

WARWICKSHIRE DESIGN GUIDE



Version Control

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Common Definitions and Abbreviations used in this document

WCC	Warwickshire County Council; also refers to WCC as the Local Highway Authority (LHA)
Developer	the promotor/ client for the scheme who wishes to obtain planning consent and deliver new infrastructure
S38	Section 38 of the Highways Act 1980
S278	Section 278 of the Highways Act 1980 allows a developer to carry out works to the public highway
LTP	Local Transport Plan
DMRB	Design Manual for Roads and Bridges (use the latest version produced and maintained by National Highways)
MfS2	Manual for Streets 2
NPPF	National Planning Policy Framework

LLFA	Lead Local Flood Authority
FRM	Flood Risk Management Team
HGI	Highway Green Infrastructure
DMT	Development Management Team
TRO	Traffic Regulation Order
HCD	Highway Construction Details (prepared by WCC)
POCOC	Package Order Call-Off Contract
NEC	New Engineering Contract (published by ICE)
NMU	Non motorised users
WMCDG	West Midlands Cycling Design Guidance (2nd edition 2019)

Part 0 Introduction

0.1 Introduction

The Warwickshire Design Guide has been prepared to provide direction and guidance to developers and designers when planning and delivering highway infrastructure improvements to Warwickshire County Council's (WCC) highway network. This design guide has been approved by Cabinet to guide developers on the County Council's requirements and expectations. Fulfilment of the requirements outlined in this document will not automatically lead to the approval and adoption of a particular material or process but, if followed, developers will find the process more efficient and there is less risk of abortive work being undertaken.

0.2 The County Council's Vision

WCC's current Council plan sets out our vision "to make Warwickshire the best it can be" which is supported by two outcomes:

- Warwickshire's communities and individuals are supported to be safe, healthy and independent
- Warwickshire's economy is vibrant and supported by the right jobs, training, skills and infrastructure.

This guide is one of several documents which are concerned with delivering the right infrastructure for Warwickshire. Consequently, throughout this document various plans and policies are referenced which support these core outcomes and must be considered when preparing infrastructure improvements.

WCC wishes to encourage high quality development, and the purpose of this guide is to try and make the entire process of delivering the highway infrastructure associated with these developments as smooth as possible for both developers and the Council itself. We believe this aim will be more successful if developers know in advance of making planning applications

what the County Council expects in terms of standards, processes and legal documents. Throughout the various Parts of the Warwickshire Design Guide, developers will find guidance on the processes that we have or recommend following.

0.3 Document Status

The document has been prepared by professionals of differing disciplines drawn mainly from the Communities Directorate of the County Council. Following production of an initial draft, stakeholder engagement exercises were carried out in Spring 2021. The initial draft document was published on the County Council's website. The dedicated WCC webpage was shared with internal and external stakeholders including developers, designers and the District and Borough Councils. Virtual seminars were also held with developers, Members and the District and Borough Councils, giving the opportunity to provide feedback and ask questions.

Following the engagement exercises, the document was updated and subsequently endorsed by Corporate Board on 02 December 2021 and approved by Cabinet on 25 January 2022 (TBC). The document will be reviewed annually considering new evidence or changes in relevant legislation, standards, codes and guidance.

Cabinet also authorised the Strategic Director for Communities to make such modifications to the Warwickshire Design Guide as they may from time to time consider to be appropriate, in consultation with the Portfolio Holder for Transport and Planning.

This guide supersedes 'The Warwickshire Guide 2001 – Transport and Roads for Developments'.

0.4 Working with Developers

Warwickshire County Council's [Local Transport Plan](#) 2011-2026 sets out how the objectives of the County's transport strategy are being addressed. Included are measures to provide for a better environment for pedestrians, better traffic management and public transport, better rural transport and integration of transport, and more transport choice by making it easier to walk, cycle and access public transport. There are proposals to improve junctions and to reduce the impact of vehicles in towns and villages, residential areas and the countryside. It also promotes measures to secure a more efficient

use of the highway network by allocating road space for priority traffic and to reduce the use of lorries, but at the same time promotes suitable routes for those lorries that must remain on the highway network. New developments should also take account of the County Council's Public Transport Strategy as set out in Local Transport Plan 2011-2026.

0.4.1 Key Objectives

The following key objectives are outlined in the Authority's Local Transport Plan:

Objective 1: To promote greater equality of opportunity for all citizens in order to promote a fairer, more inclusive society
Objective 2: To seek reliable and efficient transport networks which will help promote full employment and a strong, sustainable local and sub-regional economy
Objective 3: To reduce the impact of transport on people and the [built and natural] environment and improve the journey experience of transport users
Objective 4: To improve the safety, security and health of people by reducing the risk of death, injury or illness arising from transport, and by promoting travel modes that are beneficial to health
Objective 5: To encourage integration of transport, both in terms of policy planning and the physical interchange of modes
Objective 6: To reduce transport's emissions of carbon dioxide and other greenhouse gases and address the need to adapt to climate change.

New development and alterations to the existing highway must be considered against and satisfy the relevant policies and overall aims of WCC's Local Transport Plan.

0.5 How to use the Warwickshire Design Guide

This guide has been arranged to broadly follow the whole process from pre-application advice, design, technical approval through to delivery.

Part 1 - Pre-application Development Management sets out the pre-application consultations which are recommended to be undertaken. It includes links to the WCC Local Transport Plan and Local Land Use Planning Policy documents, WCC requirements for Transport Assessments, a table describing the road hierarchy and provides a flowchart which must be followed to establish the required national design standards which should be used in the design process.

Part 2 - Highway Design and Technical Review highlights what WCC will expect when a development impacts on our more strategic and busiest roads. It particularly relates to the design of highways mitigation which will be delivered via major Section 278 Agreements. It provides an outline for end-to-end scheme delivery and includes details on designing for maintenance that are used and what will be expected to be included in a Technical Review submission.

Part 3 - Street Design (Residential S38) is to be used when preparing Section 38 schemes, particularly in residential developments. This part includes appropriate specifications for various road types within the estate road hierarchy and is also appropriate for Section 278 Minor Works Agreements.

Part 4 - Traffic and Road Safety covers the typical Traffic Regulation Orders which are required to be published because of delivering development infrastructure. It also explains WCC's policies on traffic calming and speed management together with information relating to Road Safety Audits.

Part 5 - Drainage and Flood Risk provides guidance on the role of the LLFA to manage the flood risk associated with a development.

Part 6 - Highway Green Infrastructure outlines the design considerations for providing suitable landscaping proposals within road corridors and new developments.

Part 7 - Structures gives detailed information on the various processes and checks required when a new structure is required as part of the highway infrastructure.

Part 8 - Street Lighting provides advice for developers and designers as to WCC's requirements for street lighting. Road and street lighting systems must meet nationally prescribed standards to satisfy road safety requirements and good design can also play a significant role in the prevention of crime and disorder in both rural and urban areas.

Part 9 - Historic Environment guides developers through the correct processes to ensure that an appropriate strategy to mitigate any impacts the proposed development may have on any archaeological sites which survive within or in the wider vicinity of the application area have been developed.

Part 10 - Construction and Delivery sets out the requirements for completing the technical review, procuring the works and supervision of the contractor. It also provides important details relating to the legal agreements which need to be in place before work can commence.

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Part 1 Pre-application Development Management

1.1 Introduction

This part of **The Warwickshire Design Guide** sets out Warwickshire County Council's (WCC) processes and requirements for the pre-application stage of a development programme.

It details the assessment requirements, methodology and documentation needed by WCC to understand the impact of development proposals on highway and transport networks across the County. These supporting documents are essential to support development proposals through the planning process.

New developments, which are speculative or identified within adopted Local Plans, generate an increase in demand across Warwickshire on all modes of transport.

Accommodating this increase in travel demand and ensuring access to key employment opportunities, educational and health services effectively and with minimal delay is crucial to support Warwickshire's economy. This must be done whilst ensuring impacts are effectively mitigated to protect local communities and the environment.

1.1.1 Policy and Guidance Documents

This part of the guide must be read and utilised with regard to the following policy and guidance documents, noting where appropriate, the class of road to be designed:

- [National Planning Policy Framework \(NPPF\)](#)
- [National Planning Practice Guidance](#)
- [DfT Circular 02/2013 – Strategic road network and the delivery of sustainable development](#)
- [Department for Transport](#)
- [Design Manual for Roads and Bridges \(DMRB\)](#)
- [Manual for Streets \(MfS\)](#)
- [Manual for Streets 2 \(MfS2\)](#)
- [Warwickshire Local Transport Plan \(LTP\)](#)

1.1.2 Planning Authority Documents

Consideration must be given to Local Land use Planning Policy documents and supporting Supplementary Planning Documents (SPDs) for the following Planning Authorities;

<u>North Warwickshire Borough Council</u>	<u>North Warwickshire Local Plan</u>
<u>Nuneaton and Bedworth Borough Council</u>	<u>Nuneaton and Bedworth Local Plan</u>
<u>Rugby Borough Council</u>	<u>Rugby Local Plan</u>
<u>Warwick District Council</u>	<u>Warwick Local Plan</u>
<u>Stratford-on-Avon District Council</u>	<u>Stratford-on-Avon Local Plan</u>

Consideration must also be given to other SPDs, Planning Policy documents and Neighbourhood Plans for relevant communities where they have been written. Further information and documents can be found on Local Authority Planning websites.

1.1.3 Development Management Process

The whole development management process is presented in the process map shown in Figure 1.1.

This part of **The Warwickshire Design Guide** contains guidance on the following processes which occur at the initial stages of scheme development

- 1.2 Pre-Application advice
- 1.3 Transport Assessments
- 1.3 Design proposals for mitigation strategies
- 1.4 Supporting information required
- 1.5 Reserved Matters applications

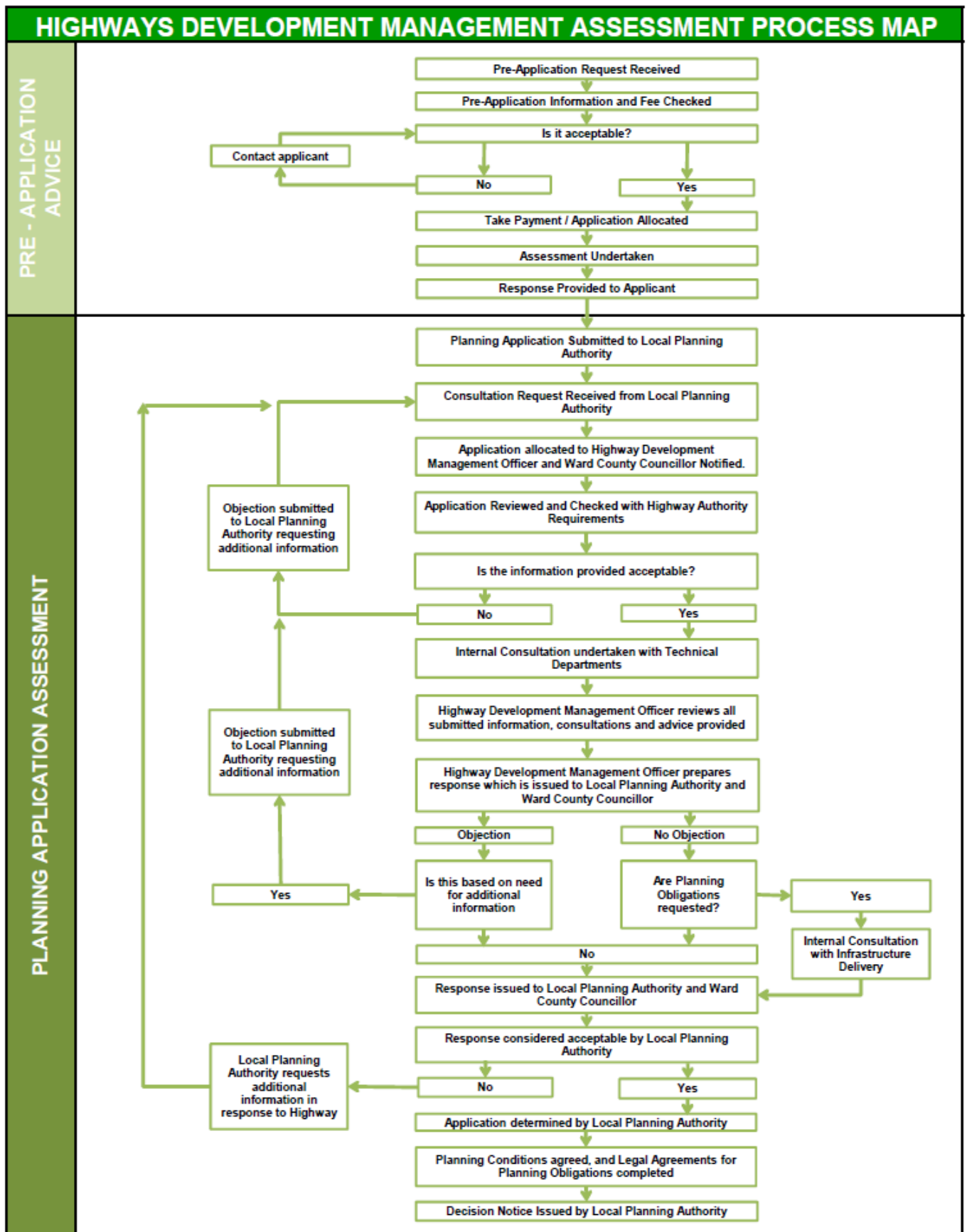


Figure 1.1 – Development Management Process Map

1.2 Pre-Application Advice

National and local guidance in both planning and transport policy identifies the merits and value of early discussions regarding assessments to identify transport matters. This ensures that all parties understand the key issues which need to be considered and addressed in respect of development proposals. In addition, the discussions will indicate the scope and level of assessment which will be required.

WCC therefore recommends that pre-application discussions are held with the County Council in its function as the Local Highway and Transport Authority. In addition, to provide added value, the Local Planning Authority should be invited to such meetings as well as third parties who may have an interest due to the operation of their networks. These could include National Highways, Network Rail and neighbouring Local Highway and Transport Authorities.

As a first step in the process, developers should enter into a pre-application agreement with the County Council.

The Highway Authority would expect developers/applicants to apply for pre-application advice a minimum of 6 months prior to the proposals being submitted to the LPAs.

This process requires the completion of the identified proforma and provision of fees in accordance with the guidance document provided in *Annex 1.1: Pre-application advice*. This advice would be valid for 12 months from date of issue notwithstanding any changes to modelling assumptions, planning consents or highway alterations which may occur.

1.3 Transport Assessments

The need for and level of formal assessment can be determined in consultation with the applicant and the relevant authorities if pre-application advice has been undertaken.

Furthermore, developers should be aware there may be a need to include specific assessment of environmental impacts of the development proposals.

1.3.1 Levels of Assessment

If an assessment is required, there are two levels;

- **Transport Statement (TS)** - development that has relatively small transport implications.
- **Transport Assessment (TA)** - development that has significant transport implications.

In accordance with Warwickshire's 2011 Local Transport Plan, where significant development is proposed, the County Council will require the use of microsimulation modelling techniques to support the Transport Assessment process. The County Council will also work with applicants to scope the individual requirements for the sites/areas under assessment. For further details please consult the WCC [Modelling Protocol](#).

Warwickshire County Council Modelling Protocol for Development Assessment;

S-Paramics (or other micro-simulation) transport modelling is required to understand the wider implications of the development over a certain size in terms of increased traffic flows and capacity issues within the area. It is considered that traditional isolated junction methodologies do not fully reflect the impact, detailed interaction of junctions, queuing and blocking back, vehicle release profiles, road user behaviour, and wider area effects of development.

We therefore request that developers adhere to the WCC Modelling Protocol for Development Assessment. By following this process, WCC hope to reduce potential disagreements on assessment approaches in the future. WCC Modelling Protocol for Development Assessment has been produced to provide developers with guidance on WCC requirements for the modelling of development sites, in terms of:

- Why WCC require micro-simulation modelling and thresholds of different types of modelling requirements;*
- Current WCC model coverage;*
- Guidance on the minimum data requirements that must be submitted to WCC prior to undertaking development assessment in Warwickshire's S-Paramics models;*
- Information on how WCC models deal with background, committed and Local Plan development related traffic growth in Future Year S-Paramics models; and,*
- The minimum requirement for undertaking an assessment of the impact of the developments on the highway networks.*

Alongside the provision of the microsimulation modelling, WCC as the Highway Authority, may also require the provision of Junction Capacity Assessments for all access and mitigation junctions. This will provide clear evidence to demonstrate that the

proposals will not have a severe or detrimental impact upon the efficient operation of the highway network. These details will be determined through the scoping and assessment process.

Where mitigation phasing is required, the Highway Authority will work with applicants to phase mitigation and infrastructure requirements by utilising the modelling procedures, ensuring the development can come forward in a sustainable and viable manner, whilst mitigating their impact on the highway network.

1.3.2 Accompanying Information Required

Every Transport Assessment and Transport Statement must be accompanied by the following information to ensure the transport information submitted is valid to support a planning application, unless advised in writing by the Highway Authority.

If the following information is not provided, the Highway Authority will submit a response to the Local Planning Authority requesting the information which will not be lifted until the Highway Authority is satisfied with the information provided.

a) Trip Generation Methodology

The Highway Authority requires the provision of a clear methodology to be provided with the supporting transport assessments. This will clearly set out how the trip generation of the development has been calculated and reference the relevant evidence base and tools which have been utilised.

For certain types of development, the Highway Authority may recommend the use of locally derived trip rate information, this will be determined during scoping discussions. Further details are available in the [WCC Modelling Protocol](#). The Highway Authority recommends, in most cases, the use of the TRICS database as the preferred tool from which the trip generation should be calculated from. Further information can be found using the following link www.trics.org

The Highway Authority will also require the provision of the output files of the trip calculations from TRICS to be provided as an appendix to the assessment report.

b) Trip Distribution Methodology

The Highway Authority will require the provision of the methodology and outputs of the trip distribution utilised for the assessments. The Highway Authority recommends the trip distribution utilises Mobile Phone Network Data, which provides accurate information on origin and destination data. It is considered that this approach is also more up to date when compared with Census Data and therefore more robust.

Further information on obtaining Mobile Phone Network Data, can be found by consulting the [WCC Modelling Protocol](#).

For certain types of development, it may be necessary to base distribution on gravity modelling, Retail Impact Assessments (for retail development), existing employee distribution data or other bespoke approaches to be agreed at scoping.

c) Microsimulation Modelling Documents

For details of the expected deliverables, consult the WCC Modelling Protocol. Also note, review timescales are dependent on submission of all deliverables in accordance with the Modelling Protocol.

d) Junction Impact Modelling

To aid the Highway Authority, assessment junction impact modelling may be required to assess all new access arrangements and mitigation improvements on the Highway Network.

The Highway Authority recommends the following programmes are utilised for the following junction types;

- Simple Priority 'T' Junction – Junctions 10 or latest version
- Ghost Right Turn Priority Junction – Junctions 10 or latest version
- Roundabout Junction Arrangement – Junctions 10 or latest version
- Signalised Junction Arrangements - LINSIG

In the case of Junctions 10 modelling, the Highway Authority will require the provision of the output reports to support the Transport Assessment Report.

With regards to LINSIG modelling, the Highway Authority will require the provision of the output files and the LINSIG Model will need to be assessed fully by the Highway Authority.

Where microsimulation modelling has been requested, the traffic flows used in Junction Impact Modelling should be derived from microsimulation models. Further details are available within WCC's Modelling Protocol.

e) Evaluation of Mitigating Measures

The Highway Authority reserves the right to request a contribution towards traffic monitoring to ascertain the impact of the development and the effectiveness of any mitigating measures undertaken. This may require the installation of

traffic monitoring equipment, with associated ongoing maintenance and servicing costs for up to five years. The number of monitoring sites required will be determined by the number of entrances/junctions to the site.

1.4 Design of the Highway Mitigation Strategy

In most cases, development will require some form of mitigation to be designed so that traffic both using and generated by the development will be accommodated within the existing and/or future highway network. The Highway Authority will require technical drawings to support any mitigation schemes, alongside suitable strategic and junction modelling to ensure they meet the Highway Authority's standards and requirements. It may be necessary to provide additional capacity assessments that demonstrate when the delivery of the mitigation will be necessary. The applicant must also demonstrate they can be undertaken within land under the landowners' control and/or the adopted/maintainable highway boundary.

The Highway Authority will also require a design statement which sets out the design philosophy for the proposed scheme, the standards utilised and the justification for any departures or relaxations of the required standards.

The key process for determining which national design standards WCC consider appropriate to use for a particular situation is shown in Figure 1.2 which must be read in conjunction with Table 1.1 Road Hierarchy.

In addition to providing general advice to pre-app schemes, if any departures and relaxations are likely, it is recommended the applicant applies for pre-application guidance to get support and constructive advice from the Highway Authority at the earliest opportunity.

If the strategy is deemed acceptable, the Highway Authority will then identify the suitable mechanism for delivery. There are four mechanisms identified below;

- Section 38 New Adoptable Highway – Highways Act 1980
- Section 184 Minor Works – Highways Act 1980
- Section 278 Works – Highways Act 1980; and
- Section 106 Obligations – Town and Country Planning Act 1990

Those schemes which will be delivered through the identified mechanisms under the Highways Act 1980 will be conditioned with a suitable trigger agreed with the Local Planning Authority.

Those schemes which will be delivered through an obligation under Section 106 of the Town and Country Planning Act 1990, will also be assessed in accordance with the Community Infrastructure Levy Regulations 2010 and the following tests. For them to be acceptable in planning terms, these tests are;

- Necessary to make the development acceptable in planning terms
- Directly related to the development; and
- Fairly and reasonably related in scale and kind to the development

Further guidance and information on Section 106 Planning Obligations can be found in the [Warwickshire County Council Developer's Guide to Infrastructure Contributions.](#)

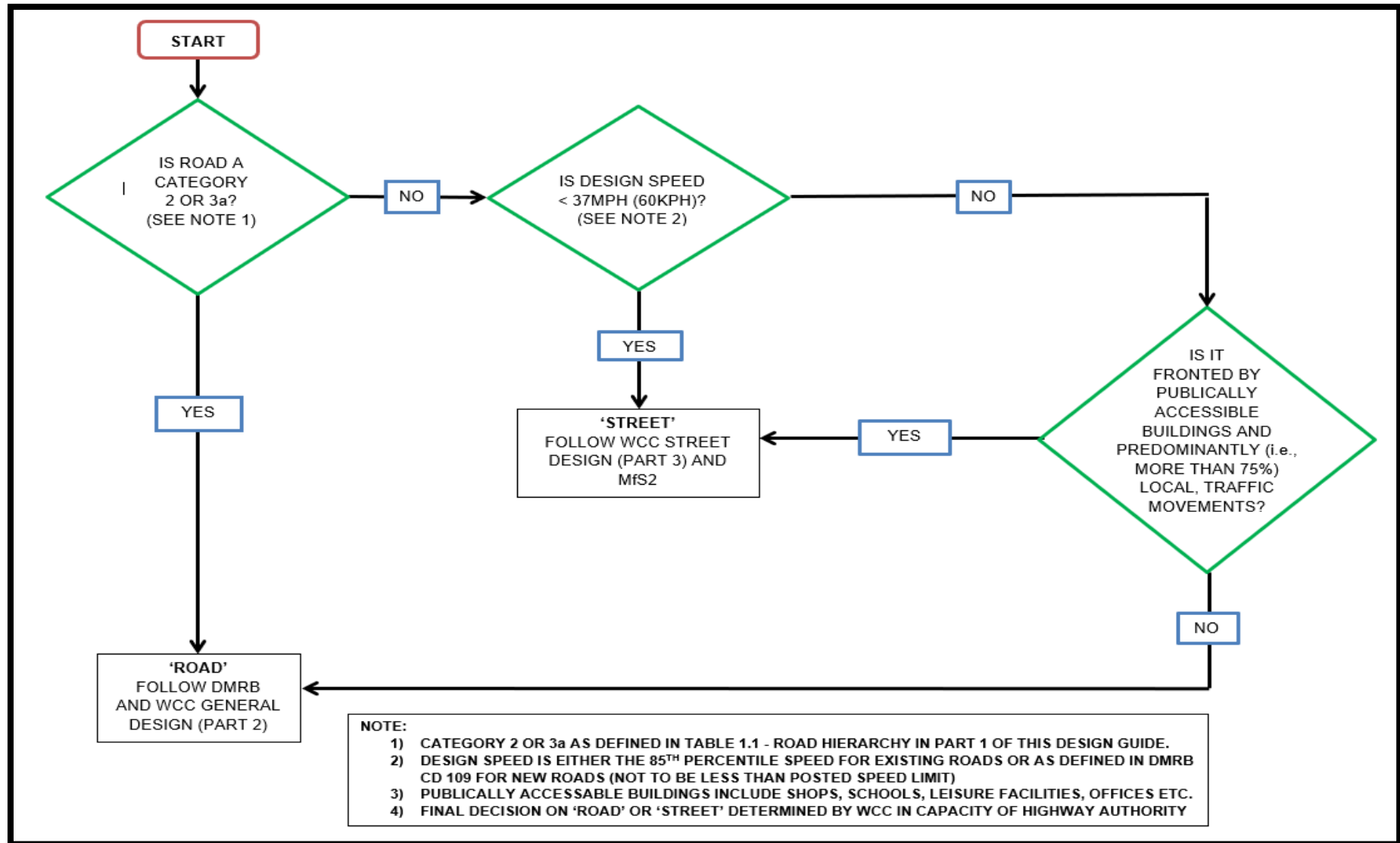


Figure 1.2 - Flow Chart to Determine 'Road' or 'Street'

	Category	WCC Category	Type of Road General Description	Description
1	Motorway		Limited access - motorway regulations apply	Routes for fast-moving long-distance traffic. Fully grade separated and restrictions on use.
2	Strategic Route		De-trunked and some Principal 'A' class roads between Primary Destinations	Trunk and some Principal 'A' class roads between Primary Destinations
3a	Main Distributor	Primary Road	Major Urban Network and Inter-Primary Links	Roads between Strategic Routes and linking urban centres to the strategic network with limited frontage access.
3b	Secondary Distributor	Secondary Route	<p>Through routes carrying bus, HGV and local traffic with frequent junctions. Unlimited unit numbers with multiple points of access onto a road of the same or higher category.</p> <p>Where a bus route is proposed, segregated pedestrian/cycle provision will be necessary with no direct frontage access other than private shared driveways serving 6 units.</p> <p>Also used for industrial estate roads.</p>	<p>In rural areas these roads link the larger villages, bus routes and HGV generators to the Strategic and Main Distributor Network.</p> <p>In residential and other built-up areas these roads will have 20 or 30 mph speed limits. This will be required to accommodate high levels of pedestrian and cycle activity with informal or controlled crossing facilities. Should on-street parking be accepted, a wider corridor will be required to accommodate buses and bus infrastructure.</p> <p>Industrial estate roads will not normally be adopted.</p>
4a	Link Road	Tertiary Road (Type 1)	<p>Roads connecting to the Primary and Secondary Distributor Network with frontage access and frequent junctions.</p> <p>Can be through roads, to serve a maximum of 200 units with a second point/emergency access, or culs-de-sac serving a maximum of 150 units.</p>	<p>In rural areas these roads link the smaller villages to the distributor roads.</p> <p>In urban areas these are residential interconnecting roads designed to limit vehicle speeds to 20mph, with high quality connectivity and permeable pedestrian and cycle routes.</p>

4b	Local Access Road	Tertiary Road (Type 2)	Culs-de-sac with a design speed of 20mph serving a maximum of 50 units. Should not be designed to access land with the potential for further development.	<p>In rural areas these roads serve small settlements and provide access to individual properties and land. They are often unsuitable for HGVs.</p> <p>In urban areas they serve a small number of residential properties with no vehicular access provided for other amenities / facilities.</p>
	Minor road	Private Driveways	Serving up to 6 units from a driveway crossover/dropped crossing.	Roads to remain private/unadopted.

Table 1.1 – Road Hierarchy

1.4.1 Site Access Arrangements

At pre-application stage, the Highway Authority will require a technical drawing which, at the very minimum, demonstrates the required visibility splays of the proposed access arrangements can be achieved as part of the development proposals.

The visibility splays must be in accordance with the appropriate national design standards as determined in Figure 1.2. It is recommended the developer obtains confirmation in writing by the Highways Development Management Team of whichever is considered the most appropriate option early in the design process to avoid the risk of redundant work.

In addition, if the gradient of the highway within the proximity of the site access poses a potential risk to visibility, the Highway Authority reserves the right to request visibility splays, based on the vertical alignment, to demonstrate the level of visibility splay and forward stopping sight distances which could be achieved on the existing carriageway.

The Highway Authority will also require vehicle tracking drawings to demonstrate the safe design and layout of proposed access arrangements. In most cases this requires tracking of a waste refuse vehicle, a fire tender vehicle and a medium passenger vehicle (MPV) as an example for residential developments.

The Highway Authority may also require tracking for articulated heavy goods vehicles or a bus service vehicle, and these should be agreed with the Highway Authority beforehand based on the type and scale of development.

1.4.2 Structures

Early consultation with the WCC Highway Development Management Team is recommended to discuss new structural proposals and to determine whether Technical Approval processes need to be applied. Advance fees will be agreed prior to any consultation and calculated according to the scale of the undertaking. The purpose of these consultations will be:

- To determine the appropriate form of the structure
- To determine the structural category of the structure to CG300
- To understand the Highway Authorities requirements if the structure is to be adopted (see Part 7.8)

For Category 0 and 1 structures to CG300, the consultation is optional and may be based upon preliminary general arrangement drawings. For larger Category 2 and 3 structures, consultation is mandatory and will involve preparing a Feasibility Study demonstrating how the preferred structural solution has been chosen and agreed with the Highway Authority.

A process flowchart for the various stages relating to structures within developments is shown in Annex 7.2. Guidance on the appropriate category for a structure is provided in Part 7 and in Annex 7.3.

1.4.3 Street furniture and Street Lighting

Early consultation with the WCC Highway Development Management Team is recommended to discuss new street furniture such as traffic signs and street lighting requirements. For further guidance see Part 8.

1.4.4 Traffic Signal Junctions

Early consultation with the WCC Highway Development Management Team is recommended to discuss proposed new signalised junctions. For further guidance see Part 2.9.

1.4.5 Road Safety Audits

Warwickshire County Council's Road Safety Policy in the 2011 Local Transport Plan states that WCC will carry out Road Safety Audits or Reviews on all new schemes and alterations to the existing road network proposed by ourselves or others.

Before the Road Safety Audit is undertaken, the assessment brief and methodology must be agreed with the Highway Authority (Highways Development Management) and must include the scheme layout drawing and vehicle tracking drawings.

Once complete, the Road Safety Audit shall be submitted for consideration and review (Road Safety Team and Highways Development Management) and must be accompanied by a designer's response (as required). The Road Safety Audit is not

recommended to be commissioned until the general principle of the scheme has been agreed with the Highway Authority. For further guidance see Part 4.

1.4.6 Impact on the Historic Environment

WCC can provide pre-application advice on archaeology and ecology, including hedgerows and historic landscape character.

Highways Development Management do not typically provide advice of impacts on historic buildings, similar structures, and Conservation Areas as this would normally be provided by Conservation Officers at the LPAs. For further guidance see Part 9.

1.4.7 Public Rights of Way (PRoW)

Developers and designers must be aware of Public Rights of Way (PRoW) that either cross new developments or are in the area surrounding new developments. WCC would not expect any PRoW to be lost because of new development. The PRoW Team should be consulted as early as possible should a development impact on a public right of way.

The Highway Authority may seek works or a financial contribution from developers to improve Public Rights of Way either on, or in the area surrounding new developments, to mitigate the additional use new residents will generate. Where the PRoW, or relevant part thereof, is over land within the control of the developer, the developer will be required to complete the works under a Section 278 Agreement. For improvements to PRoW outside of the developer's control, WCC may request a financial contribution and carry out the appropriate works. Such improvements may be secured by a Section 106 Agreement or by a suitably worded planning condition.

The contribution would usually be used for improvements to within 1.5 miles of the development, this being the radius used by a typical dog walker taking a 3 mile walk from the development and dog walkers usually being the most frequent users of PRoW surrounding a residential development.

The contribution amount requested is usually calculated by means of a formula which considers the following:

- the estimated length of public rights of way within a 1.5mile radius of the development
- the estimated cost of improvements to this network
- the cost per resident of these improvements based on residency figures for local wards
- the estimated number of future residents based on the type and number of houses

1.5 Supporting Information

1.5.1 Sustainable Transport Strategy

Large scale developments need to clearly demonstrate how they will provide and support sustainable transport infrastructure and services to enable viable alternatives to car-based journeys across the towns and villages of the borough / district.

It is important to also note that not all households have access to a car and therefore such transport options are viable to provide access to services and facilities alongside education and employment opportunities.

Developers should refer to Local Transport Note Cycle Infrastructure Design [LTN 1/20](#) for guidance when designing high-quality, safe cycle infrastructure whilst considering their sustainable transport strategy.

1.5.2 Travel Plans

Travel Plans are required for developments of employment, education, service facilities and retail use. Travel Plans set achievable targets to either reduce car usage and promote sustainable travel modes or reduce the need to travel using a variety of measures and tools.

Typical examples of measures used can include the provision of showers, lockers and changing facilities, car sharing schemes, bike purchase schemes, car sharing opportunities and flexible working schemes.

The Highway Authority does not require the provision of travel plans for residential developments at present, due to the ability to enforce such documents. However, a contribution will be sought for the provision of Warwickshire Welcome Packs to each new household in a development of 10 dwellings and over.

The Highway Authority will monitor the effectiveness of Travel Plans, in part, by traffic monitoring. This may require the installation of permanent traffic monitoring equipment and the authority may seek a contribution for both this and the ongoing costs of monitoring

1.5.3 Parking Strategy

The Highway Authority will require a parking strategy for proposed developments which sets out the number and location of parking spaces within the development. These should accord with the parking standards set by the Local Planning Authority for vehicle and cycle parking requirements in the first instance. However, consideration must also be given to the provision of disabled user parking, priority parking (e.g., parent and child parking at retail developments and schools) and electrical vehicle charging points.

Where developments are reliant upon on-street parking provision the Highway Authority reserves the right to request parking surveys to be undertaken. These are mandatory in areas where Residents Parking Permit Schemes are in operation due to the potential impact the proposal may have on the available on-street parking provision.

When undertaking a Parking Survey, it must generally be in accordance with the Lambeth Methodology. The methodology, (including elements such as distance from junctions, parking bay lengths, etc), dates and times are to be agreed with the Highway Authority, prior to the survey being undertaken. Committed developments, University term times, large employer/factory fortnight and other significant events must be a consideration with surveys not being undertaken during such periods when these would not be representative of typical conditions.

1.5.4 Service and Delivery Strategy

For developments which require servicing and deliveries to occur regularly, the Highway Authority may request the provision of a Service and Delivery Strategy.

The requirement of such a document is to agree how sites and the proposed development will be serviced, the timings of these and how they are to be managed. Assessment of this information will inform whether these activities have a detrimental impact upon the safe and efficient operation of the highway network. The information should include, as a minimum, the type of vehicles, frequency and timing of visits, and routes that could be used.

1.5.5 Heavy Goods Vehicle (HGV) Routing Strategy

The Highway Authority will require any employment, retail or other uses which generate a significant number of heavy goods vehicles to submit an HGV Routing Strategy. This should focus on the primary highway network and minimise routing through existing communities, especially in rural communities. Consideration will need to be given to any SPG or LPA guidance regarding HGV movements.

For significant developments with substantial build out periods, the Highway Authority will also require the submission of a strategy for construction traffic, compound facilities and waiting area arrangements. Due to issues of highway safety and noise levels for local residents, the Highway Authority will not accept construction traffic waiting on the highway.

1.5.6 Temporary Access Arrangements

In certain instances, applicants may require temporary access arrangements to enable construction traffic to access the development site. Such details should be identified within the submitted application to provide certainty for all parties.

However, should a Temporary Access Arrangement be required after planning permission has been granted, then applicants will need to seek advice from both the Local Planning Authority and the Highway Authority. In most cases Temporary Access Arrangements will require planning permission before a Minor Works (Section 184) Agreement is accepted by the Highway Authority.

1.5.7 Construction Management Plan

The Highway Authority reserves the right to request provision of a Construction Management Plan for development proposals and generally this is conditioned as part of the decision notice.

The Highway Authority will require this document to address the following matters;

- Existing traffic levels
- Predicted construction traffic levels and routing
- Construction delivery time periods
- Access/egress arrangements for all associated construction vehicles
- Location of the delivery compound within the development site
- Details (including swept paths) for on-site turning of construction vehicles (based on the largest vehicle that will be required to access the site)
- Location of the parking area for staff and contractors
- Details of measures to prevent delivery and construction traffic parking or waiting on the adopted Highway Network
- Details of measures to prevent mud, debris and detritus being deposited onto the highway network

The Highway Authority holds the right to require developers to undertake dilapidation surveys in accordance with Section 59 of the Highways Act 1980.

1.6 Preparing a Reserved Matters Application

The Highway Authority undertakes a thorough review and appraisal assessment of reserved matters applications and proposed site layouts. As with any application, the Highway Authority recommends that developers engage with the Highway Authority at the earliest opportunity utilising the Pre-Application process. This will enable constructive advice and guidance to be provided by the Highways Development Management Team and Highways Adoptions Team.

In addition, it will enable discussion concerning the requirements and standards required and agreement of the elements within the development that can be offered for adoption, and those which the Highway Authority will not formally adopt. In addition, the Local Planning Authority should also be invited to the discussions regarding reserved matters alongside the Highway Authority. This may assist in reducing the need for variations to approved planning permissions.

1.6.1 Requirements of a Reserved Matters Application

The Highway Authority requires the following technical drawings and documents to be submitted as part of a Reserved Matters Application. The scheme drawings should have the following details clearly annotated:

- Areas proposed for adoption
- Access road radii geometry
- Access road widths, particularly where there are any changes
- Treatment of junctions (in respect of speed management features); dummy junctions are not acceptable
- Visibility splays at junctions (including pedestrian junction visibility splays), speed control bends, changes in alignment (which will require forward stopping sight distance), accesses
- Pedestrian crossing points at all junctions and at intervals of 100 metres
- Tracking/swept path analysis based on largest vehicle requiring regular access (with MPV passing or suitable intervisibility if MPV required to be temporarily stationary), refuse, fire appliance, MPV and on-line delivery vans
- Changes of material; block paving will not be accepted within turning heads
- Bus stop locations (where bus route is to be provided) to include details of bus stop plan annotating bus cage and waiting/boarding facility, details of proposed bus stop infrastructure (pole, real time information, shelter, etc)
- Parking plan layout to include dimensions of spaces, driveway lengths, aisle widths and garages
- Communal bin storage collection points to be located outside of the public highway and in accordance with either the latest British Standard document or as agreed with the Local Planning Authority
- Annotation of details regarding TROs (Traffic Regulation Orders), lining, etc that would have been referred to as part of the approved planning permission but may be Section 106/Section 278/Minor Works
- Annotation of public rights of way where these are affected by the proposed layout
- Position of street trees proposed within those areas which are to be proposed for possible adoption

- Provision of a Road Safety Audit Stage 1 and Designer's Response for the site layout as proposed which accords with the requirements of Policy LUT 8 of the Warwickshire Local Transport Plan 2011-2026 and guidance noted above. RSA brief to be agreed with the Highway Authority prior to the commission of the audit report.

Trees will be considered at Section 38 stage due to the approval procedure of street lighting. However, where they are to be an integral part of the street scene details should be included to give an understanding of the aspirations of the LPA/developer with respect to this element of the site layout.

The developer is to advise, at the time of submission, if the development site falls within a 'Dark Skies' area as this will impact on any traffic calming/layout proposals.

Longitudinal drawings are to be submitted if it is not possible to achieve the adoptable standards as set out in Part 3. Of particular concern is where the overall street gradient is too steep and/or numerous driveways/access crossovers may result in access difficulties for the mobility impaired. Such layouts may require a wider footway/footway-verge margin to be provided.

Design details can be found in Part 3 Street Design (Residential S38).

Part 2 Highway Design and Technical Review

2.1 Introduction

This part of **The Warwickshire Design Guide** covers the design and technical approval of Category 2 or 3a Roads (refer to Table 1.1 in Part 1 of this guide). These roads are typically the strategic and main distributor (primary) roads in the County network, but their design must incorporate considerations to promote walking and cycling in line with WCC's Local Transport Plan.

Designers should follow the guidance provided in this section, when indicated after using the flow chart in Part 1 Figure 1.2, to determine the appropriate design standards for their improvement.

It is expected that the guidance included in this part of the Design Guide will be appropriate for junction improvements connecting a development to the existing network and the distributor roads within larger developments.

The vision of WCC's Land Use and Transportation Strategy is:

'To encourage new development, which is accessible, safe, sustainable and integrated with the transport network, including modes other than the car'.

Therefore, the primary focus of the strategy is to ensure development is located where it can be linked to public transport and where easy walking and cycling access is available to employment areas, shops, schools and other services, thereby reducing social exclusion and dependence on travelling by car. Larger developments should be close to high quality public transport corridors, either existing or proposed, and through routes for buses should always be included within the layout.

The design of the road infrastructure using the correct standards is critical to enabling the vision to be realised.

The County Council expects the Design Manual for Roads and Bridges (DMRB) will be the primary design manual used for new improvements. Developers' attention is drawn to GG101 Revision 0 Note 2 which states:

"Where a local highway authority decides to use the DMRB in whole or in part for development of its own highway/ road network, the overseeing organisation is defined in accordance with their own procedures."

In these situations, Warwickshire County Council will act as the overseeing organisation.

2.2 Scheme Delivery Outline

For improvements that will be carried out on the existing road network, it is expected, once planning consent has been granted, the developer will contact WCC Engineering Design Services to progress their application to enter into a formal agreement to begin the process of scheme delivery, as advised in the informative note provided as part of the planning consultation process.

In general, the process is expected to be as follows;

- Developer to apply to enter into a Section 278 Agreement or Section 38 Agreement. Further information on legal agreements is included in Part 10 and *Annex 10.1*.
- Developer to supply a preliminary general arrangement drawing which corresponds to the planning consent.

WCC will then supply a fee estimate which will cover the fees relating to the Technical Review process and procurement of a contractor from the current WCC Contractors' Framework. This work will be based upon the scope of the works included on the preliminary general arrangement drawings and the estimated programme for construction. The fee estimate will also outline what information is required for the Technical Review which can be found in *Annex 2.1 Information relating to technical review, contract preparation, tendering and construction supervision of Section 278 highway improvements in Warwickshire*.

Prospective developers should note - if relevant information is not supplied then this will increase the time for Technical Review and additional fees may have to be charged for the additional reviews. It is also important for developers to understand the typical timescales for Technical Review are months rather than weeks, but a robust initial submission based on the recommendations in this Design Guide will keep the timescales to a minimum.

- When Technical Review and procurement phase fees are paid and works information is submitted, WCC will commence Technical Review. If departures from standards are required these should be applied for and resolved at an early stage, see *Annexures 2.3 and 2.4* for further information on Departures from Standards.
- The developer will be responsible for liaising with utility companies together with placing and paying for orders for any necessary diversion works. **The developer must provide proof of payment for the diversion works prior to the start of the tendering process.**
- When Technical Review is approaching its conclusion, the developer's consultant is to supply an updated scheme estimate which will be used to add the scheme to WCC's capital programme. At this point, site supervision fees will be estimated once the full extent of the works is confirmed.
- After consultation with the developer, WCC will book the road space for construction. The timings will be agreed with the developer but if these change due to a delay to the following processes then this could mean a new notice has to be given and the scheme delayed accordingly.
- When Technical Review is completed, and the necessary certificates certified, WCC will prepare the construction contract document and invite tenders from WCC Framework Contractors. The contract will be let using the NEC conditions of contract.
- When quotes are received the developer will agree in writing for the contract to be awarded.
- **The construction contract will only be awarded when the legal agreement (e.g., Section 278 or Section 38 etc.) has been signed, a bond is in place and appropriate fees paid including statutory undertakers' fees. Further information on procurement, contract award and legal document requirements is provided in Part 10 of this Guide.**
- During the construction phase WCC will pay the contractor's invoices and invoice the developer in arrears.

2.3 General Design – Technical Review and General Considerations

WCC will expect a developer to appoint a competent consultant to carry out the design and prepare the works information for inclusion in the NEC contract documents.

During the technical review phase of any Section 278 highway improvement tasks will need to be performed by the developer, the developers' designers and WCC's Technical Review Phase Team. It should be noted that in the absence of a developer's designer for a particular Section 278 scheme, the responsibilities of the developer's designer will rest with the developer.

During the design phase, the developer will perform the role of Client under the Construction (Design and Management) Regulations 2015 (CDM 2015) and will therefore appoint the Principal Designer. The developer must ensure the Principal Designer role is performed throughout the various contract stages (including the construction phases of the scheme) as required by CDM 2015. This will be essential in circumstances where construction phase redesigns become necessary.

Furthermore, prior to Technical Approval commencing the developer shall provide WCC's Technical Review Phase Team with:

- A copy of the Planning Permission for the associated development, including details of any conditions
- One complete set of the proposed scheme-specific tender drawings and any other relevant documents in electronic format together with a signed copy of the Design Certificate
- A list of design standards intended to be used (or has been used), together with details of any proposed applications for departures from standards (see *Annexures 2.3 and 2.4* for further information). As stated previously, the design standards used will be determined using the flow chart shown in Part 1 Figure 1.2 which will need to be agreed at pre-application meeting stage and will form the basis of drawings included in the associated Planning Application. Note: departures from these standards are only likely to be accepted in exceptional circumstances
- Details of any tree preservation orders (TPOs) for trees affected by the Section 278 Scheme.
- Details of any archaeologically sensitive areas, scheduled monuments, listed buildings or conservation areas that might be affected by the S278 scheme.

To ensure a smooth transition from the Design and Technical Review phases to the contract procurement and construction phases, the developer shall submit for approval the CVs for the individual or individuals within the design organisation who

will perform the actions of the Principal Designer before making the appointment. WCC will expect the appointed organisation, and the individual who will be performing the actions of the Principal Designer, to have suitable experience of designing works to be carried out:

- On live carriageways under appropriate forms of traffic management,
- With adequate provision for pedestrians and cyclists during the construction phase,
- So that the completed works minimise the health and safety risks to those who will perform future maintenance operations.

The organisation undertaking the Principal Designer responsibilities shall be identified and a copy of the letter of appointment shall be supplied. Prior to the commencement of the procurement phase for the Section 278 highway improvement, the Principal Designer shall prepare and supply the Pre-construction Information in a format agreed in advance with WCC's Technical Review Phase Team.

More details of what work is required to be carried out by the developer and the developer's Designer is contained in *Annex 2.1 Information Relating to Technical Review*.

In addition to the above, the developer shall provide a copy of the notice (Form F10) submitted to the Health and Safety Executive, together with a copy of all correspondence between the designer(s) and the Principal Designer during the design phase of the scheme.

2.4 WCC Standard Details - Designing for Maintenance

The County Council not only insist on high quality designs using the correct design standards, but also on the use of an appropriate specification of materials that will ensure the new improvement can last for the appropriate duration before maintenance is required.

WCC's [Surfacing and Structural Maintenance Strategy](#) and [Highway Construction Details](#) (HCD) provide information on standard construction details and materials routinely used within Warwickshire. Developers should be aware that deviations from standard details are likely to incur the requirement for commuted sums for future maintenance.

WCC requires design work not specified in WCC's HCD to be undertaken in accordance with principles outlined in The UK Roads Liaison Group (UKRLG) document 'Well-managed Highway Infrastructure – A Code of Practice'.

Design should accord with Recommendation 13 – Whole Life/Designing for Maintenance which states 'Authorities should take whole life costs into consideration when assessing options for maintenance, new and improved highway schemes. The future maintenance costs of such new infrastructure are therefore a prime consideration.'

Table 2.1 below provides factors developers and designers must consider during the design process to ensure that adequate consideration is given to future maintenance requirements of schemes. This list is not exhaustive but includes several key issues that may need to be addressed. Failure to address issues may lead to the requirement for payment of commuted sums to manage specific maintenance challenges.

Issue	Check	Action
Scope and Scale		
Intended life of scheme	Is the scheme long life or 'temporary' and likely to be affected by future redevelopment?	Choose materials and products relevant to the life of scheme.
Nature of scheme	Is the scheme a 'unique' prestige project or a 'routine' standard one?	Choose materials and products relevant to the type of scheme.
Scope of scheme	Has the scheme been 'value-managed' to consider all possible marginal benefits?	All 'significant' schemes should be value managed.
Use of scheme	Is the scheme likely to be subjected to particularly 'heavy duty' traffic use with high rates of wear?	Select design and materials to mitigate these affects as far as possible.
Cost of scheme	Have the costs of future maintenance been calculated and included in future budgets/commuted sums?	Identify any extraordinary maintenance costs and report these alongside construction costs.
Design Aspects		
Pedestrians and cyclists	Do proposals for footways and cycle routes fit the actual desire lines used?	Redesign to reflect actual paths to avoid erosion and later replacement.

Heavy goods vehicles	Is footway paving likely to be over-ridden by HGV or other parked vehicles?	Where necessary use heavy duty paving or prevent over-riding to avoid frequent costly replacement.
Grassed and planted areas	Are grassed and planted areas of a size and position to be effectively maintained?	Redesign or remove where necessary to avoid future poor appearance and later redesign.
Trees	Have trees been selected and positioned to avoid future problems with roots, obstruction or leaf fall?	Reselect or reposition where necessary to avoid potentially expensive future problems.
Traffic signs	Are traffic signs required to be illuminated or can they be reflectorised?	Maximise use of reflective signs to reduce energy costs.
Historic Environment	Are standard materials suitable in this location?	Discuss with LPA Conservation Team and WCC DM on alternative enhanced materials to suit the environment. If agreed, additional costs will be met by developer accompanied by a commuted sum.
Maintenance Operations		
Maintenance regime	Does the scheme require specialist maintenance regime?	Identify cost of specialist regime and, where appropriate, consider cheaper alternatives.
Cleansing	Does the scheme require specialist cleansing regime?	Identify cost of specialist regime and, where appropriate, consider cheaper alternatives.
Traffic management	Will maintenance require special traffic management?	Identify traffic management costs and minimise wherever possible, possibly through co-ordination with other works.
Maintenance access	Is there a safe and convenient access for plant and personnel?	Redesign scheme to provide safe and convenient access.
Materials and Products		
Specialist materials	Are the materials used for the scheme of standard or specialist nature?	If specialist materials used ensure availability of future replacements.
Durability of materials	Does the durability of the materials provide	Select materials relevant to the intended

	substandard, oblique, sufficient or excessive life?	life and nature of the scheme.
Failure mechanism	How will material/product approach the failure condition – slowly/quickly?	Programme safety and service inspections on basis of risk assessment
Life extension	Are there any processes which could be used to extend useful service life at economic cost?	Investigate cost benefit of using life extension products.
Replacement practicality	Are there likely to be any difficulties in replacing failed sections?	Undertake risk assessment and plan for the likely difficulties.
Replacement cost	Is the cost of replacement likely to be disproportionately high?	Consider alternative materials and products.
Reuse and Recycling		
Practicability of reuse	If the scheme is a short life scheme what is the scope re-using materials and products?	Choose re-useable materials and products wherever possible.
Practicability of recycling	What is the scope for recycling materials and products?	Where re-useable materials and products are not appropriate, use recyclable wherever possible.

Table 2.1 - Required Maintenance Considerations

In general accordance with The UK Roads Liaison Group (UKRLG) document 'Well-managed Highway Infrastructure – A Code of Practice', WCC defines the hierarchy of existing roads and footways in the County as shown in Table 1.1. The hierarchy of the road and footway must be considered when making design decisions.

2.5 The Highways Resilient Network

The Transport Resilience Review recommends that Local Highway Authorities should "Identify a 'resilient network' to which they will give priority, in order to maintain economic activity and access to key services during extreme weather" (DfT, 2014). This has subsequently been supplemented by Well-Managed Highways Infrastructure (A Code of Practice) which further recommends; "Within the highway network hierarchy a 'Resilient Network' should be identified to which priority is given through maintenance and other measures to maintain economic activity and access to key services during extreme weather." The resilient network is part of the winter maintenance network which is a defined network on which we undertake

precautionary salting. The winter maintenance network is much more extensive covering approximately 46% of our total network.

Developers and designers must consider Warwickshire's currently defined resilient network when proposing changes to the existing highway network. Alterations to the network must not compromise the Authority's ability to maintain it during extreme weather conditions.

2.6 Pedestrian Facilities

The layout and design of footways should aim to provide convenient, appealing and safe routes for pedestrians. The provision of adequate and convenient car and cycle parking facilities will be a significant factor in discouraging ad-hoc parking that might obstruct pedestrian routes.

Footways must be designed to take account of the type and function of adjacent carriageways, location of apparatus for statutory and other services, street furniture and pedestrian movements and vulnerable road users in the vicinity of schools, shops or other community buildings.

For sites identified as 'roads' using Figure 1.2 in Part 1; footways, footpaths and cycleways must be provided and designed in accordance with standards contained within DMRB. For 'streets', footways, footpaths and cycleways (where provided) should be designed and provided in accordance with Manual for Streets recommendations and requirements, which have been used to inform Part 3 of this guide. If there is any uncertainty as to the Authority's requirements, developers should contact WCC to discuss further and confirm.

Pavement construction requirements for footpaths, footways and cycleways are detailed in the County Council's [Surfacing Strategy Guide](#) and construction details are included in [WCC HCD](#).

In addition to the standards published in DMRB and the guidance contained within the Manual for Streets, the Department for Transport has published guidance on how to design for '[Inclusive Mobility](#)'. WCC has considered this document when establishing the widths shown in the HCDs (Highway Construction Details).

Therefore, when designing footways and considering footway width, designers must note that clear width of 2000mm is needed to allow two wheelchairs to pass one another comfortably. This should be regarded as the minimum width. For information regarding longitudinal gradients, refer to the details provided in Part 3.

Crossfall on footways and footpaths is necessary to provide good drainage, but if too great, can make it difficult for wheelchair users. Variable crossfall, such as may be found when travelling along a street with vehicle crossovers, can be problematic as it affects the steering of wheelchair users and can also cause problems for people with walking difficulties. Designers should take these problems into account when considering frontage parking in residential areas, which may result in the installation of crossovers.

If there is a steep slope or drop at the rear of the footway, precautions must be made to prevent wheelchair users running over the edge or blind or partially sighted people walking over it. Suitable mitigation at the side of or across footways may be necessary in such instances.

On longer side roads and residential roads, dropped kerbs should, where possible, be provided every 100 metres to avoid the need for pedestrians and the mobility impaired to make lengthy detours to cross the road having given due consideration to desire lines for pedestrians and inter-visibility.

If the provision of ramps or handrails within the public highway are determined to be necessary, developers, designers and engineers must refer to DfT guidance document '[Inclusive Mobility](#)' for advice and guidance to provide a feature that is suitable and fit for purpose.

2.7 Cycle Facilities

Developers will be expected to ensure that new developments (residential, retail or employment sites) are connected to the local cycle network by safe, convenient and attractive cycle routes to enable residents to cycle to town centres, rail stations, educational establishments and other key destinations.

As mentioned in Part 1, developers should refer to current [Government Guidance LTN 1/20](#) (or successor guidance) for designing high-quality, safe cycle infrastructure when planning their sustainable transport strategy.

