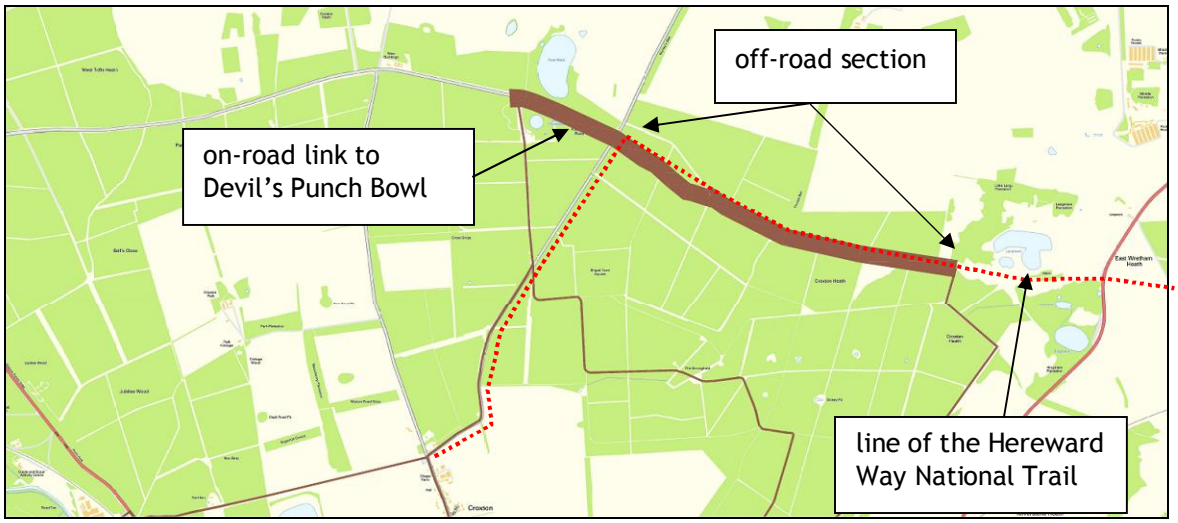


Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the southern end to the northern end).

Track through Croxton Heath – track made by vehicle use

Poor condition of existing track through Croxton Heath

Poor condition of existing track through Croxton Heath

Route leaves unmade track entering onto rural road

6m wide on-road section leading to Devil's Punch Bowl

Use
The tracks appeared little used; during the site visit not one pedestrian or cyclist was observed. The tracks were likely only used by farmers, long distance walkers or people walking their dogs.

Issues
The tracks are poorly surfaced and overgrown in places. Large puddles were present over a large proportion of the tracks resulting in very muddy, impassable conditions.

Orders
Part of the Hereward Way National Trail. Conversion process required, likely to be sensitive and contentious.

Land Ownership
Land is owned by Crown Estate.

Constraints
Extensive surface improvements required. Tracks within Croxton Heath Forest were in very bad condition and would likely have a CBR (California Bearing Ratio) less than 2.5%, requiring strengthening of the sub-grade. In addition large puddles exist on the track, indicating that drainage design would be required, significantly increasing the cost of any works. SPA.

Opportunities
Very attractive route for cyclists, good for leisure cycling and longer distance walking. Uses part of the National Trail

Options		**Budget Cost :**
1	Provide a shared-use path (approx 2.4km) in unmade areas along route, maintaining a minimum of 3m wide. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane. Further strengthening would be required to improve the strength of the subgrade.	**£92.7k**
2	Cutback overgrown areas, including low hanging trees.	**£3.5k**
3	Provide cycle symbols along carriageway section of route to increase awareness of cyclists.	**£0.2k**
4	Provide signage at start of section and where route changes direction. (Total 4 signs and posts).	**£0.8k**

Recommendation with reasons:

This route is not considered as a Priority Loop. The costs and deliverability difficulties mean that it is unkilely to be implementable. The path could be retained as a signed walking route, making use of the existing line of the Hereward Way National Trail. If longer term funding and construction opportunities arise, then the route will provide a useful addition to the Thetford Loops network. Providing signing for pedestrians will be required. The on-road link west to the Devil's Punch Bowl should be included as part of the priority network.

CL4: Croxton Loop Section 4

Path running north between Northern Loop and level crossing over railway line at Chisley Vale
Grid Refs TL 85624 85443 to TL 85556 86554 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route follows on from the northern loop by Chisley Vale continuing north through Chisley Vale to Broom Covert. The route runs along an unmade track through the middle of a field, before entering into a track running into a forest. The route passes through a section of overgrown bushes / shrubs, before continuing north along the western side of the railway line up to an unmanned level crossing.

Location Plan

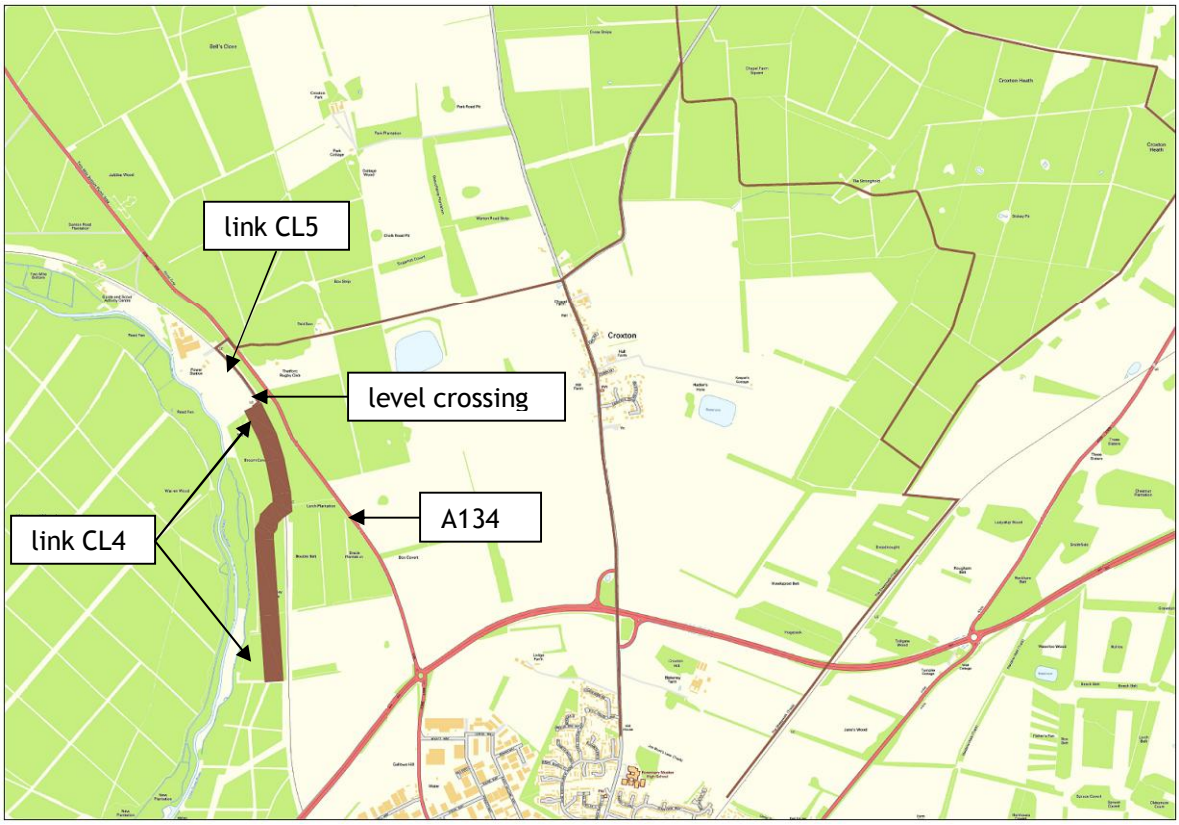


Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the southern end to the northern end).

Track through Chisley Vale at start of section

Track through forest at Chisley Vale

Trees and shrubs overgrowing track through Chisley Vale

Narrow unmade track through Chisley Vale

Uneven track alongside railway line

Fallen tree blocking the entrance to the path

Use
This is a National Trail route, St Edmund Way. The tracks appeared little used; during the site visit no path users were observed. The tracks were likely only used by longer distance walkers.

Issues
All tracks were unmade, with vegetation growing across them. In addition sections of the route were very narrow and had low hanging trees and overgrown shrubs/ bushes.

Orders
The route is a Public Footpath and is part of the St Edmund Way.

Land Ownership
Land is owned by Crown Estate.

Constraints
Footpath needs to be converted to a cycle track for lawful use by cyclists. Existing condition of track is not suitable for cyclists and requires significant upgrading. SPA.

Opportunities
Very attractive route for cyclists, good for leisure cycling and long distance walking on traffic-free path. Currently the National Trail route (St Edmund Way) along this section is only accessible to determined walkers, so improvements to the surface will allow greater use and enjoyment.

	Options	**Budget Cost :**
1	Provide shared-use path (approx 1.1km) 3m wide along length of route. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£64.1K**
2	Provide signage to indicate Croxton Loop. (Total 3 signs and posts).	**£0.6K**
3	Cutback low hanging trees and overgrown shrubs/ bushes.	**£1.2K**
4	Remove fallen tree blocking path at north end of section.	**£0.2K**
5	Convert footpath to cycle track	**£5.0K**

Recommendation with reasons:
This route should be included in the Priority Loops network. It provides the only available link opportunity to access the Croxton Loop network from the Forest Loops. It is recommended that all options are implemented so as to provide an attractive, convenient shared-use surface. Conversion to a cycle track will be required through the promotion and confirmation of an Order unless the path is constructed off the line of the St Edmund Way on a new parallel permissive route.

CL5: Croxton Loop Section 5

Path running north between level crossing over railway line at Chisley Vale and A134
Grid Refs TL855 865 to TL854 868 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route follows on from the Croxton Loop CL4 link by the unmanned, gated level crossing at Chisley Vale. The route continues north on the eastern side of the railway line along an unmade path before entering onto an access road leading into a power station from the A134. The route continues east crossing over the A134, before continuing on Croxton Loop Section 6.

(Photos are shown along the route from the southern end to the northern end).

Location Plan

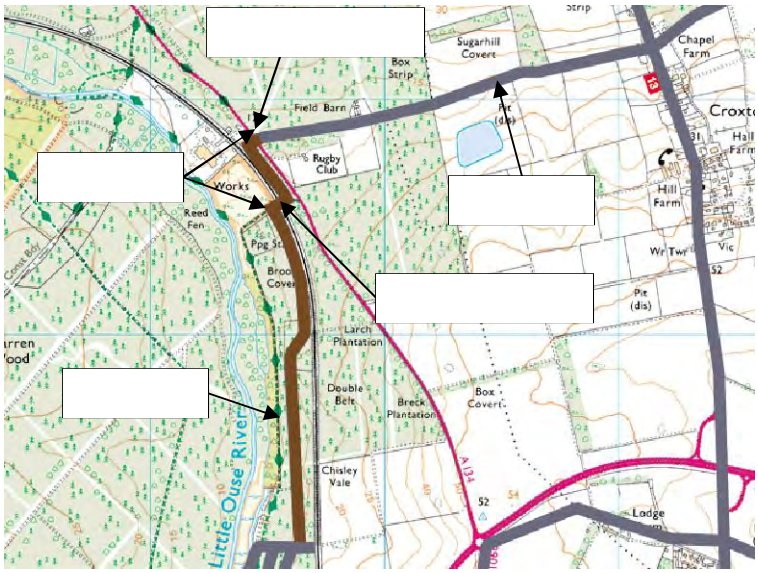


Diagram based on OS mapping. Licence number 100019535 2010

Unmanned, gated level crossing – cyclists can use the main vehicular gates with relative ease. Pedestrians have a smaller side gate.

Unmade track on eastern side of railway line

Unmade track on eastern side of railway line between level crossing and power station.

Route opportunity through to A134 just south of the Power Station access road.

Additional view of possible route alignment to the A134 south of the Power Station access road.

Location of proposed A134 refuge island between Rugby Club entrance (right) and Power Station entrance (alongside lorry).

Land Ownership
Crown Estate
Breckland District Council
Norfolk County Council (Highway Authority)

Use

The tracks appeared very unused; during the site visit not one pedestrian or cyclist was observed. The tracks were likely only used by serious walkers or people walking their dogs.

Issues

All tracks were unmade, with vegetation growing across them.
There is an unmanned, gated level crossing with separate pedestrian and vehicle gates.
No provision for crossing the A134 (60mph). The potential issue of dealing with Network Rail with regards to the crossing should not arise if no changes to the existing operation are proposed – none should be required. The crossing can be used by both pedestrians and cyclists in relative ease.
SPA.

Orders

The route follows a designated Public Footpath and appears to coincide with the St Edmund Way, a National Trail. A Conversion Order will need to be promoted and confirmed to allow for lawful use by cyclists if the line of the Trail is followed.

Council and Police observations

Constraints

Surface improvements. Footpath conversion. Crossing the A134. SPA.

Opportunities

Very attractive route for cyclists, ideal for leisure cycling on a traffic-free path. A safer crossing facility should be provided across A134 to improve the route for less confident cyclists and families with children.

Options		**Budget Cost :**
1	Provide 3m wide shared use path along length of unmade sections of route. Construct with 50mm locally sourced gravel, 150mm Type 1 material, laid over a separation membrane.	**£18.8K**
2	Provide a crossing over A134; including an uncontrolled refuge island, minimum 2m wide, with asphalt surfaced footway on either side of the carriageway. Design diagram supplied.	**£21.3K**
3	Provide cycle direction signs.	**£1.0K**
4	Convert footpath to cycletrack	**£5.0K**

Recommendation with reasons:

The link and crossing should be included as part of the priority Loops network. It is recommended that all associated options are implemented. Path surface improvements and a crossing refuge on the A134 will ensure that the Loop is both pleasant to use and safe. Conversion to a cycle track will be necessary.

CL6: Croxton Loop Section 6

Path running north between level crossing over railway line at Chisley Vale and A134
Grid Refs TL 85450 86846 to TL 87147 87225 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route follows on from the Croxton Loop section 5 on the eastern side of A134. The route continues along a track, part of the Hereward Way National Trail, leading up to a farm, before continuing east along an unmade track. The route meets with Croxton Loop Section 1 Option A where it leaves the track onto a rural road, namely The Street (Croxton Road).

Location Plan

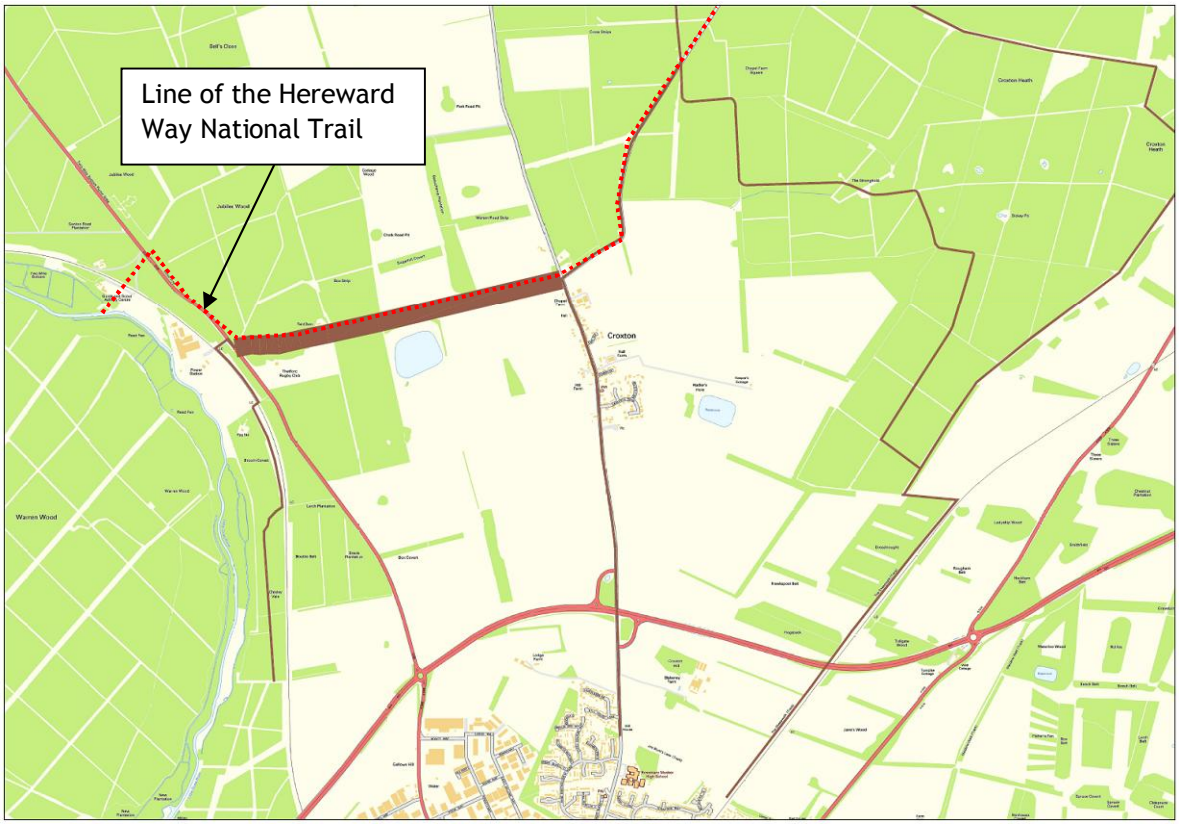


Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the southern end to the northern end).

Gate to prevent vehicular access causes a barrier for cyclists.

Track providing access to a farm

Track providing access to a farm

Track leading into farm

Unmade track along route

Eastern section of route connecting with The Street (Croxton Road)

Use
The tracks appeared little used; during the site visit no path users were seen. The tracks were likely only used by longer distance walkers or people walking their dogs and vehicles on the western section accessing the farm property.

Issues
The tracks leading into the farm appeared to be gravel surfacing with vegetation growing along the centre of the track.
A gate leading onto the track was not very cycle friendly and created a barrier for cyclists.
A large section of the track was unmade and the ground was slightly uneven.

Orders
The path is a Public Footpath. It is also along a section of Hereward Way, a National trail.

Land Ownership
Land is owned by Crown Estate.

Constraints
Footpath will need Conversion Order for lawful use by cyclists if line of National Trail route (Hereward Way) is improved. SPA.

Opportunities
Very attractive route for cyclists, good for leisure cycling and longer distance walking on traffic-free route. Providing improved surface would ensure a better ride for cyclists and enhanced accessibility for all path users.

Options		**Budget Cost :**
1	Provide shared-use path 3m wide (approx 1.9km in total) along length of unmade sections of route. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£53.5K**
2	Clear vegetation from section of route leading into the farm property.	**£2.0K**
3	Remove existing gate and provide a more cycle friendly solution.	**£3.0K**

4	Retain existing gate and clear vegetation to provide a wider access to the side of the gate for improve access for cyclists.	**£0.5K**
5	Provide signage to indicate Croxton Loop. (x3 sign and post)	**£0.6K**
6	Convert footpath to cycletrack	**£5.0K**

Recommendation with reasons:
This route should be included as a Priority Loop. There are no alternative connecting links that better complete the Loop aspiration. It is recommended that options 1, 2, 4 and 5 are implemented to provide an attractive path with an appropriate surface for shared-use.

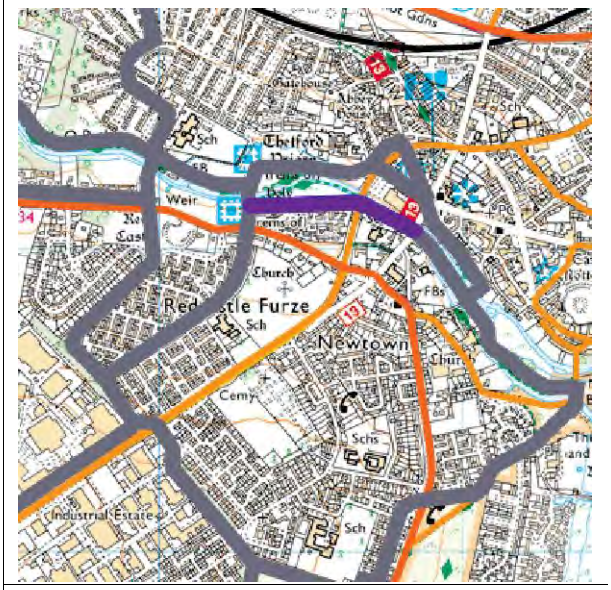
NL1a: Northern Loop Section 1 Option A (Haling Path)

Path on south side of Little Ouse between Bridge Street and Blaydon Footbridge
Grid Refs TL 868 830 – TL 864 831 Surveyed 13th August 2010

Description PRIORITY 1 RIVERSIDE ROUTE

Path in three sections. At eastern (Bridge Street) end footpath follows river and 1.8m wide bitmac cycle path set back behind trees. Next section to London Road bridge 2.6m wide bitmac shared path with fence/hedge at rear. Between London Road and Blaydon Footbridge FP7 follows river with approx 2.4m wide soft surfaced cycle path set in open land away from river.

Location Plan



Scheme shown in purple.

Diagram based on OS mapping. Licence number 100019535 2010

Bridge Street end

Transition from segregated path to shared path in middle section

Bridge under London Road – note poor surfacing at water edge.

Path set back from river in western section

Land Ownership

Breckland District Council
Environment Agency Land Drainage and Sea Defence Corridor

Use

Light use by cycle and pedestrians – usually pass at least one other user on the shared section. At western end a good proportion of cyclists turn south for subway towards Redcastle Furze.

Issues

Poor surface in parts and overhanging / encroaching vegetation on the western section.
Possible visibility problems between sections.£450k worth of improvements may be made according to Capital Symonds report. Route continuity for cyclists at the town centre end needs improving.

Opportunities

Attractive riverside route. Level, lit, with good links to adjacent areas of the Town. Improvements programmed for Haling Path retaining wall.

Options		**Budget Cost :**
1	Repair surfacing and relay strip alongside edge of river between Bridge Street and London Road – approx 130m x 1m	**£3.8K**

Recommendation with reasons:

Include in Priority Network River Corridor route. Repair surfacing and relay strip alongside edge of river between Bridge Street and London Road. It is understood that this repair work is imminent and programmed for the financial year 2010/11.

NL1bc: Northern Loop Section 1 Options B & C

Path near north side of Little Ouse between Blaydon Footbridge and London Road with on highway connection to Bridge Street
Grid Refs TL 869 831 – TL 864 831

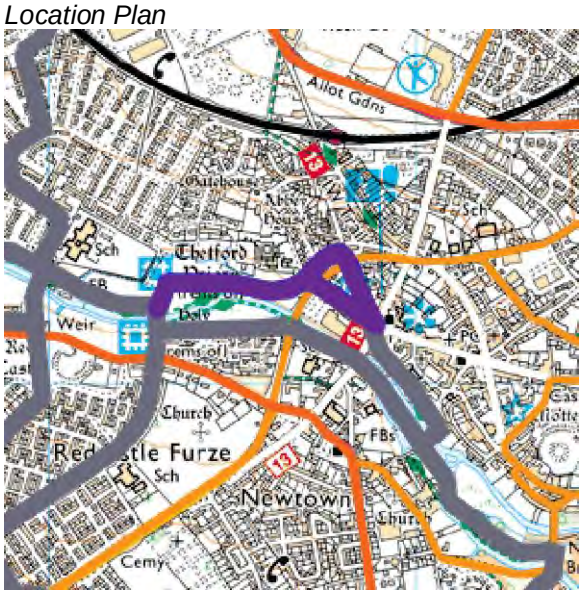
Description PRIORITY 1 RIVERSIDE ROUTE

Short section of paved shared use street between Bridge Street and Nicholas Street with a prohibition of motor vehicles order provides a very useful permeability advantage for cyclists at this junction into Minstergate.

Option B uses low flow Minstergate with 2.3m wide subway under London Road. The subway has two right angle bends though there are very gentle gradients involved creating a relatively flat passage. As London Road is raised above the level of Minstergate the subway is only partially below ground level and is consequently less dark and forbidding than many examples.

Option C uses Nicholas Street which crosses London Road at a signalled cross roads and then descends to the subway via Water Street. Both routes then use a 2.9m wide shared use bitmac with surface dressing path as far as Salisbury Way and then a 1.8m wide shared use path to Blaydon Footbridge. There are Thetford style “A Frame” access controls separating the riverside fields from the Abbey Estate.

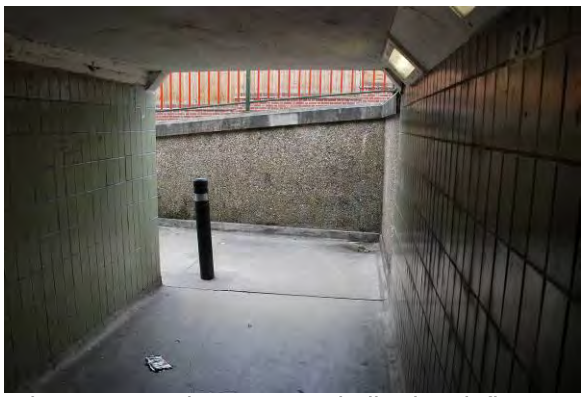
Location Plan



Scheme shown in purple

Diagram based on OS mapping. Licence number 100019535 2010

Minstergate Subway: dropped kerb (should be flush) needs improving outside houses.



Minstergate Subway – note bollard to deflect users away from blind corner. These seem to work well.

Minstergate Subway, Water Lane end – note good flush kerb

Potential short cut for phase 2 path runs straight ahead.

Abbey Estate to Blaydon Footbridge – access control and poor quality path

Abbey Estate – need to surface third side of triangle – an obvious desire-line.

Use
The path is relatively busy. All pedestrians and cyclists use the subway (option B) and most are travelling from the Abbey Estate. There is evidence of cyclists taking a short cut directly to the footbridge. Parked bikes observed outside Iceland on Minstergate.

Land
Highways, 'Custodian Asset Land'

Issues
The final footpath is narrow and has a poor surface. Poorly dropped kerb at the Minstergate end of the subway. Option C takes significantly longer to use than option B and involves a hill.

Orders
The subway will need to be converted to joint pedestrian and cycle use.

Council and Police observations
Norfolk Police ACLO3 made the following comments:
"A number of motor cycle inhibitors have been placed at access points from the housing estates to try and prevent motorcycles from getting onto the water meadows. This has been a serious problem in the past and one that is extremely difficult to police. Any decision to remove these should therefore not be taken lightly. The inhibitors are clearly designed to impede motor cycles but they appear to be wide enough for cycles to get through. If this is the case I would recommend that they should remain."

Constraints
Path quality and limited width in places.

Opportunities
Attractive, generally direct, traffic-free route. Good underpass to cross busy road with measures in place to overcome visibility and possible conflict issues. Excellent permeability measure at Minstergate. The redevelopment of the bus interchange may also provide opportunities.

Options		**Budget Cost :**
1	Make dropped kerb at Minstergate end of subway flush	**£1.5K**
2	Alter orders to convert subway to joint pedestrian and cycle use	**£5.0K**
3	Provide new bitmac path along side river 280m x 2.5m	**£39.5K**

4	Widen and resurface existing 200m long bitmac path widen from 1.8m to 2.5m	**£20.8K**
5	Manufacture and install two new three arm fingerpost signs	**£1.0K**
6	Manufacture and erect three new fingerpost arms to existing sign poles (assume two destinations plus symbols on each arm).	**£0.3K**
7	Amend traffic regulation orders to permit cyclists to use the subway	**£5.0K**

Recommendation with reasons:
Include Options A and B in the priority Loops network. Abandon option C as a Loop route but sign as a route to the railway station. Convert subway to joint pedestrian and cycle use. Widen and improve path from Abbey Estate to Blaydon Footbridge.
As a Phase 2 build direct path along northern side of river. The path could have a soft surface.

Comparison of Options A and B

Option A takes 2mins 13secs to cycle

Option B takes 3mins 30 secs to cycle

Option B with cut off takes 2mins 45 secs to cycle

It is recommended that both options A & B are developed. However, option A lines up better with the Bridge Street to Nun's Bridges section of path and should be the main loop. The destinations of Town Centre (ie King Street) Abbey Estate and Priory could be signed via option B.

NL2: Northern Loop Section 2

Footpath on north side of Little Ouse between Blaydon Footbridge and Canterbury Way
Grid Refs TL 864 831 – TL 859 832 Surveyed 11th August 2010

Description **PRIORITY 1 RIVERSIDE ROUTE**
Existing, unlit 1.75m wide bitmac path with surface dressing footpath. Suggest bitmac footpath with surface dressing along north side of Little Ouse set away from edge. Has 3.0m wide concrete bridge with no parapets across tributary / drain. Passes by boat landing area. Final steep uphill link to Canterbury Way.

Location Plan *Scheme shown in purple*

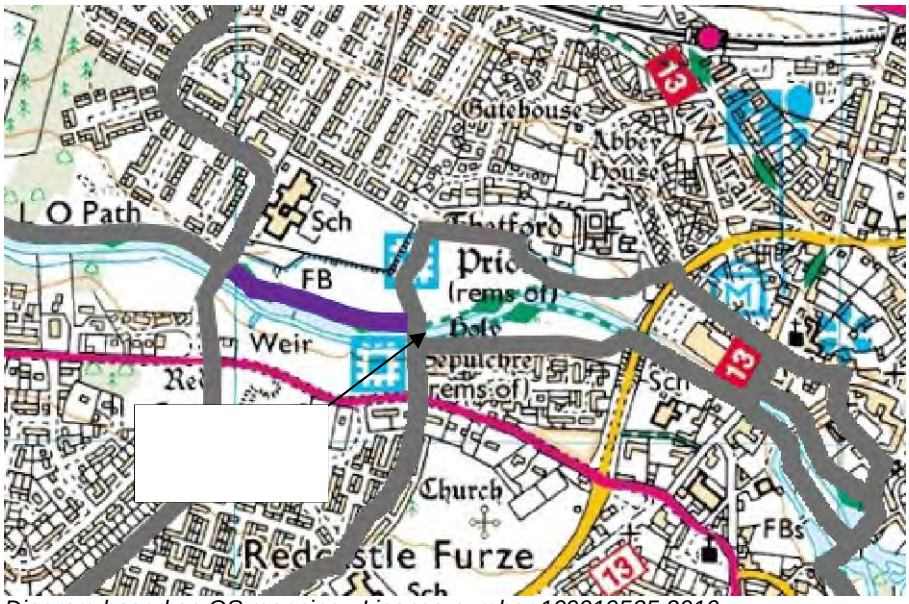


Diagram based on OS mapping. Licence number 100019535 2010

Blaydon Footbridge

Path approaching Blaydon Footbridge

Overhanging vegetation

Bridge over tributary or drain showing poor surfacing

Boat landing area.

Approach to Canterbury Way

Use

Medium level pedestrian use with occasional cyclists. People congregate around the boat landing area.

