Horsford Transport Master Plan

Methodology and Masterplan

Project related

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1: Introduction



1 Introduction

Horsford Parish Council has commissioned Royal HaskoningDHV to prepare a Transport Master Plan for the village, with the aim of creating a place that residents can feel proud to live in and feel safe travelling around on foot and by bicycle. This exercise is informed by work undertaken by the Parish Council and by transport specific concerns raised during a residents' consultation carried out in June 2021

This report presents the Draft Transport Plan for Horsford, along with the associated Master Plan. Appended to this report, details are provided of the methodology employed to generate the Transport Plan.

Through discussions with the Parish Council, road safety matters were seen to be of principal concern, and therefore the methodology draws on a range of techniques to inform the Policy and Master Plan.

Public Consultation was carried out by the Parish Council. While the issues identified have not been scrutinised in detail the themes arising have been used to inform prioritisation of measures in decision making in the development of the Transport Policy.

iRAP Star Ratings Assessment has been used to generate an objective evidence base with respect to road safety for all road users. Focusing on the main routes with typical speeds greater than 30mph, this assessment has been used to identify appropriate targets and desired outcomes of the Transport Policy.

Stakeholder Engagement has played a significant part in developing the Policy. As well as discussions and a workshop with the Parish Council, discussions and meetings have been held with Norfolk County Council (NCC) with respect to road safety and the Western Link proposal, and also with officers at Broadland District Council.

This document is structured as follows:

Section 1: The Horsford Transport Master Plan.

Supporting Appendix

Section A: A review of the Horsford Transport Survey consultation responses.

Section B: A review of the existing facilities within Horsford.

Section C: The findings of the iRAP Assessment on the existing situation within Horsford

Section D: A summary of the proposed improvement measures.

Section E: Findings of the iRAP Assessment on the proposed improvement measures

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2: Horsford Transport Plan



1 Policy Context

Horsford Neighbourhood Plan 2018 – 2038 sets a Vision for the village to be "a sustainable place where people want to live and work into the future."

Horsford Neighbourhood Plan 2019 – 2038

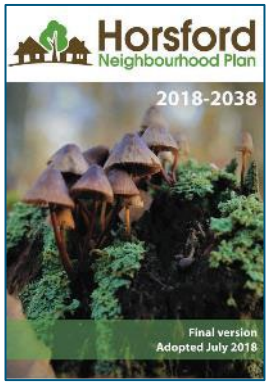
The Vision for the Neighbourhood Plan is linked to objectives and policies relating to the community, transport, housing, business, and the environment. Objectives relevant to this Transport Policy include:

To provide and encourage safe walking, cycling and the use of public transport within and beyond Horsford parish (Policies TRA1 Walkable and bikeable community, TRA2 Public transport).

To provide adequate private and public parking (Policies TRA3 and TRA4 relating to the provision of private and public car and bike parking).

To improve and provide a high quality public realm in the village (Policies ENV5 and ENV6 relating to the rural nature of the village, and provision of street lighting).





Wider Transport Policy Context

At a national level, transport policies and strategies relevant to this work include:

The National Planning Policy Framework 2021 – identifies the obligation for sustainable development.

The National Model Design Code 2021 – details the means by which "beautiful" streets should be provided in new development.

Transport Decarbonisation Plan 2021 – identifies a target for half of all journeys under 3 miles in length to be made by bike or walking by 2030.

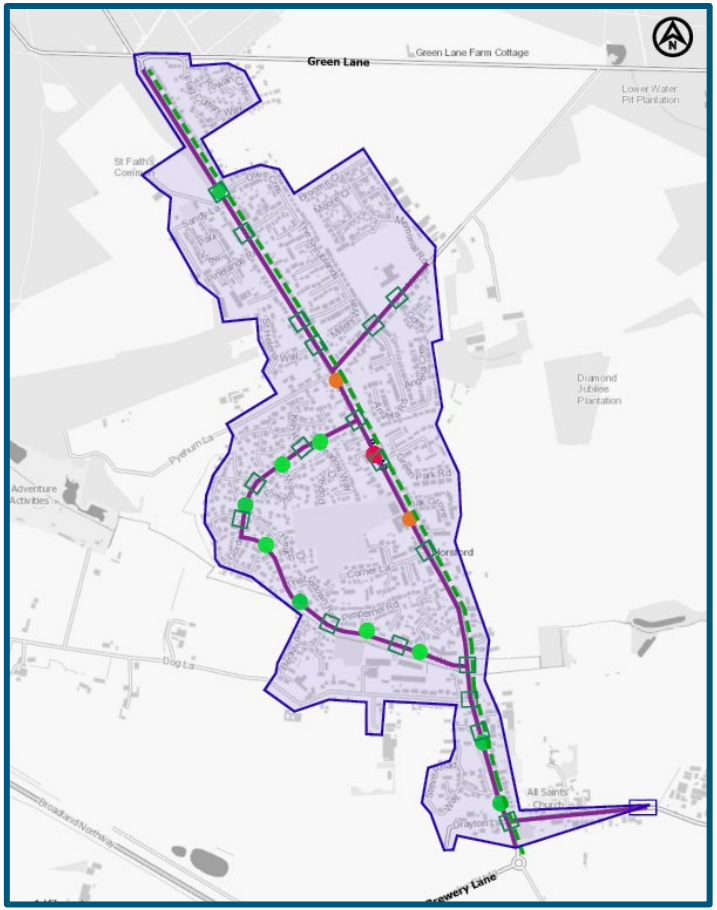
NCC Local Cycling and Walking Plan – identifies the extension of the Yellow Pedalway to connect Horsford with the city centre

Horsford Transport Plan

The aim of Horsford Parish Council is to prepare a Transport Plan which would support the cultivation and growing sense of a village environment. The Transport Plan would be based upon the following key principals, aimed at improving the environment within the village for non-motorised road users including pedestrians and cyclists.