2.7.1 General Principles

New developments should be designed to encourage cycling for local journeys, in line with the National Planning Policy Framework, national transport policy objectives and Warwickshire's Local Transport Plan and Local Cycling and Walking Infrastructure Plan (LCWIP).

The internal network of roads and streets should be designed in accordance with Manual for Streets principles, so that cyclists can be accommodated safely within the road network. Where traffic levels and speeds are higher, dedicated provision for cycling is required (see Figure 2.1 below). It is important to ensure good access is provided to the cycle route network from all areas of the site. The key design principles for providing for cyclists are set out Local Transport Note LTN 1/20.

2.7.2 Dedicated Cycling Infrastructure

Where dedicated cycling infrastructure is provided adjacent to busier roads, this should take the form of a cycle track, which is both segregated from traffic and separate from provision for pedestrians.

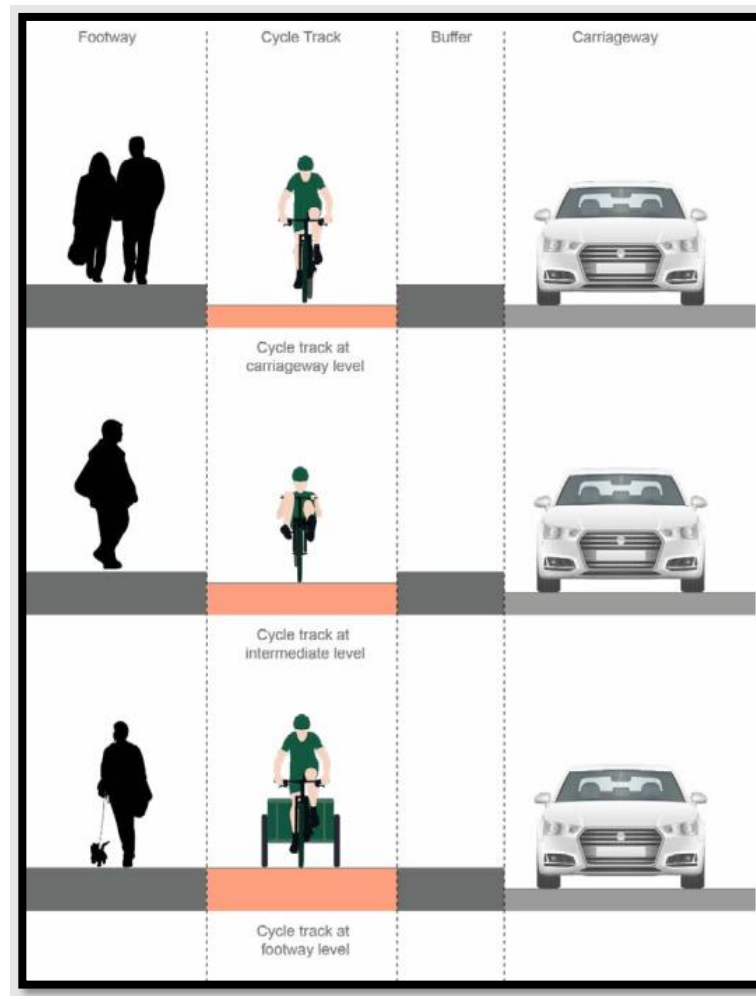


Figure 2.1 - Different levels of segregation (extracted from LTN 1/20)

The design of cycle tracks should be in line with the latest guidance set out in LTN 1/20, and site-specific issues should be discussed with WCC. Any verge buffers will need to be a minimum of 1m wide. All routes will need to connect with the existing and planned cycle route network as identified in the Warwickshire LCWIP.

Shared use footway / cycleways may be appropriate at some locations, particularly where pedestrian and cycle usage is likely to be lower, and through open spaces. In these cases, a minimum surfaced width of 3 metres will be required.

Whilst cycling infrastructure provision for new development sites should be guided by the principles and design guidance in LTN 1/20, developers should consult with WCC's Transport Planning Unit to ensure new provision is tailored to specific local requirements.

Cycle Audits and Cycling Levels of Service assessments should be considered as part of Transport Assessments.

2.7.3 Crossing Points

Interruptions to cycle routes should be minimised to ensure that cycling is as convenient and attractive as possible. Where cycle routes cross minor side roads with low traffic flows, designers should seek to provide cycle priority crossings in accordance with LTN 1/20. Where cycle routes cross busier roads, provision of refuges, parallel crossings or Toucan crossings may be necessary.

2.7.4 Cycle Barriers

Cycle routes should be designed to provide efficient travel and should be free of unnecessary obstructions. Historically, staggered guard rail barriers have been used throughout the UK as a method of controlling speeds of cyclists near to junctions with adjacent roads.

Increasingly, staggered barriers are responsible for creating accessibility issues for mobility impaired pedestrians, resulting in them being unable to access the footway. They can also create a collision risk for cyclists, particularly during the hours of darkness, and prevent cyclists from using cycleway facilities due to the difficulty in negotiating through the staggered barriers.

The authority does not support the introduction of staggered guard rails as a method of reducing cyclist speeds at the interface between a cycle route and carriageway. It is the preference of the authority that other measures are explored such as the use of warning signage or road markings.

In exceptional circumstances, the use of physical measures can be considered. It is recommended to contact WCC Transport and Highways tpu@warwickshire.gov.uk to obtain advice relating to the particular risk that has been identified during design to agree a solution.

2.7.5 Signing

Direction signing can promote the use of new cycle routes, highlighting how they connect to both the surrounding cycle network and key destinations outside the site. Cycle direction signs (including destinations / distance as appropriate) should be included in cycling infrastructure proposals and agreed with WCC's Transport Planning Unit at an early stage.

2.7.6 Connections to the Wider Cycle Network

It is vital that cycling provision included in new developments connects safely and conveniently to the existing and proposed cycle network as set out in the Warwickshire LCWIP, and other emerging proposals, to ensure that cycling is a viable choice for local journeys. Developers will be expected to provide contributions towards the infrastructure required to connect development sites to key local destinations and / or the existing cycle network.

2.8 Public Transport, Bus Stop Provisions and Services

WCC acknowledges the importance of the role local bus services and supporting bus and highway infrastructure plays in delivering connectivity between new development, urban centres, major employment sites and other prominent generators of local trips. The position of the County Council is aligned with national and local policy, as stated below:

- The National Planning Policy Framework (NPPF) steers development towards promoting its connectivity with sustainable transport to facilitate sustainable development and contribute towards wider sustainability.
- The NPPF also promotes the integration of planning and sustainable transport to provide attractive alternatives to travelling by car to access employment, education, health facilities, leisure, amenities and health objectives - aimed at providing people with a real choice about how they travel.

- The County Council requests provision and/or improvements to local bus services in association with new development in alignment with the policies established in the Warwickshire Local Transport Plan 2011-26, in respect to promoting public transport connectivity between new development and local amenities.
- The Warwickshire Local Transport Plan 2011-26 also specifies that all occupiers within a new development should be no further than 400 metres away from the nearest bus stop, in line with policy stated in the in respect to connectivity between new development and local bus services.

For further information relating to WCC's requirements please refer to *Annex 2.2 Warwickshire County Council Local Bus Service Provision and Supporting Bus and Highway Infrastructure Joint Developer Guide and Design Guide*.

2.9 Traffic Signals

A typical example of highway mitigation works might be the installation of a traffic signal junction, signalised roundabout, controlled pedestrian crossing, etc.

Any such scheme shall be designed in accordance with relevant design standards by a competent person(s) and issued with an approved LinSig model (latest software version). CV's will need to be provided for the individual/s who have designed and approved the scheme/LinSig model. If the design or model is not fit for purpose, WCC reserve the right to carry out a design audit by an external organisation at a cost to the developer.

WCC reserve the right to only implement schemes that are justified in accordance with County Council's policies for:

- [The Provision of a Traffic Signal Junction](#)
- [The Provision of Pedestrian Crossings and Pedestrian Facility at Traffic Signals Junctions](#)

If required by the Principal Designer, WCC's TCIS (Traffic Control and Information Systems) team can offer a service to assist with the detail design of the signalisation scheme for the highway works based upon their detailed road layout

drawings being issued. A quotation for the detail design fees for preparing the system specification document (Appendix 12/5) and the controller specification form (TR 2500) can be provided on request by contacting tcis@warwickshire.gov.uk.

The County Council will tender for the scheme and appoint the Principal Contractor once the Section 278 Agreement is signed.

WCC will normally request the supply and install of traffic control equipment to be installed as part of the highway works by a specialist contractor appointed by the Principal Contractor.

As described in 2.2 and in more detail in Part 10, the highway works will be supervised by WCC. Where traffic signal equipment forms part of the works information, site supervision, factory acceptance test, site acceptance test, commissioning etc. and will be carried out by WCC, this will be included in the site supervision fees associated with the Section 278 Agreement.

The installation will be subject to a commuted sum towards the future maintenance of the traffic signal equipment and one upgrade. The current commuted sums are listed in *Annex 10.1 Highway Works Agreements*.

2.10 Construction Traffic

Where construction is likely to impact on the operation of the highway network, developers must submit a Construction Management Plan (CMP) and a Dilapidation Survey as described in Part 1.5.7 for approval by the Authority prior to commencement of construction.

Part 3 Street Design (Residential S38)

3.1 Introduction

It is expected the guidance included in this part of **The Warwickshire Design Guide** will be appropriate for the design for adoption of Secondary Routes (Secondary Distributors) and below. These types of roads might provide a transition between surrounding major roads, form a network of estate roads, or become the more pedestrian dominated link roads, local access roads and minor roads.

Therefore, this part covers the design and technical approval relating to roads which fall into Category 3b, 4a or 4b as defined in Table 1.1 in Part 1 of this guide and described more fully later in this section.

Designers should follow the guidance provided in this section when directed after using the flow chart in Part 1 Figure 1.2 to determine the appropriate design standards for their improvement.

It must be noted that this section is not to present a rigid set of rules that must be followed in the design of residential layouts. Moreover, it seeks to provide a set of standard objectives and principles while indicating minimum standards to be met where necessary.

In addition, developers should be aware that roads serving industrial developments exclusively are unlikely to be adopted. If there is a desire for an industrial estate to be served by buses, developers may need to enter into private agreements with public transport operators to facilitate this.

It is expected most of these roads will be delivered following the completion of a Section 38 Highways Act 1980 Agreement. More information on the Section 38 process and how to enter into this form of Agreement is contained in *Annex 10.1 Highway Works Agreements*.

3.2 Scheme Delivery Outline

Following planning consent, the delivery process typically follows the process outlined below;

- Developer to apply to enter into a Section 38 Agreement with appropriate fee
- Technical review undertaken
- Bond to be calculated
- Technical Approval letter issued
- Section 38 agreement to be signed and completed including provision of Bond
- Scheme inspection fees paid
- Scheme constructed by developer's contractor and inspected by WCC
- Appropriate percentage of bond reduced at certain trigger points as defined in the Section 38 Agreement
- Issue of the Provisional Certificate will be subject to the developer providing evidence of issue of the Certificate for the Section 104 (drainage) Agreement Provision Certificate for the associated maintenance period
- Any uncompleted remedial works must be carried out during the maintenance period before adoption can be requested
- Following the satisfactory completion of all clauses within the Section 38 agreement, the Final Certificate of Completion will be issued
- Road adopted and now maintainable at public expense
- Remaining Bond returned to developer

Details of the terms of the Section 38 Agreement, fees and how WCC calculate the value of the bond required is contained in *Annex 10.1* of this Guide.

Failure to complete within the timescales within the Section 38 Agreement is likely to result in additional inspection fees and works for example, replacement of streetlight units, etc.

3.3 Technical Review and General Considerations

To enable the Development Management Team (DMT) to provide a robust and efficient response to a planning consultation, the developer must provide within their application the following information:

- An engineering layout, detailing radii, carriageway/footway/verge widths etc.
- A plan detailing ALL visibility splays; inclusive of junction, forward, pedestrian and driveway splays.
- A proposed adoption plan.
- A plan detailing lining and signing as required including proposed locations for street name plates and 20mph zone (TRO required).
- Plans detailing the swept path analysis of the appropriate refuse vehicle and a fire tender. NB: further swept path analysis will be required, such as that of an MPV (Medium Passenger Vehicle) vehicle exiting driveways, if thought necessary.
- Bus stop plan to be included annotating bus cage and waiting/boarding facility. Details of proposed bus stop infrastructure (pole, real time information, shelter, etc).
- Garage details - if these are proposed they should accord with the dimensions as set out in Figure 3.2.
- Construction specification and standard details ([Highway construction details](#))
- Longitudinal sections - if they are not in line with the details below, then it is advised long sections are provided at an early stage to ascertain if the horizontal design can be amended to improve the gradient
- Highway drainage - if this is proposed, including road water run-off, pipe design, surface water treatment hazard index, and flood storage calculations. If a soakaway is proposed, suitable percolation test results must be provided (to BRE365). It is advised to enter discussions at this stage as not all highway drainage will be accepted and may preclude adoption.
- A plan detailing highway street lighting and landscaping.
- Street lighting design.

3.4 Road Hierarchy Further Information

The following information is provided to guide designers towards good design principles which WCC expect to see applied to the appropriate category of road.

3.4.1 Type 3b: Secondary Distributor Roads / Secondary Routes

Secondary Routes provide a transition between surrounding major roads and more pedestrian dominated link roads, local access roads and minor roads.

They should have at least one point of access, plus additional access points determined by the number of dwellings. Although they principally cater for traffic movements, they must still cater for safe pedestrian movement. Therefore, design speeds of 20mph are expected in residential areas.

Speed restraint measures must consider the requirements of buses where serving a bus route and the emergency services. Therefore, design should aim to minimise the use of vertical traffic calming measures wherever possible, and no vertical traffic calming features should be used where a bus service is to be provided.

Type 3b: Secondary Distributor Roads /Secondary Routes	
Road Width	6.7m – Bus route with on street parking 6.1m – Bus route with no on street parking Swept path tracking may require localised widening (see Part 1.6.1)
Dwelling Limits	No defined limit but could be limited based on site specific constraints.
Design Speed	20mph (TRO required), 30mph max if a bus route
Junction Visibility Splays	20mph – 2.4m x 25m (vehicles), 1.5m x 25m (at pedestrian crossing points) 30mph – 2.4 x 43m (vehicles), 1.5m x 43m (at pedestrian crossing points)
Footway/Cycleway widths	As per LTN (Local Transport Note) 1/20 but in areas of high activity provision will be required on both sides of road). Visibility splays should be provided in accordance with LTN 1/20.
Verge/Service Margin Width	2m to 4m – subject to agreement in respect of landscaping requirements
Crossfall	1:40
Longitudinal Gradients	1: 125 minimum (1:80 minimum in blockwork) 1: 20 maximum subject to a review of the length of the gradient in accordance with DfTs Inclusive Mobility document 1:50 minimum for a distance of 15m along all approaches to junctions
Vertical Curves	Minimum 'K' value of 6 Minimum length of curve – 25m
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicular access)
Horizontal Layout	The centre line radii, along with turning heads, shall be prescribed by the swept path analysis of the relevant refuse vehicle used by the Local Planning Authority.
Speed Restraint Centres	Maximum of 70m
Vertical Heights	Minimum effective height above ground level for any tree canopy within or overhanging a visibility splay – 4m on carriageways to ensure access for fire tenders – 2.3m for any segregated/shared cycle route – Trees/landscaping should not obscure any highway signage.
Direct Vehicular Access	No but will accept private drive crossover to serve six dwellings. Minimum 25m separation from junctions (see Figure 3.1)

3.4.2 Type 4a: Link Road / Tertiary Road (Type 1) and Type 4b: Local Access Roads / Tertiary Road (Type 2)

The purpose of a Tertiary Road is to provide direct frontage access to residential properties and connect with Primary Roads (Type 3a) or Secondary Routes (Type 3b). A feature of their design is that they should facilitate a safe and secure environment which encourages a modal shift towards sustainable methods of travel.

As the number of units being served from a Tertiary Road increases, the level of two-way vehicle movements also increases. Therefore, the increased carriageway widths reflect the unit numbers and potential vehicle movements, Tertiary Roads (Type 2) serving a maximum of 50 units and Tertiary Roads (Type 1) serving up to 200 units, unless multiple points of vehicular access.

Type 4a: Link Road / Tertiary Road (Type 1)	
Road Width	5.5m (swept path tracking may require localised widening - see Part 1.6.1)
Dwelling Limits	No more than cumulatively 150 from a single point of access, up to 200 cumulatively where a separate emergency access is provided from a separate point onto the adoptable highway network, more than 200 should have a minimum of two connected points of vehicular access
Design Speed	20mph (TRO will be required)
Junction Visibility Splays	20mph – 2.4m x 25m (vehicles), 1.5m x 25m (at pedestrian crossing points)
Footway width	Absolute minimum of 2m (on each side of road).
Verge/Service Margin Width	2m minimum
Crossfall	1:40
Longitudinal Gradients	1: 125 minimum (1:80 minimum in blockwork) 1: 20 maximum subject to a review of the length of the gradient in accordance with DfTs Inclusive Mobility document 1:50 minimum for a distance of 15m along all approaches to junctions
Vertical Curves	Minimum 'K' value of 4.5 Minimum length of curve – 25m
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicular access)
Horizontal Layout	The centre line radii, along with turning heads, shall be prescribed by the swept path analysis of the relevant refuse vehicle used by the Local Planning Authority passing an MPV (see Part 1.6.1).
Speed Restraint Centres	Maximum of 70m
Vertical Heights	Minimum effective height above ground level for any tree canopy within or overhanging a visibility splay – 4m on carriageways to ensure access for fire tenders - Trees/landscaping should not obscure any highway signage.
Direct Vehicular Access	Yes, where demonstrably safe with turning space within a private drive to allow for a vehicle to re-enter the public highway in a forward gear. Minimum 15m separation from junctions (see Figure 3.1)

Type 4b: Local Access Roads / Tertiary Road (Type 2)	
Road Width	5.0m
Dwelling Limits	Up to 50 (emergency point of access may be necessary for cul-de-sac)
Design Speed	20mph (TRO will be required)
Junction Visibility Splay	20mph – 2.4m x 25m (vehicles), 1.5m x 25m (at pedestrian crossing points)
Footway width	Absolute minimum of 2m (on each side of road).
Verge/Service Margin Width	2m minimum
Crossfall	1:40
Longitudinal Gradients	1: 125 minimum (1:80 minimum in blockwork) 1: 20 maximum subject to a review of the length of the gradient in accordance with DfTs Inclusive Mobility document 1:50 minimum for 15m along all approaches to junctions
Vertical Curves	Minimum 'K' value of 4.5 Minimum length of curve – 25m
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of vehicle access)
Horizontal Layout	The centre line radii, along with turning heads, shall be prescribed by the swept path analysis of the relevant refuse vehicle used by the Local Planning Authority passing an MPV (see Part 1.6.1).
Speed Restraint Centres	Maximum of 70m
Vertical Heights	Minimum effective height above ground level for any tree canopy within or overhanging a visibility splay <ul style="list-style-type: none"> - 4m on carriageway to ensure access for fire tenders - Trees/landscaping should not obscure any highway signage.
Direct Vehicular Access	Yes, where demonstrably safe with turning space within a private drive to allow for vehicles to re-enter the public highway in a forward gear. Minimum 15m separation from junctions see Figure 3.1

3.4.3 Minor Road / Private Driveways (Unadopted)

WCC encourage that all housing developments are designed to adoptable standards whether or not they are expected to be adopted in the future. WCC will not adopt any development of 6 dwellings or less. The details within the table below set out the requirements for where the adoptable and private boundaries will connect.

Minor Road / Private Driveways (Unadopted)	
Road Width	5m for a setback of 7.5m from channel line (assumes 5.5m vehicle length plus 2m footway/service margin, greater distance may be required); reducing to minimum of 4.5m (subject to WFRS comments). A width of 5.5m will be required for an access bound on one or both sides, i.e., an undercroft access.
Dwelling Limits	6 maximum
Design Speed	< 20mph
Junction Visibility	2.4m x 'y' (vehicles), 'y' speed dependent on 85th percentile speed/design speed
Pedestrian Visibility	2.4m x 2.4m (as taken to rear of footway either side of driveway access)
Access / turning	Access with suitable turning provision for delivery vehicles e.g., Online shopping / supermarket delivery

Where developments are to remain unadopted, developers must be aware that the Highway Authority will not be liable for future maintenance, street cleansing, lighting, parking enforcement, drainage or other public liabilities, as they will have no powers under the Highways Act. Private driveways will not be adopted as public highway.

Where developments are proposed to remain unadopted, WCC encourage developers to enter into discussions early in the design stage to satisfy any specific highway requirements that may be present on a case-by-case basis.

The connection from a private driveway to the public highway shall be laid out as a dropped crossing in accordance with Section 184 of The Highways Act 1980, set out at 90 degrees to road where possible. Connections not at 90 degrees may be considered unacceptable for reasons of highway safety and would be assessed on a case-by-case basis.

The practical requirements for servicing by a refuse vehicle and/or a fire tender in case of emergency must be incorporated into the design of all developments whether they are proposed for adoption or not. Where driveways exceed a maximum length of 45 metres from the highway boundary, a minimum width of 3.7 metres should be provided to enable access by emergency vehicles (fire appliance). Turning provision will also be necessary where such driveways exceed 20.0 metres for emergency access (fire appliance). Also see 3.12 and 3.13 below.

To prevent extraneous material being deposited within the limits of the Public Highway, private driveways must be surfaced with a suitable bound material for the first 5 metres from the back of the public highway footway/service margin.

Gradients should not lead to kerbing of vehicles at the transition points, and a desirable crossfall of 2.5% (1:40) should be achieved to ensure that pedestrians and those with mobility aids are not compromised by adverse camber (see Part 1.6.1).

Positive drainage measures must be incorporated into design to ensure that driveways do not discharge surface water onto the public highway.

Parking associated with unadopted developments must not have a negative impact on the adopted public highway. Unadopted developments must therefore allow for adequate visitor parking provision in addition to private curtilage parking.

Any gates should be set at least 5.5 metres back from the back of the public highway footway. Any gates to residential properties should only open inwards to the private land and should not block any part of the public highway when opened.

Any private driveway from which more than 6 units will be served, this should be from a bellmouth access.

Turning areas for private drives must be provided where deemed necessary by the Highway Authority. Factors to be considered include volumes of traffic on the main road from which the dwelling(s) is served and highway safety implications.

Each access onto the public highway is considered a potential point of conflict. The Highway Authority, therefore, will not allow for more than a single point of access to new private dwelling or additional accesses to be added to existing dwellings, unless it can be demonstrated that the provision of additional access points is absolutely necessary and/or will not compromise public highway safety.

3.4.4 Single/Double Vehicle Access Crossings (from existing public highways)

Vehicular access crossovers should have a width of 3.0 metres (where unbounded) or 3.5 metres (where bounded) where serving one dwelling, and where serving two dwellings a width of 5.0 metres. This must extend into the site for a minimum distance of 7.5 metres as measured from the near edge of the public highway carriageway or a minimum distance of 5.5 metres from the near edge of the public highway boundary, whichever is the greater distance from the carriageway. In the case of a double vehicle access crossing this enables two opposing vehicles to pass each other at the point of access without obstructing the visibility splay required from the access. This also ensures that a vehicle entering a site does not stop or reserve back within the highway to allow an emerging vehicle out.

Other design criteria should reflect the details specified above for Private Driveways (see Part 3.4.3).

3.5 Types of Junctions

Priority controlled junctions (simple T-junctions) would generally be used to serve most residential developments. There may be the need for other junction forms i.e., ghost right turn lane tee-junctions, compact/small roundabouts or traffic signals to either avoid layouts that would otherwise result in a crossroads junction, or to provide sufficient capacity. The design for these junctions will need to be in accordance with the relevant standards i.e., DMRB. Any departures or relaxations should be identified at an early stage.

3.6 Junction Spacing

For junctions and/or vehicular accesses onto the major road, a minimum clearance of 25 metres is recommended to/from the nearside of the minor road, or Byway, (that is the side road) junction. These clearances ensure that when vehicles are indicating to turn into an access or a junction their intentions are clear to other highway users. In addition, such clearances ensure that vehicular visibility is maintained (see Figure 3.1).

Junctions on the same side of the road should be spaced so that a vehicle waiting to enter the main arm does not interfere with the visibility of a vehicle waiting at another minor arm.

Staggered junctions should be a minimum of 25 metres (centreline to centreline) however a greater separation may be required dependant on lane width and radii of the junctions.

Designers should avoid priority-controlled ('Give way') crossroads. When a crossroads cannot be avoided, WCC would normally expect the designer to provide an appropriate form of control such as a roundabout. Mini roundabouts will not be acceptable to provide access to a development.

A minimum clearance of 15 metres should be provided between the nearest side of a vehicular access on the major road, (including Byways) (that is the road with the priority), and/or the give way line/channel line at any adjacent junction with the minor road/side road.

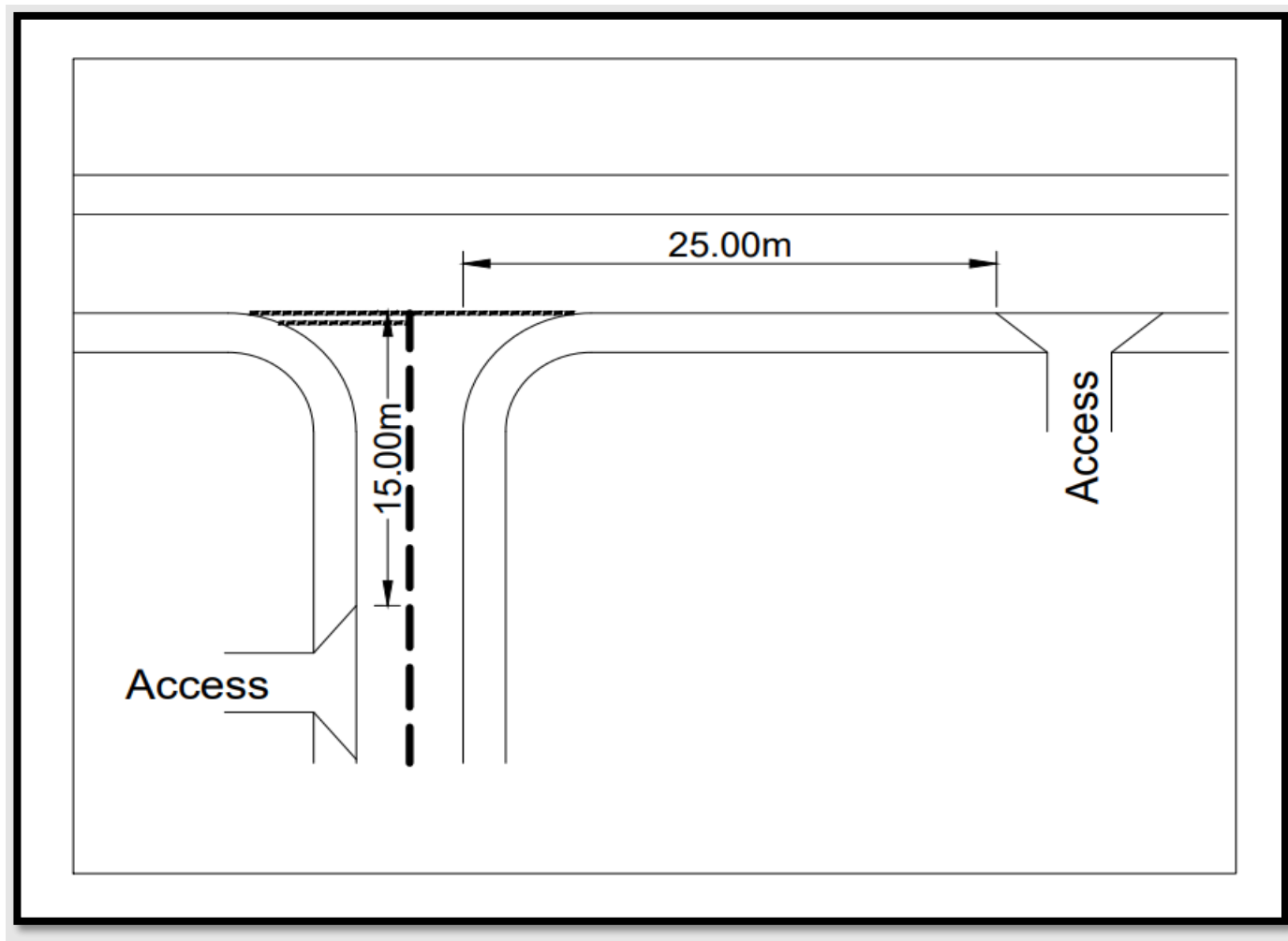


Figure 3.1 - Minimum spacing between side road junction and access

3.7 Visibility Splays

3.7.1 Junction and Forward Visibility

Table 3.1 shows the required junction and forward visibility splays, for new 'street' design. The visibility splays ('Y' distances) for new highway should be based on the proposed design speed, and the visibility splays where the connection is to an existing highway should be based on the measured 85th percentile vehicle approach speeds.

In accordance with Manual for Street recommendations, Warwickshire County Council will accept an 'X' distance of 2.4m in most built up situations (as this offers a good representation of the maximum distance between the front of the car and the driver's eye in driving position, see Part 3.5).

Design Speed (mph) (New Development Only)	Measured 85 th ile vehicle speed (mph) (Existing Development)	'Y' Distance & Forward Visibility (m)
20mph Tertiary Roads	16-20	25
25-30mph Secondary Roads	21-25	33
	26-30	43
	31-37	59

Table 3.1 - Required visibility splays for 'Streets'

Visibility splays on approach to and on exit from private drives/developments must be provided in accordance with the requirements as set out in Table 3.1. Visibility Splays must not pass over third-party land.

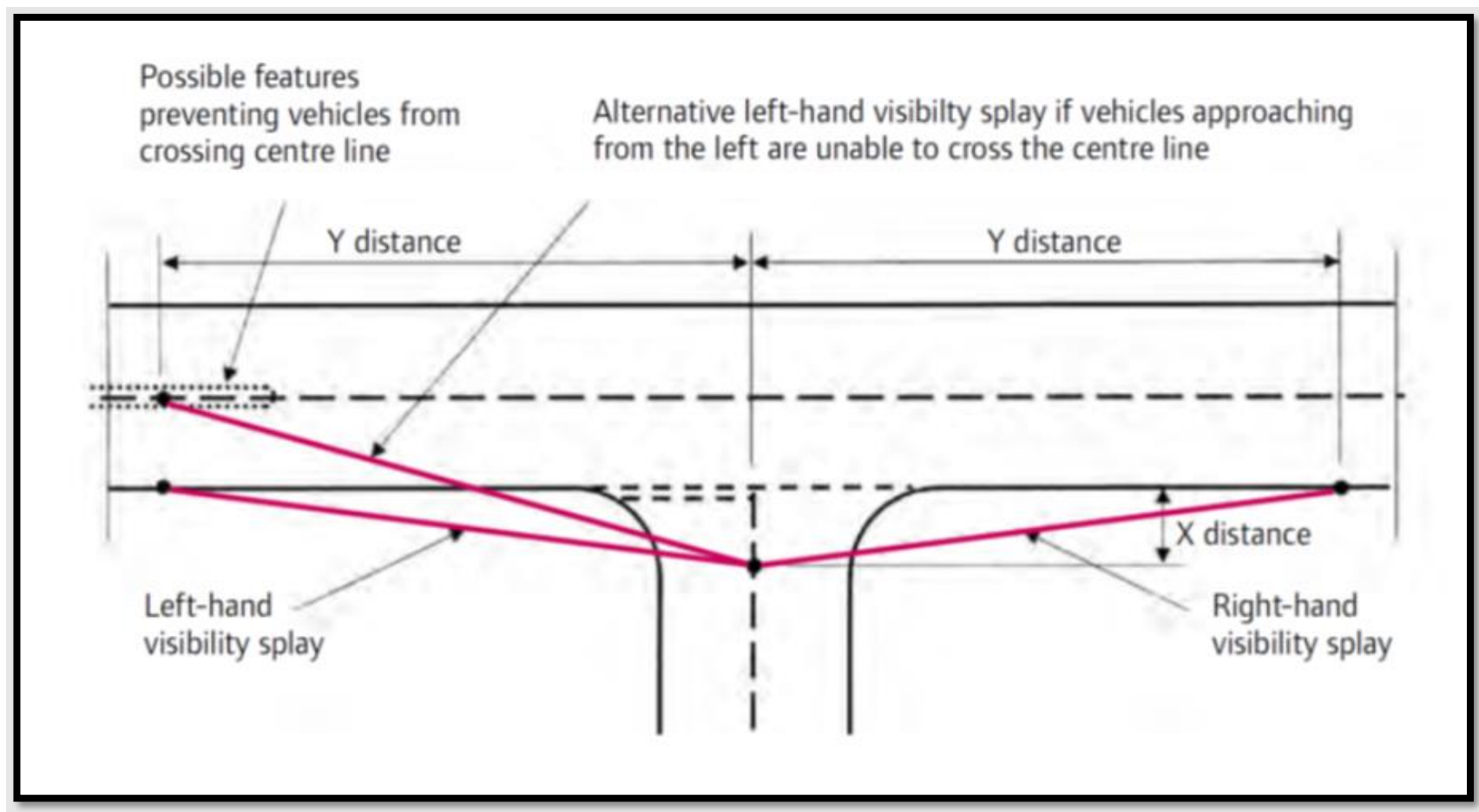


Figure 3.2 - Straight Road Visibility Splays (Extract from MfS Figure 7.18)

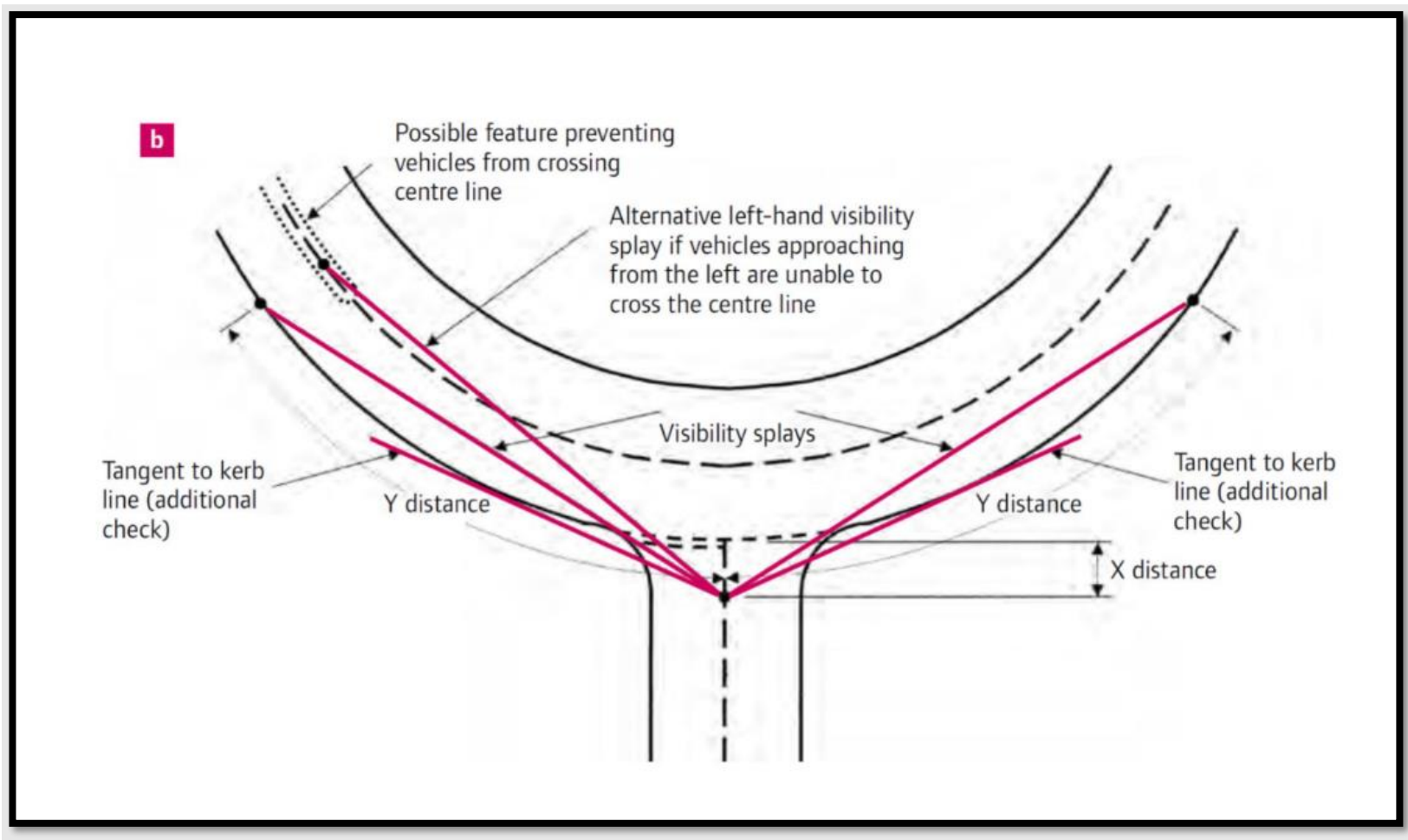


Figure 3.3 - Visibility Splay on Bend (Extract from MfS Figure 7.18)

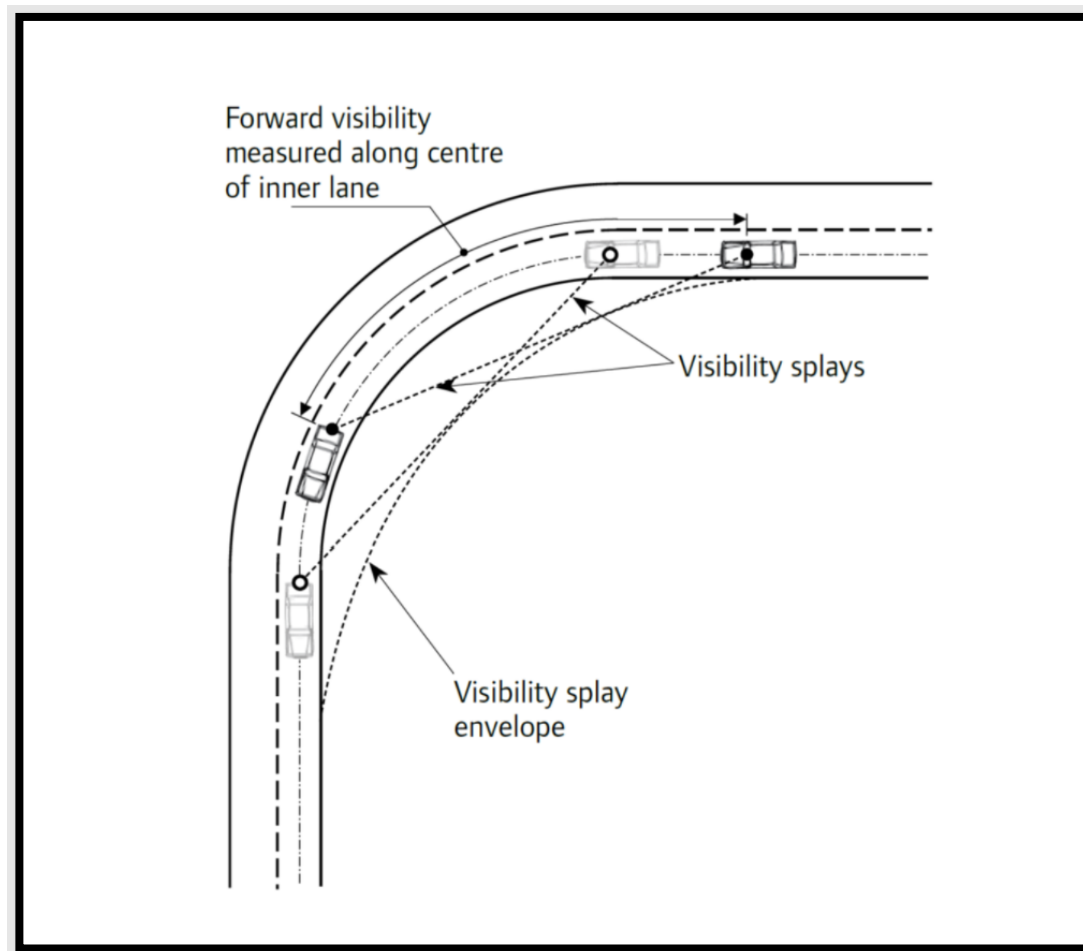


Figure 3.4 - Measurement of Forward Visibility (Reference: MfS Figure 7.19)

Where 85th percentile speeds are greater than 37mph/60kph, then the visibility splay should be based on the surrounding environment (see Figure 1.2).

Visibility splays from private accesses/driveways onto shared or segregated cycleways should be provided, and for these an 'X' distance of 2.4m should be taken from the rear of the highway (usually the footway) and a minimum 'Y' distance of 25m.

Visibility splays for pedestrians at crossing points (junctions or in-line) also need to be provided, and for these an 'X' distance of 1 metre should be used and the 'Y' distances set out in Table 3.1.

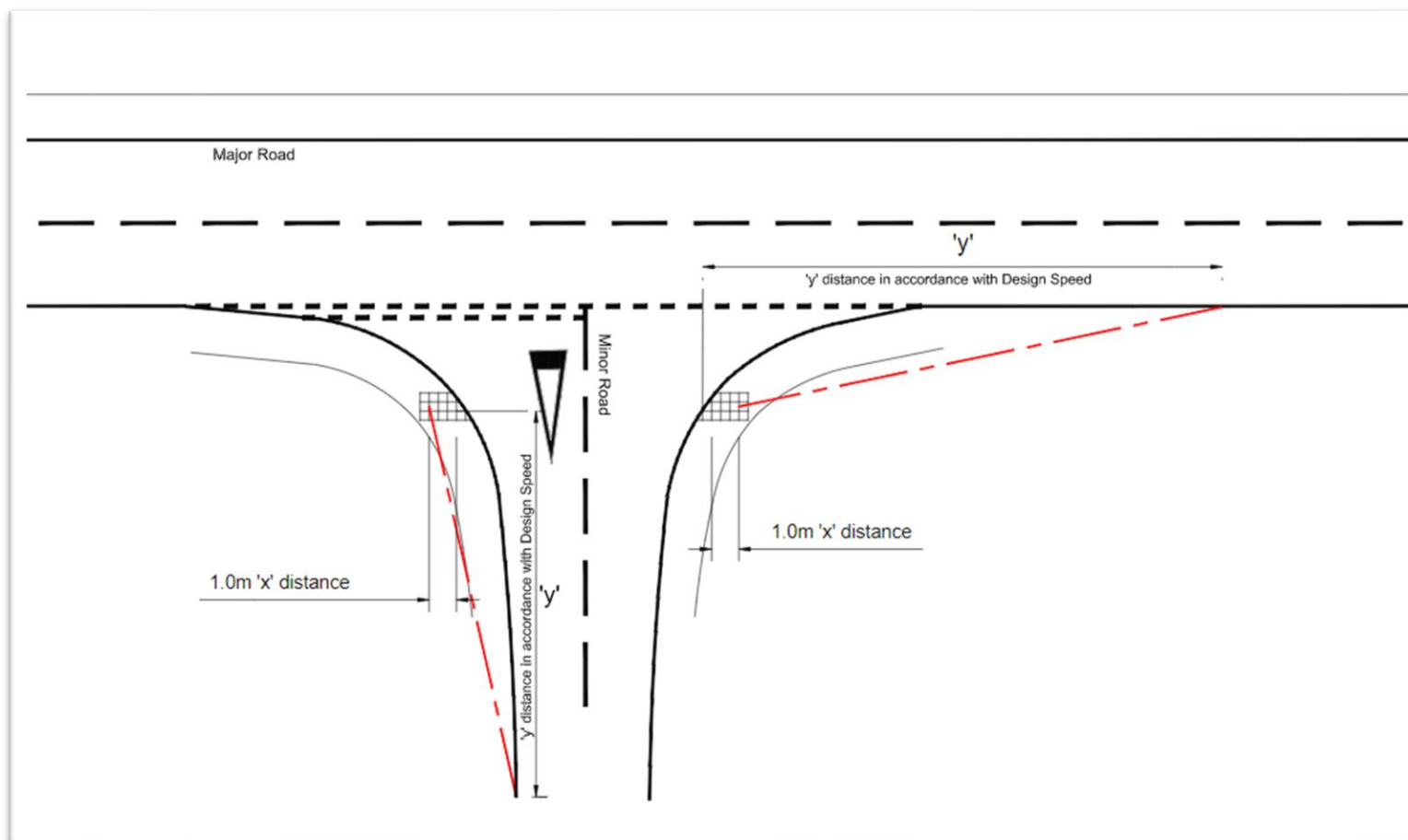


Figure 3.5 - Pedestrian Visibility Splays at Junctions

3.7.2 Vertical Visibility

When assessing vertical visibility, both driver and pedestrian lines of vision need to be considered in both vertical and horizontal planes. Adequate forward visibility must be provided to allow drivers to see a hazard and react in an appropriate and controlled manner before reaching it.

The height of 600mm should be taken as the point above which unobstructed visibility should be provided wherever there is potential for conflict between motorists and children.

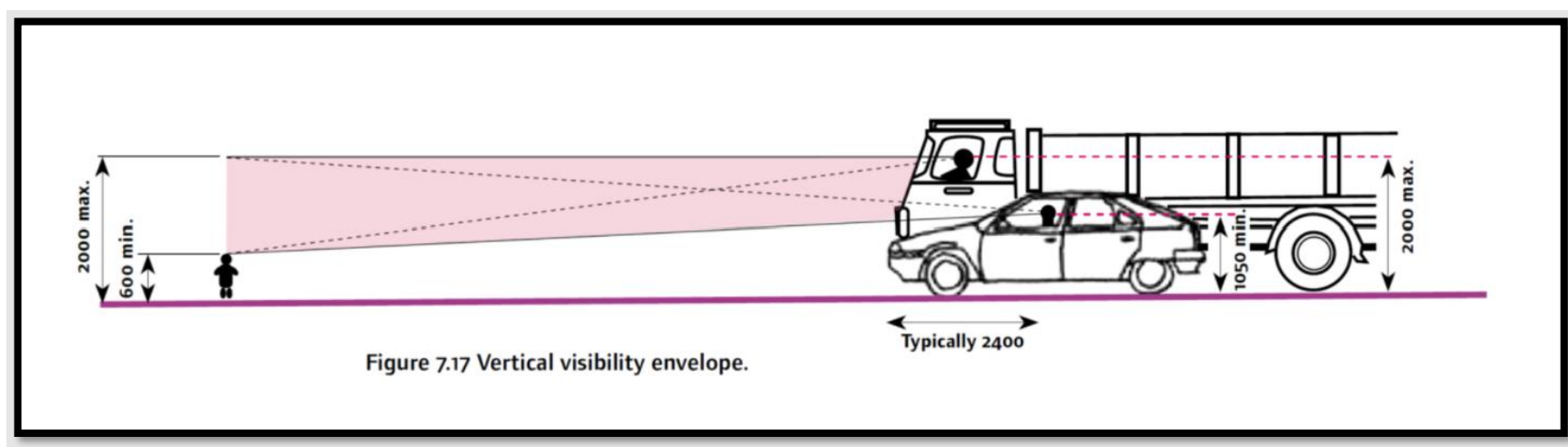


Figure 3.6 - Vertical Visibility Splay (Reference: MfS Figure 7.17)

3.8 Car Parking

Each of the five Local Planning Authorities in Warwickshire provide advice/policy with respect to the parking standards sought for respective development(s). Off-street parking provision for new developments should therefore comply with the relevant parking standards and policies. Parking policies should be regularly reviewed and updated to reflect the latest trends in car ownership and household composition.

On-street parking within a highway cannot be allocated or assigned to any individual person or property, and therefore its availability to accommodate a development's parking requirements cannot be assumed or relied upon. In some circumstances, on-street parking can be seen as an obstruction of the highway.

Private residential car parking spaces should measure a minimum of 2.5 metres x 5.5 metres. Where parking spaces are adjacent to a wall, fence or a boundary, these should be 3.0 metres wide to ensure clear access around the vehicle. Where these spaces are between walls or fences this dimension should be increased to 3.5 metres wide. Table 3.2 summarises parking space dimension requirements.

Single parking space (un-restricted)	Double parking space (un-restricted)	Single parking space (restricted one/both)	Double parking space (restricted)	Single garage (internal at narrowest point)	Double garage (internal at narrowest point)
2.5mx5.5m	5m x 5.5m	3.0/3.5m x 5.5m	6m x 5.5m	3.5m x 6m*	6m x 6m*

*additional width/length required for residential storage (cycles, etc) or evidence of separate provision

Table 3.2 - Required Dimensions for Parking spaces

Streets should be designed in such a way that, where on-street parking is not desired, drivers are deterred without the need for formal parking controls. If the provision of formal parking controls is unavoidable and required in the interest of public highway safety, developers must be aware that WCC will request commuted sums to cover the provision and associated enforcement of any necessary Traffic Regulation Order(s).

Where a proposed development may be of detriment to existing parking provision and/or amenity, developers must undertake and provide parking surveys to allow officers to make a considered assessment. As parking demands are sensitive to numerous variables, it is important the scope of a parking survey is discussed and agreed with WCC in advance of a survey being undertaken (see Part 1.5.3). Failure to undertake a survey in accordance with the requirements of WCC may result in a requirement for a developer to commission additional surveys.

3.9 Garages

Garages should be set back a minimum distance of 6.0 metres from the highway boundary to ensure a vehicle can be parked clear of the highway and to ensure that the garage door can be opened without hindrance.

A minimum width of 3.5 metres should be applied to the internal dimensions of a single garage or carport, with the overall internal length of 6 metres in a garage and 5.5 metres for a carport (or greater where required by the LPA SPD (Supplementary Planning Documents)). Where no further external storage is to be provided, then an additional width and length will be required to ensure that other elements of storage such as bicycles can be accommodated without impacting on the parking element of the garage. This is particularly important where a garage is to be included in the overall parking provision for a development.

The minimum internal dimensions (not including the storage of bicycles) should be as shown in Figure 3.7.

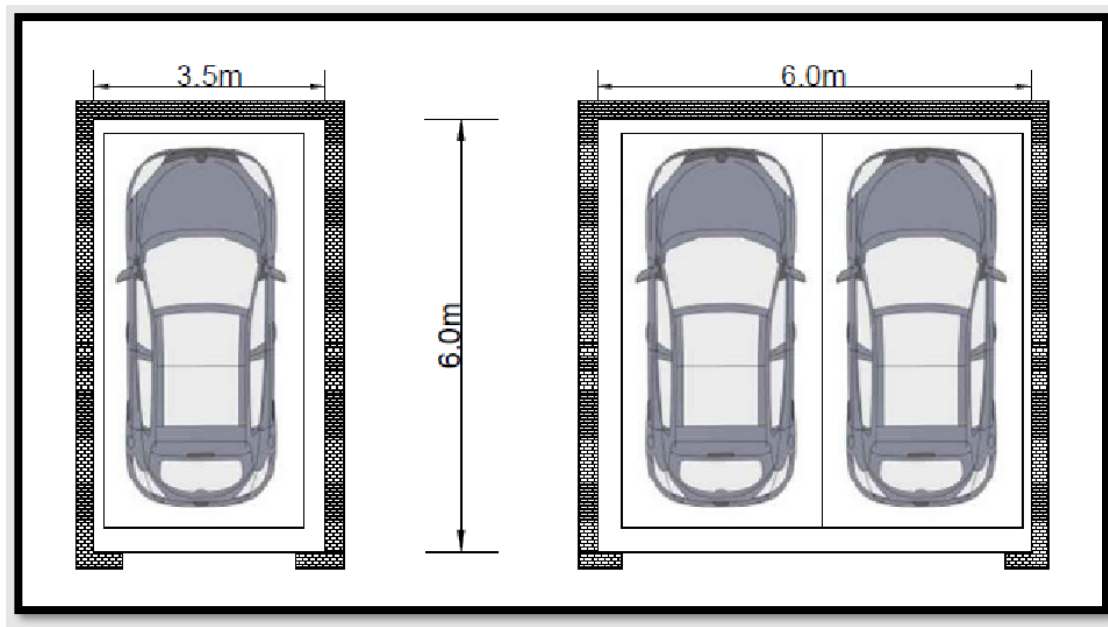


Figure 3.7 - Internal dimension requirements for garages and parking spaces surrounded by walls or solid features

3.10 Cycle Parking

The provision of high-quality cycle parking across the county is integral to any cycle network. Space for cycle parking should be considered at the earliest possible stage of any scheme design, and the County Council will insist on installing Sheffield Stands and/or 'M-profile' stands at locations that have the potential to stimulate new cycle journeys.

Cycle parking should be provided at the following locations:

- Places of residence
- Interchanges with other modes of transport
- Short-stay destinations such as shops and cafés
- Long-stay destinations such as employment and education establishments

Cycle parking types and dimensions should be agreed with WCC's Transport Planning Unit (tpu@warwickshire.gov.uk) at an early stage.

Where cycle parking for residential units is to be accommodated within the garage, the details as shown within Figure 3.7 will be required to be increased to make appropriate provision.

3.11 Provisions for Pedestrians and the Mobility Impaired

Pedestrian routes should be barrier free except at the junctions of footpaths/cyclepaths with carriageways when barriers may be required at some locations. A barrier, if needed, must be of the type which does not impair driver visibility, especially of children who may be standing, walking or running behind them. Further guidance can be found in the Department for Transport document '*Inclusive Mobility- A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure*'.

An adequate space for pedestrians to wait and for others to pass should be provided, together with an appropriate level of visibility (see 3.7.1 above), wherever a pedestrian route crosses a carriageway or cycleway.

At busier road junctions and along busy roads, or where crossing widths exceed 11m (LTN 02/95), the provision of island refuges within the carriageway should always be considered to assist pedestrians to cross.

At road junctions and other road crossings, dropped and flush kerb crossings with tactile surfacing should be provided in accordance with current national advice ([Guidance on the use of Tactile Paving Surfaces](#)).

At junctions, footways should be constructed parallel to the back of visibility splays.

3.12 Waste Collections and Recycling

The design of new developments should not require domestic waste/recycling bins to be left within the footway as they reduce its effective width. Domestic waste/recycling bins left within the footway pose a hazard for visually impaired and may act as an obstruction for wheelchair/mobility scooters and pushchair users.

The operation of domestic waste collection services should be an integral part of street design and achieved in ways that do not compromise quality of place. Waste disposal and collection authorities and their contractors should consider the geometry of streets across their area and the importance of securing quality of place when designing collection systems and deciding which vehicles are applicable. While it is always possible to design new streets to take the largest vehicle that could be manufactured, this would conflict with the desire to create quality places. It is neither necessary nor desirable to design new streets to accommodate larger waste collection vehicles than can be used within existing streets in the area.

Reversing causes a disproportionately large number of moving vehicle accidents in the waste/recycling industry. Injuries to collection workers or members of the public by moving collection vehicles are invariably severe or fatal. BS 5906: 2005 recommends a maximum reversing distance of 12 metres. Longer distances can be considered, but any reversing routes should be straight and free from obstacles or visual obstructions, with the potential requirement of street lighting in some instances. Such situations should be discussed with the Local Planning Authority.

Where bin stores are provided at private developments, they must be located outside of the public highway and in accordance with either the latest British Standard document or as agreed with the Local Planning Authority.

Residents should not be required to carry waste more than 30 metres (excluding any vertical distance) to the storage point.