Issues

Narrow for shared use, but has verges. Surface poor in places, particularly at either side of tributary / drain bridge. Encroaching vegetation and low hanging trees. Since the route is well-used and part of the 'utility' network the surface needs to be appropriate and of an all-weather quality. Although the path is in the floodplain area, its importance as a utility route and improvement should outweigh any concerns over additional surface water run-off.

Potential conflict point at end of Blaydon Footbridge, particularly if cut off path along northern side of river is constructed (see Section 1 option B)

Orders

Footpath, so requires cycletracks conversion order

Council and Police observations:

(At the Canterbury Way end) *Consideration should be given to using robust (accredited 'Secured by Design') bollards at the crossing point to prevent vehicle access on to the path.'*

Constraints

Limited width and surface quality in places.

Opportunities

This path provides a vital riverside route link part of the urban 'utility' network. The path could be improved, though it gives a reasonable level of service at the moment. It could be lit and incorporated into the wider Thetford Connect local network routes.

The Police would like to see bollards preventing vehicular access. Although there are motorcycle preventing "A Frame" access controls preventing communication between the riverside and Abbey Estate the area is not secured as there are a number of routes which motorcycles could use.

Blaydon footbridge should be considered for lawful use by cyclists.

Options:		**Budget Cost :**
1	Convert footpath to cycletrack	**5.0**
2	Manufacture and erect one three arm fingerpost sign, erect two signs to diagram 956, remove end of route and cyclists dismount signs	**1.2**
3	Undertake surface repairs (say at four locations)	**2.9**
4	Provide 20m line of robust bollards to prevent vehicular access from Canterbury Way	**4.0**
5	Widen and alter end of path next to Blaydon Footbridge to reduce blind corner effect	**2.4**
6	Widen path to 2.5m (250m) existing 1.75m path has edging which will need to be removed.	**17.0**
7	Provide lighting (360m)	**24.0**
8	Convert footpath to cycletrack	**£5.0K**

Recommendation with reasons:

Include in the Priority Thetford Loops network.

Convert footpath to cycle track. Provide bollards to prevent vehicular access to meadows. Provide direction signing. Widen and alter Blaydon Footbridge end of path make surface repairs as necessary. As a later phase the whole length of the could be widened to 2.5m path for safer shared-use. Consider lighting as future lower priority improvement.

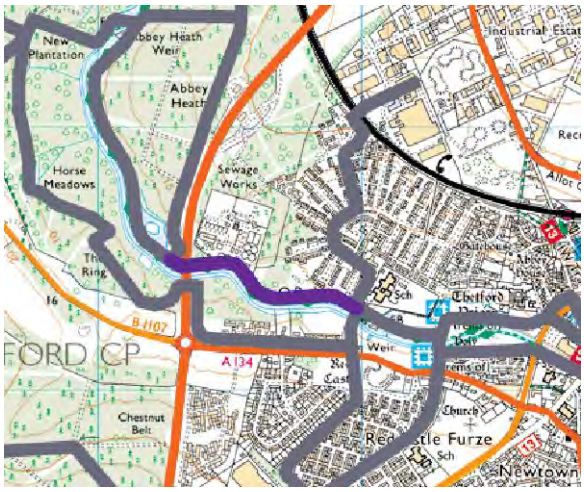
NL3: Northern Loop Section 3

Footpath on north side of Little Ouse between Canterbury Way and A11
Grid Refs TL 859 832 – TL 854 834 Surveyed 11th August 2010

Description PRIORITY 1 RIVERSIDE ROUTE

Unsurfaced footpath with encroaching vegetation but with sufficient room between trees to provide a surfaced path. Existing 2.3m wide surfaced path under A11 bridge with 1.05m balustrade. Space for route under Canterbury Way (2.0m clearance min) and evidence of desire line towards Coventry Way

Location Plan



Scheme shown in purple.

Diagram based on OS mapping. Licence number 100019535 2010

Canterbury Way bridge

Path west of Canterbury Way

Although adequate for current use some trees may need removing to allow machinery on site

More vegetation and fallen trees with informal path taking avoiding route

A11 bridge from east

A11 bridge from west

Use
Occasional cyclist and pedestrian

Issues
Narrow, surface could deteriorate if wet, encroaching vegetation. Soft surface (sand) and limited headroom under Canterbury Way. However, space exists to widen the path with the removal of only a few trees.

Orders
Currently a public footpath

Council and Police observations
"Plans show alternative routes as the path reaches this bridge. The route shown going under the bridge (Canterbury Way) *offers little opportunity for natural surveillance, even if lit. As such; the route that crosses the road would be the preferred option with regards to the principles of designing out crime."*
Desire-line 'mentality' is likely to mean that most path users will want a direct line for where they want to go. The route under the bridge is the direct one and it means that path users are not exposed to traffic when crossing Canterbury Way. It is unlikely that path users will also want to climb up and down to cross at road level.

Constraints
Public footpath will require conversion for shared-use.
SPA.

Opportunities
Note the Police comments but offer two routes so users have the alternative of crossing Canterbury Way on the level if they choose.

	Options	**Budget Cost :**
1	Convert footpath to shared-use cycle track.	**£5.0K**
2	Provide 2.0m wide soft surfaced path (700m) but provide 2.5m wide bitmac section under Canterbury Way (80m with option 4)	**£56.5K**
3	Provide 2.5m wide bitmac path links to Canterbury Way	**£20.0K**
4	Provide link to path alongside Chester Way and Coventry Way houses and provide flush dropped kerb where this path joins Canterbury Way	**£4.6K**
5	Provide 20m long line of robust bollards to exclude motor vehicles	**£3.4K**
6	Convert footpath to cycletrack	**£5.0K**

Recommendation with reasons:

Include in Priority Loops network. This is a vital riverside link, part of the longer river corridor route providing the high priority connection to High Lodge. All options should be considered and implemented.

NL4: Northern Loop Section 4

Various routes on north east side of Little Ouse between A11, Abbey Heath Weir and blocked railway bridge
Grid Refs A11 TL 854 834, Abbey Heath Weir TL 851 843, Railway bridge TL 857 850
Surveyed 11th August 2010

Description PRIORITY 1 RIVERSIDE ROUTE

There are three possible routes here with a linking route identified by TI.
FP1 & FP2 are unsurfaced footpaths following the Little Ouse. FP1 is on a bund with an approximately 3.5 – 4.3m wide flat top containing the occasional tree. FP2 is a winding path between trees further away from the river. Short length of gravel surfaced vehicle track to fishermens' car park near A11.
The easterly forest vehicular track is largely straight and has a firm gravely surface suitable for use by most bikes. Short length of concrete road from river at A11 to track's junction with A11
Between the two is another mostly grassy track with occasional sandy sections.
Linking track from just north of Abbey Heath Weir to easterly track is mostly grassy with sandy sections.

Location Plan

Scheme shown in purple

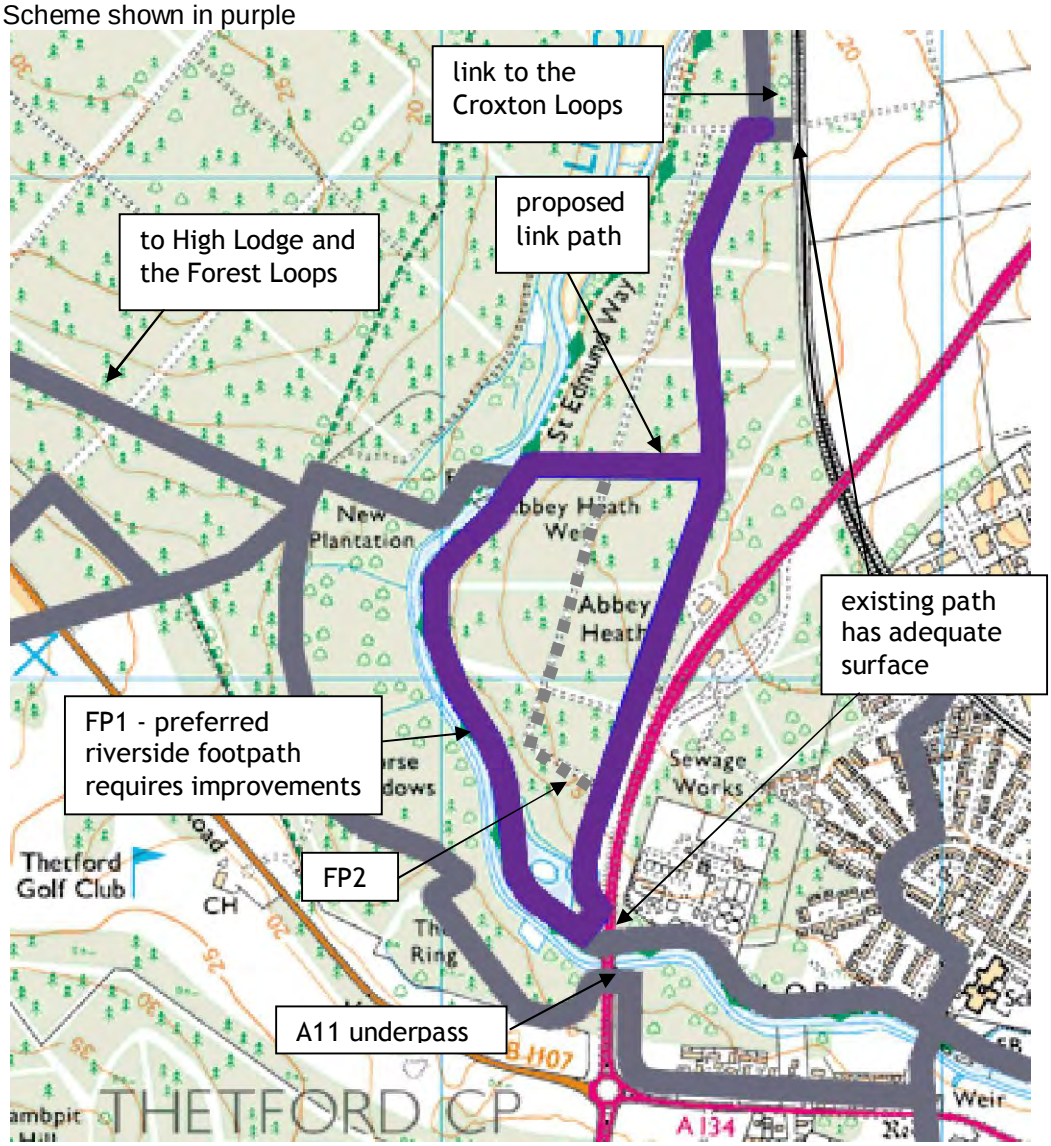


Diagram based on OS mapping. Licence number 100019535 2010

Entry to fishermen's track

FP1 River bank path, attractive route, though surface enhancements needed

Abbey Heath Weir footbridge, adequate for pedestrian and cycle use

Linking track, poor surface, needs improvement

Easterly track, surface is cycleable

Easterly track, cycleable surface in place

Easterly track/ A11 access

Informal connection at A11 access

Use

Occasional pedestrian seen on FP1. However wheelmark evidence of cycle use on FP2 and motorcycle use on FP2 and the other two tracks

Issues
FP1 and FP2 would need surfacing as would the middle track and the linking track. Some motorcycle use.

Orders
Footpaths will need conversion to cycletracks for shared-use. Easterly track has no rights of way.

Council and Police observations
The Council would prefer pedestrians to use FP1 with cyclists using one of the other forest tracks. However, this aspiration does not account for the desire to cross the river Little Ouse to head towards Thetford Warren and High Lodge. Whatever route was provided for them cyclists would use FP1 if they were seeking to get to High Lodge – which is the most important and popular desire-line.

Land
Crown Estates.

Constraints
ProW footpath St Edmund Way National Trail will require conversion for shared-use. SPA. Sensitivity of river corridor.

Opportunities
The easterly track, adjacent to the A11 could be used now with appropriate measures taken to control access, but, without the link path proposal, it only serves the Croston Loops and not the higher priority desire-line paths towards High Lodge. The riverside footpaths are the most pleasant route because of proximity to the river and they are also further from the sometimes intrusive traffic noise from the A11. The suggested routes are FP1 from A11 bridge to Abbey Heath Weir, the linking track between the Weir and the easterly track and the whole of the easterly track.

Options		**Budget Cost :**
1	Surface FP1 2.0m wide 780m long provide two sets of access control, one each end of the fishermens' track	**£70.0K**
2	Surface linking track 2.0m wide 480m long (may not all need surfacing)	**£28.0K**
3	Provide access control at A11 access to easterly track	**£0.8K**
4	Provide 4 three arm fingerposts and 6 repeaters on wooden posts	**£2.9K**
5	Convert footpath to cycletrack	**£5.0K**

Recommendation with reasons:

- Include the riverside path, the eastern track and the link path in the priority Loops Network
- Convert FP1 to a shared-use 2m wide path and improve the surface.
- Agree use of forest tracks.
- Surface necessary parts of the east-west link track.
- Provide signing.

- The river bank is the most pleasant and most likely to be used and appreciated and is the natural extension and alignment for the riverside route, however, retain the path width at 2m for sensitivity reasons
- The route provides the most direct route to High Lodge and the visitor centre and facilities there
- It provides the quickest route towards Croxton
- It provides a route between the Croxton Loops and the Thetford Forest Loops
- It provides for a short "circular" ride in this section of forest
- the paths are extant albeit the requirement for conversion to lawful use
- the easternmost path (plus the improvements to the link path) could provide an early interim route until the riverside route is completed

NL5: Northern Loop Section 5

This section of the Loop travels through the Abbey Estate along Gloucester Way, Canterbury Way. Grid Refs TL 85950 84028 – TL 85959 83244 Surveyed 17 August 2010

Description PRIORITY ROUTE

The signed path between Gloucester Way and the footbridge is a signed cycle route. The path has a hard standing surface and guard railing at the western end. Gloucester Way and Canterbury Way are residential streets travelling north / south through the Abbey Estate. Both roads have approximately 2.0 metre footways on either side of the carriageway and have no existing cycle priority facilities. Canterbury Way is a 20mph road and has vertical and horizontal deflection traffic calming to reduce vehicle speeds in the form of closely spaced road humps and footway build-outs resulting in a southbound priority chicane.

Location Plan Scheme shown in purple

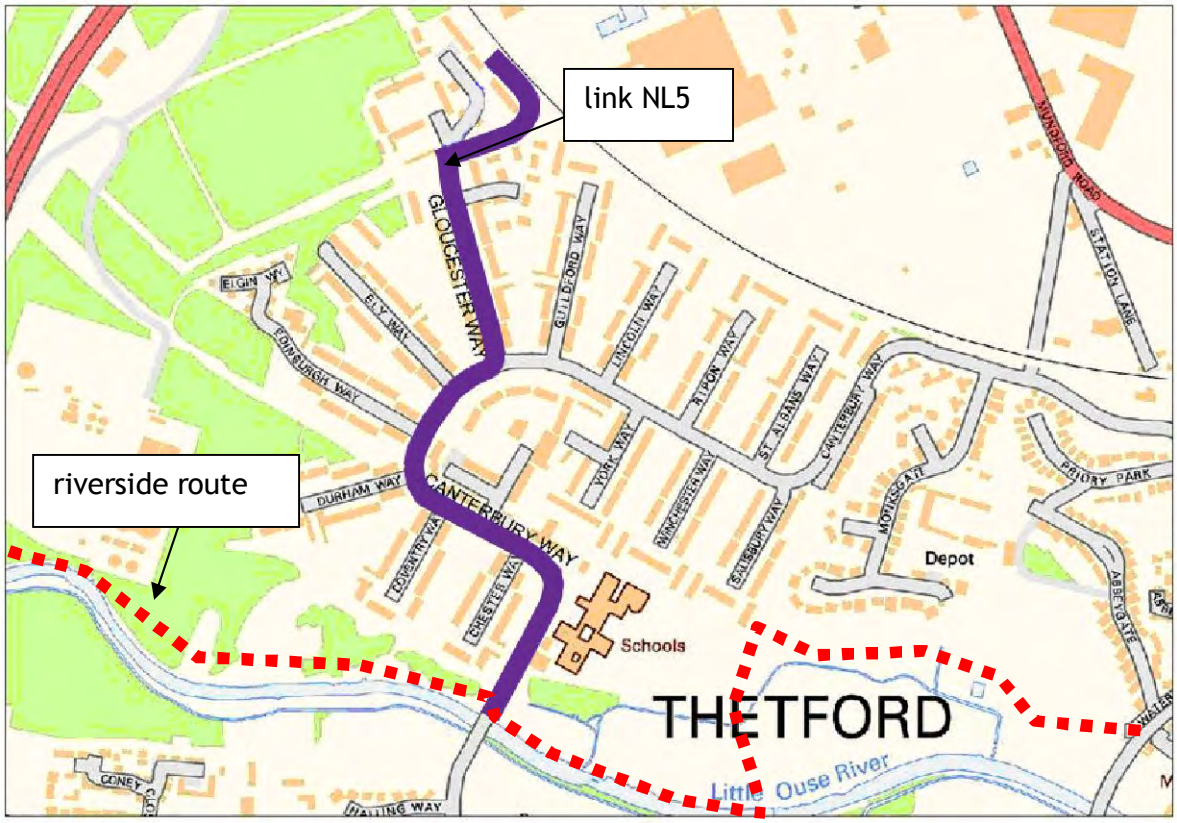


Diagram based on OS mapping. Licence number 100019535 2010

Facing west towards Gloucester Way from signed path

Facing north where path from footbridge joins with Gloucester Way

Facing northbound along Gloucester Way at signed path to Brunel Way via railway footbridge

Facing northbound along Canterbury Way at footway build-outs.

Use
It is envisaged that this existing cycle route alignment is well used by pedestrians and cyclists as it provides a direct north / south link through the Abbey Estate and on towards the industrial estates via the footbridge over the railway

Issues
The path between Gloucester Way and the footbridge width is not in accordance with DfT design standards. The guard railing at the western end of the path appears to be ineffective and therefore, serves little purpose. The existing traffic calming measures along Canterbury Way reduces ride comfort for cyclists.

Orders
Convert footpath to shared use.

Council and Police observations
Existing guard railing at western end of path serves no purpose.

Land Ownership
Breckland District Council owned and maintained

Constraints
Traffic calming on Canterbury Way needs to be retained for self enforcing 20mph speed limit

Opportunities
Existing 20mph zone and traffic calming creates safer walking and cycling environment. Modification of the traffic calming measures to make them more cycle-friendly could be considered but this is not seen as a priority. Upgrade existing path to bring in accordance with shared surface standards

Options		Budget Cost :
1	Modify footway build-outs to allow cyclists priority through carriageway width restriction.	£5.3K
2	Provide cycle signage	£1.6K
3	Upgrade existing path and convert to a cycletrack	£6.7K

Recommendation with reasons:

Include in priority Thetford Loops network. Options 2 and 3 will add low cost improvements. Provision of signage would increase awareness of cyclists and therefore reduce the risk of accidents involving cyclists. Improving existing path for cyclist would improve ride comfort, convenience and attractiveness. Making the build-outs more 'cycle-friendly' is desirable but not seen as a priority. Option 1, improving the build-outs, is not seen as a priority since the road alignment, low speeds and good intervisibility means that cyclists should find the route acceptable.

NL5C: Northern Loop Section 5 Footbridge

This section of the Loop travels along the footpath north-east of the railway footbridge and across the footbridge.
Grid Refs TL 86017 84080 Surveyed 17 August 2010

Description PRIORITY ROUTE

This section of the Loop travels along the railway footbridge that links the Abbey Estate with the industrial estate. There is a hard standing footway between Brunel Way and the footbridge the path is below 3.0 metres wide, however there is a grass verge on one side and therefore the width should be sufficient for a shared surface path. The footbridge is 1.8m wide has a stepped ramp with a gradient of around 1 in 6 and the steps have approximately 100mm upstands. The route continues on-road along Brunel Way to Mundford Road.

Location Plan Scheme shown in purple

Diagram based on OS mapping. Licence number 100019535 2010

Facing east footpath between Brunel Way and railway footbridge

Facing east down railway footbridge towards Brunel Way

North east side steps

South west side steps, showing right angled corner at bottom

Path approaching corner at bottom of south west side steps

Use
The footbridge provides a useful link between the residential areas south of the railway line and the employment areas to the north. Relatively low use was observed though this may be higher during morning and evening peak travel times associated with journeys to work.

Issues
The existence of steps makes the bridge inaccessible under DDA and inconvenient for cyclists to use. It is possible to carry or 'bump' a bicycle over the steps. If the steps were replaced with a ramp then the new facility would be relatively steep for DDA purposes but usable. If the ramps themselves were to be replaced in their current positions the south west side one would overlook houses and gardens.

Orders
Convert footway to shared use.

Council and Police observations
Potential to modify bridge for suitability for cyclists & pushchairs

Land Ownership
Breckland District Council owned and maintained

Opportunities
There are a range of opportunities. 1. As an interim, cost-effective solution a 'wheeling ramp or channel' could be added to one side of the bridge. As the bridge is only 1.8m wide a wheeling channel would reduce the effective space down to 1.5m. 2. The steps could be removed/filled in leaving a 1 in 6 (approx) ramp. The problem here would be the corners at the bottoms of the ramps. On the north east side there is room to widen and realign the path so move the corner away from the bridge. On the south west side deflection barriers or similar technique would need to be made to move cyclists away from the inside of the corner. 3. An additional improvement would be to replace the south west ramp with a new one placing the corner at the top of the ramp rather than the bottom. 4. Replace with a new shared-use bridge.

Options		**Budget Cost :**
1	Provide wheeling ramp on stepped section.	**£2K**
2	Improve access for cyclist between footpath and Brunel Way	**£0.9K**
4	Fill in stepped section with non-slip surface.	**£5K**

Recommendation with reasons:

Include as a priority route section. Investigate the potential to replace the existing steps with a ramp, provide non-slip surface and take measures to remove conflicts at corners at bottom of bridge. If that is not feasible provide wheeling ramp on one side of bridge. This would allow cycles to be wheeled over the bridge.
Improve connection between path and carriageway of Brunel Way. Provide direction signing.
As a Phase 2 improvement, the bridge ramps could be replaced – with a priority for the ramp on the south west side.

A replacement bridge is unlikely to attract funding but it can be considered as a longer term improvement should the opportunity arise.

NL6: Northern Loop Section 6

This section of the Loop alignment joins the A1066 and travels south from the Lodge Farm Field. Grid Refs TL 86446 85047 – TL 86419 84797 Surveyed 17 August 2010

Description

From the Lodge Farm Field the Loop alignment joins the A1066 immediately south of the roundabout where there is a wooden safety barrier separating the farm field from the highway. There is existing hard standing bell mouth at this junction. The Loop continues 100 metres south along A1066 where 'Option A' begins at the junction of Fison Way Industrial Estate. The Loop has an alternative alignment that travels a further 250 metres south along A1066 and turns into Brunel Way.

Location Plan Scheme shown in purple

Diagram based on OS mapping. Licence number 100019535 2010

Facing west at where the route through Lodge Farm field connects with A1066

Facing north along towards Fison Way Industrial Estate junction with the A1066

Use
The hard standing junction bell mouth suggests that this location was once a vehicle access to the Lodge Farm Field, however with the wooden knee rail it is clear that the junction is no longer used as a vehicle access point.

Issues
There are no existing footpaths for pedestrians to walk along or cycle priority provisions on either side of the carriageway north of Wyatt Way. Cyclists waiting to turn right into Wyatt Way may feel vulnerable when waiting to turn.

Orders
None

Land Ownership
Crown Estate Promotion Land
Crown Estate Land
Norfolk County Council Highway Authority

Constraints
None

Opportunities
Could be implemented and funded through future northern development proposals if allied to planning approvals. Can provide a link to/from the proposed Boudicca Site (Gallows Hill SAM), a planned future public open space. Improve safety for path users by providing a traffic island at the junction of Wyatt Way. Provide linkage between A1066 and Lodge Farm Field in accordance with shared-use path design standards.

Options		Budget Cost :
1	Cutback wooden knee rail to allow cycle access	£0.4K
2	Provide cycle signage	£1.2K
3	Provide a traffic island at the junction of Wyatt Way	£3.9K

Recommendation with reasons:

Not considered a priority route. This is a link that provides for a northern orbital and is better funded and planned along with the future Thetford Urban Extension proposals and augments access to the Boudicca Site Public Open Space (Gallows Hill).

NL6A/B: Northern Loop Section 6 Options A

This section of the Loop travels through the Fison Way Industrial Estate along Wyatt Way, Lodge Way and St Helen's Way.
Grid Refs TL 86419 84797 – TL 86884 84516 Surveyed 17 August 2010

Description PRIORITY ROUTE

'Option A' Loop alignment travels though the Fison Way Industrial estate connecting to the 'Ladies Estate' via an existing footpath off St Helen's Way. The link was originally idenfied as the only available route between Mundford Road and Croxton Road. An alternative route via Fisons Way is also available.

Location Plan Scheme shown in purple

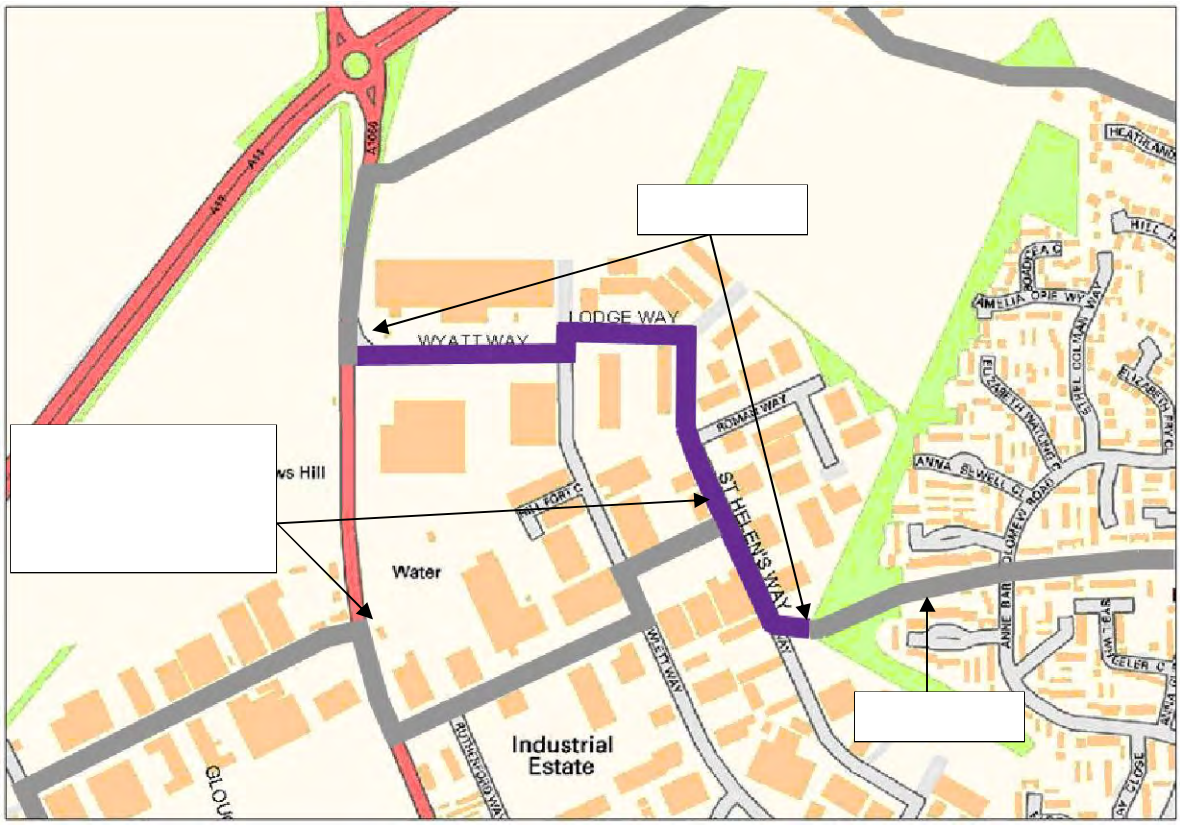


Diagram based on OS mapping. Licence number 100019535 2010

Facing south along St Helen's Way

Facing east off St Helen's Way along footway

Use
The Fison Way Industrial Estate has no existing cycling provision. A high proportion of vehicle traffic in the estate are HGVs. There are no waiting and loading restrictions and as a result vehicle parking is unregulated and frequently takes place on footways. Carriageway widths are relatively wide and footways widths are approximately 2.0m wide where available. On-road visibility is generally good.

Issues
Use by HGVs. Cars and vans parked on footways. Generally unattractive walking and cycling environment. Use at weekends by walkers and cyclists for leisure purposes will be less affected by work traffic and activities.

Orders
None

Land Ownership
Breckland District Council owned and maintained.

Constraints

Opportunities
Increase awareness of cyclists and improve cyclists accessibility onto footway off St Helen's Way

Options		Budget Cost :
1	Provide cycle signage of Loop	£1.2K
2	Provide drop kerb at footpath to allow cyclists transition between footway and carriageway	£0.5K

Recommendation with reasons:

A route through the Fison Way Industrial estate provides the only practical, deliverable connection between Abbey Estate, via the Brunel Footbridge, and Croxton Road in order to complete the Northern Orbital Loop. This is a presently not an attractive environment for pedestrians and cyclists. The most direct route is available via Fison Way, Howlett Way and Baird Way, as an alternative to the Wyatt Way, Lodge Way and St Helens Way identified in the original Loops proposals (and which were associated with the more northern links NL6 and NL6C.

The lack of priority and deliverability of these routes to and via Lodge Farm, to the north, means that the more direct on-road route along Fisons way has to be considered as the most viable, practical route, certainly in the short to medium term. This route is therefore recommended for inclusion in the priority Loops network.

NL6B: Northern Loop Section 6 Option A

This section of the Loop continues along the footpath off St Helen's Way. The path towards Anne Bartholothew Road is an existing cycle route that continues to Croxton Road
Grid Refs TL 86884 84516 – TL 87432 84559 Surveyed 17 August 2010

Description PRIORITY ROUTE

The footway off St Helen's Way has a hard standing surface and is less than 3.0m wide. The path is bound by fencing on either side. The path connects to an existing signed off-carriageway shared surface cycle route that crosses Anne Bartholomew Road and joins onto Croxton Road via the 'Ladies Estate'. This shared surface has a hard standing surface and is design in accordance to DfT cycle design standards.

