# A44 Oxford Street, Woodstock

# Pedestrian Safety Enhancement Measures, Evaluation Report

## April 2021

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Prepared for: Oxfordshire County Council (OCC)

Project Ref: WODC-ER

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# 1. Introduction

## 1.1 Background

This report describes a design investigation undertaken on the A44 Woodstock to develop feasibility options to enhance pedestrian perceptions of safety along the route and to incorporate speed reduction measures as appropriate. At the request of Woodstock Town Council the investigation was commissioned by the client, Oxfordshire County Council, who appointed Traffic & Road Safety - Infrastructure Operations to develop design feasibility options. The area under consideration extends between the North & South gateway features into Woodstock. Figure 1.1.


**Figure 1.1 – Location Plan**

## 1.2 Accident Records

There have been eleven reported accidents within this location in the previous five years. Records indicate them to be as the result of driver error with no attributable cause to either road geometry or associated aspects. Figure 1.2.

**Figure 1.2 – Recorded Accident Locations**

## 1.3 Scope of Work

All existing measures of the 2.5km section of the A44 through Woodstock, affecting or influencing driver or pedestrian behaviour are to be assessed and where appropriate, retained and integrated within feasibility design proposals. Final report and detail design proposals to be presented to the Client.

# 2. Methodology

Quantify and assess existing features and measures that may directly affect user behaviour in terms of vehicle speed and perceived pedestrian safety. Identify any restrictions and develop design feasibility options within appropriate design standards, guidance and relevant OCC policies. Incorporate or replace existing measures as appropriate towards final design presentation.

# 3. Design Standards

## 3.1 General Standards

The Geometric design has been undertaken in accordance with the *Design Manual for Roads and Bridges (DMRB): ICE Manual of Highway Design and Management;* the key findings & conclusions reached in *Local Transport Note (LTN) 1/07 "Traffic Calming" 2007 & LTN 1/08 "Traffic Management and Streetscape" 2008.*

## 3.2 Detail Design Parameters

Under the general design standards, a number of baseline parameters were determined and adopted for the purposes of feasibility design:

Footways, 2m minimum width

Physical road narrowings 7m minimum width (assumed volumes of HGVs & agricultural vehicles)

Ghost narrowings, 6m indicative width (assumed volumes of HGVs & agricultural vehicles)

OCC High friction & coloured surfacing policy

OCC policies on air quality, emissions, noise and environment

# 4. Existing Features

## 4.1 Description, Quantity & Assessment

**Gateways incorporating speed reductions**

Gateway features integrating speed limit reductions from 50mph to 30mph are located at both the North & South approaches to Woodstock and are linked to the visual start of the town, emphasising the changing nature of the road and its usage. A 30mph speed roundel and "dragon's teeth" markings are proposed at the South gateway to increase its conspicuity and provide a consistent visual message to approaching road users by matching the existing features of the North gateway.

**No right turn junctions with warning signs**

Both locations are required on safety grounds.

**Warning lines**

Present throughout the scheme and are to remain. Any proposed removal would damage the existing surfacing and overpainting large lengths in black would lead to reflection issues at night.

**Dedicated right turning lanes with central hatched markings & left turning lane**

Five locations exist within the scheme limits, together with associated central hatched road markings for safer cross-traffic movements and a left turning lane entry into Hensington Gate to help reduce congestion for through traffic.

**Signal controlled crossings with warning signs**

Three locations exist for safer pedestrian movements while naturally increasing driver awareness and traffic calming when in use.

**Fixed speed enforcement cameras with advanced signage**

The camera locations, 145m inside the northern gateway & 650m inside the southern gateway act to enforce the 30mph speed limit and would have been subject to historical consultation. The pedestrian crossing refuge at the southern camera location aligns with a desire line to cross the A44 from Cadogan Park and beyond.

**Shared use pedestrian/cycle routes with repeater signs**

Various lengths exist to the southern area, predominantly adjacent to the northbound carriageway.

**Off carriageway bus stop laybys**

Three opposing pairs of bus laybys are present within the scheme presenting minor traffic flow restrictions when in use.

**On carriageway bus stops with markings**

Two opposing pairs of laybys are present within the scheme presenting minor traffic flow restrictions when in use.

**Yellow box marking**

Located at the junction with High Street the yellow box marking primarily serves to facilitate access to & from High Street & Hensington Road when the adjacent signalised crossing is in use.

**Sheltered on street parking**

Four lengths of parking exist in the central town area. Removal of some or all of the parking could provide benefits to the perceived sense of safety and pedestrian experience of space through widened and less congested footways. This would require wide consultation with residents' organisations, commerce & bus operators to establish potential desirability and raise any concerns, which is outside the scope of this report. Parking will therefore remain in place as a contributing element in reducing vehicle speeds.

**No waiting restrictions**

Various lengths present throughout the central town area. There appear to be no potential benefits to further restrictions.

**Vehicle activated sign**

A "30mph Slow Down" warning sign which requires assessment for functionality.

**"SLOW" road markings**

There are seven markings at various locations. One marking at Oxford Road North, on the approach to the double bends is to be relocated and the original painted black.

**"Double Bend" and "Reduce speed now" signs**

Required on each approach to the causeway for safety reasons.

**Zebra crossing**

Located on the causeway the crossing and footway approaches would benefit from widening to 2m.