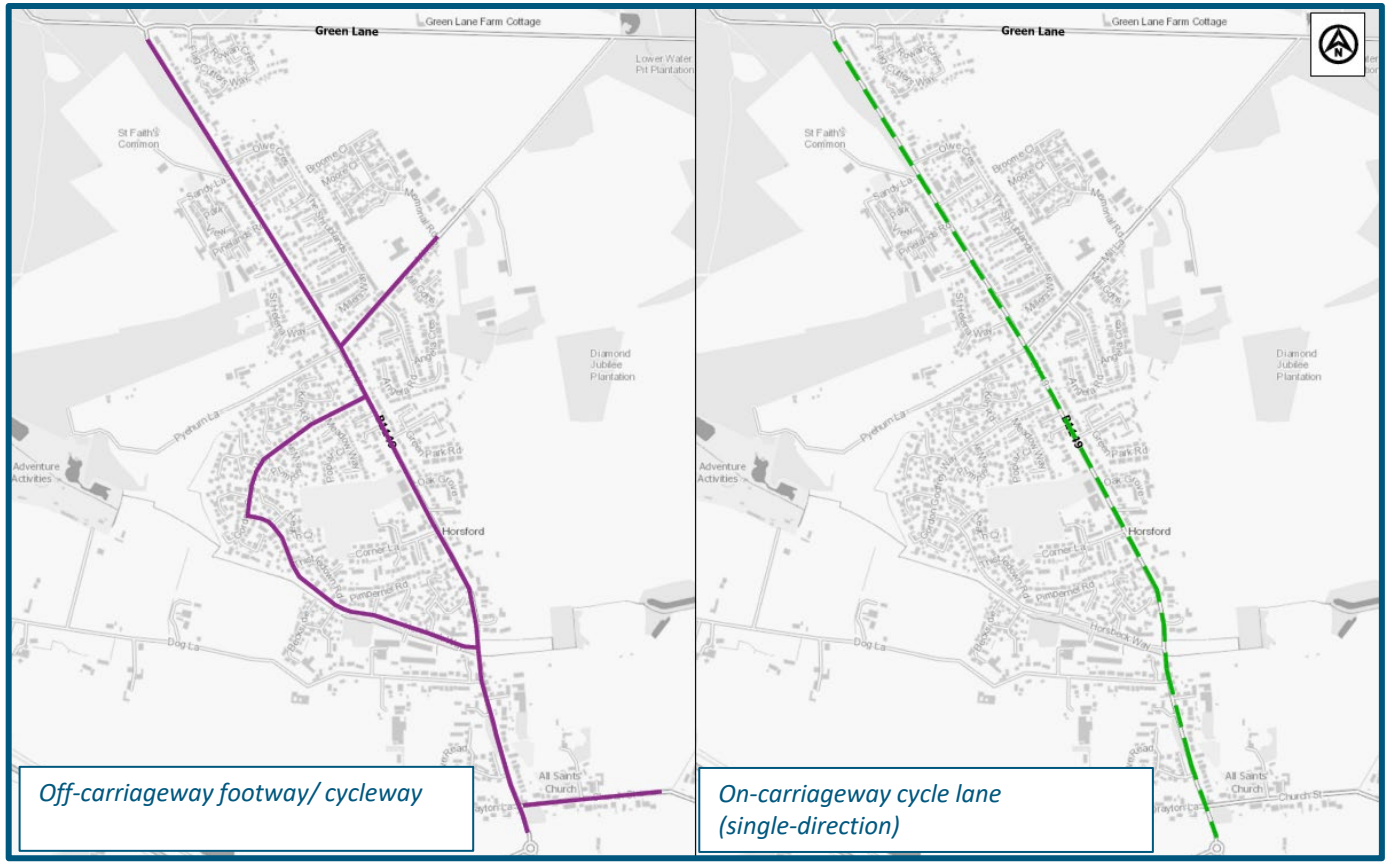
1. Walking and cycling must be provided for by infrastructure which has a high level of intrinsic safety.
2. The roads and streets in the village should be designed so that pedestrians and cyclists of all ages and abilities feel safe moving through the village.
3. All roads within Horsford should have an iRAP 5* rating for pedestrians and cyclists, unless there are specific design constraints that result in a short section of less than 5* on an otherwise long and high Star Rating route.
4. All roads within the built-up area should be a 4* rating for all motorised users (vehicle occupants and motorcyclists). This prioritisation of users in design terms reflects the high level of safety afforded vehicle occupants by their vehicle's safety features and the more vulnerable nature of people walking and cycling.
5. Holt Road improvements are to be primarily sought via the NDR Western Link to help mitigate the impact of the reassigned traffic which is anticipated to result from those proposals, particularly on pedestrians and cyclists.
6. The improvements to key side roads and segregated walking and cycling routes will be delivered primarily by the Parish Council and/ or future developments where those developments could foreseeably (in planning terms) result in changes in pedestrian or cycling levels on those routes.
7. Future developments in Horsford will be asked to demonstrate how the iRAP outcomes will be supported by their proposals through their Transport Assessments or similar submissions.

Horsford Transport Master Plan



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Potential Pedestrian/ Cycle Route Improvements



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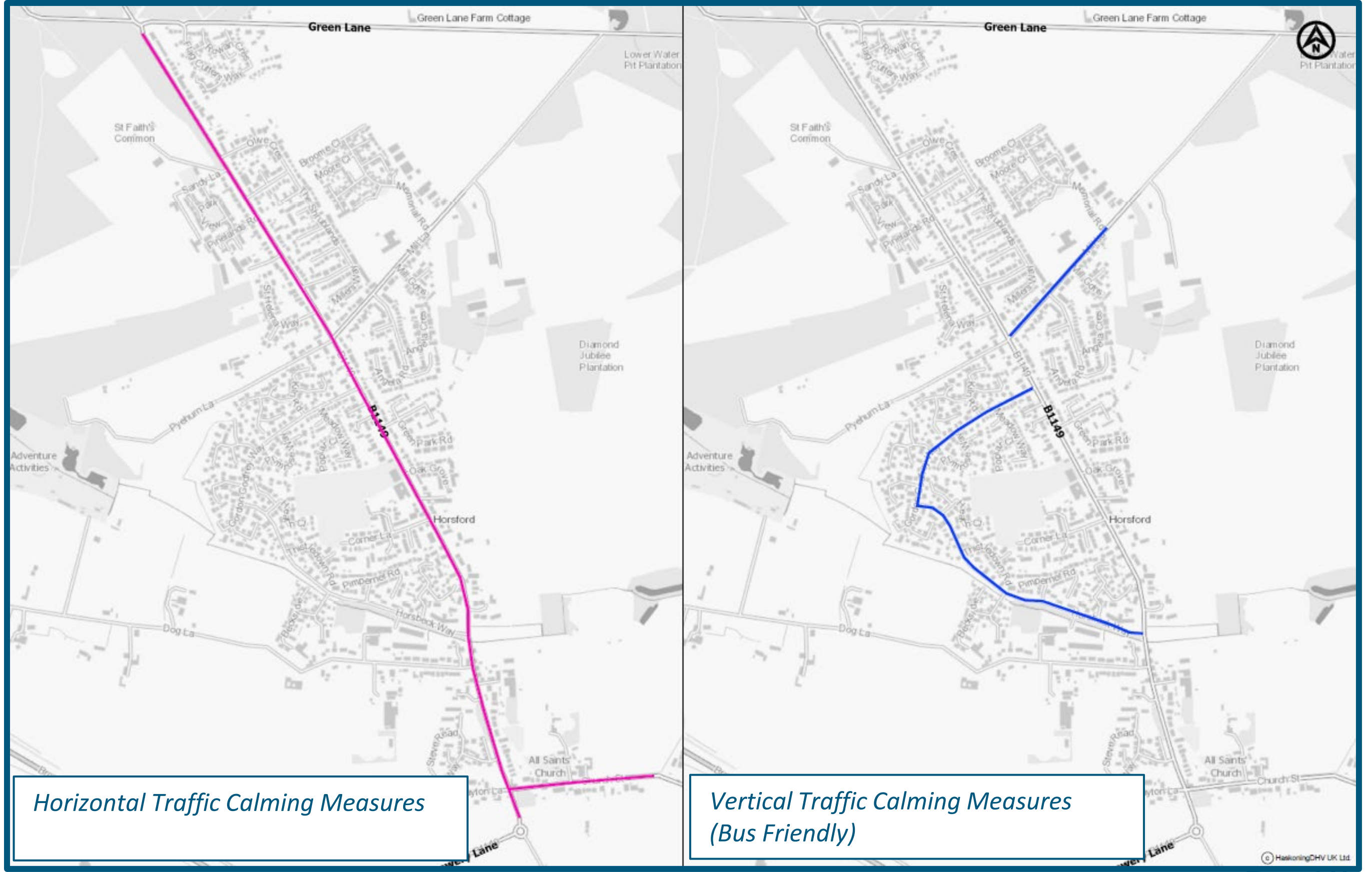
Potential Uncontrolled Raised Crossing Locations