Location Plan Scheme shown in purple

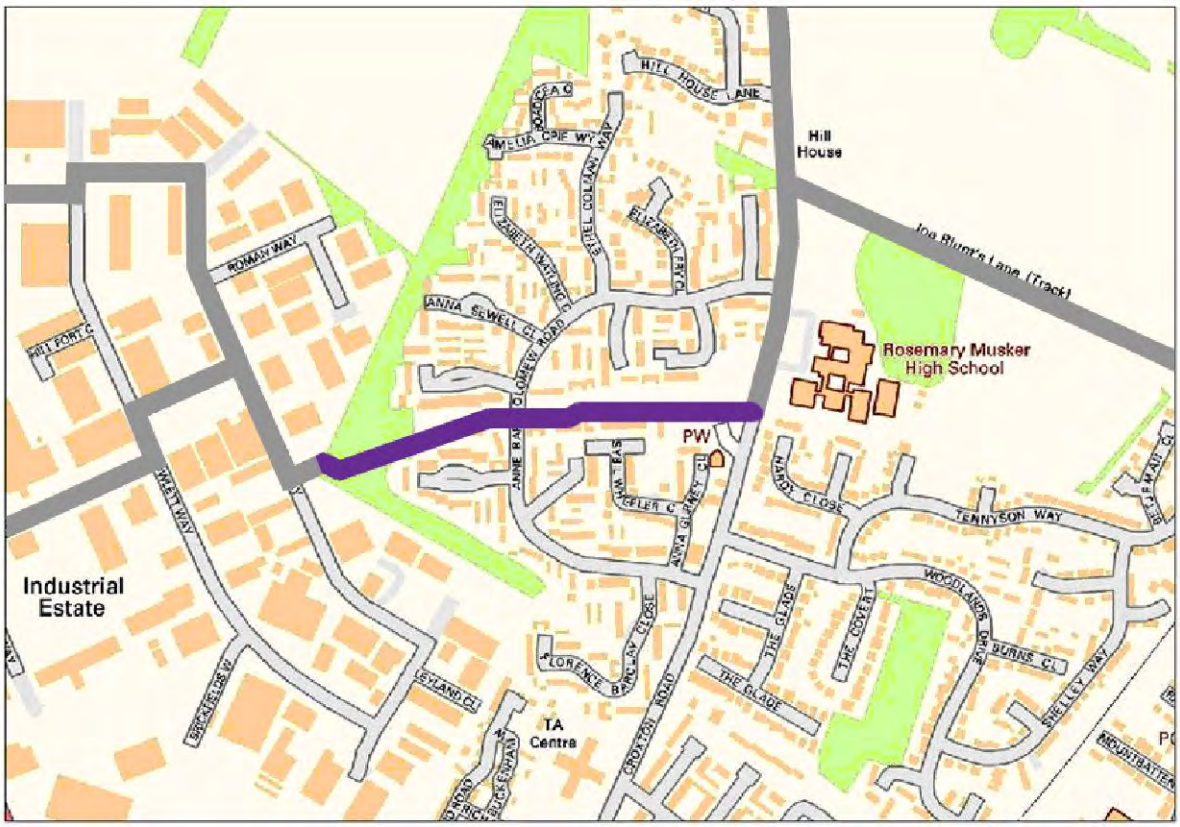


Diagram based on OS mapping. Licence number 100019535 2010

Facing east along footpath towards Anne Bartholomew Road.

Facing east along footpath across Anne Bartholomew Road – note the absence of flush kerbs

Use
The footway off St Helen's Way appears to be a well used link between the Ladies Estate and Fison Way Industrial Estate – no doubt useful for journeys to work. The shared surface provides formalised direct route to Croxton Road, however, there are a number of alternative routes through the residential estate that could be used to augment the main route, so in terms of permeability, the network is very good.

Issues
The footway off St Helen's Way is below the recommended width for shared surface paths (2.5m), though this can be improved by vegetation clearance. There are no existing facilities to assist path users crossing at Anne Bartholomew Road.

Orders
Upgrade existing footway to a shared surface.

Council and Police observations
Norfolk Police ACLO commented that effort should be made to widen the path, natural surveillance, lighting should be improved. Overhanging branches and vegetation should be cutback and maintained.

Land Ownership
Breckland District Council owned and maintained

Constraints
Widening the path is constrained by perimeter fencing of adjacent industrial unit areas.

Opportunities
Existing traffic-free link, very useful for local utility trips to employment areas off Mundford Road. Improve crossing of Anne Bartholomew Road and improve cycle signage.

Options		**Budget Cost :**
3	Install flush kerbs on Anne Bartholomew Road	**£0.5K**
4	Provide a raised table	**£5.8K**
5	Cutback overgrown vegetation to reinstate existing path width	**£0.1K**
6	Provide new cycle signage	**£1.2K**

Recommendation with reasons:

Recommended for inclusion in the priority network. Flush kerb access provision throughout the path should be provided where necessary. There is conflict with an existing bus stop to provide a raised table on Anne Bartholomew Road.

NL6C: Northern Loop Section 6 Option C

Loop travels along Lodge Farm access road and through the farm field towards Mundford Road.
Grid Refs TL 87459 84913 – TL 86572 85084 Surveyed 17 August 2010

Description

There is an existing vehicle tracked path that runs to Lodge Farm. Beyond the farm there is no formal path through the farm field to provide a connection onto A1066 as part of the Loop proposal.

Location Plan Scheme shown in purple.

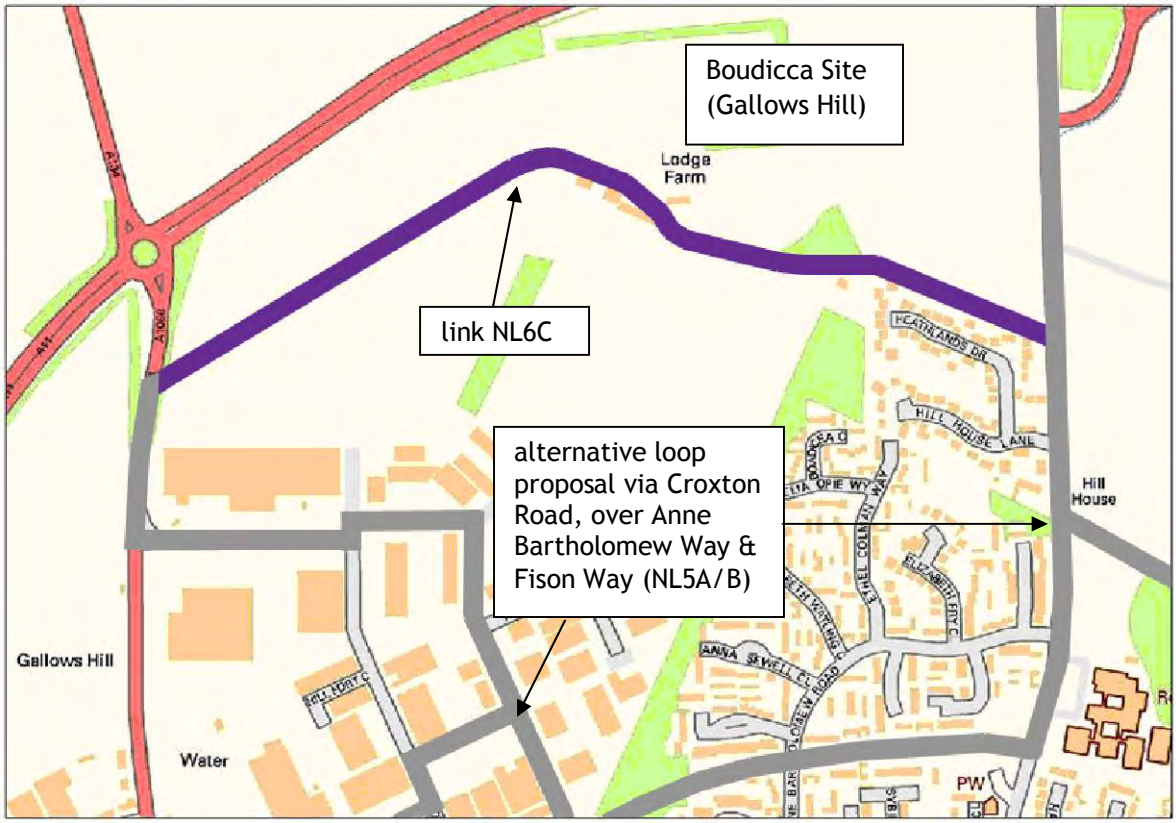


Diagram based on OS mapping. Licence number 100019535 2010

Facing north-west along the path that runs adjacent to Lodge Farm

Facing west along through farm field towards A11, A134, A1066 roundabout

Use

It is likely that the path to Lodge Farm is predominantly used for access to the farm as there is currently no through access to destinations further on.

Issues

The existing indicated Loop alignment passes through the centre of an arable planted field.

Orders
None

Land Ownership
Crown Estate Promotion Land

Constraints
Existing indicated loop alignment passes through the centre of farm fields. It is unknown if a right of way on this alignment would be achievable. No existing right of way. Scheduled Ancient Monument (Gallows Hill) permissions!

Opportunities
Upgrade existing paths to be used as the Loop. Future land use designation as open space part of the Boudicca Site (Thetford Design Guidance Framework). Implementation though planning agreement and funding as part of the future Thetford Urban Extension proposals is the likely only way of delivering the route.

Options		**Budget Cost :**
1	Formalise a shared path through the farm field by providing a 3m wide path along length of unmade sections of route. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£46.2K**

Recommendation with reasons:

This Loop proposal is unlikely to be deliverable due to the need for agreement with the landowner to create a right of way or the bringing forward through development aspirations for the area.Scheduled Ancient Monument permission will also be an issue. It could be retained as a longer term aspiration, particularly if it was associated with development proposals in the north of Thetford where these deliverability issues are best dealt with and overcome as part of a wider land use proposal.

NL7A: Northern Loop Section 7 Option A

Route between Croxton Loop by Hawthorn Way and Croxton Road
Grid Refs TL 88026 84460 to TL 87465 84805 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route makes use of an existing PRoW known as Joe Blunt's Lane. It passes under a railway bridge and runs along the north side of the Rosemary Musker High School. The route continues onto an unmade track before splitting into two, with one route leading north into Blakeney Farm and the second continuing west along the proposed cycle route, namely Joe Blunt's Lane. Continuing west the route becomes very narrow, with less than 1m width in places between trees and bushes.

Location Plan Scheme shown in purple

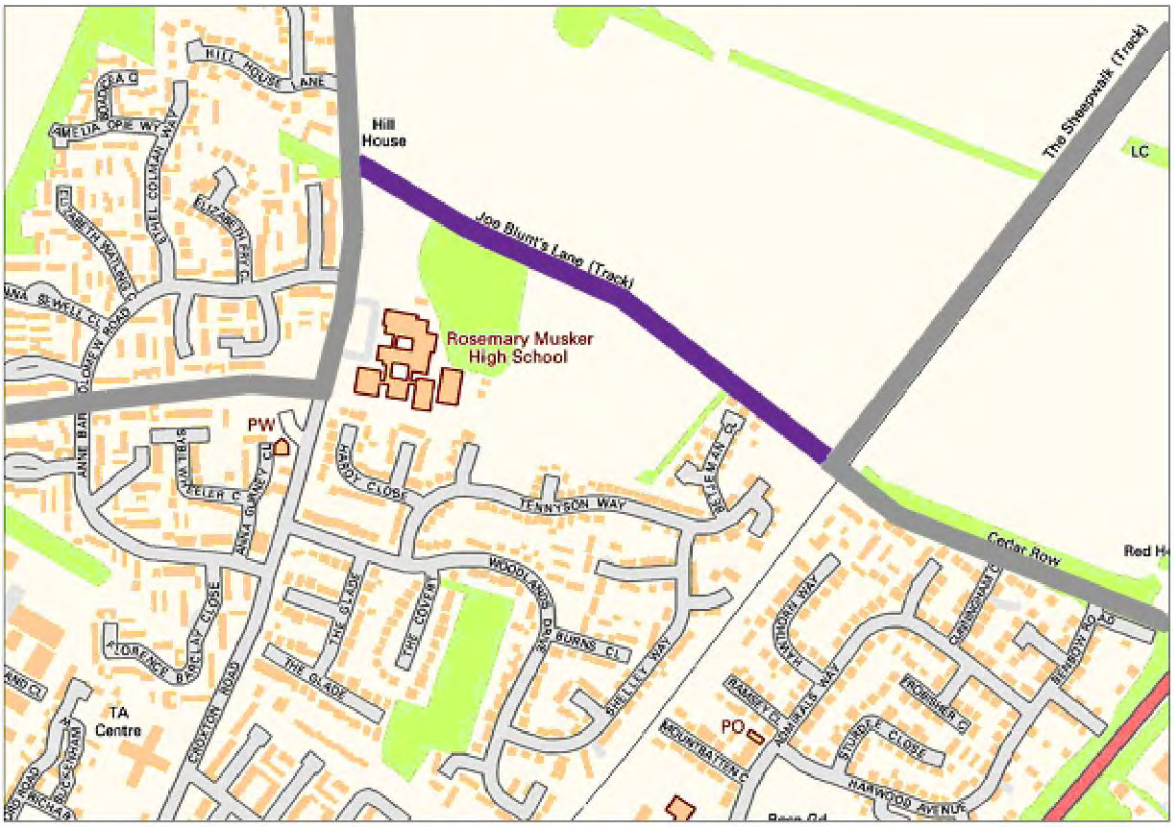


Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the eastern end to the western end).

Underpass under railway line

Joe Blunt's Lane becomes an unmade track running north of Rosemary Musker School

Overhanging trees along Joe Blunt's Lane

Routes split into two. Signage required identifying route direction.

Narrow unmade track along Joe Blunt's Lane not suitable for cyclists and pedestrian to pass.

View at Croxton Road. Existing sign identifying existing cycle routes.

Use
The route on the eastern section of Joe Blunt's Lane between the railway bridge and where the road splits is likely used by pedestrians seeking access to Blakeney Farm. The western end of Joe Blunt's Lane is very narrow with trees either side and is likely used as a short cut for pedestrians / cyclists.

Issues
The unmade track surface makes it very difficult and uncomfortable for cyclists to use. The western part of the route is very narrow with little spce for path users to pass each other comfortably.

Orders
Joe Blunt's Lane is designated as a Public Footpath from Croxton Road to Cedar Row. A Conversion Order will need to be promoted and confirmed to allow for lawful use by cyclists.

Land Ownership
Breckland District Council owned and maintained
Norfolk County Council (Highway Authority) for ProW issues

Constraints
None. ProW conversion

Opportunities
Provides an attractive, traffic-free, direct route for pedestrians and cyclists accessing Tesco superstore, local schools and beyond from the western side of Croxton Road. Provides a good link to Green Lane.

Options		**Budget Cost :**
1	Provide 3.0m wide shared use path (approx 300m) between railway bridge and where road splits for Blakeney Farm. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£12.6K**

2	Trim or cut back trees, shrubs and bushes where appropriate and provide a shared-use path (approx 400m) linking Croxton Road to eastern section of route. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£15.2K**
3	Trim or cut back trees and overhanging bushes / shrubs along length of footpath.	**£3.0K**
4	Add signage to identify route and update existing signage on Croxton Road. (Total 3 signs and posts).	**£0.6K**
5	Convert footpath to cycletrack	**£5.0K**

Recommendation with reasons:

Include as part of the Loops priority network. It is recommended that all options are implemented. Providing an adequately surfaced footpath, maintaining a minimum of 3.0m would greatly improve the route for both cyclists and pedestrians, encouraging much more use.

NL7B: Northern Loop Section 7 Option A & B South

Route between Tesco's Superstore and Croxton Loop along Cunningham Walk, Collingwood Walk and Joe Blunts Lane
Grid Refs TL 88397 85443 to TL 88026 84460 Surveyed 17th August 2010

Description PRIORITY ROUTE

The route leaves the Tesco's superstore and crosses over the A1075 Norwich Road via an uncontrolled crossing facility (refuge). The refuge islands are approximately 2.0m wide and sufficient to cater for cyclists waiting in the centre of the road. The route then splits into two alternative routes: described as Option A and Option B. Option A, to the south, uses 2.0m wide paths, Cunningham Walk and Collingwood Walk, before joining onto Joe Blunt's Lane. Option B uses the length of Joe Blunt's Lane (a Public Footpath) up to the railway bridge underpass, joining directly from the A1075.

Location Plan Scheme options shown in purple or turquoise

Diagram based on OS mapping. Licence number 100019535 2010

(Photos are shown along the route from the eastern end to the western end).

Uncontrolled crossing over A1075.

Staggered barriers to slow cyclists on approach to footway.

Option A route: dropped kerb required on Benbow Road

Option A route: dropped kerb required on Cunningham Walk

Option A route: unmade footway linking with Option B route

Option B route: Existing signage along route

Option B route: wide gravel shared use surface leading into Joe Blunt's Lane

Option B route: Joe Blunt's Lane – a gravel corridor with vegetation growing on surface and bounded by low hanging trees

Use
The footpath along Option A provides access for local people to their properties linking Benbow Road, Cunningham Close and Collingwood Way. The footpath along Option B (Joe Blunt's Lane) is more likely used by cyclists and people walking their dogs.

Issues
Along Option A the footpath is 2m wide in sections, which is not sufficient to cater for shared use.
Along Option B the footpath has vegetation growing in sections and low overhanging trees.
Public Footpath will require promotion and confirmation of a Conversion Order.

Orders
Joe Blunt's Lane is a Public Footpath

Land Ownership
Breckland District Council owned and maintained
Norfolk County Council (Highway Authority) has responsibility for ProW.

Constraints
Narrow footpath along Route Option A, which is restricted by residential properties to the south and trees to the north. Ignoring this alignment risks not providing for a popular desire-line which provides a more direct route for pedestrians. The better surface and access arrangements provided by Option B alignment should ensure that cyclists prefer the route.

Opportunities
Improving the surface of Joe Blunt's Lane would provide an attractive route for cyclists. Green Lane has been improved to a good level of service as a shared-use path and should require no further improvement other than maintenance and vegetation management.

Options	**Budget Cost :**

Recommendation with reasons:

It is recommended that Route Option B is used as the preferred route for the northern loop and included as part of the priority Loop network. It provides a more attractive route through a green area and is less likely to have conflicts with pedestrians. In addition the footpath is wider than Route Option A footpath making it more suitable for shared used.

It is recommended that Options 1, 3, 4 and 5 are implemented. Widening the crossing would ensure that more than two cyclists and pedestrians could cross simultaneously as currently there is restricted space for both pedestrians and cyclists to wait in the centre of the road. Minor surface improvements, vegetation management would improve the route for path users, particularly cyclists, and encourage greater use.

NL 7C: Northern Loop Section 7 Option C

Loop along Kilverstone Road and farm field perimeter or private path
Grid Refs TL 88667 84293 – TL 89633 84872 Surveyed 17 August 2010

Description

Green Lane provides an existing traffic-free section of the Loops network and gives access onto Kilverstone Road – surface improvements are desirable though it is useable presently. Kilverstone Road is approximately 7.5m wide and the carriageway is lined on both sides with vegetation / trees. There is no footway, so pedestrians have to walk in the road. Adjacent to the private path that runs north is an informal path/track along the perimeter of the farming field known locally as Maiden's Walk. The route proposal then follows the line of a belt of trees along a field edge.

Location Plan Scheme shown in purple

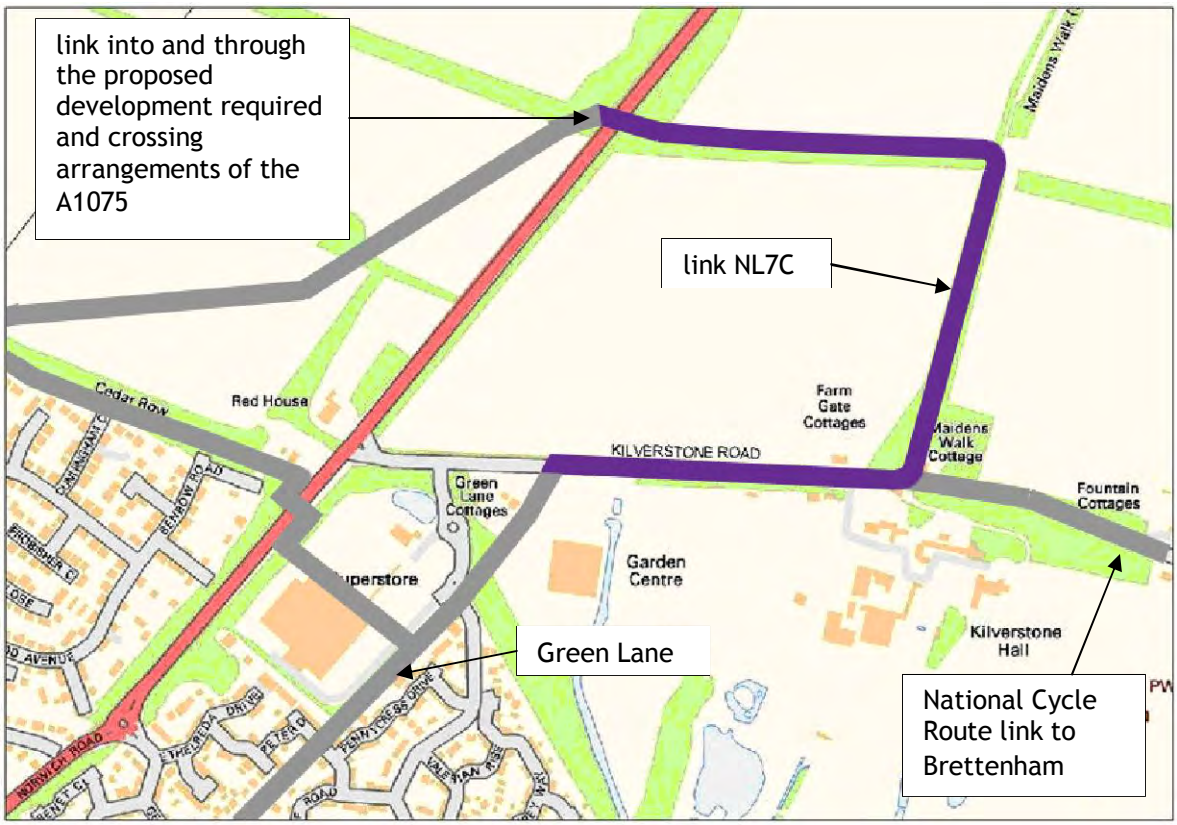


Diagram based on OS mapping. Licence number 100019535 2010

Facing westwards at junction of Kilverston Road and footpath that connects to Charlock Road

Facing south along Maiden's Walk towards Kilverstone Road

Use
The shared path between Kilverstone Road and Charlock Road appears to be well used and the route is signed. Kilverstone Road has no existing pedestrian and cycle facilities along this section of the Loop. Kilverstone Road is signed as part of the National Cycle Network route (13 and 30) in the area. A 'Quiet Lanes' network has been developed in the Brettenham area and surroundings. The farm field perimeter track is used by agricultural vehicles, however it appears to be infrequently used. A more attractive route is provided by the Maiden's Walk private path adjacent. The well-worn path is evidence of frequent pedestrian or even cyclist use.

Issues
Off-highways paths along the Loop are unmade, there is no pedestrian or cycle provisions along Kilverstone Road. The preferred adjacent to the farm field perimeter is a private path. Future development in this area should include the improvement and inclusion of this route into the wider Loops network. A connection to the west of the A1075 Norwich Road and an appropriate crossing arrangement (either a Toucan or a protected refuge) will also be required from the planned development proposals.

Orders
Highway adoption of private path

Land Ownership
Kilverstone Estate Promotion Land
Forestry Commission Management Area

Constraints
Private path

Opportunities
Upgrade off-highway paths along section of Loop through planning permissions and funding contributions from proposed Thetford Urban Extension proposals.

Options		Budget Cost :
1	Off-carriageway paths – cutback vegetation to provide 3m wide path along length of unmade sections of route. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	£35.0K
2	Adopt private path as highway	unknown

Recommendation with reasons:

This route is not included in the priority recommendations since it is dependent upon future development proposals, permissions and funding. Ensure that this route is identified in advance of development proposals for north Thetford. Upgrade of the paths would clearly define the orbital Loop and provide an attractive, traffic-free walking and cycling route, part of the wider Thetford Loops network.

NL8A: Northern Loop Section 8 Option A

Wooded trail running adjacent to the river between Nuns Bridges Road and Arlington Way
Grid Refs TL 87340 82433 – TL 87943 82878 Surveyed 17 August 2010

Description

The southern section of the wooded trail begins at Nun's Bridges Road between two closely spaced narrow bridges. The trail is relatively open allowing space for users to by-pass each other comfortably and there is an existing foot crossing spanning the river. The northern section of the wooded trail is generally made up of a single trail footpath bounded by vegetation on both sides. The wooded trail ends with steps built into the verge joining onto the footway of Arlington Way.

Location Plan Scheme shown in purple

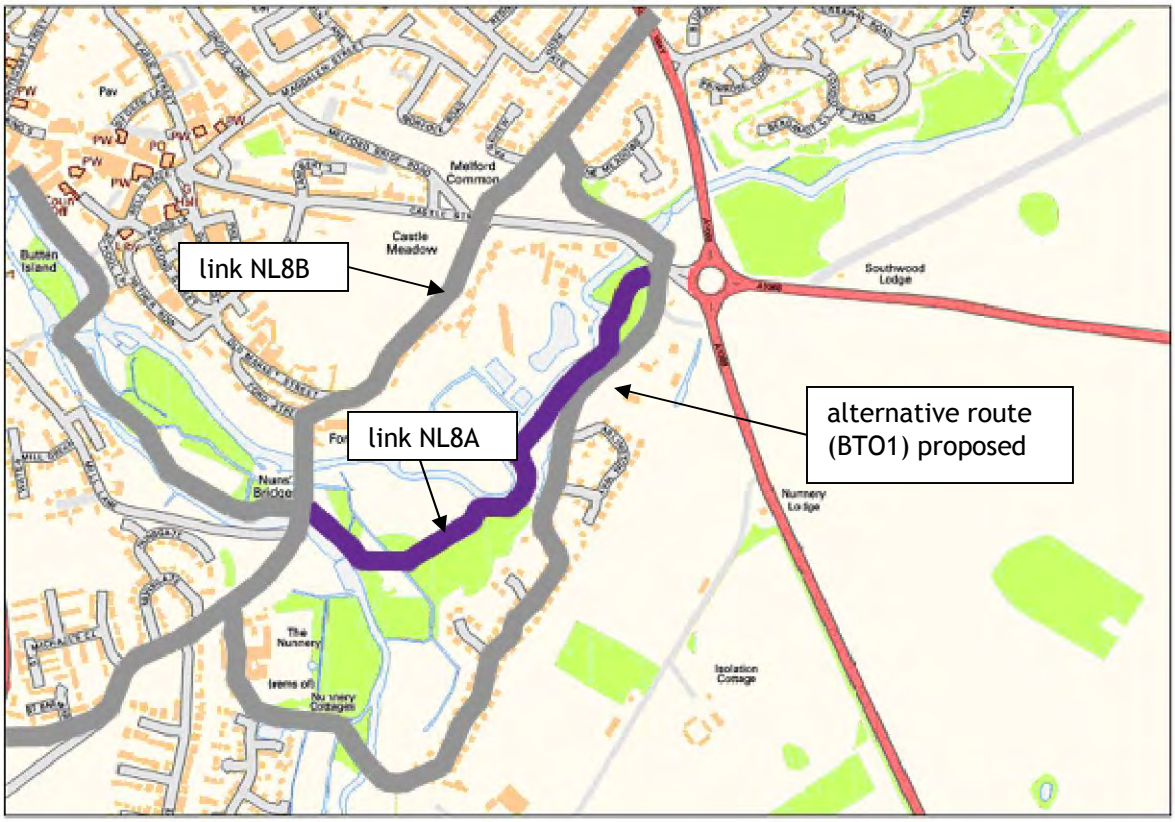


Diagram based on OS mapping. Licence number 100019535 2010

Facing south-west across the river towards Nun's Bridges Road

Facing north-east along the wooded trail at the northern section of the trail.

Use
The wooded trail appears to be used infrequently used. The narrow trail through the northern section and the steep climb served by steps linking the trail with Arlington Way suggests that this trail is only available for use by determined and able pedestrians.

Issues
Adjacent Local BTO Nunnery Lakes Nature Reserve. The trail is very narrow through the northern section making it currently unsuitable for all but occasional use. The existing informal river crossing arrangement is potentially hazardous for all path users. The trail ends with steps connecting with Arlington Way and therefore is currently not suitable for cycle use.

Orders
A formal path alignment will need to be agreed and access arrangements up the steep gradient at the Arlington Way end.

Land Ownership
Breckland District Council owed and maintained
Environment Agency Land Drainage and Sea Defence Corridor

Constraints
The Local Nature Reserve designation means that any route proposals and improvements will be contentious. Improvement works along the existing substandard path with be very intrusive.

Opportunities
Upgrade the entire trail through wooded area. Improve the river crossing from a safety aspect for cyclists and provide a suitable link between the end of the trail and Arlington Way for cyclist

Options		**Budget Cost :**
1	Cutback vegetation to provide 3m wide path along length of unmade sections of route. Construct with 50mm locally sourced self binding gravel, 150mm Type 1 material, laid over a separation membrane.	**£25.0K**
2	Provide new wider river crossing with hand rails	**£2.5K**
3	Provide splinter trail with a gradual gradient connecting trail to Arlington Way footway.	**£2.0K**
4	Formalise path use	**Unknown**

Recommendation with reasons:

This route option is not recommended for further development due to the Nature Reserve designation and need for extensive path construction and access ramp to Arlington Way. An alternative, existing route (BTO1) is available via Nunnery Place and Arlington Way. Similarly, an on-road route is available between Nuns Bridges and Castle Lane. The proposed link can be retained and signed as a pedestrian route if desirable.

NL8B: Northern Loop Section 8 Option B

This alignment of Section 8 travels along Nuns Bridges Road, Ford Street, Castle Lane and Green Lane
Grid Refs TL 87367 82486 – TL 87669 82991 Surveyed 17 August 2010

Description PRIORITY ROUTE

Nun's Bridges Road, Ford Street Castle Lane and Green Lane have relatively narrow carriageway and footway widths. Ford Street is one-way westbound only, it is suspected that vehicle speeds are relatively low due to a combination of reduced carriageway widths and reduced visibility. The route travels between Castle Lane and Green Lane and is configured as a staggered priority junction.