# 5. Design Feasibility Options

## 5.1 Restrictions

The A44 Oxford Street is a primary route serving HGVs & agricultural vehicles with further high volumes of general traffic frequently generated by activities at Blenheim Palace World Heritage Site as well as general tourism.

On street parking, bus stops, controlled crossings, informal crossing points, numerous side roads and considerable pedestrian footfall all contribute to the general streetscape and awareness for both drivers and pedestrians.

Highway boundary records suggest there would be no requirement for land acquisition.

Significant traffic survey data would be required to inform the design process when considering a reduction in speed limit to 20mph and wide-ranging zonal measures that may incorporate more physical measures. There is currently a policy worked for 20mph limits in Oxfordshire which the development of this scheme will work with.

In addition, Department for Transport (DfT) guidance sets consideration criteria and suggests extensive collaboration with partners from the police, health, environment, urban planning, education and the local community to deliver 20mph limits as part of an integrated approach to addressing transport, community, environment and health objectives.

Current OCC policy on high friction & coloured surfacing materials restricts consideration for their use to within exceptional circumstances only.

OCC policies on air quality, emissions, noise and environment conflict with the effects of measures that involve vertical deflections. Measures with horizontal deflections also conflict with these policies in areas of high traffic volume.

The relative costs of measures may ultimately influence timing and implementation of schemes but not feasibility. They have therefore not been considered as part of this report.

## 5.2 Considerations

To incorporate any enhancements to existing features, described elsewhere in this report, within proposed physical & perceptual measures that comply with the restrictions outlined.

The effect of speed on safety, accident levels and environmental impact depends upon driver behaviour; all can generally be reduced if vehicles are driven in a smooth manner; also proven in studies to positively affect pedestrian behaviour. Self-enforcement by drivers is, therefore, important.

Ensuring that the speed limit properly reflects the character of the road will influence the degree to which drivers adhere to that limit. Similarly, traffic calming, or other traffic management measures, can assist in changing the character of a road to fit the desired speed limit.

Studies have shown that effectiveness of traffic calming measures can be directly related to their frequency and that this is therefore an important element in establishing smoother driving characteristics.

# 6. Results

## 6.1 Woodstock Gateway - South

A 30mph speed roundel and “dragon’s teeth” are proposed in order to increase the conspicuity of the South gateway, reinforce the change in speed limit and provide a consistent visual message to approaching road users by matching the features of the existing North gateway. (Figure 6.1)