Potential Controlled Pedestrian/ Cycle Crossing Locations



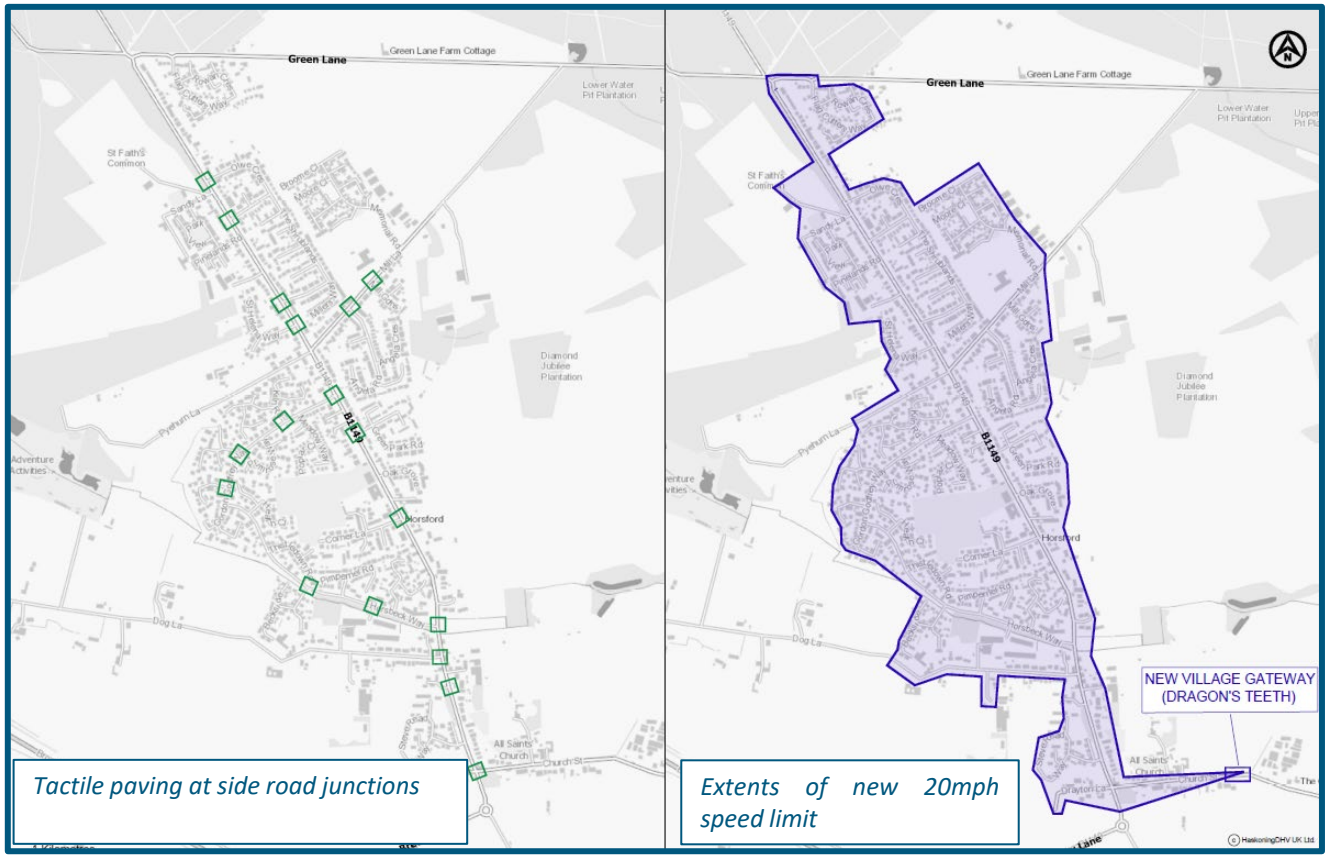
Potential Horizontal and Vertical Traffic Calming Extents



Horizontal Traffic Calming Measures

Vertical Traffic Calming Measures (Bus Friendly)

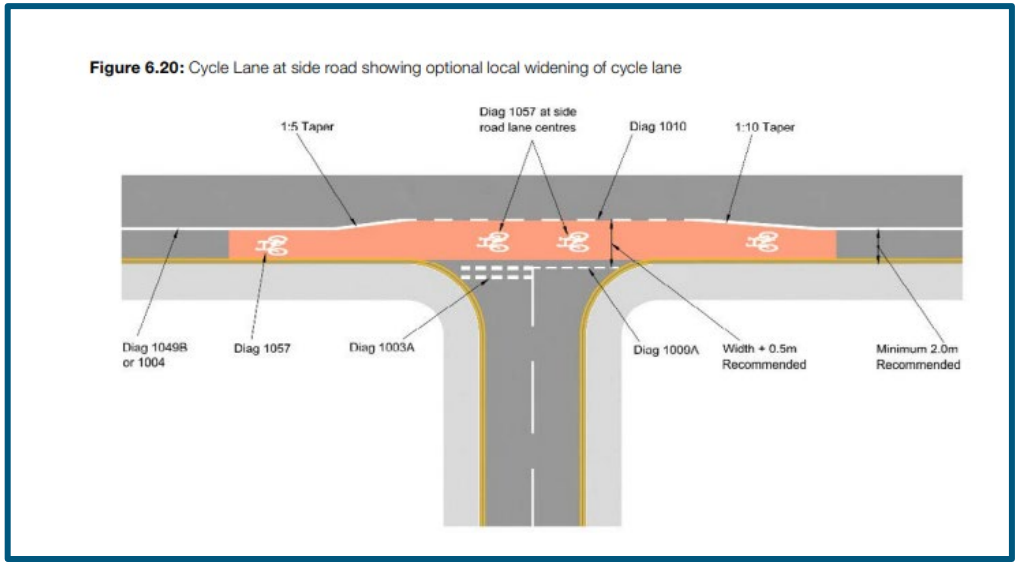
Potential Pedestrian Improvements and New 20mph Limit Extents



Examples of on-carriageway Cycle Lane Design



Example of an on-carriageway cycle lane crossing a side road junction (London Borough of Waltham Forest). In some locations the cycle lane is further designated using coloured surfacing.



Design example of an on-carriageway cycle lane crossing a side road junction *(taken from LTN 1/20 Cycle Infrastructure Design, published by Department for Transport – July 2020)*

Examples of Pedestrian/ Cycle Crossing Facilities



Toucan crossing in Peterborough



Light Cyclist Segregation in Norwich

Examples of 'Light Segregation' for On-Carriageway Cycle Lanes



Parallel pedestrian/ cycle crossing in London Borough of Waltham Forest



'Armadillos' in Birmingham

Examples of Cycle Parking



'Sheffield stands' style cycle parking in Peterborough



Secure, covered cycle parking in Walthamstow

Examples of tactile Paving



'L' shaped tactile paving at a controlled crossing in March



Tactile paving at an uncontrolled crossing in Manchester

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Supporting Appendices



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A: Horsford Transport Survey



Horsford Transport Survey

In June 2021, residents of Horsford were invited to complete a Transport Survey. The survey asked residents what they considered to be the most important transport issues. The survey was carried out electronically, using Survey Monkey and also in hard copy.