Location Plan Scheme shown in purple

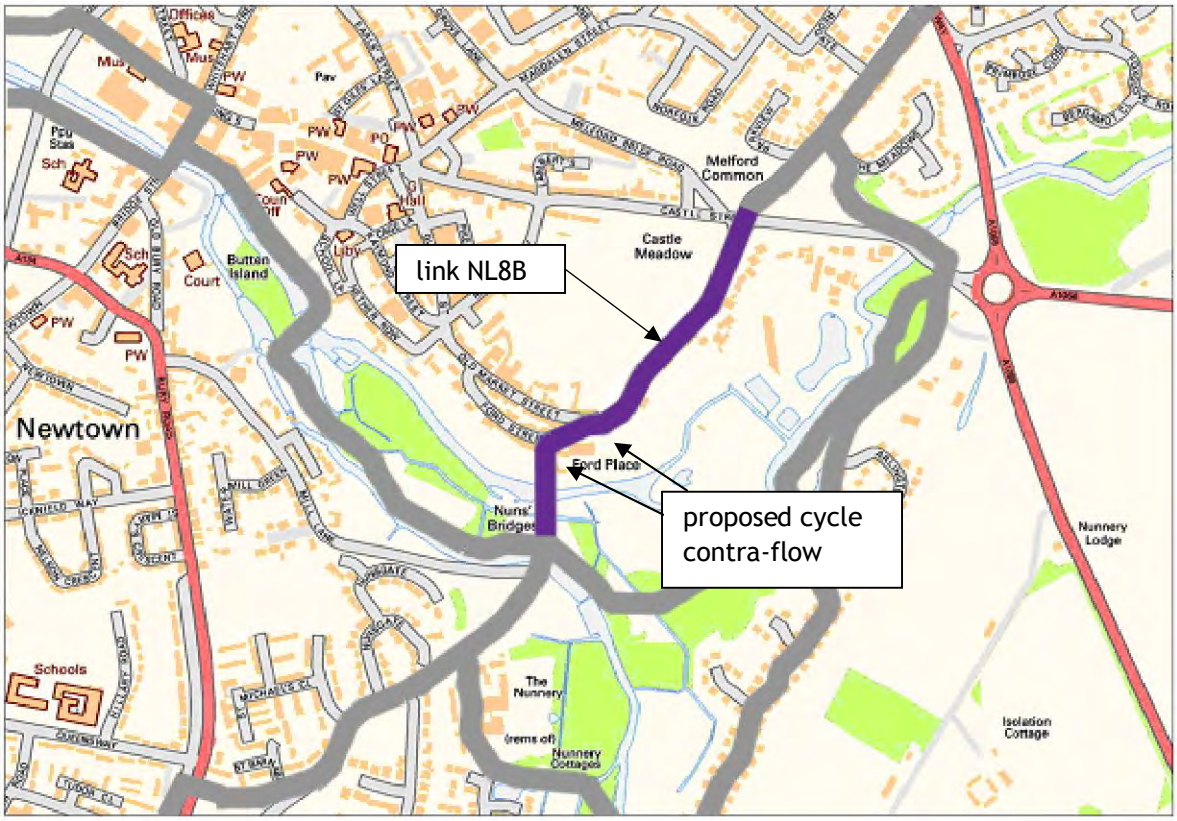


Diagram based on OS mapping. Licence number 100019535 2010

Facing north-east into Ford Street from Nun's Bridges Road

Facing north-east from Castle Lane at junction of Castle Street and Green Lane.

Use
This route proposal functions as an existing, useful local walking and cycling route, catering for 'utility' journeys. The roads are used by local traffic as it is the only link between Bury Road and Castle Street.

Issues
Ford Street is one-way and as a result the northbound route is convoluted for cyclists to travel up Castle Lane via Old Market Street. The junction of Castle Lane / Castle Street / Green Lane requires cyclists to undertake 2 turns in close succession. The width and limited forward visibility along Castle Lane makes it feel slightly intimidating for cyclists. Footways are intermittent and in places pedestrians must walk in the road.

Orders
Traffic Regulation Order for contra-flow cycle lane

Land Ownership
Breckland District Council owed and maintained
Breckland District Council maintained but not owned
Environment Agency Land Drainage and Sea Defence Corridor
Norfolk County Council (Highway Authority)

Constraints
Provision of short length of cycle contra-flow.

Opportunities
Allow cyclists to travel eastbound along Ford Street to create a safer, convenient, more direct route.

Options		**Budget Cost :**
1	Provide a contra flow cycle lane on Ford Street including promoting TRO	**£10.0K**
2	Provide new cycle signage and road markings	**£0.5K**

Recommendation with reasons:

Include in the Priority Route network. This is an obvious and logical desire-line to the south-east of Thetford town centre. It provides a convenient link between Spring Lane and Green Lane. Currently, a short one-way system forces a detour for cyclists. However, many are observed to ignore this prohibition and cycle unlawfully, albeit in relative safety. A contra-flow cycle lane a long Ford Street would provide a more direct, safer and convenient route to Castle Lane and formalise cyclist's current non-compliance with the one-way. No other measures are required along the route.

NL9: Northern Loop Section 9

Paths along Little Ouse between Bridge Street and Nuns Bridges
Grid Refs TL 868 830 – TL 873 825 Surveyed 13th August 2010

Description PRIORITY 1 RIVERSIDE ROUTE

Location plan Scheme shown in purple

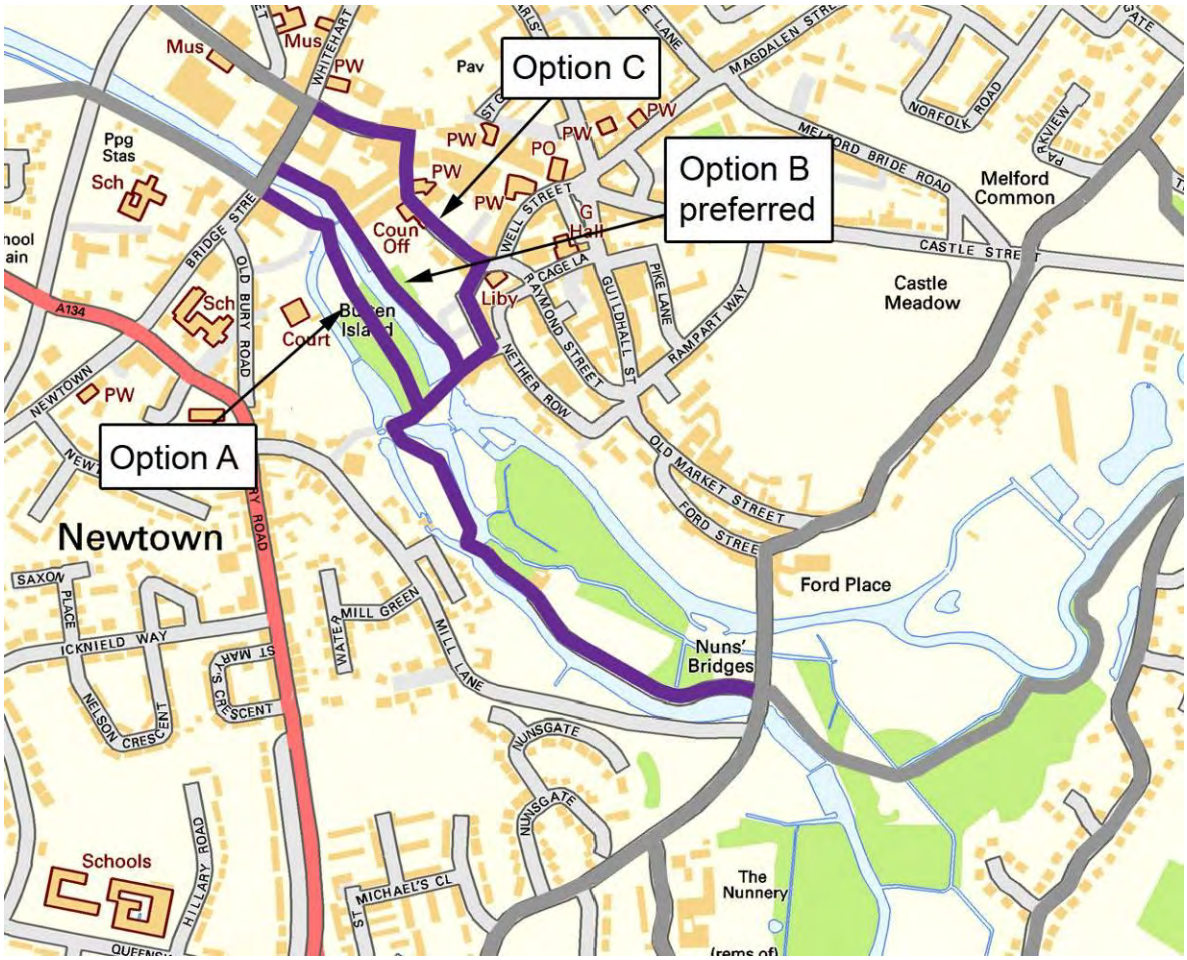


Diagram based on OS mapping. Licence number 100019535 2010

There are three route options:

Option 1: from Bridge Street the route uses the carriageway of the bus station access road to the three way bridge to Butten Island. This bridge is 1.66m wide. The route crosses the bridge and uses the soft surface path through Butten Island to the School Lane – Mill Lane (Bridges Walk) path with its 1.55m wide bridge over part of the Little Ouse. It then uses the 1.75m wide soft surfaced path signed as a cycle route. This path has a gentle transition into Spring Walk, a bitmac surfaced lane.

Option 2: from Bridge Street the route uses the 5m wide pedestrian access to the shops on the north side of the Little Ouse (Riverside Walk) to the three way bridge and then uses the narrower (usable width approx 3.6m) continuation of the Riverside Walk east. This becomes an approx. 2m wide path to School Lane from which Bridges Walk is used to access the Option 1 route.

Option 3: uses the pedestrianised King Street and Tanner Street to reach School Lane, Bridges Walk and Spring Walk. The photos below show the preferred Option 2 route.

Riverside Walk

Riverside Walk

Riverside Walk

Riverside Walk

Riverside Walk

Riverside Walk at School Lane

Bridges Walk

Bridges Walk to Spring Walk

Use

Paths have medium pedestrian use and light cycle use (unlawful) but the three way bridge appears to be heavily used at all times and it is width and gradient constrained. Some use of cycles – there are certainly parked cycles observed in Riverside Walk and chained to the bridge railings on the south side of the river.

Issues
Congestion, widths and gradients on the three way bridge (Option 1)
Widths of parts of Riverside Walk (Option 2)
Possible conflict at the ends of the three way bridge (Option 2)
Ramp at end of Riverside Walk (Option 2) although visibility is excellent.
Street furniture at junction of King Street and Tanner Street (Option 3)

Orders
King Street and Tanner Street have 'no vehicle' orders (i.e. which also excludes cyclists) and Riverside Walk has a 'no cycling' order. Spring Walk is shown as a public footpath, although cycling has taken place along it for a considerable period.

Council and Police observations
Thetford Town Council has reservations about allowing cycling in King Street.

Constraints

Opportunities
Part of the attractive Riverside Route aspirations, mainly based on existing paths. Option 2 provides access to the shops and parking on Riverside Walk. It may be appropriate to mark out a segregated route over the central section.

Options		Budget Cost :
1	Alter orders to permit cycling on Riverside Walk and Spring Walk	£5.0K
2	Provide segregated cycle route using painted line. Use red surface dressing at end of three way bridge to reduce the possibility of conflict.	£3.0K
3	Provide segregated cycle route 2.0m wide 120m long by repaving part of Riverside Walk in pavers with a contrasting colour to the existing surfacing.	£18.0K
4	Rebuild ramp at eastern end of Riverside Walk with a DDA compliant gradient and construct additional 2.0m bitmac path to School Lane (140m)	£35.6K
5	Manufacture and erect five three arm and one four arm fingerpost signs	£3.0K

Recommendation with reasons:

Include in the Priority Riverside Route proposals. Option 2 route recommended. Avoids most congested part of path (three way bridge). Gives better access to shopping area and serves cycle parking area on Riverside Walk. The lack of a convenient through-route for cyclists (remember that cyclists are banned from the town centre and King Street) will be improved somewhat by the provision of the Riverside Route alternative.

S1A: Southern Loop Nuns' Bridges to A134 & Bracken Road

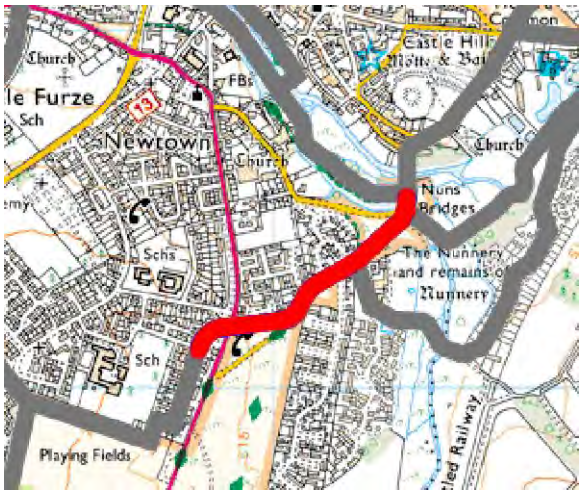
Option via crossing near Kingsway

Grid Refs TL 873 824, TL 867 821 Surveyed 17th August 2010

Description PRIORITY NETWORK

Nun's Bridges Road is a low flow road suitable for cycling and part of Thetford Connect. There are footways throughout. South west of St Michaels Close there is a 1.7m wide footway crossing open grass running more directly to Bury Road. There is space at its junction with Nun's Bridges Road to construct a link between the two. Dropped kerbs at St Barnabas Close are not flush. There is another path between Bury Road and Kingsway but the two paths do not line up. Kingsway has a 5.5m wide carriageway and is one-way in the west to northeast direction.

Location Plan



Scheme shown in red

Diagram based on OS mapping. Licence number 100019535 2010

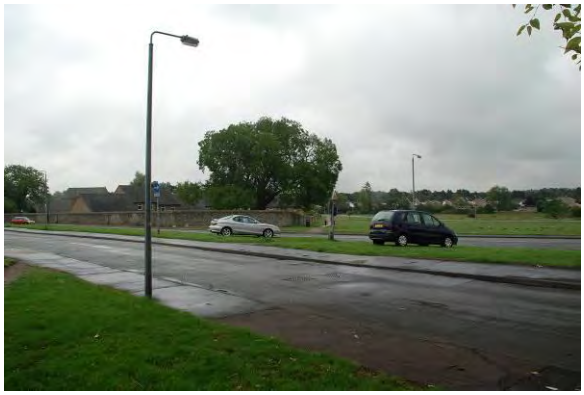
The path to Bury Road at Nun's Bridges Road

The path at Nun's Bridges Road

St Barnabas Close

Bury Road looking south – path by silver car

Bury Road and path – showing paths do not line up



View of path / Bury Road from Kingsway

Use
Low – occasional pedestrians observed on path to east of A134. Cyclist observed travelling in the "wrong" direction on Kingsway. No conflicts observed.

Issues
Kingsway is one-way eastbound

Orders
Local LA footway – needs to be converted for shared use.
Kingsway – one way order

Council and Police observations
The Council notes that there are no rights of access to Barnham Cross Common by bicycle and suggests that cycle stands could be provided.

Constraints
Need for contra-flow.

Opportunities
This crossing of Bury Road needs to be compared to the alternative via Bracken Road. This route option is preferable because:-

- Traffic on Bury Road is travelling more slowly here. This makes crossing easier now and in the future any signals will be more likely to be observed.
- There is greater visibility
- Any crossing investment can also benefit routes to the Charles Burrell High School

Kingsway will need a contra-flow cycle facility. It is currently recommended that an advisory contra flow scheme is introduced using the currently non-prescribed signs to diagram 960.2 between Bracken Road and Queensway. It is likely that in 2011 the new edition of the Traffic Signs Regulations and General Directions will permit an "except cycles" plate under a "no entry" sign. If this is the case then the group of one-way streets, Kingsway, Queensway and Staniforth Road, could be made two-way for cycles which would improve cycle access to the High School. Making Kingsway two-way between Bracken Road and Queensway does not involve any "no entry' signs.

Options		Budget Cost :
1	Widen footpath to 2.5m (190m) and convert to a cycletrack	£25.5K
2	Provide new path between Bury Road and Kingsway lining up with path from Nun's Bridges Road 2.5m x 13m	£2.3K
3	Signal Crossing (Toucan) of Bury Road	£50.0K
4	Provide 2.5m wide refuge island on Bury Road	£30.0K
5	surface route between Nun's Bridges Road and Nunnery Drive	£14.5K
6	Provide contra-flow cycle facility on Kingsway including promoting TRO	£12K

Recommendation with reasons:

Include as priority Loop route.

Phase 1. Convert footpath to Cycle track or Bridleway. Widen ends of path, Improve crossing of St Barnabas Close, provide flush dropped kerbs at Bury Road. Construct new 2.5m wide path between Bury Road and Kingsway, provide advisory contra-flow cycle facility on Kingsway.

Phase 2. Provide refuge island crossing of Bury Road. The number of users appeared too low to justify a toucan at this stage. (School times not observed). Reconsider if Thetford is extended eastwards from Arlington Drive area.

Phase 3. Extend contra-flow cycle facility on Kingsway to include Staniforth Road giving access to Charles Burrell High School

Phase 4. Surface path to Nunnery Drive and highlight crossing of Nun's Bridges Road

SL1B: Southern Loop Nun's Bridges to A134

Option via crossing near Bracken Road

Grid Refs TL 873 825, TL 868 820 Surveyed 17th August 2010

Description

Nun's Bridges Road is a low flow road suitable for cycling and part of Thetford Connect. Cyclists would use this to get to the A134 Bury Road. The Thetford Connect network signing suggests that cyclists should use a short length of Bury Road and then make a right turn into Bracken Road. This manouevre and the right turn into Nun's Bridges Road in the reverse direction are unprotected. The Thetford Loops Stage 1 report suggests that cyclists on Nun's Bridges Road cross Bury Road directly travelling through a gap in the hedge to join resurfacable paths to Bracken Road.
Bury Road has a 7.3m carriageway with a 1m strip of central hatching. It also has a 30mph limit which starts approximately 80m south of Bracken Road. Northbound traffic speeds are likely to be higher than the posted 30mph. Visibility from the suggested gap in the hedge is poor.

Location Plan Scheme shown in red

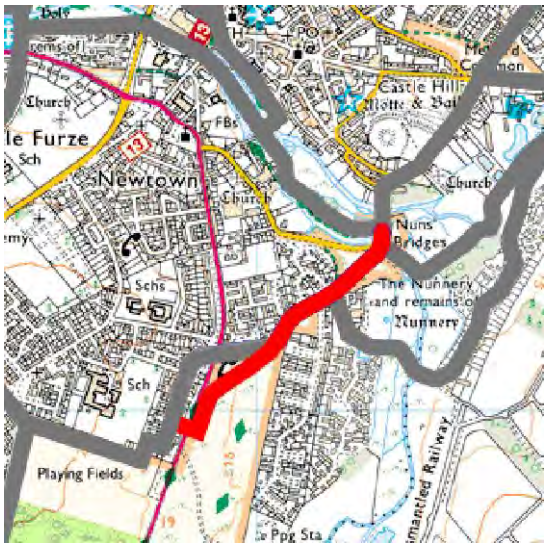


Diagram based on OS mapping. Licence number 100019535 2010

Bury Road at limit of 30mph area

Bury Road at Bracken Road

Bracken Road at Bury Road showing potential path between houses and Bury Road

Use
No cycles or pedestrians observed.

Issues
Exposure to traffic, traffic speeds, sightlines,

Orders

Council and Police observations

Constraints
The narrow carriageway of Bury Road means that to install a refuge island would require widening of the road.

Opportunities
Widen Bury Road north of Nun's Bridge Road and provide a refuge plus a right turn lane into Nun's Bridges Road. These are more like options than opportunities?.
Widen Bury Road at the edge of the 30mph limit and construct an entry feature with refuge. Having to widen the road is not an opportunity. The potential link path between the houses and Bury Road is an opportunity perhaps?

Options		Budget Cost :
1	Widen carriageway from 7.3m to 10m and provide 2.5m refuge. Would need alterations to mouth of Nun's Bridges Road	n/a
2	Widen carriageway from 7.3m to 10m and provide 2.5m refuge with entry feature. Also widen footway on east side of road from 1.7m to 2.5m (180m long)	n/a
3	Manufacture and erect two two-arm fingerpost signs and 6 repeater signs on bollards	n/a

Recommendation with reasons:

It is not recommended that this option be taken forward. Preferred option is SL1A.

S2: Southern Loop Bracken Road to London Road

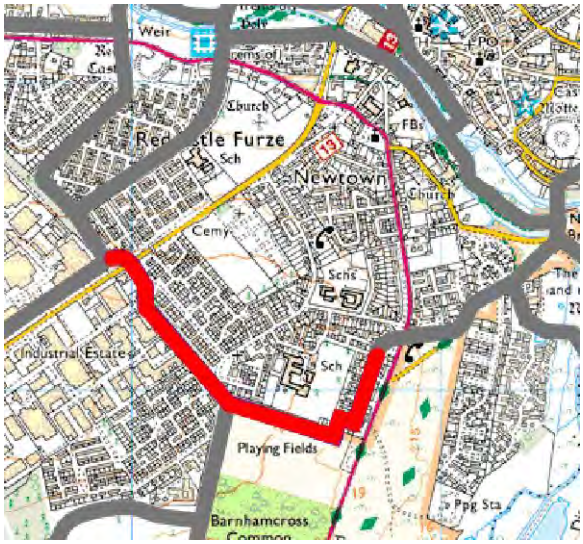
Estate Road, paths on open land, converted footway
Grid Refs TL 867 820 – 859 824 Surveyed 13th August 2010 – checked 17th August 2010

Description PRIORITY ROUTE

Bracken Road is a low flow residential road, partly a cul de sac, suitable for cycling at Bikeability Level 2. There are footways throughout. The access from Bracken Road to Barnham Cross playing fields is via a run down garage area. The first section of off-highway path runs along the northern side of Barnham Cross playing fields. It is a 1.5m wide straight bitmac path with a surface dressing. Entries to the playing fields have access controls.

The path crosses Fir Road by a raised table where cyclists ostensibly have priority. This is currently seen as "innovative". The next section is Kimms Belt, a 3.0m wide soft surfaced path running between mature trees. At Burrell Way the path becomes a 2.6m wide bitmac path. The crossing of Kimms Belt (The road of the same name) is via an advisory crossing with full width flush dropped kerbs, a good feature. The path continues to London road with a 0.5m flint edging between it and the carriageway. There are two options to cross London Road; a 2.5m wide island on the line of Kimms Belt and St Martins Way and a toucan crossing in line with Stearne Close approximately 100m further north east. There is a direct footpath between the crossing of Kimms Belt and the toucan (no measurements taken).

Location Plan



Scheme shown in red

Diagram based on OS mapping. Licence number 100019535 2010

Bracken Road

Bracken Road garages and entrance to playing fields

Entrance to playing fields at Bracken Road

Playing fields from Fir Road

Kimms Belt / Fir Road priority crossing

Kimms Belt

Crossing of Kimms Belt (road of same name)

Refuge island crossing of London Road

Use
Low use by both cyclists and pedestrians. No conflicts observed.

Issues
The path across the Barnham Cross playing fields is only 1.5m wide. It seems to work acceptably at the moment but could be widened if / when the Thetford Forest Loop towards Olleys Farm is constructed.

Orders
Not known for paths – cycle track or converted footway for Burrell Way to London Road.
Kimms Belt is a “maintained cycleway”.

Council and Police observations
Status of off road paths will need to be checked

Constraints
Barnham Cross Common sensitivities.

Opportunities
For the main part, good existing shared-use path infrastructure is in place.

Options		Budget Cost :
1	Widen path across playing fields from 1.5 to 2.5m (450m)	£39.7K
2	Leave path at 1.5m wide but make small scale improvements to path surfacing at entrance to Bracken Road	£2k
3	Manufacture and erect three finger post signs and 10 repeater signs most on existing poles	£4.1K

Recommendation with reasons:

Include in Priority Loop network
Phase 1 – provide direction signs
Phase 2 – Leave path at 1.5m wide but make small scale improvements to path surfacing at entrance to Bracken Road

S3A/B: Southern Loop London Road to Canterbury Way

Option 1 via Redcastle Plantation

Estate Road, paths in woodland and on open land, crossing.
Grid Refs TL 859 824 – 859 832 Surveyed 13th August 2010 – checked 17th August 2010

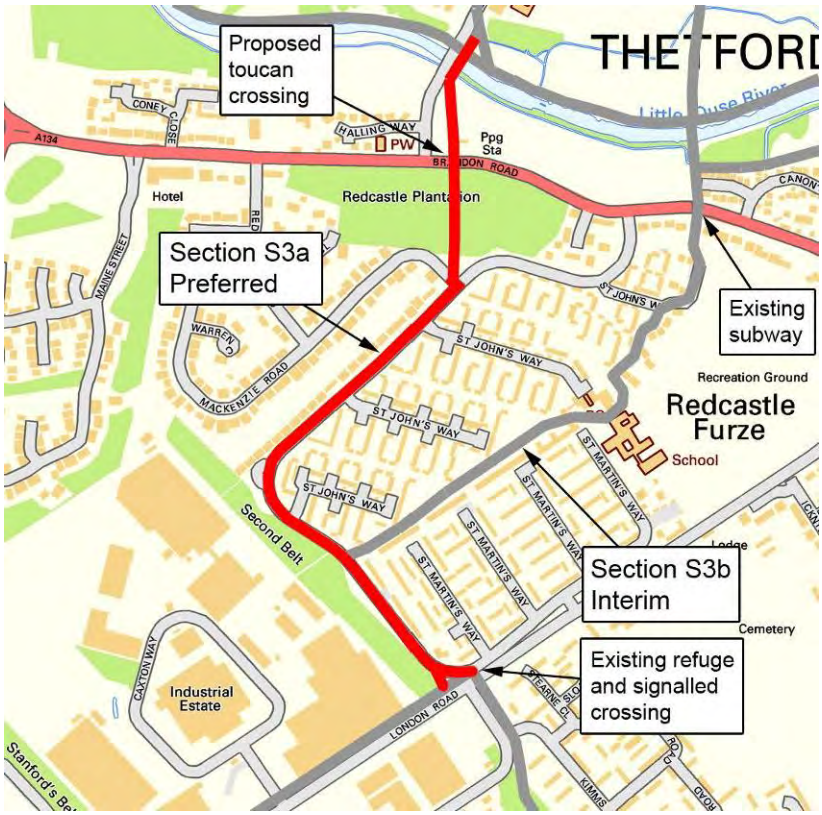
Description PRIORITY ROUTE

There are two options here where the brief suggests one potential route. This first assessment covers the route in the Stage 1 report.

St Martin's Way and St John's Way are low flow estate roads suitable for cycling at Bikebility Level 2. The roads have a bus route on them and scattered parking. From St Johns Way there are two informal paths through Redcastle Plantation to Brandon Road. One runs from the St John's Way / Mackenzie Road junction and the other from a point approximately 100m further east along St John's Way. Both are unsurfaced and both lead to the same point on Brandon Road. The easternmost path is signed for pedestrians as part of the Thetford Connect routes. Sightlines at the St John's Way end of the easternmost path are poorer than for the western one. Both paths have a gradient descending to Brandon Road.

Brandon Road has no formal crossing facilities. There is no dropped kerb on the Redcastle Plantation side. The carriageway is 6.2m wide and sightlines are considered inadequate in the easterly direction. The path between Brandon Road and Canterbury Way bridge over the Little Ouse river is 1.7m wide, straight and bitmac surfaced. It leads to the eastern footway of the bridge which is 1.55m wide and has railings on each side.

Location Plan



Scheme shown in red

Diagram based on OS mapping. Licence number 100019535 2010

St Martin's Way – connection over London Road via right turn cycle lane. This is also Forest Loop to London Road. Continue along St Martin's Way for route to Town Centre.

St John's Way

St John's Way / Mackenzie Road. The path through Redcastle Plantation leaves Mackenzie Road near its tangent point.

Redcastle Plantation near Brandon Road. The path to Mackenzie Road bears right and the Thetford Connect signed route bears left.

Brandon Road from path to Canterbury Way bridge

Brandon Road. Path through Redcastle Plantation starts where edging is exposed. Path to Canterbury Way bridge starts at fingerpost

Land Ownership

Breckland District Council
Norfolk County Council (Highway Authority)

Use

Local use by cyclists and pedestrians.

Issues

The main issue is the crossing of Brandon Road. There are no facilities and the sightlines are poor, even for this 30mph road. The paths through Redcastle Plantation need to be surfaced and the surrounding vegetation better managed. The paths should also be lit. The westernmost path seems better used. Sightlines at St John's Way are poor at the end of the easternmost path.
Gradients down to Brandon Road could be considered a safety problem and require barriers to deter approaching too fast, particularly on a bicycle.

Orders
No Public rights of Way.

Council and Police observations
Police:
"The proposed formalisation of this section should include BS5489 white lighting that as well allowing the user to see the path they are walking on, also enables them to see into trees either side of the path"
The Council recognize the problem of the Brandon Road crossing; they say "as part of this Loop there could be an opportunity to improve the situation, be it a pedestrian refuge or signing with associated dropped kerbs."
We would recommend a light controlled Toucan crossing rather than an uncontrolled crossing.

Constraints
Crossing requirement. Surface improvements. Ancient Monument status of Redcastle Furze.

Opportunities
This route provides for a popular local desire-line facilitating 'utility' trips. The route has been identified for many years and the Loops initiative is an opportunity to develop and formalise the route.

Options These need to be considered with the alternative route via Redcastle Furze Estate.		**Budget Cost :**
1	Surface westernmost path through Redcastle Plantation (2.5m x 90m) cutting back vegetation to give 1m verge. Flush dropped kerbs required at Mackenzie Road and Brandon Road. There should be a deflection at Brandon Road	**£17.8K**
2	Path lighting (lighting columns to be in verge)	**£6.3K**
3	Provide toucan crossing of Brandon Road	**£50.0K**
4	Widen Brandon Road and provide 2.5m refuge island. Cut back vegetation to provide adequate sightlines in the easterly direction.	**£35.0K**
5	Widen footway between Brandon Road and Canterbury Way to 2.5m and provide connection to the carriageway of Canterbury Road south of bridge. (110m)	**£61.2K**

Recommendation with reasons:

Include as a priority route. It is locally acknowledged that the crossing point for this route on Brandon Road is popular but un-provided for. Ideally, a light-controlled Toucan crossing should be installed – this will improve road safety and network convenience. This route option is preferred over the alternative subway route. The Redcastle Furze path via the subway (S3B) is recommended as an interim route and also included as a priority route. Options 1, 2, 3 and 5 recommended as funds and opportunity allows.

S3A/B: Southern Loop London Road to Canterbury Way

Option 2 via Redcastle Furze Estate

Estate Road, paths in residential area

Grid Refs TL 859 824 – 859 832 Surveyed 13th August 2010 – checked 17th August 2010

Description

There are two options here where the brief suggests one potential route.
St Martin's Way is a low flow estate road suitable for cycling at Bikebility Level 2. The road has a bus route on it.
This option then uses the existing cycle route through Redcastle Furze Estate. This consists of a:-

- Shared use path through an open area of land (width not measured) in front of houses
- Path indicated by red paviors through shopping area
- Bitmac shared use path to Prior Stephen's Way mostly at 2.5m width but with 1.75m pinch point one blind right angle bend and two other corners with limited visibility
- Section on low flow cul de sac, Prior Stephen's Way
- Section of bitmac path 2.5m wide followed by 3.0m wide path surfaced in precast concrete flags.
- Subway 3.0m wide and 2.0m high.
- There is a chicane at the south western entrance to the shopping area and a Thetford "A frame" access control at the north east end.