Waste collection vehicles should be able to get to within 25 metres of the storage point (Note: BS 5906: 200518 recommends shorter distances) and the gradient between the two should not exceed 1:12 or as agreed with the Local Planning Authority.

3.13 Emergency Vehicles

The requirements for emergency vehicles are generally dictated by the fire service requirements. Providing access for large fire appliances (including the need to be able to work around them where appropriate) will cater for police vehicles and ambulances.

The Building Regulation requirement BS (2000)10 concerns 'Access and Facilities for the Fire Service'. Section 17, 'Vehicle Access', includes the following advice on access from the highway:

- There should be a minimum carriageway width of 3.7 metres between kerbs for operating space at the scene of a fire;
- There should be vehicle access for a pump appliance within 45 metres of single-family houses, furthest habitable room;
- There should be vehicle access for a pump appliance within 45 metres of every dwelling entrance for flats/maisonettes;
- A vehicle access route may be a road or other route; and
- Fire service vehicles should not have to reverse more than 20 metres.

To reach a fire, the access route should be no less than 3.1 metres in width and capable of withstanding the load of a fire appliance. The pump appliance is required to get within 45 metres of all points inside the residential properties measured along the route of the hose. For commercial, education and other properties, early engagement with WFRS should be made.

Where access for fire appliances will need to be taken from private driveways, consideration should be given as to the likelihood of parked vehicles causing an obstruction or preventing vehicles manoeuvring. In such circumstances discussion with WFRS is recommended.

3.14 Surface Finishes

For further information regarding standard details for the expected highway surface finishes within a residential development, refer to the Highway Construction Details webpage on the [WCC website](#).

Surfacing contrary to that contained within the Warwickshire Surfacing Strategy is undesirable and developers must be aware that surfacing other than specified in the WCC documents noted above will attract a commuted sum. The use of block paving within the turning heads for areas where significant vehicle manoeuvring will take place will not be accepted due to the resulting increased amount of maintenance compared to tarmac.

3.15 Highway Green Infrastructure (HGI)

For any proposed HGI within the adopted highway, consideration will need to be given to matters such as visibility splays, street lighting, signage, street name plates and safety for all users. For further details, refer to Part 6.

Part 4 Traffic and Road Safety

4.1 Introduction

This part of **The Warwickshire Design Guide** describes the processes and policies relating to various aspects of traffic management and road safety. This includes Traffic Regulation Orders, setting of speed limits, measures to control speeds and Road Safety Audits.

4.2 Traffic Regulation Orders

Traffic Regulation Orders (TRO's) are required to legally enforce a new restriction or an alteration to an existing restriction to traffic. Examples of when a TRO is required are below:

- Changes to speed limits
- Alterations and creation of parking restrictions
- Weight/height limits
- One-way streets
- Parking

TROs follow a statutory process and are a legal document. They are undertaken by Warwickshire County Council (WCC) to ensure the process complies with The Local Authorities' Traffic Orders (Procedure) (England) Regulations 2012.

The timescales for a TRO from concept to implementation are varied. Typically, TROs take between 12 and 18 months to deliver. However, complex or contentious TROs often extend these timescales. If developers suspect that TROs will be required as part of their development, then they should highlight and discuss this with the Highway Development Management Team during pre-application discussions (see Part 2).

The process for a Traffic Regulation Order typically includes the below stages:

- Feasibility work
- Preparation for statutory processes- includes design work
- Statutory consultation
- Consideration of objections - including communication to attempt to resolve them
- Referral for a decision under WCC's constitution - if objections are unresolved
- Making of the TRO including sealing of the order
- Implementation of the TRO – Physical changes on site

The consultation for a TRO is important as it can lead to modifications to the design of a scheme or abandoning the scheme completely. Numerous groups are consulted as part of a TRO which usually include but are not limited to the below:

- Police, Fire and Ambulance Services
- District and Parish Councils
- Road Haulage Association, Freight Transport Association
- Action Grounds (Mobility, Cycling, Bus Operators)

As part of the TRO consultation there is a period of time in which representation can be received expressing views on the proposed TRO. Objections must be resolved and considered before the TRO can be made.

Developers and designers should therefore allow sufficient time in their development programme for the statutory process required for TROs.

4.3 Speed Limits

WCC's Local Transport Plan provides the objectives for Speed management within Warwickshire.

Speed limits on non-trunk roads in Warwickshire are set in accordance with Department for Transport guidance.

In short, speed limits should be set at the appropriate level for the road environment to ensure compliance with the limit and to ensure safety for all road users. Speed limits should be evidence-led, self-explaining and seek to reinforce people's assessment of what is a safe speed to travel and encourage self-compliance. They should be seen by drivers as the maximum speed rather than a target speed at which to drive irrespective of conditions.

For speed limits to be effective they need to be set with support from the local community, the police and other local services and with consideration of whether engineering measures are necessary to reduce vehicle speeds. There needs to be consideration as to whether the speed limit is set unrealistically low for the particular road function and condition. A lack of consideration may lead to ineffective speed limits and drivers may not comply with the speed limits.

If drivers do not comply with the speed limits, the risk of collisions and injuries would increase, and significant and avoidable enforcement activity would be needed.

Factors that are considered in speed limit decisions are:

- History of Personal injury collisions (PIC's)
- Road geometry and engineering
- Road Function
- Composition of road users
- Existing traffic speeds
- Road environment

Speed limits should not be used to attempt to solve the problem of isolated hazards, such as a single road junction or reduced visibility.

WCC will not support speed limit reductions as a consequence of designers wishing to avoid departures from standards. Speed limit reductions must be as a last resort and be part of a package of mitigation measures in addition to any camera enforcement that is proposed (see 4.7 Average Speed Cameras below).

The minimum length of speed limit should not be less than 600 metres to avoid too many changes of speed limit along a route.

4.4 Traffic Calming and Speed Management

Residential roads such as Category 3b or 4a (see Table 1.1 for road hierarchy descriptions) should be designed with a design speed no greater than 20mph; 30mph maximum if a bus route.

Traffic calming should only be used where good highway design does not reduce speeds to an acceptable level. New road layouts should normally be designed in such a manner that speeds are controlled by the horizontal and vertical layout of the highway and the location of buildings in relation to the highway. This can be achieved by avoiding lengths of straight roads or shallow bends.

Where traffic calming is demonstrably necessary on a new or existing section of highway, the characteristics and restrictions of the road network must be fully considered to determine the most appropriate scheme. The likely impact any scheme will have on motorised and non-motorised users must be assessed (with particular thought being given to the needs of cyclists - refer to LTN 1/20) and the future impact on highway maintenance must also be considered.

Development should refer to current DFT guidance for information on design and good practice for installing traffic calming features.

Where traffic calming measures are proposed on the existing highway network, consultation should be undertaken with WCC's Traffic and Road Safety Team to confirm that any scheme accords with the requirements of the Authority.

4.5 Vehicle Activated Signs Criteria

If designers consider the installation of Vehicle Activated Signs as a form of mitigation, they will only be considered where the following four criteria are met;

1. **Personal injury collisions** (reported and taken from Police database)

The site shall have a PIC (Personal Injury Collision) score of at least 5 within a 200 metre radius of the proposed VAS (Vehicle Activated Signs) location over the preceding 3 years. The weighted score should be applied to collision severity as detailed below:

Severity of PIC	Weighted Score
Slight	1
Serious or Fatal	3

For example, a site with 2 recorded slight injuries and 1 serious or fatal over the preceding 3 years would meet this particular criterion, as would a site with 1 fatal and 1 serious PIC. A weighted score of 5 would ensure that the location has a real collision risk associated with it, and not a perceived one. It should be noted that when it comes to assessing PIC's, Officer discretion should be used in relation to the specifics of the causation (i.e., inappropriate speed / drunk driver etc.) and what impact this has on the assessment.

2. **Speeds**

The site will have an 85th percentile speed above ACPO (Association of Chief Policy Officers) limits, i.e., 15% of drivers would be exceeding ACPO levels (= speed limit + 10% + 2mph), through significant periods of the day. Without a recognised speed problem there is little benefit in reinforcing the speed limit. Thresholds are 35mph (in a 30mph limit), 46mph (40mph limit), 57mph (50mph limit) or 68mph (60mph limit).

3. **Traffic Flows**

More than 3000 vehicles per day (24 hour, 2-way flow) shall pass through the site (Officers discretion can be used in exceptional circumstances). With low traffic flows, associated risk is likely to be reduced.

4. Environmental Concerns

The site will have an environmental weighted score of a least 5 within a 200 metre radius of the proposed location (Officers discretion can be used in exceptional circumstances). The weighting scores are detailed below:

Environmental Concern	Weighted Score
School/College/Nursery/Care Home	3
Community Facility(s) (Local Shop/Doctors Surgery/Church/Recreation Area/Village Hall etc.)	2
Well used formal/informal crossing point(s)	2
Vulnerable users/insufficient footway	2
Isolated/community severance	1

For example, a village with a school and a well-used crossing point would score 5 and meet this particular criterion (5 points).

If only three criteria are met WCC will consider the use of Vehicle Activated Signs at pre-application meetings where some flexibility at appropriate sites can be considered. This will be solely at WCC's discretion and would need to be fully justified.

4.6 High Friction Surfacing

The use of high friction surfacing within Warwickshire should be used to treat locations where there are demonstrable safety concerns linked to braking only. It should only be considered at locations with a history of collisions with contributory factors identified as a result of excess speed and loss of control.

Without these factors the use of high friction surfacing is not encouraged for use. A preferable alternative solution to high friction surfacing would be to resurface the carriageway using a high PSV surface course as these have been shown to be more durable and more economical to maintain.

4.7 Average Speed Cameras

WCC will only consider the use of average speed cameras on routes within the county where there is an identified history of Personal Injury Collisions attributed to speeds in excess of the current speed limit. All other engineering measures to address the identified speeding issue must also have been attempted and proven to be ineffective before Average Speed Cameras can be considered.

Developers should not submit proposals for the use of such cameras unless these criteria can clearly be shown to have been met. These proposals would then be subject to review and approval by WCC. These proposals would also have to be supported by Warwickshire Police who would ultimately be responsible for the enforcement of average speed cameras.

4.8 Passively Safe Street Furniture

Passively safe furniture is used to create a safer roadside to reduce the severity of collisions involving errant vehicles. Street furniture such as street lighting columns, traffic sign posts and cabinets are available to comply with Passive Safety guidelines.

The furniture is specifically designed to provide less resistance during impact and to reduce sudden decelerations during collisions which may result in injury to vehicle occupants.

WCC has a duty of care under the Highways Act 1980 to aid the safe passage of traffic on the highway.

The County's *Use of Passively Safe Street furniture document (Annex 4.2)* provides detail regarding the requirements for passively safe furniture within Warwickshire. It allows users to assess the site location to identify whether furniture at a particular location needs to be designed to confirm with passive safety guidelines.

4.9 Road Safety Audit

Warwickshire County Council's Road Safety Policy RS25 set out in the Local Transport Plan 2011-2026 states that WCC will carry out Road Safety Audits on all new schemes and alterations to the existing road network proposed by ourselves or others.

WCC's procedures are based on, and should be read in conjunction with, National Highways GG119 – 'Road Safety Audit' of The National Highways Design Manual for Roads and Bridges (DMRB). These procedures also reflect the Institute for Highways and Transportation (IHT) Road Safety Audit Guidelines 2008, which suggests areas where National Highways HD Standard can be relaxed to suit local circumstances.

The procedures are included as *Annex 4.1* and apply to all non-trunk road schemes within Warwickshire, including developer funded schemes on non-trunk roads in the County.

Four levels of Road Safety Audit are prescribed in the procedure;

- Road Safety Audit, Type A (RSA/A), a Road Safety Audit carried out in accordance with GG119 guidance.
- Road Safety Audit, Type B (RSA/B), a Road Safety Audit carried out by qualified Road Safety Auditors in accordance with the procedures in *Annex 4.1*
- Road Safety Assessment, Type C (RSA/C), an assessment carried out by an independent Assessor.
- Road Safety Audit Review, Type D (RR), an approval of a Road Safety Audit carried out by an external organisation.

WCC will carry out a Road Safety Audit Type A, B or C on behalf of a developer for an appropriate fee. However, developers are free to commission qualified third parties to carry out Road Safety Audit Type A, B or C should they wish. Where third party Road Safety Audits are commissioned, Highways Development Management will request a Road Safety Audit Review Type D.

Part 5 Drainage and Flood Risk

5.1 Introduction - Statutory Consultee for Major Development

This section of **The Warwickshire Design Guide** describes the processes relating to design and approval of surface water drainage on major developments and the role of Warwickshire County Council (WCC) as a statutory consultee relating to flood risk and development drainage.

WCC is the Lead Local Flood Authority (LLFA) responsible for reducing the risk of flooding from surface water, groundwater and ordinary watercourses under the Flood and Water Management Act 2010. This role is carried out by the WCC's Flood Risk Management (FRM) Team. In comparison to its role as Highway Authority, the LLFA role is relatively new and the role is still evolving as legislation and national policy are updated and more responsibility is assigned to LLFAs. Therefore, it is recommended that reference is made to the [WCC FRM website](#) for the most up to date information in this area, or direct contact is made with the team before developers and their designers progress their proposals too far.

At the time of writing, the LLFA's role in relation to the approval of highway drainage designs is limited to its role within the planning process and LLFAs are a statutory consultee for the surface water drainage on major developments. The LLFA are also responsible for the regulation of Ordinary Watercourses.

This section also provides details of the consenting process from the LLFA that will be required under Section 23 of the Land Drainage Act 1991 for any works that will affect the flows within a watercourse (temporarily or permanently).

Whatever the development and its drainage impact, it is recommended that developers engage with FRM to discuss their proposals at pre-application stage.

5.2 Design Principles

New developments must ensure that they do not increase the flood risk elsewhere and this is usually done through Sustainable Drainage Systems (SuDS). Such systems offer multiple benefits in that they can remove pollutants from surface water and provide environmental gains whilst controlling how the water is released from the site.

The discharge rate from the site must be controlled to pre-development (greenfield) rates or lower. It must be discharged to an approved outfall for all rainfall events up to the design event (currently 100 year) plus an allowance for climate change and urban creep. WCC will review the assumptions and calculations to determine the discharge rate before providing their response in the planning process and when carrying out Technical Review of surface water drainage proposed as part of a Section 278 application.

The selection of outfall should follow the hierarchy outlined in the Planning Practice Guidance (PPG), with infiltration being the preferred option, followed by a watercourse, and then a surface water sewer. Generally, new developments should not discharge into a combined sewer, and never to a foul sewer.

Where the applicant proposes to discharge into existing highway drainage, the LLFA will undertake further consultation with WCC Highways and will usually request a survey and the repair of any significant defects before this is considered suitable. Developers should also note that further discussions on maintenance and ownership together with the need for commuted sums are also likely as part of the overall process.

5.3 Highway Drainage Considerations

Where the surface water drainage for Section 278 highway works outfall into the development site drainage, this will be included within the planning application and will be assessed by the LLFA in that process. It is essential to demonstrate a viable outfall does not increase flood risk to or from the highway.

If highway drainage works are separate to the development, the drainage checks will be carried out as part of the highway design approval as outlined in Parts 2 and 3 of this guide, depending on the Road Hierarchy. These checks will include the detailed drainage design, outfall rates, attenuation sizing, treatment of flows and suitability of outfall locations.

In accordance with Paragraphs 155-165 of the National Planning Policy Framework 2019, the highway drainage system should be discharged via a sustainable drainage system (SuDS) into a suitable watercourse. WCC encourage such designs, where opportunities exist, to develop (SuDS) associated with existing or proposed wetland areas for the whole or significant areas of a new development highway network and connecting them to existing highway drainage system. Where no watercourse is available, then it should be discharged into a public surface water sewer.

Developers should be aware, however, that SuDS created within public open spaces will not normally be adopted by the Highway Authority if they drain into non-highway areas. Further information on SuDS is contained in 5.4 The Use of Sustainable Drainage Systems (SuDS) below.

Roads should be designed with adequate minimum gradients to ensure self-draining will occur. The use of combined kerb/channel blocks will only be considered where standard drainage solutions either cannot be utilised or where methods used to drain the carriageway have proved to be inadequate.

Positive drainage must be provided for all surfaces forming part of the adoptable highway network including separate footpaths, cycleways and emergency accesses. Positive drainage measures (e.g., channel drainage systems) should also always be provided wherever there is the potential for surface water to run off private drives, forecourts, car parks or other adjacent land onto the highway.

New pipes should be located to avoid any possible interference from root growth, and to ensure excavations for laying them do not damage root systems where these are being retained within a development.

The maximum area of a paved surface draining to a gully should not exceed 150 square metres, but additional gullies are likely to be required at low points and where gradients approach prescribed or optimum minimums. When connecting into an existing drainage system, the number of connections already leading into the system must be checked to ensure that there

is adequate capacity to accommodate an additional connection. A CCTV survey of any existing system may be requested where a connection is proposed.

We would recommend following the guidance in the DMRB CG501 regarding the hydraulic design of highway drainage systems.

Gullies must be positioned such that they can be properly accessed for cleansing and where the parking of cleansing vehicles will not create an unreasonable obstruction - e.g., gullies located in the corners of turning areas are often impractical to clean, and if maintenance vehicles must park within narrow carriageways or close to tight bends will usually constitute an unreasonable obstruction. If gullies are located at formal or informal crossing points the impact on pedestrians must be assessed and pedestrian friendly gully lids used if there is a need for them to be installed within desire lines.

All highway drainage pipes should be laid within the highway boundary preferably outside the limits of the carriageway, but always at least 1 metre from any kerb line.

Similarly, where foul sewers are located within the public highway then, wherever it is practicable to do so, they should be laid outside the limits of the carriageway but, in any case, at least 1 metre from any kerb line.

Longitudinal sewer runs should not cross beneath kerb lines.

Manholes are to be provided in accordance with WCC standard details at the head of a line and at all changes in pipe size, direction or gradient and, along straight runs, at intervals of not more than 90 metres. They should be positioned such that when access is required to them, they will not render the highway impassable for vehicles and pedestrians. Manholes should be set outside of vehicle wheel tracking areas where possible. If the positioning is within a wheel tracking area, a material conforming to HA104/09 must be used for installation to accommodate heavy trafficking.

Balancing tanks, other than nominal oversizing of pipes, will not be acceptable beneath any carriageway. A drainage design comprising only gullies being piped directly to a storage feature will result in a significant maintenance liability to regularly de-silt due to an absence of features to capture the silt upstream.

Consequently, such tanks are not encouraged as they are difficult to install and maintain and therefore a SuDS system should be specified if space allows.

Propriety treatment systems will be required wherever there is a high risk of unsuitable liquids or other materials being directed towards a highway drain.

Road water run-off, pipe design, surface water treatment hazard index (outlined in the SuDS Manual CIRIA C753) and flood storage calculations must be provided with all applications for the adoption of roads.

Consultation should take place with the FRM Team regarding all development which might have implications for land drainage and for connections into Ordinary Watercourses.

5.4 The Use of Sustainable Drainage Systems (SuDS)

National policy states that there is expectation that SuDS will be provided in new developments wherever possible. This is also applicable for new road design, as outlined in the DMRB.

As the use of SuDS features to drain the highway is relatively new in Warwickshire, there will be a bedding in process and all features are not currently accepted for adoption. Developers should discuss proposed SuDS features during pre-application discussions where they will be updated on the current position on both acceptability and adoption of different SuDS features. A commuted sum may be required for adoption of non-standard features.

As more features are adopted by the County, additional guidance will be provided as to how they should be detailed. Until that time, the basic principles that should be followed when designing a SuDS drainage system are given below;

- a) The design and layout of the development should utilise SuDS features to maximise the amount of surface water being managed as close to source as possible.

- b) Several smaller features closer to source, that are connected in series will reduce the overall size and depth of final stage attenuation features, whilst providing both additional treatment of flows and resilience should any one of those features fail.
- c) Where possible, the movement of flows between features (conveyance) should be via surface level features such as swales. Such features provide treatment of flows and remove silts, whilst reducing the ongoing maintenance due to a lower risk of blockage and increased surveillance.
- d) The depths of surface water drainage features should be kept as shallow as possible to allow the use of open features throughout the development. More innovative approaches to draining hard standing areas should be investigated rather than a reliance on traditional gulley and pipe systems.
- e) Permeable paving or over-the-edge drainage into a roadside swale or filter strip are very good at treating the pollutants associated with carriageways and are a very good first step of a SuDS system.
- f) Open features are much more effective at removing silts and grits, which is not possible in features such as oversized pipes or storage tanks. These features are not considered as a suitable sustainable drainage system in isolation.
- g) The ground conditions throughout the County are unsuitable to enable efficient drainage by natural percolation and soakaways are not, therefore, acceptable for public highway drainage. There are areas where infiltration is possible, and if a soakaway is proposed, suitable percolation test results must be provided (to BRE365).
- h) It is recognised that full SuDS schemes are not possible on all highway schemes due to land take, levels and ground conditions, however this does not prevent a well-designed scheme.

There are best practice guidance documents available (such as the SuDS Manual CIRIA C753 and Guidance on the construction of SuDS CIRIA C768) which can assist in improving designs and to help provide additional treatment and reduce ongoing maintenance requirements.

5.5 Attenuation of Flows

For the most up to date guidance on design events and additional allowances to be applied for climate change and urban creep, refer to WCC FRM Local Guidance for Developers.

Adequate attenuation of flows must be provided for new carriageway areas. Where possible, this should be for the total carriageway area rather than the net increase in carriageway area only. This is particularly important for wholly new sections of carriageway where there will not be as much of a constraint on space available.

Where possible, multiple small outfalls should be consolidated into a single feature to minimise disruption to the accepting watercourse, reduce maintenance requirements, and to maximise the opportunity of further treatment of the flows.

Attenuation of flows during the construction phase is also very important as construction sites, when stripped, can pass on silt laden flows downstream. Guidance for ensuring flood risk is not increased during the construction phase of a project can be found in CIRIA C768 'Guidance on the construction of SuDS'. This guidance also includes silt management on large construction sites, which should be included in any Construction Environmental Management Plan.

It is now possible to restrict outfall discharge rates to below 5.0 l/s in a variety of ways including newer control devices, protected orifices and overall better design. Indeed, in small catchments, the greenfield discharge may be below 5.0 l/s. Therefore, if developers propose a practical minimum of 5.0 l/s this will be challenged by the LLFA, particularly where the drainage systems are split into multiple small catchments with individual outfalls.

5.6 Treatment of Runoff

Due to the pollutants, grit, silt and hydrocarbons usually found on highways, drainage proposals must include adequate treatment of run off before final discharge to ensure no degradation of the quality of accepting watercourses and waterbodies,

This treatment can be done using surface level SuDS features installed in series, but it should be noted that trapped gullies, catch pits, and underground tanks do not provide treatment to the flows and will not be considered as such.

CIRIA C753 The SuDS Manual outlines a hazard index approach that assigns values to drainage features in terms of their ability to treat flows. This can be used to identify the number and combination of source and site control features required.

5.7 Flood Risk Considerations and Requirement for Flood Risk Assessment

For the most up to date guidance for the requirements of a Flood Risk Assessment and additional considerations related to flood risk, refer to WCC FRM Local Guidance for Developers.

5.8 Ordinary Watercourse Consenting

The LLFA are also responsible for the regulation of Ordinary Watercourses. A consent from the LLFA will be required under Section 23 of the Land Drainage Act 1991 for any works that will affect the flows within a watercourse (temporarily or permanently).

This is a process which is independent to other approvals such as planning permissions or highways design approvals, and the Land Drainage Act gives LLFAs powers to enforce the removal of unconsented works.

There is a minimal application fee (see www.warwickshire.gov.uk/watercourse) and a determination period of up to two months.

Works that will require consent include crossing a watercourse for site accesses both temporary and permanent, the construction of outfall structures, or the temporary diversion of flows to make a dry working area. The LLFA cannot give retrospective consent and as such, consent must be applied for prior to any works taking place.

In general, WCC does not support the culverting of watercourses and encourages the removal of existing culverts where possible.

Where culverting is the only option, the length of culvert should be kept to a minimum, with the preferred solution being an oversized box culvert sunk into the channel bed, with measures to aid the re-naturalisation of the bed.

Further information and details of the application process is available on the [WCC FRM website](http://www.warwickshire.gov.uk/flooding) (www.warwickshire.gov.uk/flooding) or from the FRM Team.

Additional permissions may be required from the Environment Agency; the FRM Team will be able to advise.

5.9 Riparian Responsibilities and Highway Ditches

Although the County Council, through the LLFA has oversight over ordinary watercourses and powers to carry out enforcement, they are not responsible for the ongoing maintenance of them. The ownership of ordinary watercourses and the responsibility for their maintenance lies with the owner of the land through which the watercourse runs.

Further guidance on owning a watercourse and riparian responsibilities is available online on the [Gov.uk website](http://www.gov.uk/guidance/owning-a-watercourse) (www.gov.uk/guidance/owning-a-watercourse).

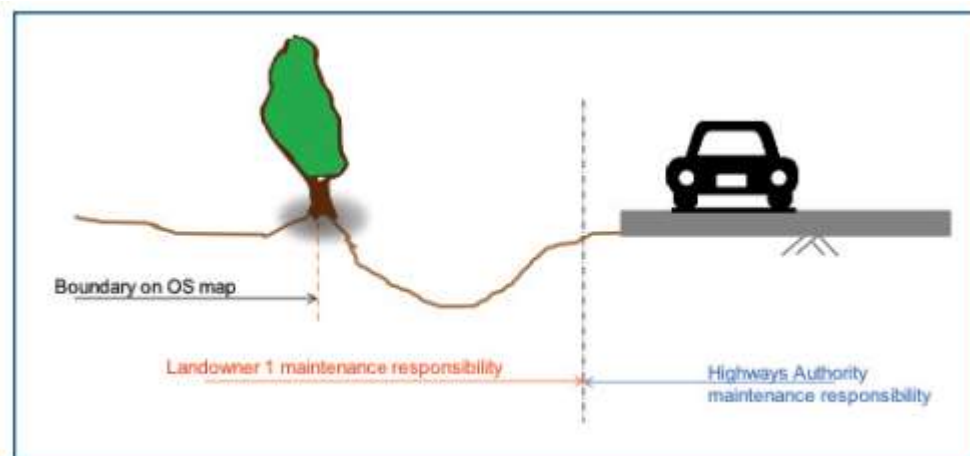


Figure 5.1 – Riparian responsibilities in relation to ditches

Roadside ditches are a specific example of watercourse and, the maintenance of these ditches is the responsibility of the adjacent landowner. The current position of the county is quoted below;

"Common Law imposes a duty on the occupier of land adjoining highways to maintain roadside ditches which provide natural drainage for both the land and the highway. This will also apply where the watercourse is shown within the

highway extents, in these cases county highways are the owners of the watercourse, but the responsibility for maintenance lies with the adjacent landowner."

There are several examples where County Highways may have some responsibility for the watercourse, and it will fall to the landowner to provide evidence that any of these apply; a) A documented agreement is in place between County Highways and the landowner

b) There is highway maintainable asset on both banks of the watercourse (e.g., a footpath separated from the carriageway by the watercourse)

c) It is clear that the ditch only drains the highway, is not a continuation of an ordinary watercourse and therefore not draining any other land

WCC remains responsible for regular maintenance and cleansing of gullies and grips on the highway which may discharge into these ditches.

5.10 Further Information

WCC FRM have a design guidance note and other useful documents available on their webpage www.warwickshire.gov.uk/flooding. These are updated when possible so you may wish to contact the LLFA to ensure that you are working to the most up to date information.

A chargeable pre-application advice service is available amongst other discretionary services. Contact the team for the current arrangements.

For SuDS advice, contact frmplanning@warwickshire.gov.uk

Part 6 Highway Green Infrastructure

Design considerations for providing suitable landscaping proposals within road corridors and new developments

6.1 Introduction The National Planning Policy Framework (NPPF) recognises that trees make an important contribution to the character and quality of urban environments and can help mitigate and adapt to climate change. Therefore, planning policies and decisions should ensure that new streets are tree-lined and existing trees retained wherever possible. To achieve this aim, applicants and local planning authorities should work with Highways Officers and Tree (Arboricultural) Officers to ensure the right trees are planted in the right places and solutions are found that are compatible with highways standards and the needs of different users.

The NPPF refers to design guides and codes, at an area-wide, neighbourhood or site-specific scale, which will carry weight in decision-making as part of a local plan or as supplementary planning documents. Such design guides and codes seek to raise the quality of all new built development and create a sense of place.

Highway Green Infrastructure (HGI) comprises the network of trees, hedges, ditches, verges, and native and ornamental planting within road corridors. The provision of HGI is now widely recognised as contributing towards creating better places for people and wildlife. There are numerous benefits; from mitigating surface water run-off and flooding, improving air quality, cooling the urban environment, improving local economy, encouraging walking and cycling, to enhancing biodiversity and ecological resilience.

This part of **The Warwickshire Design Guide** covers the information an applicant will need to provide for new development; surveys of existing vegetation and other landscape features; the protection of areas (e.g., Conservation Areas, Areas of Outstanding Natural Beauty (AONBs), Local Natural Reserves, etc.), habitats, species, hedgerows, rural and urban

trees (e.g., Tree Preservation Orders, 'important' hedgerows, etc.); planting strategies for both rural and urban settings, and future maintenance.

Please note an application cannot be processed until all the relevant information has been provided. Allow sufficient time for the proposed scheme to receive the necessary technical approvals. Early consultation with Warwickshire County Council highwayconsultation@warwickshire.gov.uk as the Technical Approval Authority is recommended.

6.2 Planning Considerations for New Developments

Both existing and proposed HGI should form the fundamental basis of environmental design to create resilient, liveable and economically sustainable development for the future. The following should be considered as part of the design process.

6.2.1 Landscape Character

The [Warwickshire Landscape Guidelines](#) map and description of the special characteristics of each of the County's seven landscape character areas (Arden, Avon Valley, Feldon, Cotswolds, Dunsmore, High Cross Plateau and Mease Lowlands). The guidelines should be referred to for an understanding of local landscape character, its distinctiveness, general development guidelines and indigenous species.

The wider landscape provides a setting for day-to-day activities for living, working and recreational pursuits. Incorporating existing landscape features within a new development helps to tie the development more readily in with its immediate surroundings. It is the combination of landscape features that make up the local landscape character and give it its value and sense of place. All development proposals should reflect this distinctiveness and not be detrimental to the character or value of a particular area. Landscape features can also form part of green corridors, helping to promote species diversity, and may be surviving historic references.

6.2.2 Planning Restrictions

The 1990 Town and Country Planning Act states that trees are a material consideration in planning law. The Act also makes provision for Tree Preservation Orders (TPOs) to be placed on trees, groups of trees and woodlands that are considered to be of high public amenity. This status serves to protect them for the enjoyment of the public.

All County trees (those on WCC owned sites and those growing within highway land maintainable at public expense) are currently protected by virtue of being managed by WCC Arboriculturalists (Tree officers) and therefore considered, in law, to be under good arboricultural management and, as such, not generally requiring the protection of Tree Preservation Orders.

Trees within Conservation Areas are also protected by provisions set out in the Town and Country Planning Act.

A Forestry Commission Felling Licence (refer to the 1967 Forestry Act) may be required for any larger scale tree removal work.

Consider the protection of areas (e.g., Conservation Areas, Areas of Outstanding Natural Beauty (AONBs), SSSIs (Site of Special Scientific Interest), Local Nature Reserves, etc.), habitats, species, hedgerows (The Hedgerows Regulations 1997) and trees. For example, ancient and veteran trees now have greater protection under the guidelines set out in the National Planning Policy Framework. They can only be removed for 'exceptional reasons' and where a suitable compensation strategy exists.

6.3 Design Constraints

6.3.1 Existing Landscape Features and Setting

Safeguard existing trees and vegetation as well as any other landscape features on or adjacent to the site; a new development should reflect an area's function, history, and culture. Consider the layout in relation to adjacent buildings, streets, and spaces; the topography; the general pattern of building heights; and views, vistas, and landmarks within and outside of the development site.

6.3.2 Service Runs, Drains, Underground Utility Apparatus and Overhead Cables

Protect Root Protect Areas (RPAs) of existing trees and hedgerows. Employ specialist 'no dig' methodologies and protective fencing for tree and hedges in accordance with the appropriate British Standard. Guidance can be found in the National Joint Utilities Group (NJUG) Guidelines Volume 4 for the planning, installation and maintenance of utility apparatus in proximity to trees.

Where drains are proposed close to trees, consider root-intrusion resistant pipe technology, (e.g., welded polyethylene pipes), particularly in green field developments to prevent future root ingress into pipe joints. The use of root barriers, root directors or cellular confinement systems may also be appropriate.

To prevent damage or interference with underground services only shrubs, ground cover and small tree species should be proposed within dedicated service strips or margins. It may be necessary to consider alternative routes for services where conflicts are apparent, and in which case the agreement of the service providers must be obtained.

Culverted water courses and land drainage are not always well mapped but may have impacts on flood risk. If culverts and land drains run across sites, these should have appropriate maintenance easements and should not be severed. Culverts may appear redundant but will carry high flows during a flood event.

Position overhead services so that they will not conflict with tree positions. Equally, do not plant trees where they will conflict with existing overhead power lines or cables. In new developments, early consultation and cooperation between the developer and the service provider is essential, and proposed service routes should be coordinated with the landscape design proposals. Underground apparatus should be ducted or otherwise protected at the time of construction to enable trees to be planted nearby without conflict. Wherever possible, common service trenches should be specified to minimize the land take associated with underground services and to facilitate future maintenance.

6.3.3 Footpaths, Cycleways, and Structures

Consideration must always be given to the risks to users of the highway that could result from inappropriate species selection and poor positioning of trees and shrubs. Similarly, where certain species of existing trees or shrubs are retained

within new highways, account must be taken of any leaf or other litter they may produce and the effects this may have on footways or cycleways.

Some plant species, when planted in certain soil types, can cause damage to adjacent paving, buildings and structures. Wherever there is a risk of this happening root deflectors or other appropriate protection must be provided. Where trees and shrubs are included within a development it is essential that nearby structures, and the foundations of these, are built to a sufficient specification to withstand the potential damage that could be caused by roots, either directly or indirectly.

Refer to British Standard (BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' relating to trees, buildings and soil types) and the recommendations of the National House Builders Council (Chapter 4.2 Building near trees) or subsequent revisions, regarding foundation depth and design when building in proximity to trees and shrubs or on shrinkable soils.

6.3.4 Visibility Splays

Where it is proposed to include soft landscaping within visibility splays at road and access junctions, driveways and around bends then, normally, this should be either a grass verge or ground cover planting or single tree planting providing only a momentary interruption to driver visibility. Smaller diameter trees in long splays will be less likely to cause problems than larger diameter trees in short splays. Trees in visibility splays will require arboricultural and safety audit approval.

6.3.5 Street Lighting

During the initial stages of highway design, it is important new tree planting and streetlights are well planned to work together. This should be discussed with the street lighting team, the Local Planning Authority and the WCC arboriculturalist.

Please refer to the following extracts from British Standard BS5489-1:2013 'Code of practice for the design of road lighting - Lighting of roads and public amenity areas with regard to highway trees':

"The design and siting of road lighting and other road equipment can make a great difference to the street scene, even though this might not be consciously appreciated. In situations such as a processional way or monumental bridge, the design and placing of lighting columns can make a positive formal contribution to the scene. In such cases, the siting should be carefully related to the architectural or landscape setting. More usually, however, buildings, trees, paved

surfaces, grass and people provide all the interest required, and road lighting equipment should be made as unobtrusive as possible. The designer should consult the client to determine whether there are opportunities to reduce street clutter."

"Lighting columns when first installed should be sited so as not to require substantial cutting back of trees, taking into account the fully mature spread of the tree."

"In tree-lined roads, lower mounting heights than usual may be used to bring luminaires below the tree canopy. In new streets where trees are to be planted, the lighting should be designed in consultation with the landscape architects and/or by taking into account the landscaping plan or the tree schedule."

"Careful siting of trees and luminaires can help to minimize interference with the performance and operation of the lighting by the foliage. Lighting columns in the vicinity of trees should be sited so as to minimize issues such as:

- incorrect photocell operation*
- impaired maintenance access*
- damage to luminaire, column, foundation and electrical cables."*

"The lighting at night of parks, gardens and landscaped areas can change what would otherwise be a dark zone into an attractive amenity that enhances the environment and encourages use as a source of pleasure in comparative safety and security."

"With the availability of a wide variety of luminaires and coloured light sources, the opportunity to create a visual night scene by the subtle use of illumination on foliage and features can produce a dramatic impact. Variation of light, shadow and silhouette can offer a pleasing effect that changes with the direction of view, inviting visitors to enjoy the ever-changing shape of their surroundings. Although there has to be an interrelationship for the lighting of flora, features and forms to produce an artistic composition, the specific illumination of foliage can give a spectacular effect. This can be carried out by using projector floodlights remotely positioned to create an effective background if viewed from a distance. If adjacent to trees with descending branches, floodlights can be placed underneath or within the trees,".

"Lighting in landscaped areas should be designed in consultation with the landscape architect and/or the arboriculturalist. Lighting column positions should include potential growth of trees and account for summer foliage."

It is therefore advisable to provide WCC with drawings showing the positions of proposed streetlights and proposed trees, so advice can be given, and decisions made in view of the requirement for technical approval from both WCC Street Lighting and WCC arboriculturalists.

The approval of all landscaping within areas proposed for highway adoption (Section 38) will be required from WCC Arboriculturalist at the Technical Approval stage. Their formal approval will also be required at adoption stage.

6.4 Existing Trees Outside of the Development

As trees are a material consideration in planning law, it is a planning requirement to provide a tree survey and report for all developments that have the potential to affect any trees on the site or adjacent to it. If a landscape scheme is relevant to the development, then landscaping details should be submitted to an acceptable scale and accurately plotted. This should cover both hard and soft elements and include existing landscape features that are proposed for retention.

It is important to consider the area immediately beyond the defined development boundary in terms of existing trees and the landscape setting. This helps to gain an understanding of the extent of the wider landscape that may be affected by the proposals. Tree surveys should be prepared by a suitable professional in accordance with the British Standard 'BS5837:2012 Trees in relation to design, demolition and construction - Recommendations' (or subsequent revisions). The tree report should include a detailed survey, impact and mitigation proposals, and should cover all trees on the development site and any adjacent to the site where there is potential for the development to affect them.

Care should be given when planning roads adjacent to existing trees outside the curtilage of the proposed development. Proposed highways must be located at an adequate distance away from the site boundary to avoid developing within the Root Protection Area (RPA) and overhanging canopies of existing trees and hedgerows both within and outside the curtilage of the development.

6.5 Existing Trees and Hedges within the Curtilage of the Development

Where there are existing landscape features present and where trees are being considered for adoption, the following will apply:

All tree surveys should be in accordance with British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (or subsequent revisions). These should note any trees which are protected by a Tree Preservation Order or are within a Conservation Area.

Where buildings are proposed within the shade of a tree there may be a requirement for a tree shade evaluation to be provided, or to follow other guidance / good practice. The shade of trees must be fully considered in the siting of recreational areas such as gardens. The same applies to the positioning of windows in new buildings to minimise future conflict that could lead to the tree becoming a target for pruning or even removal.

Where trees are to be retained, they will need to be detailed within the tree report with appropriate protection measures. Submission of plans clearly defining these protection measures is encouraged as part of a planning application. This helps to avoid the need for conditions and their subsequent discharge.

Where the Highway Authority agrees to the removal of highway trees, hedges, or shrubs the applicant must pay an agreed sum for the loss of these assets and for the necessary replacement / new planting. A nationally recognised system for assessing the monetary value of these will be used to determine this. A monetary sum that covers the loss and the necessary mitigation planting will be required prior to any tree, hedge or shrub removal works commencing.

The Highway Authority will seek compensation from all organisations / individuals responsible for any damage or removal of Council owned trees.

6.6 Landscape and Visual Impact

All major developments will require a detailed landscape and visual impact assessment. Applicants are advised to follow the methodology set out in the most recent edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA). The

GLVIA is the industry standard and presents detailed advice on the process of assessing the landscape and visual effects of development and their significance. It also covers cumulative effects, the combined effects of a proposed development in proximity to other significant developments.

Landscape sensitivity is of equal importance. Understanding the character, quality and value of the landscape determines the sensitivity of that landscape to accommodate change through development. There are several published Landscape Sensitivity studies, (for Rugby, Stratford, and Warwick District), providing robust evidence for local plans that have been tried and tested at Public Inquiry.

The landscape assessment should guide the design for the new development and identify appropriate mitigation measures. Mitigation will be required to address any adverse visual and landscape character impacts that are identified.

It is essential a chartered landscape architect is contacted for professional advice on all landscaping matters relating to new development.

For all applications that include existing trees and hedgerows and require additional landscape works an applicant will need to provide landscape details, to an acceptable scale, which cover both hard and soft elements:

- Existing landscape features such as trees, hedges, and ponds to be retained or removed need to be accurately plotted.
- Planting plans should include a schedule of plants noting species, plant sizes and proposed numbers/densities.
- Specifications should include all operations associated with tree, plant and grass establishment and long-term management.
- Proposed plans should indicate existing and proposed finished levels (to include details of grading and contouring of earthworks, the relationship of proposed mounding to existing vegetation and surrounding landform).
- The means of accommodating change in level (e.g., steps, retaining walls, ramps).

- Hard surfacing materials - details of manufacturer, type, design, colour and bonding pattern where appropriate, samples may be required to be submitted and approved.
- Historic landscape features to be retained, removed, or restored.
- Sustainable Urban Drainage features, (SuDS).
- Street lighting.

6.7 Ecology and Archaeology

A biodiversity survey and summary report must be provided where a proposed development has the potential to significantly impact on biodiversity.

Where existing hedgerows are affected by a proposed development then the applicant must be mindful of legislation relating to the protection of these under the Wildlife and Countryside Act 1981. A hedgerow is protected if it contains species in part I of Schedule 1; Schedule 5; or Schedule 8 or various other defined species including certain Red Data Book species. The Hedgerows Regulations (1997) a guide to the law and good practice, published by the Department of the Environment also seeks to protect countryside hedgerows. A countryside hedgerow is protected if it meets the following criteria for: length, location and 'importance'. Please refer to the Government website for further details www.gov.uk/guidance/countryside-hedgerows-regulation-and-management.

Refer also to British Standard BS8596:2015 'Surveying for bats in trees and woodland guide'. Hedges, trees, and shrubs should not be removed in the bird nesting season without an ecological survey having been undertaken immediately prior to the works. The loss of nesting birds and their young can lead to a prosecution by the police. Contact WCC's Ecology team for further information and advice.

An 'important' hedgerow may include associated features such as banks or walls; ditches; gaps; standard trees or ground flora woodland species (as defined in Schedule 2 of the 1997 Regulations). Connectivity to other existing features should also be considered, particularly, parallel hedgerows, broad-leaved woodlands, or ponds.

Appropriate buffer strips will need to be provided to protect existing hedgerows and their associated habitats.

Highway verges and the wider 'soft estate' both have implications for conservation and biodiversity. Specialist advice should be sought on the management of these areas to achieve the correct balance between safety, amenity and nature conservation. Where landscape management plans, biodiversity action plans, or environmental databases exist they should be consulted before any work is carried out.

Trees and hedgerows may also have landscape and historic value, for example, old orchard sites. Refer to the Warwickshire Landscape Guidelines and the County's Historic Landscape Characterisation Project. Contact WCC's Ecology, Historic Environment and Landscape team for further information and advice.

Ensure proposals to remove a hedgerow are discussed with WCC's Archaeological Information and Advice and Ecology teams first to ensure compliance with the Hedgerow Regulations. Find out what restrictions there may be for trimming, cutting, coppicing, or laying a hedgerow before any work commences.

Tree and hedgerow removal may also need approval of the Local Planning Authority (LPA). Contact the LPA for pre-application advice.

6.8 Highway Green Infrastructure Planting Strategies

Consider a range of planting in addition to new tree planting. The benefits of green infrastructure are discussed below in 6.13 Green Infrastructure and Urban Air Quality.

Before preparing detailed planting and grass / wildflower seeding strategies consider the type of vegetation and species' composition that will be appropriate to the landscape setting, provision of nature conservation benefits, driver and pedestrian interest.

Consider the topography of the site and its surroundings, e.g., screen planting on relatively flat landscapes can be difficult to blend in with existing landscape features as these landscapes often have very little vegetation cover. In this instance concentrate new planting around existing tree groups and within and around the development area. Using vegetation of

variable heights and intermittent planting will also help to maintain views. Planting native trees in groups will help to reinstate parkland landscapes or in providing a broken edge to an area of woodland to complement local character.

Incorporate into the design safe routes for pedestrians, cyclists and public transport users. National standards, including '[Manual for Streets](#)', advocate the creation of a clear and well-connected street network, well defined public and private spaces, and streets that can be used in safety by a wide range of people. Consider an individual's perception of safety along these new routes. See Parts 2 and 3 for appropriate guidance relating to safe routes for non-motorised users.

6.9 Designing for New Trees

All new tree planting proposals are an essential consideration in the layout, design, and future use of a development site, the local landscape character, and the contextual surroundings. Trees generally form the dominant elements of the long-term landscape structure of a site. Careful consideration needs to be given to their ultimate height, spread, form, habit, colour, density of foliage and future maintenance requirements, in relation to both the proposed built form and retained landscape features. Trees, either individually or as formal or informal groups, perform a variety of roles that can be maximised by a well-designed landscape. These include:

- a) Contribution to green infrastructure (HGI) networks, (WCC consider this to be of particular importance in urban areas).
- b) The inherent aesthetic attractiveness of trees as prominent landscape features.
- c) Screening of undesirable views and provision of privacy.
- d) Articulation and definition of spaces.
- e) Definition and direction of routes and views.
- f) Introduction of natural character and seasonal change that can relieve / complement artificial environments.
- g) Reflection of local landscape character, providing a 'sense of place', sometimes as significant landmarks.
- h) Control of soil erosion, attenuation of surface water run-off and mitigation of flood risk, through root system reinforcement and canopy interception of precipitation.
- i) A reduction in heating / cooling costs.
- j) Improved physical health and mental wellbeing.
- k) Pollution reduction.

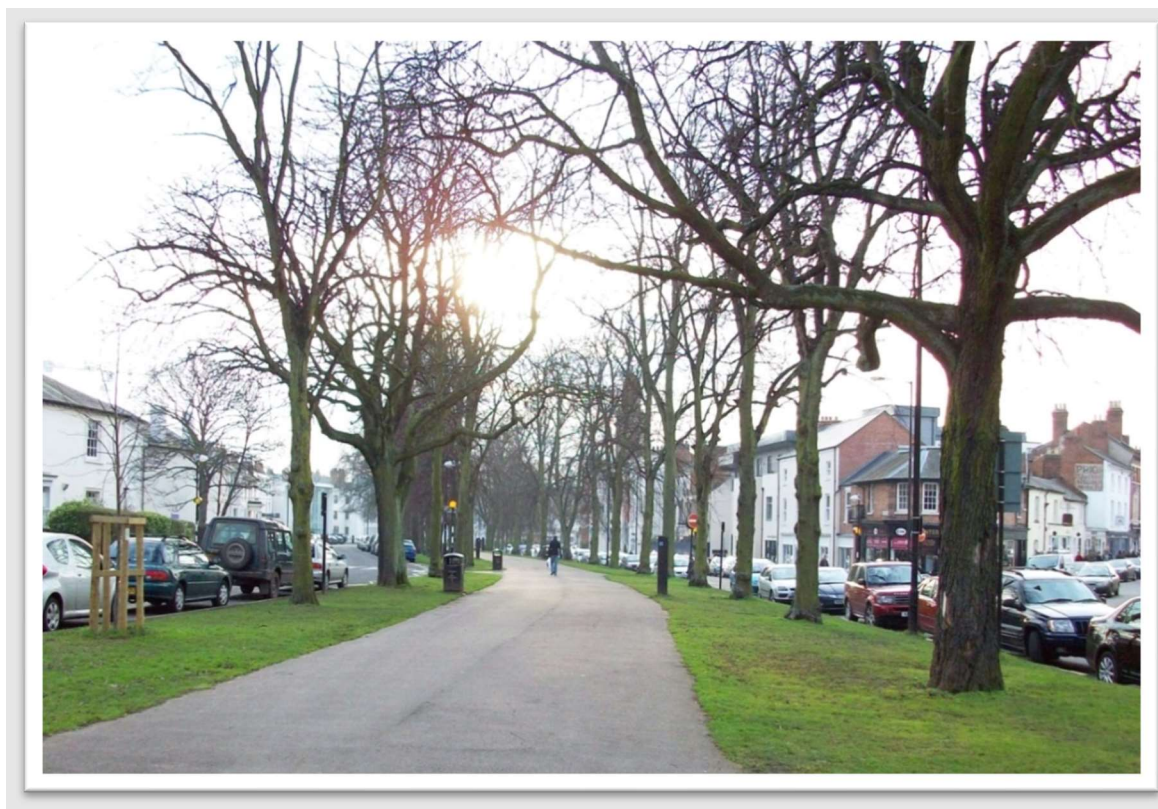


Many of these factors can provide a significant enhancement to the value of property. This is reflected in research carried out by CABI in [*'Does money grow on trees?'*](#) (CABI, 2005), and in anecdotal evidence of high property values in urban areas where trees are prevalent.

The purpose of any proposed planting should be understood from the start of the design process so that long-term landscape objectives inform decisions regarding appropriate locations and species. Advice on detailed design and how this would integrate within a proposed development should be sought from a landscape architect and an arboriculturist or other competent person.

Large stature trees often form an important part of the landscape and open space network of a settlement. Such trees can often be located to advantage at the end of a vista, within village greens and along the street itself. The most suitable location will depend on the character of the settlement and the specific circumstances.

When considering new developments, developers are encouraged to involve landscape consultants at an early stage in the design process to help determine if there are any major issues (topographic, access, services, drainage, etc.). As the design evolves allied disciplines start to investigate and develop their own design with greater detail.



6.10 Tree Species Selection

6.10.1

The Warwickshire Landscapes Guidelines provide species lists for tree and shrub species common and characteristic for each of the seven regional character areas across the county. All suggested plants form the basis for native planting schemes (except for the common ash tree, *Fraxinus excelsior*, which cannot be planted at the time of writing until further notice). The Guidelines set out the distinctive characteristics for each of these character areas and provide advice and specific guidance about the individual local landscape types and how acceptable and successful landscaping schemes can be best developed.

Non-native and native cultivars are not appropriate in rural settings. Whilst fastigiated trees have some merits, they should not be specified along wider highways where there is room for trees with more stature.

The 'Application of Biosecurity in Arboriculture' Guidance Note 2 (published 2018) provides information on how to help prevent a pest or pathogen (e.g., bacteria or fungi) outbreak which could accelerate mortality and lead to the loss of large numbers of trees. Guidance Note 2 is free to download as an eBook.



Unfortunately, tree pests and diseases can be transported between or within countries via a number of pathways, including:

- [live plant and tree products](#), such as potted plants
- Timber and wood packaging materials such as shipping crates and pallets
- Tools, equipment, machinery and vehicles, such as chainsaws, boots, and all-terrain vehicles
- Soil and organic material, such as leaf litter
- Natural methods, such as wind and water

The origin and provenance of planting stock is of increasing importance. Planting stock should be grown from UK seed collections and grown on in UK nurseries. Sourcing planting stock of local provenance is always preferable for native species.

Over the last twenty years there has been a significant rise in the number of non-native tree pests and diseases being introduced to the United Kingdom. Therefore, it is good practice to implement appropriate biosecurity measures.

Section 14 of the 1981 Wildlife & Countryside Act prohibits the release of any non-native plant species that are specifically listed in Schedule 9. This is to prevent the planting or otherwise cause to grow of invasive species which have become established in the wild and continue to pose a threat to natural fauna and flora.

Published guidance includes:

- 'The Urban Tree Manual', (Produced for Defra by the Forestry Commission, England, Forest Research, Animal and Plant Agency, University of Birmingham and Royal Horticultural Society, 2018), provides advice on the selection and procurement of trees for urban areas
- Tree and Design Action Group's - '[Trees in the Townscape](#)' (2021) , 'Trees in Hard Landscapes: A Guide for Delivery' (2014) and 'Tree Species Selection for Green Infrastructure – A guide for [Specifiers](#)', (2019), provides tree species selection for HGI

It is prudent to consider a wide range of tree species to avoid developments looking the same, to help provide orientation and to maintain or create a sense of place.

Although there is an abundance of published guidance available on the selection of ornamental tree species, there is a key role to be played by the experience, intuition, and vision of individual specifiers for projects as no single document will have all the answers. It is recommended that WCC's landscape architects and arboricultural officers are presented with a list of proposed species and associated plans at an early stage of the development.

6.10.2 Trees Planted Close to the Highway

Selected species should not cause conflict with the highway apparatus mentioned throughout this document. The following parameters are recommended:

6.10.3 Canopy Clearance

Height clearances of 2.4 metres over footpaths, 3.5 metres over cycleways and 5.2 metres over the carriageway will be required.

	Footpath/Footway	Cycleway	Carriageway
Canopy Clearance Required	2.4m	3.5m	5.2m

Table 6.1 - Required Canopy Clearances

6.10.4 Species Diversity

Species diversity is vital to provide highway tree stock within rural settings with some resilience to pests, diseases, and changes in the climate (see 'Application of Biosecurity in Arboriculture' Guidance Note 2, published 2018). Include species from at least two or three different genera in planting specifications and follow the preferred 10-20-30 model (Source: Tree Health Resilience Strategy, Defra, 2018): -

No more than:

- 10% of the tree stock in the area being of one species
- 20% of the tree stock in the area being of one genus, and
- 30% of the tree stock in the area being of one family

Note there are always exceptions to the rule, particularly in urban settings e.g., in the design of formal avenues and tree lined streets.

6.10.5 Planting in the Verge

Where proposals include trees to be planted in verges, whether between a footway and carriageway or adjacent to a carriageway where no footway is provided, then the verges must be of adequate width to accommodate the trees at maturity.

Consider the root area needed for tree pits. Tree pits should provide enough space and uncompacted soil for the tree. Where trees might be prone to vehicle collision, such as near parking bays, then tree protection guards may be needed.

Check species suitability when planting adjacent to footpaths and cycleways.

6.11 Ornamental Planting within the Urban Environment

6.11.1

There are some situations where a distinctive road corridor landscape, or the use of non-native species, is appropriate because it provides a sense of place and can signal the change from rural to urban environments, examples include: -

- Planting along the roadside verge to help break up the scale of the development or to focus views on buildings of interest.
- Planting an avenue of trees along a road corridor to create a distinctive character which may enhance the setting of historic landscapes.
- Bold planting using robust ornamental species, tolerant of roadside conditions, where roads pass through established urban areas, e.g., planting on roundabouts to signal a change from rural to urban areas and to provide local landmarks. In some instances, private local sponsorship can be secured for landscape planting and maintenance.
- Avoid block planting of thorny species as these can trap litter.