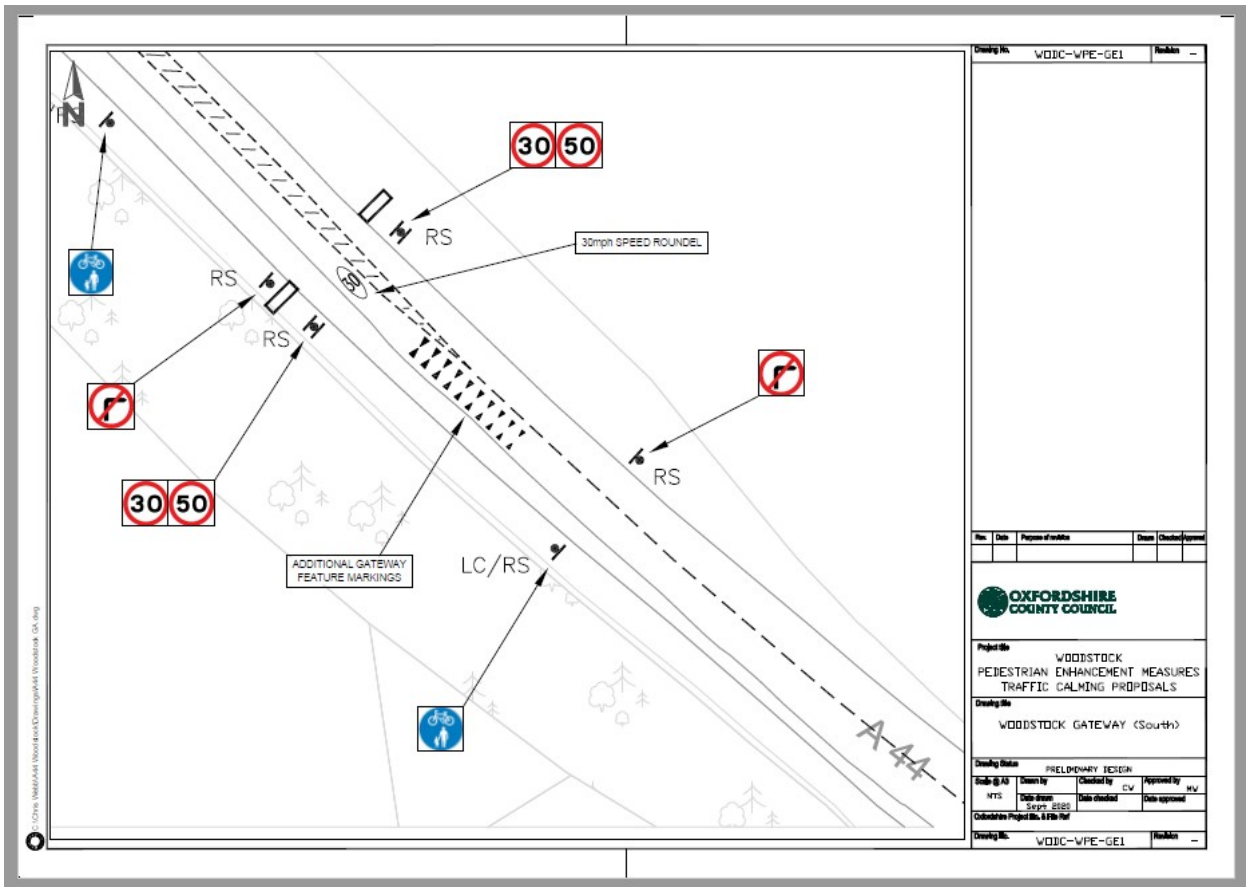


Figure 6.1 Woodstock Gateway - South

## 6.2 Caroline Court

A “ghost” road hump is proposed to maintain the frequency of features on the approach to the town centre area. The tapering road markings also emphasise a narrowing of the carriageway to provide a minimum width of 2m to the western footway at Caroline Court, while maintaining a minimum carriageway width of 7m. (Figure 6.2)

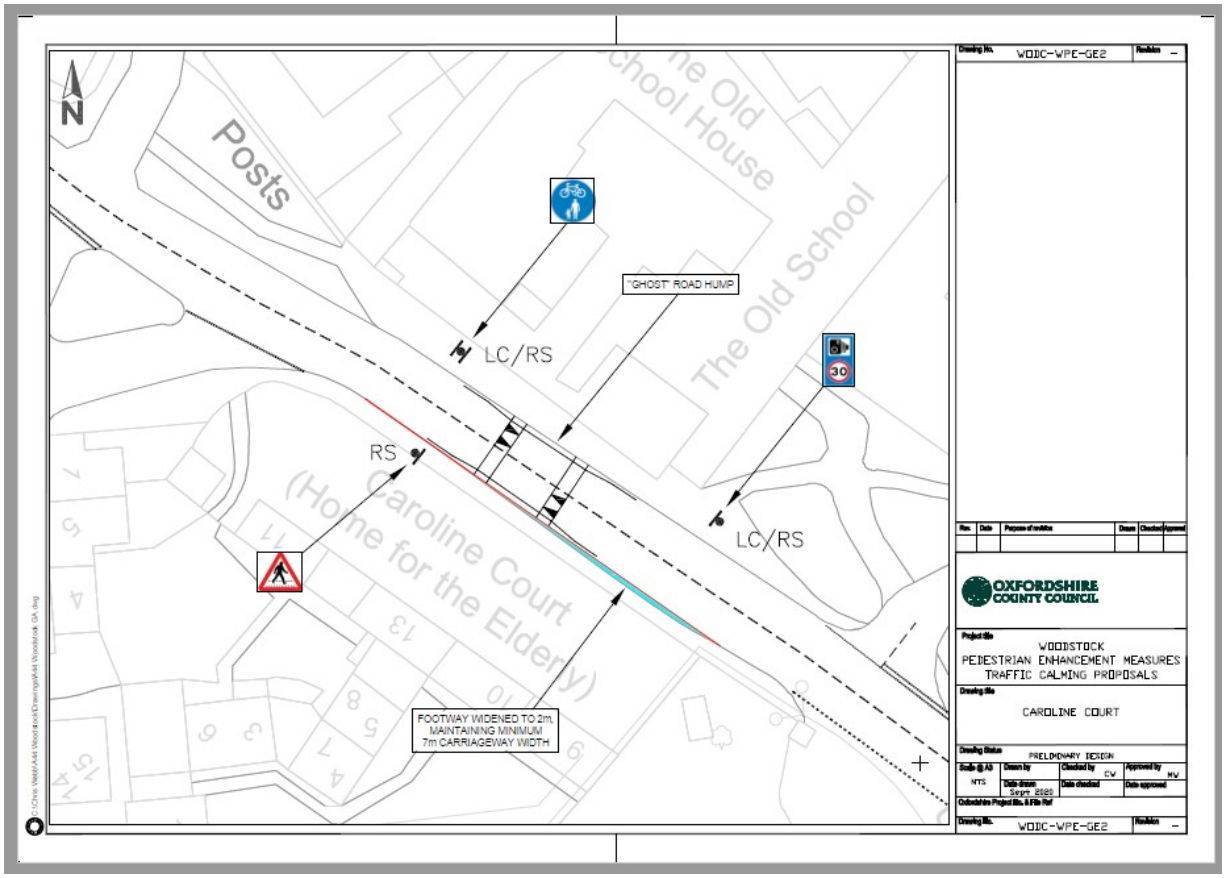


Figure 6.2 Caroline Court

## 6.3 Market Street Junction

The informal crossing point is enhanced by additional road narrowing/widening of the eastern footway, further emphasised by the introduction of bollards with bi-directional, reflective banding that also serve to prevent overhang parking of the build-out. Carriageway width at the narrowing is maintained at a minimum of 7m. An additional bollard with bi-directional, reflective banding is to be installed to the western footway adjacent to The King's Head Hotel to maintain maximum footway width by preventing overhang parking. (Figure 6.3)