Location Plan Scheme shown in red

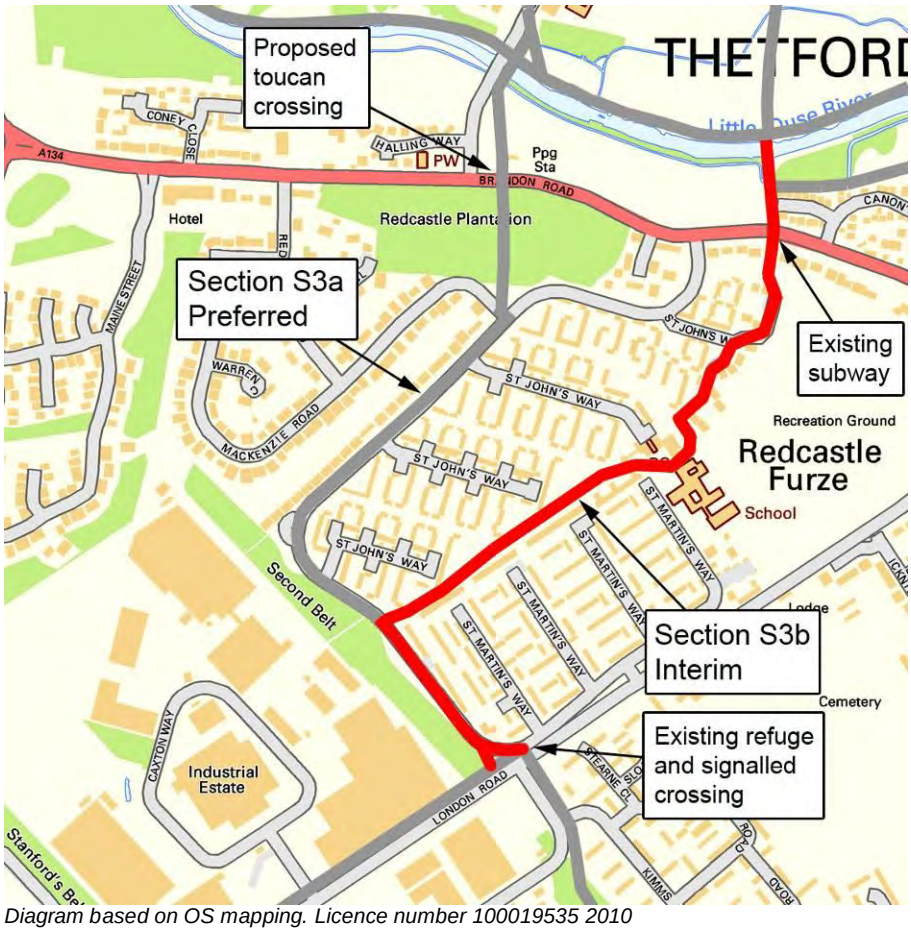


Diagram based on OS mapping. Licence number 100019535 2010

Path at St Martin's Way – flush dropped crossing equired at actual end of path.

Path through housing area.

Chicane on approach to shopping area

Red(ish) surfaced paviors through shopping area

The north eastern end of St Martin's Way reaches the shopping area. A flush dropped kerb is required here and the gully grating needs altering.

The route through the shopping area at its north eastern end

Access control at north east end of shopping area

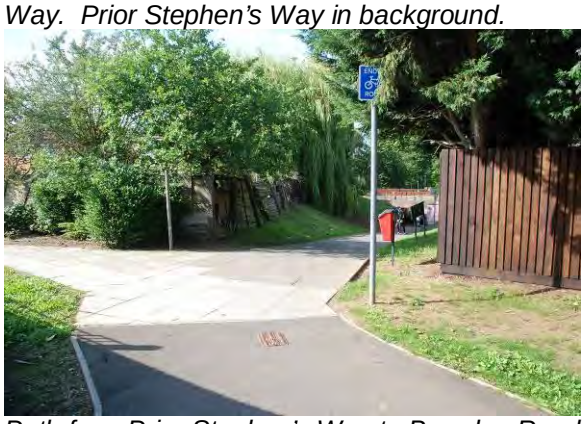
Wiggle with school access and pinch point immediately north east of the shops

1.7m pinch point in 2.5m wide path. In the background is the first of two 45° bends – see right

45° bend.

Right angle corner south west of Prior Stephens Way. Prior Stephen's Way in background.

Prior Stephen's Way and path to shops.



Path from Prior Stephen's Way to Brandon Road subway

Brandon Road subway.

Use

Low but continual use by cyclists and pedestrians. No conflicts observed.

Issues

Blind corners, however most pedestrians take a different route between Prior Stephen's Way and the shops than along the cycle path. Which way school children travel is not known.
Access controls, lack of connection to St Martin's Way, south west end, for turns on this route and north east end for additional connections to shops.

Orders

None known

Council and Police observations:

Constraints

Opportunities
The route exists now. It would be easy to add the north eastern section of St Martin's Way to the Thetford Connect network. It would be theoretically possible to extend this north west to St John's Way making a Redcastle Furze mini network. This route serves a group of shops which the Redcastle Plantation option does not.

Options: This route needs to be considered with the alternative route via Redcastle Plantation.

		Budget Cost :

Recommendation with reasons:

This route should be used as part of the Southern Loop until the Redcastle Plantation path and Brandon Road crossings are completed

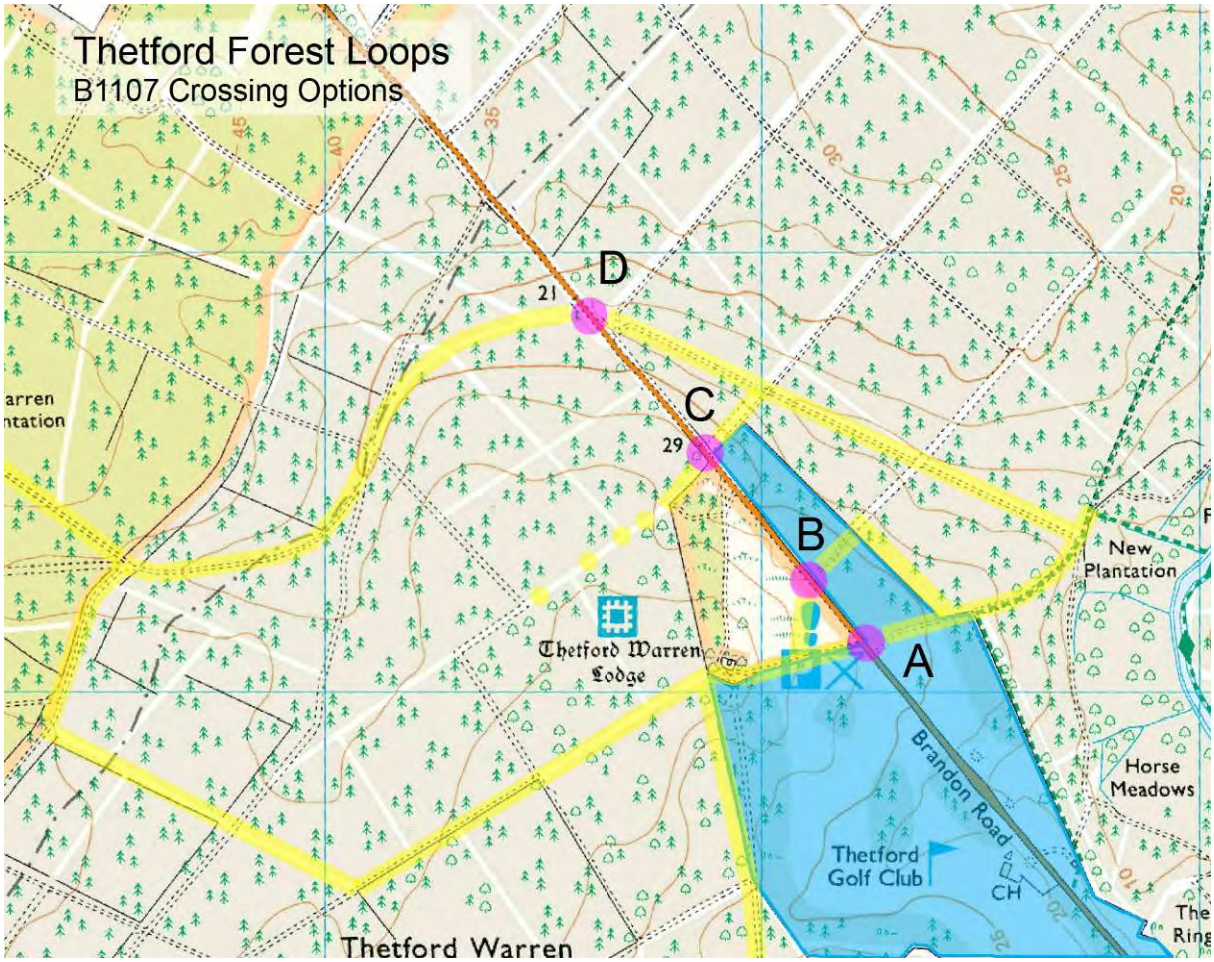
Appendix C
Thetford Loops: Priorities List

Ref *(* = priority scheme)*	**Description and location**	**Comments**	**Associated links to complete the Loop**	**Estimated cost (£K)**
BTO 1 *	Nuns Bridges Road via Nunnery place, Arlington Way to Castle Street	Existing surfaced route requiring only minor improvements. Also requires crossing of Castle Street at Melford Bridge and new link to Green Lane in longer term.		5
CL1A *	Croxton Road, from Anne Bartholomew Road to Croxton and Devil's Punch Bowl	Existing, on-road route. No improvements required only signing. Include on-road loop to connect Devil's Punch Bowl.	CL1B CL2B	2
CL1B	Croxton, off-road link from Joe Blunt's Lane to include The Sheepwalk	Existing, informal tracks. Associated with development proposals. Permissions and funding should be sought through development proposals.	CL2B CL1A	40.3
CL2B	Off-road link from The Sheepwalk to Croxton Road	Uses existing forest tracks, some require no improvement. Permissions and funding should be sought through development proposals.	CL1B CL1A	73.9
CL4	Off-road link from Abbey Heath to level crossing east of Little Ouse River	Existing, rough track, part of St Edmund Way National Trail.	CL5 CL6	71.1
CL5	Off-road link from level crossing to A134, east of Little Ouse River	Existing, rough track, part of St Edmund National Trail.	CL4 CL6	45.1
CL6	Off-road link from A134 to Croxton Road	Existing, rough, farm access track, part of St Edmund Way National Trail.	CL4 CL5	61.6
FL2	Off-road link between High Lodge and Olleys Farm at A11	Existing forest track, currently in use for walking and cycling, part of forest network.	FL5 FL7	2
FL3	London Road, supermarket to St Martin's Way	Existing footway link requires improvements for shared use.	FL6	54
FL5	Off-road track from A11 Olleys Farm to Barnham Cross Common	Existing track, following Norfolk/ Suffolk boundary and line of St Edmund Way National Trail, and existing paths around Barnham Cross Common.	FL2 FL7	216

Ref *(* = priority scheme)*	**Description and location**	**Comments**	**Associated links to complete the Loop**	**Estimated cost (£K)**
FL6	Off-road track from supermarket on London Road to Barnham Cross Common	Existing tracks, provide edge of town southern orbital and link to supermarket.	FL	68.5
FL7A *	Off-road track east from High Lodge to Warren Plantation	Existing forest track, currently in use for walking and cycling, part of forest network.	FL2	1.1
FL7C *	High Lodge to Little Ouse River, crossing B1107 Brandon Road	Existing FC tracks west of B1107 and footpath to bridge over Little Ouse River. FC tracks to west of B1107 require surface improvements. Includes refuge crossing of Brandon Road.	FL7A NL4	114.2
NL1A *	Riverside route between Bridge Street and St John's Way	Existing, surfaced, popular route on south side of river.	NL2 NL3 NL4 NL9	3.8
NL1BC*	Riverside route, off-road path between Abbey Farm and Minstergate via A11 underpass	Existing, well-used route between town centre and Abbey Farm.	NL2 NL3 NL4 NL9	73.1
NL2 *	Riverside route St John's Way to Canterbury Way	Existing surfaced link on north side of river from St John's Way to Canterbury Way. Widening and other improvements desirable though not imperative.	NL1A NL1B NL3 NL4 NL9	61.5
NL3 *	Riverside route Canterbury Way to A11	Existing PRoW (footpath) on north side of river from Canterbury Way to A11. Significant improvements required.	NL1A NL1B NL2 NL4 NL9	94.5
NL4 *	Riverside route A11 to Abbey Heath Wier footbridge	Best of three highlighted route options, although significant improvements are required to the preferred riverside footpath. Interim route available using existing link next to A11 and surface improvement to an east-west link path.	NL1A NL1B NL2 NL3 NL9	106.7
NL5C	Brunel Footbridge, links Gloucester Way to Brunel way	Existing footbridge, includes shallow steps on ramps. Requires wheeling channel for more convenient use by cyclists. New replacement bridge desirable but funding unlikely.	NL1A NL1B	4.1

Ref *(* = priority scheme)*	**Description and location**	**Comments**	**Associated links to complete the Loop**	**Estimated cost (£K)**
NL5	On-road, traffic-calmed route on Canterbury Way between the river and the Brunel footbridge	Existing, on-road route benefits from traffic calming.	NL1B NL1A	8.3
NL6A/B	Link through industrial estate from Mundford Road to St Helens Way	Alternative route via Fisons Way, Howlett Way, Baird Way and St Helens Way proposed.	NL5C NL6B	1.7
NL6B	Off-road link between St Helens Way and Croxton Road	Existing traffic-free route. Better access arrangements, flush kerbs and crossing ramp of Anne Bartholomew Way desirable.	NL6A/B NL5C	7.6
NL7A	Joe Blunt's Lane, Croxton Road to railway line at Cedar Row	Off-road path (footpath) requires surface improvements and Conversion Order for PRoW.	NL7B	36.4
NL7B	Cedar Way, off-road link between railway line at Joe Blunt's Land and Norwich Road	Existing off-road paths (Footpath) provide alternative alignments. Option B, northern alignment preferred. Minor surface and clearance works required and Conversion Order.	NL7A	8.7
NL8B *	Nuns Bridges Road and Castle Lane ink - Spring Lane to Castle Street	Proposed on-road link using existing roads. Current one-way makes the route inconvenient and much-ignored. A cycle contra-flow will rectify this.	S1A S2 S3A/B	10.5
NL9 *	Riverside route, Bridge Street to Nuns Bridges Road	Uses existing paths and alignments north of river. Minimal works required.	NL1A NL1B NL2 NL3 NL4 NL9	61.9
S1A *	Nuns Bridges Road - Spring Walk to Bury Road	Existing on-road proposal with new short off-road section from Barnabas Close. Includes Toucan crossing on Bury Road	S2	75.1
S2 *	Bracken Road to London Road	Uses existing paths and can be designated with minimal works. Ideally, paths around Barnham Cross Common should be widened.	S1A S3A/B	43.8
S3A/B	London Road to Canterbury Way	S3A link is on-road/off-road proposal and includes a toucan crossing at Brandon Road. Interim link S3B uses existing underpass.	S1A S2	123.3
Total				**1,477.8**

Appendix D
B1107 crossing option assessment



Plan based on OS mapping. OS Licence Number 100019535 2010.

Background

To be able to reach Thetford Forest and High Lodge from Thetford it is necessary to cross either the A11 or the B1107 Brandon Road.

The Capita Symonds report on Thetford Loops Stage 1 for Breckland Council identified two crossings of the B1107 Brandon Road, marked A and B on the above plan. Transport Initiatives have investigated two more locations shown as C and D on the plan. This note compares the four crossing points.

On the plan above the crossing points are shown as pink dots and the routes associated with them by yellow lines. Where a route has not been surveyed yellow dots show its probable route.

Land owned by Thetford Golf Club is shown shaded blue. The adjacent land ownership affecting the routes is held by the Crown Estate (FC). The highway is controlled by Norfolk County Council.

In addition to the four crossing points shown, the Forestry Commission, in its Access and Tourism Strategy, suggested a 'green bridge' over this road. The green bridge would be for biodiversity purposes but would not be incompatible with use for a pedestrian and cycle path.

Crossing A – Direct Route

This crossing is in the brief. It is the most direct route across the road and the shortest route from Abbey Heath Weir to the forest. It means crossing the car park. Visibility for crossing the B1107 is, however, inadequate since path users will be expected to cross in the lee of a summit in the road. Hence it is more difficult to cross and it also would be more difficult for motorists to see a refuge island.

It also requires crossing Golf Club land and the associated negotiations and permissions, which seem unlikely to be granted.

B1107 approaching direct crossing point

Crossing B – from Lay-by

This crossing was also in the brief and acknowledges the inadequacies of crossing A. It uses the car park access road or a direct route from Thetford Warren Lodge could be constructed to the mid point of the lay-by near the car park entrance. Here there is room to widen the road to install a refuge island. As it is away from the nearby summit in the road, visibility is good. It will introduce a detour into the identified desire-line and may encourage path users who can see where they want to go, to cross in an unsafe area where there are no facilities.

The associated crossing link paths also require access across the Golf Club land.

Crossing C – North of Golf Club land

This crossing avoids the requirement for any permissions or land from the Golf Club. It provides the most direct route between Abbey Heath Weir and Thetford Warren Lodge which remains on Forestry Commission land. However, visibility is not good (NB not immediately evident in photos below), so motorists may miss a potential island. There is also an uphill gradient for path users approaching the crossing from the east.


Brompton bicycle marks crossing point

Crossing D – north of Golf Club in hollow

Located in a hollow on the B1107, this potential crossing point has the best visibility for both path users and drivers. The topography may, however, encourage higher vehicle speeds though this would be mitigated by the presence of a highly visible crossing refuge and advance carriageway markings. The crossing and associated link paths provide the shortest direct route between High Lodge and Abbey Heath Weir. This route also benefits from gentler gradients in comparison with the other route and crossing options.

The land is owned by the Crown Estate and tenanted by the Forestry Commission who are generally supportive of the Thetford Loops initiative. Agreement will be required from Norfolk County Council (as highway authority) on the nature and location of the B1107 crossing.

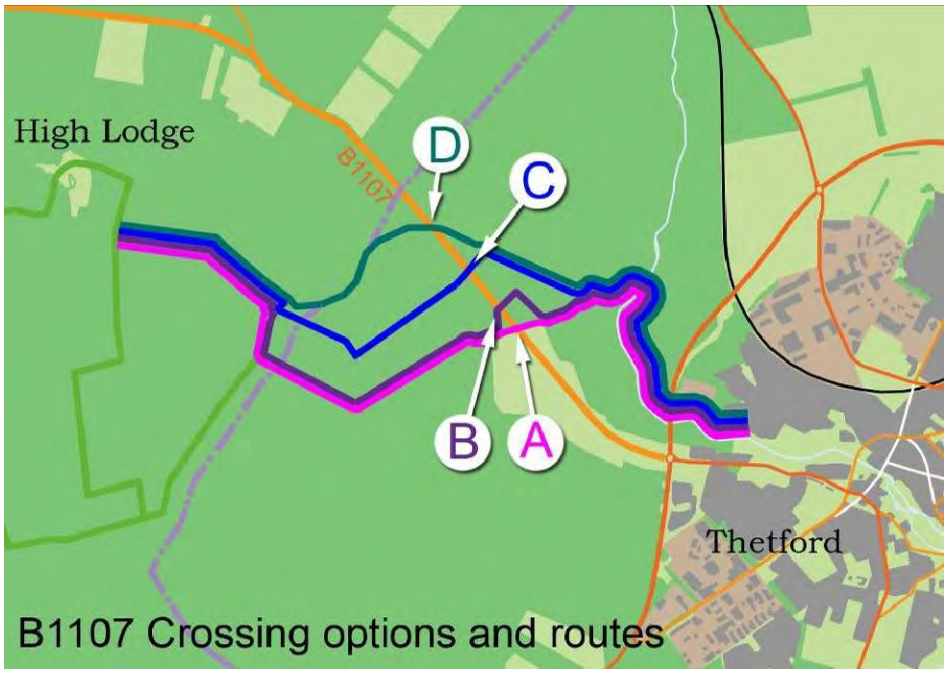
Visibility good approaching dip from south east

Potential crossing point from north west

Potential crossing point from south east

Option assessment

The different crossing locations mean that a range of different tracks and rides would be used to reach them. The possible different path options are shown on the diagram below and an options comparison matrix has also been provided.



Crossing & route option	crossing (refuge)	attractiveness	directness	gradients	path construction requirement	Land Ownership	cost £K
A	poor	good	5.67km	hilly	yes	problem	29.9
B	good	good	5.93km	hilly	yes	problem	31.5
C	adequate	good	5.3km	hilly	yes	OK	36.0
D	very good	good	5.0km	gentle	yes	OK	44.6

B1107 crossing and route comparison matrix

Cost of the junction crossing is estimated at £27.9K and is common to all the estimates and included in the total figure for each option. A suggested uncontrolled crossing design is included in the design section of this report.

It is considered that Option D offers the best all-round route solution, since it is the safest location for a crossing, provides a direct, attractive link into the FC High Lodge path network and does not require negotiations with and agreement from the Golf Course.

The higher cost of Option D is offset by the reduced path construction/improvement costs in the High Lodge forest area. Future FC forest management proposals indicate that tree felling close to this area is proposed soon (2011) and that appropriate access path changes, to create the short link onto the High Lodge path network, can be considered and agreed in line with the recommended route proposal. This would be in anticipation of a project to create the Option D link and crossing if the project was not programmed or constructed quickly.

Norfolk County Council as the highway authority, would need to approve any final design and its location. Many similar crossings have already been provided by the County Council at locations throughout Norfolk to facilitate pedestrian and cyclist crossing points on strategic, principal routes with speed limits up to 60mph. The A148 at Sculthorpe (see photo below) and the A1067 at Bintree are good examples where the National Cycle Network and local pedestrian crossing movements are facilitated. Appendix E includes a generic design for such a crossing.

Protected refuge crossing on the A148 at Sculthorpe, near Fakenham, in Norfolk. This design for an existing, approved crossing arrangement should be appropriate and permissible for the Thetford Loops.

Conclusion

The B1107 Brandon Road crossing and associated linking paths are considered to be a high priority since it will provide a safer crossing opportunity and a relatively direct link between Thetford and High Lodge.

Alternative link and crossing aspirations (e.g. a bridge or an underpass) associated with the A11 Trunk Road improvement are likely to be a long way off and have not been included as part of the current A11 improvement proposals. This makes the case, need and priority for the Brandon Road crossing all the more imperative. The river corridor route and the extension to High Lodge are seen as the highest priority proposals for the Thetford Loops programme.

Appendix E
Crossing design drawings

Plan 1. B1107 Brandon Road proposed refuge crossing

Plan 2. A134 Brandon Road proposed Toucan

Plan 3. A134 refuge crossing by Thetford Rugby Club

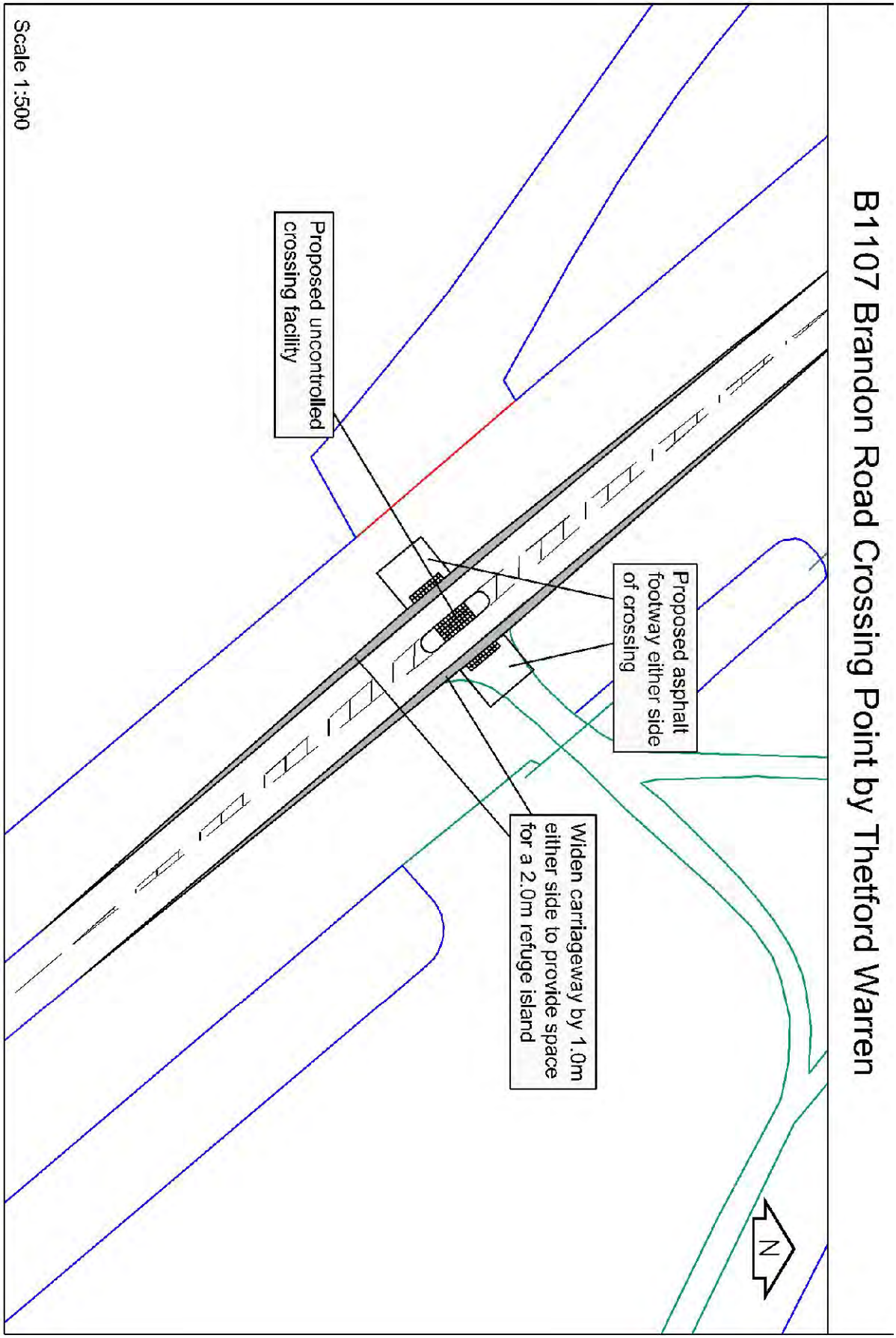
Plan 4. A134 Bury Road - proposed Toucan

Plan 5. Castle Street proposed refuge crossing

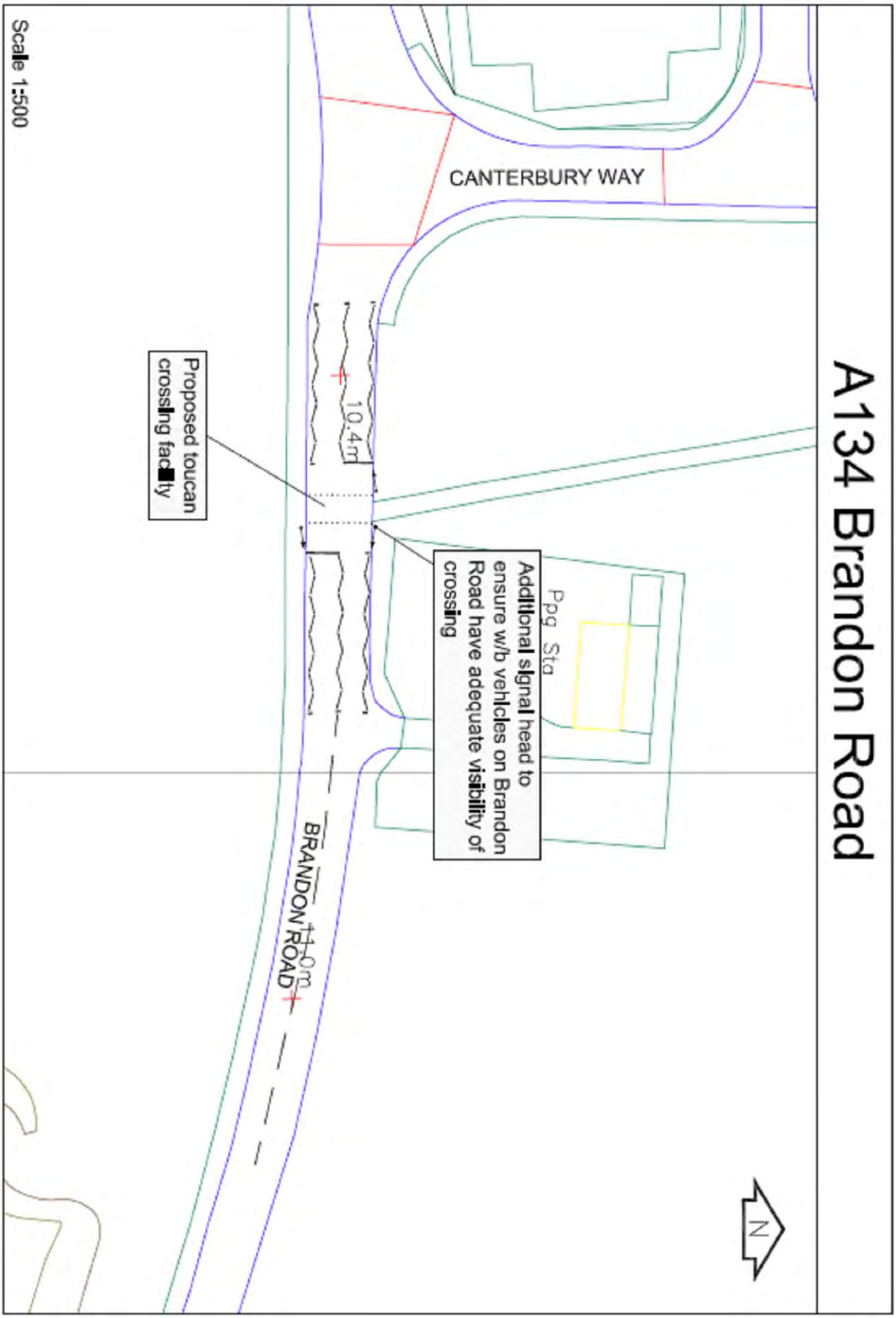
Plan 6. A1066 Mundford Road proposed Toucan