The key survey questions were:

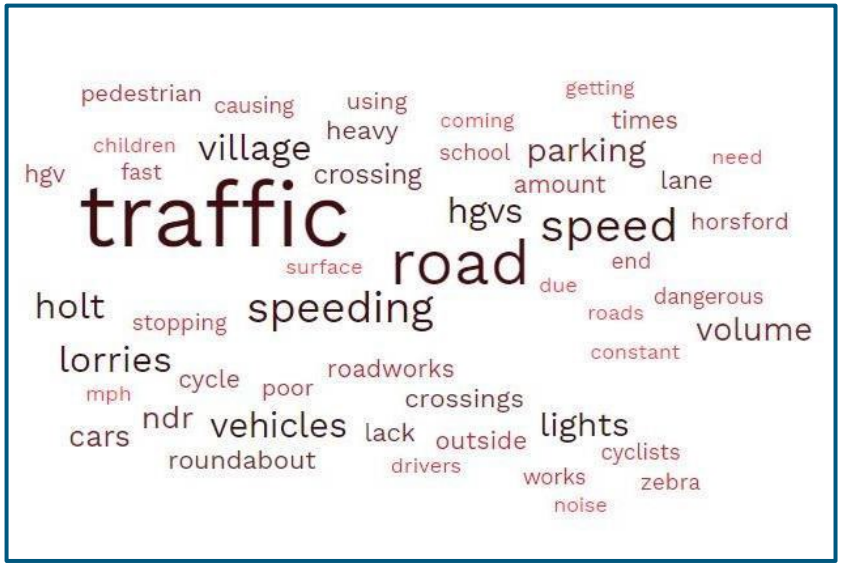
- ‘What do you think are the main transport issues on the Holt Road (as a driver, pedestrian, cyclist of bus user)?
- What are the main issues that concern you on your road and the roads that surround where you live?

Residents were also asked how easy, or otherwise, is it to get in and out of the village at peak times and also whether Church Street should be left turn only (onto the Holt Road) for drivers?

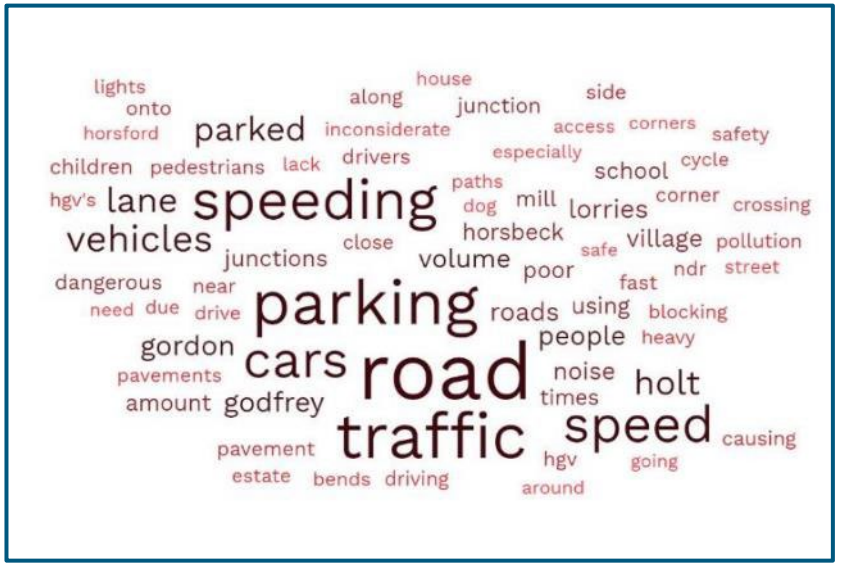


Horsford Transport Survey Results

Question 1 – What do you think are the main transport issues on the Holt Road?



Question 2 – What are the main issues that concern you on your road and the roads that surround where you live?



Horsford Transport Survey Results

Question 1 – What do you think are the main transport issues on the Holt Road?

Top Five Answers

1. Speeds
2. HGVs
3. Volume of Traffic
4. Pedestrians and pedestrian crossings
5. (Temporary) Traffic lights

Question 2 – What are the main issues that concern you on your road and the roads that surround where you live?

Top Five Answers

1. Speeds
2. Parking
3. HGVs
4. Volume of Traffic
5. Condition of roads and paths



Horsford Transport Survey

As well as transport specific comments, the survey responses showed that residents have a desire to:

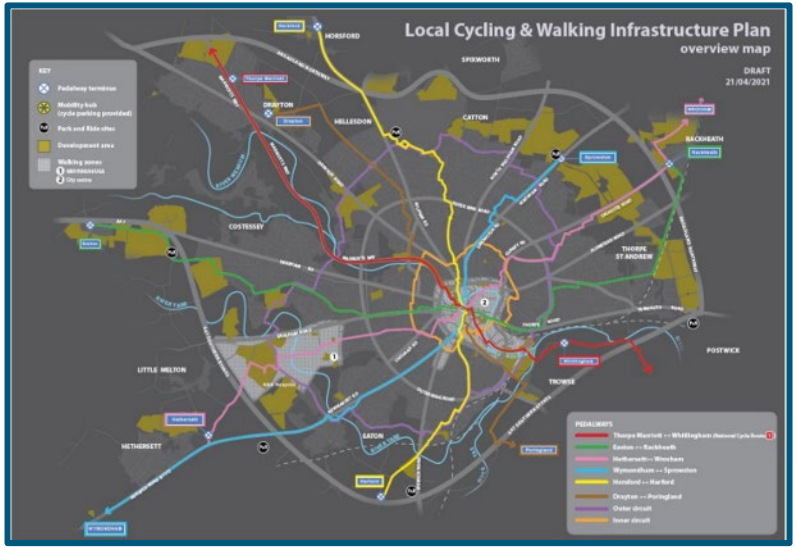
- Make Horsford feel like a village
- Create somewhere that people can feel proud of in its appearance
- Reduce the level of threat experienced by people in the village due to heavy traffic or anti-social behaviour



Horsford Transport Survey

*The results of the Horsford Transport Survey have been considered in context with following current and emerging **national**, **regional** and **local** transport policy*

- Net Zero Strategy (National UK Government)
- DfT Gear Change (and associated design guide)
- DfT Decarbonising Transport Plan
  - Requires half of all local trips to be made by bicycle by 2030
- Joint Health and Wellbeing Strategy (2018-2022) – Health and Wellbeing Board for Norfolk and Waveney
- Norfolk Delivery Plan
- Norfolk Cycling and Walking Strategy (2017)
- Norfolk Access Improvement Plan (2019-2029)
- Local Transport Plan 4 (2021-2036) - emerging
- Greater Norwich LCWIP



Source: NCC LCWIP

Horsford Transport Survey

The Horsford Transport Policy and associated Master Plan will address residents' concerns relating to vehicle speeds, parking and feelings of being unsafe whilst walking and cycling.

Speeds – a reduction in speed limit is only effective where road users are **compelled** to reduce their travelling speeds. A combination of **traffic calming measures** are recommended to compel road users to reduce their speed when travelling through the village.

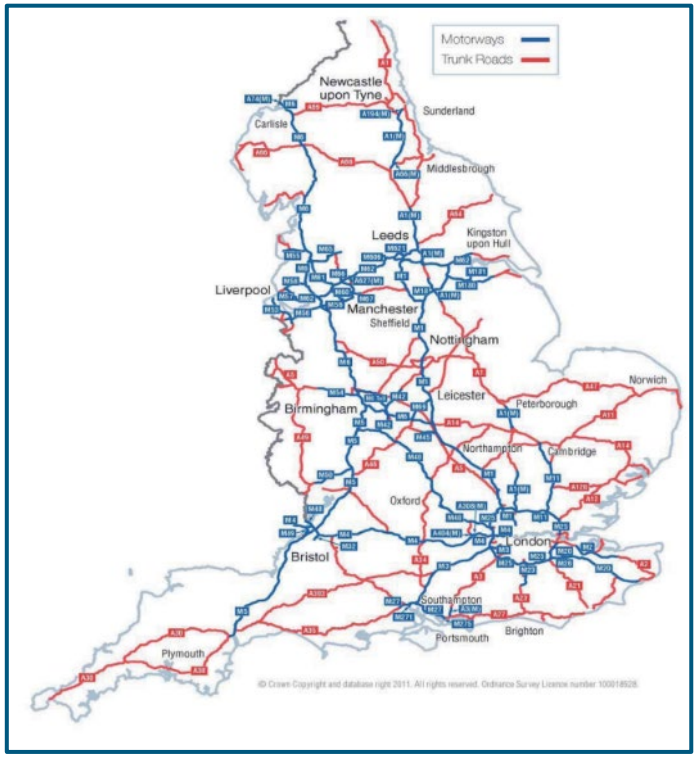
Parking – the survey responses in Question 2, indicate that there is a **significant level** of car parking associated with school/ nursery pick-up/ drop off and outside local shops.