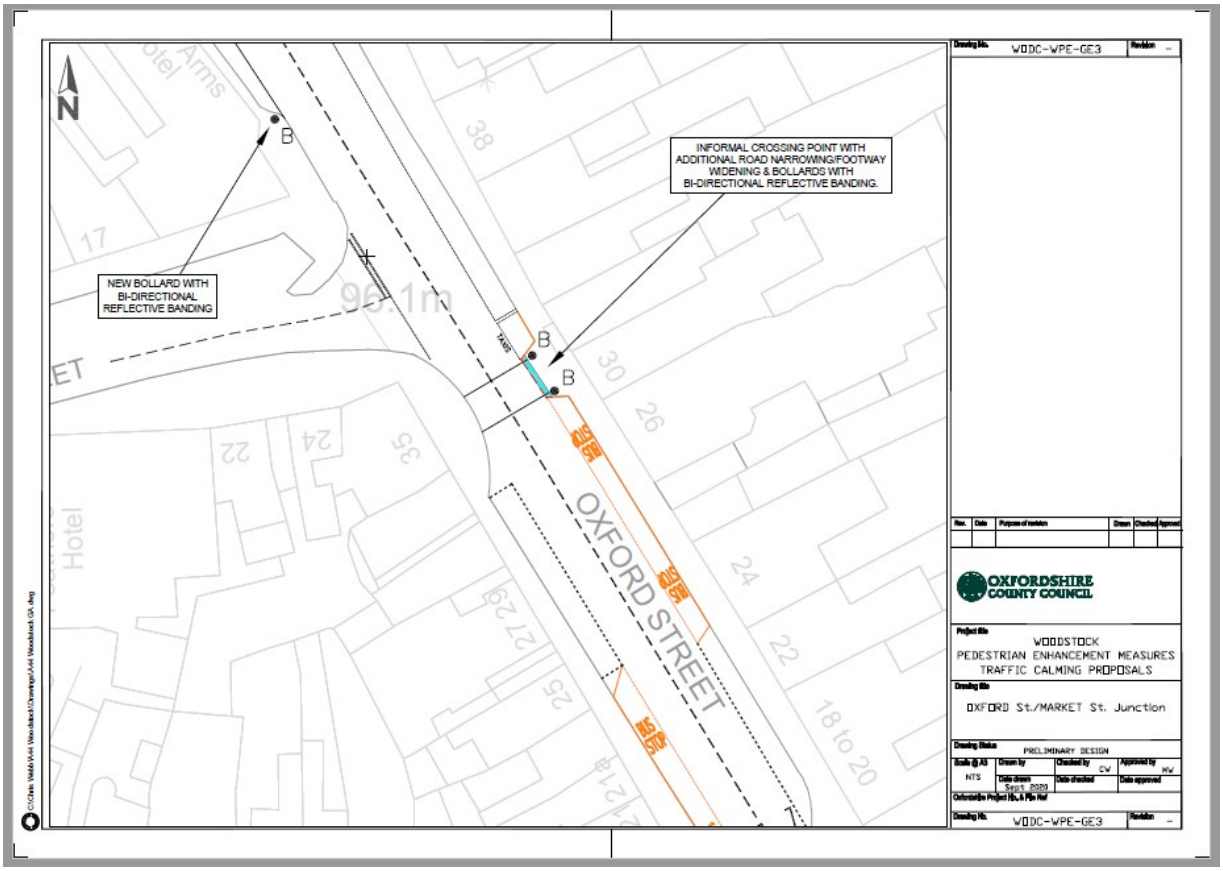


Figure 6.3 Market Street Junction

## 6.4 Oxford Street North

A “ghost” road hump and informal crossing point are proposed to maintain the frequency of features on the approaches to both the Causeway and town centre areas. The informal crossing at the intersection of two footways, is located to provide a means of crossing to the wider, northern footway on approach to the Causeway. The road markings provide a visual perception of a vertical deflection and road narrowing. These are further enhanced by the introduction of an additional “SLOW” road marking on the downhill approach to the double bends. (Figure 6.4)