Plan 7. A11 Olleys Farm underpass

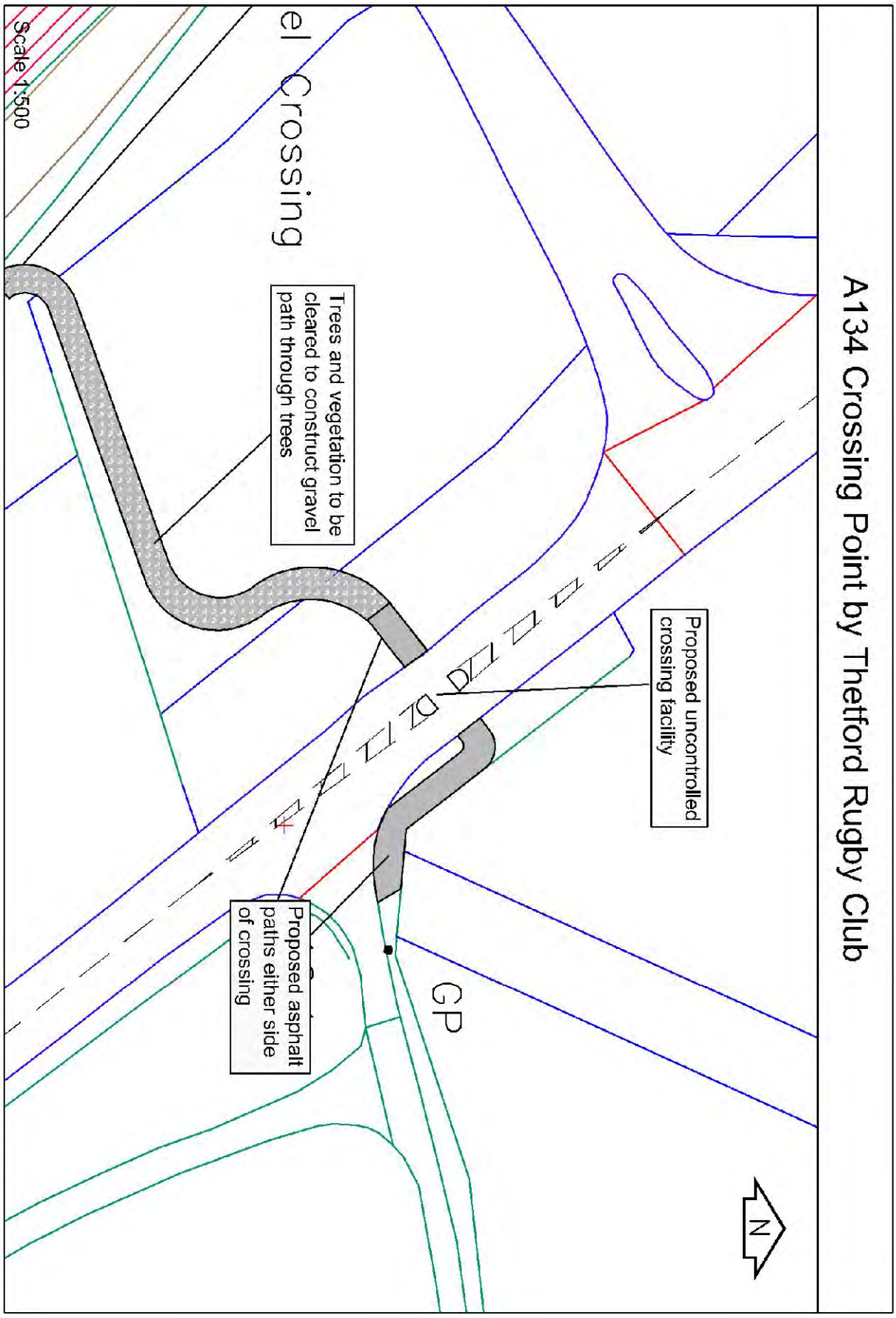
Plan 8. A11 'green bridge'



Plan 1. B1107 Brandon Road proposed refuge crossing

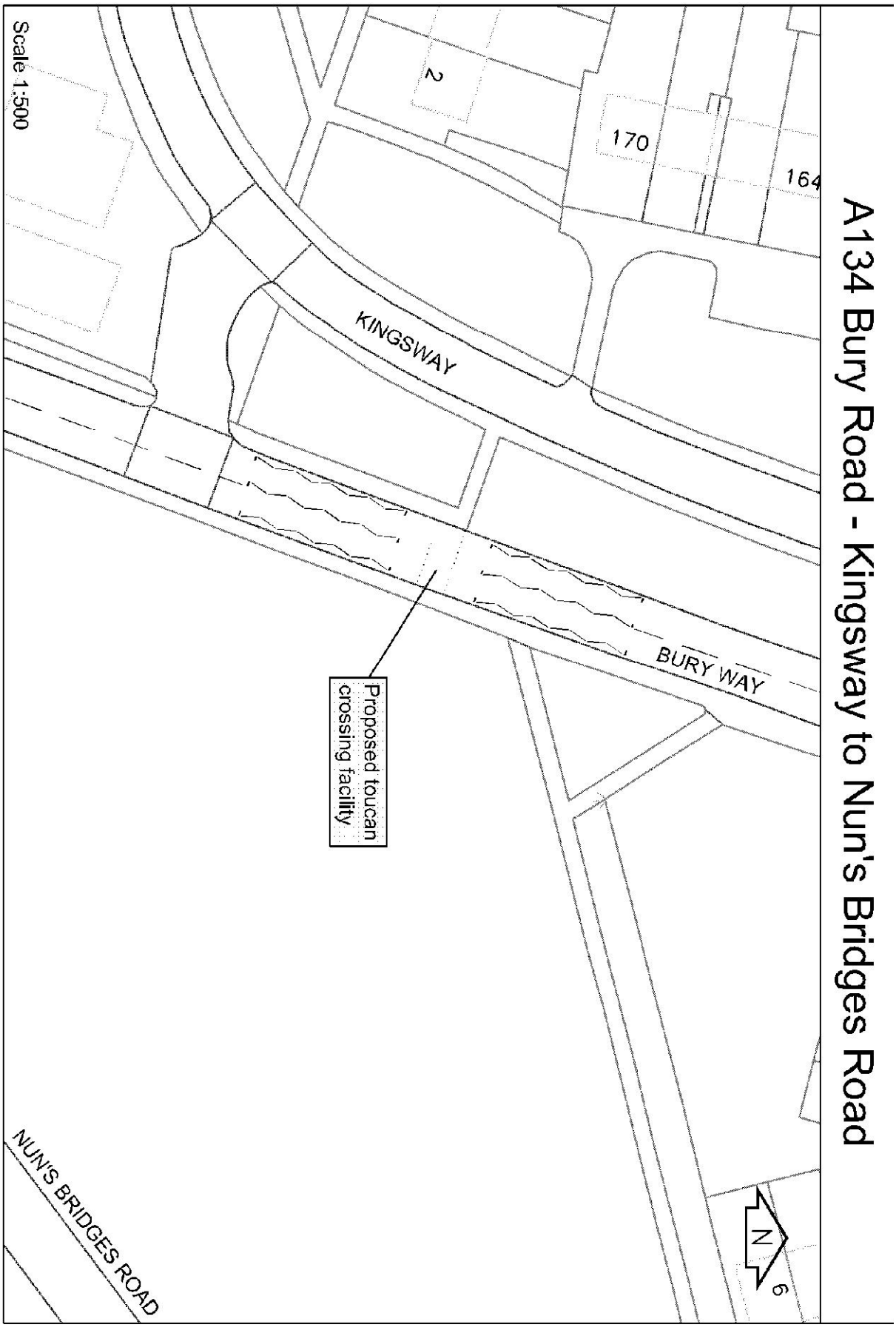


Plan 2. A134 Brandon Road proposed Toucan

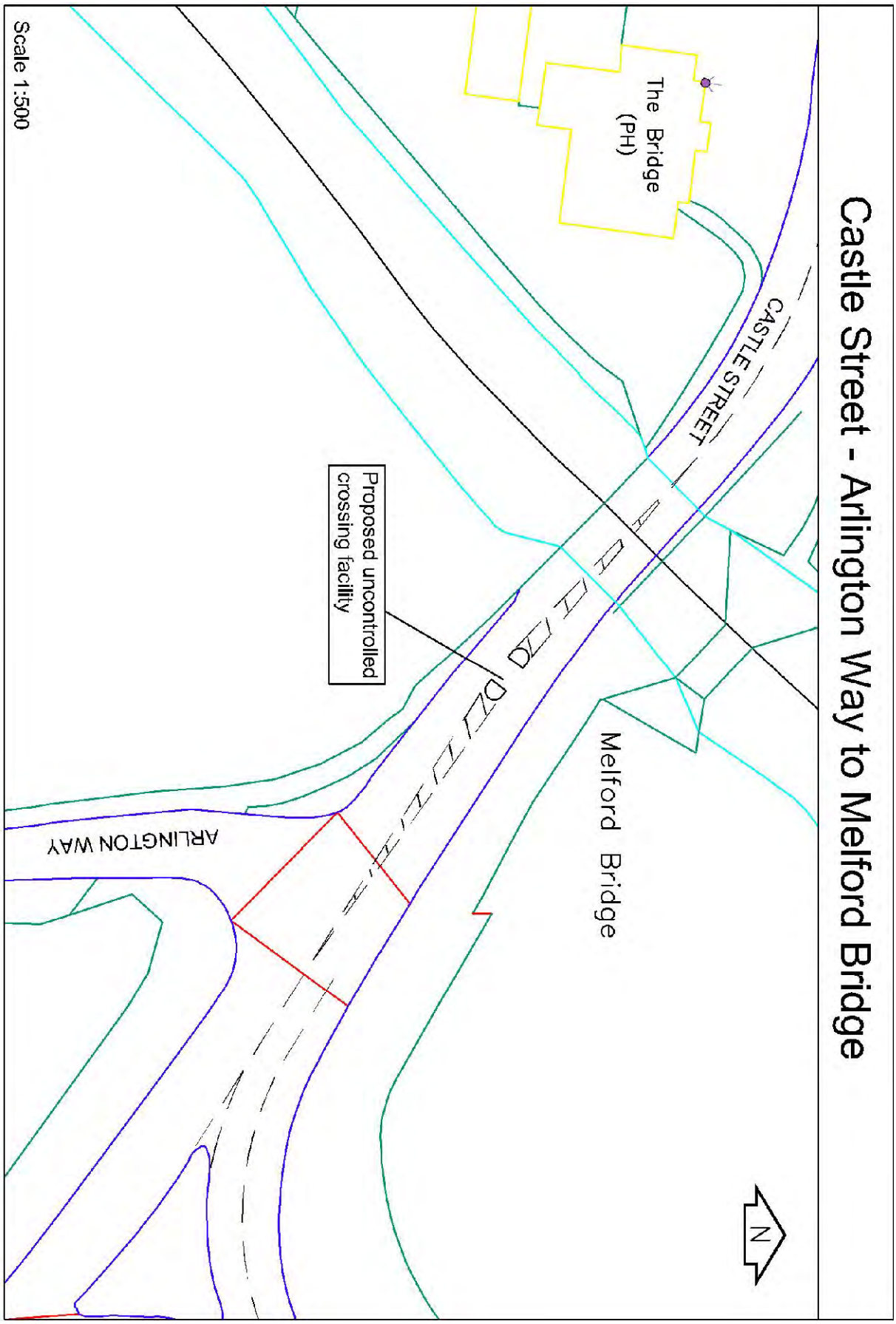


Plan 3. A134 refuge crossing by Thetford Rugby Club

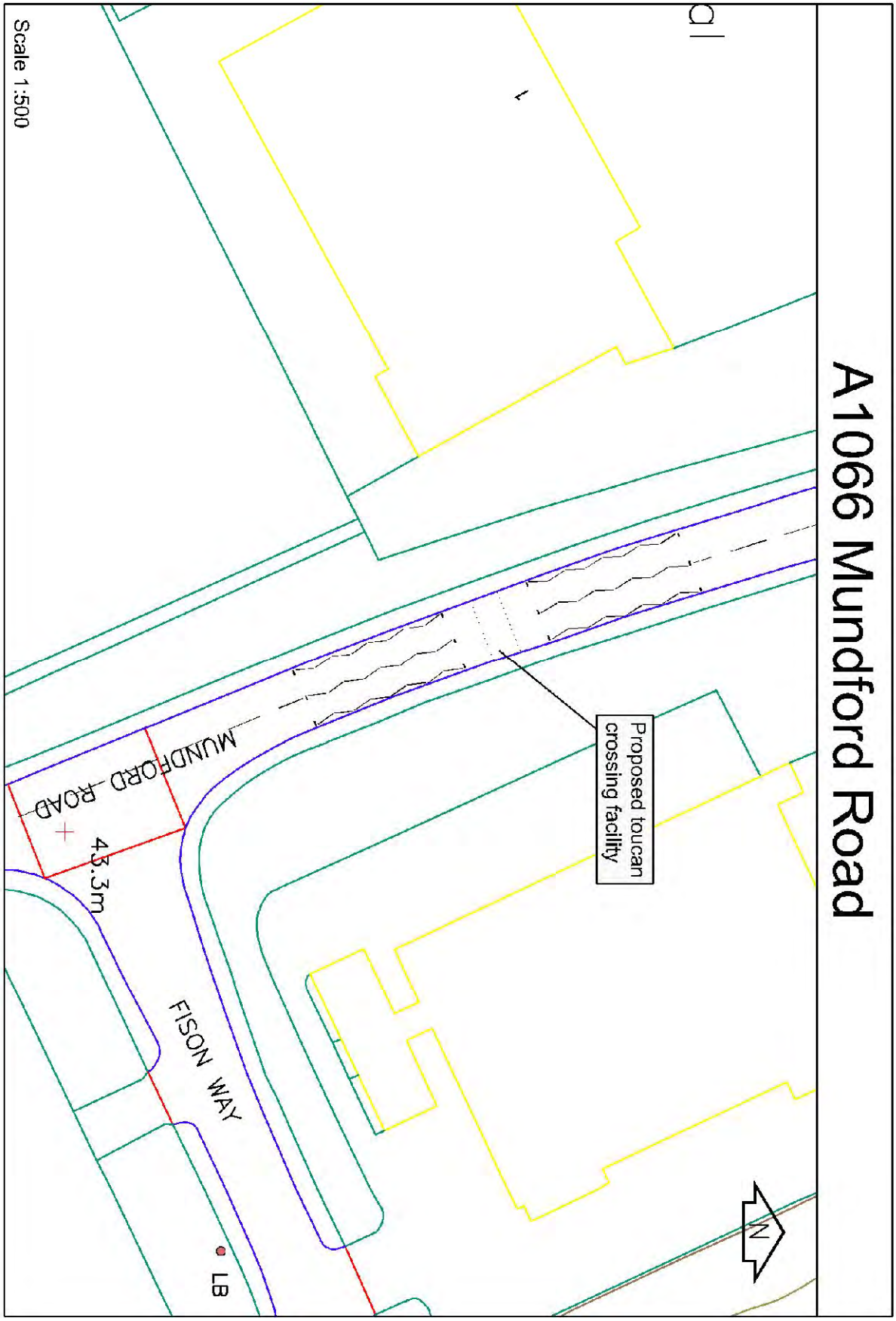
Trees and vegetation are mainly saplings and brush. No mature tress would be touched.



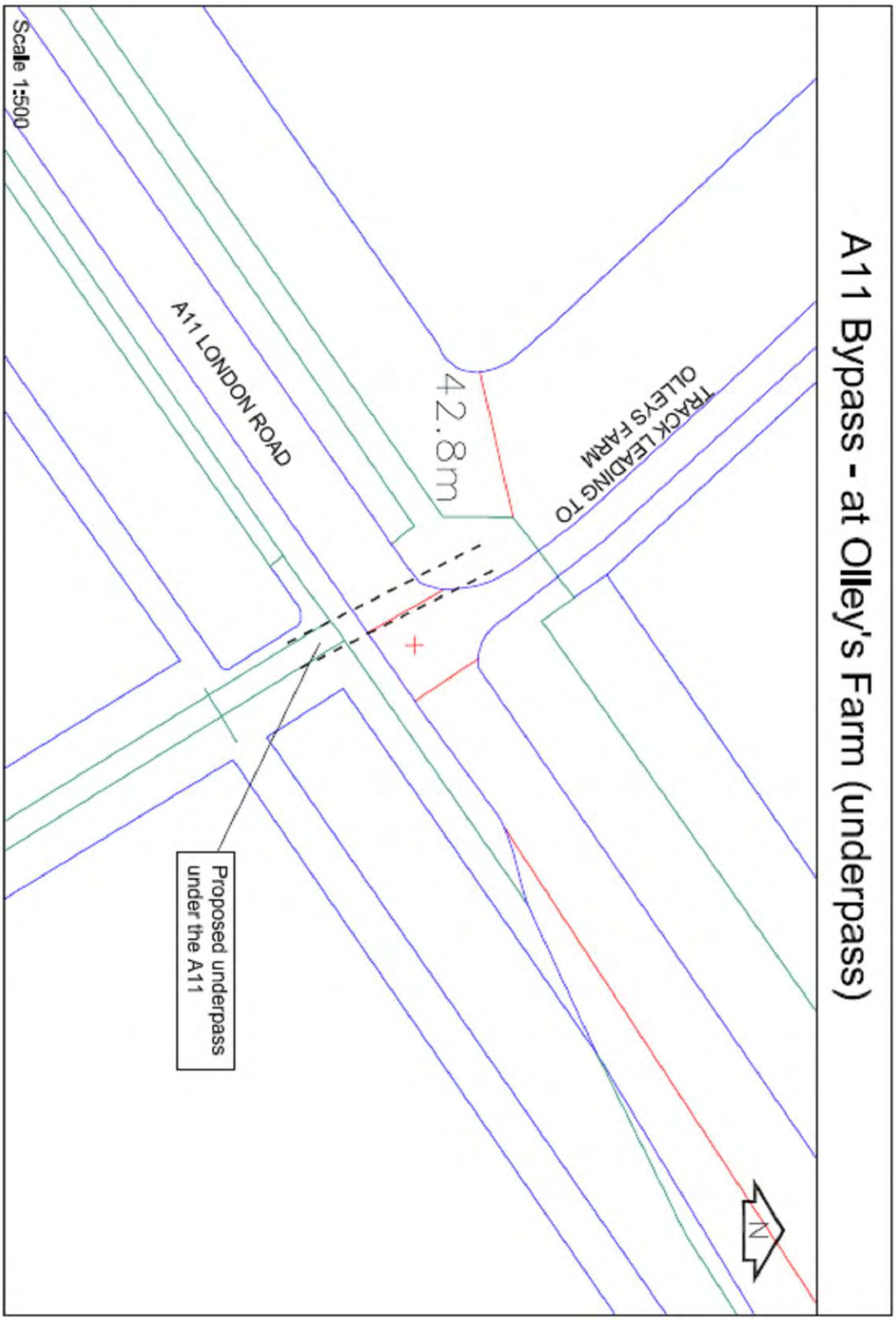
Plan 4. A134 Bury Road - proposed Toucan



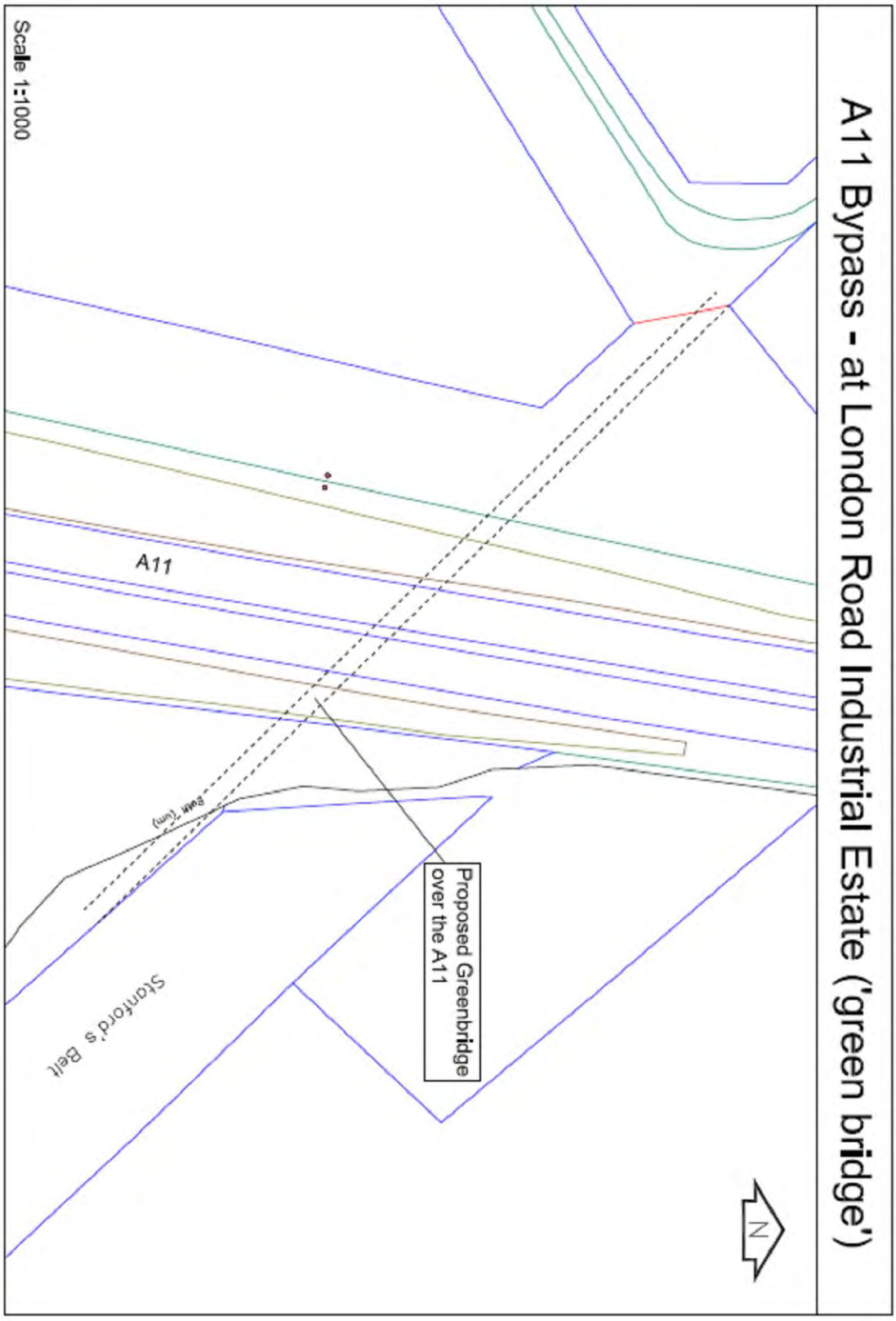
Plan 5. Castle Street proposed refuge crossing



Plan 6. A1066 Mundford Road proposed Toucan



Plan 7. A11 Underpass Olleys Farm



Plan 8. A11 Potential Green Bridge

Appendix G
Section lengths

Loop section		Priority	Total Length (km)	Length to be improved (km)	Length new (km)	No. Cross-ings	Crossing type
FL2	High Lodge - Olleys Fm	1	6500			1	subway
FL3	London Road	1	1000	250	20	4	refuge
FL4	A11 FL3-FL4		1200	500			
FL5	Olleys Fm - Barnham X	1	3450		3450		
FL6	London Rd - Barnham X	1	1600		1000		
FL7	High Lodge - B1107 (a)	1	1450				
FL7b	High Lodge – Thetford Warren		2400		400		
FL7c	High Lodge - B1107 (b)	1	3000	400	620	1	refuge
FL7d	High Lodge – Thetford Warren		1900		900	1	refuge
FL7e	Thetford Warren / B1107		900				
FL8	Thetford Warren - west Thetford		2950		2200	1	bridge
FL9	Cut off Thetford Warren		2100				
BTO		1	1850		300	1	refuge
CL1a	Croxton Road	1	3850				
CL1b	Sheepwalk	1	2300	2300			
CL2a	Croxton Heath		1000		1000		
CL2b	Croxton Heath	1	3700	?			
CL2c	Croxton Heath		2950		3200		
CL3	West of Railway		2800		2400		
CL4	West of Railway	1	1500		1100		
CL5	Power Station	1	400	50		1	refuge
CL6	Croxton - Power Stn	1	1800		1900		
NL1	Haling Path	1	750	130			
NL2 (part)	River Bank Path	1	600	200	280		
NL2 (part)	River Bank Path	1	350	250	700		
NL3	River Bank Path	1	800		1260		
NL4	Abbey Heath	1	3200				
NL5a	Abbey Estate	1	1000				
NL5b	Abbey - Industrial Est	1	700				
NL6	A1066		500			1	refuge
NL6a	St Helens Way	1	1450				
NL6b		1	500				
NL6c	Urban Extension		1000	500	500		
NL7a	Joe Blunts Lane	1	700	400	300		
NL7b	Cedar Row	1	400	400			
NL7c			1300				
NL8	Green Lane	1	1500				
NL8a	River Bank Path		850	?			
NL8b	Castle Lane	1	700				
NL9a	Nun's Bridges - Town Centre		400	120	140		

NL9b	Nun's Bridges - Town Centre	1	1000				
NL9c	Nun's Bridges - Town Centre		400				
SL1a	Nun's Bridges - A134	1	1000	190	13		
SL1b	Nun's Bridges - A134		1000	180			
SL2	Kimms Belt	1	1500	450			
SL3a	Redcastle Furze		1100		90	1	toucan
SL3b	Redcastle Furze	1	800				
	All Total in metres		**74100**	**6320**	**21773**	**12**	
	Priority Total in metres		**49350**	**5020**	**10943**	**8**	

Appendix G
Cost estimates

Please note that costs can be reduced by combining elements of work. For instance if conversion orders are made together they will be cheaper than if made individually.

Loop Ref	Section	Option	Description	Cost
BTO Loop				
BTO Whole	BTO Loop	1	Construction of 60m of path	£2,500
		2	Cutback vegetation	£500
		3	Provision of signing	£1,600
		4	Provision of shared surface path	£4,500
		5	Provision of segregated path	£6,500
		6	Provide refuge crossing islands	£3,500
TOTAL				**£19,100**
Forest Loop				
FL1	Forest Loop 1	1	Section dropped - no options costed	n/a
FL2	Forest Loop - Section 2	1	Provision of signing	£ 4,300
		2	Construction of underpass	£1,000,000
		3	Construction of footbridge	£400,000
FL3	Forest Loop - Section 3	1	Construction of 4 No. refuge islands	£13,700
		2	Construction of 9 No. dropped crossings	£9,400
		3	Construction of 20m pedestrian/ cycle path	£3,500
		4	250m Footway Widening	£14,100
		5	Provision of signing	£1,900
		6	Provision of signing	£3,150
		7	Provision of signing	£3,150
FL4	Forest Loop - Section 4	1	250m footway widening	£66,000
		2	Construction of 500m cycle track	£79,000
		4	Provision of signing	£2,800
FL5	Forest Loop - Section 5	1	Construction of 450m soft surfaced path	£27,500
		2	Construction of 3km soft surfaced path	£187,000
		3	Provision of signing	£1,500
FL6	Froest Loop - Section 6	1	Construction of 450m soft surfaced path	£27,500
		2	Construction of 1km soft surfaced path	£39,500
		3	Provision of signing	£1,500
FL7a	Forest Loop - Section 7a	1	Provision of signing	£1,100
FL7b	Forest Loop - Section 7b	1	Construction of 2km of soft surfaced path	£122,000
		2	Provision of signing	£3,550
FL7c	Forest Loop - Section 7c	1	Vegetation clearance	£7,400
		2	Construction of 620m soft surfaced path	£32,300
		3	Provision of signing	£2,300

Loop Ref	Section	Option	Description	Cost
FL7d	Forest Loop - Section 7d	1	Section dropped - no options costed	n/a
FL7e	Forest Loop - Section 7e	1	Vegetation clearance, construction of 400m soft surfaced path and provision of 320m fencing	£26,750
		2	Construction of 320m soft surfaced path	£19,500
FL8	Forest Loop - Section 8	1	Construction 1.4km soft surfaced path	£85,300
		2	Construction of 50m long footbridge	£493,200
		3	Construction of 80m asphalt path	£11,250
		4	Provision of signing	£3,800
FL9	Forest Loop - Section 9	1	Provision of signing	£2,700
TOTAL				**£642,500**
Northern Loop				
NL1a	Northern Loop - Section 1 a	1	Repairs to existing asphalt path	£3,800
NL1b/c	Northern Loop - Sections 1: b and c	1	Dropped kerb	£1,500
		2	Conversion of subway for joint cycle/ pedestrian use	£5,000
		3	Construction of 280m asphalt path	£39,500
		4	Widen and resurface 200m of existing path	£20,800
		5	Provision of signing	£ 950
		6	Provision of sign plates to existing poles	£250
NL2	Northern Loop - Section 2	1	Conversion of footpath to cycle track or bridleway	£5,000
		2	Provision of signing	£1,150
		3	Surfacing repairs	£2,900
		4	Provision of 20m of bollards	£4,000
		5	Alteration to path at Blaydon Footbridge	£2,350
		6	Widening of existing path	£16,950
		7	Provision of lighting	£24,000
NL3	Northern Loop - Section 3	1	Conversion of footpath to bridleway	£5,000
		2	Construction of 700m soft surfaced path	£56,500
		3	Construction of asphalt path	£20,000
		4	Construction of asphalt path	£4,600
		5	Provision of 20m of bollards	£3,400
NL4	Northern Loop - Section 4	1	Surfacing of FP1: 780m asphalt	£70,000
		2	Surfacing of 480m of existing track	£28,000
		3	Provision of access control at A11 access to easterly track	£730
		4	Provision of signing	£2,900
NL 5 Gloucester Canterbury	Northern Loop - Section 5	1	Modify footway build-outs	£5,300
		2	Provision of signing	£1,600
		3	Upgrade existing path	£1,700
NL 5 Footbridge	Northern Loop - Section 5	1	New bridge for cyclists	£25,000