Improving the walking and cycling **environment** within the village is likely to lead to a **reduction in short-distance car trips**, including those associated with school/ nursery drop-off and pick-up. In turn, this will lead to a **reduction in on-street car parking**, thereby further improving the walking and cycling environment.



Horsford Transport Survey

All roads in the UK have a ‘functional hierarchy’.



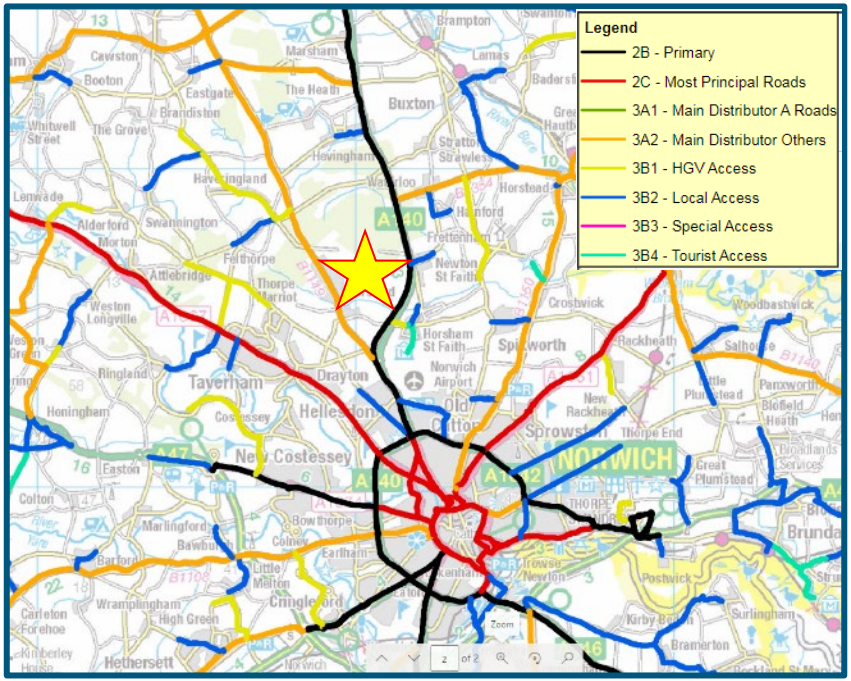
Source: Safety Framework for the Strategic Road Network 2011



Source: https://maps.dft.gov.uk/major-road-network/index.html

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Roads Hierarchy



*https://norfolk.citizenspace.com/consultation/highwaymaintenance/user_uploads/transport-asset-management-plan-full-document.pdf

'A' roads provide **large-scale transport links** between or within areas.

'B' roads (i.e. Holt Road) are intended to **connect areas** and to feed traffic between 'A' roads and smaller roads within the network.

'C' roads (i.e. Church Street) connect 'A' and 'B' roads, often **linking villages** to the rest of the network.

'Unclassified' roads are local roads intended for **local traffic** (i.e. Gordon Godfrey Way/ Horsbeck Way).

B1149 Holt Road is a **'Main Distributor, others'** within NCC's 'Transport Asset Management Plan'*.

This classification designates the Holt Road as a **suitable and appropriate** HGV route.

For this reason, there is no scope to delimit or divert HGVs from using Holt Road as it passes through Horsford. The Master Plan will therefore need to consider what measures could be put in place to reduce the effects of heavy traffic on people, and particularly on people who are walking or cycling.

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B: Review of Existing Facilities



3 Existing Walking and Cycling Facilities

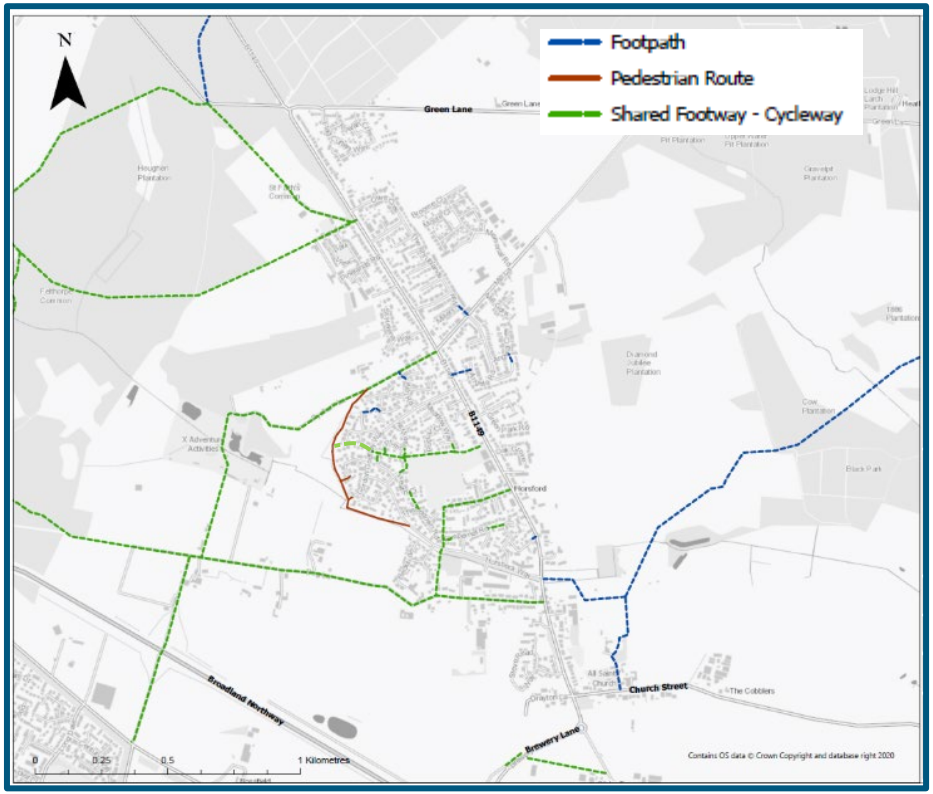
A review of the existing walking and cycling facilities was carried out on site and using survey footage.

Different levels of provision and quality of facility was observed throughout the village.

Zebra crossings are present on Holt Road and Mill Lane and two refuge-only crossings are situated on Holt Road to the north of Church Street/ Drayton Lane.

There are no pedestrian crossing facilities on Gordon Godfrey Way, Horsbeck Way and Church Street.