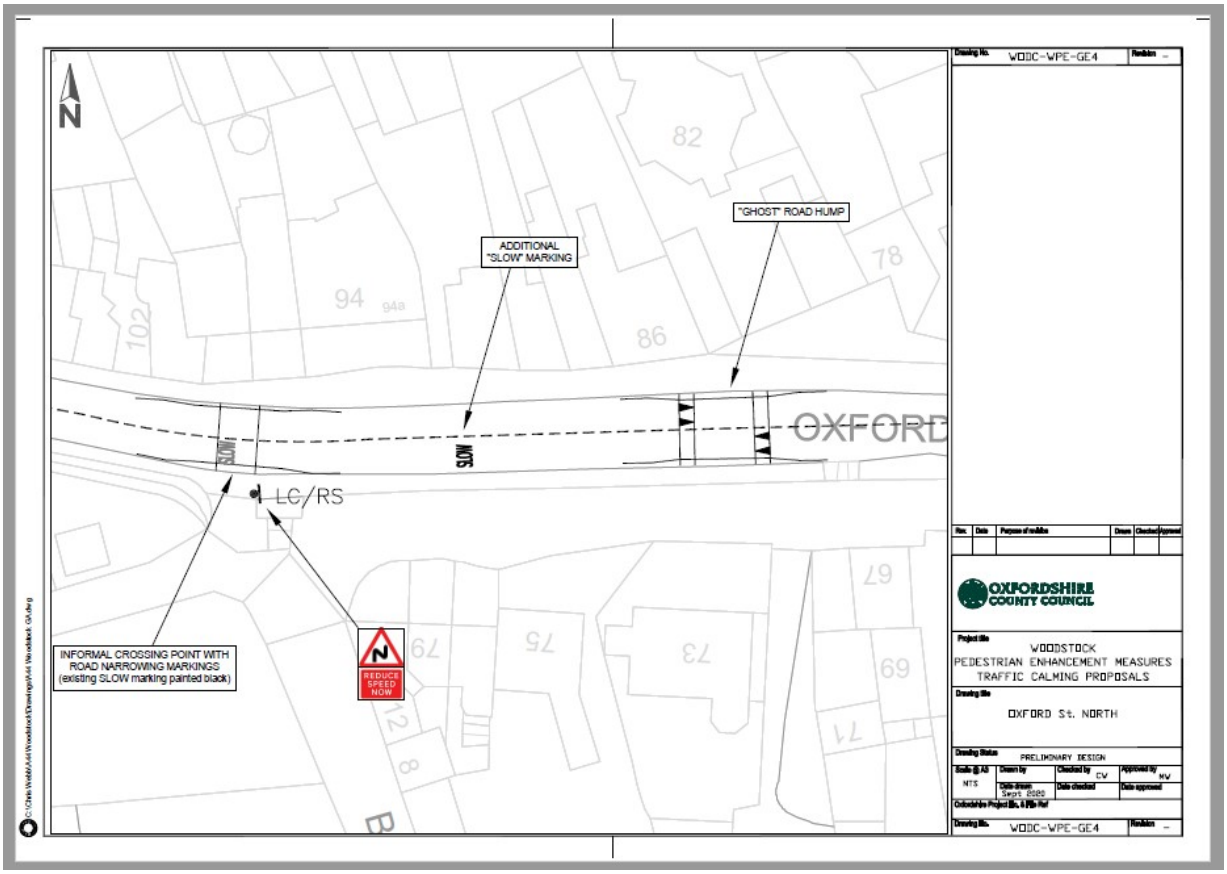


Figure 6.4 Oxford Street North

## 6.5 The Causeway

The footway approaches to the Zebra crossing are widened to a minimum of 2m while maintaining a minimum carriageway width of 7m. The kerb realignment to the eastern footway will tie-in with that generated by the replacement parapet fencing works. (Figure 6.5)