Loop Ref	Section	Option	Description	Cost
		2	Provision of signing	£1,200
		3	Upgrade access onto existing path	£900
NL 5A Brunel Way	Northern Loop - Section 5 A	1	Provision of shared path and Toucan Crossing	£41,200
		2	Provision of traffic island	£2,800
		3	Provision of signing	£1,200
		4	Carriageway surface maintenance	£1,500
NL 5B Brunel Way	Northern Loop - Section 5 B	1	Construction of 740m of footpath	£31,200
		2	Provision of signing	£1,200
		3	Improve gated access	£1,000
NL 6 Mundford Rd	Northern Loop - Section 6	1	Remove section of wooden knee rail	£400
		2	Provision of signing	£1,200
		3	Provision of traffic islands	£3,900
NL 6A Fision Estate	Northern Loop - Section 6 A	1	Provision of signing	£1,200
		2	Provide drop kerb for footway St Helen's Way	£500
NL 6A Ladies Estate		3	Provide drop kerb for footway AB Rd	£500
		4	Provide raised table	£ 5,800
		5	Cutback vegetation on existing path	£100
		6	Provision of signing	£1,200
NL 6C Lodge Farm	Northern Loop - Section 6 C	1	Construction of 1100m of footpath	£46,200
NL 7A Cedar Row 2 Options	Northern Loop - Section 7 A	1	Widen uncontrolled crossing	£2,100
		2	Provide drop kerbs	£900
		3	Cutback vegetation and local re-surfacing	£5,000
		4	clear overhanging vegetation	£1,000
		5	Provision of signing	£600
NL 7B Kilverstone Croxton	Northern Loop - Section 7 B	1	Construction of 840m of footpath	£35,000
		2	Construction of 760m of footpath	£32,000
NL 8A Nuns Bridges - Kilverstone	Northern Loop - Section 8 A	1	Construction of 600m of footpath	£25,000
		2	Upgrade river crossing	£2,500
		3	Construct splinter path	£2,000
		4	Provide Toucan Crossing	£41,000
		5	Provide refuge islands	£9,000
		6	Construct new footpath	£4,700
		7	Cutback vegetation and improve access from bridge	£700
		8	Construction of 840m of footpath	£20,000
		9	Provide alternative suggested route	£8,000
		10	Improve gated access	£100
		11	Convert footway to shared use	£5,500

Loop Ref	Section	Option	Description	Cost
NL 8B Nuns Bridges_ Tesco	Northern Loop - Section 8 B	1	Contra-flow cycle lane	£500
		2	Provision of signing	£500
		3	Provision of signing	£1,000
		4	Construction of 600m of footpath	£22,200
		5	Provision of signing	£1,000
NL9	Northern Loop - Section 9	1	Alteration of Orders	£2,300
		2	Provision of segregated cycle route	£3,000
		3	120m repaving works to effect segregated cycle route	£18,000
		4	Reconstruction of ramp to comply with DDA	£35,600
		5	Provision of signing	£3,000
TOTAL				**£778,280**

Southern Loop

SL1A	Southern Loop - Section 1a	1	190m footway widening	£25,500
		2	Construction of 13m asphalt path	£2,300
		3	Provision of signal crossing	£38,000
		4	Surface existing route	£14,500
		5	Provision of contra-flow cycle lane	£6,800
SL1B	Southern Loop - Section 1b	1	Carriageway widening	£52,700
		2	Carriageway widening and entry feature	£60,000
		3	Provision of signing	£2,650
SL2	Southern Loop - Section 2	1	450m of footway widening	£39,650
		2	Provision of signing	£4,050
SL3A	Southern Loop - Section 3a	1	Surfacing to existing path and provision of dropped kerbs	£17,750
		2	Provision of lighting	£6,300
		3	Provision of toucan crossing	£38,000
		4	Carriageway widening	£35,000
		5	110m of footway widening	£61,150
SL3B	Southern Loop - Section 3b	1	Provision of dropped crossing	£2,100
		2	Provision of dropped crossing	£2,100
		3	Provision of bollards	£560
		4	Provision of signing	£1,400
		5	Provision of signing	£2,500
TOTAL				**£413,010**

Croxton Loop

CL 1A	Croxton Loop Section 1 Option A	1	Provision of signing	£2,000
		2	Road markings	£1,700
		3	New gully covers	£5,100
CL 1B 1C	Croxton Loop Section	1	New gravel footpath	£14,500

Loop Ref	Section	Option	Description	Cost
	1 Options B & C			
		2	Resurface and widen existing track	£24,800
		3	Provision of signing	£1,000
CL 2A 3B	Croxton Loop Section 2 Option A & Section 3 Option B	1	New gravel footpath	£38,800
		2	Maintain existing gravel track	£4,000
		3	Remove vegetation at side of gates	£500
		4	Provision of signing	£600
CL 2A 3B Alt Opt	Croxton Loop Section 2 Option A & Section 3 Option B Alternative Option	1	Provision of signing	£1,200
		2	Road markings	£1,200
		3	Reduce speed limit (orders)	£2,000
CL 2B	Croxton Loop Section 2 Option B	1	New gravel footpath	£65,300
		2	Maintain existing gravel track / remove vegetation.	£2,000
		3	Provision of signing	£1,600
CL 2C	Croxton Loop Section 2 Option C	1	New gravel footpath	£127,900
		2	Replace existing gates	£3,000
		3	Retain existing gate and clear vegetation	£500
		4	Cutback overgrown areas and ensure footpath is kept clear of fallen trees.	£2,500
		5	Provision of signing	£600
CL 3C	Croxton Loop Section 3 Option C	1	New gravel footpath	£92,700
		2	Cutback overgrown areas	£3,500
		3	Road markings	£200
		4	Provision of signing	£800
CL 4	Croxton Loop Section 4	1	New gravel footpath	£64,100
		2	Provision of signing	£600
		3	Cutback low hanging trees and overgrown shrubs/ bushes	£1,200
		4	Remove fallen tree	£200
CL5	Croxton Loop Section 5	1	New gravel footpath	£15,700
		2	Provide a dropped kerb from access road	£400
		3	Upgrade level crossing facility	£8,000
		4	Provide a crossing over A134	£21,300
		5	Provision of signing	£800
CL 6	Croxton Loop Section 6	1	New gravel footpath	£53,500
		2	Clear vegetation	£2,000
		3	Replace existing gate	£3,000
		4	Retain existing gate and clear vegetation	£500
		5	Provision of signing	£600
TOTAL				**£569,900**
OVERALL TOTAL FOR ALL ROUTES & OPTIONS				**£2,422,790**

Appendix H
Thetford Loops: Design Guidance

1. Route specification

The fundamental purpose of the Thetford Loops is to provide opportunities to travel other than by motorised modes – walking and cycling being the principle modes.

The smoothness and rolling resistance of the surfaces, the avoidance of delays and steep gradients, transitions and crossing arrangements over roads, railways and waterways, should all be such that Thetford Loop users feel comfortable, safe and well-provided for – with real care and consideration given to the routes and facilities. Furthermore, it should be evident that some thought has been given to peoples' priority and convenience, particularly over motorised traffic. For example, a relatively simple detail like a totally flush kerb makes a lot of difference to someone with a pushchair or on a bicycle. Another practical detail and a clear commitment to the Thetford Loops will be demonstrated by providing path users with route alignments that are off-carriageway or on less busy roads where possible.

As far as possible, routes comprising the Thetford Loops should be:

- traffic-free
- useable and available all year round
- of an adequate standard that encourages walking and cycling
- provided with accessible, safe crossings of roads, railways and waterways
- barrier-free
- connected, with useful local links to places of interest and to where people live and work
- signed and be 'legible' and easy to follow
- supported by route maps, information boards and other promotional events and activities
- designed for low maintenance
- adequately maintained
- be conceived, designed and implemented with the 'travelling landscape' in mind to ensure some element of 'local distinctiveness'

2. Design Principles

When developing walking and cycling networks it is important to have in mind the now widely accepted and established fundamental design principles of **Safety, Coherence, Directness, Attractiveness** and **Comfort,** described below.

If these are followed, they will contribute to the development of a network of consistent routes that people will choose to use, both for recreational trips but also for 'utility' trips including journeys to work, to school and for other every-day purposes.

There are five basic principles which should be followed by the Thetford Loops:

Safety	Dangers should be minimised for path users, giving a feeling of safety and security.
Coherence	A continuous, connected route is crucial, with its own distinctive feel and character. Links to other places, and other routes and attractions are important.
Directness	Routes must be as direct and as quick to use as possible. Although many of the Thetford Loops are more recreational, occasional uses, the importance of directness and avoiding unnecessary detours should not be underestimated. Use of some of the Thetford Loops through the centre of town would be for 'every-day utility trips' is an important aspect of their function.
Attractiveness	The routes should complement and enhance the local environment and be designed and constructed so that the walking and cycling experience is an enjoyable one.
Comfort	Routes should be easy and convenient to use, with gentle gradients. The use of barriers should be kept to an absolute minimum. Surfaces should be smooth and accessible throughout the year.

3. Thetford Loops types

The Thetford Loops comprise the following main alignment types:

- Formal shared-use, traffic-free paths and bridleways, away from roads – used by pedestrians, cyclists and horse riders
- Permissive shared-use, traffic-free paths away from roads – used by pedestrians, cyclists and horse riders
- Shared-use, traffic-free cycle tracks alongside roads – used by pedestrians and cyclists together
- Segregated, traffic-free tracks alongside roads – used by pedestrians and cyclists separately
- Footways alongside roads – used by pedestrians only
- Mandatory cycle lanes, on-carriageway – used by cyclists only
- Advisory cycle lanes, on-carriageway or no designated cycle provision on-carriageway – used by cyclists and motorists

4. Designing for Pedestrians and Cyclists

Walking and cycling are healthy, efficient and sustainable forms of travel. Local authorities and other agencies seeking to increase their use aim to allocate highway facilities and greater priority to both.

Walking and cycling have often been grouped together under the general heading of 'non-motorised modes of transport'. Although they have similar needs they are by no means identical. Ill-conceived and badly designed schemes for shared-use can cause conflicts and ill-feeling between pedestrians and cyclists. As a general rule in urban areas, segregated facilities are recommended so that pedestrians and cyclists are not forced to share surfaces, with cyclists usually being better provided for on the carriageway except where traffic conditions dictate otherwise. However it is certainly not the case that unsegregated shared-use is inappropriate in all circumstances. This is particularly the case in rural areas or on paths predominantly used by either cyclists or pedestrians.

The concept of the Thetford Loops, and the requirement for the greatest extent of traffic-free alignment, means that pedestrians and cyclists will be sharing paths. In the cases it is a question of achieving the appropriate path specification, particularly adequate width and forward visibility right. This must be balanced against the intensity of use and the nature of the alignment. Where a route is likely to be used by 'utility' cyclists on journeys to work or to school, a wider path will be required to accommodate their usually higher speeds and their desire of getting from 'A to B' as quickly as possible. The more peripheral and less busier 'recreational' route sections can perform acceptably at a lower width and space specification.

The key design principles of Safety, Coherence, Directness, Attractiveness and Comfort, however, apply to both pedestrians and cyclists and these principles have already been highlighted above.

The Thetford Loops and the existing walking and cycling network should be seen as a single whole and each element should mesh with every other seamlessly.

Existing guidance

There is a wide range of technical guidance available on the specifications for paths and other routes for pedestrians and cyclists:

- Cycle Infrastructure Design, DfT (2008)
- Local Transport Note (LTN) 2/08 Cycling Infrastructure Design, DfT (2008)
- Manual for Streets / Manual for Streets 2, DfT (2007/2010)
- London Cycling Design Standards, Transport for London (2005)
- Encouraging Walking, DfT (2000)
- National Cycle Network: Guidelines for Planning and Design, Sustrans/Arup (1997)

5. Design Elements

Design Speed

Although this is not particularly relevant to pedestrians, a path's 'design speed' is of importance to cyclists and has a bearing on further aspects, such as forward visibility, width and the radius of turns, if conflicts between path users are to be minimised.

On routes identified for potential commuter use by cyclists, they will usually want to travel at speeds of between 12 and 20mph, ideally without losing momentum. Most cyclists, however, travel at about 12mph. Cyclists do not like to use alignments that frequently require them to slow down or to stop. Where the effective design speed is well below 20mph cyclists on utility trips will not be encouraged to use the alignment. Those cyclists that still choose to cycle are likely to do so upon an alternative alignment, most likely a more direct road, unless the route in question provides an invaluable short cut that is worth sacrificing speed and time for.

Visibility and Geometric Design

Visibility issues affect all path users. Good forward visibility allows pedestrians to see approaching path users, be they cyclists who are travelling at a faster speed than themselves or other pedestrians, who may be perceived as a 'personal safety' threat by those of a more nervous disposition. Clear sight lines will make some people feel safer.

The ease with which a cyclist can interact safely and in time with other path users and obstacles depends on the available sightlines. Two visibility aspects determine whether cyclists can ride comfortably at their own pace and react to any hazards as they arise. These aspects can be referred to as the Sight Distance in Motion (SDM) and the Stopping Sight Distance (SSD).

The SDM is the distance ahead that a cyclist needs in order to travel in reasonable safely and comfort. Research (CROW, 1993) and experience suggests this distance to be equal to the distance covered in 8 to 10 seconds – this is between 50-80 metres at typical cycling speeds.

SSD is the distance ahead that a cyclist needs to spot hazards and to be able to react to them in time and come to a safe stop. This is usually much shorter than the SDM. It also depends on the design speed of the alignment in question (and the surface). It follows that a faster alignment, e.g. like a 'utility alignment' needs a longer SSD than a slower route.

Table 1: Visibility and Geometric Design

Route type (main usage)	Design speed	min. Sight Distance in Motion	min. Stopping Sight Distance	min. radius of curve
Utility	20 mph	80 m	25 m	25 m
Recreational	12 mph	50 m	15 m	15 m

Information extracted from: LTN2/08 Cycling Infrastructure Design, Section 8, DfT, 2008

The guidance in the table above depends on cyclists' initial speed, alertness/reaction time, training and experience, the surface skid resistance and the braking efficiency of the bicycle.

The curvature of a route also affects comfort and safety, particularly for cyclists. Unlike pedestrians, cyclists cannot easily make relatively sharp turns, so curves should be designed accordingly. Minimum radii of curvature are given in the above table.

Remember that for unsurfaced routes the minimum Stopping Sight Distance should be increased. It is suggested that this should be by a minimum of 50%.

Physical constraints may make the achievement of these criteria difficult in some locations. It is important to consider such sites on a site-specific basis so that alternative mitigating measures may be considered. There are many design solutions available for a wide range of circumstances.

Regardless of geometry, it is important that cycling speeds do not cause inconvenience or danger to other path users. Generous sightlines and good widths, along with other measures can help create conditions that allow everyone to co-exist in comfort and in safety.

Widths

The Thetford Loops alignment in the main are shared-use paths – whether away from roads or next to a road in the form of a cycle track.

People using paths like to walk or cycle side by side or in small groups. Groups of path users rarely travel in single file. It is important for people's enjoyment of the Thetford Loops that they are able to walk or cycle side by side in groups of two or more people.

Path users also need to pass each other in opposite directions or 'overtake' sometimes. Children like to run around unpredictably and require sufficient space to do so. Dogs (hopefully on leads) also can be equally unpredictable and wander randomly over the full width of a path. To cater for all this, adequate width is clearly very important.

For Thetford Loops alignments unsegregated use is generally recommended (i.e. no segregation between pedestrians and cyclists) with a minimum path width of 2.0m.

This allows for reasonably comfortable use and convenience for all modes. Where a route is envisaged to be used as a 'utility alignment', there are high levels of path users anticipated, or it is close to a carriageway, paths should be wider. We recommend that 2.5m wide path is the minimum immediately adjacent to a carriageway and that 2.5m is the minimum in urban parts of Thetford. Narrower specification paths mean that conflicts, frustration and delay for path users is more likely.

For short lengths, less than 50m, narrower widths can be acceptable, even down to 1.5m where, for example, a tree or another obstacle can't be avoided or additional path space created around it. Where vehicular access is anticipated, e.g. for agricultural vehicles or where limited residential access is required, appropriate widths will need to be considered at the design stage. It is likely that at least 3.0m will be required, or wider if verges are unavailable for path users to avoid vehicles.

Accessible grass verges to the edge of surfaced paths gives additional space should path users temporarily need more room to pass each other.

Where a path is bounded by a vertical feature, such as a wall, railings of a kerb, an additional allowance should be made for extra 'elbow room' since the very edge of the path cannot be used due to the closeness of the feature.

Table 2: additional width requirements

Type of edge constraint	Additional width required
Flush or near flush surface (e.g. grass verge)	Nil
Low upstand to 150mm (e.g. kerb)	Add 0.2m
Vertical feature from 150mm to 1.2m high (e.g. fence) *	Add 0.25m
Vertical feature above 1.2m high (e.g wall)	Add 0.5m
* including bridge parapets etc., over 1.2 m high, for short distances	

Information extracted from: LTN2/08 Cycling Infrastructure Design, Section 8, DfT, 2008

Gradients

Hills are generally avoided by cyclists – they require extra effort and energy and slow them down. To a lesser extent pedestrians also find hills and gradients less pleasurable – unless they're appreciating them as scenery. Pushchair and wheelchair users, and those using powered scooters etc., will be the most inconvenienced of path users.

In general, a maximum gradient of 3% is recommended for the Thetford Loops. This is less steep than the 5% stipulated in the DDA. However over relatively short distances (less than 100m) and at dedicated access ramps, e.g. to bridges and subways, this may rise to 5%. The absolute maximum, as set out in the DDA, should be 6.7% (1 in 15) for ramps between 2m and 5m, and 8.3% (1in 12) over distances below 2m.

At crossings and junctions, level areas should be provided where possible and certainly gradients of no more than 3%. Cycling uphill from a standing start and similarly setting off uphill with a pushchair or wheelchair should be avoided in the site design.

Surfaces

For Thetford Loops alignments through wooded areas, locally sourced, self-binding gravel is acceptable, laid over a base material and separation geo-textile membrane.

The type and quality of the Thetford Loop alignment surfaces will affect the comfort, convenience and attractiveness of the network. It will also affect the on-going maintenance cost of the network. A good specification, sealed, all-weather surface will minimise the need for maintenance and other repair costs over the longer term. This is in addition to the level of service afforded to path users who, in the main, will welcome such all-weather surfaces.

A suitable surface for Thetford Loop alignment is therefore essential. Aspects normally considered important include:

- the route's existing or expected dominant usage (e.g. 'utility' or 'recreational')
- expected level of use
- accessibility commitment (disabled and others)
- use by motorised traffic or horse riders
- construction methods available (e.g. access for path laying machinery)
- budgets
- aesthetic and environmental considerations

Hand-laid, unbound surfaces are generally located in rural wooded areas and parks. These paths have higher rolling resistance than asphalt, can be dusty or even muddy when wet, and are therefore less desirable for utility users. The nature of the unbound surface makes it less durable than asphalt surfaces and also can be more prone to puddling. However it must be remembered that in appropriate conditions, unbound surfaces can provide more fun and enjoyment for certain recreational users – and aesthetically, they can be less intrusive.

Type 1 granular material is commonly used as a base course for rural shared-use paths. Recycled highway surfacing material such as 'road planings' from other highways maintenance or construction schemes can be used. This offers environmental benefits and possible cost savings.

The specification for the Thetford Loop paths should be a sealed or 'bound' asphalt construction along alignments not located in wooded areas or agriculture land. This will

ensure that all path users are catered for, that a high level of service is provided and that future maintenance is minimised.

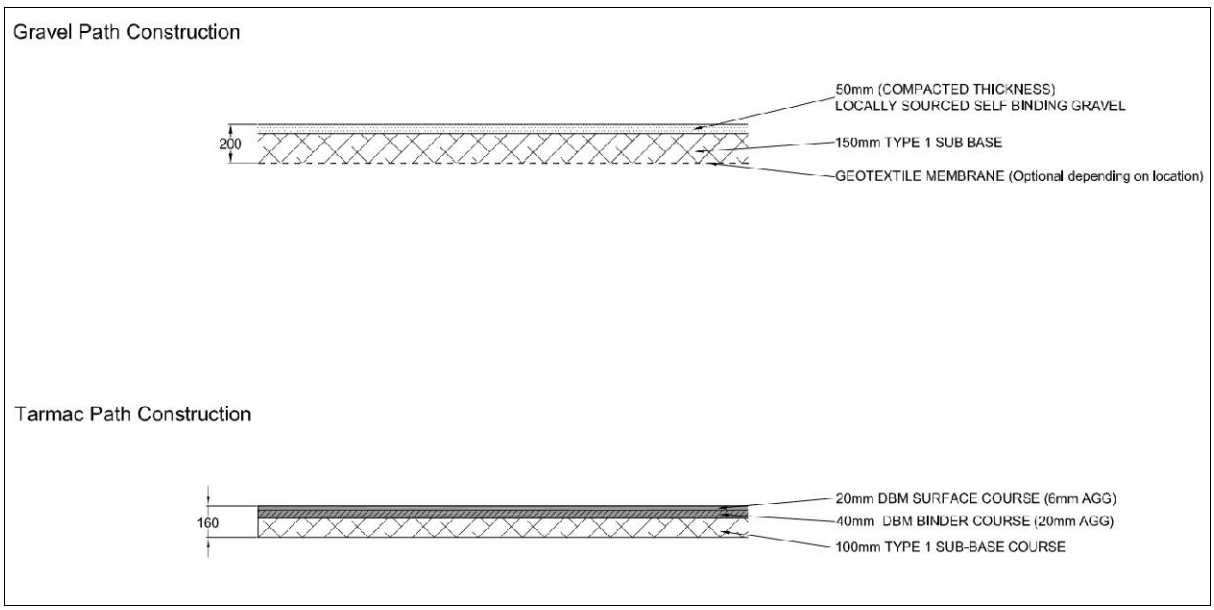
Additional strength or wearing resistance can be attained through the use of fibre-reinforced surfacing techniques which are increasingly widely available. Since these are usually machine-laid, the construction thickness will need to consider the weight of the machinery involved. Where possible, a machine-laid surface should be considered and provided to maximise ride comfort for cyclists.

In certain circumstances, unbound surfaces may be acceptable and appropriate, but these should be the exception.

Table 3: Typical Path Construction Choices

Surface	Comment
Asphalt or bituminous	Preferred surface for cycle tracks along urban areas – suitable for all path users. Can be surface-dressed for aesthetic and non-slip reasons. Lower long-term maintenance costs.
Concrete laid in situ	High installation cost but very durable. Suitable for vehicular access, particularly farm traffic. A textured surface will be required which can reduce ride comfort for cyclists and pushchair users.
Concrete block or clay paviours	Expensive, but durable. May be attractive in certain locations. Dependent upon sound installation. Minimal future maintenance.
Surface dressed base course	May be more acceptable in rural settings. Preferred to unbound surfacing, allows for colour variation through choice of chippings. Fibre reinforced surfaces add strength and durability and surface quality.
Unbound	Not generally recommended. Unsuitable to most users except for determined pedestrians. Prone to erosion by water. Easily damaged by horses and mountain bikes. Higher long-term maintenance costs.

Information extracted from: LTN2/08 Cycling Infrastructure Design, Section 8, DfT, 2008



Typical path construction cross-sections (© JMP)

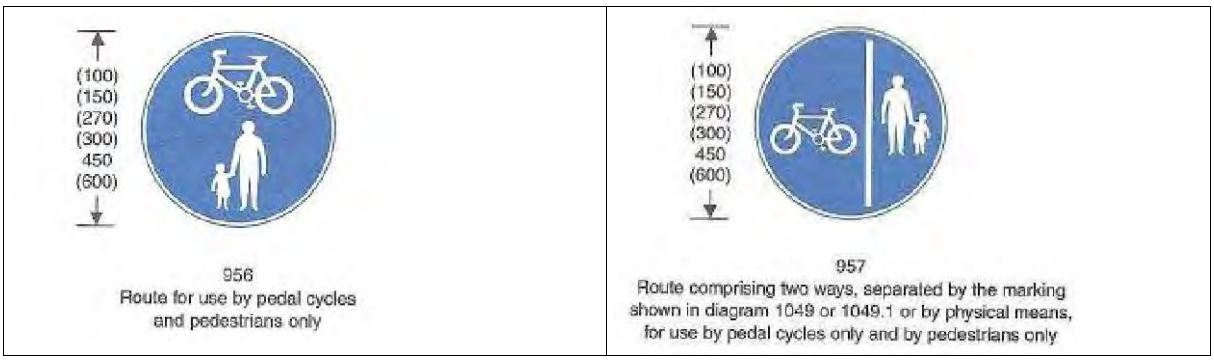
Signing

Signs for use on the public highway are set out in the Traffic Signs Regulations and General Directions 2002 (TSRGD), which details every traffic sign that can be used in the UK including signs for non-motorised traffic, i.e. for pedestrians, cyclists, horses, etc. Each sign is given a 'diagram number'. TSRGD also stipulates how and where each sign may be used – this ranges from the sign plate design and font sizes to what other signs and symbols may be used in conjunction with each other. Compliance with TSRGD is mandatory where signs are erected by the Local Highway Authority upon the public highway.

The TSRGD provides some flexibility in the use of standard signs, including the use of smaller signs in appropriate conditions but this flexibility generally is extremely limited. For signs not included in the TSRGD (i.e. non-prescribed signs) authorisation is required before they can be used. 'Special authorisation' may be sought from DfT for a non-standard sign but the timescales are considerable and variations and new signs are rarely authorised.

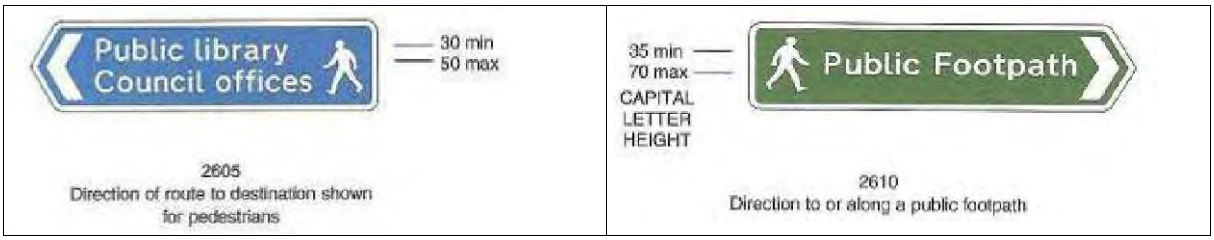
Highway-compliant signs should be used on the Thetford Loops. Minor, risk-assessed departures from standards will ensure that signs are not too large, dominant or overused. Signs should generally be to minimum dimensions and only used where there is a proven

Generally, there should be a presumption for minimal signing, so that adverse visual effects (particularly in rural settings), cost and on-going maintenance of signs can be reduced. Signs are, however, needed to inform and sometimes to warn and promote road safety. They also are the on-the-ground evidence of a Traffic Regulation Order and therefore important to establish clearly who may lawfully use the section in question (e.g. Diagrams 956 and 957 to denote shared or segregated use). If enforcement action by the police is required then the status of the path in question must be clear.



From TSRGD (DfT, 2002)

Direction signs for pedestrians generally have a blue background with white lettering and include the walking figure symbol (2605). In town centres, especially in pedestrianised areas, other colours may be used and the symbol may be omitted: these signs may also use different styles of lettering. Pedestrian routes to tourist attractions may have brown backgrounds and those for public footpaths green backgrounds. Signs may include distances in yards or miles.

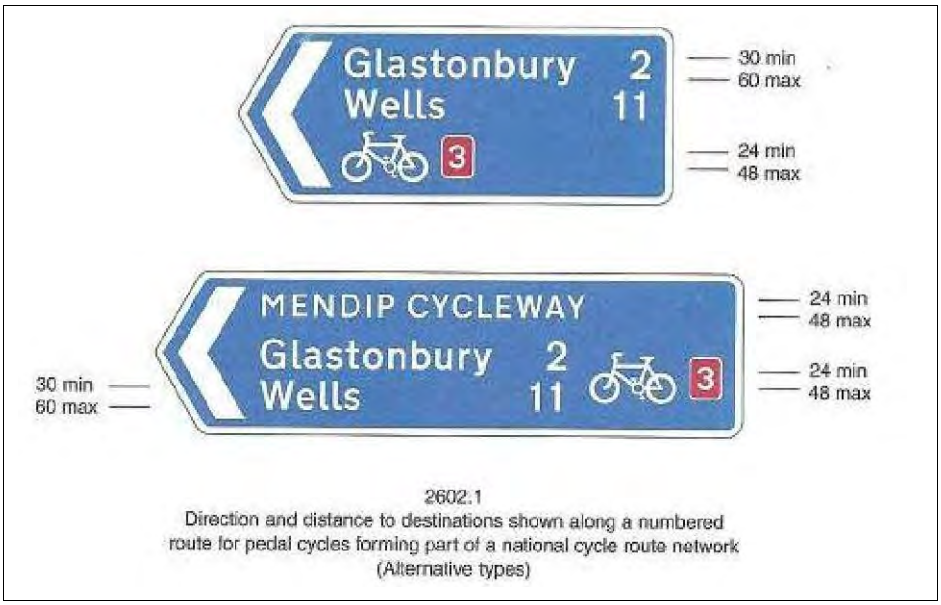


From TSRGD (DfT, 2002)

A public footpath may be waymarked by a yellow waymarker. A blue arrow is used for public bridleways. The background may be of a different colour (2610).

Direction signs for cyclists have a blue background and include a white pedal cycle symbol (2602.1). The cycle symbol may also be used on pedestrian signs where cyclists and pedestrians share the route (2606). Where the route indicated forms part of the National Cycle Route, the number of that route is shown on the signs in white numerals on a red patch (2602.1). Links within the network may be designated as Regional Cycle Routes: signs indicating these have white numbers on blue patches.

Some local authorities may have their own numbered cycle routes using different coloured patches. Where a cycle route leads to a national or regional route, the number of the route to which it leads may be shown in brackets. Signs may also include the name of the route (2602.1). Note: unlike for pedestrian route signs, cycle route signs must have a blue background.



2602.1
Direction and distance to destinations shown along a numbered route for pedal cycles forming part of a national cycle route network (Alternative types)

From TSRGD (DfT, 2002)

In the TSRGD, there is limited opportunity for 'branding' of a route using elaborate logos, although the name of a route can be included. It is, therefore, permitted to use the name of the Thetford Loop (in capitals) on signing.

Route logos are not included in TSRGD and are therefore, technically, not allowed on pedestrian or cycle route signs. Many local authorities include non-complying route logos on signs (e.g. 'Thetford Connect') and there does not appear to be any consequent safety or litigious aspects. It is suggested that the Thetford Loop logo (or similar) is used on signs where appropriate, particularly where small route repeater signs cannot accommodate 'Thetford Loop '.

Sign sizes should be appropriate to the location and so that they may be seen in time by Thetford Loop users, particularly cyclists, who will come upon them much more quickly than pedestrians. This will have to be decided on a site-specific basis taking into consideration aspects such as the positioning, sight lines and speed of approaching cyclists. A useful 'rule of thumb' is that the signs should be readable by someone with normal vision from 18m away.

The font height for all signs is set out in TSRGD and is known as the 'x-height' (the height of the letter 'x' in millimetres). The minimum x-height of 30mm is likely to be suitable for most applications. The x-height and the number and length of destinations on the sign will dictate

the final plate size. Some signs can end up being inappropriately large and out of place in rural settings. Some highway authorities use a smaller, non-complying x-height for destinations, down to 20mm, which helps reduces the final sign size further. This appears to work well and is recommended, where they are appropriate, however, the signs are technically non-compliant if used on the public highway.