Examples of ornamental planting include:

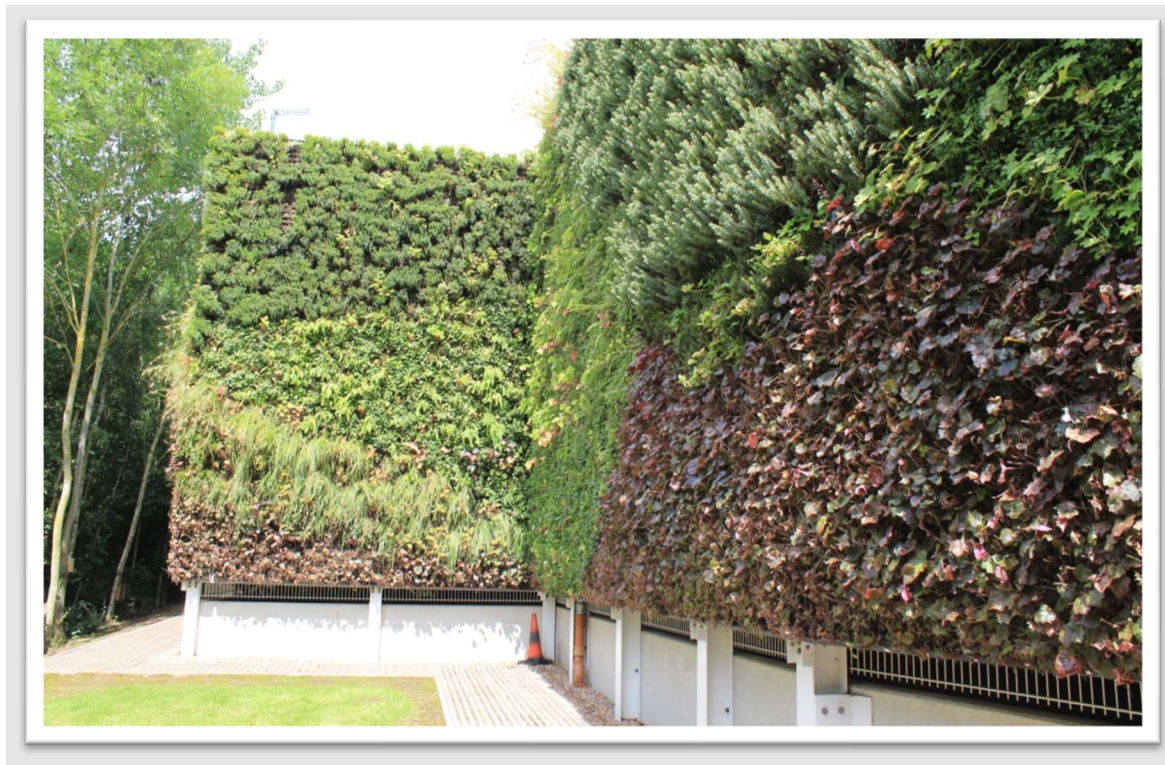
6.11.2 Green Walls

Green walls involve the use of climbing plants to create a living cladding system. The principal types are:

- Climbing wall plants – these can be grown directly against a wall or trained against a trellis or steel cables. Commonly used species for wall-greening are ivy, Russian-vine, and Virginia-creeper. These systems are usually irrigated but can survive without irrigation if rooted in the ground.

- Hydroponic green walls – these systems are usually constructed from plastic mesh, geotextiles, horticultural mineral wool, or a combination of materials fixed to supporting frames. Plants are grown without substrate or soil and rely on nutrients added to irrigation water.
- Modular green walls – these are usually manufactured from purpose made HDPE modules containing cells which are filled with growing medium and planted. Modules are fixed to a wall or frame.

All green walls should be regularly maintained to ensure that irrigation systems are working, and the growing medium does not dry out. If the walls are maintainable by WCC a commuted sum will be payable. It is likely that each wall is unique and would therefore qualify as a non-standard commuted sum (see *Annex 10.1*)



6.11.3 Ornamental Flowering Turf

Ornamental flowering turf is a cost-effective method of establishing a high impact floral display which then matures and develops year on year. The displays tend to be stunning, rich in nectar, attracting a range of wildlife. The flowers are not native but comprise a selection of annuals that will provide a succession of interest from June to October, so they will need good, fertile soil. The flowering turf can also be established from seed.

6.12 Native Planting within the Urban Environment

Examples of native planting include: -

6.12.1 Wildflower Verges

The specification and sowing of wildflower seed is a simple yet effective way of enhancing habitats for biodiversity, particularly invertebrates. This can be incorporated into most schemes where verge excavation occurs. However, it is important to establish which flora species are appropriate to the location. WCC's Ecology team can specify appropriate seed mixes on request. Sub-soils should be used for wildflower planting and/or sowing to counteract nitrogen deposition that occurs alongside roads (topsoil contains seeds of more vigorous competing grasses, thistles, docks, and rushes). Flower swards need to be managed usually by a single cut after flowering.



6.12.2 Wildflower Meadows

Consider wildflower meadows which can provide a floral display for many months as an alternative to amenity grass areas. Choose plants that are appropriate to the site – there are wildflowers for every aspect and every kind of soil/ pH. Try to source wildflower seeds that are common and characteristic to the local area to help boost local populations. Details of native

wildflowers can be found using the National Biodiversity Network's database. However, not all wildflowers listed on the database are commercially available.

Obtain seed of British origin from an approved supplier who can make up the required mix. Garden 'wildflower' seed mixes and/or plants (which may contain non-natives or be of unknown provenance) must not be sown in the wider countryside or close to environmentally sensitive areas.

Perennial wildflowers prefer a poorer soil than annuals, if the topsoil is very fertile it may need to be removed before sowing. Try to find a use for the removed topsoil locally, to fill raised beds, or create a new planting area.

6.12.3 Hedges

Hedges need to be planted and managed in a way that reflects the local landscape character. Species composition should mimic that of existing hedges in the vicinity (refer to the Warwickshire Landscapes Guidelines for planting of appropriate native species). Hedgerow trees are being lost gradually in many parts of the county and roadside hedges offer an opportunity to provide replacements and enhance landscape character as a result.

Plant hedges in double staggered rows using transplants. If hedgerow trees are included in the mix, they must be clearly indicated by marker stakes, so that they are not cut accidentally during hedge trimming. It may be advisable to offset the trees from the hedges. Provide measures to protect new planting from rabbit and deer. Plastic tree/ shrub guards should no longer be used. Biodegradable guards are widely available. Refer to the Forestry Commission's 'Tree protection: The use of tree shelters and guards Guidance and sustainability best practice' (2020).



Hedgerows need to be managed sensitively to maintain their biodiversity value and to maintain their effectiveness as a stock proof barrier. Hedgerows bordering the highway may be eligible for or already included within an agri-environment management scheme (wildlife-friendly management that helps to support biodiversity, enhance the landscape, and improve the quality of water, air, and soil on farmland).

There are exemptions to the 1997 Hedgerow Regulations, i.e., hedges that form the boundary or curtilage of a dwelling. TPOs can apply to individual trees, groups, areas of trees or whole woods and hedgerow trees.

6.12.4 Green Bridges

Green bridges are landscape bridges or wildlife overpasses planted with a variety of local trees or shrubs and other vegetation. The 2015 report: "*Green Bridges – a literature review*" for Natural England suggests that green bridges could become an important part of the sustainability of future transport projects. Green bridges can be constructed to: - create safe crossing points for wildlife as well as people; join up habitats and connect colonies; offer potential homes for wildlife; benefit pollinators and help to integrate roads into the surrounding landscape. Although green bridges are common in Europe and North America only a few have been built in the UK. Examples include the preservation of a historic drive to a castle, the continuity of a parkland setting, and the use of recycled rainwater to maintain the water content of surrounding soils.

6.13 Green Infrastructure and Urban Air Quality

Highway Green infrastructure (HGI) can influence pollution dispersal and deposition. Trees, shrubs, hedges, green walls and roofs, with their differing heights, can help to create a rough surface creating turbulence that increases mixing and pollutant dispersion leading to locally cleaner air. Using planting to help mitigate urban air pollution requires a context-sensitive approach; consider the location of the source of the pollutants to be reduced, and the characteristics of the surrounding built form (i.e., street height-to-width ratio). In open road conditions, thick, dense, and tall vegetation barriers can help to restrict vehicle emissions from reaching roadsides in high concentrations where people walk, cycle, or live nearby. In dense urban environments with no in-canyon pollution sources (e.g., a pedestrianised street), trees can produce "filtered" avenues, in which air is cleaner than on the regional scale. Likewise, in a low-density context where the building arrangement will not cause a canyon effect, trees can remove air pollutants, especially particulate matter.

It is widely recognised that air quality is significantly compromised due to increased energy consumption and traffic-induced emissions. Therefore, consider the amount and connectivity of HGI when developing urban green infrastructure to promote biodiversity. Build in flexibility to future management plans to accommodate changing needs of HGI features.

For suggested further reading and case studies refer to *Local Green Infrastructure Helping communities make the most of their landscape*, (Landscape Institute, (2011)).

6.14 New Planting

A soil survey should be conducted before planning or designing any new soft landscaping and remedial works undertaken to treat poor ground conditions. Failed planting schemes due to poorly prepared soils will need to be replanted.

Assess the condition and extent of the soil below ground. During construction activities surrounding soils can become damaged by compaction and contamination. Compacted soil becomes starved of oxygen which is essential to the survival of plant roots. Compaction can be improved by deep ripping or cultivation (or both) allowing oxygen to penetrate the soil and improving drainage. Remove any soil that is badly contaminated from the site and replace it with fresh topsoil. Apply organic surface mulches, such as pulverised bark, to a planting area to help retain soil moisture, suppress weed growth and encourage the colonisation of soil organisms (mycorrhizae) which are beneficial to plant roots.

Prepare a suitable area for planting and carefully handle plants so they arrive at the site in good condition. The plants should be planted at the same level on the stem as they were when they were in the nursery. All roots should be covered with friable (crumbly) topsoil, firmed so the plants stand upright. Large stock, such as standard trees, should initially be supported with stakes and ties. Any hard surfaces close to planting areas should be designed to withstand roots developing and expanding. Consider using root barriers around trees which help to deflect root development downwards and away from vulnerable surfaces.

HGI and gardens can soak up rain, unlike paving, tarmac and concrete areas which are less porous and increase the amount of rainwater that runs off by as much as 50 percent. New drainage should be designed to cope with expected run-off to avoid localised flooding. Use permeable paving where possible to help improve drainage and oxygen penetration to the soil below and keep hard surfaces to a minimum. A variety of materials ranging from gravel, pavers, matrix pavers, grass reinforcement and open soil can be used in tandem with a sustainable drainage system (SuDS). SuDS systems can be supported by channel drainage and oil interceptors, to effectively and safely manage surface water that needs to drain into surrounding water bodies. There is also an opportunity for reducing run-off by creating rain gardens.

It is critical to understand both above ground and below-ground conditions for the long-term survival of existing trees and/or the planting new trees in hard landscapes. Assess the need for; load bearing capacity for new or refurbished hard surfacing; below-ground services; water infiltration and rooting space. Consider using raft, crate or structural growing media to create a

good rooting environment while protecting hard surfaces from potential damage, (refer to case studies within Trees in Hard Landscapes – A Guide for Delivery, (Trees & Design Action Group, 2014)).

Refer to nationally recognised guidance on the creation of SuDS.

6.15 Load Bearing Surfaces (no dig) during Construction The construction of pedestrian routes, cycleways, extensions to existing or new buildings and the construction of temporary access roads all have a potential impact on a tree's longevity. The trees and hedges root protection area (RPA) must be identified to decide when a load bearing "no dig" construction method may be used.

'No-dig' (cellular confinement systems) relate to 2 and 3 dimensional 'load spreading' materials that are used where construction is within rooting areas of existing trees for both footways and carriageways. If development is to be phased the need for any temporary or permanent accesses must be indicated / provided as part of the planning application process. All construction works must occur above the existing ground level. Passage of all vehicles across an unprotected soil surface must be avoided, particularly where the soil is wet or is high in clay content, because there is a substantial risk to surface roots, soil compaction and consequently reduced soil aeration. Over-compaction can prevent oxygen reaching the roots, as well as inhibit drainage, both of which can severely limit long-term tree growth. Protect the Root Protection Area of all affected trees using appropriate fencing in accordance with BS5837:2012 (or subsequent revision).

The system the contractor proposes to use to protect trees needs to be included in the Contractor's method statements and designers should consider suitable construction methods when preparing their designs.

6.16 Permanent Load Bearing Construction (no dig)

Permanent load bearing (PLBC) (no dig) (cellular confinement systems) are not considered suitable for adoption whereby there is heavy traffic use. The council will consider adoption of PLBC for light traffic e.g., cycleways, driveways, and footpaths.

Early consultation with the highway engineers and the Arboricultural officer is advisable if a cellular confinement system is to be used and offered for adoption.

6.17 Maintenance Considerations

All planting must be established before it can be adopted by the local authority. Design planting schemes to keep long-term maintenance requirements to a minimum. Where appropriate, a commuted sum will be required as a contribution towards future maintenance costs. (See *Annex 6.1 and Annex 10.1* for further details on commuted sums on Section 38 Agreements and Section 278 Agreements).

Maintenance works should meet the relevant British Standards and should always relate to the specific scheme. For example, establishing an avenue of heavy standard trees within a grass verge is very different to establishing a forestry plantation.

The growth of weeds in footways and cycle routes, paved verges, central reserves filter drains and along kerb lines may cause structural damage, drainage issues and the environment may be perceived to be untidy. Weeds may also have implications for pedestrian safety. Weed treatment should be undertaken according to traffic and pedestrian usage and at an appropriate frequency. The use of weed killers should be the minimum compatible with the required results.

Pruning after planting should only be required to enhance or guide the shape of the tree. Trees proposed for pollarding should be avoided as it is costly, time consuming and unattractive. Expert advice should always be sought in the management of any tree within the highway environment, whether on highway land or not.

6.18 Adoption and Technical Approval of Highway Trees

The adoption of existing trees into a highway network can add instant benefits to a site and, if protected properly during construction, can continue to do so, for many years.

Where tree planting within private plots immediately abutting an adoptable highway is proposed, due regard must be given to the ultimate height and spread. This is to avoid overhanging branches and shrubs projecting into the highway which could constitute obstructions.

If the Highway Authority is to adopt an existing tree, the tree report must show the protection measures that will be taken, to safeguard the tree during construction. This should be submitted as a Tree Protection Plan.

It is important to involve the Highway Authority in the development of all landscape proposals which affect adoptable highways to ensure that there will be no conflicts of interest once a planning consent has been granted.

The planting of all new trees within, or directly adjacent to land that is proposed for dedication as public highway, will require technical approval by WCC Arboricultural Officers. The same applies for existing trees proposed for retention, including if there is a need to partially remove, prune, or undertake any ground works near to any existing highway trees to facilitate a development and/or access to it.

Following the granting of technical approval, formal approval by WCC Arboricultural Officers will also be required at the final adoption stage.

6.19 Suggested Further Reading

Documents referenced in this part of the Design Guide are indicated below. These and others should be considered to ensure that best practice is being applied in the development of landscape schemes:

- Warwickshire Landscapes Guidelines - www.warwickshire.gov.uk/landscapeguidelines
- BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'
- BS 5489-1:2013 'Code of practice for the design of road lighting - Lighting of roads and public amenity areas with regard to highway trees'
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3rd Edition
- Wildlife and Countryside Act, (1981)
- Hedgerow Regulations, (1997)
- BS 8596:2015 'Surveying for bats in trees and woodland guide'
- Historic Landscape Characterisation Project - www.warwickshire.gov.uk/historiclandscapecharacterisation
- Manual for Streets - www.gov.uk/government/publications/manual-for-streets

- [‘Does money grow on trees?’ \(CABE 2005\)](#)
- ‘Application of Biosecurity in Arboriculture’ Guidance Note 2, (2018)
- The Urban Tree Manual, (Defra publication, 2018)
- Trees in the Townscape, (Trees & Design Action Group), (2021) - <https://www.tdag.org.uk>
- [Trees in hard landscapes- A guide to delivery - https://www.tdag.org.uk \(2014\)](https://www.tdag.org.uk)
- [Trees Species Selection for Green Infrastructure – A Guide for Specifiers, \(Trees & Design Action Group\), \(2019\)](#)
- National Biodiversity Network Database – <https://nbn.org.uk/>
- Forestry Commission ‘Tree protection: The use of tree shelters and guards Guidance and sustainability best practice’ (2020)
- [Local Green Infrastructure Helping communities make the most of their landscape, \(Landscape Institute, 2011\)](#)

Further reading:

- Warwickshire District and Borough Design Guides
- Design Manual for Roads and Bridges, Volume 10
- BS 8545:2014 Trees: from nursery to independence in the landscape
- BS 3998:2010 Tree work. Recommendations
- BS 3936-1:1992 Nursery stock. Specification for trees and shrubs
- BS 4428:1989 ‘Code of practice for general landscape operations (excluding hard surfaces)’
- BS 3882:2015 ‘Specification for topsoil’
- Trees in the Townscape: A Guide for Decision Makers (Trees and Design Action Group)
- NJUG Volume 4 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees (National Joint Utilities Group)
- Building Near Trees – NHBC Standards Chapter 4.2 (National House Building Council)

For undated documents, the current edition including any revisions, updates or amendments apply.

Part 7 Structures

7.1 Introduction

7.1.1 Objectives of Part

This part of **The Warwickshire Design Guide** shall inform the planning, design, construction and adoption of structures over, under, adjacent to or otherwise affecting;

- (i) the public highway including the carriageway, footway and all verges, or
- (ii) Public Rights of Way

within the County of Warwickshire.

This guidance shall be applied to structures classified as Category 0 or above as defined under The Design Manual for Roads and Bridges Section CG 300: Technical Approval of Highway Structures. This guide shall be applied where it is intended Warwickshire County Council shall become the maintaining authority in the future and those structures which affect the Public Highway but shall remain in private ownership.

Developers and their consultants shall use this guidance to map the processes and consultations required by WCC in the execution of its statutory responsibilities as Highway Authority under the Highways Act 1980 and the role of the Technical Approval Authority for the purposes of Technical Approval of Highway Structures to CG 300.

The guide is structured according to the key stages of the project which are summarised as follows:

<i>Planning Stage</i>	<i>Early consultations to inform Planning Applications for new Structures and Alterations to Existing Structures</i>
<i>Section 278 and Section 38 Processes</i>	<i>Agreeing where responsibilities lie for design, procurement, construction and adoption</i>

<i>Approval in Principle</i>	<i>Agreeing the structural form, materials to be used, design/assessment methodology and technical standards to be applied</i>
<i>Detailed Design and Check</i>	<i>Certification of the Design and Check and Acceptance of the Construction Drawings and Specifications</i>
<i>Construction Compliance</i>	<i>Supervision or Inspection of the Works and Certification that the completed works comply with the standards set out in the AIP</i>
<i>Adoption of New Structures</i>	<i>Process for handing over new structures to the Highway Authority on Completion of Section 278 and Section 38 Agreements</i>
<i>Adoption of Existing Structures</i>	<i>Process for Adopting Existing Structures, currently under private ownership, which affect the Public Highway, or which are expected to affect the Public Highway once new infrastructure has been constructed</i>

The process described in this Design Guide is mapped as a flowchart in Figure 7.1.1 in Annex 7.1.

It is recommended this guidance is read in conjunction with CG 300 which is available from: The Stationery Office (TSO) e-mail: book.orders@tso.co.uk Online: www.tso.co.uk. Online viewing of CG 300 and all other Highways Agency Technical Memoranda that comprise the Design Manual for Roads & Bridges (DMRB) is available on the Standards for Highways webpage www.standardsforhighways.co.uk/dmr/htm

7.2 Planning

7.2.1 Pre-planning Consultations

As discussed in Part 1.4, early consultation with the Highway Authority is recommended to discuss new structural proposals and to determine whether Technical Approval processes need to be applied. CG 300 sets out a series of Geometric Criteria for the application of Technical Approval processes and these are summarised in Table 7.2.1 in Annex 7.2.

Advance fees will be agreed prior to any consultation and calculated according to the scale of the undertaking. The purpose of these consultations will be:

- To determine the appropriate form of the structure
- To determine the structural category of the structure to CG 300
- To understand the Highway Authority's maintenance requirements if the structure is to be adopted

For Category 0 and 1 structures to CG300 with an estimated construction cost not in excess of £0.5M (not including Bridges), the consultation is optional and may be based upon preliminary general arrangement drawings. As a minimum the design will need to incorporate the following maintenance requirements.

Access for future maintenance and inspection	A designated 1m wide access path from the highway to any visible elements of the structure or associated gullies, rodding eyes, or access chambers which are not directly accessible from the highway. Permanent steps, ramps or level platforms shall be provided where necessary
Parking	Parking facilities to be identified within 200m of the highway

Table 7.1 Minimum Maintenance Access Requirements for Minor Structures

For Category 0 and 1 structures with an estimated construction cost in excess of £0.5M or any Category 1 Bridge or any Category 2 or 3 structure, consultation is mandatory and will involve preparing a Structures Option Report demonstrating how the preferred structural solution has been chosen and agreed with the Highway Authority. Guidance on the appropriate category for a structure is provided on Table 7.3.1 in Annex 7.3.

7.2.2 Structure Options Report

The Designer will need to produce a Structure Options Report (SOR) for the following types of structure:

- Any Category 0 or 1 Structure with an estimated construction cost in excess of £0.5M
- Any Category 1 Bridge Structure
- Any Category 2 or 3 structure

The structure and content for the Structures Option Report shall be agreed in advance with the Highway Authority before it is commenced. As a minimum, the report shall be produced in accordance CG 300 Appendix O, supplemented by the following:

- A description of the existing site and the design constraints including ground conditions
- Technical Options Appraisal of structural forms including structural geometry and proposed foundations
- A summary of technical standards to be applied and departures from standard required
- Qualitative Impact Assessment of traffic disruption on the network during construction
- Vehicle and pedestrian restraint requirements
- Utilities apparatus to be protected or diverted
- Whole Life Cost Appraisal
- Health and Safety and Environmental Risk Register
- Project Delivery Programme
- Future maintenance requirements, including the facilitation of future maintenance and inspection activities. As a minimum the design will need to incorporate the following maintenance requirements as in the table below.
- Maintenance access including clearances, headroom, maintenance strips, wayleaves, space requirements for temporary structures e.g., bailey-bridges, etc.

Access for future maintenance and inspection	A designated 2.5m wide access track from the highway to any visible elements of the structure or associated gullies, rodding eyes, or access chambers which are not directly accessible from the highway. Gradient of the access track to be no greater than 1 in 20
Access for maintenance of drainage systems	A designated 1m wide access path from the highway to gullies, rodding eyes, or access chambers associated with the structure
Parking	Parking bay shall be provided within 100m of a structure
Headroom	Where access is required to inspect and repair interiors and soffits a minimum headroom of 2m will be required
Security	A lockable field gate shall be provided at the entrance of the access track adjacent to the highway
Access to watercourses	For structures over watercourses a designated 2.5m access track shall be provided from the highway to a suitable launching and berthing location at the water's edge

Table 7.2 Minimum Access Requirements for Major Structures

A suitably experienced and competent civil engineering design engineer should be appointed to produce the Structure Option Report. Alternatively, for an agreed fee the Warwickshire County Council Bridge and Structural Design Team can also provide this service.

The Structure Options Report must be submitted for acceptance by the Highway Authority and later included with the Planning Application.

7.2.3 Existing Structures

Where the project affects an existing structure the Highway Authority must be consulted on the proposals before a Planning Application is submitted. This includes any project which requires the widening, improvement, repair (where structural integrity may be affected), change of use, highway layout or loading or demolition of an existing highway structure. The purpose of the consultation is as follows:

- To request existing records of inspections, assessments and as-constructed information, if available. Charges may apply
- To identify known restrictions e.g., weight limits, listed status, existing defects, presence of utilities, etc which could affect the proposals
- To carry out a Structural Review and agree Assessment Requirements
- To agree the appropriate form of any alterations or establish the brief for a Structure Options Report
- To determine the structural category of the proposals or assessment to CG 300
- To understand the Highway Authority's future maintenance requirements

For all existing structures, consultation with the Highway Authority shall include a Structural Review to CS 451 to be prepared by the developer or their consultants and submitted for approval by the Highway Authority. This shall set out the requirements for inspection and assessment of the affected structure as necessary to inform the development of structural proposals. If existing records of inspections and assessments are available and provide information that is current and sufficiently comprehensive to adequately inform the development of the design, then this could negate the need for further inspection and assessment work to be undertaken.

Where the proposals affect a Category 1 Bridge or Category 2 or 3 structure, similar to that noted above, a Structure Option Report will be required to establish the preferred solution for acceptance by the Highway Authority. Guidance on the appropriate Category for a structure is provided in Table 7.3.1 in Annex 7.3. For further details of the minimum requirements for a Structure Option Report, please refer to 7.2.2 of this guide. However, the Highway Authority should always be contacted in advance to agree the brief for the Structure Option Report before work on it commences.

7.2.4 Planning Consultations

Information submitted with Planning Applications will be reviewed by the Highway Authority as a statutory consultee. If the proposals are to construct a large structure i.e., Category 2 or 3 to CG 300 or if they affect an existing large structure and have not been subject to a rigorous Structure Option Report, the Highway Authority are likely to object to the proposals.

Where an existing structure is to be altered significantly or extended beyond its existing footprint and elevation, a Planning Application will be required. If the Highway Authority have not been consulted on proposals which alter or affect an existing structure, the Highway Authority is likely to object at the planning stage. Similarly, if proposals affecting an existing large structure i.e., Category 2 or 3 to CG 300 are not supported by an accepted Structure Option Report, the Highway Authority is likely to object to the proposals.

For Category 2 and 3 structures, where there is already an approved Structure Option Report, it should not be assumed that planning consent is guaranteed. As part of planning consultations, the details of the proposed structure will be reviewed by other authorities separate from the Highway Authority, who may have different views on the form and aesthetics. For example, Historic England, the Local Planning Authority, or the Local Conservation Team with jurisdiction at the location of the structure, may have different opinions about the proposed form of a new bridge and whether the materials and finishes of the parapets and cladding are sympathetic to the surrounding environment.

7.3 Section 278 and Section 38 Processes

7.3.1 The Highways Act 1980

If planning consent is granted, the developer will need to decide upon the appropriate legal framework under which to deliver the project and handover ownership of infrastructure to the Highway Authority as provided for under the Highways Act 1980. In Warwickshire, there are three principal instruments that a developer may employ for these purposes:

<i>Section 38 Agreement</i>	<i>Where the Highway Authority enters into a legal agreement with a developer to adopt a structure provided it has been constructed to a specified standard and to the satisfaction of the Highway Authority.</i>
<i>Section 278 Agreement</i>	<i>Where the Highway Authority enters into a legal agreement with a developer (in order to facilitate development) for the developer to pay for the construction or modification of a structure by the Highway Authority on the existing highway network.</i>
<i>Minor Section 278 Agreement</i>	<i>Where the Highway Authority enters into a legal agreement with a developer (in order to facilitate development) for the developer to construct or modify a minor structure on the existing highway network to a specified standard and to the satisfaction of the Highway Authority.</i>

Further information on entering into the relevant Agreement is described in Part 2 and Part 10 of this Design Guide.

On entering into a Section 278 Agreement involving the construction of a new highway structure, it is recommended the developer facilitates a risk workshop in order to properly understand the potential financial risks during construction and to inform suitable contingencies.

7.4 Technical Approval: Approval In Principle (AIP)

7.4.1 Technical Approval

Included amongst the conditions attached to the planning decision for a new or modified structure, there is a requirement for it to be Technically Approved. Technical Approval processes for new structures are required to comply with CG 300.

All structures which support, form part of, or affect the public highway or other Public Rights of Way will require Technical Approval to CG 300 by the Technical Approval Authority, Warwickshire County Council. Under CG 300, structures requiring Technical Approval include all those that are situated wholly or partly within; under, or over the existing or proposed highway and which exceed defined geometric criteria.

Where the project affects an existing highway structure, any resulting assessment will also be subject to Technical Approval processes described in CG 300. Typically, an assessment of an existing structure will be required under the following circumstances:

- Works are to be undertaken to the structure that affect structural integrity, whether refurbishment, maintenance or strengthening
- The use of the structure will change exceeding the loading for which it was originally designed or previously assessed
- The use of the structure will change without exceeding the loading for which it was originally designed or previously assessed, but the condition of the critical structural elements has subsequently deteriorated to the extent that a reassessment is required.

For a detailed summary of the types of structures which require Technical Approval under CG 300, refer to Table 7.1.1 in Annex 7.1.

At various stages of the Technical Approval process, the developer or their design consultant is required to submit information to the Technical Approval Authority for approval. The stages of the process are listed below and described in greater detail in the following sections of this guide.

<i>Approval in Principle</i>	<i>Agreeing the structural form, materials to be used, design/assessment methodology and technical standards to be applied</i>
<i>Detailed Design/Assessment and Check</i>	<i>Certification of the Design and Check and Acceptance of the Construction Drawings and Specifications</i>
<i>Construction Compliance</i>	<i>Inspection and Certification of the Works</i>

It is to be noted that, depending upon the quality of the submissions and complexity of the project, the time required to complete the Technical Approval processes can vary.

7.4.2 Determining the Structural Category

Before preparing the Approval in Principle submission, the Technical Approval Authority should be consulted to agree the structural category as defined in CG 300. The geometric criteria for determining the structural category are presented in detail in Table 7.3.1 in Annex 7.3. However, where any of the following criteria apply, the structure is automatically designated as Category 3

- (i) Any structure designed to have high structural redundancy
- (ii) Any structure possessing unconventional, novel or esoteric design aspects
- (iii) Any structure with a span exceeding 50m
- (iv) Any structure with a skew exceeding 45°
- (v) Any structure with difficult foundation problems

For lighting columns, traffic sign/signal posts, cantilever masts for traffic signals and/or speed cameras, masts for camera, radio and telecommunication transmission equipment and other high masts, the structural category will be affected by the exposure conditions at the location of the structure. The exposure conditions referred to in Table 7.3.1 in Annex 7.3 are defined in CD 345 as follows:

Within the United Kingdom, very exposed sites are defined as:

- (a) sites at high altitude, above 250m
- (b) sites within 5km from the coast
- (c) sites subject to significant local funnelling

7.4.3 Approval in Principle (AIP) Document

The purpose of this submission is to agree the form of the proposed structure, choice of materials, details of the principal elements, traffic loadings, technical standards to which it will be designed, category of the design check and to identify buildability and sustainability issues and Health and Safety risks.

The Approval in Principle (AIP) document should be submitted before the detailed design of the structure or the assessment and detailed design of alterations commences. However, in some circumstances, this can be undertaken retrospectively with the agreement of the Technical Approval Authority (TAA).

The format and layout of the document should follow the appropriate pro-forma set out in Appendix A of CG 300. Any deviation from this format should be agreed with the Technical Approval Authority first.

When preparing the AIP Document, the designer/assessor should refer to the AIP Guidance Notes provided in Annex 7.4. The designer/assessor may request an example of an AIP for a similar approved structural design or assessment from the Technical Approval Authority as a useful reference to help inform the content and quality of their submission. The Technical Approval Fee Estimate outlined in Section 7.2 is sufficient for up to three reviews of the AIP Submission by the Technical Approval Authority. If further reviews are required, the Technical Approval Authority will request additional fees to be paid in advance before the process resumes.

The Approval in Principle is valid for three years from the date it is signed by the TAA. If the construction has not commenced within this period, the AIP shall be reviewed by the designer against current standards and amended as necessary. The document shall be submitted to the Technical Approval Authority for review and acceptance as if it were a new submission.

7.4.4 Technical Standards Applied in Design

The standards to be used on the detailed design shall be listed in the Technical Approval Schedule appended to the AIP document. A standard list of technical standards relevant to highway structures projects can be obtained free of charge on the DMRB website.

Warwickshire County Council's policy is that highway structures should comply in all respects with the following technical standards and guidance:

- Eurocodes and associated National Annexes
- BSi published guidance
- Execution Standards referenced in British Standards and Eurocodes
- Product Standards reference in British Standards and Eurocodes
- British Standards
- The Manual of Contract Documents for Highway Works
- The Design Manual for Roads and Bridges
- Interim Advice Notes Issued by National Highways
- CIRIA Published Guidance

Any proposal to depart from these standards must be justified and agreed with the Highway Authority by applying for a relaxation or a formal Departure from Standard. For further information on Departures, see *Annexures 2.3 and 2.5*. The designer should consult with the Technical Approval Authority where there is conflict or ambiguity between different applicable standards.

7.4.5 Drawings Accompanying the AIP

As a minimum a general arrangement drawing is to be included in the AIP and shall include the following:

- A location plan of the structure showing the structure in relation to the nearest town or village
- A further larger scale location plan should also be provided to show the location of the structure within a new development if applicable, and where appropriate, the nearest existing highway affected by the works
- The position of the existing and proposed highway boundary
- The structural form, including articulation
- The obstacle to be crossed, including clearances
- The geometry of principal structural elements including initial section sizes
- The preliminary substructure proposals
- Proposed construction materials
- Existing and proposed ground levels
- The proximity and effect of the proposals on any existing highway structure
- If applicable, the structural elements to be later adopted by the Highway Authority shall be highlighted
- The features that ensure long-term durability e.g., waterproofing, drainage, joint details, etc.

Further details may be requested by the Technical Approval Authority.

7.4.6 The Idealised Structure Diagram

For Category 0 or 1 Structures, the Idealised Structure Diagram shall define the geometry of the simplified critical section to be used for analysis as well as the forces and pressures to be applied.

For Category 2 or 3 Structures this is to be supplemented by visualisations of the structural models input to the analysis software.

7.4.7 Geotechnical Information

For Category 1 structures, the AIP shall include relevant extracts of a Ground Investigation Report factual and interpretative geotechnical report, or if this is not available, the soil parameters that will be used in the detailed design whether based upon assumptions or supported by factual geotechnical data. For Category 2 and 3 Structures, the AIP shall include a Geotechnical Design Report.

7.4.8 Temporary Works

Sufficient consideration will need to be given to the buildability of a new structure to understand the nature of any temporary works required to enable the construction and for these to be identified in the AIP. Once a contractor and Temporary Works designer have been appointed, the Temporary Works design will in turn will require Technical Approval to CG 300 prior to construction. The process for submitting Temporary Works AIPs to the Technical Approval Authority is identical to permanent works AIPs. However, please note there is a specific Temporary Works AIP pro forma in CG 300. Developers and their contractors will need to allow for a minimum of six weeks in their construction programme for Temporary Works AIPs to be submitted, reviewed, commented on and approved prior to construction. Please note the duration of the approval process may be extended if multiple reviews and revisions of the documents are required to achieve approval.

7.4.9 Future Maintenance Requirements

For all structural categories, the pro forma Approval in Principle in CG 300 requires details on provisions made for enabling future inspection and maintenance activities. Access to the elevations and, where appropriate, the interior of the structure will need to be considered. Safe routes will need to be identified from the highway to the various structural elements, whether by foot or by vehicle, highlighting the necessity of specialised access equipment and risks associated with confined

spaces and working at height. To enable access for inspections and maintenance, it may be necessary to gain access to private land. An easement or license will need to be established with the affected landowner permitting access for inspection and construction working space for future maintenance activities.

7.4.10 Submission Requirements

The signatory to the AIP must be a Chartered Engineer with suitable relevant experience. Where multiple design organisations are involved in the scheme, it is preferred that a single signatory takes responsibility for the collective submission. If this is not achievable, the Technical Approval Authority should be contacted to agree alternative arrangements before the AIP is submitted.

Documentation can be submitted to the Technical Approval Authority either in paper form with an ink signature or as a .pdf file with an electronic signature. Once signed by the TAA, the developer or their consultant will receive a .pdf copy of the signed document via email. If the developer or their consultant wish to receive approved hard copies of the AIP document signed in ink by the TAA, they must submit sufficient hard copies, as necessary.

7.5 Technical Approval: Detailed Design / Assessment and Check

Once the AIP Document is signed off by the Technical Approval Authority, the developer may commission their design consultant to proceed with the detailed design/assessment in accordance with the agreed parameters in the Approved AIP Document and the production of the construction drawings and specifications.

The completed design information will then be subject to a formal check. The Structural Category to CG 300 will determine the type of check to be performed on the design calculations, drawings and associated reinforcement schedules. Table 7.3 below sets out the Design/Assessment Check Criteria in CG 300.

Structural Category	Design Check Criteria
Category 0	An independent Check by another engineer from the Design/Assessment Team
Category 1	An independent Check by another engineer from the Design/Assessment Team
Category 2	A Check by a Check Team which may be from the same Organisation but must be independent of the Design/Assessment Team
Category 3	A check by a Check Team from a separate Organisation proposed by the Designer or Assessor and Agreed by the TAA

Table 7.3 Design/Assessment Check Criteria

The Design/Assessment Team will address any issues or comments raised by the Check Team. Once agreement has been reached that the design or assessment is accurate, satisfies the relevant standards and the design has been accurately translated to the construction drawings and bar bending schedules, the Design/Assessment and Check Certificates can be prepared and submitted to the TAA.

7.5.1 Design/Assessment and Check Certificates

The format and layout of the certificates must follow the appropriate proforma set out in Appendix A of CG 300. The wording of the certificate may vary depending upon the Category of Structure and whether it is a design, assessment or check that is being certified. Any deviation from the standard format and wording must be agreed with the Technical Approval Authority before submission, otherwise, it will be automatically rejected. Each Design/Assessment and Check Certificate shall include the CDM Principal Designer as signatory.

Accompanying the submission of the certificate(s) the developer shall provide:

- Construction drawings, accompanying specifications and reinforcement schedules
- A copy of the structural design or assessment calculations
- A copy of the Geotechnical Design Report for the structure

- A copy of the Topographical Survey
- Where the works affect the existing highway, a copy of the Ground Penetrating Radar Survey and records of utility trenches to investigate unidentified apparatus
- Where the works affect an existing structure, a copy of the Inspection and Assessment Reports

7.5.2 Design Review for New Structures and Modifications to Existing Structures

The Technical Approval Authority shall carry out a formal review of the information submitted with the Design and Check Certificates. The purpose of the review is:

- To ensure the construction drawings and accompanying specifications are consistent with the Approved AIP Document and comply with the relevant Technical Standards
- To capture ambiguous or incomplete information that would have a cost implication for Section 278 Works
- To identify materials, components or details that could adversely affect the buildability or quality of the construction or ease of future maintenance
- To inspect the design/assessment calculations to ensure they comply with the AIP

Any inconsistency or inaccuracy shall be brought to the attention of the Design/Assessment Team and must be addressed before the certificates will be signed by the TAA. The TAA do not accept any liability or errors in the information that has been reviewed.

7.5.3 Submission Requirements

The signatories to the Design and Check Certificates must be Chartered Engineers with suitable relevant experience. Where multiple design organisations are involved in the scheme, each must provide a signature on the certificate. The certificate will therefore need to clearly distinguish which the elements of the structure were designed by the respective design organisations. A principal of the lead design organisation must sign the certificates and take responsibility for the collective submission. If this is not achievable, the Technical Approval Authority should be contacted to agree alternative arrangements before the certificates are submitted.

The Design and Check Certificates can be submitted to the Technical Approval Authority either in paper form with an ink signature or as a .pdf file with an electronic signature. Once signed by the TAA, the developer or their consultant will receive a .pdf copy of the signed document via email. If the developer or their consultant wish to receive an approved hard copy of

the certificates signed in ink by the TAA, they must submit sufficient hard copies, as necessary. Supporting information should be submitted electronically.

For new highway structures or modifications to existing highway structures, the Design and Check Certificates are valid for a period of three years from the date that the AIP was signed off. If construction has not commenced before the AIP and the Certificates expire, the design and check certificates shall be resubmitted with reference to an updated AIP document.

7.6 Technical Approval: Construction Compliance

Construction shall not commence until the AIP and Design/Assessment and Check Certificates have been signed by the Technical Approval Authority. The Technical Approval Authority will not accept certificates for Technical Approval for structures that have already been constructed. For details of how to seek adoption of an existing structure, refer to 7.7 Managing Geotechnical Risk to CD 622 below.

During construction, WCC as the Highway Authority and Technical Approval Authority will monitor the quality of the construction with in situ inspections and/or supervision. The inspection or supervision regimes will vary depending upon which process is being used to deliver the works under the Highways Act 1980.

7.6.1 Site Inspection by the Technical Approval Authority under a Section 38 Agreement or Minor Section 278 Agreement or of a Privately-owned Structure

At the start of the Construction Phase, the developer or their consultant is required to provide the Technical Approval Authority with a construction programme. The Technical Approval Authority will organise the inspection of the works as required to confirm that the quality of construction meets the standards set out in the AIP and, where appropriate, the structure is suitable for adoption. During construction, the developer and their contractor will be responsible for facilitating safe and comprehensive access to the works to enable the Inspector to perform this role. For Category 2 or 3 Structures, the developer and their contractor will be required to provide a furnished office and a site vehicle on site for use by the TAA Inspector.

If the works are being constructed under a Section 38 Agreement, a Minor Section 278 Agreement or a Third-Party Contract, the Highway Authority is not party to the construction contract. It is therefore the responsibility of the developer to appoint an independent Work's Examiner in accordance with CG 300, who shall ensure the works are constructed to the required

standards set out in the AIP. Before construction commences, details of the independent Work's Examiner which demonstrate their competence to perform the role, are to be provided to the Technical Approval Authority for their acceptance. For Category 2 or 3 structures, the Works Examiner shall be a Chartered Engineer with suitable relevant experience. During construction, the Works Examiner will carry out and document inspections of the works recording their findings. These are to be included in the maintenance manual.

The developer will need to establish and advise the TAA on the appropriate channels of communication through which to raise any comments or concerns regarding the quality of the construction so they may be dealt with in a timely fashion and resolved without adversely affecting the quality of the completed works. Ultimately, the acceptance of the Construction Compliance Certificate will depend upon the findings of the site inspections by the TAA during construction and where necessary, agreement on the appropriate rectification of defects and non-compliance with quality standards.

On completion of the works, the CDM Principal Designer appointed by the Developer will need to compile the CDM Health and Safety File.

The contents of the CDM Health and Safety File are set out in The Design Manual for Roads and Bridges: CD 302

7.6.2 Procurement of Works Delivered under a Section 278 Agreement

WCC deliver Section 278 works using the WCC Construction Framework. The developer can either opt for a competitive tender or engage with a single Framework Contractor to agree a price. If the developer chooses the latter option, WCC will invite a single tender under the Framework from that contractor to establish a legally binding Call-off Contract.

The WCC Construction Framework uses the NEC3 ECC Option A Contract. Further details of the contractual terms and the division of contractual risk are provided elsewhere in Part 10 of this Design Guide.

7.6.3 Construction Contract Roles and Responsibilities for Works Delivered under a Section 278 Agreement

Warwickshire County Council will act as the NEC Employer and shall retain discretion over the appointment of the NEC Site Supervisor and the NEC Project Manager. The developer may propose a suitable appointment to perform the commercial aspects of the NEC Project Manager role and retain oversight of construction costs. Please note however the NEC Project Manager is the Employer's appointment and under the NEC ECC Contract the NEC Project Manager is required to act fairly and impartially. If the NEC Project Manager fails to adequately perform the role or behaves in a manner which breaches the

terms of the contract to unfairly protect the developer's interests, WCC shall appoint a new NEC Project Manager. See Part 10 for more details.

7.6.4 Other Roles and Responsibilities for Works Delivered under a Section 278 Agreement

At the start of the construction phase, the responsibilities of the CDM Client will be transferred from the developer to WCC and updated on to the HSE (Health and Safety Executive) F10 form accordingly.

During construction, the developer is required to ensure the continuity of the CDM Principal Designer role to ensure that Health and Safety risks are appropriately managed in respect of any design changes and to prepare the CDM Health and Safety File on completion of the works.

Where the design has been produced by a third-party Design Consultant employed by the developer, the services of the designer are to be retained during construction to answer technical queries and if necessary, implement any design changes required along with the associated changes to the Works Information.

Under a Section 278 Agreement, the NEC Site Supervisor Role performed by WCC shall incorporate the responsibilities of the Work's Examiner and certify the quality of construction meets the standards set out in the AIP and any additional checks and inspections required by the Highway Authority to ensure that the structure is suitable for adoption.

7.6.5 Submission Requirements

On completion of the works, the Construction Compliance Certificate will be signed by the contractor and the Works Examiner. For works delivered under a Section 278 Agreement, the Work's Examiner will be the WCC NEC Site Supervisor. For privately-owned works or works delivered under a Section 38 or Minor Section 278 Agreement, this will be the Developer's Independent Work's Examiner. Please note, for Category 2 or 3 structures, the signatories for the contractor and the Developer's Independent Work's Examiner shall be Chartered Engineers with suitable relevant experience. The certificate is then submitted to the Technical Approval Authority for acceptance. Please note the Construction Compliance Certificates are valid for a period of three years from the date the Certificate was signed by the TAA. If the adoption process is not complete before the certificate expires, then the process for adopting an existing structure will be applied.

The format and layout of the certificate should follow the appropriate pro forma set out in Appendices I to N of CG 300. Any deviation from this format should first be agreed with the Technical Approval Authority.

Accompanying the submission of the certificate the Developer shall provide:

- The As-constructed drawings
- A Maintenance Manual including the CDM Health and Safety File. The contents of the Maintenance Manual are provided in Annex 7.6
- The complete set of design calculations, separately bound for each structure, with all sections of the design separately titled and indexed with page numbers

For works constructed under a Section 38 Agreement where the Developer is responsible for construction quality management, the Developer's Independent Work's Examiner will need to be suitably empowered to effectively manage the quality of the construction and provide their assurance of the quality of the finished works by signing the Construction Compliance Certificate.

Documentation can be submitted to the Technical Approval Authority either in paper form with an ink signature or as a .pdf file with an electronic signature. Once signed by the TAA, the developer or their consultant will receive a .pdf copy of the signed document via email. If the developer or their consultant wish to receive an approved hard copy of the certificates signed in ink by the TAA, they must submit sufficient hard copies, as necessary.

7.7 Managing Geotechnical Risk to CD 622

In parallel with the Technical Approval Process, the Technical Approval Authority shall also act as the principal point of contact for processes associated with Managing Geotechnical Risk to CD 622. Under this standard, the developer must demonstrate that geotechnical risk is appropriately managed and certified by the TAA through the design and construction phases by following the procedures described in the standard. These are to be implemented during the process of planning and reporting ground investigations and during the planning, design and construction of geotechnical works affecting the highway. However, where it is clear from the outset of a project that no geotechnical design or construction activities are necessary, then it can be assumed that the CD 622 process will not apply.

7.7.1 Designer's Geotechnical Advisor

It is the responsibility of the developer and their design consultant to appoint the designer's Geotechnical Advisor to oversee and act as focal point for the planning, procurement, interpretation and implementation of the geotechnical aspects of the project. The appointed person will be a geotechnical engineer with experience appropriate to the project being undertaken and with the experience and qualifications of a Geotechnical Designer as described in the Site Investigation in Construction Series Documents, published by the Institution of Civil Engineers. Details of the appointment shall be submitted to the TAA for their acceptance.

The Technical Approval Authority shall appoint their own Geotechnical Advisor to review and approve documents submitted by the developer.

7.7.2 The CD 622 Process

To ensure that geotechnical risks are identified and correctly managed, CD 622 requires the developer and their design consultant to follow a sequence of geotechnical design processes through planning, design and construction. At each stage information and certificates will be submitted to the Technical Approval Authority who will comment on and/or approve the submitted documents subject to the guidance of their Geotechnical Advisor.

7.7.3 Geotechnical Classification

Depending upon the complexity of the proposed geotechnical works and the geotechnical risk implications to Health and Safety, CD 622 requires that all projects have their geotechnical classification established with reference to the geotechnical categories given in BS EN 1997-1 and that this classification is reviewed when appropriate. Table 7.4 below outlines the principal criteria by which the Geotechnical Category is determined. Please note these categories do not correspond to the Structural Categories defined in CG 300.

Geotechnical Category	CD 622 Criteria
Category 1	<ul style="list-style-type: none"> • Small simple structures, earthworks and geotechnical activities • Qualitative Geotechnical Investigations and Local experience • Negligible Geotechnical Risk associated with stability, ground movements and ground conditions (only where there are no excavations below the Water Table or where comparable local experience indicates that a proposed excavation below the Water table will be straightforward)
Category 2	<ul style="list-style-type: none"> • Conventional structures, earthworks and geotechnical activities • Quantitative Geotechnical Data and Analysis with routine field and laboratory testing • No exceptional Geotechnical Risks, unusual or difficult ground conditions or structural loading
Category 3	<ul style="list-style-type: none"> • Very large or unusual structures and earthworks and complex geotechnical activities • Quantitative Geotechnical Data and Analysis with bespoke field and laboratory testing, if necessary • Abnormal Geotechnical Risks or exceptionally difficult ground conditions

Table 7.4 The CD 622 Process: Geotechnical Categories

7.7.4 Geotechnical Reporting Requirements

Once the Geotechnical Category has been agreed, the developer's designer guided by the designer's Geotechnical Advisor shall then progress through the CD 622 process producing and submitting to the Technical Approval Authority for approval of the sequence of reports. The scope of each report and direction to the relevant pro forma provided in Appendices of CD 622 are summarised in Table 7.5 below.

	Scope	Format
Statement of Intent	A letter or statement which includes a preliminary assessment of the scope of geotechnical activities involved in the project, identifying known or suspected geotechnical risks, establish the preliminary Geotechnical Risk Register and to state the scope, purpose, estimated programme and cost of initial geotechnical assessments	CD 622 Appendix C
Preliminary Sources Study Report (PSSR)	A desk study including site reconnaissance, the Geotechnical Risk Register, risks, an appraisal of implications and feasibility of all scheme options	CD 622 Appendix D
Ground Investigation Scope Report (GISR)	The exploratory investigation described in the GISR shall gather geotechnical and geoenvironmental data in those areas where the provision of extra data reduces the geotechnical risks.	CD 622 Appendix E
Ground Investigation Report (GIR)	Presentation and evaluation of all available geotechnical information including factual data and test results produced from a ground investigation undertaken by a specialist contractor stating the assumptions made in the interpretation.	CD 622 Appendix F
Geotechnical Design Report (GDR)	The Designer's detailed report on their interpretation of all the investigations and the design of the geotechnical elements of the project	CD 622 Appendix G
Special Geotechnical Measures (SGM)	The Designer's detailed report on their interpretation of all the investigations and the design of strengthened earthworks elements	CD 622 Appendix H
Geotechnical Feedback Report (GFR)	A record of location and nature of materials encountered and utilised based upon construction data; problems encountered on site and their solutions.	CD 622 Appendix I

Table 7.5 The CD 622 Process: Key Documents

7.7.5 The Relationship between CD 622 Geotechnical Process and CG 300 Technical Approval Process

Whilst CG 300 and CD 622 describe separate processes which run in parallel during the life of the project, the Technical Approval Authority recognise there is a relationship between them. To establish a consistent approach, it is the policy of the TAA the approval of Technical Approval Certification will be subject to the completion and certification of specific Key Stages within the CD 622 process. These requirements are set out in greater detail in Table 7.5.1 in Annex 7.5.

7.7.6 Submission Requirements

Geotechnical Certificates can be submitted to the Technical Approval Authority either in paper form with an ink signature or as a .pdf file with an electronic signature. Once signed by the TAA, the developer or their consultant will receive a .pdf copy of the signed document via email. If the developer or their consultant wish to receive an approved hard copy of the certificates signed in ink by the TAA, they must submit sufficient hard copies, as necessary. Supporting information should be submitted electronically.

Geotechnical Certificates are valid for a period of three years from the date they are signed. If construction has not commenced before the Certificates expire, key documents will need to be reviewed and updated and re-signed by the responsible parties and submitted to the Technical Approval Authority, along with new certificates.

7.8 Adoption

7.8.1 Section 38 and Minor Section 278 Process

The adoption of a new highway structure under a Section 38 Agreement occurs contemporaneously with the associated adoption of the new highway. The legal processes for transfer of ownership, dedication of highways and payment of Commuted Sums for Future Maintenance is explained elsewhere in this Design Guide.

The developer shall be responsible for the inspection, maintenance and repair of the structure following completion of the works, until adoption is complete.

Before the adoption process for a new highway structure can commence the following documents must be in place:

- A signed Construction Compliance Certificate, approved by the Technical Approval Authority
- A Maintenance Manual incorporating the CDM Health and Safety File accepted by WCC Bridge Maintenance, Annex 7.6
- Easements and licenses permitting access to private land to enable future inspection and maintenance activities
- Details of Drainage Outfall Agreements, including rights to maintain drainage assets on private land or private assets serving the highway drainage
- A Principal Pre-opening Inspection Report to CS 450, produced by WCC Bridge Maintenance

Finally, once WCC is in receipt of these documents, the Commuted Sums for future maintenance are paid by the developer and the County Council takes ownership of the completed works.

7.8.2 Adoption of Existing Structures

The adoption of existing structures is agreed through a bespoke agreement of sale. The terms of such agreements are drawn up and agreed between the respective parties on a case-by-case basis. Before considering the adoption of any existing structure, the seller will first demonstrate to the Highway Authority's satisfaction the structure is in use by the public and can reasonably be considered part of the public highway.

The seller will commission Warwickshire County Council Bridge Maintenance to perform a Transfer Inspection in accordance with CS 450 and, where appropriate, a structural assessment to determine the structure is in good condition and working order and has sufficient capacity to support the highway to assessment loading for the classification of the road or footpath carried by it.

The seller will then either agree to remedy any defects identified by the inspection or allow for their remediation within a Commuted Sum for Future Maintenance. The Commuted Sum is calculated in accordance with guidance provided by the Association of Directors of Environment, Economy Planning and Transport (ADEPT) and included within the terms of the associated agreement of sale.

As part of the Agreement of Sale, the developer will be required to provide a Maintenance Manual. Details of the contents of this document can be found in Annex 7.6.

Part 8 Street Lighting

8.1 Introduction

This part of **The Warwickshire Design Guide** provides guidance on the specification for developers and designers as to Warwickshire County Council's requirements for street lighting.

If in any doubt about the following, please contact WCC's Street Lighting team directly at streetlighting@warwickshire.gov.uk as it is better to resolve issues at the design stage than at time of adoption.

8.2 WCC Policy Approach

General specification for lighting on adoptable highways, cycleways, and footways.

The County Council's stock of apparatus is maintained on a contract. The Operating Sub-Contractor is Balfour Beatty.

This guidance document summarises the Development Standards for WCC and ensures compliance with the Adoption Required Standards.

Commuted Sums will apply to any non-standard apparatus. Specification details of all such apparatus must be agreed in consultation with WCC's Street Lighting Team prior to installation.

8.3 Definitions and Abbreviations

Adoption	When applied to any item of Apparatus, Apparatus which has become the responsibility of the Warwickshire County Council under the terms of its Street Lighting Maintenance Contract.
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Apparatus	Street lighting and off-highway lighting installations and materials which, for the avoidance of doubt and without limitations includes:- lighting points, lighting columns, posts, straight posts (only to the extent used as an additional support for an illuminated traffic sign) together with their respective attachments, luminaires, lanterns, shields, control gear, control devices, switches, relays, meters, illuminated traffic signs, subway lighting, illuminated traffic bollards, Belisha beacons, illuminated pedestrian refuge beacons, school crossing patrol warning lights, flood lighting of monuments and buildings, surface car park lighting systems, wall mounted connection boxes, conduits, surface mounted wiring/cabling, feeder pillars, Authority owned Private Cable Networks and all associated components.
Authority Attachment(s)	Any Authority owned street or traffic signs or sign plate or notices or other equipment and items authorised by the Authority to be attached to Apparatus including (and in the case of illuminated items only) to other structures.
SDD	Standard Detailed Drawings
WCC	Warwickshire County Council
De-Adopted	When applied to any item of Apparatus, Apparatus which is no longer the responsibility of Warwickshire County Council under the terms of its Street Lighting Maintenance Contract.
DNO and IDNO	(a) a distribution network operator and/or (b) an independent distribution network operator within the meaning of Part 1 of the Electricity Act 1989 as amended by the Utilities Act 2000.
Developer	Developer refers to any person or organisation installing lighting or traffic management equipment that it is proposed to maintain at public expense, upon completion of the previously mentioned works.