Existing Walking and Cycling Facilities within the Village



Shared footway/ cycleway (Corner Lane)



Shared footway/ cycleway (Horsbeck Way)



Shared footway/ cycleway (to Coltsfoot Road)

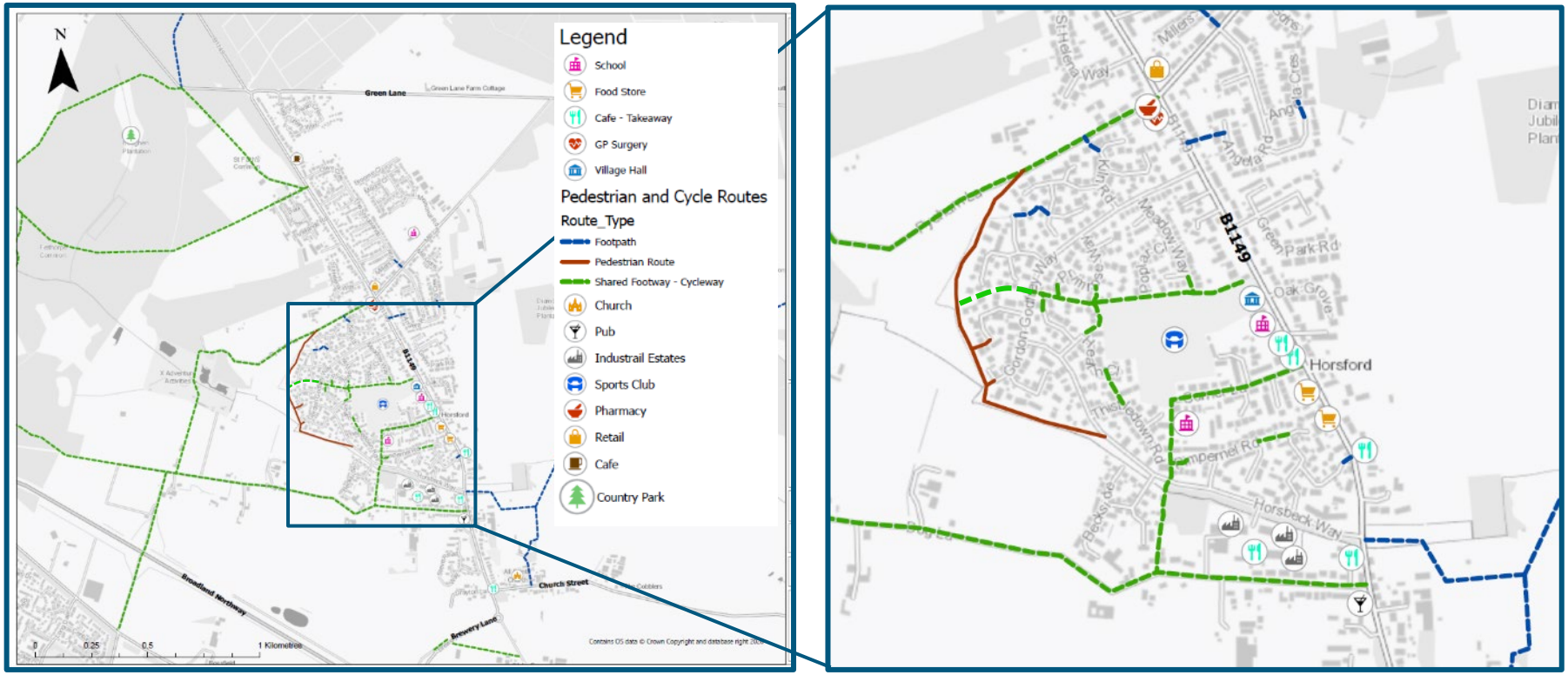


Narrow footway (Holt Road)



Narrow footway (Holt Road)

Access to Local Amenities



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C: iRAP Assessment (Existing Situation)



iRAP Assessment (Existing Situation)

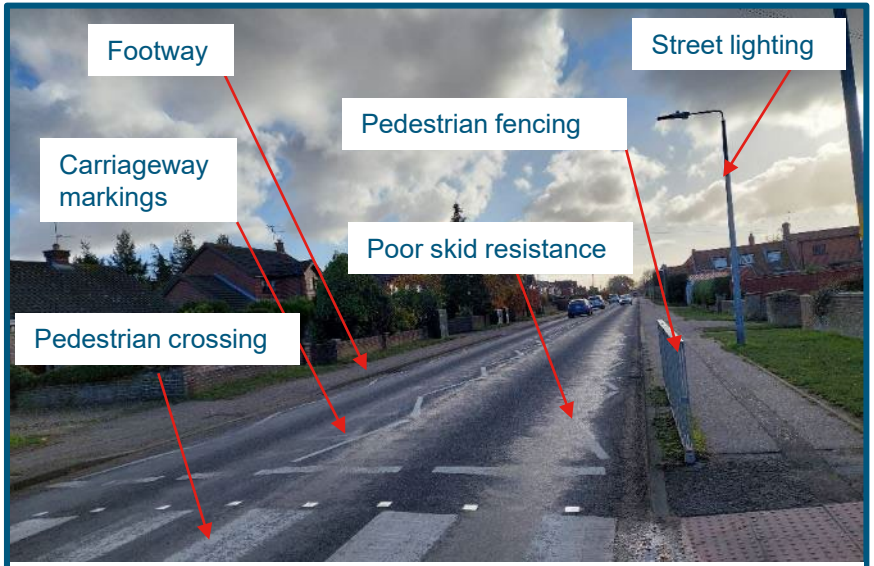
The International Road Assessment Programme (iRAP) is a tool to support making roads safer for all road users. The assessment works by assessing the physical condition of existing road infrastructure, taking into account specific road attributes to create 'Star Ratings' for each road user.

The assessments are based upon the 'Star Rating' road survey methodology which doesn't rely on detailed crash data but works directly from road surveys. 'Star Ratings' are an objective measure of the level of safety 'built-in' to the road for vehicle occupants, motorcyclists, bicyclists and pedestrians.

Although iRAP has been used by National Highways and the Road Safety Fund, use of the programme is still limited so far in the UK. It is however, used a lot overseas. iRAP allows consideration of sections of highway, not simply single locations.

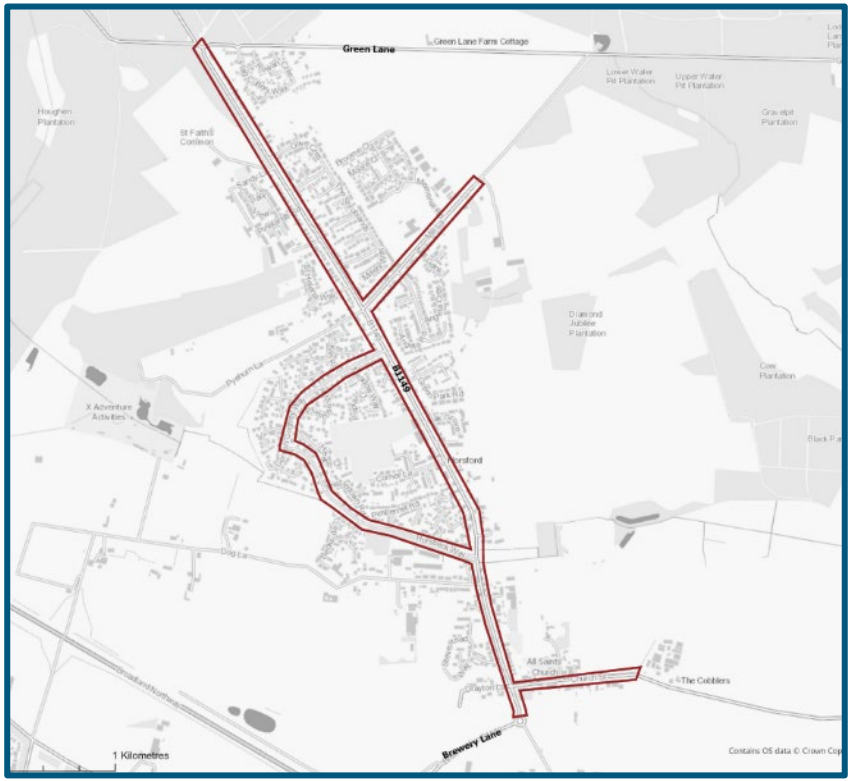
The 'Star Ratings' take into account specific road attributes which impact safety for individual road user types (pedestrians, bicyclists, motorcyclists and vehicle occupants).