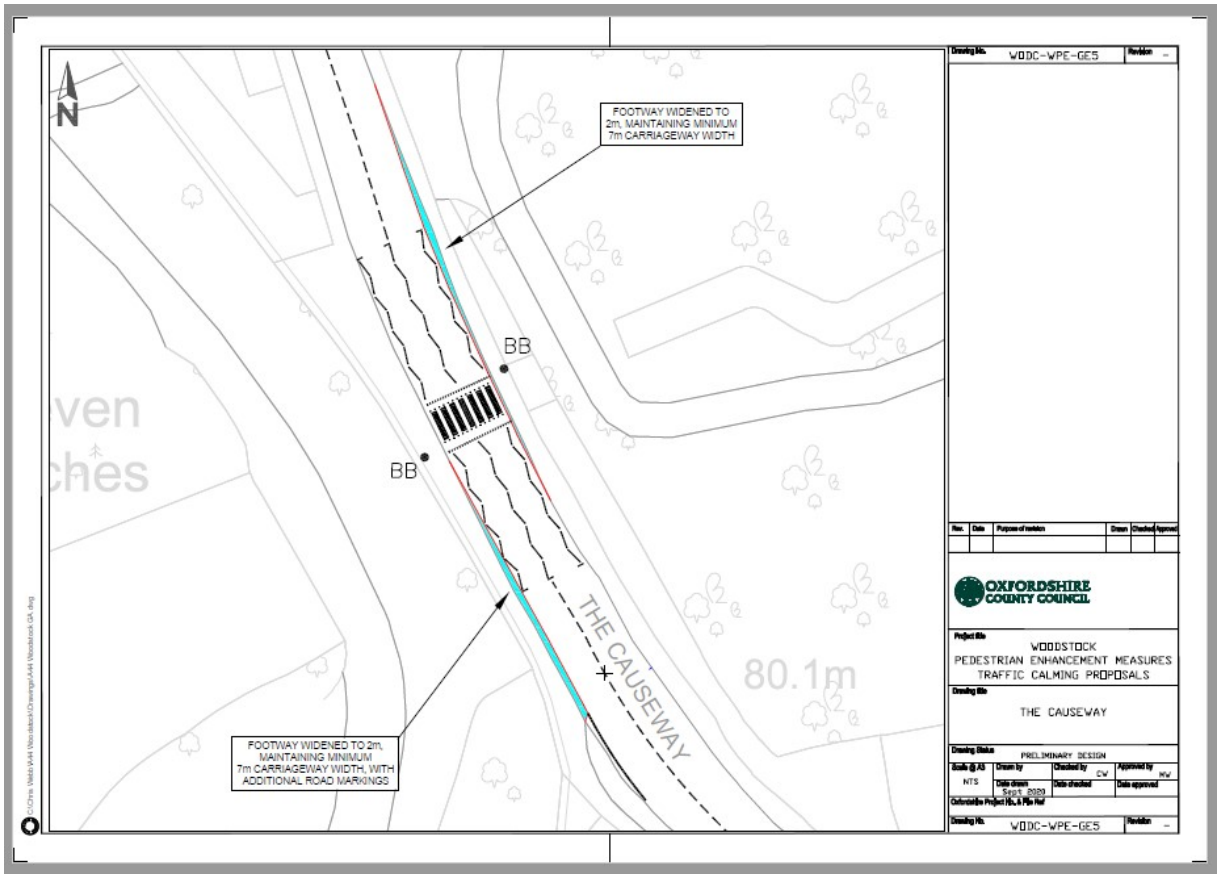


Figure 6.5 The Causeway

## 6.6 Manor Farm

An informal crossing point is proposed to maintain the frequency of features on the downhill approach to the Causeway and at a safe location for likely access to The Black Prince public house. The road markings provide a visual perception of road narrowing. (Figure 6.6)

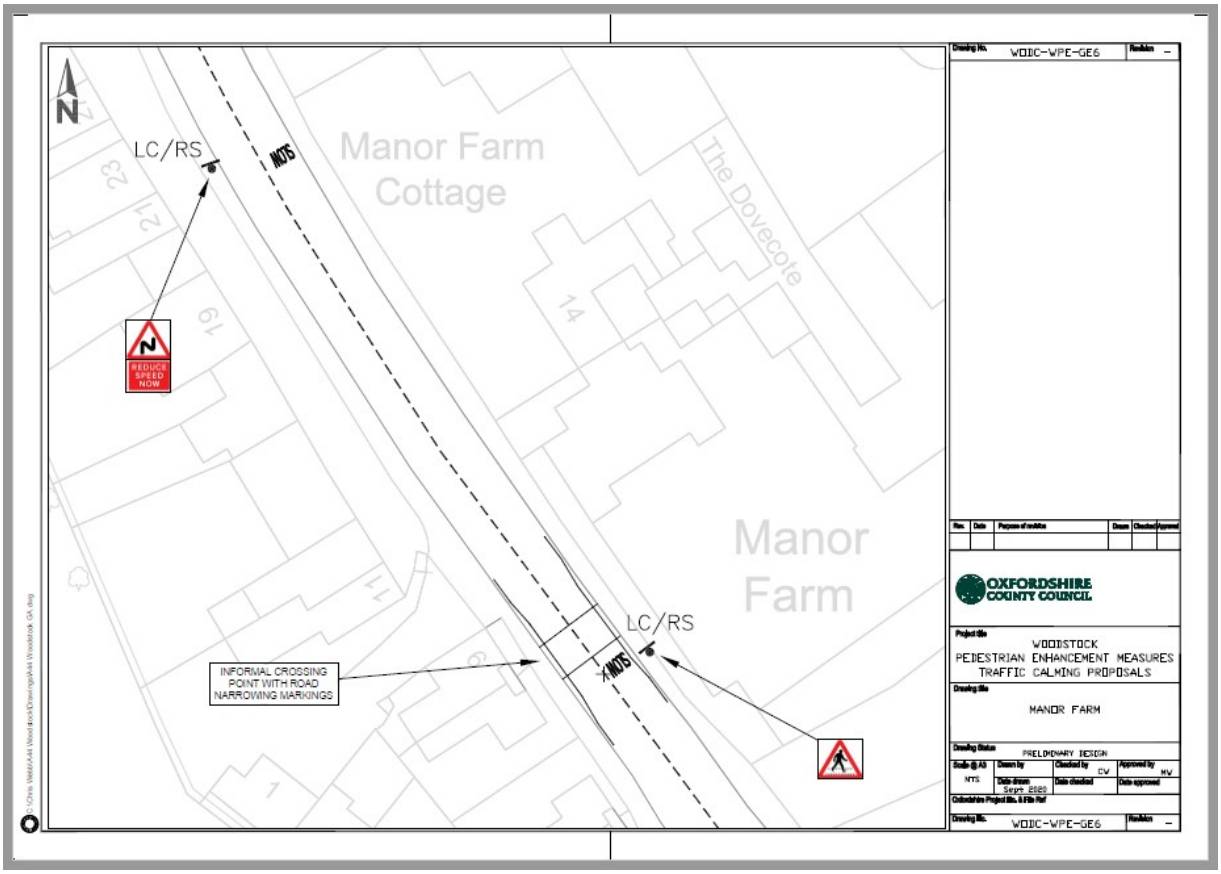


Figure 6.6 Manor Farm

## 6.7 Manor Road

A “ghost” road hump is proposed to maintain the frequency of features on the inclined section of Manor. The road markings provide a visual perception of vertical deflection and road narrowing. (Figure 6.7)