8.4 Technical Requirements – Planning and Design

8.4.1 Planning of Developments

Developers and their consultants need to consider street lighting at the earliest opportunity and should consider:

- a) Sustainability - Public realm lighting must minimise CO₂ emissions and future maintenance costs. Efficient lighting is not incompatible with a pleasing street scene. Incorporating advice early in the planning of any development will enable the achieving of correct lighting levels.
- b) Design Codes - Development Design Codes should incorporate a site-specific lighting design brief issued by the Highway Authority. All design briefs will be based on the advice contained in this document. WCC's Street Lighting Team will specify lighting classes for every street and should be consulted early in the process so that detailed advice can be incorporated in the design.
- c) Street Layout - If footpaths and cycle paths are routed separately from the road then they may require separate systems of lighting, with attendant increased energy and CO₂ emissions.
- d) Highway Trees - Integration of street lighting, tree planting and landscaping; these aspects should be developed harmoniously by developers, their design consultants, Local Planning Authorities and the Highway Authority. The height and spread of some trees may conflict with efficient lighting solutions. Combined arboriculture and lighting advice should be obtained at an early stage from all parties before tree positions are agreed.
- e) Ecology and Lighting - Advice on the mitigation of lighting and its ecological impacts should be included in all designs and will be incorporated in development planning briefs.
- f) Non-standard apparatus - Any departure from standard materials will require specific approval by the WCC's Street Lighting Team as part of the technical design approval process. Non-standard apparatus will always incur commuted sum charges.

8.4.2 BS5489 and BS EN13201

Lighting designs should be based on the advice given in the current BS 5489-1-2020 *Code of Practice for the Design of Road Lighting (Part 1: Lighting of Roads and Public Amenity Areas)* and the associated current BS EN 13201 Standards.

8.4.3 Institution of Lighting Professionals (ILP) Guidance

Designs are to take guidance from the Institution of Lighting Professionals' (ILP) technical reports, professional lighting guides and guidance notes.

8.4.4 Environmental Zones and Light Intrusion

Developments should be categorized by Environmental Zones in accordance with ILP *Guidance Note for the Reduction of Obtrusive Light*.

Light intrusion (e.g., into windows) is to be avoided and any apparent issues are to be monitored by the developer in accordance with ILP *Guidance Note for the Reduction of Obtrusive Light*. Lighting designers should produce vertical illuminance calculations where appropriate.

8.4.5 Construction, Design and Management Regulations (CDM)

Lighting design must be carried out by appropriately qualified competent persons in accordance with current CDM regulations. See ILP guidance on competencies.

A clear note must be appended to the street lighting layout drawings detailing which of the Highway Electrical Design Procedures was used by the designer – see the HEA Guidance Note "CDM 2015 Regulations / Applicability to Highway Lighting Design.

If a site involves changes to the existing highway network, a solely desktop indicative lighting design is not acceptable.

Desktop designs are not acceptable for Section 278 or changes to the existing highway.

8.4.6 Hazard Elimination and Management List (HEML)

As defined within current CDM regulations, all risks at construction, maintenance, decommissioning and replacement must be assessed as an integral part of the design process. Guidance on risk assessment and the use of risk matrices is provided

by the Health and Safety Executive. Hazards may include, but not be limited to, highway features and users, underground services, overhead power and telecoms, fuel pipelines, mobile phone masts, waterways, aerodromes, rail infrastructure, etc.

An HEML (Hazard Elimination and Management List) that considers all relevant factors must be submitted with all detailed lighting designs.

A Hazard Elimination and Management List must be submitted with all detailed lighting designs.

8.4.7 HSG47

Designers are to ensure that designs are viable, and the developer should ensure that underground service locations are identified to the designer and designs are based on up-to-date information. Designers are to 'design out' risks where practicable and to ensure that any significant residual hazards are documented and noted on layout drawings - ref HSG47 *Avoiding Danger from Underground Services*.

8.4.8 G39/1

Designers are to ensure compliance with relevant clearances and processes as detailed in G39/1 Model Code of Practice Covering Electrical Safety in Planning, Installation, Commissioning and Maintenance of Public Lighting and Other Street Furniture.

8.4.9 Approach to Lighting Design

New designs need to be prepared in sympathy with the local environment.

- a) Site-specific design brief – Designs should be based on a site-specific design brief in liaison with WCC's Street Lighting Team.

- b) New sites (e.g., Section 38) - These designs may be derived solely from desktop activity.
- c) Existing roads (e.g., Section 278) – Where a site involves changes to the existing highway network a solely desktop indicative lighting design is not acceptable.
- d) Tying-in with existing highway lighting - The lighting design calculations should demonstrate compliance and consistency in the transition area from the old lighting to the new lighting.
- e) Efficacy of design – Designers need to show the optics chosen have the optimal distribution pattern and flux for the predominant road geometry to light the target area with efficacy in mind, and to minimise unwanted spill light.
- f) Viability of design – Designers should make every effort to ensure designs are viable for construction. For example, with works on existing roads the availability of DNO LV mains supply cables for proposed columns should be ascertained along with the identification of hazards and obstructions (utilities, services, trees, etc.).
- g) Street clutter – Proliferation of street clutter is undesirable. Where possible sign plates may be located on appropriately positioned lighting columns. However, the designer **MUST** check that columns are designed to accommodate the loading from the additional weight & windage of any Authority Attachments **AND** that residual capacity for additional 0.3m² signage remains.

8.4.10 Column Height Constraints

Column heights should be considerate of the scale of the street scene whilst allowing energy-efficient design. Column heights are constrained by the road type and environmental context. WCC's Street Lighting Team can advise on each site-specific design brief.

8.4.11 Lighting Layout Drawing

Design drawings are to be supplied at scale of 1:500 and are to be a maximum size of A1, and are to include:

- a) Statement of the design procedure used
- b) Summary of target lighting class(es)

- c) Boundary showing adoptable area and any easements required
- d) Tree planting layout
- e) Vehicular crossovers and driveways
- f) Significant residual hazards
- g) Clearance from columns to hazards to be highlighted
- h) Environmental constraints relevant to lighting
- i) Positions of highway electrical apparatus with lantern aiming
- j) Key/legend – including materials specification with quantities. For each LED lantern these attributes need to be identified: luminaire body, CCT, optic, flux output, system wattage, quantities. Non-standard columns will require accompanying detail drawings
- k) Existing and new unit ID numbers
- l) A schedule of illuminated apparatus, summarising clearance from kerbs, supply cable service type
- m) Where 'private' (non-DNO/IDNO) cable systems are to be used all cable and duct routes are to be shown on detailed design drawings, along with schematic circuit diagrams (supporting calculations will also be required)
- n) Private lighting installed on housing developments in areas adjacent to highway lighting is to be indicated along with a note of the responsible maintenance management companies

As-built drawings should include a summary schedule of revisions.

8.4.12 Maintenance Factors (New Equipment)

Overall maintenance factors are derived from BS5489 methodology. For an WCC approved luminaire, such as TRT Aspect/Mini, the overall maintenance factor will be + 0.84.

8.4.13 Lighting Design Calculations

These should be from Lighting Reality with file names that clearly describe the location and should include:

- a) 'User notes/title page notes' – These should describe the target lighting class, include a commentary on the design constraints; explain any deviations from design standards (if necessary, a separate 'designer narrative' document may be produced)
- b) 'Roadway' calculations – These are required to demonstrate compliance, determine optimal spacing and optimal optic choice for the site's predominant road geometries; the original RTMR files are required.
- c) 'Outdoor' calculations – These are also required for illuminance of irregular areas; multiple calculation grids should be provided, with grids confined to relevant discrete areas to minimise any distorting effects on average illuminance values. Luminaires should generally be aimed perpendicular to the adjacent kerb or road centre line. To demonstrate the correlation of design calculations and column positions, the lighting layout drawing with relevant topographic information is to be used as the base drawing within Lighting Reality e.g., when the lighting calculations have been completed the subsequent layout drawing should be re-imported into the RTMA file.
- d) PDF and 'read-only' files (supplied additionally as a record) - These should exclude greyscale, points and unnecessary Isolux contour lines. Masks should not be hidden, and the results should be displayed.

8.4.14 Conflict Areas, Crossings, Traffic Calming, Cycleways

WCC's Street Lighting Team's approach to the guidance in ILP document PLG02 – *Application of Conflict Areas* is that context is paramount, with each site to be assessed on a case-by-case basis. A conflict area may be limited to the actual conflict and its immediate surroundings:

- a) Roundabouts or complex junctions - The design may be deconstructed into multiple calculation grids, with each conflict area limited to include the area of conflict ahead of the driver and the adjacent area where a conflicting body might approach from.
- b) Zebra crossings – Supplementary lighting should generally be provided to give positive contrast of pedestrians on the crossing as delineated in ILP document TR12 *Lighting of pedestrian crossings*.

- c) Signalised crossings - Are generally not considered to need additional lighting if the existing road lighting is of an appropriate standard. Where crossings are situated within larger conflict areas, designers should create an additional calculation grid to ensure that average illuminance levels at the crossing 'carpet' are not lower than the approaches.
- d) Uncontrolled/Informal crossings - For example new refuge islands - designers should create an additional calculation grid to ensure that average illuminance levels at the crossing 'carpet' are not lower than the approaches; it may be desirable to light these with some element of positive contrast through the standard road lighting, with columns placed equidistant from and in advance of the island (as viewed by the driver).
- e) Traffic calming - Guidance on the lighting of traffic calming features is outlined in ILP document TR25 *Lighting for traffic calming features*.
- f) Cycleways and shared surface paths - Guidance on the lighting of shared surface cycleways is outlined in ILP document TR23 *Lighting of cycle tracks*. Designers should assess cycleways as routes and should aim for good uniformity (≥ 0.25); establishing adjacent visibility zones may not always be practicable.

8.4.15 Column Positioning and Clearances

Apparatus positioning should be in accordance with good industry practice to avoid restricting pedestrian movement whilst ensuring the lighting unit can be safely maintained.

- a) Apparatus is to be sited within the highway - Easements will be required where equipment is sited on private land (easement size will as minimum 1.0m x 1.0m concrete mowing block and connected to the highway).
- b) Clearance from carriageway - Are to be not less than the **minimum** defined in Table 8.1. Greater clearances may be desirable. All clearances are to be itemised on detailed design layout drawings. In some situations, where it is necessary to place columns at less than the recommended clearances, a project - specific risk assessment should be carried out.

Speed Limit (mph)	Minimum horizontal clearance
Less than 30	0.8m
40 to 50	1.0m
60 to 70	1.5m
1 - Table derived from BS5489-1:2020, Table-1 (please note that this table refers to 'speed limit' not 'design speed')	
2 - Clearance is subject to other factors, e.g., passive safety risk assessment	

Table 8.1 - Horizontal Clearance from Carriageway

- c) Footways – Columns should generally be sited at the rear of the footway.
- d) Verges – Where verges are provided between carriageway and footway then columns may be sited in the verge, provided that minimum horizontal clearances are maintained (see Table 8.1)
- e) Clearance from crossovers/driveways – Minimum lateral clearance of 1.0m to the path of any vehicle crossover should be maintained.
- f) Shared surfaces - Residential roads with shared surface arrangements will require careful consideration of column positions; there is currently no framework whereby WCC can adopt columns that are not protected by conventional kerb upstand and clearance from carriageway.
- g) Clearance from buildings – Such clearance as necessary to avoid disturbance to foundations or structures.
- h) Hazards – Columns are to be positioned to avoid conflict with hazards and to allow safe maintenance; working widths for barriers and road restraint systems should be noted.
- i) Door alignment – Column doors should be 'downstream' from adjacent traffic flow (such that opening a door requires a person to face the oncoming traffic)

- j) Boundaries - Ideally columns are to be sited on property boundaries.
- k) Trees – Clearance to trees must be maintained (see Section 8.4.16 below).
- l) Footpaths – Raise and lower columns are to be used where access via MEWP (Mobile Elevated Working Platform) cannot be guaranteed and to be positioned so that apparatus can be safely maintained in the future.
- m) Cycle paths – Columns should be set back a minimum 0.5m clear of cyclepaths such that they do not obstruct overhanging handlebars. As per reference LTP2. Critical distance to fixed objects from Table 8.1 minimum clearances will not be less than 0.75m.
- n) Wall-mounted lanterns - May be considered. Minimum vertical clearances above highway must be maintained. On new developments wall-mounted apparatus requires a Deed of Dedication, not a Wayleave Agreement.

8.4.16 Highway Trees and Lighting

At an early stage of development planning there should be detailed integration of tree planting layouts and lighting designs; the potential for foliage 'blocking' light distribution should be considered when deciding what species to plant.

- a) Energy efficacy - Of lighting requires that optimal design spacings are achieved and the development of planting plans should be coordinated with lighting design.
- b) Horizontal clearance - Maximum growth of a tree canopy should be >5m from any lantern.
- c) Vertical clearance - In some cases (e.g., with mature trees) it may be possible to locate columns beneath the tree canopy provided that $\geq 1.6\text{m}$ clearance is kept above the lantern.
- d) Base compartments - And their access doors should not be encroached upon by undergrowth restricting maintenance access.

8.4.17 Ecology and Lighting

Lighting design of any previously unlit area must consider ecological impacts. All new developments will have an environmental ecology report with Planning Conditions. Lighting proposals should avoid or minimise the potential for impacts on existing or created habitats.

The ILP have resources that assist in ensuring best practice. Lighting designers shall summarise their decisions in relation to significant environmental constraints and in response to Environmental Impact Assessments.

Lighting designers should choose apparatus that has the optimal light distribution pattern for the road geometry, thus, to illuminate only the target area and minimising unwanted spill light in accordance with the ILP *Guidance Note for the Reduction of Obtrusive Light*.

Detailed design drawings should show environmental constraints relevant to lighting (e.g., hedgerows frequented by bats); where constraints apply the detailed design drawings should show appropriate Isolux contour lines (suggested 1.0 lux & 0.2 lux) to demonstrate the extent of spill light.

It may be possible to mitigate lighting impacts, through other measures such as:

- a) Louvres or back shields may be specified.
- b) Light sources may be altered to different colour temperature and spectral distribution.
- c) Reducing the mounting height of lanterns sited near environmentally sensitive areas.
- d) Excluding lighting from areas separated from the road network, from areas at site periphery or from private communal areas.
- e) Positioning lights sensitively – e.g., by avoiding positions at intersecting hedges, bat flight paths etc.

8.4.18 Non-Standard Apparatus and Commuted Sums

In conservation areas, non-standard apparatus may be deemed to be appropriate by Local Planning Authorities. Departure from standard materials will require the specific technical approval by the WCC's Street Lighting Team. Non-standard apparatus may incur commuted sum charges.

Power supplies should be provided via mains DNO or IDNO networks; with few exceptions private cable networks are considered to be nonstandard and will incur commuted sum charges

8.4.19 Power Supply

The developer is to procure unmetered low voltage electricity supplies for all apparatus (single-phase 230v earthed mains power supply) DNO - by preference, the supply should be from the local/host DNO. Western Power Distribution is the Distribution Network Operator within Warwickshire. Developers are advised to allow sufficient time for liaison with the DNO in advance of works (email wpdnewsuppliesmids@westernpower.co.uk).

- a) IDNO – some developments are served by an electricity supply cable network that is owned by an IDNO (Independent DNO). In this case WCC must be advised of the identity of the IDNO.
- b) Private cable networks – may be specified where mains supply cables cannot be provided – e.g., for apparatus such as illuminated signs sited on traffic islands or for passively safe apparatus (see Section 8.4.28 below). Supporting calculations should be provided. Private cable networks proposed in other circumstances will be likely to incur commuted sum charges (see Section 8.4.18 above).

To commission lighting units, developers will first need to sign an Unmetered Connection Agreement (UmCA) with the host DNO (WPD) and sign-up with an electricity supplier – for more information see www.ssen.co.uk/ConnectionsYouHaveaChoice/ and www.ssen.co.uk/UnmeteredConnectionsFlowchart/

8.4.20 Electrical Test Data

The developer shall carry out electrical testing of apparatus in accordance with the requirements of the current edition of BS 7671 (the IEE Wiring Regulations) which identifies the electrical testing required for recording results and standard methods of testing.

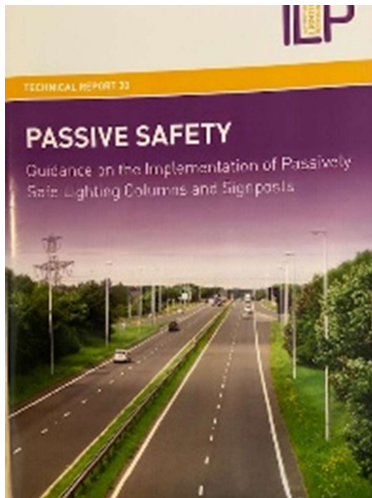
Notwithstanding the requirements of BS 7671, the test certificate for each lighting unit **must be no more than 12 months old** at the time of the initial adoption inspection request.

All test results are to be recorded and presented to the Highway Authority before adoption.

- a) BS 7671 tests for new apparatus shall be in the recommended format for new electrical equipment and include a 'Initial Certification of new installation': recommended e.g., HEA/HERS or IET GN3 Inspection and Testing.
- b) BS 7671 tests for private cable networks shall additionally include: Cable Sheath Insulation Test. Earth electrode Resistance.

Electrical test certificates should be referenced against a named as-built drawing and the column/sign numbers should correlate.

8.4.21 Passive Safety Risk Assessment



For guidance on passive safety classifications and electrical safety standards Lighting Designers should use ILP TR30 'Guidance on the Implementation of Passively Safe Lighting Columns and Signposts'. Apparatus is to be selected in accordance with 'Step 19' of the 'Passive Safety Flowchart' in TR30 and in accordance with the requirements of BS EN 12767:2007 - Table NA1.

For risk assessments, Lighting Designers should not always use the 'Passive Safety Flowchart' from ILP TR30 (please note, TR30 is not intended to provide the definitive answer to every scenario on local authority roads).

For risk assessment of the need for protection of roadside features (and whether passively safe lighting equipment might be appropriate) WCC uses the UK Roads Liaison Group (UKRLG) document 'Provision of Road Restraint Systems on Local Authority Roads' – this uses speed limit and traffic flow criteria to determine which risk assessment method to use.

Traffic Flow (AADT)	Speed Limit (MPH)	Guidance to use	Risk assessment method
>5000	≥50	TD19	RRRAP / TR30 flowchart
>5000	<50	UKRLG	Relevant UKRLG method (A, B, C as appropriate)
<5000	≥50	UKRLG	
<5000	<50	UKRLG	

(Table derived from UKRLG)

Table 8.2 Applicable methods for determining when a RRS is required

For **street lighting only** schemes on existing roads – e.g., where the Lighting Designer is the Principal Designer – risk assessment should be as follows:

- a) Lighting Designers may use the *TR30 flowchart*
- b) Where criteria show the UKRLG framework applies - use 'Method A – Accident Assessment' from the UKRLG document. If the KSI return is above the value described in Table 3.1 of the UKRLG document, then the designer may consider changes to the existing configuration so that columns/signs are not placed in areas with a high risk of strike.
- c) Other evidence for run-off accidents may also be considered – including site survey and examination of maintenance records for data of historic RTC damage to assets.
- d) The Lighting Designer's risk assessment should list the appraisal factors considered and assumptions made and should include a narrative of decisions taken.

In summary, the design approach should be:

- a) Apparatus is not to be placed in areas with a high risk of strike.

- b) Apparatus at high risk of strike that cannot be protected by a road restraint system (RRS) - or where it is advantageous - may be specified as passively safe type (provided this does not create an additional hazard).

8.4.22 Switching and Telensa Remote Monitoring System

New lighting will need to be fitted with Telecell nodes to enable their correct switching remotely. WCC specification requirements:

- a) Before adoption, all lanterns are to be commissioned by the Authority with Telensa CMS nodes which allow individual streetlights to be monitored and switched and for light output to be dynamically controlled.
- b) Individual 5PIN Telensa CMS nodes fit into a 7-pin nema socket built into each road lighting lantern. For some specialist lanterns (e.g., subway lighting units) internal nodes are fitted inside the lantern.
- c) The 7-pin nema-socket can accommodate a standard NEMA-type photocell, which could be fitted *temporarily*, allowing installation of the Nodes (if required) at a later date (pre-Adoption); any conventional photocells fitted temporarily should be set to switch on at 35 lux and to switch off at 18 lux.
- d) Each Node is identified by a unique sixteen-digit barcode number. Telensa provides barcode stickers with the apparatus: one sticker is to be mounted in the base of each column (suggested that the top of the supply cut-out should be wiped clean and the sticker affixed) and one sticker on a plan/column NODE installation sheet which the Developer must present to Warwickshire County Council prior to adoption.

For further details contact: Telensa Limited, Iconix 3, London Road, Pampisford, Cambridge, CB22 3EG
Email support@telensa.com. Telephone +44 (0)1799 399200.

8.4.23 Standard Detail Drawings

Details of all current WCC standard detail drawings can be provided by the WCC Street Lighting Team.

8.4.24 Materials – Lighting Columns

WCC's specification for lighting columns is as follows (please note, for passively safe column requirements see Section 8.4.21)

- a) Column types will either be aluminium specified or steel galvanized with protective factory finish plascoat finish to WCC standard detail drawings.
- b) Steel galvanized columns are to be manufactured in accordance with BS EN 40 and PD6547, and with a design life of 50 years.
- c) Steel galvanized columns painting to be Plascoat factory-finish. Finish colour to be RAL7016 Grey- unless otherwise specified. In some areas the use of 'black' or different colour may be specified by WCC.
- d) Aluminium columns to have 76 mm spigot. Columns shall have the following minimum base tube diameter to facilitate electrical equipment to be fitted internally and equipped with a locking flush fitting door complete with separate earth connection to the door and the pole
 - Up to 6 metres - 135-145mm
 - 8 metres and above - 165mm –250mm
- e) All columns shall comply with BS EN40-1, 3 and 6 including Guidance Notes PD 6547 and where specified by the Roads Authority's Representative with the requirements of The Highways Agency Department Standard BD 94/07.
- f) Where there is a requirement for Passive Safety then the documents TD26/04 TA89/05 BD2/05 and EN12767 should be considered.
- g) Columns will be 'post-top' style; outreach brackets may only be specified in agreement with WCC's Street Lighting Team.

- h) Column base-boards at least equivalent to the door size and made of treated hardwood of sufficient size to accommodate all control equipment and service cut-outs; boards shall be positively secured to the column by two flush fitting screws.
- i) Earthing terminal to be 8mm diameter brass terminal with brass washers and nuts.
- j) Where access via MEWP is not guaranteed columns should be mid-hinged.
- k) Standard columns shall be designed to be capable of accepting the loads indicated in this table (if greater loads are required then 'heavy-duty' column design will need to be confirmed with detail drawing and manufacturer's design certificate at the design stage):

Column height/type	Lantern weight	Lantern windage	Sign area	Sign weight	Sign eccentricity	Sign drag coefficient
5/6m post-top	10kg	0.13m ²	0.6m ²	5.0kg	0.4m	1.8
8m post-top	11.5kg	0.145m ²	0.6m ²	5.0kg	0.4m	1.8
10m post-top	21kg	0.22m ²	1.0m ²	5.0kg	0.4m	1.8
12m post-top	21kg	0.27m ²	1.0m ²	5.0kg	0.4m	1.8
5/6m post-top "raise & lower"	9.5kg	0.055m ²	0.3m ²	5.0kg	0.3m	1.8

Table 8.3 Wind Loading

- l) Columns to be supplied with manufacturer-applied ground-level / planting depth marker tape affixed to the root/base, and marker tape to be remain attached after installation.
- m) Any sign attachments agreed are to be centred up to 3m above ground level, maximum eccentricity as shown in Table 8.3. No attachments shall be fitted to mid-hinged columns.

- n) Attachments to columns, where agreed, shall be fixed with circumferential clamps of stainless steel AISI Grade 201 with neoprene strips placed under the clamps to prevent damage to the column or its protective coating.
- o) Where planted root columns are not viable a flange base with designed foundation may need to be specified.
- p) The column foundation details shown on WCC standard detail drawings assume poor soil conditions; column manufacturers detail drawings should be cross-checked to ensure all requirements are met.
- q) Column data sheets and manufacturer's standard detail drawing to be provided before adoption.

8.4.25 Materials – Illuminated Signs

Signing requirements as per the current edition of TSRGD and BS EN 12899-1.

Refer to SDD – Signs and Bollards

WCC specification for illuminated road signs is as follows:

- a) Hot-dip galvanised steel wide base post (in Conservation Areas the finish should match the lighting columns e.g., Black Plascoat colour).
- b) Base-boards at least equivalent to the door size and made of treated hardwood of sufficient size to accommodate all control equipment and service cut-outs and secondary isolators; boards shall be positively secured to the column by two flush fitting screws.
- c) Earthing terminal to be 8mm diameter brass terminal with brass washers and nuts.
- d) Illuminated sign plates to class RA2 BS EN 12899.
- e) Sign light units to be Simmons signs integrated LED LUA or LUB with diecast aluminium body (or similar approved).
- f) Sign light output determined by size of sign plate, as follows: 600mm Ø sign plates 3x1w integrated LUA; 750mm Ø sign plates 6x1w integrated LUA; >750mm sign plates LUB 10x1w LED.
- g) Sign lighting units require an electronic ballast.

8.4.26 Materials - Road Lighting Luminaires

All new developments will use LED TRT Aspect and Aspect Mini luminaires. These will generally be of neutral white colour temperature (4,000°k) though there may be environmental mitigation applications where warm-white (3,000°k) is required. The optimal configuration of lantern body, flux and total LEDs for optimal lifetime energy efficiency is the principal factor in specification.

Notes:

1. Lantern body and canopy to be powder coated.
2. Standard colour RAL9006 Light Grey unless otherwise specified. In some areas the use of 'black' may be specified.
3. Ballast to be electronic and fully dimmable via DALI protocol.
4. Switching – all lanterns to be fitted with Telensa 7-pin nema socket & external 5-pin Telecell node (except Subway and Underpass lighting units and some specialist lanterns which are to be fitted with Telensa internal node).
5. Where asymmetric luminaires are specified (e.g., at a zebra crossing) these are to be of CCT a single step cooler than the adjacent roadway lighting (to be 5700K).

8.4.27 Materials - Internal Wiring of Columns and Signs

Refer to SDD SL400_1, SL400_2 and SL400_3.

DNO supply cables to be terminated in single-phase.

Internal wiring to lantern to be multi-core PVC flexible Artic Grade 2.5mm² 3-core outer sheath blue.

Earthing conductor to be 6mm² PVC insulated coloured green/yellow; connections to be by bolted crimped terminations.

Internal cabling to be neatly clipped to the base board; all fixing screws to be stainless steel.

Base boards to be securely fixed to column base.

8.4.28 Materials - Passively Safe Equipment

For the risk assessment process to determine the need for passive safety see Section 8.4.21 above.

Apparatus is to be selected in accordance with the requirements of BS EN 12767:2007 (Table NA1) and as outlined in the ILP's TR30 'Guidance on the Implementation of Passively Safe Lighting Columns and Signposts'.

Columns are to be installed in retention sockets (such as NAL) with foundations in accordance with manufacturer's instructions.

Electrical disconnection system to be NAL SIS system. SIS impact sensor to be installed in each item of passively safe apparatus. SIS monitoring unit to be fitted in an above-ground location (lamp column, wide-base signpost or feeder pillar) located outside the clearance zone.

Mains DNO/IDNO supply **may not** be provided with passively safe equipment. For private cable systems, see Section 8.4.29.

8.4.29 Private Cable, Ducting and Feeder Pillars

Refer to WCC 'SDD' - Standard Detail Drawings.

Pillars, ducts and cables are to be used exclusively for street lighting and illuminated signs.

Private cables to be laid in road internal 100mm diameter orange PVC ducts (DNO/IDNO cables only in black duct). Refer to SDD.

Private cables to be laid internal 50mm diameter orange PVC ducts (DNO/IDNO cables only in black duct). Refer to SDD.

Ducting systems to include necessary chambers/draw pits.

Cable ducts below footways to be >450mm below finished level; ducts below carriageways to be >600mm below finished level.

150mm-wide yellow heavy gauge PVC tape marked 'street lighting' to be placed over private cables/ducts.

Cable ducts to be installed with draw cords.

Private cables to be XLPE\SWA\PVC.

All DNO cut outs shall have HRC fuse in pull-out carrier and provision for Live, Neutral and Earth cable connections including a PME link.

All outgoing circuits are to be labelled by an encapsulated schematic drawing detailing the outgoing cable route and the population of lighting units on each circuit.

Feeder pillars to be installed with a minimum of 1.0m² hard-standing provided at ground-level in front of the pillar door.

For electrical testing see Section 8.4.20.

8.5 Process – Design, Construction, Inspection and Adoption

8.5.1 Preliminary Enquiry

The developer is to provide drawings showing site location, highway adoptable areas, development phasing, other relevant information including: site specific planning constraints/conditions; LPA (Local Planning Authority) design codes; environmental impact assessments (EIA) and ecology report, presence of amenities such as shops, schools, sports or medical facilities; existing or predicted traffic flow and speed limits, night-time accident data, presence of traffic calming features; confirmation of road surface materials (including reflectance characteristics), etc.

8.5.2 Site-Specific Design Brief

On receipt of relevant information (see 8.5.1) WCC's Street Lighting Team will liaise with the designer and confirm the designers' proposed site-specific design brief indicating a target lighting class and information relevant to achieving the Adoption Required Standard.

Developers and their designers are encouraged to liaise with WCC's Street Lighting Team to ensure designs are progressed in accordance with the site-specific design brief and this design guidance.

8.5.3 Lighting Design

The developer is to arrange for the design to be undertaken using the guidance contained in this document and the site-specific design brief.

8.5.4 Detailed Design Submission

The following information is to be supplied to WCC with a document register; documents are to be clearly named to identify their contents:

- a) Location plan – to show phases of development (can be included on layout drawing).
- b) Layout drawing – PDF format required, at scale 1:500 maximum size A1.
- c) Hazard elimination and management list.
- d) Lighting design calculations – full RTMA and RTMR files from Lighting Reality to be supplied complete with design commentary.
- e) Site clearance drawing – to show any apparatus (including ID numbers) affected by the works (can be incorporated into the main layout drawing).
- f) Network owner – statement confirming identity of LV supply network owner, whether DNO or IDNO.
- g) Private cable calculations if applicable, output from *Amtech* software, or similar.
- h) Illuminated sign details (if applicable) - details may be shown on the street lighting layout (to include a schedule of sign faces and dimensions, specification of sign light).
- i) Special column requirements (if applicable).
- j) Initial Inventory Information – Inventory Template document will be provided from WCC's Street Lighting Team.
- k) Written confirmation that the submission complies with the *Adoptable Required Standards* e.g., the materials meet the Development Standard current at the agreement date.

8.5.5 Ongoing Liaison

The developer will need to incorporate WCC's comments from design appraisal into revisions, as required, resubmitting proposals for further scrutiny, as necessary. If the proposed highway features are altered, then lighting column positions may need to be reconsidered by the designer.

8.5.6 Certificate of Technical Approval

When the design documents meet the required standards a Certificate of Technical Approval will be issued by the WCC's Street Lighting Team.

8.5.7 Changes to the Design

Any subsequent changes to the agreed design need to be agreed with WCC's Street Lighting Team. In these instances, the developer must supply revised design calculations and drawings.

8.5.8 Customer Liaison

The developer shall ensure prospective purchasers are informed a plan of the street lighting scheme is displayed in the sales office so that purchasers, and existing residents, can be made aware of the impact of lighting units on adjacent properties.

8.5.9 HEA Contractors

Following WCC's certificated approval of the lighting design the developer is to Identify to WCC which accredited (HEA, NICEIC) contractor has been appointed for the street lighting and illuminated sign installation and maintenance works.

8.5.10 Existing Apparatus Within the Works – De-adoption

Any existing apparatus due to be removed or altered will need to be de-adopted from the WCC maintenance contract. The developer must inform WCC's Street Lighting Team no less than 30 business days before the works programmed date by emailing streetlighting@warwickshire.gov.uk

Any existing apparatus which is temporarily made inaccessible for maintenance (e.g., barriered-off) will need to be suspended from the WCC maintenance contract. The developer must inform WCC's Street Lighting Team no less than 30 business days before barriers are installed.

The developer is responsible for maintenance of all apparatus (de-adopted or suspended) within their works until it is formally inspected and handed over to WCC. Maintenance should be in accordance with industry good practice with full records to be kept of any works.

8.5.11 Temporary Lighting/Signing

Where alterations to the existing highway are proposed the sequencing of works should ensure that the highway remains appropriately illuminated, i.e., that existing lights shall be maintained correctly, and any new lights shall be commissioned before the disconnection and removal of existing lights.

In the event new road alignments are opened to traffic before the commissioning of the new approved lighting, temporary lighting shall be installed.

Temporary lighting shall illuminate the road to the appropriate design class and should not cause adverse impacts to nearby residents or road users.

8.5.12 Column Verification

To ensure compliance with materials specification the developer should present WCC with column data sheets and ID batch numbers of the columns installed.

8.5.13 Labelling of Apparatus

All apparatus should be numbered as agreed with WCC's Street Lighting Team - sequentially by named road. If works affect existing roads, then sequential re-numbering of existing apparatus may be required after any road naming and numbering of the adjacent properties is completed.

Where appropriate (e.g., within the 'vicinity zone' of overhead power cables) an 'overhead warning' label should be applied to column shaft. See standard detail drawing.

Where a lighting column or illuminated sign holds the isolation point for an outgoing private sub-circuit then internally on isolator to be marked by indelible ink to identify the apparatus supplied via the private sub-circuit. All SWA private looped sub-circuit to have labelling tags identifying column/sign ID number supplied and ID column/sign number that the looped cable supply feed.

8.5.14 Cable Schematics

Isolation points for any private networks (e.g., feeder pillars or columns and signs with additional outgoing sub-circuits) must have enclosed in the base compartment an encapsulated waterproofed schematic drawing (A3 minimum) detailing the outgoing cable routes and the lighting units on each circuit along with as-laid cable routes.

8.5.15 Electrical Testing

As per the latest edition of BS7671, to include all items of highway apparatus i.e., road lighting, illuminated signs, feeder pillars and private supply cable networks.

8.5.16 Telensa Switching

Lanterns for adoption shall be controlled by the 'Telensa' remote monitoring system – the developer shall liaise with Telensa.

8.5.17 Maintenance before Adoption

The developer's duty of care includes maintenance of lights within the works in accordance with good industry practice and shall include:

- a) Reactive repairs - prompt identification and repair of operational faults, emergency repairs as necessary, and maintaining records of these activities.
- b) Electrical testing – to the requirements of BS7671 all apparatus is to be tested every 6 years. Notwithstanding the requirements of BS7671 the developer will be asked to re-test if a test certificate for each lighting unit is over 12 months old. All test certifications **must be no more than 12 months old** at the time of the initial pre-adoption inspection request.

8.5.18 Records Required Before Pre-Adoption Inspection

The following information is to be supplied with a document register to WCC **prior to inspection**. Documents are to be clearly named to identify their contents:

- a) As-built layout drawing – revised to include agreed changes.

- b) HEML - Hazard Elimination and Management List and/or Designers Risk assessment in accordance and to comply with the requirements of CDM.
- c) Illuminated sign schedule - as appropriate.
- d) Electrical test results – tests to be compliant with BS7671.
- e) Column data sheet or column batch number – including manufacturer, protective system and detail of any Authority attachments.
- f) Telensa node schedule – the reference numbers of the Telensa nodes are to be detailed on a schedule of illuminated apparatus, listed by road and maintenance ID no. – or this may be included on the layout drawing.
- g) Pre-adoption inventory information – blank template provided by WCC’s Street Lighting Team.
- h) Confirmation the handover complies with the Adoption Required Standards (e.g., that the materials meet the Development Standard current at the agreement date and are in a satisfactory defect-free condition).

8.5.19 Pre-Adoption Inspection

WCC will arrange a thorough initial inspection of apparatus to be offered for adoption. Repeat inspections (after second inspection) will be charged separately. Requests for inspection should be accompanied by the electrical test certificates, node schedule and as-built drawings (in PDF format).

8.5.20. Energy

Following adoption, the developer is to inform their energy supplier the development is now within the scope of the WCC energy contract.

8.5.21 Document Submissions

At each stage of the process, developers are to provide the appropriate information, along with a document register (electronic documents should be clearly named to reveal their content). Checklist as follows:

a)	Before WCC provides a Technical Approval Quotation	<input type="checkbox"/>
	Site location plan	
	Draft layout drawings showing the highway adoptable areas clearly indicating <u>extents</u> of scheme, detail of adjoining schemes, site phasing plan	
	Other relevant information – e.g.: ecology reports, design codes, planning conditions, predicted daily traffic flow, etc	

b)	Detailed design submission	<input type="checkbox"/>
	Location plan	
	Lighting layout drawing & specification	
	Hazard Elimination & Management List and/or Designers Risk Assessment incorporating CDM compliance.	
	Lighting design calculations with designer narrative/commentary	
	Site clearance drawing (if applicable; may be in layout drawing)	
	Confirmation of LV supply network owner - host DNO / IDNO	
	Private cable calculations (if applicable)	
	Illuminated sign details (if applicable)	
	Special ('heavy-duty') column requirements (if applicable)	
	Relevant contract documents, schedules & appendices	
	Written confirmation that the design submission complies with the <i>Adoption Required Standards</i>	

c)	Pre-construction	<input type="checkbox"/>
	Confirmation of the identity of the HEA-approved subcontractor(s) engaged by the Developer to carry out street lighting / illuminated sign installation works	
	Confirmation of commencement date of street lighting installation works	

d)	Pre-adoption inspection	<input type="checkbox"/>
	'As-built' version of the lighting layout drawing	
	Hazard Elimination & Management List	
	Illuminated sign details (if applicable)	
	Electrical test results (Date no longer than 12 months old)	
	Column data sheets/batch numbers	
	Telensa node schedule	
	Pre-adoption inventory information (Blank Template provided by WCC Street Lighting Team)	
	Written confirmation that the installation complies with the <i>Adoption Required Standards</i>	

8.6 Additional Further Guidance

For any queries about implementing the WCC Street Lighting Guidance Document to your project, please contact the WCC Street Lighting Team at streetlighting@warwickshire.gov.uk

Part 9 Historic Environment

Historic Environment design considerations for within road corridors and new developments

9.1 Introduction

The Historic Environment is defined in the National Planning Policy Framework (NPPF) as 'all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora'.

Paragraph 8 of the NPPF sets out how the planning system has three overarching objectives which need to be pursued to help achieve sustainable development. The protection and enhancement of the historic environment is referenced in the third of these objectives, highlighting its role in helping achieve sustainable development:

“an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment...”.

The historic environment is made up of heritage assets. The NPPF defines a heritage asset as being 'a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the Local Planning Authority (including local listing)'.

Heritage assets range from sites and buildings of local historic value to those of the highest significance (NPPF, para. 184). Some of these may be statutorily protected, for example, Scheduled Monuments, Listed Buildings, Registered Park and Gardens, Registered Battlefields, Conservation Areas etc.

As set out in paragraph 184 of the NPPF, heritage assets 'are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations'.

Development can have both direct and indirect impacts on the historic environment. This can range from the disturbance or destruction of archaeological deposits during on-site works, to impacts on the setting of heritage assets within, or in the wider vicinity of, the application site.

This part of **The Warwickshire Design Guide** covers the information an applicant will need to provide with any application submitted to the Highway Authority.

Early consultation with WCC's Archaeological Information and Advice team (AI&A) is recommended.

9.2 Historic Environment Impact Mitigation Process

To ensure that any potential impacts on any heritage assets, including archaeological features which survive across the site or in its wider vicinity, are identified and appropriately mitigated, it is recommended developers liaise with WCC's Archaeological Information and Advice team at the early design stage.

Their contact details are:

Archaeological Information and Advice (AI&A)
Warwickshire County Council
PO Box 43
Shire Hall
Warwick
CV34 4SX
(01926) 412276
Email: Planningarchaeologist@warwickshire.gov.uk

Advance fees will be agreed prior to any consultation and calculated according to the scale of the undertaking.

All applications where the proposed development involves any groundworks, landscaping, remedial works undertaken to treat poor ground conditions and/or installation of street furniture and equipment, shall either:

- provide a letter from the WCC Archaeological Information and Advice team confirming that either:
 - no archaeological mitigation is necessary or,
 - an appropriate strategy to mitigate any impacts the proposed development may have on any archaeological sites which survive within or in the wider vicinity of the application area has been developed. The application should include a document setting out the mitigation strategy, including a Written Scheme of Investigation for any archaeological work to be undertaken;
- or provide a report detailing the results of an Archaeological Assessment undertaken by an appropriately qualified and experienced archaeological contractor. The scope of the assessment, which may include archaeological evaluative fieldwork, should be agreed with the WCC Archaeological Information and Advice team in advance.

The Historic Environment Record (HER) held by Warwickshire County Council must be accessed to inform this Assessment. The assessment must quote the unique HER search reference number; the on-line version is not suitable for use in the planning process. Further information on the Historic Environment Record can be found on the [HER webpage](#).

Information on the locations of Scheduled Monuments, Listed Buildings, Registered Parks and Gardens, and Battlefields is available from the [National Heritage List for England](#).

Existing planning consents may be subject to an archaeological condition which secures an archaeological mitigation strategy (which may include archaeological fieldwork) across the application site, or parts thereof. Developers should ensure the requirements of any such condition(s) have been satisfied and any highways proposal is not in conflict with any agreed mitigation strategy.

The AI&A team should also be consulted on any proposal to remove any hedgerow or part thereof.

Where there is a potential for a proposal to have an impact on historic buildings or structures and/or a Conservation Area, assessment by an appropriately experienced and qualified Conservation Specialist may be necessary.

9.3 Suggested Further Reading

National Planning Policy Framework (NPPF)

National Planning Practice Guidance, in particular guidance on the Historic Environment (www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment)

Historic England's published planning advice at <https://historicengland.org.uk/advice/planning/planning-system/#Section4Text>.

These include:

- **Good Practice Advice notes** (GPAs) - provide supporting information on good practice, particularly looking at the principles of how national policy and guidance can be applied.
- **Historic England Advice Notes** (HEANs) - include detailed, practical advice on how to implement national planning policy and guidance.

Planning (Listed Buildings and Conservation Areas) Act 1990

Ancient Monuments and Archaeological Areas Act 1979

The Hedgerows Regulations 1997

Part 10 Construction and Delivery

10.1 Introduction

This part of **The Warwickshire Design Guide** covers the various steps and processes Warwickshire County Council (WCC) require when a technically approved scheme is ready to be constructed. As discussed in Part 2 of this guide, WCC insist that Category 2 or 3a Roads (refer to Table 1.1 in Part 1 of this guide) are constructed using WCC approved Framework Contractors.

However, this part may be applicable for other improvements which connect onto the existing highway network as well as works on the strategic and main distributor (primary) roads in the County network which are deemed large and/or complex enough that WCC consider that it needs to be constructed by a WCC Framework Contractor.

10.2 Scheme Delivery Outline

As described in Part 2.2, the general process for scheme delivery is as follows;

- a) Developer to apply to enter into a Section 278 Agreement or Section 38 Agreement (see www.warwickshire.gov.uk/roaddesigns). Further information on legal agreements is included in Part 10 and *Annex 10.1*.
- b) Developer to supply a preliminary general arrangement which corresponds to the planning consent.
- c) WCC to supply a fee estimate which will cover the fees relating to Technical Review process including the initial package check and procurement of a contractor from the current WCC Contractors Framework. All these will be based on the scope of the works shown on the preliminary general arrangement and the estimated programme for construction. The fee estimate will also outline the details of what information is required for Technical Review which is also included in *Annex 2.1*. **Prospective Developers should note - if relevant information is not supplied then this will increase the time for Technical Review and additional fees may have to be charged for the additional reviews.**

- d) When Technical Review and procurement phase fees are paid and works information submitted, WCC will commence Technical Review. If departures from standards are required, then these should be applied for and resolved at an early stage. Further information on departures can be found in *Annexures 2.3 and 2.4*.
- e) The developer will be responsible for liaising with utilities, placing and paying for any orders for any necessary diversion works. The developer must provide proof of payment for the diversion works prior to the start of the tendering process.
- f) When Technical Review is approaching its conclusion, the developer's consultant will supply an updated scheme estimate which will be used to add the scheme to WCC's capital programme. At this point, site supervision fees will be estimated now that the full extents of the works are confirmed.
- g) After consultation with the developer, WCC will book the road space for construction. The timings will be agreed with the developer but if these change because of any delay to the following processes then this could mean a new notice has to be given and the scheme delayed accordingly.
- h) When Technical Review is completed and the necessary certificates certified (including, if necessary, any structural compliance checks as described in Part 7.6) then WCC will prepare the construction contract document and invite tenders from WCC Framework Contractors. The list of contractors will be available upon request. The contract will be let using the NEC conditions of contract.
- i) When quotes are received the developer will agree in writing for the contract to be awarded.
- j) **The construction contract will only be awarded when the legal agreement (e.g., Section 278 or Section 38 etc.) has been signed, a bond is in place and appropriate fees paid.**
- k) During the construction phase WCC will pay the contractor's invoices and invoice the developer in arrears.

This part provides more details of WCC's expectations and requirements to complete the scheme delivery and in particular the points (f) to (k) above.

10.3 Updated Scheme Estimate

WCC will expect a developer to appoint a competent consultant to carry out the design and prepare the works information for inclusion in the NEC contract documents.

When Technical Review is approaching its conclusion, the developer's consultant will supply an updated scheme estimate which will be used to add the scheme to WCC's capital programme. This needs to be done because, during construction, WCC will

pay the contractor's invoices and then retrospectively reclaim those monies from the developer. As WCC initially uses its own money, WCC processes insist this is reflected in the capital programme.

A more robust scheme estimate also allows for the procurement to be targeted at the appropriate lot on the Construction Framework.

Site supervision fees will be estimated once the full extents of the works are confirmed. They will be based on the anticipated construction programme and will be included in Appendix A of the Section 278 Legal Agreement.

10.4 Highway Works Permits/ Booking Road Space

When the anticipated construction programme has been developed and details of the Section 278 agreement have been confirmed, if all parties agree, the necessary road space can be booked.

There is always a risk when booking road space as any changes often mean that a new notice must be given and other projects may 'jump ahead' of the original project and delay the start of the works.

Conversely, if WCC wait until after a contractor is appointed, there might be a 3 month delay before construction begins following the appointment of the contractor.

Therefore, there are no set rules about booking road space, but it is recommended it is not undertaken until all parties have confidence in the dates to be booked.

10.5 Procurement of the Contractor using the WCC Construction Framework

When Technical Review is completed and the Technical Approval certificate is issued, WCC will prepare the construction contract document and invite tenders from WCC Framework Contractors. **Contractors who are not currently on the Framework will not be allowed to carry out the works.**

The contract will be let using the NEC conditions of contract.

Tender periods are typically 6 weeks but can be reduced slightly for smaller, less complex schemes and, similarly, could be increased for larger schemes.

WCC will carefully review the returned tenders before recommending a preferred contractor to the developer. **The contract will only be awarded when the developer has issued a 'Notice to Accept' for the contract to be awarded and the Section 278 agreement or other appropriate Legal Agreement has been signed and all fees due have been paid.**

10.6 Legal Agreements

The process of drawing-up the legal agreement will take place in parallel with the technical approval of the scheme. However, some drawings necessary for the agreement can only be finalised once design and technical approval is completed so the completion of the legal agreement will often be just prior to construction.

WCC currently have different Section 278 Legal Agreement templates for: -

- Tendered contract with 200% initial bond; (used when a formal Agreement is needed early), developer appointed to act as NEC Project Manager;
- Tendered contract with 150% bond based on the winning tender cost, developer appointed to act as NEC Project Manager;
- Tendered contract with 200 % initial bond or 150% bond based on the winning tender cost, with WCC appointing the Project Manager;
- Direct award with 150% bond;
- Direct award, developer appointed to act as NEC Project Manager;
- HMC contract.

It is important developers note the legal agreement contains details relating to the Bond for the scheme. The value of the bond is calculated using the preferred contractor's quotation (unless a 200% initial bond template is used).

Bond value = Quotation x 1.5 (i.e., 150%)

During construction the value of the bond can be reduced as contractor's invoices are paid and monies reclaimed by WCC up to a limit of 50% of the quotation total.

This remaining value of the bond is retained for 5 years, following completion of the scheme.

Furthermore, the legal agreement will also contain reference to commuted sums relating to the new infrastructure which will be payable on signing of the agreement. Commuted sums are a contribution to the future maintenance costs of the new asset.

The most common requirement for a commuted sum is for traffic signal junctions, pedestrian crossings facilities and for Intelligent Transport Systems. This charge will cover five main areas; maintenance, routine inspections, operational costs, end of life cycle replacement of the asset and traffic monitoring equipment to evaluate the effect of the development and the effectiveness of any mitigation measures over the following 5 years.

More details of legal agreements and the costs associated with them are contained in *Annex 10.1* and the WCC's Section 278 Developer Guidance Document found at www.warwickshire.gov.uk/roaddesigns.

10.7 Statutory Undertakers

The developer will be responsible for liaising with utilities, placing and paying for any orders for any necessary diversion works. The developer must provide proof of payment for the diversion works prior to the start of the tendering process.

The responsibility of supervising the utility companies carrying out their works will be outlined in the contract documents.

10.8 Construction Supervision and Contract Management

WCC will allow various supervision options during the construction phase of the scheme.

The options available depend on the ability of the developer to be able to provide a suitably qualified NEC Project Manager. However, if WCC do not believe the Project Manager is acting in an impartial manner, as required under the NEC, then they can be removed.

WCC will always retain the right to have some level of supervision capacity on site to ensure the works comply with the specification and that they are undertaken in a manner which is considerate to motorists, residents and businesses in the area. The costs of this resource will be met by the developer.

The exact form of supervision for each contract will be agreed between the developer and WCC before the Section 278 agreement is signed as the agreement will need to reflect the options chosen.

As the contract to carry out the works is between WCC and the contractor, WCC will pay any certified invoices to the contractor directly and reclaim the monies from the developer in arrears. WCC will supply the developer with regular statements relating to the current project spend.

10.9 Land Compensation Act 1973 (Part 1)

On occasion, neighbouring properties can depreciate in value due to works and property owners and occupiers may be entitled to claim compensation. This is known as a 'Part 1 claim'.

More information can be found at www.gov.uk/compensation-road-property-value

'Part 1' claims can only be made 12 months after the works have opened to traffic.

It is for this reason WCC will retain the proportion of the bond for 5 years to ensure it is protected against the costs of any claims. Claims will be assessed by WCC property services, paid by WCC and the costs reclaimed from the developer in arrears.

Annexures

**Warwickshire County Council
Highway Authority**

Pre-application Charging Scheme

June 2011

Introduction

Warwickshire County Council's Highway Authority operates a scheme of charging for pre-application advice for development proposals and project work.

This note provides guidance on the procedure and charging arrangements for pre-application advice.

The Highway Authority considers around 2,000 consultations each year. The advice of the Highway Authority is an important consideration for the Planning Authority when determining planning applications.

The Highway Authority welcomes and encourages discussions before a developer submits a planning application. These discussions can result in better quality applications which stand a better chance of a successful outcome and help speed up the decision making process after submission. As a consequence they can help to minimise subsequent costs and avoid abortive applications.

To enable the Highway Authority to provide this service to a consistent and high standard the Highway Authority allocates significant resources to the service. The Council has decided that the cost of providing the service should be recovered directly from the developer and not fall as a general cost to the council taxpayer, in accordance with The Local Government Act 2003. It should be noted that the current statutory planning fees do not cover the cost of pre-application advice given by the Highway Authority.

Development Management approach

The principle of front loading the local planning process is detailed within Planning Policy Statement 12: Local Development Frameworks. The document established the need for a streamlined and efficient process to ensure housing targets can be met, one of the proposed improvements is to 'front load' the planning process ensuring that discussions are undertaken at the earliest opportunity.

Planning Policy Statement 3: Housing highlights the need for a collaborative working approach, which should be initiated at an early stage of the planning process to ensure that development is delivered to a high standard and housing objectives can be met.

The recently published Manual for Streets (March 2007) and subsequent MfS 2 also emphasize the need for a collaborative approach to shaping development proposals, where developers, local authorities and other public agencies work together to ensure developments are designed and delivered with consideration of all relevant issues.

What do we expect of you?

Applicants are expected to be aware of WCC's and the LPA's policies in considering the early stages of a proposal as this provides the most efficient basis for discussion. Applicants will be expected to highlight and explain where, and why, current policies do not form the basis of a submission.

While we appreciate that some information may not be available for pre-application discussions, we expect a minimum level of information to be provided to enable us to provide quality advice and guidance and ensure that time is used effectively

The benefits of pre-application discussions

- Understanding how national, regional and local guidance will be applied to your development
- Potential for reducing the time your professional advisors spend in formulating your proposals
- Written confirmation of the advice given at the pre-application stage
- Indicate any proposals which are completely unacceptable, so saving the cost of pursuing a formal application
- Identify if specialist input will be required
- Identify the supporting documents that will be required to be submitted with a formal application to be considered favourably by the Highway Authority
- Advice that is consistent, reliable, up to date and tailored to your needs

If an application is submitted which requires significant change, where pre-application advice has not been sought or followed or where no explanation has been provided to support a proposal which does not follow published advice, the County Council will respond to the District Council based upon the information submitted with the application, it is unlikely that, at that stage, an applicant will be invited to discuss the proposal.

We therefore expect that any applicant will seek pre-application advice before committing to make an application.

What are the levels of charging?

The fee is directly related to the complexity of the proposed development and reflects the amount of time required and the need for possible ongoing update meetings where larger developments are proposed.

Category A – Small Scale Development - £60 (£50 + VAT)

- 2 or fewer dwellings
- Up to 100 sqm commercial floorspace
- Dropped kerbed accesses

Category B – Small Scale Development - £120 (£100 + VAT)

- 3 to 9 dwellings
- 100 - 500 sqm commercial floorspace
- Change of Use of up to 500 sqm floor space
- Telecommunication masts

Category C – Medium Scale Development - £600 (£500 + VAT)

- 10 to 49 Dwellings
- 500 sqm to 1,000 sqm Commercial Floorspace
- Change of Use of up to 500 and 1,000 sqm
- Minerals and Waste sites below 1ha

Category D – Large Scale Development - £900 (£750 + VAT)

- 50 to 79 Dwellings
- 1,000 sqm to 2,000 sqm Commercial Floorspace
- Reserved matter applications for outline schemes with category E
- Other developments requiring;
 - Transport Statements¹
 - Travel Plan Statements²
- Amendments to previously agreed schemes within category E
- Change of use between 1,000 and 2,000 sqm
- Minerals and Waste sites between 1ha & 15ha

Category E – Major Scale Development - £1800 (£1500 + VAT)

- 80 to 200 Dwellings
- 2000 sqm to 5,000 sqm or more Commercial Floorspace
- Change of use between 2,000 and 5,000 sqm
- Minerals and Waste sites between 1ha & 15ha
- Other developments requiring;
 - Transport Assessments¹
 - Travel Plans²

Category F – Project/Major Work - £2400 minimum fee (calculated on request) (£2000 + VAT)

- 200 + Dwellings
- 5,000 sqm or more Commercial Floorspace
- Change of use of over 5,000 sqm
- Minerals and Waste Sites over 15ha

If your development does not clearly fall within an above category please contact the Highway Authority for further advice

¹ Thresholds can be found in the Department for Transport - Guidance on Transport Assessments, Appendix B

² Thresholds can be found in the Department for Transport – Good Practice Guidelines: Delivering Travel plans through the Planning Process, Chapter 4

Exemptions

The charging scheme will not apply to enforcement or advice to any local resident affected by a development. Such advice at this time will continue to be provided free of charge.