Undertaking a baseline assessment of the existing infrastructure and road users is a crucial to understanding the intrinsic safety of the environment in which people move around and through the village.



Example of attributes considered as part of the iRAP Assessment

Horsford iRAP Assessment (Existing Situation)



The existing situation within Horsford was assessed, based on surveys carried out in November 2021.

- The iRAP assessment study area comprised:
  - B1149 Holt Road
  - Mill Lane
  - Church Street
  - Gordon Godfrey Way/ Horsbeck Way

In addition to the video surveys, the assessment team collected speed data, pedestrian and bicyclist flows and measured carriageway widths.



Horsford iRAP Assessment (Existing Situation)

The assessment team identified key ‘attributes’ from the videos and photographs collected during the survey.

The attributes included items such as:

- Roadside hazards (trees/ signs/ walls)
- Pedestrian/ bicyclist facilities
- Type of pedestrian crossing facilities
- Quality of carriageway markings/ signage/ carriageway surfacing

The ‘attributes’ were coded into the iRAP software which calculated a Star Rating for each 100m section of each road within the study area



Zebra crossing on the Holt Road (near Mill Lane)



Vehicle parking and street lighting on Gordon Godfrey Way



Absence of footway and roadside hazards on Church Street

Horsford iRAP Assessment (Existing Situation)



Horsbeck Way (near Industrial Estate)



Church Street (west of church)



Mill Lane (looking north towards school)



Holt Road (looking south)



Gordon Godfrey Way (looking west)

Horsford iRAP Assessment (Existing Situation)

Star Ratings involve an inspection of specific attributes that are known to have an impact on the likelihood of a crash and its severity.

A Star Rating (between 1 and 5) is awarded depending on the level of 'built-in' safety of the road.

The **safest roads** (those which are awarded a 4 or a 5 Star Rating) have attributes which are **appropriate** for the prevalent traffic speeds.

The least safe roads (those with 1 and 2 Star Ratings) do not have attributes which are appropriate for traffic speeds.

Safe roads may include good provision for pedestrians and bicyclists such as footways, bicycle lanes and pedestrian crossings, clear, consistent carriageway markings and good junction design.

Less safe roads are likely to have poor carriageway markings, unprotected roadside hazards and do not adequately accommodate pedestrians and bicyclists.

Attributes within the study area were recorded over 100 metre sections. The 'worst case' attribute was selected for inclusion within the programme. For example, if a footway was present for 90m but absent for the final 10m of the section, the attribute selection would be recorded as 'no footway'. This ensures that the assessment is robust, taking into account the intrinsic safety of the section.

When considering the specific road user groups, the iRAP software also takes into account **observed behaviour**. For example, the number of pedestrians crossing the road within any given 100m section would be recorded and input into the programme, or the number of bicyclists observed within the section.

The assessment programme then identifies the intrinsic level of safety based upon the hazards (attributes) identified, traffic flows and speeds, and the number of pedestrians and bicyclists recorded, providing a 'Star Rating' for these user types.





iRAP Assessment – Holt Road Star Ratings (Existing)



















iRAP Assessment Mill Lane – Star Ratings (Existing)





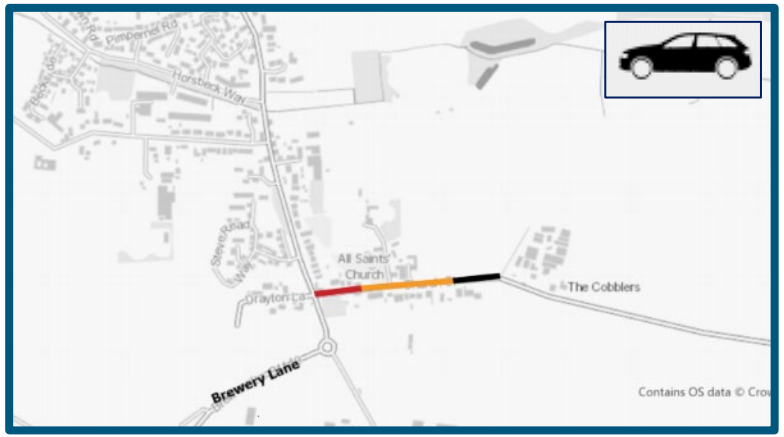


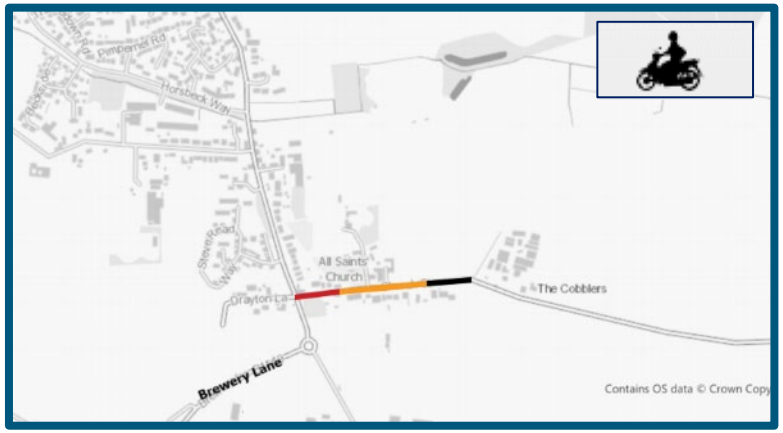


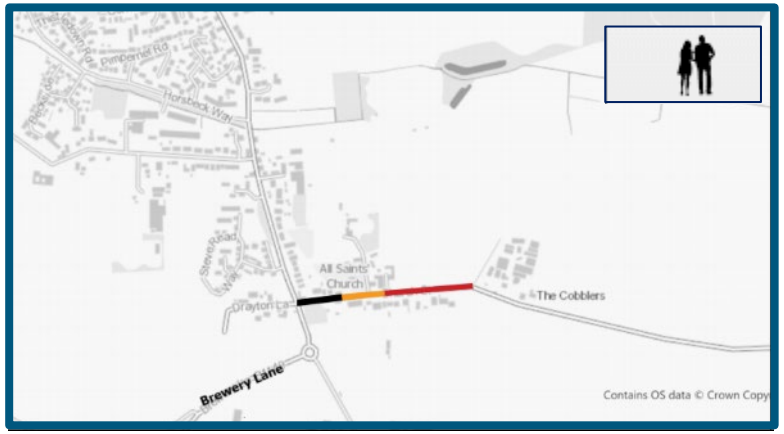


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iRAP Assessment Church Street – Star Ratings (Existing)











iRAP Assessment Gordon Godfrey Way/Horsbeck Way– Star Ratings (Existing)











iRAP Assessment - Existing Network: Star Ratings – ‘Before’

Star Ratings by Road User				
3 Star or Better	91.48%	85.10%	74.47%	93.61%
5 Stars	0.00%	0.00%	4.26%	6.38%
4 Stars	31.91%	25.53%	34.04%	23.40%
3 Stars	59.57%	59.57%	36.17%	63.83%
2 Stars	6.38%	10.64%	23.40%	6.38%
1 Star	2.13%	4.26%	2.13%	0.00%
Not Applicable	0.00%	0.00%	0.00%	0.00%

The image shows the ‘Star ratings’ for each road user (vehicle occupants, motorcyclists, pedestrians and bicyclists) for the entire network studied.