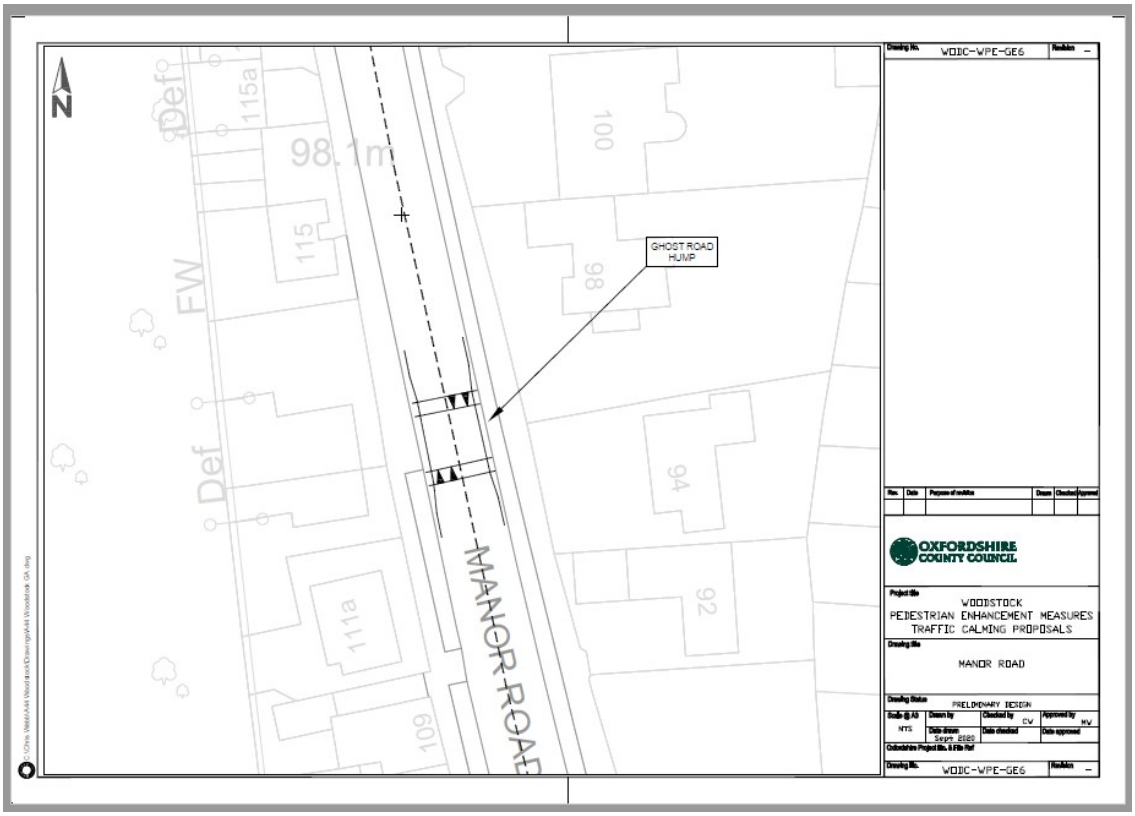


Figure 6.7 Manor Road

# 7. Summary

The accident data for the A44 Woodstock did not identify any specific road geometry or associated aspects to address as part of this report.

In order to meet the demands of the various restrictions the focus of the investigation was centred on achieving constant, low traffic speeds throughout. Utilising a range of physical and perceptual measures and the principle of regularity, a level of self-regulation to speed will also be achieved.

Monitoring following installation will demonstrate the effectiveness of the measures in terms of safety & speed reduction, providing any prior studies are undertaken in a comparative format.

The contents of this report can be used to formulate future traffic and pedestrian movement studies including those required should additional investigations of more wide ranging, zonal considerations be required, at the next stage of scheme development.

It should also be noted that the development of this report will need to take into account and adapt to other works and developments, and Traffic Regulation Orders in and around Woodstock.