Advice to District and Borough Councils on the following policy work will continue to be provided free of charge:

- Advice on policy preparation of Master Plans
- Advice on policy preparation of Local Development Framework Submissions
- Advice on policy preparation of Strategic Sites

No chargeable advice will be given over the telephone.

Additional Charges

The standard charge for major development/ project work inquiries relates to the amount of time taken by the case officer(s), from the investigation stage to a meeting with the applicant and the subsequent written confirmation of advice.

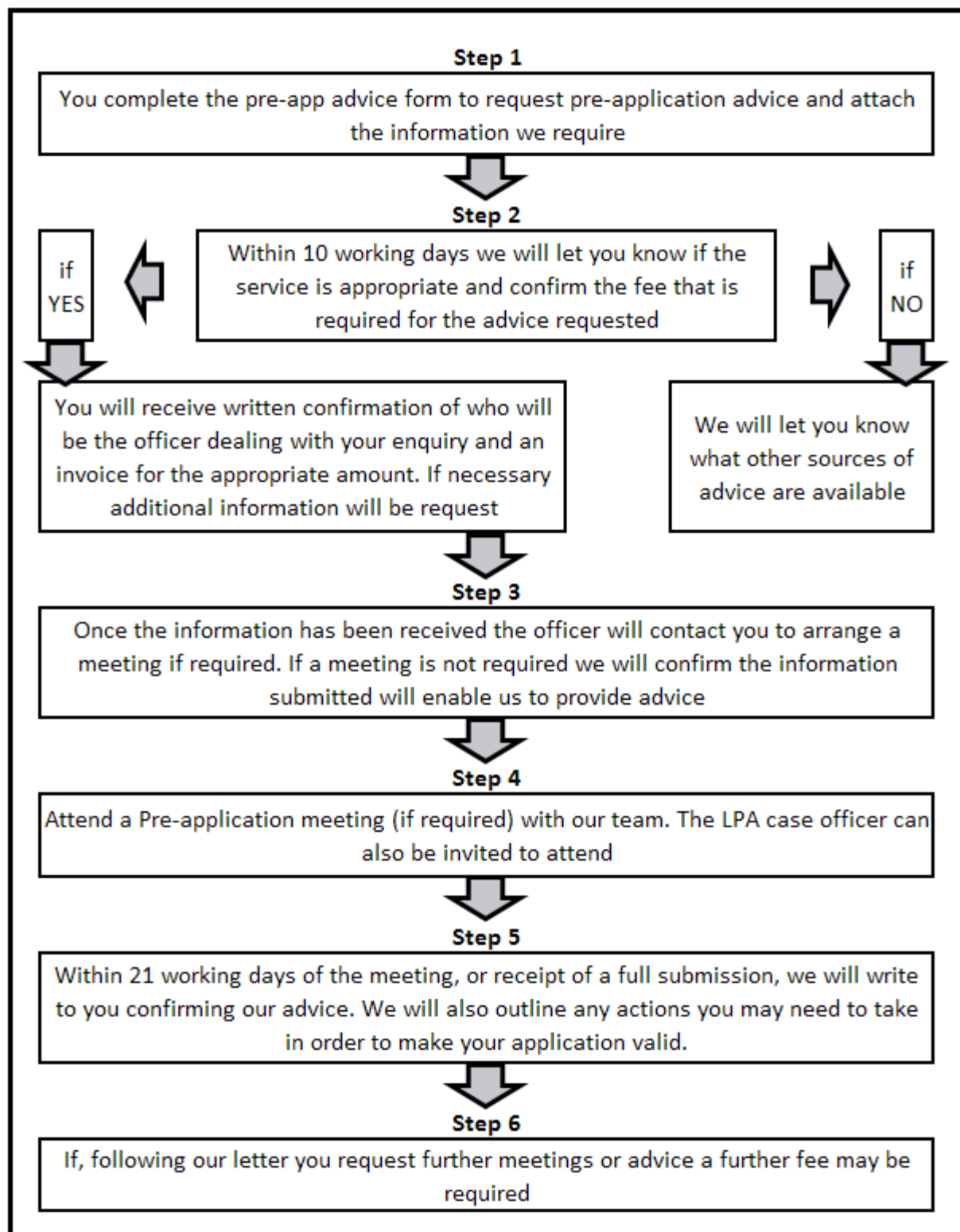
The Authority reserves the right to advise that the scope for further discussion has been exhausted. Any additional work required to respond to additional queries beyond this point will be charged at an hourly rate. Hourly rates will be charged at cost. Where additional specialist advice is required to be provided by other groups within Warwickshire County Council, fees will be charged at cost.

Additional meetings will only be attended where all action points agreed at the previous meeting have been addressed to our satisfaction and may require an additional fee.

Payment of Charges

All fees are required upfront and no response to your enquiry will be possible until payment has been received and processed.

Pre-application Process



Information Required for Pre-application Discussion

Warwickshire County Council's Highway Authority requires a sufficient level of information to be provided before any pre-application advice is given or meetings are attended. This is to enable us to provide quality advice and guidance to be given and ensure the meeting time is used effectively.

The following list is the requirement for information. You will be informed at the relevant stage of the process if additional information is required.

You must ensure that we receive all of the information 10 working days before a pre-application meeting otherwise the meeting may need to be rescheduled.

The more information that is provided to the Highway Authority the better able we will be to ensure that all the issues are identified early in the discussion process.

The following information is required:

- Confirmation that you are willing to pay the appropriate fee by signing the declaration,
- A site location plan (scale 1:1250) with site extents indicated,
- Description, (including site layout plans) of the proposed development and schedule of uses, (sketch plans for dropped kerbed accesses maybe acceptable)

In addition the following information should be provided at the earliest point available:

- Reference to supporting national, regional and local Planning documents and policies
- Schedule of existing uses, including planning history with reference numbers,
- Parking Strategy, including provision of parking for all forms of transport
- Relevant data collected to date.
- Summary of reasons supporting site access/highway works proposals, including plan (scale 1:200 or similar) with achievable visibility splays indicated
- Location plan of key services indicating locations of education, employment, food retail, non-food retail and health care facilities
- Final Stage 1 Road Safety Audit (if required) of site access and designers response, including amended plans,

For Category D proposals and above, the following information should also be provided at the earliest point available;

- Information related to any necessary Transport Statement/Assessment
- Proposed trip rates supported with TRICS outputs and site selection methodology
- Proposed traffic growth factors supported with NTEM/TEMPRO growth factors and methodology

Standard of Service

If you have a proposal which is likely to be subject to a charge you can contact us in a number of ways:

Write to us at: Highway Control Team, Planning and Development Group, Environment and Economy, PO BOX 43, Shire Hall, Warwick, CV34 4SX

Email us at highwayconsultation@warwickshire.gov.uk

Telephone us on (01926) 412362

Visit our web site www.warwickshire.gov.uk

When you contact us we will ask you to fill out a 'pre-application advice form' and provide us with the required information (as above).

The form can be sent to you by post, email or can be downloaded from our website

What Will You Get From the Service?

We will:

- Provide written confirmation within 10 working days of receiving your request to tell you whether the service is right for you
- Provide details of what further information you may need to supply
- Contact you to arrange a date for a meeting if required
- Arrange a meeting with you and invite the District council planning officers to advise you on your case, including any site visits needed
- Provide detailed written confirmation within 21 working days of the meeting, or receipt of a full submission, of our advice. This will include what you will need to supply to support your application
- Advise on whether a Section 106 agreement is likely and the process we use to agree it (this will cover Highway related requirements and not Education, libraries etc)
- Ensure any necessary confidentiality
- Advise that will remain directly relevant to the proposals for 90 days.

Pre-application Meeting

Subject to the availability of all of the required information, the date and venue for the pre-application advice meeting will be confirmed by all parties.

Normally, the meeting will be held at the Highway Authority's offices in Barrack Street, Warwick, however, we can also consider site meetings or alternative venues if required.

Written Confirmation of Officer Advice

Following the pre-application meeting, or the submission of a full pre-application package, you will receive a written response confirming our advice. Our aim is to issue a response within 21 working days of the meeting being held. Where this is not possible due to the issues being more complex, a specific time scale reflecting this will be agreed at the meeting.

If you request further discussions following the receipt of this written advice a further fee is likely to be required.

Where proposals for project work, large or major schemes with highly complex issues a series of meetings or pre application submissions may be required. This will be discussed and an approach agreed during an initial pre-application meeting. An additional fee may be required.

Additional meetings will only be attended where all action points agreed at the previous meeting have been addressed to our satisfaction.

Please Note

Requesting Warwickshire County Council's Highway Authority's Pre-Application advice is not mandatory. However the Highway Authority will no longer enter into discussion over the in depth scope or content of any specialist highways and transport advice outside the Pre-Application Advice Scheme.

Any advice given by the Highway Authority officers for pre-application enquiries does not constitute a formal response.

Any views or opinions are given in good faith, and on the best of ability, without prejudice to the formal consideration of any planning application, which will be subject to public consultation and ultimately decided by the Planning Authority.

You should therefore be aware that officers cannot give guarantees about the final formal decision that will be made on your planning or related applications. However, the advice note will form the basis of our consultation response to the Planning Authority, who will determine any subsequent planning applications, subject to the proviso that circumstances and information may change or come to light that could alter the position.

It should be noted that little or no weight will be given to the content of the Councils pre-application advice for schemes submitted more than 12 months after the date of the advice being used.

We cannot guarantee that any subsequent application you make will be valid or will get approval. However, the pre-application advice we give you will aid this process significantly.

All additional charges/invoices should be paid within 30 days.

Any advice given in relation to the planning history of the site, planning constraints or statutory designations does not constitute a formal response under the provisions of the Local Land Charges Act 1975.

REQUEST FOR PRE-APPLICATION ADVICE

This form should be returned to:

Development Management, Environment and Economy, Warwickshire County Council,
PO BOX 43, Shire Hall, Warwick, CV34 4SX



Applicant Contact Details		Agent Contact Details					
Name		Name					
Company		Company					
Address		Address					
Postcode		Post Code					
Tel No.		Tel No.					
Email		Email					
Preferred Contact		Preferred Contact					
Development Site Address							
Description of Development proposal:							
District / Borough Council	Stratford	Warwick	Rugby	Nuneaton & Bedworth	North Warks		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
ADVICE REQUIRED (Please tick to confirm advice required)		CATEGORY OF PROPOSAL					
		A	B	C	D	E	F
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATTACHED INFORMATION							
<input type="checkbox"/>	A site location plan (scale 1:1250) with site extents indicated		<input type="checkbox"/>	Reference to supporting national, regional and local planning documents and policies			
<input type="checkbox"/>	Schedule of existing uses, including planning history with reference numbers		<input type="checkbox"/>	Parking strategy, including provision for all forms of transport			
<input type="checkbox"/>	Description, (including site layout plans) of the proposed development and use classes		<input type="checkbox"/>	Relevant data collected to date			
<input type="checkbox"/>	Summary of reasons supporting site access/highway works proposals, in plan (scale 1:200 or similar) with achievable visibility splays indicated		For Category D - F proposals				
<input type="checkbox"/>	Stage 1 Road Safety Audit (if required) of proposed highway works and designers response with amended plans		<input type="checkbox"/>	Information related to any necessary Transport Statement/Assessment			
<input type="checkbox"/>	Location plan of key services indicating locations of education, employment, food retail, non-food retail and health care facilities		<input type="checkbox"/>	Proposed trip rates supported with TRICS outputs and site selection methodology			
			<input type="checkbox"/>	Proposed traffic growth factors supported with NTEM/TEMPRO growth factors and methodology			
Declaration							
I (the undersigned hereby request the views of Warwickshire County Council on the pre-application proposal and agree to pay the fee for this service. I also agree to pay and additional sums arising from the service as detailed in the pre-application charging document							
Signed Print Name							
Date							

Information Relating to Technical Review, Contract Preparation, Tendering and Construction Supervision of S278 Highway Improvements in Warwickshire

WORK TO BE UNDERTAKEN BY THE DEVELOPER AND THE DEVELOPER'S DESIGNER

2.1. Preamble

- 2.1.1 The following sections describe, in detail, the information and products required by WCC (Warwickshire County Council) to complete the technical review. Failure to provide these, in the format requested, may result in Technical Approval not being granted. If the developer intends to commission a design consultant, WCC recommends that the consultant be provided with a copy of the following pages so that the design consultant is fully aware of the requirements (including their format). An extract of this document without the fee information can be provided on request.
- 2.1.2 The developer's designers shall undertake and be responsible for:
- all design and/or redesign work; and
 - the supply of Construction Package Order Call Off Contract (POCOC) information (including NEC3 ECC Contract Data Part one information, Site Information and Works Information).
- 2.1.3 Designers should follow the guidance provided in this section when indicated after using the flow chart in Part 1 Figure 1.2 to determine the appropriate design standards for their improvement. WCC expect that for most improvements the design shall be in accordance with the DMRB (produced and maintained by National Highways). The most recent version of WCC's Highway Construction Details (HCD) can be found at www.warwickshire.gov.uk/highwayconstruction. The standards current at the time of commencing the design work shall apply.

2.1.4 Prior to the commencement of the technical review phase, the developer's designer shall submit for the WCC's consideration a list of the design (or pre-design) elements (as applicable and as identified in the table below), along with:

- the corresponding design element data (calculation sheets, computer aided design inputs/outputs, drawings, written specifications, etc as applicable); and
- the corresponding design standards and/or specifications which have been applied to the design or the proposed Works Information for the Construction POCOC.

The list shall be accompanied by details of any proposed Departures from the Relevant Design

Standards. Designs are expected to comply with the technical standards set out in the Relevant Design Standards or Specifications (either general or specific to the Section 278 scheme). These Relevant Design Standards or Specifications will have been notified in advance by WCC's Technical Review Phase Team. Departures from the Relevant Design Standards are only likely to be accepted in exceptional circumstances. Where Departures from the Relevant Design Standards are proposed, a formal application to have them approved will be required stating:

- the design standards to which the Departure(s) relate(s);
- the precise details of the Departure(s); and
- the justification for the Departure(s) including any mitigation.

The application shall be in the form of a report containing all the information needed to assess it. For further information on Departures from Standards, see *Annexures 2.3 and 2.4*.

2.1.5 The developer's designer shall submit one complete set of design drawings and any other design documentation in an electronic format and the Design Certificate for review (at the end of this document). The Design Certificate shall be signed by the developer's designer(s). If any modifications are required, the developer's designer will be notified, and the relevant drawings and documents will be re-submitted for a further review. The revised and signed Design Certificate shall also be submitted for review. **This process shall be repeated until WCC has no further comment to make on the complete package of work undertaken by the developer's designer.**

FOR THE AVOIDANCE OF DOUBT, THE TECHNICAL REVIEW PHASE WILL NOT COMMENCE UNTIL ALL OF THE ITEMS LISTED HAVE BEEN PROVIDED.

2.2 Check List of Design (or Pre-Design) Elements

Item	Design (or Pre-design) Element	Tick to confirm inclusion
1.	Location plan with geographic coordinates of the central point of the works	
2.	Topographical survey data relating to the site for the Construction POCOC	
3.	Ground investigation data relating to the site for the Construction POCOC	
4.	Ecological data and further measures relating to the site for the Construction POCOC	
5.	Archaeological data and further measures relating to the site for the Construction POCOC	
6.	Landscape measures relating to the site for the Construction POCOC	
7.	Highway geometry (horizontal and vertical alignments) relating to new carriageway, footway and cycleway layouts. Plans to include chainages and level information	
8.	Existing and proposed highway boundary information	
9.	Road restraint systems	
10.	Highway drainage (including connections to public sewers and other outfall arrangements)	
11.	Earthworks	
12.	Road pavements	
13.	Kerbs, footways and other paved areas	
14.	Traffic signs and road markings	
15.	Traffic signals and controlled crossings	
16.	Street lighting (columns, lamps and electrical work etc)	

2.2 Check List of Design (or Pre-Design) Elements

Item	Design (or Pre-design) Element	Tick to confirm inclusion
17.	Structures (culverts, headwalls and retaining structures etc) and confirmation of whether Approval in Principle (AIP) will be required	
18.	The identification of existing and proposed service apparatus including details of diversionary works that may be required and copies of correspondence with the statutory undertaker companies	
19.	Interface with contiguous schemes (e.g., Section 38 estate roads)	
20.	Road Safety Audit Stage 2 (RSA2) and designer's Responses	
21.	Highway Maintenance Audit Responses (where available)	
22.	Cycle Audit Responses (where available)	
23.	Consultation responses (local residents, landowners and other stakeholders) (where available)	
24.	Identification of any Permanent Traffic Regulation Orders, Speed Limit Orders, Highways to be Stopped Up or Diverted etc	
25.	Letter of appointment of the Principal Designer	
26.	Letter of appointment of the designer	
27.	Application form to enter into a Section 278 Agreement including copy of planning consent and title plan	
28.	Copy of the design in AutoCAD	
29.	Land Registry Plans confirming ownership	

Notes on Design (or Pre-design Elements)

- 2.2.1 **Topographical survey data:** Coordinates shall be to the National Grid; levels shall be relative to Ordnance Survey datum. The presentation of survey data shall include the position of survey stations (each of which shall be labelled and annotated to show the corresponding coordinates and level data). Accuracy shall be as follows:

Feature	Tolerances	
	Vertical	Horizontal
Buildings and highway structures	±0.004m	±0.008m
Highway surfaces and other hard surfaces	±0.010m	±0.020m
All other surfaces	±0.025m	±0.020m

- 2.2.2 **Ground investigation data:** As a minimum, data shall be obtained which:

- identifies the general condition of the ground and the CBR of the ground at formation level for proposed new carriageways (this data will enable the developer's designers to determine the thickness of lower sub-base and/or more appropriate measures if saturated ground or CBRs below 1.5% are encountered);
- identifies the position of service apparatus in relation to proposed new carriageways (this data will enable the developer's designers to determine the extent of service diversions and/or service protection in advance of the construction phase and avoid unplanned delays during the construction phase); and
- identifies suitable gradients for cutting slopes.

Any additional requirements relating to ground investigation data will be notified by WCC's Technical Review Phase Team.

- 2.2.3 **Ecological data and further measures:** In addition to any requirements imposed by the planning authority in connection with the planning permission for the main development, ecological data specific to the site for the Section 278 Scheme shall be obtained from WCC's Landscape, Ecology and Historic Environment team (LEHE). LEHE will advise on the need or otherwise for further measures such as habitat surveys, construction phase constraints or measures to mitigate the impact on nearby ecology.

- 2.2.4 **Archaeological data and further measures:** In addition to any requirements imposed by the planning authority in connection with the planning permission for the main development, archaeological data specific to the site for the Section 278 or Scheme shall be obtained from WCC's Landscape, Ecology and Historic Environment team (LEHE). LEHE will advise on the need for further measures such as archaeological field work, construction phase constraints or measures to mitigate the impact on archaeology.
- 2.2.5 **Landscape measures:** In addition to any requirements imposed by the planning authority in connection with the planning permission for the main development, the necessary landscape measures specific to the Site for the Section 278 Scheme shall be obtained from WCC's Landscape, Ecology and Historic Environment team (LEHE). LEHE will advise on any specific planting or seeding and any associated planting maintenance to be included in the Construction POCOC.
- 2.2.6 **Highway geometry:** Unless otherwise agreed in advance with WCC's Technical Review Phase Team, highway geometry shall be determined in accordance with the relevant technical directives (and technical advice) in the Design Manual for Roads and Bridges (DMRB). For the Construction POCOC Works Information, the following shall apply.
- The presentation of horizontal alignments (in plan) shall include appropriate feature labels, chainage points and corresponding annotation. The design alignment data for each chainage point on a particular feature shall include coordinates, level information, bearing information and horizontal radius information.
 - Vertical alignments shall be presented in longitudinal section format and shall be accompanied by tabulated data showing chainages, levels, longitudinal gradients, super-elevations, vertical curvature (including K values) and corresponding horizontal curvature. The tabulated data shall demonstrate that the Relevant Design Standards and Specifications (insofar as they relate to geometric design standards) have been achieved.
 - Both the horizontal and vertical alignments shall be presented so as to demonstrate that the stopping sight distances, and any other visibility criteria, have been achieved.

Although not required for the Construction POCOC Works Information, the technical review submission shall include carriageway plans with annotated contours superimposed upon them to show the position of any unavoidable flat or low areas/spots and demonstrate that there are no irregular carriageway profiles or shapes.

2.2.7 **Highway boundary:** For the Construction POCOC Works Information, the highway boundary shall be established in the manner set out in WCC's Highway Construction Details (700 Series) Volume 1: H701.1 and H702.1 (or as otherwise agreed in advance with WCC's Technical Review Phase Team).

2.2.8 **Road restraint systems:** The need or otherwise for road restraint systems shall be determined in accordance with the relevant technical directives in the DMRB. For the Construction POCOC Works Information, the performance data for road restraint systems shall be determined for insertion into the relevant Numbered Appendices to the Specification for Highway Works (SHW).

2.2.9 **Highway drainage systems:** Highway drainage systems and associated infrastructure shall generally be designed and determined in accordance with the relevant technical directives in the DMRB or other industry standards. The design shall incorporate industry standard methods which have been approved in advance by WCC or, in the case of Public Sewers, by the sewer authority responsible for adoption, and, for the Construction POCOC Works Information, the specifications set out in the SHW. However, the following principles or stipulations shall apply (whether they constitute an alternative to the DMRB design standard or the SHW provisions, or act as supplementary information to either).

Location	Design Storm Frequency
For sites with average ground slopes greater than 1%	1 in 1 year
For sites with average ground slopes of 1% or less	1 in 2 years
For sites where the consequences of flooding are severe	1 in 5 years
For sections of drain situated beneath carriageway	1 in 10 years

Catchment Areas	Levels of Impermeability
Paved areas (carriageways, footways cycleways etc.)	100%
Plan areas of earthworks side slopes (cutting and embankment)	40%
Verges	20%
Meadows and agricultural land	15%
Woodland	10%

- Industry standard geographical factors (relevant to the location of the site) shall be applied.
- The minimum pipe velocity shall be 0.75ms^{-1} and the maximum pipe velocity shall be 4.0ms^{-1} . At the point where a pipe discharges into a water course, the maximum discharge velocity shall be 1.5ms^{-1} .
- Pipe roughness values (k_s) shall be 0.6mm in all cases, regardless of pipe material.
- Design submissions shall include any necessary site investigation reports, calculations, computer inputs and outputs (as necessary), diagrams, catchment areas and their ground contours and shall show the locations, types, sizes, gradients etc of all pipes, chambers, gullies, rodding eyes and any other proposed drainage infrastructure in plan and in section (as appropriate).
- Design calculations shall include for any existing flows in the highway drainage systems and any residual outflow (from the adjacent development) into the existing or proposed highway drainage system.
- Where public sewers are to be constructed or highway drainage systems are to connect into Public Sewers, the design standards of the sewer authority responsible for adoption shall apply.
- Written confirmation and supporting documentation shall be supplied to demonstrate that any necessary third-party authority (sewer authority, Environment Agency, Flood Risk Management authority etc.) approvals are in place. These will be required for connection to existing public sewers and discharging into watercourses.
- Drain runs (except formation drains) shall be straight or on a curve of not less than 200m radius. Formation drains or minor filter drains (i.e., those not collecting run-off from gullies) shall be laid straight or on a curve of not less than 50m.
- Where the carriageway channel has a radius of less than 200m either:
 - a) a combined surface water/filter drain shall be laid (straight or on a curve of not less than 200m) and the lower sub-base shall be extended to the edge of the drain; or
 - b) a surface water drain shall be laid (straight or on a curve of not less than 200m) to collect run-off from gullies and a formation drain shall be laid parallel to the carriageway channel to collect ground water.
- No drain run between chambers or between a rodding eye and a chamber shall exceed 90m.
- Pipes connecting to highway drainage chambers shall be designed to have level soffits.

- Drains shall only be situated beneath carriageways if they are required to cross carriageways. The crossing shall be on the line of the shortest practical route.
- Filter drains or combined filter and surface water drains shall not be situated beneath paved areas such as carriageways, footways, cycleways or accesses.
- For roads on embankment, the main carrier drain shall be a combined surface water/filter drain laid at the foot of the embankment. The lower and upper sub-base shall be extended to the side slopes of the embankment as shown on WCC's Highway Construction Details (700 Series) Volume 1: A701.1 (or as otherwise agreed in advance with WCC's Technical Review Phase Team).
- Pipe, bedding, backfill and trench specification details shall be in accordance with WCC's Highway Construction Details (700 Series) Volume 1: F701.1, F702.1 and F702.2 (as appropriate).
- For the Construction POCOC Works Information, Pipe Group details for SHW Numbered Appendix 5/1 shall be presented in the format shown in Annex 1 to the Notes for Guidance on WCC's Highway Construction Details (700 Series) Volume 1.
- Chambers for highway drains shall be catchpits (Type 71 or 73) as appropriate, in accordance with WCC's Highway Construction Details (700 Series) Volume 1: F703.1 and F703.2 unless otherwise agreed in advance with WCC's Technical Review Phase Team. The following chamber diameters shall apply:

Diameter of largest pipe connected (mm)	Chamber section diameter (mm)
150 – 225	1050
300	1200
375 – 450	1350
500 – 700	1500
750 – 900	1800

- Chambers for highway drainage systems (i.e., catchpits) must always be situated at the downstream end of a filter drain, where the continuation of the drain run downstream is a surface water drain.

- The Relevant Design Standards or Specifications for chambers for public sewers are those prescribed by the sewer authority responsible for adoption. Chambers for public sewers are likely to be manholes.
- Rodding eyes shall be installed at the head of all highway drainage systems.
- Where road gullies are proposed, gully spacings shall be determined in accordance with the relevant technical directives in the DMRB. Gullies shall be in accordance with WCC's Highway Construction Details (700 Series) Volume 1: F704.1.
- Where a proprietary kerbdrain system is proposed, approval to proceed with the proprietary system shall be obtained in advance from WCC's Technical Review Phase Team. Once approval has been given, the hydraulic performance of the proposed proprietary system shall be demonstrated by applying the manufacturer's design processes.
- Where a proposed highway drainage system is to include an inlet from a ditch and/or an outfall into a watercourse, the headwalls shall only be in accordance with Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: F705.1 if the height of the headwall (from pipe invert level to top of parapet/coping) is no greater than 1.2m. In circumstances where the height is greater than 1.2m, headwalls will need to be designed as an earth retaining structure and the requirements for structures shall apply.
- **For technical approval to be granted the developer's designers must demonstrate to the satisfaction of WCC's Technical Review Phase Team that the proposed highway drainage system:**
 - **meets the Relevant Design Standards or Specifications;**
 - **outfalls into an existing, working drainage system (highway drainage system, watercourse or public sewer) which has sufficient reserve capacity to cope with the total additional volume of run-off and its associated peak flow rate; and**
 - **is legally entitled to outfall into the existing drainage system. Evidence of the necessary agreements being in place under the Water Industry Act, Highways Act or any other relevant Act of Parliament shall be supplied to demonstrate that the legal requirements have been satisfied.**

2.2.10 **Earthworks:** Earthworks shall generally be designed and determined in accordance with the relevant technical directives in the DMRB and the specifications set out in the SHW. However, the following principles or stipulations shall apply (whether they constitute an alternative to the DMRB design standard or the SHW provisions or act as supplementary information to either).

- Cross sections shall comply with Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: A701.1, A701.2 and A701.3 (as appropriate) (or as otherwise agreed in advance with WCC's Technical Review Phase Team). Cross sections shall incorporate the requirements of Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: B701.1 and B701.2 (as appropriate).
- Cutting and embankment slope gradients shall be suitable for the soils encountered or the fill material proposed (refer to paragraph 6.2 (Ground investigation data) and note that acceptable general fill materials are limited to SHW material Classes 1A, 2A, 2B or 2C).
- In circumstances where the CBR at formation is less than 1.5% (refer to paragraph 6.2), a geotextile solution may be preferable to an increased thickness of lower sub-base. Geotextiles and any associated measures shall be designed in accordance with the relevant technical directives in the DMRB. For the Construction POCOC Works Information, the performance data for geotextiles shall be determined for insertion into the relevant Numbered Appendices to the SHW. Refer also to paragraph 6.11 (Road pavements).

2.2.11 **Road pavements:** Road pavements shall be designed generally in accordance with WCC's current version of the County Road Construction Strategy (the Relevant Design Standards or Specifications). The methods to be used are described in Part 1 of the Strategy with the following exceptions or additional requirements:

- In Part 1: Section 2, the Strategy refers to 'W sub-base' being laid at a thickness of 600mm in circumstances where $CBR < 2.0\%$ (Lias clay). However, where $CBR < 1.5\%$, other measures, such as geotextiles and additional formation drainage, shall be investigated and proposed as an alternative to 600mm thick lower sub-base. The other measures shall be certified as suitable for the specific conditions by an experienced geotechnical engineer whose credentials have been approved in advance by WCC's Technical Review Phase Team. Refer also to paragraph 6.10 (Earthworks).
- Where areas of existing carriageway are to be overlaid or where existing layers are to be planed out and replaced, the design shall comply with the requirements for construction joints and regulating courses set out in Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: B705.1 and B705.2.

- Where lengths of existing carriageway are to be 'strip-widened', the existing surface course (adjacent to new full carriageway construction) shall be planed out and new surface course shall be laid so that the longitudinal joint in the surface course follows the line of the nearest linear longitudinal road marking (carriageway centreline or lane marking) which lies over existing road construction. In circumstances where the longitudinal joint for the 'strip widened' surface course would naturally lie within the existing half of the resultant carriageway (i.e., beyond the centreline), new surface course shall be laid over the full width of carriageway. This will allow those areas of carriageway which are frequently tracked by vehicles to remain free from longitudinal joints, a common source of potholes.

2.2.12 **Kerbs, footways and other paved areas:** Footway and cycleway construction shall be determined in accordance with the vehicle trafficking principles set out in Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: B704.1 or B704.5 (as applicable). Access construction shall be determined in accordance with the intended use principles set out in Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: B704.2. Where a proprietary kerbdrain system is proposed, the crushing strength of kerbdrain units shall be sufficient to withstand 40 tonne HGV accidental wheel loading.

2.2.13 **Traffic signs and road markings:** Traffic signs and road markings shall be designed generally in accordance with the current version of the Traffic Signs Regulations and General Directions along with any supporting national standards (the Relevant Design Standards or Specifications) with the following exceptions or additional requirements.

- Occasionally, for site-specific or other local reasons, WCC departs from or relaxes the requirements of the Traffic Signs Regulations and General Directions. In such circumstances, WCC's Technical Review Phase Team will notify the developer's designers of the departures or relaxations which will be imposed. Notification will be given after the geometric design has been finalised and before the traffic sign design commences. Notification can also be given upon the request of the developer's designers. For the avoidance of doubt, any departures or relaxations imposed by WCC are a part of the Relevant Design Standards or Specifications. Any non-compliant proposal on the part of the developer's designers will need to be treated as a Departure from Relevant Design Standards.
- For the Construction POCOC Works Information, information shall be supplied in a format suitable for inclusion in SHW Numbered Appendices 12/1, 12/3 and 14/5. Information for Appendix 14/5 shall include details of the electrical connections and disconnections for illuminated traffic signs and shall identify the organisation which will be responsible for undertaking this work.

- 2.2.14 **Traffic signals and controlled crossings:** In circumstances where Warwickshire County Council's Traffic Control and Information Systems (TCIS) team is designing on behalf of the developer's designers, the service will include the technical approval of the design for traffic signals and controlled crossings and the supply of the Construction POCOC Works Information. In all other circumstances, WCC's Technical Review Phase Team will notify the developer's designers (upon request) of the Relevant Design Standards or Specifications relating to the design of traffic signals and controlled crossings.

For the Construction POCOC Works Information, information shall be supplied in a format suitable for inclusion in SHW Numbered Appendix 12/5. Information for Appendix 12/5 shall include details of the electrical and telecommunication connections to the traffic signal controller and shall identify the organisation which will be responsible for undertaking this work.

- 2.2.15 **Street lighting:** In circumstances where Warwickshire County Council's Street Lighting team is designing on behalf of the developer's designers, the service will include the technical approval of the design for street lighting and the supply of the Construction POCOC Works Information. In all other circumstances, WCC's Technical Review Phase Team will notify the developer's designers (upon request) of the Relevant Design Standards or Specifications relating to the design of street lighting. The following additional requirements shall also apply:

- Street lighting design proposals shall be accompanied by lighting contour plans, which shall identify the level of lighting achieved within the new highway layout.
- For the Construction POCOC Works Information, information shall be supplied in a format suitable for inclusion in SHW Numbered Appendices 13/1, 14/2 and 14/4. Appendix 14/4 shall include details of the electrical connections and disconnections and shall identify the organisation which will be responsible for undertaking this work.

- 2.2.16 **Structures:** Minor structures may need to undergo an AIP process. WCC's Technical Review Phase Team will notify the developer's designers of the AIP process upon request. Minor structures (except headwall types shown on Warwickshire County Council's Highway Construction Details (700 Series) Volume 1: F705.1) shall be designed in accordance with the relevant technical directives in the DMRB and, for the Construction POCOC Works Information, the specifications set out in the SHW. Details for all minor structures shall be supplied in a format suitable for inclusion in SHW Numbered Appendices 17/1 to 17/5, 20/1 and 24/1 (as applicable).

For major structures, such as bridges, the developer's designers shall contact WCC's Bridge Design team for advice on how to proceed with the design process.

2.2.17 **Diversion or protection of service apparatus:** Design proposals shall demonstrate that the relevant Statutory Undertakers (or licensees under Section 50 of the New Roads and Street Works Act 1991) have been consulted to determine:

- the approximate position of potentially affected service apparatus; and
- the need or otherwise to protect or divert it.

Design proposals shall also demonstrate that where the position of potentially affected service apparatus is uncertain (as a result of ambiguous Statutory Undertaker or licensee records), site investigation work has been undertaken to confirm the position of potentially affected apparatus (refer also to paragraph 6.2 (Ground investigation data)).

Once the extent of protection or diversion work has been established, Works Information for the Construction POCOC shall be supplied in a format suitable for inclusion in SHW Numbered Appendix 1/16. Any need for advance works or advance ordering of materials and supplies (to enable the protection or diversion of apparatus) shall be identified. The developer must provide written evidence that all statutory undertakers works have been paid for in advance of award of contract

2.2.18 **Interface with contiguous schemes:** In circumstances where a s.278 Scheme is contiguous with another scheme being designed by others (for example a s.38 estate road scheme which is the continuation of a road forming part of the s.278 Scheme) the details of the interface between the two schemes shall be agreed in advance with WCC's Technical Review Phase Team and the other designers. The details will include the coordinates, levels and bearings of each linear highway design feature at the interface.

2.2.19 **Road Safety Audit Stage 2 (RSA2) Designers' Responses:** If WCC's Road Safety Team is undertaking the RSA2, WCC's Technical Review Phase Team will be able to facilitate communications between auditors and designers. Otherwise, the developer's designers shall submit the RSA2 and designers' Response to WCC's Technical Review Phase Team for review by WCC's Road Safety Team.

2.2.20 **Highway Maintenance Audit Responses:** Before the Construction POCOC Works Information is finalised, highway drainage and road pavement proposals shall be submitted by WCC's Technical Review Phase Team to WCC's Highway Maintenance Locality Officer for a Highway Maintenance Audit. Highway drainage and road

pavement specifications shall be discussed with the Locality Officer and mutually acceptable specifications will be notified to the developer's designer.

- 2.2.21 **Cycle Audit Responses:** Before the Construction POCOC Works Information is finalised, scheme layout proposals shall be submitted by WCC's Technical Review Phase Team to WCC's Cycle Officer for a Cycle Audit. Mutually acceptable provisions for cyclists shall be discussed with the Cycle Officer and notified to the developer's designers.
- 2.2.22 **Consultation responses:** The consultation of local residents and other local stakeholders will be undertaken by WCC's Technical Review Phase Team. However, the developer's designers shall be responsible for supplying the technical information needed for the for consultee responses. Designs and associated Construction POCOC Works Information may need to be amended as a result of consultation.
- 2.2.23 **Permanent Traffic Regulation Orders (TROs) etc:** All necessary highway TROs, Speed Limit Orders, Highways to be Stopped Up or Diverted etc shall be identified by the developer's designers. Once identified, the developer's designers shall provide the plans and consultation drawings necessary to commission WCC's Traffic and Road Safety Group to process the orders on the developer's behalf. For the avoidance of doubt, 'highway' includes all footpaths, bridleways and byways.
- 2.2.24 **Principal Designer role under CDM 2015:** If the developer's designers are to undertake the CDM 2015 Principal Designer role, the expectation (subject to agreement between the developer and WCC's Technical Review Phase Team) is that the appointment will be made for the full duration of the project (i.e., from commencement of the design phase through to completion of the construction phase). The consequences of changes to the Construction POCOC Works Information, which stem from changes to the design, will need to be overseen by the Principal Designer throughout the construction phase. Pre-construction Information shall be supplied to WCC's Technical Review Phase Team so that it may be appended to the Construction POCOC documentation supplied to tendering contractors.
- 2.2.25 **Designer role under CDM 2015:** The designer's Risk Assessment shall be submitted to the Principal Designer for inclusion in the Pre-construction Information. During the construction phase, designs may need to be amended to allow for changes to the Works Information under the Construction POCOC. The need for such amendments is often the result of unforeseen physical conditions. **Redesign work during the construction phase is the responsibility of the developer's designers.**

2.3 Design Products

2.3.1 One complete set of the package of drawings and any other documentation, including that required for Contract Data Part one and the Works Information for the Construction POCOC, shall be submitted in an electronic format for technical review. This shall be accompanied by a completed Design Certificate (in the form set out on page 26). The Design Certificate shall be signed by the lead designer acting on behalf of the developer's designers. WCC's Technical Review Phase Team will advise the developer's designers of the lead reviewer's contact details. If any modifications are required, the developer will be notified, and the relevant drawings and documents will need to be amended accordingly and re-submitted for a further review. A revised and signed Design Certificate shall accompany the submission. **This process will be repeated until WCC's Technical Review Phase Team have no further comment to make on the complete package of work undertaken by the developer's designers.**

2.3.2 **Scheme-specific technical review, tender and contract drawings:** All drawings supplied, whether they be for technical review purposes, for final issue as tender drawings or for changes to the Construction POCOC Works Information during the construction phase, shall be supplied in PDF format. Unless otherwise agreed in advance with WCC's Technical Review Phase Team, drawings shall be produced for printing onto A1 sized sheets. The information shown on scheme-specific technical review, tender and contract drawings shall be organised generally in accordance with the various 'series' of the SHW. Separate drawings or separate sets of drawings shall be provided for:

- General Arrangement;
- Setting Out and Site Clearance (Series 200);
- Fencing and Road Restraint Systems (Series 300 and 400 respectively);
- Drainage and Service Ducts (Series 500);
- Earthworks (Series 600);
- Road Pavements (Series 700, 800 and 900);
- Kerbs, Footways and Paved Areas (Series 1100);
- Traffic Signs and Road Markings (Series 1200 and 1900);

- Traffic Signals and Controlled Crossings (Series 1200 and 1900);
- Street Lighting (Series 1300, 1400 and 1900);
- Structures (Series 1600, 1700, 1800, 1900, 2000, 2100, 2300, 2400, and 2500 as necessary);
- Miscellaneous (Series 2600);
- Landscape and Ecology (Series 3000);
- Longitudinal Sections;
- Cross Sections;
- Existing and Proposed Service Apparatus (Locations and Types) and, where applicable;
- Land Dedication (for the Section 278 Agreement).
- 'Other' (for the Section 278 Agreement).

- 2.3.3 The titles of drawings shall be as stated in the bullets above. However, for simple schemes where the detail needed to be shown on the drawings is limited, information may be merged onto fewer drawings. In such cases, the revised titles of drawings shall reflect the content of the drawings. Approval to merge information must be sought in advance from WCC's Technical Review Phase Team. Approval will only be granted for proposals which demonstrate a logical grouping of information.
- 2.3.4 Where two or more drawings are required to cover the extent of the Section 278 Scheme, annotated 'cut lines' shall be used to identify the common points on the different drawings.
- 2.3.5 Where two or more drawings (forming a set) are required to cover all the information for a particular drawing title (e.g., Road Pavements), the title shall be extended to include the phrase "Sheet X of Y" (as appropriate) and the 'key' identifying the features shown shall be the same for all drawings within the set.
- 2.3.6 Unless otherwise agreed in advance with WCC's Technical Review Phase Team, the scale of all drawings showing information in plan shall be 1:500. However, where desirable, details of particular features may be

shown in separate boxes at a suitably larger scale. In such cases the box shall clearly indicate the larger scale, which shall be one of the standard scales for technical drawings. Unless otherwise agreed in advance with WCC's Technical Review Phase Team, longitudinal sections and cross sections shall be produced at the following scales:

- longitudinal sections (1:500 horizontally and 1:100 vertically); and
- cross sections (1:100 horizontally and 1:50 vertically).

2.3.7 Title-specific drawing content: The following table identifies certain content of drawings, identified by drawing title. It is not meant to provide a comprehensive list of the information required for each drawing; it is meant to ensure that certain information is shown on the appropriate drawing. Unless otherwise agreed in advance with WCC's Technical Review Phase Team, these principles shall be followed.

Drawing Title	Content
General Arrangement	<p>This drawing (or set) should show the proposed works in plan at ground level; buried features should not be shown. It should not be used for pricing and therefore it should not include specification details. Appropriate features include:</p> <ul style="list-style-type: none"> • new highway layout superimposed upon existing ('new' should be easily distinguished from 'existing' either by colour or by 'line weight'); • new fencing and road restraint systems; • new carriageway extent (i.e., the extent of new carriageway surfacing); • new refuges and new traffic calming features (humps, speed tables, chicanes etc.); • new footways and cycleways (cycleways shall be identified as either segregated or unsegregated); • new tactile paving; • new road markings; and • new traffic signals and controlled crossings (the type of crossing shall be shown).
Setting Out and Site Clearance	<p>This drawing (or set) should identify the positions of survey stations or permanent ground markers (PGMs) which will enable the contractor to set out the works. Each survey station or PGM shall be uniquely referenced. A table should be provided on the drawing which gives the National Grid coordinates and level (relative to the relevant Ordnance Survey datum) for each of the uniquely referenced survey stations and PGMs.</p>

Drawing Title	Content
	<p>Setting out details of the carriageway alignment shall include easting, northing, levels and radii of curves. All crown-lines should be shown on this drawing.</p> <p>The drawing (or set) should also identify the 'site' (as defined by the NEC3 ECC conditions of contract) as the area to be cleared. The contract requires the '<i>boundaries of the site</i>' to be identified in the Contract Data. When compiling the Contract Data Part one, WCC's Technical Review Phase Team will make reference to this drawing so the key on the drawing should use the term 'Boundary(ies) of the Site' to identify the closed line(s) which identify the area(s) to be cleared. Everything above ground level within the <i>boundary of the site</i> will be removed unless marked to 'remain' be 'preserved' or to be 'taken up or down'. Any demolition or special treatment shall be identified in the appropriate Numbered Appendices.</p>
Fencing and Road Restraint Systems	<p>This drawing (or set) should include all fences, gates, stiles, safety barriers and guard railing. If hedges are to be included as boundary features but no other planting is required, the new hedges and associated details may be shown on this drawing. In such instances, the drawing title should be amended to include reference to hedges.</p>
Drainage and Service Ducts	<p>This drawing (or set) should include all new drainage infrastructure: pipes, chambers, gullies, rodding eyes, headwalls, ditch works, attenuation systems, SuDS and the like, which should all be numerically referenced. Outfalls and connections with the existing drainage infrastructure should be clearly marked. Drawings submitted for technical review purposes shall also show finished road level contours so that gully positions and/or 'kerbdrain' outfalls can be checked.</p> <p>The drawing should also include a chamber schedule and pipe schedule. The chamber schedule should include the type of chamber, size of chamber (internal diameter), depth (ground level to top of base slab), the cover level and the grade of cover and frame. The pipe schedule should include for each length of pipe, the Pipe Group (as defined in Numbered Appendix 5/1), the length of pipe and the size of pipe (internal diameter). Upstream and downstream pipe invert levels should either be put on the plan or on the pipe schedule.</p>
Earthworks	<p>This drawing (or set) should identify zones of excavation and fill. Excavation zones shall be based on the profile of acceptable and unacceptable material Class U1A. Excavation of Class 5A, U1B or U2 material should be treated separately. Zones of excavation in Hard Material should be identified and the type of Hard Material (natural stone, concrete, bitumen-bound material etc.) should be clearly marked. Fill zones should be identified by material class</p>

Drawing Title	Content
	unless General Fill is to be used, in which case the relevant zones should be identified as General Fill. Zones of topsoil should also be shown. If seeding and/or turfing are to be included but no planting is required, the seeding and/or turfing details may be shown on this drawing. If shown, the drawing title should be amended to include reference to seeding and/or turfing. The details of geotextiles (if used) should also be included.
Road Pavements	<p>This drawing (or set) should identify areas of full carriageway construction, areas of carriageway overlay and associated regulating material and areas where the existing surface course is to be planed out and replaced. Areas of carriageway overlay and associated regulating material should be identified separately for:</p> <ul style="list-style-type: none"> • full surface course overlay with fine regulating; • full surface course overlay with binder course regulating; • full surface course and full binder course overlay with base regulating; and • full construction of all bituminous layers with additional upper sub-base material. <p>The drawing (or set) should also identify areas of existing carriageway to be broken up or perforated to allow full construction or near full construction where overlay solutions would be too expensive. Drawings submitted for technical review purposes shall also show isopachyte contours so that the different limits of overlay and associated regulating material can be checked.</p>
Kerbs, Footways and Paved Areas	<p>This drawing (or set) should identify the locations, types and sizes of kerbs (including special kerbs such as transition kerbs and dropped kerbs), edgings, channel blocks, combined drainage and kerb blocks and any other type of paved area edge restraint. This drawing (or set) should also identify all 'off-carriageway' paved areas such as footways and cycleways (including their construction details). Paved areas in flexible construction should refer to the relevant type given in WCC's HCDs (700 Series) Vol 1: B704.1 or B704.2. Details of block paving or flag paving should identify the locations, types, sizes, colours, laying patterns, bedding details and edge restraint arrangements for the paving.</p>
Traffic Signs and Road Markings	<p>This drawing (or set) should identify the locations, type and sizes of signs, poles and foundations. The detail should include the design of the sign face including material specification, x-heights and lighting requirements. Sign details may take the form of a 'sign schedule'.</p>
Traffic Signals and	<p>This drawing (or set) should identify the layout and arrangements for traffic signals and controlled crossing facilities. The detail should include:</p>

Drawing Title	Content
Controlled Crossings	<ul style="list-style-type: none"> • the locations and types of signal controllers; • the locations of traffic signal poles and signal heads, pedestrian aspects, push-button units, on-crossing detectors, kerbside detectors, microwave vehicle detectors, detection loops and any other equipment necessary for the operation of the facility or facilities; • all road markings within and around the facility or facilities and the referenced positions of all traffic signs (including bollards) within and around the facility or facilities. Road marking and traffic sign reference details should match those shown on the Traffic Signs and Road Markings drawing(s); • ducting layouts, NAL sockets, footing/foundation details for equipment, access chambers, crossing-specific kerbing arrangements and tactile paving; and • all pedestrian guard railing within and around the facility or facilities. This should match the information shown on the Fencing and Road Restraint Systems drawing(s).
Street Lighting	<p>This drawing (or set) should identify both existing and proposed positions of street lighting columns and illuminated signs and bollards. The drawing (or set) should include a 'Key' which:</p> <ul style="list-style-type: none"> • indicates the different types of street furniture and their specification; • for street lighting columns includes details that identify <ul style="list-style-type: none"> - the height of the column, - column features or type (hinged etc.), - lantern model, and - lamp wattage; • indicates cable positions and features; and • indicates duct positions and features. <p>All proposed streetlights should be numbered 001 upwards and prefixing with a 'P' (e.g., P001, P002 etc.). The same will apply to all proposed illuminated signs and bollards which must be numbered from 001 upwards and prefixed with a 'PS' (e.g., PS001, PS002 etc.). Only equipment that is acceptable to WCC's Street Lighting team should be shown on the drawing (or set). Equipment specifications must therefore be agreed with WCC's Street Lighting team prior to the proposals being submitted for technical review. Lighting levels should be indicated in either lux or Cd/m² depending on the road type. The lighting levels and other considerations on the drawing (or set) should comply with BS5489 and BS EN 13201 (British/European Standards for Road Lighting).</p>

Drawing Title	Content
	All electric connections for street lighting and illuminated signs shall be made via the Distribution Network Operator Mains Cable , with the exception of illuminated equipment situated, for example, on a refuge, splitter island, or roundabout. Such equipment should obtain its electricity supply via a suitably sized private cable embossed with "Warwickshire County Council Street Lighting" from an adjacent streetlight using XLPE/SWA/XLPE cable with copper conductors. All private cable routes and ducts should be shown on the drawing (or set). All proposals relating to electrical terminations, cable runs etc, should comply with the current edition of the IEE Wiring Regulations, WCC's Street Lighting Standard Details and the current working practises of the Distribution Network Operator.
Structures	The content of this drawing (or set) should be agreed in advance with WCC's Technical Review Phase Team.
Longitudinal Sections	This drawing (or set) should show the master alignments in relation to existing ground profiles beneath them. The annotation boxes should identify chainages at 10m intervals with corresponding levels. Horizontal and vertical curvature should also be shown in relation to a chainage range.
Cross Sections	This drawing (or set) should show the proposed ground profile, the existing ground profile and the earthworks outline over the full extent of the works (determined from interfacing) at each 10m interval along each master alignment. The annotation box for each section should identify the master alignment string which is used as datum, the chainage of the section, the offset distance from the datum for each interface string (topographical and design data) and the corresponding level at each interface point.
Landscape and Ecology	This drawing (or set) should identify all planting, seeding, turfing and ecological work, together with any planting maintenance requirements which might best be identified on drawings.
Existing and Propose Service Apparatus (Locations and Types)	This drawing (or set) should show apparatus within the Site Boundary as follows: <ul style="list-style-type: none"> • for existing apparatus - the location and type of all service apparatus (including chambers) as it will be on the starting date for the Construction POCOC (it should therefore consider any advance diversionary works associated with the s.278 Scheme); and • for proposed apparatus - the location and type of all service apparatus (including chambers) to be installed during the contract period for the Construction POCOC. This information should match the information given in Numbered Appendix 1/16.

Drawing Title	Content
Land Dedication	Where applicable, this drawing (or set) should show the land owned by the developer which will be dedicated to Warwickshire County Council (as local highway authority) for highway use under a Section 278 Agreement. The plan area of the land to be dedicated should be shaded pink and edged in red line. The area shaded pink should consider the full requirement for the Section 278 Scheme, including the extent of associated earthworks and visibility splays.
Miscellaneous	Where applicable, this drawing (or set) should identify all works which are not covered by the other drawing titles listed. Items to consider include, but are not limited to: <ul style="list-style-type: none"> • any proposals which would be subject to agreement under Section 50 of the New Roads and Street Works Act 1991; • accommodation works; and • other legal requirements such as those relating to rights of access to land to allow for future maintenance • plans suitable for pre-construction notification to residents, businesses etc (should be size and format easy to read).

All drawings showing the scheme layout, except for the General Arrangement and Land Dedication drawings, should show the following:

- Safety, Health and Environmental (SHE) information in the form of a 'SHE Box' recommended under CDM 2015 (via implied reference to the ACoP under the previous 2007 Regulations); and
- chainages for each of the master alignment strings.

Each master alignment string shall be annotated to show the string label and chainage interval value.

2.4. Construction POCOC Procurement and Construction Phases

- 2.4.1 **Documents:** For the Construction POCOC, documents will be prepared by WCC's Technical Review Phase Team for the purpose of procuring the Section 278 works under an NEC3 Engineering and Construction Contract (ECC) or an NEC3 Term Service Contract (TSC). Where ECC is used, the main Option will be Option A (for priced contracts). The Construction POCOC Works Information will be in accordance with the Specification for Highway Works (SHW). The Construction POCOC, which will supplement WCC's overarching Construction Framework

Contract, will be accompanied with CDM 2015 Pre-construction Information as Annexure 1 to the Construction POCOC. The contents of the documents will be as follows

- Construction POCOC
 - Form of Agreement,
 - Schedule A: Contract Data Specific to the Work Package,
 - Schedule B: Site Information and Works Information Specific to the Work Package,
 - Schedule C: Quotation Information, and
 - Enclosure 1: Documents Relating to the Package Order; and
- Construction POCOC Annexure 1
 - Construction (Design and Management) Regulations 2015 (CDM 2015): Pre-construction Information and Acceptance of the Construction Phase Plan.

2.4.2 The developer's designers shall provide all the information necessary to complete Contract Data Part One, the Site Information, the Numbered Appendices to the SHW (forming a part of the Works Information), any other Works Information and the designer's Risk Assessment for the Pre-construction Information. If the developer's designers are also the Principal Designer under CDM 2015, they shall also provide all the other information necessary to complete the Pre-construction Information.

2.4.3 Where TSC is used, the contract procurement documents will take the form of a Task Order (TO) and associated documents. WCC's Technical Review Phase Team will compile the TO and associated documents, including the CDM 2015 Pre-construction Information and Acceptance of the Construction Phase Plan.

2.4.4 **Procurement phase responsibilities:** During the Construction POCOC procurement phase, the developer's designers shall:

- provide WCC's Technical Review Phase Team with information concerning the design or the Construction POCOC Works Information which will enable WCC's Technical Review Phase Team to respond to tender enquiries; and
- provide WCC's Technical Review Phase Team with revised Construction POCOC Works Information (including revised drawings and revised information for the Numbered Appendices as necessary), to allow WCC's Technical Review Phase Team to review the revisions and, if appropriate, provide tender amendments in the form of 'corrigenda' and/or 'addenda'.

- 2.4.5 **Construction phase responsibilities:** During the Construction POCOC construction phase, the developer's designers shall provide WCC's Technical Review Phase Team with revised Construction POCOC Works Information (including revised drawings and revised information for the Numbered Appendices as necessary), to allow WCC's Construction Phase Team to review the revisions and, if appropriate, issue the information to the NEC3 Project Manager.

DESIGN CERTIFICATE – sample format

We: the designers

Address:

.....

certify that all reasonable professional skill and care has been used in the preparation and checking of the design for

Scheme title

.....