Non-compliant Signs

There have been many 'battles' between those seeking unobtrusive, locally distinctive, non-standard signs and those who have the responsibility and final say when placing signs on the public highway. In most instances, these result in TSRGD compliant signs. There is some sense and logic to this in that the signs are nationally recognised and understood by the public and that they have 'stood the test of time'.

Many would argue, however, that times have moved on and that some signs, particularly those for pedestrians and cyclists, were designed from a driver's viewpoint and with little sensitivity to settings and aesthetics – and that they are just too big. There is a move towards using fewer and smaller signs and this can be done to a certain extent by ensuring that minimum prescribed sizes are used.

Non-compliant signs will require strong senior management local authority and political support. In addition, designers could undertake a 'risk assessment' to ensure that the proposals are not inherently unsafe, or create more danger when set against the benefits.

Recommendations for Thetford Loops signage

When considering signs, designers should start from a position of having no signs and should only introduce them if they serve a clear function:

"Signs are used to guide and control traffic and to promote road safety. They should only be used where they can usefully serve these functions." Manual for Streets, DfT, 2007

Suggested specification for signs:

- should comply with TSRGD
- white lettering on blue background
- x-height 30mm maximum (unless site requirements require larger - unlikely)
- smaller x-heights (e.g. down to 20mm) should be considered where possible *****
- x-height on non-highway sections can be 20mm
- destinations should be included (no more than 3 per sign if possible)
- distances in miles (up to 3 miles to nearest quarter of a mile, 3 miles and above nearest mile).Times could also be considered (see note below)
- pedestrian, cycle and horse symbol as appropriate
- include National / Regional Cycle Network route patches where appropriate
- include other route logos (Thetford Connect?) where appropriate and if space allows
- use Thetford Loop logo for repeater signs *
- at access points to paths use appropriate shared-use sign (normally Diag. 956)
- use minimum sign sizes and consider smaller signs in very rural or off-highway situations *

** These are non-complying aspects for which the DfT will not give special authorisation, however minor. It is highly unlikely that this 'departure from standards' will put the local authority at risk or endanger the public. However, some form of internal 'risk assessment' should be undertaken so that the highway authority is aware of the departure from standards and any consequent risks are assessed and considered to be acceptable.*

- signs should be securely mounted on square section, anti-rotation posts
- location and mounting heights (2.4m) should aim to discourage vandalism (particularly graffiti) where this is likely to be a problem
- the position of sign poles and plates should not obstruct the width of paths
- the use of 'cyclist dismount' (966) or 'end of route' (965) must be avoided unless there is a real and proven need for them (which rarely there is), e.g. at a dead-end
- other mounting opportunities should be considered for signs to avoid additional clutter and cost, e.g. on existing posts, bollards, gates, buildings, etc.

A 'path warden' or 'route ranger' initiative is a useful and cost-effective way of ensuring that signing (and other) problems are highlighted and rectified quickly.

Journey times on signs

Some authorities are starting to include journey times to destinations on walking and cycling signs, e.g. Aylesbury (see photo below). Knowing how long it takes to make a trip, particularly by bicycle, can encourage more people to cycle since many people overestimate how long it takes to make cycling journeys. This is likely to be more useful for those making 'utility' trips rather than recreational ones, although a sign that suggests that it's 30 mins to High Lodge, rather than 6km, may be more appealing. It is also a clear message to 'non-cyclists' that the distances and times involved are really not that great. The down side to showing times is that some people walk or cycle much faster than others and the need to include times on signs adds about 20% to the sign size.

These signs show times to destinations and include a promotional 'strap line' and branded route name. Note that the inclusion of 'mins' text has increased the sign length by about 20%. (Aylesbury)

Currently, the use of times on signs requires special authorisation from the DfT since it is a non-standard detail. Showing journey times will be considered during the TSRGD signs review in 2009/2010. It is likely that the special authorisation requirement to include signs on times will be removed so that local authorities may use them at their discretion.

Seating and Shelter

These are important aspects that should be considered when developing walking and cycling routes.

Seating is important because it:

- offers an opportunity to rest, particularly for the less able or those on longer journeys
- can be located where attractive views are available, e.g. of the landscape or public art
- provides a convenient place to take refreshments
- provides a place for contemplation or social interaction
- can have other useful associated facilities (e.g. rubbish bins, cycle parking, information boards)

Seating should be located to take advantage of views and where possible, make use of any available shelter (see below). This might be under a bridge or in the lee of a hedge, tree or other structure to protect users from prevailing winds.

Seating is available in a wide range of designs and materials. Durability and resistance to vandalism, aesthetics, location considerations and cost are likely to be the most important factors when deciding upon seating types.

Standard designs are widely available but it may be worth considering having seating designed and made locally. The use of tree trunks for seating is recommended at suitable, often more rural, locations. This is very sustainable, usually aesthetically appropriate and, as they naturally decay, they provide habitats for a wide range of insects and other animals.

Shelter is important because it:

- offers welcome protection from the elements, usually rain, wind and sun
- is useful in more exposed, less urban settings, where informal shelter is less available
- can be located where attractive views are available, e.g. of the landscape or public art
- provides a convenient place to take refreshments
- provides a place for contemplation or social interaction
- can have other useful associated facilities (e.g. lavatories, seating, rubbish bins, cycle parking, information boards)

There are of course, existing shelter opportunities that should not be overlooked. The visitor facilities at High Lodge provide ultimate shelter opportunities and a wide range of associated visitor facilities. Edge-of-town stores (e.g. on London Road and Norwich Road) can provide shelter, food and lavatory facilities. Although most churches are kept locked these days, the often-forgotten church porch can provide shelter from the rain and also a tranquil, cool place to sit in summer – it can also be an encouragement to seek out the keyholder and explore the church properly.

There may be existing shelter opportunities provided by bridges and underpasses. For example, in times of inclement weather, the underpass on the A11 or the bridge on Joe Blunt's Lane will provide welcome shelter to anyone caught out in a sudden shower.

'Natural' shelter is available under trees but the protection afforded is limited, particularly from the rain. However, trees can provide shade and exposure to the wind. Seats located directly under trees suffer from bird droppings.

Hedges are invaluable for providing protection from exposure to the wind and provide excellent barriers and screens to external views – this can be both useful and not so useful of course, depending upon what is being screened. Attractive views should be available from many points and the less attractive, possibly more 'urban' features can be screened.

Wicker shelters are both sustainable and are generally aesthetically acceptable in more rural settings. These can be sourced locally. They are not as robust as more solid structures but are maintained with relative ease. They can provide shelter from all but the most severe of downpours. Including some form of seating, ideally a tree trunk, would be useful.

In keeping with the sustainability-based approach of the Thetford Loops, the seating and shelter designs used should be 'environmentally-friendly' and as far as is possible and practicable, fulfil the following criteria:

- sourced and manufactured locally
- manufactured sustainably and from appropriate materials
- be aesthetically appropriate for the location
- 'form' should not be at the expense of 'function'
- be as 'vandal-proof' as is practicable
- easily maintainable and replaceable

Examples of Seating and Shelter

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Tree trunk seating</td><td>A bridge affords some shelter from the rain – Joe Blunt's Lane Thetford</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Wooden bench seating</td><td>'Living' willow shelter</td></tr>
</table>

Lighting

Lighting makes people *feel* safer, which encourages greater use. Lighting should normally be considered for the Thetford Loops, particularly where a high level of 'utility' trips are made. The more 'recreational' rural routes may not need lighting.

Lighting confers a feeling of greater personal safety and security, although Home Office studies suggest that lighting does not necessarily reduce the incidence of recorded crime. However, if lighting makes people feel safer then it should be considered as an integral element of a scheme that provides routes for pedestrians and cyclists.

In addition to making people feel safer, lighting helps path users detect potential hazards, obstructions and deviations on paths. Generally, it should be assumed that lighting should be provided where affordable and feasible.

In urban situations, this is likely to be the rule. Where there are likely to be a high level of 'utility trips' – journeys to work, to school or to the shops, then a presumption in favour of lighting should be made. It is important that utility travel is encouraged.

Loop alignments outside built-up areas that are more 'recreational' in their nature and usage would not normally need to be lit. Exceptions may be at crossing locations or where routes are alongside a road, or there are identified safety reasons for including lighting. Where cost is a key element, and where lighting may be deemed useful at a future date when additional resources become available or an identified need is established, ducting for lighting can be laid when the route is installed. This will make adding lighting easier and more affordable at a later date.

The Highways Act 1980, section 65(1) contains powers to light paths and cycletracks. Technical design guidance is available in TR23, Lighting of Cycletracks (ILE 1998).

The problem of vandalism is an important issue when considering less intrusive, low level lighting installations. For this reason, where lighting is to be provided, it is advisable to opt for high level lighting. This arrangement also gives a more efficient dispersal of light with greater benefit to path users. Fewer lighting points will be required to achieve a given level of lighting. There is a wide choice of lighting sources from the commonly used low pressure sodium discharge lamp (which gives a yellow looking light) to high pressure sodium lamps which give a whiter, clearer light. More recently, metal halide systems and LED technology is becoming viable.

Provided the physical requirements can be met, designers now have a wide choice of materials, finishes, and styles to choose from. Columns can be coated with a range of products providing an extensive choice of colours and finishes. The styling of the column can also be varied from the typical, tubular format seen extensively on motorways and many streets through to 'period style' units used in "heritage" areas. There are a growing number of more imaginative, contemporary designs available too.

As a rule of thumb, an urban lighting column costs £1,500 each to buy and install.

Solar powered, surface mounted studs are being used increasingly on some paths. These units, however, do not provide the levels of lighting that make people feel safer in terms of personal security, though they can provide useful path locational information for users. Being solar powered, there is a significant sustainability aspect to them. They are also relatively vandal-proof.

Access, Barriers and Speed Controls

There should be a presumption against the use of any access barriers on the Thetford Loops. Until/unless there is a **proven** need for access controls they can introduce significant difficulties and seriously inconvenience path users, including those they are intended to protect. A simple bollard arrangement presents a user-friendly alternative which nevertheless has been shown to be effective.

The delay and inconvenience caused by access controls is frequently complained about by path users, particularly cyclists and those in wheelchairs or other mobility aids. Access controls are rarely if ever used on similar continental European shared-use paths.

Access controls are usually installed on paths in order to exclude inappropriate or unlawful use by motorised vehicles – particularly cars, vans and also 'travellers'. Depending upon their design, barriers can become a problem for cyclists and those with mobility difficulties where the barrier design attempts to exclude motorcycles. In many cases, some bona fide path users are actually denied lawful access onto paths because of the design and presence of motorcycle barriers. This would be unacceptable and indeed illegal under the Disability Discrimination Act.

Motorcycles

Anti-motorcycle barriers should only be introduced after a definite and proven need has been identified. Measures that reliably exclude motorcycles will also invariably exclude many other path users such as cyclists on tandems, tricycles, hand-cranked cycles and cycle trailers and child 'tag-alongs'. Bicycles fitted with panniers or other luggage carrying arrangements may also be excluded. Attempts to get a bicycle fitted with a child seat through such barriers can be very hazardous.

Some people with disabilities using mobility aids, such as mobility scooters and wheelchairs, will also be denied access at motorcycle access control points. As noted above this is likely to contravene the Disability Discrimination Act.

Even where bona fide path users are not excluded at less severely designed access controls, such barriers introduce considerable inconvenience and are clearly a deterrent to encouraging cycling and disabled access. Visually, and for cost and ongoing maintenance reasons, elaborate and contrived access controls should be avoided.

Measures to exclude motorcycles are only as effective as the weakest point along a route's boundary. The few determined, anti-social motorcyclists will often gain entry at other points along the route and many will even overcome severe barriers, for example by passing a motorcycle over a fence. Hence little is gained in practice from the use of restrictive barriers. Barriers and high fences are both inappropriate and unaffordable throughout a route. Access barriers are unlikely to have any useful deterrent effect – other than to exclude and incommode bona fide users.

If potential misuse by motorcycles is raised as an issue then it is better to reserve aside capital funds to cover the cost and installation of a barrier, but only after the situation has been monitored and the route's use and operation been allowed to settle down. If concerns are found to remain justified, there will be funds available to install a barrier if appropriate. Rarely, however, will this solve the problem. It is far better to encourage greater use of such paths by legitimate user, which will discourage motorcyclists, and to work with the police to identify the local offenders. Regular patrols by local police, wardens or other officials on bicycles have been shown to have a deterrent effect. These also help to reassure users that concerns are being addressed.

Measures to Reduce Pedestrian / Cyclist Conflict

There may be locations where there is potential for actual or perceived conflict between path users. This is usually associated with design shortcomings where there is limited forward visibility e.g. at sharp bends, or at entrances to subways. Vegetation can also reduce intervisibility between users. Problems can be reduced or eliminated through a range of mitigating measures that can reduce the speed or direction of travel of path users.

Disability Issues

Access for disabled people must be facilitated. The Disability Discrimination Act, 1995, is clear that reasonable access must be provided. The Thetford Loop initiative is fundamentally about improving access and it follows that the network should be accessible.

Bollards

A single row of bollards spaced at 1.5m centres is the recommended basic access control measure. This arrangement will keep cars and vans out but allow convenient, relatively unrestricted access for everyone else. It is also simple, cost-effective and visually less intrusive than more complicated designs that use gates, chicanes, etc. Many are currently in use throughout Thetford and appear to be working well. This arrangement is clearly already acceptable to the Highway Authority and should be the standard access control design throughout the Thetford Loop network.

Where it is deemed necessary for safety reasons, e.g. to slow cyclists down, a double, parallel row of 'staggered' bollards can be used. These should be 1.2m apart.

Bollards should ideally be located at least 5m from any junction or bend so that cyclists and wheelchair users can approach 'straight on'. This gap also provides space for larger groups of path users to wait in whilst other clear the access controls.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Bollard at bridge (Aylesbury)</td><td>Staggered bollards to slow cyclists (Aylesbury)</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Concrete bollard (Bedford)</td><td>Row of bollards at 1.5m centres (Worth Way, West Sussex)</td></tr>
</table>

It should also be remembered that bollards can be hazardous on unlit routes and at sites where the layout restricts forward visibility. A reflective collar or other such reflectorised plate should be incorporated into the bollard design to improve conspicuity. Alternatively, bollards may be painted in bright colours, e.g. yellow, if this is aesthetically acceptable at the site, to augment their visibility.

A wide range of bollard designs are available from a large number of suppliers. Materials are diverse, including concrete, metal, recycled materials and timber. An 'artist-designed' or locally distinctive Thetford Loop bollard design could be commissioned or chosen from commercially available designs. This will help to develop the Thetford Loops 'look' and will help with route awareness, continuity and promotion. Ideas and themes from the 'Discovering Thetford' feasibility work could be developed. Alternatively, bollards and access arrangements could be designed around large carved birds or animals local to the area. The TV 'Dad's Army' associations could also be considered in bollard design or in wider branding. Timber bollards are generally more aesthetically appropriate and acceptable in rural settings. However they are more vulnerable to vandalism and natural decay and weathering than those made of other materials.

Removable bollards are also available where vehicular access (e.g. for maintenance) is required.

Stiles

Public footpaths and other Rights of Way often have stiles as access controls. This is normally a requirement where paths pass through areas where livestock is kept. Stiles are clearly very difficult for those with a mobility handicap, or for people who are less able simply due to age or a temporary infirmity. They also exclude cyclists unless they are capable of lifting bikes over them. Any path that is likely to function as a 'utilty' route and where there are stiles will deter significantly those people who choose to cycle to work or to school.

Stiles should be replaced with more accessible access arrangements where possible. There are many examples in Cambridge where shared-use paths cross commons grazed by livestock. In some cases, the need for a stile has long since gone due to a change of use of the land.

	
'Cattle grid' arrangement in central Cambridge permitting easy access to a path crossing an area grazed by animals. Simpler, 'single lane' designs would be applicable on the Thetford Loops.	*This stile is very inconvenient and denies access to a wide range of path users. Better to replace it with a single bollard or a 'cattle grid' if necessary. (Queens Park, Bedford)*

Crossings

Urban carriageway crossing points along the Thetford Loop alignment should seek to have controlled Toucan crossing facilities where feasible and cost-effective. On principal roads outside the lower speed urban areas, protected refuge facilities should be provided. Along minor roads where traffic flows are low there should be designated uncontrolled crossing points on shared-use paths, where flush kerbs are provided for convenience, accessibility and safety. Consideration should also be given to the provision of raised tables and zebra

This approach will send a clear message to both path and road users: users of the Thetford Loops are 'important travellers' and consideration has been given to their safety, priority and convenience.

Priority Road Crossings

There is a DfT approved design detail for a priority crossing for pedestrians and cyclists crossing in the National Cycle Network Guidelines and Practical Details (Figure 2, p.59) and the use of the crossing is further supported in LTN2/08 Cycle Infrastructure Design, DfT, 2008 (p.63) where a design detail is included as Fig.10.2.

Guidance recommends that priority crossings are appropriate where the speeds on minor roads are less than 30 mph and total traffic flows do not exceed 4,000 vehicles per day. Such crossings should, additionally, be sited on a flat-topped road hump to enhance path user safety and convenience. Requirements for good visibility will be necessary so that vehicle drivers can see approaching path users in time to give way to them - as required by the give-way signs and surface markings. The presence of a ramp will ensure that vehicle speeds are low and that any conflicts do not result in serious injury.

This priority crossing in Thetford provides convenience and safer crossing opportunities. It sends a clear message to drivers that path users have priority over traffic.

Where a priority crossing is considered inappropriate, a non-priority ramped crossing should be considered. This arrangement will provide high levels of convenience and safety, although path user priority will not be provided. In reality, observation and use of such crossings shows that the majority of drivers give-way to waiting pedestrians and cyclists.

Side Road Crossings

In some instances, the Thetford Loops will be located on wide shared-use paths adjacent to roads (e.g. London Road). The paths will inevitably have to cross side roads, many of which will be very lightly trafficked or are merely private accesses. All too often the shared-use walking and cycling route loses priority to these minor side roads. It is inappropriate and contrary to mode hierarchy policies (i.e. pedestrians and cyclists first) that path users should be expected to give way at such locations. Cyclists particularly find such routes inconvenient and evidence suggests that where there are no side road crossing measures, it can be safer for cyclists to stay on the carriageway. For this reason, many well-intentioned, but poorly designed shared-use routes are not used, particularly by cyclists, who opt to stay on the carriageway for greater convenience and retained priority.

Thetford Loops should be provided with ramped crossings across side roads. This will encourage drivers to slow down over the ramps and to defer to approaching path users and those waiting to cross the side road – reaffirming the Highway Code guidance to give way to people crossing side roads in these circumstances. A wide variety of crossing arrangements are in use, some offering formal priority (see National Cycle Network Guidelines and Technical Details, Issue 2, p.65, for design drawing) and other designs where path users are expected to give way.

Example of an existing, good specification, ramped, priority crossing on a shared-use path (Bedford)

However, further along the same shared-use path there is no crossing provision (Bedford)

Priority crossing over side road. (Cambridge)

Non-priority crossing over side road. (Cambridge)

Signal Controlled Crossings

Signal controlled crossings can provide extra safety and convenience. Toucan crossings provide both pedestrian and cyclists a controlled signal aspect to cross the carriageway. Puffin and Pelican crossings provide pedestrians only with a crossing aspect and

Where traffic flows are greater than 8,000 vehicles per day and in areas where the speed limit is less than 50mph then a signal controlled crossing should be introduced for the safety and convenience of Thetford Loop users.

Where a cycle route meets a signal controlled junction pedestrians and cyclists can be provided with a dedicated crossing phase incorporated in the traffic signal staging. This type of carriageway crossing operation are well utilised by 'utility' cyclists and is good design practice at signal controlled junctions.

The Minstergate junction in Thetford provides a very useful pedestrian- and cyclist-only link and confers advantage over motorised traffic.

This junction has a dedicated crossing for cyclists and has advanced detection – again, very good practice (Brickhill Drive/Larkway, Bedford)

Toucan and Puffin-style Crossings

Since the majority of routes will be shared-use, a 'Toucan' design is the usual choice, since this allows cyclists to use the crossing without having to dismount. It is a current requirement that new Toucan crossings use 'Puffin' crossing design principles. Such crossings are sometimes referred to as 'Puffin-style' Toucan' crossings. These crossings have detectors and 'near side' crossing indicator lights, unlike the older style 'Pelican' crossings where they are mounted on the opposite side of the crossing. The Puffin design has advantages over the Pelican and therefore 'Puffin-style' Toucan crossings are generally recommended.

It is important to ensure that light controlled crossings respond as soon as possible to demands made to cross when path users press the button. Thus, it should be ensured that the response delay time is no more than 6 seconds, but this may vary according to the location and the road to be crossed. Presumptions in favour of crossing user priority should be made and departures from this should be justified.

Staggered or split crossings are not generally recommended, particularly if cyclists are required to use them. They introduce delay and inconvenience and add exposure to avoidable conflict and danger by adding a second crossing movement when there could only be one.

Signal controlled crossings cost between £40,000 to £60,000, depending on location and other site requirements.

Toucans and other signal controlled crossings are standard, widely used measures. Detailed advice on the design of Toucan crossings is given in LTN 2/95, The Design of Pedestrian Crossings (DoT, 1995). There is a good example of a Toucan crossing in Thetford on the A1066 Hurth Way, associated with the Green Lane route.

Zebra Crossings

Zebra crossings are widely used throughout the UK. They offer considerable convenience and safety benefits to pedestrians, but also to cyclists who, in practice, generally use them in the same way as pedestrians. Technically, of course, cyclists are required to dismount and to push their bicycles over the crossing.

A Zebra crossing usually allows people to cross almost immediately upon their arrival at the crossing. For this reason they are very convenient indeed. How they operate and give priority to crossing users is universally accepted by drivers. Consequently, a Zebra crossing is preferable to a signal controlled one, especially if a raised table can be provided on the crossing. Where it is expected that cyclists will use such a crossing the deployment of 'cyclist dismount' signs may be appropriate.

Zebra crossings can range between £15,000 and £20,000 to install and are therefore considerably cheaper than signal controlled crossings.

'Cycle-zebra' Crossings.

A number of mainland European countries allow the use of zebra-style pedestrian crossings by cyclists. At present it is not unlawful for cyclists to cycle across Zebra crossings within the UK. However, since there is no legal requirement for motorists to give way when they do, encouraging this practice cannot currently be promoted. Where a Thetford Loop naturally brings cyclists to such facilities, wider than normal crossings should be provided and 'Cyclists dismount' signs used.

Protected Refuge Crossings

For crossings of roads like the B1107 Brandon Road, where a 60mph speed limit is in force, light controlled crossings are considered inappropriate. Site-specific designs for protected refuge crossings have been included in this note (Appendix E). Throughout Norfolk, many such crossings are in place to facilitate pedestrian and cycle movements across such relatively busy, higher speed roads.

Protected refuge crossing on a 60mph Principal Road. A148 Sculthorpe, Norfolk.

6. The Travelling Landscape

Thetford Loop users will appreciate environments where consideration has been given to its attractiveness and making it more special and interesting. Since much of the alignment is recreational through wooded areas or out of town, views, attention to detail and use of material can considerably enhance the user's experience.

Unlike when travelling in a car or on public transport, pedestrians and cyclists are much less 'insulated' or removed from their immediate travelling environment. They are more intimately aware of the details of the route and along its edges, and unlike in a car, there is much more inclination and opportunity to stop or slow down to take in better views and other physical aspects. The wildlife, the colours, smells and sounds of the path environment are there to be enjoyed and appreciated. The surprise and delight of coming across unexpected occasional artworks should not be underestimated.

The attractiveness of a route is a heightened consideration for Thetford Loops purposes. Freedom from and proximity to vehicular traffic is another important aspect and alignments should be chosen or created that avoid motorised routes as far as possible.

Along rural sections, of which there are many in the Thetford Loops proposals, the sense of being in the countryside and the view are important. Gaps in hedges or woodland tracks and clearings can open out an otherwise restricted, less interesting corridor. Ensuring that these aspects are considered should be an important part of the path design and implementation stages. Each section of the Thetford Loops should be considered as potentially unique and locally distinctive. Views can be created or accentuated (by removing hedges and other obstacles, and providing seating). Shelters and screens should also be considered.

Existing structures such as bridges can be enhanced and given a 'face-lift' sometimes by very simple and not too expensive measures, possibly introducing associated and much-needed seating. Drainage channels and dykes can be cleared out or better managed to encourage more interesting and diverse wildlife - both flora and fauna.

Association with water is a particularly attractive and alluring environment in which to walk or cycle and path users are inevitably drawn to water wherever it exists. Many sections of the Thetford Loops link to or come into proximity with watercourse: crossing them, going around them or following them.

Opportunities that afford views, access to water and travel alongside water should be considered and made the most of. The route along the Little Ouse River with improvements and extensions to the existing Haling Path along the river should be considered as the key, priority route in the network.

Gateway feature on Cambridge's Millennium Path

Artwork on Peterborough's 'Green Wheel'

7. Design Guidance summary table

Loop Proposal Item	Usage	Design Specification
Cycle track	Rural High	Tar Spray and Chippings Bitumen or Stone Base Single coat of gravel (3-6mm) 50mm DBM (20mm aggregates) OR Single coat of gravel (6mm) 100-150mm Type 1 Granular Material
Cycle track	Rural Low	75mm Self-biding gravel (30mm fines) 100-150mm Type 1 Granular Material
Cycle track	Urban High / Low	Macadam 60mm DBM (20mm aggregates) 100-150mm Type 1 Granular Material
Shared path	Low	Path width = 2.0m (min) Clearance = 0.5m
Shared path	High	Path width = 3.0m (min) Clearance = 0.5m
Cycle Lane	Single lane on-carriageway	Lane width = 1.5m
Cycle Lane	2-way segregated off-carriageway	Each lane width = 1.0m (min) Each lane width = 1.5m (recommended) Clearance = 0.5m
Barriers	All	Static bollard at 1.5m spacing
Advanced stop line	At signal controlled stop lines	Depth = 4.0m (min) Depth = 5.0m (recommended)
Road Crossings	30-30+ mph / high traffic flow	Toucan crossing – width 4.0m (min)
Road Crossings	30-30+ mph / high traffic flow	Signal controlled junction facility
Road Crossings	All road types	Central pedestrian and cycle refuge island Island width 2.0m (min) Island width 3.0m (recommended)
Road Crossings	0-30 mph low traffic flow	Raised table (priority)
Road Crossings	0-30 mph med traffic flow	Raised table (no priority)
Road Crossings	0-30 mph med/low traffic flow	Zebra crossing

8. Order Making and Public Rights of Way

Some of the Thetford Loops identified in this feasibility study require the lawful use by cyclists of what are currently pedestrian-only facilities. Typically these will be existing Public Footpaths or Local Authority Footways. It should be remembered that unless specific provision is made, cyclists are not allowed to ride along either Footpaths or Footways.

The three most common Orders made in respect of cycling facilities are:

- Traffic Regulation Orders (TRO)
- Orders extinguishing vehicular rights over a highway, often used in establishing pedestrian zones
- Footpath conversion Orders and footway conversions

The first two of the above are relatively standard and their operation well-understood. However, this is not always the case with regard to footpath conversions.

Footpath Conversion Orders

These are made under section 3 of the Cycle Tracks Act 1984 and the Cycle Tracks Regulations 1984. An Order is made by the local highway authority (in this case Norfolk County Council) but if there are unwithdrawn objections, the Order has to be confirmed by the Secretary of State – either after a public local inquiry, or as is increasingly happening, a less onerous process known as 'written representations'.

Footpaths are designated Public Rights of Way and are highlighted on the 'Definitive Rights of Way' schedule kept by the local authority. There is often an 'objection in principle' made by the Ramblers' Association to footway conversions since it results in the removal of the public right of way from local definitive maps. Although in reality the right of way and walking facility is retained on the ground, and usually improved for a wider range of path users (including wheelchair users as well as cyclists), this 'removal' from the definitive map is an issue that continues to cause concern since it is seen as a formal loss of a public right of way. This is not the most positive approach, given that pedestrian walking rights and opportunities are generally enhanced rather than curtailed rather enhanced. Nevertheless it is important to be aware of the potential difficulty caused by these form of objections when an Order is advertised.

If there are no objections, or all objections are withdrawn, the Order can be confirmed by the local authority. The Secretary of State will weigh the evidence and either confirm or decline to confirm the Order. It is anticipated that the Thetford Loops routes, since they are included in the local planning aspirations, policies, strategies, etc., would be likely to be confirmed should objections 'in principle' by the Rambler's Association be made.

Other procedures

As well as the procedure under the Cycle Tracks Act 1984, local authorities can convert all or part of a footpath to a cycle track by:

- obtaining planning permission (Town and Country Planning Act 1971) for a new cycle track
- making a stopping up Order under section 209 of the Town and Country Planning Act 1971 on all or part of the footpath
- constructing a new cycle track under section 24(1) of the Highways Act 1980

A compulsory purchase order may be required if the authority does not own the footpath sub-soil.

This report has assumed that £5,000 will cover the cost to the local authority for each Conversion Order promoted. This figure can be reduced of course if conversions are combined. It would be prudent, for example, for the conversion of the entire Riverside Route to be promoted in one operation rather than the four individual sections identified.

Promoted Routes

Some of the footpaths and other rights of way identified form part of 'Promoted Routes". They have all been created by linking existing local footpaths, bridleways and minor roads and by developing new ones where there were gaps. Routes comprising Promoted Routes usually have the status of Public Footpaths or Bridleways

The highest profile promoted routes are the 15 National Trails (Long Distance Route in Scotland). These are nationally recognised trails in England and Wales, designated and managed by the Countryside Agency or the Countryside Council for Wales. They include some of the best-known routes in Britain, passing through some of its most beautiful countryside and areas of great historic interest. They are all well-waymarked using the standard acorn symbol. The nearest such route to the Thetford Loops is the Peddars Way/Norfolk Coast Path.

In addition to the nationally recognised trails, there are many more waymarked routes, usually created with the involvement of local authorities and with the help of local Ramblers Association and other walking groups who work voluntarily to waymark, maintain and describe the routes. There is an enormous variety of these paths, from short health walks and urban 'green chains' to lengthy cross-country treks of several hundred kilometres. Each is waymarked with its own logo or the name of the route, though standards of waymarking and format and availability of leaflets and guidebooks vary enormously. They are generally managed by the local authority's Rights of Way team *.

There are three long-distance waymarked promoted routes in and around Thetford: St Edmund Way, Hereward Way and Icknield Way Path. These are clearly indicated on the relevant OS Explorer Map (229). They have also been indicated, where appropriate on data sheet location plans.

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