## 7.1 Overview – South Section

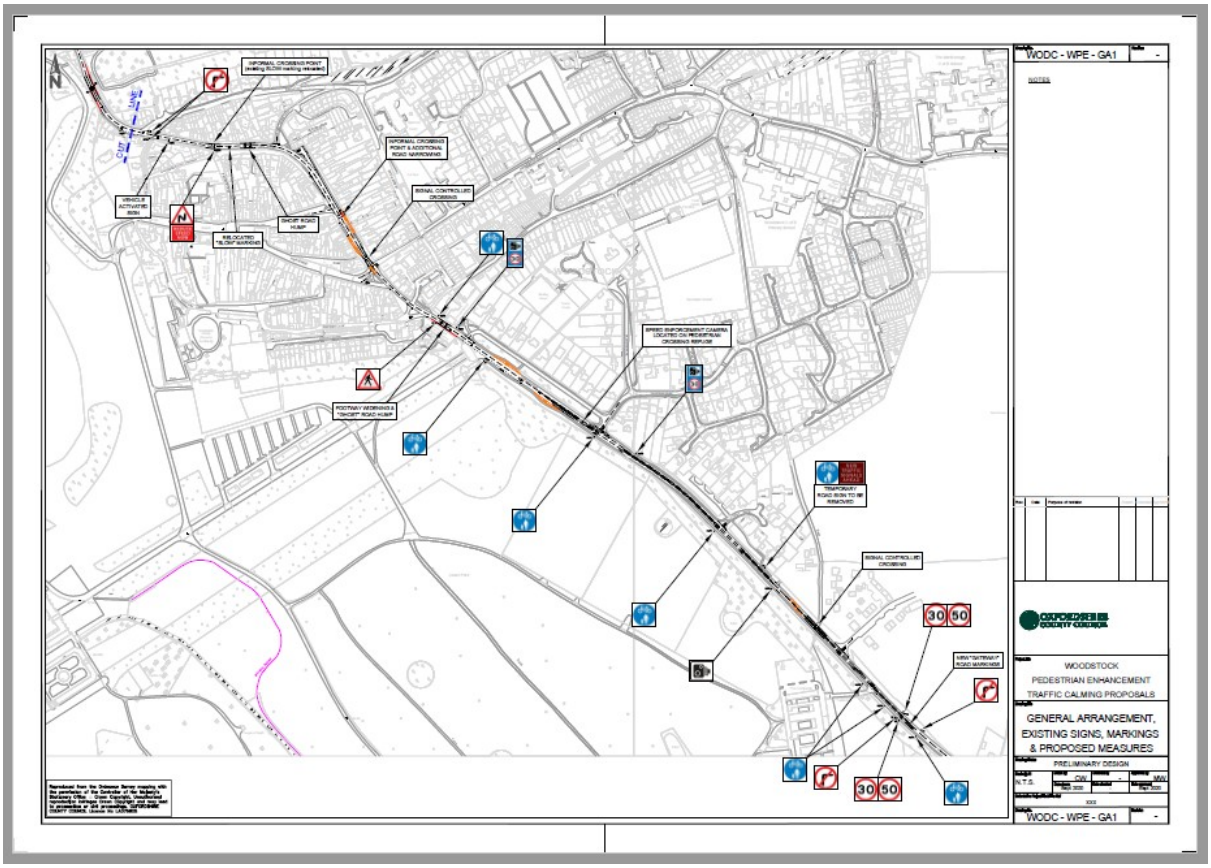


Figure 7.1 GA1 – South Section

## 7.2 Overview – North Section

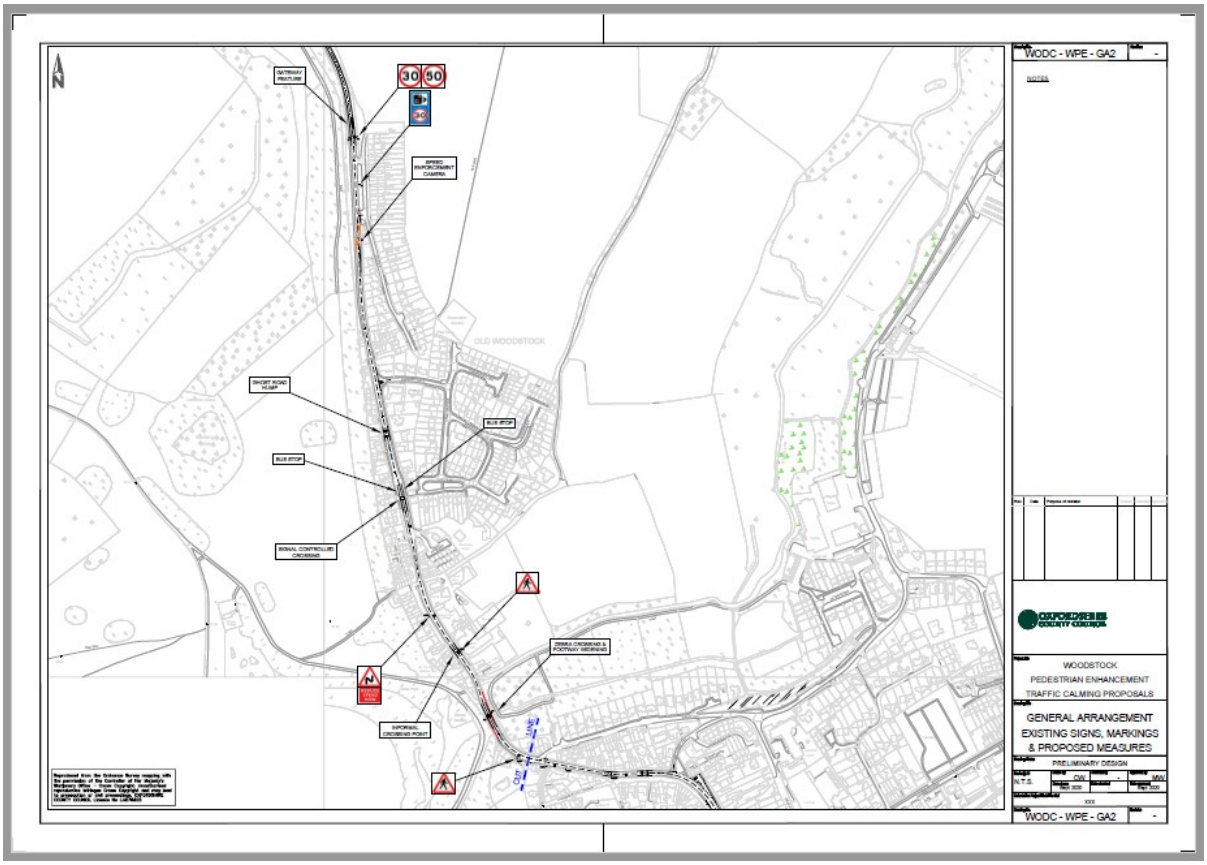


Figure 7.2 GA2 – North Section