I confirm we have prepared the design shown on the following drawings and documents:

Number / Ref	Revision	Title

continue drawing and document references overleaf as necessary

Signed

Name (Lead designer)

Date

To be completed by Warwickshire County Council

This Certificate is:

- a) received*
- b) received with comments as follows*
- c) returned marked 'comments as follows'*

* delete as appropriate

Signed

Name (Technical Review Lead)

Date

Number / Ref	Revision	Title

Local Bus Service Provision and Supporting Bus and Highway Infrastructure – Warwickshire County Council

1 Introduction

Warwickshire County Council (WCC) acknowledge the role local bus services and supporting bus and highway infrastructure have in delivering connectivity between new development, urban centres, major employment sites and other prominent generators of local trips. The position of the County Council is aligned with national and local policy as stated below:

- The [National Planning Policy Framework](#) (NPPF) steers development towards promoting its connectivity with sustainable transport to facilitate sustainable development and contribute towards wider sustainability.
- The NPPF also promotes the integration of planning and sustainable transport to provide attractive alternatives to travelling by car to access employment, education, health facilities, leisure, amenities and health objectives - aimed at providing people with a real choice about how they travel.
- The County Council requests provision and/or improvements to local bus services in association with new development in alignment with the policies established in the Warwickshire [Local Transport Plan 2011-26](#), in respect to promoting public transport connectivity between new development and local amenities; and
- The Warwickshire Local Transport Plan 2011-26 also specifies that all occupiers within a new development should be no further than 400 metres away from the nearest bus stop, in line with policy stated in the in respect to connectivity between new development and local bus services.

Developer contributions can only be sought if they meet the 3 legal tests for planning obligations which are as follows:

- a) Necessary to make the development acceptable in planning terms.
- b) Directly related to the development.
- c) Fairly and reasonably related in scale and kind to the development.

It will be the Local Planning Authority who decides whether the request is included in the commitments placed on the developer.

2 Common Developer Contribution Requirements

2.1 Local Bus Service Provision

For larger developments, i.e., those with more than 20 employees and/or significant visitor numbers, or a residential development of 25 or more dwellings, the County Council will consider requesting for the developer to provide a contribution covering any of the following:

- Cost for extending the timetable (i.e., providing additional bus journeys) and/or route of an existing local service to serve the new employment and/or visitor amenity, to cater for such visitors and/or shift change patterns;
- Diversion of one, or a combination of, existing local bus services to penetrate, or be adjacent to, the residential development, this will include enhancing the frequency and providing additional journeys; or
- The cost of a new bespoke bus service specifically serving the new development and providing connectivity with nearby residential areas, town centres and public transport interchanges.

The developer is asked to provide a contribution covering the cost of providing the designated local bus service provision over a period of 5 years.

Example of Developer Contribution Payment Phases in 2018 (costs could change over time):

Year 1 - £130,000
Year 2 - £110,000
Year 3 - £90,000
Year 4 - £70,000
Year 5 - £50,000
Total - £450,000

How have the costs figures been derived?

The cost of procuring the operation of one additional bus, with driver, during the period 0700-1900 on Monday to Saturday is approximately £150,000 per annum. It would be expected that revenue would be collected from passengers using the service operated by this bus, which would be expected to grow gradually as the development is completed and travel habits are established. In this typical example, starting revenue growth has been assumed at £20,000 pa., growing by £20,000pa, which would mirror experience. For large, or remote, developments, an evening and Sunday hourly service provision would be required and likely cost about an additional £65,000pa.

Additional Information on Rationale and Justification:

It would be expected that a major residential or commercial development would require a bus service running at least every 30 minutes during the main daytime period, in order to comply with the National Planning Policy framework promoting the integration of planning and sustainable transport in order to provide attractive alternatives to travelling by car to access employment, education, health facilities, leisure, amenities and health objectives - aimed at providing people with a real choice about how they travel.

Depending on the location, the provision of such service will be achieved by extending or diverting an existing bus service, or in the more extreme cases, a completely new service. Invariably the extension or diversion of an existing service will require an additional bus to be placed in service to serve the Development and maintain existing frequency of service. If a completely new service is required, or any extension is lengthy, then it is likely that two additional vehicles would be required to reach major shopping, employment and transport interchange areas, with costs, but not necessarily revenue, doubled accordingly.

The County Council places great emphasis on ensuring during the planning stage the local bus service provision has every chance of achieving success. This is in terms of attracting a sufficient level of patronage ensuring the provision will not require subsidy from the County Council to continue operation after expiry of the developer contribution lifespan.

It is possible for the developer to negotiate directly with a local bus operator to operate the bus service compliant with the requirements. However, in this instance, the developer will be responsible for the compliant provision of this service for the length of the agreement, with the bus operator as their sub-contractor. The developer will be responsible for providing WCC with loading and revenue data for the service to facilitate future decisions once the Section 106 Agreement expires.

2.2 Supporting Highway Infrastructure within the Proposed New Development

The County Council and local bus operators agree it is fundamental to ensure the primary spine road penetrating a new development is planned and constructed with the local bus service mind, i.e., its layout enables buses to penetrate the new development site effectively, moving easily on bus friendly roads in both directions including access and egress.

In respect to separate significant developments which are situated adjacent to one another, it is fundamental the main spine road for each development connect with one another, in order to support effective bus penetration and connectivity.

The County Council is minded it is fundamental that internal footways within the new development provide effective connectivity between properties and the bus stops situated on the main spine road.

Where roads are identified as bus routes and bus stops are to be placed by the developer, these should be at locations within the development that will be convenient for passengers (circa 400m walking distance from each house/unit) considering the bus route and the previous and following stops away from the development, or as otherwise agreed with the Highway Authority.

2.3 Supporting Bus Infrastructure

Developer contributions are usually sought in respect of securing improvements to bus infrastructure in association with any development comprising 50 or more dwellings or any employment-based amenity, where a local bus service is in operation within close proximity to the new development.

Bus infrastructure is secured and delivered by means of the following alternative options: The appropriate agreement will be agreed at pre-application meetings.

- Section 38 Agreement – The developer manages the delivery of the works, e.g., provision of bus stops on the main spine road within a new development – commuted sums would need to be collected.
- Section 278 Agreement – The County Council or the developer manages delivery of works, e.g., provision or enhancement of nearest existing bus stops serving the new development, as part of a wider package of highway works aimed at connecting the new development to the local highway network, commuted sums would need to be collected: or
- Section 106 Agreement – The County Council manages delivery of necessary bus stop provision or enhancement work on the local highway network in support of the new development after construction – commuted sums would need to be collected.

The improvements to bus infrastructure could comprise any of the following:

a) Provision and/or Enhancement of Bus Stops:

It is usual for bus stops provided or enhanced in association with new development to consist of the following:

- Provision of a bus boarding / alighting area including an area of hard-standing;

- Provision of a bus stop pole – to be a Swan Neck specification if the development is on an existing Quality Bus Corridor (QBC) route;
- Provision of bus stop clearway box markings on the carriageway; and
- Provision of a bus shelter.

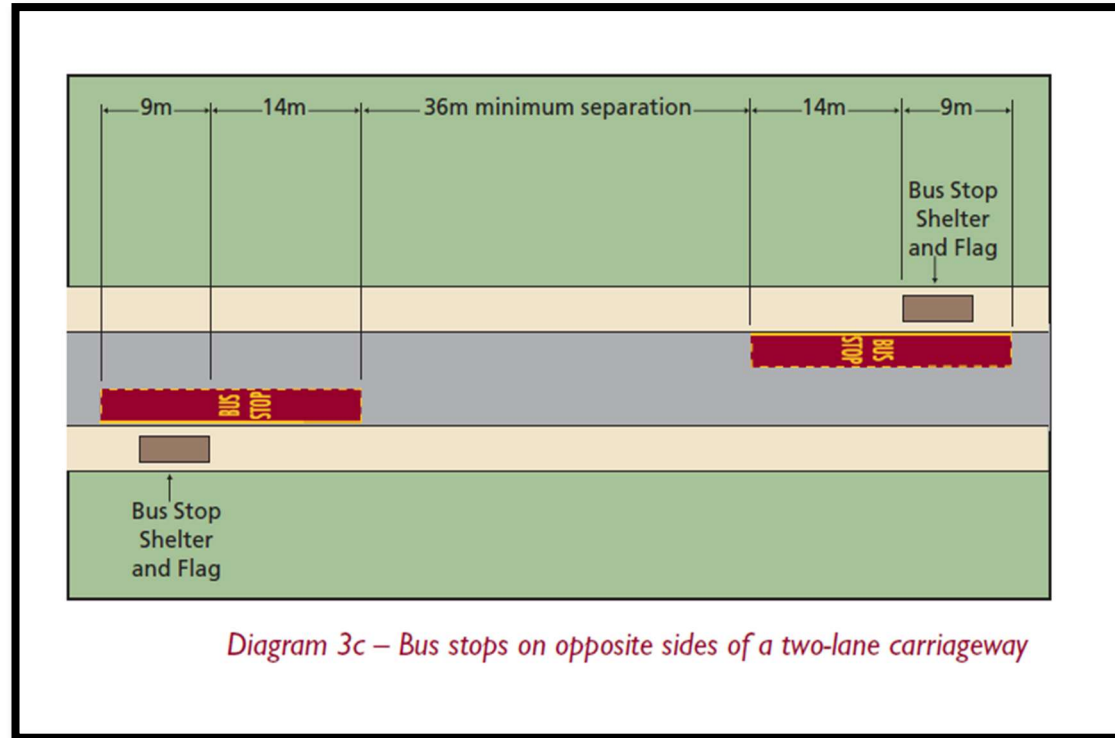
b) Provision of Bus Shelters:

The County Council will seek for bus shelters to be provided in association with new development when aligned to the following circumstances:

- It considers a new development to be of a sufficient size to be classified as a major generator of trips, and as such, encouraging use of local bus service is important to support modal shift, e.g., a residential development of 75 dwellings or more; and/or
- The new development is situated near a mass of existing properties also served by the same local bus service, in which requests for a bus shelter have been received, sometimes on a political basis.

c) Paired Bus Stop Arrangements (Section 38 Arrangements):

It is generally not advisable to position bus stops opposite each other on a main spine road (two-way carriageway) within a new development, as safety and visibility would be compromised. It is suggested that the paired bus stops be positioned with a minimum separation of 36 metres instigated, i.e., buses stop 'tail to tail' and move off away from each other as per the diagram below:



Note: Diagram taken from the Bus Stop Design Guide by the Roads Service, Transportation Unit, Department for Infrastructure (Northern Ireland), October 2005

- d) **Bus Shelter Maintenance:**
When two or more bus shelters are required in association with a new development, the developer is requested to provide a commuted sum to cover the cost of maintaining the bus shelters over a period of 5 years (£1,000 per annum per bus shelter), and therefore, the sum of £5,000 per bus shelter is stipulated by the County Council.
- e) **Bus Stop Lay-bys:**
Where new bus stops associated with new development are to be provided on busy roads, the County Council often requests for a bus stop layby to be provided to enable buses to pick up / set down passengers without obstructing traffic flow. The length of a typical standard bus stop lay-by is approximately 28 metres taper to taper.

f) A Super Stop:

In respect to a significant employment-based amenity, if the major development has a primary entrance point to its main building adjacent to a main carriageway access, then the County Council may request for a Super-Stop to be provided in the vicinity of the entrance point, i.e., resembling a bus interchange point with a large, elongated waiting facility (i.e., a 5-bay bus shelter) being its main feature.

g) Bus Priority:

In terms of major residential and/or significant employment-based amenity, the County Council may consider opportunities to deliver bus priority at key junctions in an urban centre on a bus route serving a new development. This would support bus punctuality, schedule adherence and improve customer satisfaction. Bus priority may also be provided at access points for bus and/or rail stations served by the local bus service calling at the new development.

h) Real Time Information:

- The provision of real time information displays may be requested at bus stops within the main spine road of a significant employment-based amenity. Such provision will act as an extension of the existing RTI scheme in Coventry to simplify the organisational and technical arrangements. The developer would be asked to include the RTI provision in Section 38/278 Agreement and lead delivery. The developer would need to work with WCC Traffic Control and Information Systems Team, Travel for West Midlands and VIX (RTI supplier for WCC RTI Scheme) to deliver the initiative.
- A commuted sum would be required to cover the maintenance of the RTI displays and supporting infrastructure at a cost per display of £800 per annum over 5 years, i.e., £4,000 per RTI display (2018 prices and these costs may change over time).
- A further commuted sum will be required to contribute towards replace the RTI displays after the expiry of their 15 years lifespan at a cost of £8,000 per RTI display (2018 prices and these costs may change over time). This is a similar arrangement to the Section 106 Agreement maintenance measures put in place for traffic signals.
- The maintenance sums to be included in Section 106 Agreement and the County Council would not assume responsibility for the maintenance of the RTI infrastructure until the Highway was adopted.

i) Park and Ride:

Some form of either conventional or virtual Park and Ride in the vicinity of a significant employment-based amenity may be considered by the County Council, in response to overall development in the area. Such a facility would also be facilitated with supporting bus priority measures at key junctions on the local highway network. The developer would be

asked to make a significant contribution towards the operation of the Park and Ride bus service and the construction, operation and management of the site.

j) Bespoke Measures (Solar Panels and Green Roofs):

- WCC officers will consider the provision of potential provision of solar panels and green roofs on bus shelters to be provided by developers in liaison with WCC County Highways.
- WCC County Highways has initially indicated that such solar-panelled provision could be acceptable to power only a very small light to run in the shelter overnight. The location would also have to be considered, e.g., how much shade would the roof get etc.
- Further intelligence will be sought regarding the life expectancy of solar batteries/led etc for bus shelters and maintenance costs before WCC officers consider requesting developers to provide provision of solar powered lighting infrastructure in the future.
- WCC officers agree that solar-powered provision would not be appropriate for larger infrastructure items such as real time information displays due to common operational difficulties, particularly during winter months.
- WCC officers will also obtain further intelligence on provision of solar-panelled green roofs in terms of specification and guidance on how to maintain them.
- WCC County Highways would need to review and approve the maintenance contributions requested for such bespoke provision, as such specifications are not currently dealt with by County Highways.
- WCC County Highways maintenance regime is very simple, i.e., monthly clean of glass and floor, and annual electrical test for those with power supplies. Either of the these would possibly require more cyclical maintenance, and thus, further intelligence will be sought on this matter to guide future decision making.

3 Monitoring Delivery of New Stops/Services Secured by Section 106 Agreement

3.1 Local Bus Services

The WCC Passenger Transport Team monitors the delivery, operation and performance of bus service enhancements or provision secured through a Section 106 Agreement, when operated under contract to the County Council.

The developer is responsible for monitoring the delivery, operation and performance of bus service enhancements or provision, in which the developer has procured the enhancement and discharged the funding directly to the bus operator as their sub-contractor.

3.2 Bus Stop Infrastructure

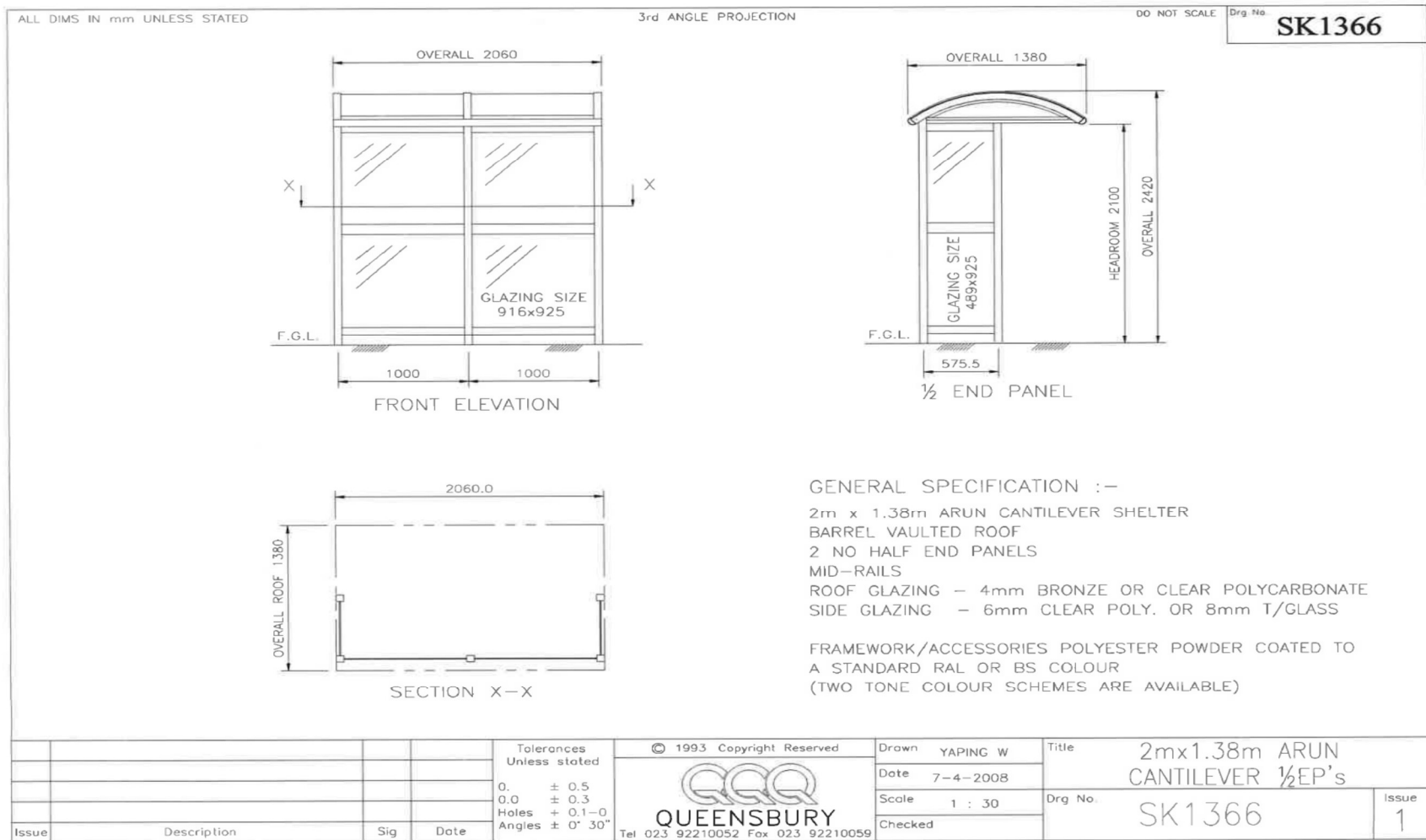
The WCC Transport Planning Team manages the delivery of bus stop provision or improvements secured through a Section 106 Agreement, including overseeing the process of getting the funding added to the WCC Capital Programme and commissioning WCC Design Services to design and deliver the necessary works.

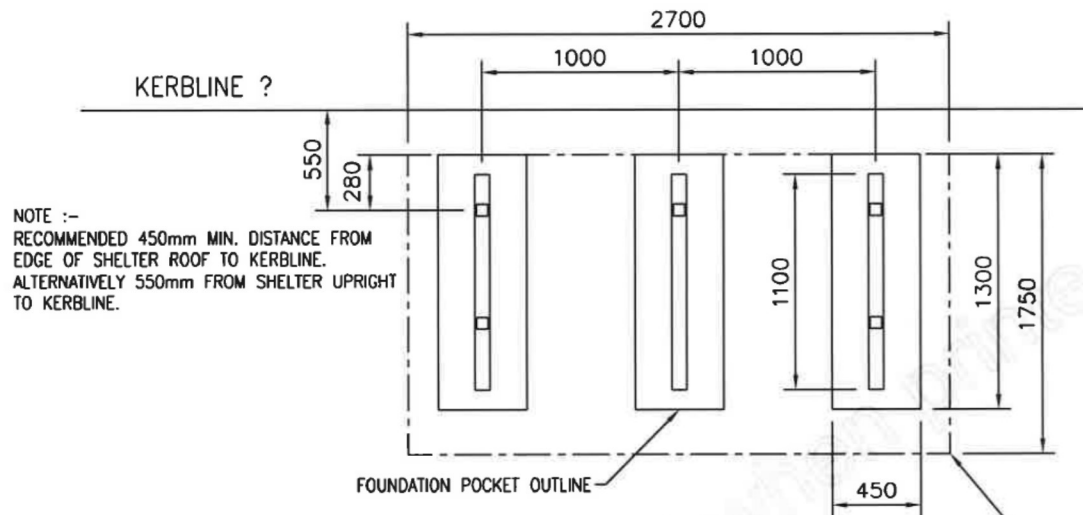
Appendix A: Standard Detail for Bus Shelters

The developer, as part of a Section 38 or Section 278 Agreement highway works, or alternatively bus shelter suppliers when directed by the County Council as part of Section 278 or Section 106 Agreement highway works, are asked to provide the following infrastructure depending on the location:

- A 2 or 3 bay cantilever bus shelter with half end panels on either side and a barrel roof;
- Bus shelter is to be provided with a full-length perch seat;
- A double royal size display case to be attached to interior of the bus shelter (to enable bus information to be placed on display within the bus shelter);
- The colour of the bus shelter, roof, perch seat, display case and the bus stop pole will be black (RAL number Black RAL 9005);
- The bus shelter is to be erected upon an adequately sized concrete base; and
- On occasions, the bus shelter supplier is also asked to provide a standard or black swan neck specification bus stop pole RAL number Black RAL 9005.

Example Dimensions and Measurements of a 2 bay Cantilever Bus Shelter

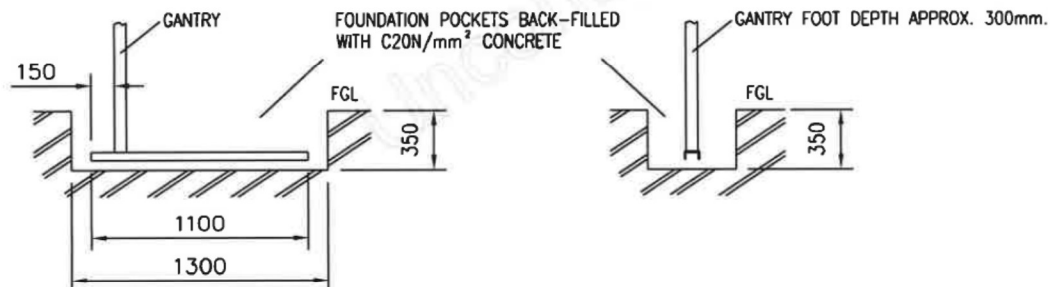




CHECK ORIENTATION OF SHELTER

NOTE :-
WHERE A HARDSTANDING PAD IS REQUIRED THE
PAD SHOULD BE APPROX. 2700 x 1750mm.
FOUNDATION POCKETS CAN BE REDUCED SLIGHTLY
IN SIZE IF PAD IS TO BE CONCRETE TO ASSIST
IN SHUTTERING OF HOLES.

SECTION SHOWING FOUNDATION DETAIL

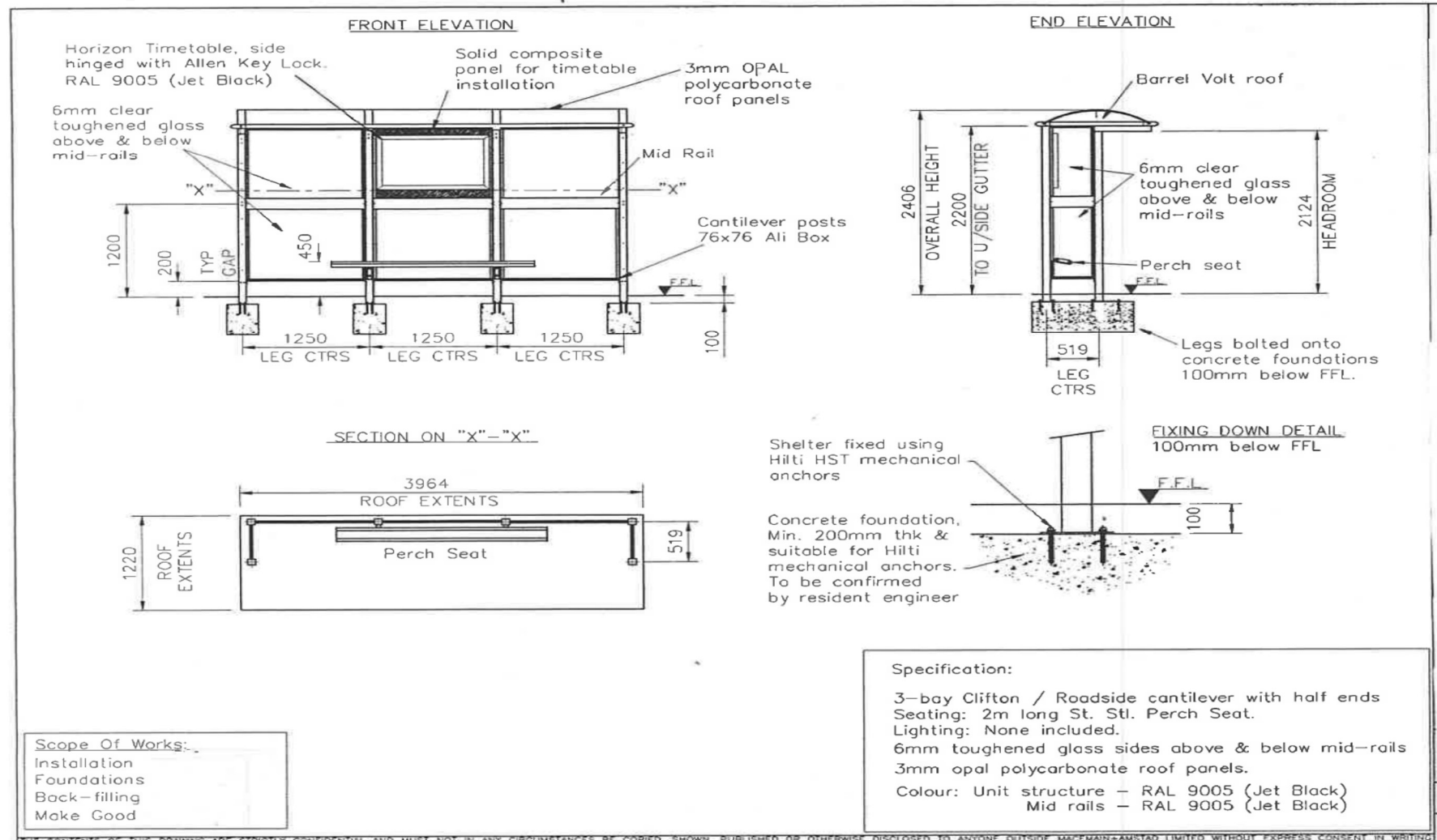



NOTE :- FOUNDATION POCKETS TO DIMENSIONS SHOWN
BACK-FILLED WITH C20N/mm² CONCRETE
TOP OF FOUNDATIONS TO BE SET LEVEL
TO FINISHED GROUND LEVEL OR TO ALLOW
FOR FINAL REINSTATEMENT.

NOTE :- 1.38m REFERS TO APPROX. O/A ROOF WIDTH.

				Tolerances Unless stated	© 1996 Copyright Reserved	Drawn W.H.D.	Title FOUNDATION PLAN		
				Std Tol ± 0.5	 QUEENSBURY	Date 21-5-2002	2m x 1.38m ARUN CANTILEVER		
				Holes + 0.1-0		Scale N.T.S.	Org No.	SK 923	Issue 1
				Angles ± 0°30'		Checked			
Issue	Description	Sig	Date			Tel 02392 210052 Fax 02392 210059			

Example Dimensions and Measurements of a 3 bay Cantilever Bus Shelter

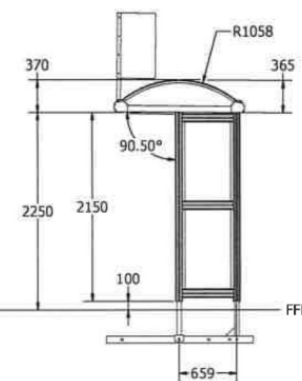
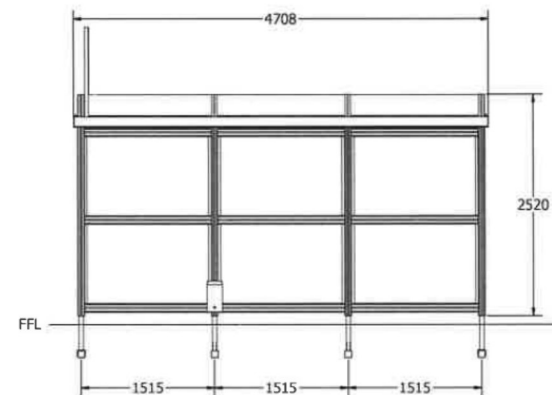
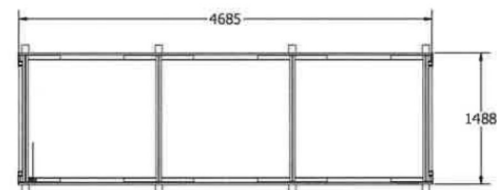
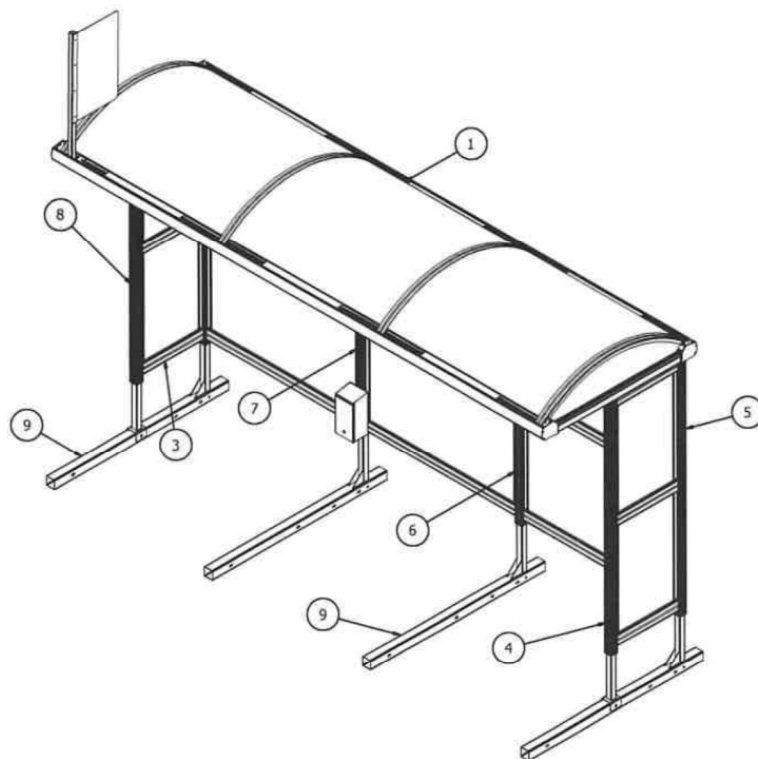
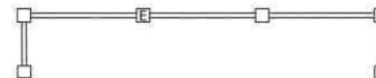


 BUS SHELTERS LTD we cover your world	DESIGN BY Lee Jones	DRAWN/DETAILED BY Lee Jones	DRAWING NUMBER 224808	REVISION P1
	Dyffryn Business Park, Llandow, Glamorgan, CF71 7PY			
	www.shelters.co.uk t 01446 795 444 f 01446 793 344			

----- PARTS LIST -----

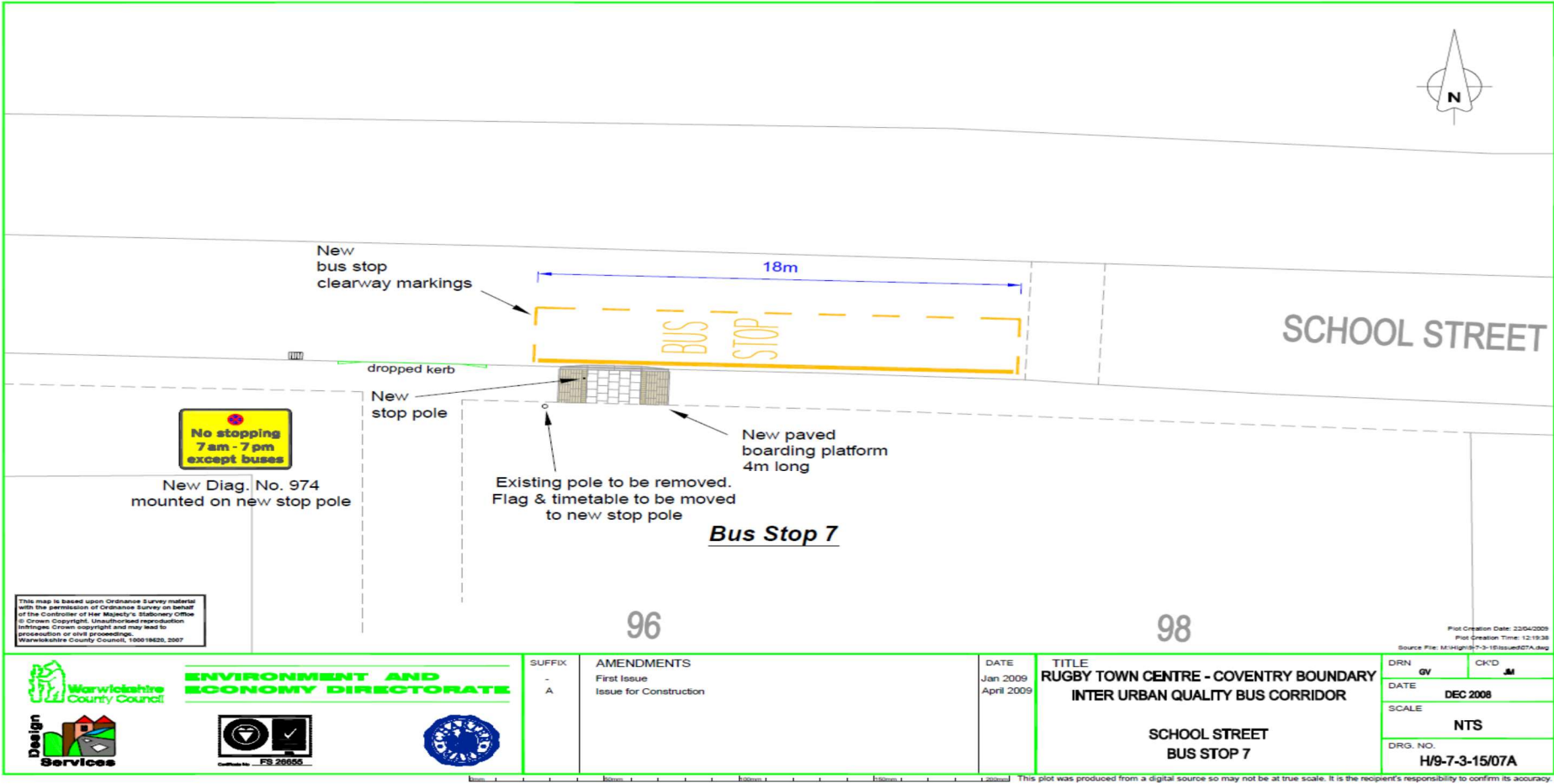
ITEM	DRAWING	REV	QTY	TITLE	DESCRIPTION	MATERIAL	FINISH	MASS
1	224847	P2	1	3 Bay Cantilever Roof	General Assembly of Parts	As Parts	As Parts	152.66 kg
2	224850	P4	3	Glazing Assembly - Full Bay Width	General Assembly of Parts	As Parts	As Parts	38.21 kg
3	224852	P5	2	Glazing Assembly - Cantilever 1/2 Ends	Assembly of APts	As Parts	As Parts	17.28 kg
4	224854	P1	2	Dead End Column Assembly	General Assembly of Parts	As Parts	As Parts	7.22 kg
5	224855	P1	2	Corner Column Assembly	General Assembly of Parts	As Parts	As Parts	7.54 kg
6	224856	P1	1	Centre Column Assembly	General Assembly of Parts	As Parts	As Parts	7.54 kg
7	224857	P2	1	Electric Centre Column Assembly	General Assembly of Parts	As Parts	As Parts	12.49 kg
8	224906	P3	2	Adjustable Spigot Leg Assembly	Welded Sub Assy	As Parts	Powder Coat	9.21 kg
9	224909	P4	4	Cantilever Adjustable Spigot	Welded sub assy.	As Parts	Powder Coat	20.61 kg

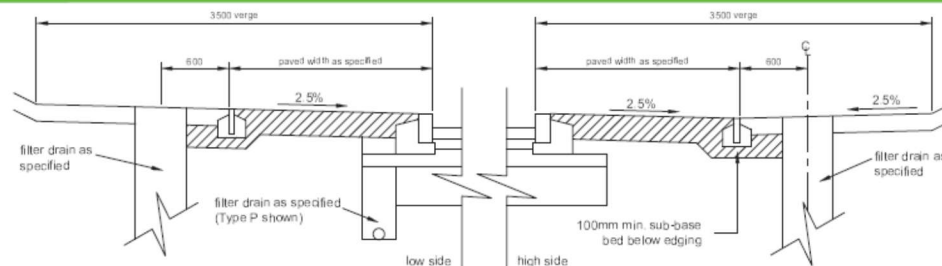
Shelter Configuration



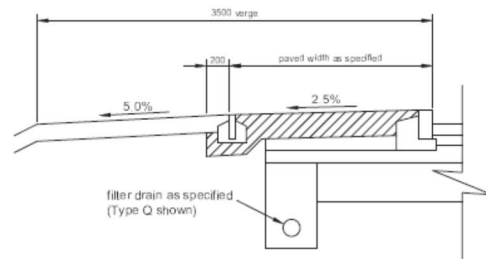
TITLE 3 Bay Cantilever, 1/2 Ends				PROJECT TRANSIT 2			
DESCRIPTION General Assembly of Parts				FINISH As Parts		MATERIAL As Parts	
CREATION DATE 02/11/2007	CHECKED BY	DESIGN BY Lee Jones	DRAWN/DETAILED BY Lee Jones	SHEET 1/1	MM	A3	DRAWING NUMBER 224808
						REVISION P1	

Appendix B: Standard Detail for Bus Stops

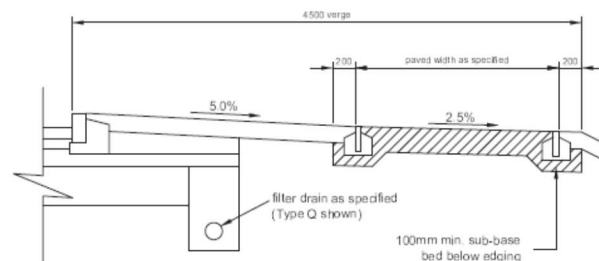




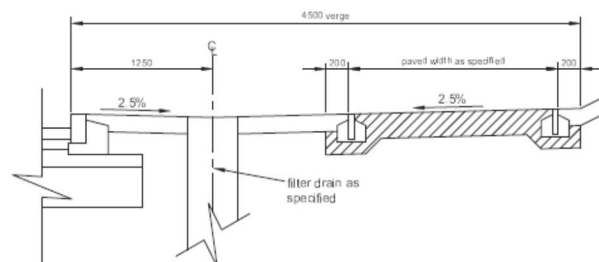
PAVED AREA ADJACENT TO CARRIAGEWAY IN CUTTING



PAVED AREA ADJACENT TO CARRIAGEWAY ON EMBANKMENT



PAVED AREA AT BACK OF VERGE ON EMBANKMENT



PAVED AREA AT BACK OF VERGE IN CUTTING

KEY



CONSTRUCTION FOR BITUMINOUS FOOTWAYS, CYCLEWAYS AND COMBINED FOOTWAYS/CYCLEWAYS

Construction Type	Thickness	Specification	Notes
Type 1: (footways only)	20mm	Surface Course: HRA 55/6F surf 100/150 (HRA 45/6F 160/220 if hand laid)	To be used on untrafficked footways only, where vehicle loading is not possible.
	50mm	Binder Course: AC20 dense bin 100/150 (160/220 binder may be used in winter when hand laying)	
	100mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803, Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	
Type 2: (footways and cycleways)	20mm	Surface Course: HRA 55/6F surf 100/150 (HRA 45/6F 160/220 if hand laid)	To be used on footways and cycleways trafficked only by light vehicles and where there is no risk of heavy vehicle loading.
	50mm	Binder Course: AC20 dense bin 100/150 (160/220 binder may be used in winter when hand laying)	
	150mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803, Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	
Type 3: (footways and cycleways)	20mm	Surface Course: HRA 55/6F surf 100/150 (HRA 45/6F 160/220 if hand laid)	To be used on footways and cycleways occasionally trafficked by heavy vehicles.
	50mm	Binder Course: AC20 dense bin 100/150 (160/220 binder may be used in winter when hand laying)	
	225mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803, Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	
Type 4: (footways and cycleways)	25mm	Surface Course: HRA 55/6F surf 100/150 (HRA 45/6F 160/220 if hand laid)	To be used on footways and cycleways frequently trafficked by heavy vehicles.
	90mm	Base: AC32 dense base 100/150 (160/220 base may be used in winter when hand laying)	
	365mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803, Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	

NOTES

- The material specifications for 55/6F surf., 45/6F surf. and 45/10F surf. are given in W.C.C. County Road Construction Strategy. The material specification for 55/10F surf. is given in PD 6691, Table C2A.
- Footways and cycleways crossing accesses shall be constructed in accordance with the relevant access construction requirements of B 704.2.
- Machine laying of bituminous layers is the default option. Except for circumstances where it is not possible, cycleways and combined footways/cycleways shall be machine laid. Permission to hand lay must be sought from the Overseeing Organisation.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED. DO NOT SCALE FROM THIS DRAWING.



HIGHWAY
CONSTRUCTION
DETAILS (HCD-700)

SECTION
EDGE OF PAVEMENT DETAILS

TITLE
FOOTWAY & CYCLEWAY CONSTRUCTION
(BITUMINOUS)

DRAWN
RJP

CHECKED
NH

APPROVED
AC

ISSUE
6

PREVIOUS ISSUES
1 FEB 2005
2 MAY 2010
3 OCT 2010
4 FEB 2013

5 APR 2016

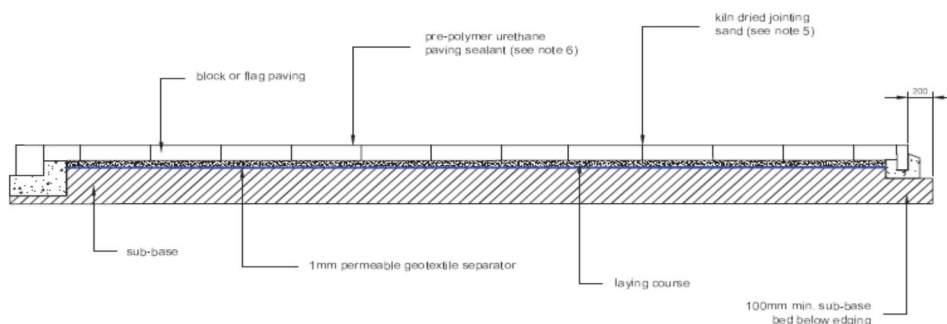
DRAWING NUMBER
B 704.1

SHEET SIZE
A3

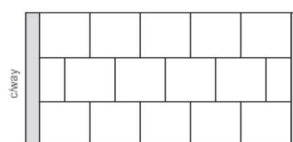
ISSUE DATE
FEB 2017

0mm 50mm 100mm 150mm 200mm

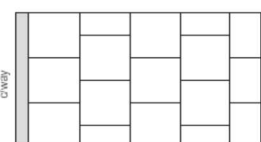
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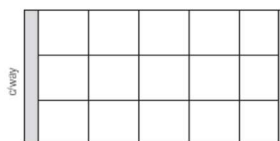
TYPICAL SECTION



Transverse Stretcher Bond



Longitudinal Stretcher Bond



Stack Bond

FLAG PAVING PATTERNS

CONSTRUCTION FOR PAVED FOOTWAYS, CYCLEWAYS AND COMBINED FOOTWAYS/CYCLEWAYS

Construction Type	Thickness	Specification	Notes
Type A: (footways only)	Varies	Block or flag pavers as specified on scheme specific drawings	To be used on untrafficked footways only, where vehicle loading is not possible.
	30mm	Laying Course: Sand (kiln dried and compacted)	
	100mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803. Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	
Type B: (footways and cycleways)	Varies	Block or flag pavers as specified on scheme specific drawings	To be used on footways and cycleways trafficked very occasionally by light vehicles and where there is no risk of heavy vehicle loading.
	30mm	Laying Course: Rigid mortar to BS 7533	
	200mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803. Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	
Type C: (footways and cycleways)	Varies	Block or flag pavers as specified on scheme specific drawings	To be used on footways and cycleways trafficked very occasionally by heavy vehicles.
	30mm	Laying Course: Rigid mortar to BS 7533	
	70mm	Binder Course: AC20 dense bin 100/150 (160/220 binder may be used in winter when hand laying)	
	150mm	Sub-base: Type 1 Unbound Mixtures to S.H.W. Clause 803. Type 2 Unbound Mixtures (if they contain at least 80% bituminous planings) to S.H.W. Clause 804 or Type 3 (open graded) Unbound Mixtures to S.H.W. Clause 805	

NOTES

- For kerbs and edgings details, refer to WCC HCD B 702.1.
- For footway/cycleway construction drainage details, refer to WCC HCD B 704.1.
- For block paving laying patterns, refer to WCC HCD B 704.3
- For acceptable flag paving sizes, refer to British Standard sizes detailed in BS 7263-1 and the national annexe of BS EN1339:2003.
- Joints shall be filled in dry conditions and when paving is completely dry to within 2mm of the paving surface.
- The pre-polymer urethane paving sealant shall be a jointing sand stabiliser that is suitable for the installed paving units and be applied as per the manufacturers specification. The proposed sealant must be approved by the Overseeing Organisation prior to its application.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED. DO NOT SCALE FROM THIS DRAWING.



HIGHWAY
CONSTRUCTION
DETAILS (HCD-700)

SECTION
EDGE OF PAVEMENT DETAILS

TITLE
FOOTWAY & CYCLEWAY CONSTRUCTION
(BLOCK & FLAG PAVING)

DRAWN
RJP

CHECKED
NH

APPROVED
AC

ISSUE
2

PREVIOUS ISSUES
1 APR 2016

DRAWING NUMBER
B 704.5

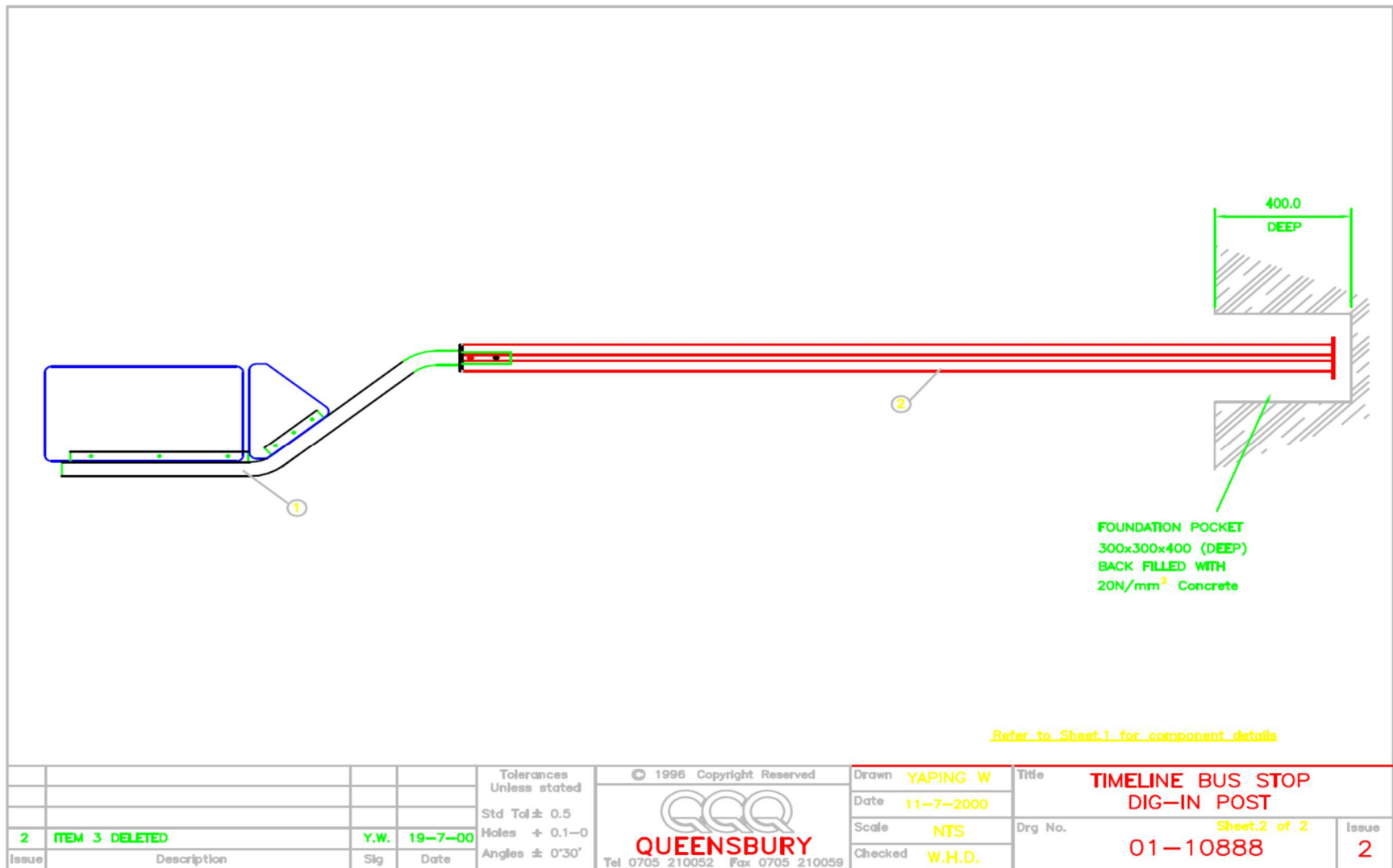
SHEET SIZE
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ISSUE DATE
FEB 2017



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Departures from Standards

1. Introduction

1.1. Purpose of This Document

This procedure has been written for assessing Departures from Standards and for designers preparing submissions. It sets out the process of recording the judgements of the professionals involved in the delivery of the scheme. This procedure may be applied to schemes on non-trunk roads within Warwickshire. For schemes that interface with the trunk road network, the National Highways' processes should be used.

Within this procedure, the term "Designer" refers to Warwickshire County Council's design team or an external Design Organisation. "Highway Authority" can refer to Warwickshire County Council or other local authority clients. Details of the Designer and Highway Authority shall be recorded on the Departure from Standard form (QF045).

1.2. The Benefits of Departures

Departures from standard are often necessary to deliver lean designs that lead to potential cost savings or other forms of "added value", or to resolve issues where there are physical constraints such as available highway land. Departures from standard can enable designs to fit the overarching project objectives, and to take advantage of new innovative techniques.

Despite the range of flexibility with standards that exists with respect to virtually all the significant road design features, there are situations in which the application of even the minimum criteria (including any allowable Relaxations) would result in safety, technical, programme, financial or environmental negative impacts greater than the benefits that would be obtained by incorporating the proposed Departure.

In other circumstances, innovation, cost or performance considerations may result in a Departure being proposed, providing it takes account of durability/maintenance and network resilience considerations and is consistent with current legislation, policy and the long-term route management strategy.

If the proposed design contradicts or is below the Mandatory Requirements of the current standards, or permitted as a Relaxation, then it is a Departure.

When deciding if the Departures process needs to be applied, the designer should compare the design against the Declared Standard, which may not always be the DMRB.

Design standards are developed with future maintenance and whole life costs in mind. Such issues must be considered in any non-standard situation and without effective safeguards there is a possibility that future problems may be built into designs.

Where departures from standard are accepted and implemented, the demonstration of a suitable process and provision of an audit trail is of high importance in defending the decisions taken.

1.3. Legal Position

It is only trunk roads that are required to be designed according to the Design Manual for Roads and Bridges. For all other roads the decisions on the choice of standards and their incorporation into designs remain in the hands of local highway authorities. As the DMRB sets out the current best practice for highway design, it shall be used for the design of highway improvement schemes within Warwickshire.

In the case of risks related to construction of the works or future roadworker activity, the duty under Health and Safety legislation is to reduce risks so that they are “As Low As Reasonably Practicable”. This is reinforced by the CDM Regulations.

Following an accident investigation, the discovery of the implementation of a design that was not in accordance with a recognised standard may be cited as a material consideration in any accusation of a failure in a duty of care. In these circumstances both the Design Organisation and the highway authority would need to be able to demonstrate that they exercised a reasonable level of professional skill and care in the submission and determination of a Departure. The risk of a highway authority being held liable in law is potentially lessened if any Departures from its standards could be shown, via records, to have been adequately considered. The completion of QF045 and an accompanying risk assessment using QF181 will make this process easier and less expensive.

All persons involved in processing a Departure, whether preparing, submitting or determining an application, have a duty and responsibility to apply reasonable professional skill and care to that task.

Other Documents

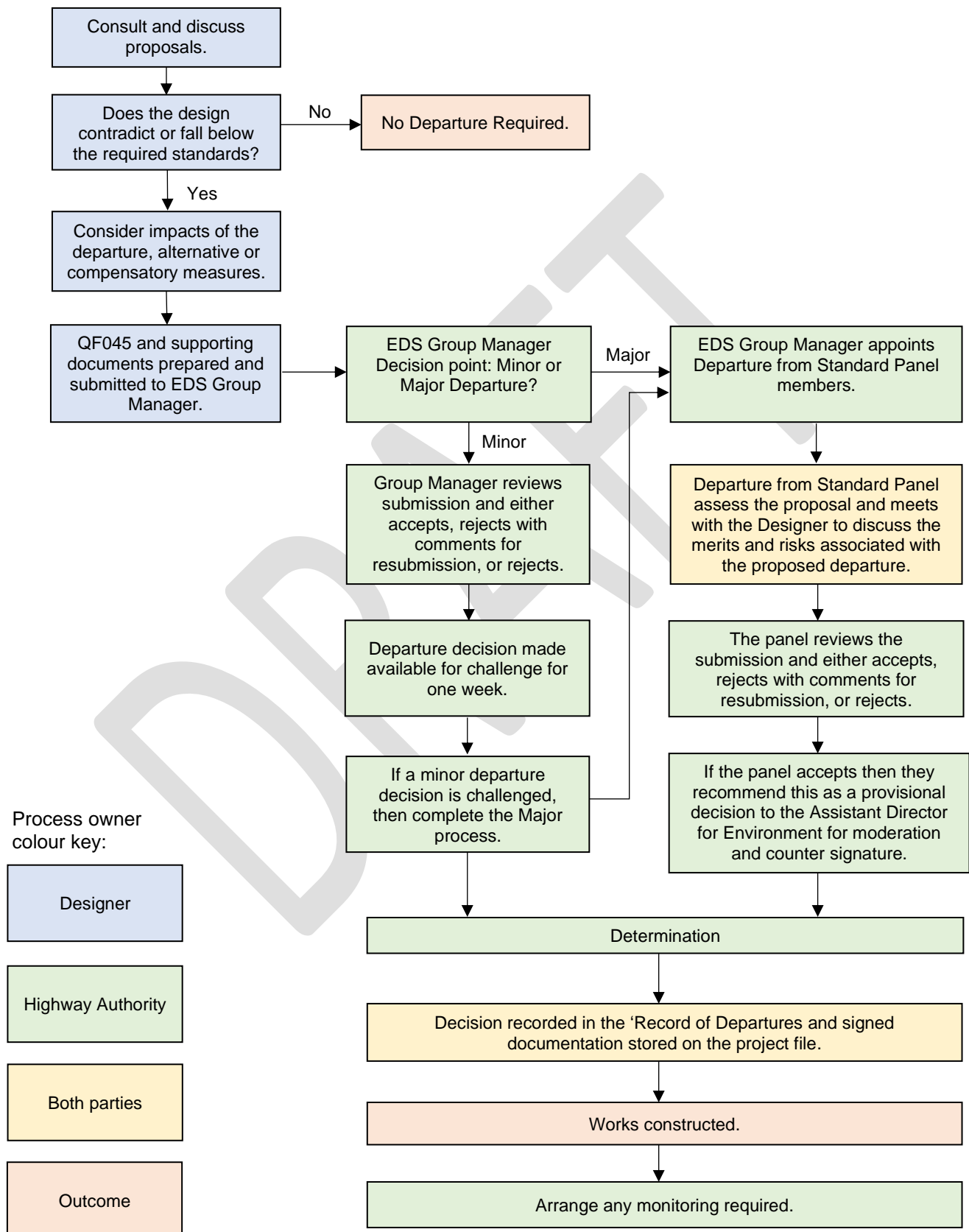
The principle of the departure from standards process is set out in DMRB GG101, and designers should familiarise themselves with this document in conjunction with the procedure set out below.