The ‘Star Ratings’ achieved represent the existing infrastructure and user environments for the network studied.

The image indicates that none of the study area was rated 5* for vehicle occupants and motorcyclists, with 2.13% and 4.26% rated as 1* respectively. These sections are on Church Street and on the Holt Road immediately north of the Brewery Lane roundabout.

Anecdotal evidence suggests that there is a high level of ‘perceived danger’ on Church Street which is ‘backed-up’ by the ‘star ratings’.

iRAP Assessment Findings

In summary, iRAP shows a disparity between the Star Ratings for vehicle occupants and the Star Ratings for other users, and it is likely that this difference in danger is perceived.

This disparity in Star Ratings combined with the way Horsford looks and feels at present creates a barrier to residents moving safely around the village. Barriers include a lack of appropriate pedestrian crossing facilities, narrow footways and an absence of consistent cycle facilities. The unsafe feel of the village is likely to be as a result of traffic flows, composition and speeds.

As a result, focussing on ways to materially change the safety with respect to pedestrians and bicyclists is likely to help change how people feel as they move around the village.

The key aims of the iRAP assessment at this stage was to identify improvements which would result, primarily, in a safer environment for pedestrians and bicyclists within the village.

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D: Potential Master Plan Measures



Potential Improvement Measures

Following the initial iRAP assessment, and in order to improve walking and cycling within the village the following improvement measures were considered:

- Provision of shared footway/ cycleway along all roads
- Provision of an on-carriageway cycle lane (potentially in one direction, with the shared use path in the other direction)
- Traffic calming (mix of vertical and horizontal calming measures)
  - Vertical traffic calming measures would need to be bus-friendly
  - Horizontal measures could be priority ‘give and take’
- Improvements to existing pedestrian crossings
- Provision of a new signalised Toucan/ Puffin crossing on Holt Road close to Gordon Godfrey Way to cater for pedestrians and cyclists
- Provision of new crossings on Gordon Godfrey Way and Horsbeck Way
- Tactile paving, and dropped kerbs where absent, at junctions with side roads
- Reduction in speed limit from 30mph to 20mph

These potential measures also seek to address the residents’ concerns relating to pedestrian and bicyclist safety.

Potential Improvement Measures

The following measures would seek to improve the cycling environment within the village and enhance the village feel of Horsford.

- **Improve cycle connectivity** throughout the village
  - Connect the residential areas with the key amenities within Horsford
  - Link up with existing cycle routes outside of the village – including routes towards Norwich
  - Provide additional cycle parking at key locations within the village
  - Improve the condition of existing cycle infrastructure
- Increase the **'village feel'** of Horsford
  - Introduce landscaping within public areas
    - Street trees
    - Planters
    - Benches
- Include bespoke features which have meaning for the people of Horsford
- Enhance the sense of community and pride in the village

Potential Measures – Holt Road

The following potential measures could be applied along the full length of Holt Road.

- Shared footway/ cycleway adjacent to the carriageway
- On-carriageway cycle lane (potentially in one direction, with the shared use path in the other direction)
- Localised carriageway width reduction
- Traffic calming (horizontal calming measures – priority ‘give and take’, pinch points)
- Reduction in speed limit from 30mph to 20mph



Example of cycle lane treatment at a bus stop in Norwich



Example of a flat topped speed table in Norwich

Images from Google streetview

Potential Measures – Holt Road

The potential measures described below would improve the safety of non-motorised users on Holt Road

- Conversion of existing Zebra crossings to raised Zebra crossings (potentially with parallel cycle crossing)
- Conversion of existing refuge only crossings to raised unmarked crossings with associated carriageway width reduction
- Provision of new signalised crossing on Holt Road close to Gordon Godfrey Way to cater for pedestrians
  - The provision of a signalised crossing recognises that there are some groups who do not feel safe using the existing Zebra crossings
  - Not all pedestrians will need to use a signalised crossing
  - The location of the new signalised crossing will not cater for the majority of people wanting to cross Holt Road along the whole of its length but it will provide a safer option for people who may prefer not to use unsignalized crossings
  - Providing a Puffin crossing would reduce the potential for driver frustration as if the pedestrian crosses in a gap, the signal is cancelled and traffic will not be stopped
  - Tactile paving at junctions with side roads to facilitate safer and more inclusive pedestrian crossing movements at junctions

Potential Measures – Mill Lane

Potential measures to improve the environment for road users on Mill Lane could include the following

- Provision of a shared footway/ cycleway adjacent to the carriageway
- Vertical calming measures such as sinusoidal speed humps
- Tactile paving at junctions with side roads to facilitate safer pedestrian crossing movements at junctions
- Reduction in speed limit from 30mph to 20mph



Example of a flat topped speed hump



Example of speed cushions

Potential Measures – Church Street

The following potential measures could be applied along Church Street from the junction with Holt Road to the change to national speed limit

- Extension of the existing footway to the east, providing a continuous shared footway/ cycleway along Church Street for approximately 400m
- Horizontal calming measures – priority 'give and take'
- Tactile paving at the junction with Holt Road to facilitate safer pedestrian and bicyclist crossing movement
- Reduction in speed limit from 30mph to 20mph
- Provide a village gateway feature



'Dragon's Teeth on approach to village gateway in Otford, Kent



Chicane with cycle bypasses in Kings Lynn, Norfolk

Potential Measures – Gordon Godfrey Way/ Horsbeck Way

The following potential measures could be applied along Gordon Godfrey Way/ Horsbeck Way.

- Shared footway/ cycleway adjacent to the carriageway
- Traffic calming (mix of bus-friendly vertical and horizontal calming measures)
- Raised table crossings where the shared footway/ cycleway either crosses or connects to the highway
- Tactile paving at junctions with side roads to facilitate safer and inclusive pedestrian crossing movements at junctions
- Reduction in speed limit from 30mph to 20mph



Flat topped speed hump, Manchester



Flat topped speed hump, Peterborough

Royal HaskoningDHV
Enhancing Society Together

D: iRAP Assessment (with Master Plan Measures)



Holt Road iRAP Assessment – Star Ratings (with Master Plan)



















Mill Lane iRAP Assessment – Star Ratings (with Master Plan)











iRAP Assessment Church Street – Star Ratings (with Master Plan)











iRAP Assessment Gordon Godfrey Way/ Horsbeck Way – Star Ratings (with Master Plan)











Star Ratings with Master Plan

Star Ratings by Road User				
3 Star or Better	101%	100%	100%	100%
5 Stars	98.87%	95.74%	95.74%	100.00%
4 Stars	2.13%	4.26%	4.26%	0.00%
3 Stars	0.00%	0.00%	0.00%	0.00%
2 Stars	0.00%	0.00%	0.00%	0.00%
1 Star	0.00%	0.00%	0.00%	0.00%
Not Applicable	0.00%	0.00%	0.00%	0.00%

- The image shows the ‘Star ratings’ for each road user for the entire network studied.
- The ratings shown include the impact of the recommended improvements combined with a reduction in the speed limit to 20mph with full compliance from road users.
- More than 95% of the network scores a 5* rating for all road users following the reduction traffic speeds.

Annual Collision Reduction

The iRAP assessment tool calculates the impact of potential improvements on the number of crashes (per year) that could be expected on the network studied.

The table below summarises the impact of the potential measures described previously within this report on the number of road users who could be killed or seriously injured per year

Number of Fatal and Serious Injuries					Total
Existing Situation	0.3	0.3	0.5	0.3	**1.4**
Proposed Countermeasures Only	0.3	0.2	0.3	0.2	**1.0**
Countermeasures plus 20MPH speed limit	0.1	0.1	0.1	0.1	**0.4**