For highway structures, DMRB CG300 provides additional advice on Departures and technical approval.

2. The Procedure

2.1. Principles

An overview of the Departure from Standard procedure is given below.



2.2. Roles and Responsibilities: Design Organisation

The primary responsibility for the assessment of a proposed Departure lies with the Designer. Design Organisations not appointed by the highway authority (e.g., on developer schemes) should satisfy themselves and the highway authority that they are competent to carry out highway design work of the type submitted and have the appropriate professional indemnity insurance.

All DMRB applicable designs shall be in accordance with the DMRB and/or any alternative WCC Local Highway Authority specific requirements. Applicable design standards must be set out in the Quality Plan as the Declared Standards. The Designer is responsible for the identification of **all** Departures from **all** Declared Standards including **all** aspects not covered by Standards involved in a particular design. Where the process of identification of standards that comprise the Declared Standards has not taken place (by the highway authority), the Designer should at the outset of the design seek clarification from the highway authority of the appropriate standards to use. Departure applications shall be submitted to the Highway Authority using template QF045, or suitable equivalent.

Whilst Designers should be mindful of the design standards it is important that they remain open to the possibility of adding value by proposing designs that may be variants from those presented in standards.

The Designer should assess the risks, negative impacts and benefits involved with a proposed Departure. This assessment process should be recorded on a risk assessment. For schemes where WCC are the designer, QF181 may be used. The assessment should consider safety, technical issues, programme, economic and environmental issues as well as durability, routine and major maintenance requirements, disruption during the works and network resilience. The needs of any group that may be affected should also be considered, for example, residents, businesses, non- motorised users and motorised users.

As part of the assessment of a proposed Departure, Designers should carry out all necessary consultations as advised by the highway authority. All such consultations should be summarised on QF045.

The Designer should be able to confirm that the residual risks are acceptably low and that the negative impacts are outweighed by the benefits associated with the Departure and the benefits associated with the scheme as a whole.

The Designer should compare the proposed Departure with a design fully in accordance with standards. Where a design fully in accordance with standards is clearly not a feasible option, such a design need not necessarily be formally prepared to a detailed level. The level of preparation of a compliant design should be limited to the point that a broad understanding of the likely consequences of a compliant design can be gained

The Designer should consider alternatives and reasons for promoting the proposed option rather than an alternative.

The Designer is responsible for the accuracy, comprehensiveness and validity of the statements made regarding their proposals. By submitting an application for a Departure from Standard, the Designer is indicating that they have used reasonable professional skill and care.

The Designer shall retain responsibility for the quality of design incorporating the Departure, including user safety, buildability, maintainability, compliance with the CDM Regulations and environmental legislation.

2.3. Roles and Responsibilities: Highways Authority

The role of the highway authority is to determine if a Departure, based on the details submitted by the Designer with the QF045, represents a convincing argument that may be brought forward at any future date to assist in explaining the actions taken. The highway authority should be convinced that the case shows that the benefits outweigh any disbenefits. Where impacts cannot be easily monetarised, this requires professional judgement.

In reflecting upon a submission, the highway authority should recognise that firm evidence may not always be available to the Designer, particularly for innovative designs. The absence of firm evidence is not sufficient reason on its own to reject a design concept but may be reason enough to justify a higher level of scrutiny and consultation.

Where a Departure application is found to be incomplete or inaccurate, inadequately prepared or with insufficient justification, it should be rejected and returned to the Designer for revision along with the reasons for rejection. An indication as to whether a Departure may be approvable once additional justification is available should also be given.

Warwickshire County Council Engineering Design Services (WCC EDS) should not compile part or all of a Departure application on behalf of a Designer unless where the design function is undertaken in-house. In this case the normal rules of “distance” between a designer and a client should be applied to ensure an appropriate level of scrutiny and challenge.

In situations where the Designer is not competent to produce the necessary documentation (e.g., some developers with insufficient expertise) then the highway authority should ask the scheme promoter to seek specialist assistance from a suitably competent engineer with highway design expertise and appropriate professional indemnity cover.

2.4. Timing of Departures

The timing of Departure applications should be discussed with the Project Manager who may need to consult with other staff or external advisors. Bearing in mind different procurement routes, key stages may include:

- Entry into programme
- Prior to Public Consultation
- Before completion of preliminary design
- Before completion of detailed design
- After Public Inquiry/before Works Commitment
- In respect of developer-funded highway works, prior to the grant of planning permission for the associated development

The Project Manager is best placed to make decisions on timing because inevitably decisions on Departures are likely to be affected by contractual, financial and programme considerations. Project Managers should satisfy themselves that due weight is given to these issues. Individual standards also normally mandate that Departures are agreed for inclusion in designs before the appropriate design stage is completed and signed-off.

All departures from standard must be determined prior to inviting tenders to minimise the risk of contractual issues.

At the early stages of schemes some design concepts may be insufficiently developed to allow a full risk assessment to be carried out. For example, surveys and investigations may

be ongoing to determine if a structure is to be retained or demolished. In these cases, an agreement in principle may be more useful than a full agreement to a Departure. However, at an appropriate later stage an agreement in principle should be converted into a full Departure determination.

“Retrospective” Departures should not normally be considered, and it is important that design decisions and related standards issues are agreed before site work commences.

“Retrospective” Departures are where a Departure is discovered after construction. In such cases it is likely to be appropriate to use the contractual provisions to determine the desired process. Where the design changes during construction works, any new Departure or any necessary amendment to a pre-works Departure that results from the design change can still be dealt with using this Procedure.

Previous Departure approvals will normally be considered as potentially invalid if one or more of the following apply:

- If the construction works have not commenced within a period of 3 years from Departure approval.
- Where a replacement or complementary Standard has been published.
- If a material change in a scheme design parameter generates additional risk (e.g., if a new traffic forecast shows a material change compared to the previous forecast).
- Where verifiable research or legislation in force affects the basis on which the Departure was approved.
- If either the Designer or highway authority considers that a change in any other factor may affect the previous approval.

3. Assessment of Departures

3.1. Introduction

When all the design issues have been considered and evaluated, a review of the proposed Departure should be carried out by the WCC EDS project team and submitted to EDS' Group Manager for review. The Group Manager will review the proposal and decide if the Departure is minor or major. Major Departures from Standard have the potential for significant or overlapping issues and risks or potential to be controversial and susceptible to challenge.

Minor Departures will be assessed and determined by the EDS Group Manager. The Group Manager's decision will be shared with the designer, the responsible team's Section Manager, Transport and Highways' Service Manager and the Assistant Director for Environment Services who will have a period of one week to challenge the decision. If challenged, the proposal will be treated as a Major Departure.

Major Departures will be assessed by a Departure from Standard Panel and passed to the Assistant Director for Environment Services with a recommendation for acceptance or rejection.

Due to the varying nature of Departures, their interaction with each other and the existing and future route conditions, each Departure is unique. Therefore, there are no rigid criteria as to whether a particular Departure will be approved or rejected. However, the following would normally be among the factors considered during assessment:

- It should be demonstrable that the benefits significantly outweigh any negative impacts of the proposed Departure through a comparison with a design fully in accordance with Standards.
- The avoidance of introducing a discontinuity into the route in terms of its current and known future strategy; e.g., future operational performance requirements.
- The avoidance of a road design that is ambiguous to users. The assessment of this factor will need to take account of the normal range of operating conditions that users can be expected to encounter including varying traffic flows and weather conditions.
- Any significant increase in risk to any user or potential user of the route because of the incorporation of the Departure into the works should be considered for compensatory measures.
- The proposed design should be consistent with scheme objectives, current legislation, authority policy and long-term Route Management / Regional Investment Strategies.

3.2. Departure from Standard Submissions

Submissions for Departures from Standard should consist of a copy of QF045 with the relevant sections completed by the Designer, along with all supporting design drawings, specifications, test reports, product data sheets and other literature. A risk assessment as detailed in section 3.4 must accompany the submission. Copies of a cost benefit analysis and Road Safety Audits may also be required if applicable.

Attachments to the Departure application should be clearly identified and listed (e.g., drawing numbers) so that the reader can ascertain the scope of the submission and the information he is being expected to read.

3.3. Departure from Standard Panel

A panel of three or more professionally qualified and suitably experienced Tier 3 or Tier 4 engineers shall assess Major departure submissions using the criteria set out in 3.1 above. The panel members shall have experience in the field of engineering related to the topic of the proposed departure and should ideally be from outside the project team to ensure an impartial viewpoint. The panel should also include representatives from the Delivery and Commissioning teams.

The panel members should be selected by the EDS Group Manager. A list of potential WCC EDS panel members can be viewed here:

[Departures Panel Members List](#)

The Designer shall meet with the Departure from Standard Panel to discuss the merits and risks associated with the proposed departure. The panel will make a recommendation for the proposed departure to be approved, rejected or rejected with comments for resubmission. If the Panel recommends that a proposal is approved, then it shall be passed to WCC EDS's Assistant Director for Environmental Services for the final decision on whether the proposal is approved or rejected.

If a departure is rejected by either the EDS Group Manager, the Departure from Standard panel or the Assistant Director, then the Designer shall be provided with details of their reasoning for rejecting the proposal. An indication as to whether a Departure may be approvable once additional justification is available should also be given.

Further details on the process of determining departure applications are given in section 4.

3.4. Risk Assessments

The Designer should fully assess the risks associated with Departures being proposed. Risks to road user safety, financial, programme (including land and statutory procedures), environmental and network resilience (e.g., congestion and loss of capacity) should be considered. The Management of Health & Safety Regulations also require that a "suitable and sufficient assessment" is made of risks to people, and in the context of Departures this relates to the safety of operatives and other road based staff during construction, inspection and future maintenance.

For designs prepared in-house by WCC EDS QF181 should be used to assess the risks present by proposed departures from standard.

The most critical element of the risk assessment is the identification of a full range of individual hazards and factors within the design and full consideration of the road user groups, including maintainers, that could be affected. This process should not be treated as an appendage to a design but should be used in preparing an appropriate design. Risk assessments should not only be prepared at the end of the design process as such a process becomes merely one of identifying residual risks. Completing risk assessments at the commencement of the process, and periodically reviewing and updating them throughout the design process will frequently enable risks to be better understood and/or designed-out, thus also reducing the need for Departures.

The Designer should record a summary of the primary design options that have been considered and the reasoning behind rejected options in section 2f of QF045. This approach is useful in demonstrating the thoroughness of the design process.

The overall risk assessment and selection of options should have regard to the intended life

cycle, including construction, operation, maintenance and foreseeable modifications (e.g., where a wide pavement may be needed in the near future it may be preferable to construct the maximum width at the outset, but with hatching to reduce the width in the interim). It may be appropriate to 'trade-off' risks between different stages of the life cycle to obtain the safest solution overall.

3.5. Road Safety Audit

Road safety auditors must be made aware of the prospect of Departures being included in road layout designs before they commence a Road Safety Audit. The input of a road safety auditor should be beneficial to the overall process that includes consideration of safety and non-safety issues.

4. Determination of Departures

4.1. General

The highway authority has three choices when deciding whether to accept a Departure application. It can determine that a Departure be approved, rejected or, if the proposal may be acceptable following alteration or further justification, rejected with comments.

The highway authority may be content to approve a Departure if it believes that:

- a sufficiently strong case has been made by the applicant; and
- the explanation is comprehensible to an outside professional observer with no inherent scheme knowledge; and
- sufficient consultation with stakeholders has been carried out

If a Departure is rejected it would be appropriate to explain the reason for the rejection. If a Departure proposed by a designer other than WCC EDS is rejected with comments, it should be noted that written comments that positively direct the design may attract designer's responsibilities to the highway authority. It would normally be preferable to prompt the designer to consider these issues in the next design iteration. For example, a highway authority may have noted that a proposed traffic sign is inappropriate as a compensatory measure. Rather than the highway authority directly asking for such a sign to be removed from the design it is likely to be preferable for the Design Organisation to be asked to review the need for such a sign with reference to the Traffic Signs Manual and any local policies, e.g., in the cases of signs, any policy on urban design and street clutter.

When a departure is rejected with comments, it is often desirable for the Panel members to reference comments with a numbering system so that they can be easily understood and subsequently managed by the applicant.

5. Monitoring

Post-construction safety monitoring for each scheme should be undertaken in accordance with the contract and include a Stage 3 Safety Audit where appropriate. Acceptance and routine safety inspections should also be undertaken as required by the DMRB and MCHW.

Very occasionally the use of post opening “conflict analysis” may be warranted to allow an early opinion to be formed of the likely accident performance.

The Designer should consider the desirability of safety monitoring or other post-opening monitoring and advise what arrangements are considered desirable.

The highway authority may also advise if a different level of monitoring is required as a condition when approving Departures for more innovative, unusual or contentious schemes. This may be particularly important when a new concept may have wider application in future years.

Where durability of a product in-service is required to be measured, the process put in place should take account of the likely accessibility and techniques for such scrutiny. Additionally, the timeframe should take account of any maintenance periods in contracts and any warranties supplied by manufacturers.

Imprecise statements should be avoided. If a Departure requires specific monitoring, this should be stated and details of responsibility, frequency and duration included in the application or approval comments.

6. Record Keeping

Copies on the completed Departure from Standard documents and all supporting documentation must be stored together on the project file. The outcome of the Departure from Standard assessment shall be recorded on the [Record of Departures](#)

Because Departure records may be called upon in the event of any accident some time after a road opens, it is not uncommon for long periods of storage to be required. Documents should be stored according to WCC’s current policy for document retention. Details should also be stored on the relevant asset management systems in use within the County Highways, Traffic Control and Information Systems and Bridge Maintenance.

PROJECT NAME	
DESIGN ORGANISATION	
CONTACT DETAILS	
APPLICANT REF	
HIGHWAY AUTHORITY REF	
DATE SUBMITTED	

1) PROJECT DETAILS

1a	Description	
1b	Location	
1c	Road category and type	
1d	Design speed and speed limit	
1e	Traffic and NMU flows	

2) DEPARTURE DETAILS

2a	Discipline	
	Type	
2b	Relevant Standard(s)	
	Clauses	
2c	Difference between Standard(s) and Proposed Design	
2d	Reason for Departure (overview)	
2e	Associated Project Departures	

2f	Other options considered	
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3) JUSTIFICATION (POTENTIAL POSITIVE AND NEGATIVE IMPACTS)

3a	Safety	
3b	Congestion/ delay	
3c	Environmental/ Sustainability	
3d	Capital and Whole Life Cost/Value	
3e	Accessibility	
3f	Integration	
3g	Structural	
3h	Network Resilience & Maintenance	

4) COMPENSATORY MEASURES

4a	Included Measures	
4b	Rejected Options	

5) ATTACHMENTS & OTHER INFORMATION

5a	List of Attachments	
5b	Consultations	
5c	Other information	

6) DESIGN ORGANISATION'S CONCLUDING REMARKS

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7) ENGINEERING DESIGN SERVICES GROUP MANAGER RECOMMENDATION/DECISION

Name Role **Engineering Design Services Group Manager** Signed Date

Departure from Standard Category**Minor**
☐

Complete recommendation below

Major
☐

Complete Sections 8 and 9

Decision	1 - Approved		2 - Rejected with comments		3 - Rejected	
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Comments	
Challenge period response	

8) DEPARTURE FROM STANDARDS PANAL RECOMMENDATION

Name 1 Role Signed Date

Name 2 Role Signed Date

Name 3 Role Signed Date

Recommendation	1 - Approved		2 - Rejected with comments		3 - Rejected	
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Comments	
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9) ASSISTANT DIRECTOR FOR ENVIRONMENT SERVICES DECISION

Name Role Assistant Director for Environment Services Signed Date

Decision	1 - Approved		2 - Rejected with comments		3 - Rejected	
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Comments	
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WARWICKSHIRE COUNTY COUNCIL QUALITY PROCEDURE

Road Safety Audit Procedure

1.0 Background

This procedure describes the process for undertaking and managing Road Safety Audits in Warwickshire.

Road Safety Audit is the independent, systematic, assessment of highway alterations/improvements schemes (proposed and as constructed) to identify hazards, recommend mitigating actions and record subsequent responses to those recommendations and monitor road safety performance.

Warwickshire County Council will carry out or approve Road Safety Audits on all new schemes and alterations to the existing road network proposed by ourselves or others.

These procedures are based on and should be read in conjunction with current DMRB guidance on Road Safety Audit work. These procedures also reflect the Chartered Institution of Highways and Transportation (CIHT) Road Safety Audit guidelines, which suggest areas where audit standards can be relaxed to suit local circumstances.

The procedures in this document apply to all non-trunk road schemes within Warwickshire, including development schemes on non-trunk roads in the County.

1.1 Definitions

- 1.2 Design Organisation:** The organisation(s) commissioned to undertake various phases of scheme preparation.

NOTE 1: At some stages of road safety audit, this can be a contractor

- 1.3 Design Team:** The group within the Design Organisation undertaking the various phases of the scheme design and co-ordinating the input of the various design disciplines.

- 1.4 Design Team Leader:** A person within the Design Team responsible for managing the scheme design and co-ordinating the input of the various design disciplines and external Developer scheme representatives.

- 1.5 Development Scheme:** Any public or privately funded scheme where planning approval is sought.

- 1.6 Exception Report:** A report from the Project Sponsor to the Warwickshire County Council Exceptions Panel detailing each problem identified in the Road Safety Audit Response Report where an Agreed Road Safety Audit Action cannot be reached between the Design Organisation and Overseeing Organisation.
- 1.7 Highway Schemes:** All works that involve construction of new highway or permanent change to the existing highway layout of features. This includes changes to road layout, kerbs, signs and road markings, lighting, signalling, drainage, landscaping, communications cabinets and the installation of roadside equipment. Significant or lengthy Traffic Management schemes or Temporary Works schemes might also fall within the definition of 'Highway Schemes' with Road Safety Audit requirements.
- 1.8 Interim Road Safety Audit:** The application of Road Safety Audit to the whole or part of a Highway Scheme at any time during its design and construction. Interim Road Safety Audit is neither mandatory nor a substitute for the Stage 1, 2 and 3 Road Safety Audits.
- 1.9 Like-for-like Maintenance Scheme:** A scheme or highway feature replacement proposed as maintenance works, that solely involves the replacement or refurbishment of a highway feature with a corresponding feature, which as a minimum, will appear the same, be located in the same position, perform the same and be constructed of comparable materials as the feature it replaces.
- 1.10 Overseeing Organisation:** The highway authority responsible for the road Highway Scheme to be road safety audited or affected by the proposed Highway Scheme.
- 1.11 Project Sponsor/Project Manager:** A person from the Overseeing Organisation responsible for ensuring the progression of a scheme in accordance with the policy and procedures of the Overseeing Organisation and ensuring compliance with the requirements of this Road Safety Audit Procedure. It should be noted that the Project Sponsor may not always be from the same organisation as those promoting the scheme, as the scheme may be proposed by a third-party organisation.
- 1.12 Road Safety Audit:** The evaluation of Highway Schemes during design and at the end of construction. The aim is to identify potential road safety problems that may affect any users of the highway and to make recommendations as to how the Design Organisation may mitigate them. The Road Safety Audit process includes the collision monitoring of Highway Schemes (Stage 4 Road Safety Audit) to identify any road safety problems occurring after opening. The

Stage 4 Road Safety Audit will include the analysis and reporting of 12 and/or 36 months of Personal Injury Collision (PIC) data from when the scheme became operational.

- 1.13 Road Safety Audit Brief:** The instructions to the Road Safety Audit Team defining the scope and details of the Highway Scheme to be audited, including sufficient information for the Road Safety Audit to be undertaken. To be submitted in the format shown in **Appendix B (QF 336)**.
- 1.14 Road Safety Audit Report:** The report produced by the Road Safety Audit Team describing the road safety related problems identified by the Road Safety Audit and the recommended mitigations to those problems. To be submitted in the format shown in **Appendix C (QF 337)**.
- 1.15 Road Safety Audit Response Report:** A report produced by the Design Team following Road Safety Audit Stages 1, 2 and 3 in which the Design Team and Overseeing Organisation respond to the problems and recommendations raised in the Road Safety Audit Report and agree relevant RSA Actions. To be submitted in the format shown in **Appendix D (QF 338) or Appendix E (QF 339) in the case of Planning Applications**.
- 1.16 Road Safety Audit Team:** A team that works together on all aspects of the Road Safety Audit, independent of the Design Team. The Road Safety Audit Team shall comprise a minimum of two suitably qualified and experienced persons (a Team Leader and Team Member).
- 1.17 Road Safety Audit Team Leader:** A person with the appropriate training, skills and experience who is approved for a particular highway scheme and road safety audit stage by the Overseeing Organisation as defined in section 5.

NOTE 1: The road safety audit team leader is responsible for leading the road safety audit team through the process and managing the production of the road safety audit report. This officer is responsible for the overall audit content.

- 1.18 Road Safety Audit Team Member:** A member of the road safety audit team with the appropriate training, skills and experience necessary for a particular highway scheme and road safety audit stage as defined in section 5.
- 1.19 Road Safety Audit Team Observer:** A person with appropriate training, skills and experience accompanying the Road Safety Audit Team to observe and gain experience of the Road Safety Audit process.

2.0 Scope of Road Safety Audit

2.1 Purpose

Road Safety Audit problems raised in Road Safety Audit Reports shall only consider road safety matters.

Road Safety Audit is not a technical check that the design conforms to Standards and/or best practice guidance, or a check that the scheme has been constructed in accordance with the design, and it does not consider structural safety.

Design Teams are responsible for ensuring that their designs have been subjected to the appropriate design reviews and any Departures from Standards or Relaxations of Standards are documented prior to Road Safety Audit and communicated to the Road Safety Audit Team.

In carrying out Road Safety Audits, the Audit Team shall consider all users of the highway, including motorists, pedestrians, cyclists, equestrians and facilities for those working on the highway. Particular attention should be given to vulnerable roads users such as the very young, older users and the mobility and visually impaired.

2.2 Types of scheme to be road safety audited

These procedures apply to all Highway Schemes on roads for which Warwickshire County Council is the Highway Authority. This includes work carried out under agreement with Warwickshire County Council resulting from developments alongside or affecting the highway network.

Like-for-like maintenance schemes are excluded from Road Safety Audit. However, the Project Sponsors and Designers should ensure any like-for-like replacement scheme does not reinstate a feature that is known by Warwickshire County Council to adversely affect road user safety (e.g. the replacement of a non-passively safe traffic sign in the same location where it has been previously struck by errant road users on numerous occasions).

2.3 Definitions of Road Safety Audit levels

The following sets out three levels of Road Safety Audit to be adopted by Warwickshire County Council.

- Road Safety Audit, **Type A (RSA/A)**, a Road Safety Audit carried out in compliance with current DMRB guidance using the document templates

set out in this policy.

- Road Safety Audit, **Type B (RSA/B)**, a Road Safety Audit carried out by qualified Road Safety Auditors in accordance with the procedures in this document.
- Road Safety Audit, **Type C (RSA/C)**, a Road Safety Audit carried out by qualified Road Safety Auditors in accordance with the procedures in this document.

Tables 1 and 2 provide guidance on the minimum level of safety audit required for works carried out by Warwickshire County Council, either generated by Warwickshire County Council or works which are funded by other sources, such as S278 highway works.

All requests for Safety Audit submitted via a planning application will be carried out to RSA/A standard.

Where the Road Safety Audit Team Leader has concerns about the complexity of the scheme being audited, they have the right to raise the level of the audit at their sole discretion.

Table 1: Audit Level by Scheme Type (Warwickshire County Council)

Warwickshire County Council Schemes for Audit			
Scheme Type	<£25,000	£25,000 - £200,000	>£200,000
Major Highway Improvement Schemes	n/a	RSA/A	RSA/A
Traffic Management Schemes	RSA/B	RSA/B	RSA/A
Shared Space Schemes	RSA/B	RSA/B	RSA/A
Carriageway/Footway Improvement Schemes (including maintenance)	RSA/C	RSA/B	
Cycleway Schemes	RSA/B	RSA/B	RSA/A
Pedestrian Crossing (all types)	RSA/B	RSA/B	RSA/A
Pedestrian Refuges	RSA/B	RSA/B	
Pedestrian Guardrail	RSA/C	RSA/B	
Safety Barrier	RSA/B	RSA/B	RSA/B
Bollards	RSA/C	RSA/B	
Signing and Lining	RSA/C	RSA/B	
Gateway Features	RSA/C	RSA/C	
Changes in Speed Limit	RSA/C	RSA/B	
Mini Roundabouts	RSA/B	RSA/B	RSA/A
Traffic Signals	RSA/B	RSA/B	RSA/A
Parking Bays	RSA/C	RSA/B	
Change of priorities	RSA/B	RSA/B	
Street Lighting	RSA/B	RSA/B	
Section 278 Highway Works	RSA/B	RSA/B	RSA/A
Section 38 New Estate Roads	RSA/B	RSA/B	RSA/A
Significant Traffic Management or Temp. Works	According to Road Safety discussion re. effect		

Note: Road Safety Audits carried out by external organisations must be submitted prior to grant of planning consent for review by Warwickshire County Council's Road Safety Audit personnel

3.0 Road Safety Audit stages

Highway Schemes shall be road safety audited at the following stages:

Stage 1 – Preliminary design

Stage 2 – Detailed design

Stage 3 – Upon scheme completion (ideally prior to the scheme being opened to public traffic), in both daytime and darkness conditions

Stage 4 – When personal injury collision data is available for 12 months and/or 36 months following scheme completion.

Where a scheme is of such a limited scale that no preliminary design has been necessary, Road Safety Audits shall be combined to form a combined Stages 1 & 2 Audit.

It is the responsibility of the Project Sponsor or Design Team Leader to provide enough detail for the Road Safety Audit Team to undertake the audit.

Interim Road Safety Audits can be commissioned by the Project Sponsor. An Interim Road Safety Audit allows the Road Safety Audit Team to give safety advice during the scheme design process and development at times between the formal audit stages.

4.0 Methodology for undertaking Road Safety Audits

4.1 Road Safety Audit – Type A (RSA/A)

Type A schemes involve major highway works and other largescale improvements costing greater than £200,000. These schemes are likely to be complex and could include innovative measures; therefore, a Road Safety Audit should be carried out in accordance with current DMRB guidance on Road Safety Audit work.

RSA/A teams will consist of a team leader and one team member as a minimum. All team members will demonstrate the required competencies set out in section 5.

RSA/A teams will conduct a joint site visit and all team members will review the scheme documentation. Team members will draft the report and team leaders will review and make any necessary amendments in discussion with the audit team before signing of and submitting the report to the Design Organisation.

4.2 Road Safety Audit – Type B (RSA/B)

All schemes costing between £25,000 and £200,000 are categorised as Type B. In addition, some lower cost schemes such as pedestrian crossings are categorised as Type B, these schemes despite being low cost have the potential to create hazards for road users once operational.

The process for undertaking RSA/B should be the same as RSA/A; however, some relevant competencies for team members are relaxed. These are detailed in section 5.

4.2.1 Stage 1, Stage 2 and Stage 1/2 Road Safety Audits

- The Audit Team comprises of two Road Safety Auditors.
- All members of the audit team will attend a site visit together for RSA/A and RSA/B audits. For RSA/C Audits site visits are carried out at the discretion of the team leader.

4.2.2 Stage 3 Road Safety Audits

- The Audit Team comprises of two Road Safety Auditors,
- For RSA/B daytime visits, all members of the audit team must visit the site together. The Police will also be invited to send a representative.
- For visits in the hours of darkness, one of the Audit Team can visit the site alone,
- Both Audit Team Members need to review all plans and documents.

A representative from the Police shall be invited to all Stage 3 Road Safety Audits by the Audit Team Leader. The Police representatives are present as an additional expert and do not formally constitute part of the Road Safety Audit Team. The responsibility for producing the Road Safety Audit Report in these cases remains with the Road Safety Audit Team.

4.2.3 Interim Road Safety Audits

The Project Sponsor or Design Team Leader may consider it useful to gain advice on road safety issues as the scheme design proceeds. If this is the case the Road Safety Audit Team can be approached to give interim advice before the formal Audit stages are reached, the advice should be detailed in a Road Safety Audit Report and a copy sent to the Design Team Leader or Project Sponsor. It should be noted that Interim Road Safety Audits are not a replacement for other Audit stages.

4.2.4 Stage 4 Road Safety Audits

Stage 4 Road Safety Audits should be carried out when 12 months and/or 36 months collision data is available following completion of the scheme. For Warwickshire County Council designed schemes, this will be included as part of the routine collision monitoring process to identify any collision sites on Warwickshire's highway network. Therefore, a separate Stage 4 Road Safety Report will not always be required, unless a collision problem associated with a scheme is identified. Under these circumstances, for a Development Scheme promoted by an 'external' developer, a collision report shall be prepared to assess whether remedial measures are required to address the collision problem. The findings should be presented to the Project Sponsor for action.

4.2.5 The Road Safety Audit Report

Reports for Stages 1, 1&2, 2 and 3 Road Safety Audits should be written in a consistent format, as described in **Appendix B (QF 337)**.

Non-safety comments can be included in the report under a separate title, such as 'Notes' or 'Observations'. A copy of the report should be sent to the Project Sponsor and Design Team Leader.

For audits carried out by Warwickshire CC, once the Road Safety Audit Team has completed the Road Safety Audit, a copy of the report, together with all the documentation, plans, site notes and photographs should be archived by the Road Safety Audit Team.

4.3 Road Safety Audit – Type C (RSA/C)

Type C schemes are small scale projects designed by Warwickshire County Council costing less than £25,000, such as footway improvements, signing and the installation of bollards. For RSA/C Audits a single auditor will usually be appointed as Team Leader.

The Auditor/Assessor should evaluate the scheme with reference to the Safety Assessment Checklist in **Appendix A (QF 335)**. The auditor will then complete a Road Safety Audit Report accordingly and submit it to a checker for review prior to submission to the Design Team. The relevant competencies for the Checker are set out in section 5.

4.4 Road Safety Audit Response Report

All Road Safety Audits must go through the process shown in section 6. This includes the production of a Road Safety Audit Response Report following the template shown in **Appendix D (QF 338)** or **Appendix E (QF 339)** in the case

of Planning Applications.

For internal schemes Traffic and Road Safety Group officers are likely to fulfil the roles of Road Safety Auditor and Overseeing Organisation. Where a 3rd party scheme has appointed an external Road Safety Auditor Traffic and Road Safety Group officers will still operate as the Overseeing Organisation. The required competencies to fulfil this role are set out in section 5.

For a scheme to proceed to the next stage of audit or construction the Design Organisation, Road Safety Auditor and Overseeing Organisation must agree an RSA action for each problem raised in the Road Safety Audit Report and record these in the Road Safety Audit Response Report.

If RSA Actions cannot be agreed by all parties the scheme must enter Warwickshire County Council's Exception Process as described in section 6.

Responses submitted in a format that differs from that shown in **Appendix D (QF 338)** or **Appendix E (QF 339)** will not be accepted. In the case of Audits linked to planning applications this will result in WCC objecting to the application in its role as Highway Authority.

4.5 Traffic Management or Temporary Works

Generally, temporary Traffic Management arrangement schemes will not be audited as the design of such schemes should be considered within CDM processes and DfT publications "Safety at Street Works: A Code of Practice" and Chapter 8 of "The Traffic Signs Manual" which contain guidance on such works. However, for schemes with complex arrangements or that will significantly affect the highway network for a considerable period, particularly on high-speed roads, a Road Safety Audit may be required at the discretion of Warwickshire County Council.

4.6 The Audit Brief

The Audit Brief template is set out in **Appendix B (QF 336)**.

The Design Organisation must submit the completed Brief to Traffic and Road Safety Group before appointing the Road Safety Audit Team.

5.0 Road Safety Audit Team requirements

Warwickshire County Council Safety Auditors will demonstrate the competencies set out below.

Auditors not directly employed by Warwickshire CC. shall submit CVs to

Warwickshire CC's. Safety Engineering Team for scheme-specific prior approval. CVs must demonstrate compliance with the requirements set out below for RSA/A Audits.

5.1 Road Safety Audit team competencies

The following sets out the required competencies of RSA team members in accordance with the type of audit being undertaken.

Table 3a: RSA/A competencies

	RSA team observer	RSA team member	RSA team leader
Training	In accordance with current DMRB requirements	In accordance with current DMRB requirements	In accordance with current DMRB requirements
CPD	N/A	In accordance with current DMRB requirements	In accordance with current DMRB requirements
Experience	N/A	In accordance with current DMRB requirements	In accordance with current DMRB requirements

Table 3b: RSA/B competencies

	RSA team observer	RSA team member	RSA team leader
Training	N/A	10 days of formal collision data analysis or road safety engineering/road design	10 days of formal collision data analysis or road safety engineering/road design
CPD	N/A	A minimum of 2 days CPD in the field of RSA, collision data analysis or road safety engineering in the last 12 months	A minimum of 2 days CPD in the field of RSA, collision data analysis or road safety engineering in the last 12 months
Experience	N/A	1 years of collision data analysis or road safety engineering/road design experience	2 years of collision data analysis or road safety engineering/road design experience
	N/A	5 RSAs completed within the last 24 months as team leader, member or observer	5 RSAs completed within the last 12 months as team leader, member or observer

Table 3c: RSA/C competencies

	RSA team observer	RSA team leader	RSA checker
Training	10 days of formal collision data analysis or road safety engineering/road design	10 days of formal collision data analysis or road safety engineering/road design	10 days of formal collision data analysis or road safety engineering/road design
CPD	N/A	A minimum of 2 days CPD in the field of RSA, collision data analysis or road safety	A minimum of 2 days CPD in the field of RSA, collision data analysis or road safety

	RSA team observer	RSA team leader	RSA checker
		engineering in the last 12 months	engineering in the last 12 months
Experience	N/A	5 RSAs completed within the last 24 months as team leader, member or observer	5 RSAs completed within the last 24 months as team leader, member or observer
	N/A		

Table 3: Overseeing Organisation competencies

	Traffic and Road Safety Officers have conducted the RSA	A 3rd Party has conducted the RSA	
Training	N/A	In accordance with RSA/A competencies	
CPD	N/A	In accordance with RSA/A competencies	
Experience	Occupy a relevant Tier 4 post in Traffic and Road Safety Group	In accordance with RSA/A competencies	

Where Auditor CVs do not demonstrate compliance with Audit Team position requirements Warwickshire CC will be at liberty to reject the Audit Team in part or in whole and reject the Road Safety Audit Brief or Response Report.

It is recommended that, where possible, the same Road Safety Audit Team is used throughout the scheme delivery.

All Road Safety Auditors employed by or on behalf of Warwickshire County Council are responsible for ensuring that they keep up to date with the CPD and experience requirements listed above.

6.0 Road Safety Audit Process

All works affecting the public highway in Warwickshire will be subject to a Road Safety Audit at stages 1, 2 and 3.

For internal schemes officers from Warwickshire County Council's Road Safety Audit team will determine the relevant audit type.

All external audits will be carried out as Type A audits as this most closely aligns with the standards used by Safety Auditors in the private sector.

For internal schemes the Road Safety Audit Team should be derived from Warwickshire County Council's internal Auditors' complement. The audit team must be comprised of officers independent from the design process. If resources are not available to undertake a Road Safety Audit within the required timescale, the Project Sponsor may consider appointing a suitably qualified Road Safety Audit Team from independent consultants.

Third party developers may appoint Road Safety Auditors from external auditors. Any such audit must be commissioned with the RSA Brief in **Appendix B (QF 336)**. The Brief must be approved by Warwickshire County Council's Safety Audit team prior to the appointment of the Road Safety Audit Team.

When the developer has appointed a Road Safety Audit team CV's for all team members must be submitted to WCC for approval.

Only when all of the above steps have been completed and approved can the Safety Audit take place.

When the audit has been completed the design organisation must complete a Road Safety Audit Response Report in accordance with the template in **Appendix D (QF 338) or Appendix E (QF 339) in the case of Planning Applications** and submit this to Warwickshire County Council's Road Safety Audit team. Warwickshire County Council will then consider the problems raised, the design team responses and add an overseeing organisation response. Warwickshire County Council will also add any additional issues considered relevant to the scheme.

Warwickshire County Council's Road Safety Audit team will then contact the Design Organisation to agree RSA actions before finalising the Road Safety Audit Response Report and sending it to all relevant parties for sign off.

Where RSA actions are agreed between the Overseeing Organisation and the Design Organisation the scheme can progress to the next stage of Road Safety Audit or implementation as appropriate.

Where RSA actions cannot be agreed the Road Safety Audit will enter Warwickshire County Council's Exception Process.

For 3rd party schemes the Design Organisation must pay for all stages of Road Safety Audit and Road Safety Audit Response Reports.

Before Warwickshire County Council will agree to not raise an objection to a planning application on Road Safety grounds a stage 2 road safety audit (Type A) must be undertaken where the planning application requires works within the highway, in accordance with Local Transport Plan Policy. The design organisation must then submit a Road Safety Audit Response Report (**see Appendix E (QF 339)**) to Warwickshire County Council for comment and approval.

It should be noted that Planning Authorities may decide not to register a

planning application if a Road Safety Audit required according to this Procedure is not provided. For large developments it may be appropriate for the Developer to discuss road safety issues at the pre-planning application stage so that any potential problems can be considered early in the process.

If Road Safety Audit issues are not satisfactorily addressed or if a required Road Safety Audit Response Report is not submitted in accordance with this Procedure then Warwickshire County Council is likely to recommend that the planning application be refused.

It should be noted that Warwickshire County Council will be at liberty to decline to register applications for Highway Agreements where a Stage 2 Road Safety Audit Response Report required according to this Procedure is not provided.

7.0 References

- 1) Current DMRB guidance on Road Safety Audit work
- 2) Current Road Safety Audit guidelines - Institution of Highways and Transportation (now Chartered Institution of Highways & Transportation).

RELATED QUALITY DOCUMENTS

[Road Safety Audit Process Map](#)

Appendix A: [QF 335](#) – Road Safety Audit Checklist

Appendix B: [QF 336](#) – Road Safety Audit Brief

Appendix C: [QF 337](#) – Road Safety Audit Report

Appendix D: [QF 338](#) – Road Safety Audit Response Report

Appendix E: [QF 339](#) – Road Safety Audit Response Report (Planning Applications)

WARWICKSHIRE COUNTY COUNCIL
QUALITY PROCEDURE
Road Safety Audit Checklist

Referred from QP 321 Road Safety Audit Procedure

Road Safety Audit checklists are outlined within this document.

For RSA/A and RSA/B audits, these are to be undertaken in accordance with the DMRB document GG 119. See Section 1 of this document.

For RSA/C audits, these are to be undertaken in accordance with Warwickshire County Council's checklist for Road Safety Assessments. See Section 2 of this document.

These lists are not exhaustive, the audit team may find additional safety related problems when undertaking road safety audits at all stages.

Section 1- RSA/A and RSA/B checklist

Table A.1 LOCAL ALIGNMENT

Stage 1	Stage 2	Stage 3
Visibility		
<p>Are horizontal and vertical alignments consistent with required visibility?</p> <p>Will sight lines be obstructed by permanent or temporary features e.g. bridge abutments and parked vehicles?</p>	<p>Are sight lines obstructed by:</p> <ol style="list-style-type: none"> 1. safety fences; 2. boundary fences; 3. street furniture; 4. parking facilities; 5. signs; 6. landscaping; 7. structures; 8. environmental barriers; 9. crests; 10. features such as buildings, plant or materials outside the highway boundary? <p>Is the forward visibility of at-grade crossings sufficient to ensure they are conspicuous?</p>	<p>Are the sight lines clear of obstruction?</p>
New/existing road interface		
<p>Will the proposed scheme be consistent with the standard of provision on adjacent lengths of road and if not, is this made obvious to the road user?</p> <p>Does interface occur near any potential hazard, i.e. crest, bend after steep gradient?</p>	<p>Where a new road scheme joins an existing road, or where an on-line improvement is to be constructed, will the transition give rise to potential hazards?</p> <p>Where the road environment changes (e.g. urban to rural, restricted to unrestricted) is the transition made obvious by appropriate signing and carriageway markings?</p>	<p>Is there a need for additional signs and/or road markings?</p>

Stage 1	Stage 2	Stage 3
Vertical alignment		
Are climbing lanes to be provided? Will the vertical alignment cause any "hidden dips"?		

Table A.2 GENERAL

Stage 1	Stage 2	Stage 3
Departures from standards		
What are the road safety implications of any approved departures from standards or relaxations? (Are these strategic decisions within the scope of the RSA?)	Consider road safety aspects of any departures granted since the stage 1 RSA.	Are there any adverse road safety implications of any departures from standard granted since the stage 2 RSA?
Cross sections and cross-sectional variation		
How safely do the cross-sections accommodate drainage, ducting, signing, fencing, lighting and pedestrian, cyclist and equestrian routes? Could the scheme result in the provision of adverse camber? What are the road safety implications if the standard of the proposed scheme differs from adjacent lengths of highway?		
Landscaping		
Could areas of landscaping conflict with sight lines (including during windy conditions)?	Could planting (new or when mature) encroach onto the carriageway or obscure signs or sight lines (including during windy conditions)?	Could planting obscure signs or sight lines (including during periods of windy weather)? Do earth bunds obscure signs or visibility?

Stage 1	Stage 2	Stage 3
	<p>Could earth bunds obscure signs or visibility?</p> <p>Could trees (new or when mature) be a hazard to an errant vehicle?</p> <p>Could planting affect lighting or shed leaves on to the carriageway?</p>	<p>Could trees (new or when mature) be a potential hazard to an errant vehicle?</p> <p>Could planting affect lighting or shed leaves onto the carriageway?</p>
Climatic conditions		
	Is there a need for specific provision to mitigate effects of fog, wind, sun glare, snow, and ice?	Are any extraordinary measures required?
Drainage		
<p>Will the new road drain adequately, or could areas of excess surface water result?</p> <p>Could excess surface water turn to ice during freezing conditions?</p> <p>Could excessive water drain across the highway from adjacent land?</p>	<p>Do drainage facilities (e.g. gully spacing, gully locations, flat spots, crossfall, ditches) appear to be adequate?</p> <p>Are features such as utility covers or gullies located within footpaths, cycle routes or equestrian routes?</p> <p>Are features such as utility covers or gullies located in the likely wheel tracks for motorcyclists or cyclists?</p> <p>Do they give concern for motorcyclist/cyclist stability?</p> <p>Is surface water likely to drain across a carriageway and increase the risk of aquaplaning under storm conditions?</p>	<p>Does drainage of roads, cycle routes and footpaths appear adequate?</p> <p>Are drainage features such as utility covers or gullies located within footpaths, cycle routes or equestrian routes?</p> <p>Are features such as utility covers or gullies located in the likely wheel tracks for motorcyclists or cyclists?</p> <p>Do they give concern for motorcyclist/cyclist stability?</p>

Stage 1	Stage 2	Stage 3
Lay-bys		
<p>Has adequate provision been made for vehicles to stop off the carriageway including picnic areas?</p> <p>How will parked vehicles affect sight lines?</p> <p>Could lay-bys be confused with junctions?</p> <p>Is the lay-by located in a safe location (e.g. away from vertical crests or tight horizontal alignments with limited visibility)?</p>	<p>Have lay-bys been positioned safely?</p> <p>Could parked vehicles obscure sight lines?</p> <p>Are lay-bys adequately signed?</p> <p>Are picnic areas properly segregated from vehicular traffic?</p>	
Public utilities/services apparatus		
<p>Could utility apparatus be struck by an errant vehicle?</p> <p>Could utility apparatus obscure sight lines?</p>	<p>Can maintenance vehicles stop clear of traffic lanes? If so, could they obscure signs or sight lines?</p> <p>Are boxes, pillars, posts and cabinets located in safe positions away from locations that may have a high potential of errant vehicle strikes?</p> <p>Do they interfere with visibility?</p> <p>Has sufficient clearance to overhead cables been provided?</p> <p>Have any special accesses/parking areas been provided and are they safe?</p> <p>Are there any utility inspection chambers in live traffic lanes and/or wheel tracks including those of motorcyclists or cyclists?</p>	<p>Can maintenance vehicles stop clear of traffic lanes?</p> <p>If so, could they obscure signs or sight lines?</p> <p>Are boxes, pillars, posts and cabinets located in safe positions away from locations that may have a high potential for errant vehicle strikes?</p> <p>Do they interfere with visibility?</p> <p>Are any special accesses/parking areas provided safe?</p> <p>Are there any utility inspection chambers in live traffic lanes and/or wheel tracks?</p> <p>Has any loose material around utility</p>

Stage 1	Stage 2	Stage 3
	Do they give concern for motorcyclist/ cyclist stability?	covers or gullies located in the verge been compacted down and made level with the surrounding ground?
Access		
Can all accesses be used safely? Can multiple accesses be linked into one service road? Are there any conflicts between turning and parked vehicles?	Is the visibility to/from accesses adequate? Are the accesses of adequate length to ensure all vehicles clear the main carriageway? Do all accesses appear safe for their intended use?	Is the visibility to/from accesses adequate? Are the accesses of adequate length to ensure all vehicles clear the main carriageway?
Skid resistance		
	Are there locations where high skid resistance surfacing (such as on approaches to junctions and crossings) would be beneficial? Do surface changes occur at locations where they could adversely affect motorcycle stability? Is the colour of any high friction surfacing appropriate?	Do any joints in the surfacing appear to have excessive bleeding or low skid resistance? Do surface changes occur at locations where they could adversely affect motorcycle stability?
Emergency vehicles		
Has provision been made for safe access and egress by emergency vehicles?		

Stage 1	Stage 2	Stage 3
Future widening		
Where a single carriageway scheme is to form part of a future dual carriageway, is it clear to road users that the road is for two-way traffic?		
Agriculture		
	<p>Have the needs of agricultural vehicles and plant been taken into consideration (e.g. room to stop between carriageway and gate, facilities for turning on dual carriageways)?</p> <p>Are such facilities safe to use and are they adequately signed?</p>	
Fences and road restraint systems		
	<p>Is there a need for road restraint systems to protect road users from signs, gantries, parapets, abutments, steep embankments or water hazards?</p> <p>Do the road restraint systems provided give adequate protection?</p> <p>Are the road restraint systems long enough? Are specific restraint facilities required for motorcyclists?</p> <p>In the case of wooden post and rail boundary fences, are the rails placed on the non-traffic side of the posts?</p>	<p>Is the restraint system adequate?</p> <p>In the case of wooden post and rail boundary fences, are the rails placed on the non-traffic side of the posts?</p> <p>Have specific restraint facilities been provided for motorcyclists?</p>

Stage 1	Stage 2	Stage 3
	If there are roads on both sides of the fence is an interlocking-design necessary to prevent impalement on impact?	
Adjacent development		
Does adjacent development cause interference/ confusion? (e.g. lighting or traffic signals on adjacent roads may affect a road user's perception of the road ahead) Is screening required to avoid headlamp glare between opposing carriageways, or any distraction to road users?	Has screening been provided to avoid headlamp glare between opposing carriageways, or any distraction to road users? Are there any safety issues relating to the provision of environmental barriers or screens?	Have environmental barriers been provided and do they create a potential hazard?
Basic design principles		
Are the overall design principles appropriate for the predicted level of use for all road users?		
Bridge parapets		
	Are parapet heights appropriate for the adjacent road user groups?	Is the projection of any attachment to the parapet likely to be struck by road users?
Network management		
		Have appropriate signs and/or markings been installed in respect of Traffic Regulation Orders?

Stage 1	Stage 2	Stage 3
Specific road users		
Is specific provision required for vulnerable groups? (i.e. the young, older users, mobility and visually impaired, motorcyclists.)	<p>Are gradients appropriate for mobility scooters?</p> <p>Are timings at controlled crossings sufficient for all users?</p> <p>Do surface changes or excessive use of carriageway markings occur at locations where they could adversely affect motorcycle stability?</p> <p>Are specific restraint facilities required for motorcyclists?</p> <p>Are features such as traffic calming, utility covers or gullies located in the likely wheel tracks for motorcyclists or cyclists?</p> <p>Do they give concern for motorcyclist/cyclist stability?</p>	<p>Are the following adequate for specific and vulnerable groups?</p> <ol style="list-style-type: none"> 1. visibility; 2. signs; 3. surfacing; 4. other guardrails; 5. drop kerbing/flush surfaces; 6. tactile paving; 7. gradients; 8. lighting levels; 9. restraint systems; 10. positioning of utility covers/gullies.

Table A.3 JUNCTIONS

Stage 1	Stage 2	Stage 3
Layout		
<p>Is provision for right turning vehicles required? Are acceleration/deceleration lanes required?</p> <p>Are splitter islands required on minor arms to assist pedestrians or formalise road users' movements to/from the junction?</p> <p>Are there any unusual features that affect road safety?</p> <p>Are widths and swept paths adequate for all road users?</p> <p>Will large vehicles overrun pedestrian or cycle facilities?</p> <p>Are there any conflicts between turning and parked vehicles?</p> <p>Are any junctions sited on a crest?</p> <p>Is the junction type appropriate for the traffic flows and likely vehicle speeds?</p>	<p>Are the junctions and accesses adequate for all vehicular movements?</p> <p>Are there any unusual features, which may have an adverse effect on road safety?</p> <p>Have guardrails/safety fences been provided where appropriate?</p> <p>Do any roadside features (e.g. guard rails, safety fences, traffic bollards signs and traffic signals) intrude into drivers' line of sight?</p> <p>Are splitter islands and bollards required on minor arms to assist pedestrians or formalise road users' movements to/from the junction?</p> <p>Are parking or stopping zones for buses, taxis and public utilities vehicles situated within the junction area?</p> <p>Are they located outside visibility splays?</p> <p>Are any utility covers or gullies located in the likely wheel tracks of motorcyclists or cyclists?</p>	<p>Have guard rails/safety fences been provided where appropriate?</p> <p>Do any roadside features (e.g. guard rails, safety fences, traffic bollards signs and traffic signals) intrude into drivers' line of sight?</p> <p>Have bollards been provided to assist pedestrians or formalise road user movements?</p>

Stage 1	Stage 2	Stage 3
Visibility		
<p>Are sight lines adequate on and through junction approaches and from the minor arm?</p> <p>Are visibility splays adequate and clear of obstructions such as street furniture and landscaping?</p> <p>Will the use of deceleration or acceleration lanes obscure junction visibility?</p>	<p>Are the sight lines adequate at and through the junctions and from minor roads?</p> <p>Are visibility splays clear of obstruction?</p>	<p>Are all visibility splays clear of obstructions?</p>
T, X, Y - junctions		
	<p>Have ghost island right turn lanes and refuges been provided where required?</p> <p>Do junctions have adequate stacking space for turning movements?</p> <p>Can staggered crossroads accommodate all vehicle types and movements?</p>	<p>Are priorities clearly defined?</p> <p>Is signing adequate?</p>

Stage 1	Stage 2	Stage 3
All roundabouts		
	<p>Are the deflection angles of approach roads adequate for the likely approach speed?</p> <p>Are splitter islands necessary?</p> <p>Is visibility on approach adequate to ensure drivers can perceive the correct path through the junction?</p> <p>Where chevron signs are required, have they been correctly sited?</p> <p>Are dedicated approach lanes required? If provided, will the road markings and signs be clear to all users?</p> <p>Are any utility covers or gullies located in the likely wheel tracks of motorcyclists or cyclists?</p>	<p>Can the junction be seen from appropriate distances and is the signing adequate?</p> <p>Where chevron signs are required, have they been correctly sited?</p>
Mini roundabouts		
	<p>Are the approach speeds for each arm likely to be appropriate for a mini roundabout?</p> <p>Is the centre island visible from all approaches?</p>	

Stage 1	Stage 2	Stage 3
Traffic signals		
	<p>Will speed discrimination equipment be required?</p> <p>Is the advance signing adequate?</p> <p>Are signals clearly visible in relation to the likely approach speeds?</p> <p>Is "see through" likely to be a problem?</p> <p>Would lantern filters assist?</p> <p>Is the visibility of signals likely to be affected by sunrise/sunset?</p> <p>Would high intensity signals and/or backing boards improve visibility?</p> <p>Would high-level signal units be of value? Is the stopline in the correct location?</p> <p>Are any pedestrian crossings excessively long?</p> <p>Are the proposed tactile paving layouts correct?</p> <p>Are the markings for right turning vehicles adequate?</p>	<p>Can the traffic signals be seen from appropriate distances?</p> <p>Can drivers see traffic signal heads for opposing traffic?</p> <p>For the operation of signals: Are the signal phases working correctly, are unnecessary delays being created?</p> <p>Do pedestrian and cycle phases give adequate crossing time?</p> <p>Can pedestrians or cyclists mistakenly view the "green man" signal for other pedestrian or cycle phases?</p>

Stage 1	Stage 2	Stage 3
	<p>Is there a need for box junction markings?</p> <p>Is the phasing appropriate?</p> <p>Will pedestrian/ cyclist phases be needed?</p> <p>Does the number of exit lanes equal the number of approach lanes?</p> <p>If not is the taper length adequate? Is the required junction intervisibility provided?</p>	

Table A.4 WALKING, CYCLING AND HORSE RIDING

Stage 1	Stage 2	Stage 3
Adjacent land		
Will the scheme have an adverse effect on safe use of adjacent land?	<p>Are accesses to and from adjacent land/properties safe to use?</p> <p>Has adjacent land been suitably fenced?</p>	Has suitable fencing been provided?

Stage 1	Stage 2	Stage 3
Pedestrians		
<p>Have pedestrian routes been provided where required?</p> <p>Do shared facilities take account of the needs of all user groups?</p> <p>Can verge strips dividing footways/cycleways and carriageways be provided?</p> <p>Where footpaths have been diverted, will the new alignment permit the same users free access?</p> <p>Are footbridges/subways sited to attract maximum use?</p> <p>Is specific provision required for special and vulnerable groups? (i.e. the young, older users, mobility and visually impaired?)</p> <p>Are tactile paving, flush kerbs and guard railing proposed? Is it specified correctly and in the best location?</p> <p>Have all walking needs been considered, especially at junctions?</p>	<p>Have the needs of pedestrians been considered especially at junctions and roundabouts?</p> <p>Are any proposed drop kerbs flush with the adjacent highway?</p> <p>Is tactile paving proposed? Is it specified correctly and in the best location?</p>	<p>Are the following adequate?:</p> <ol style="list-style-type: none"> 1. visibility; 2. signs; 3. surfacing; 4. other guardrails; 5. drop kerbing or flush surfaces; 6. tactile paving

Stage 1	Stage 2	Stage 3
Are these routes clear of obstructions such as signposts, lamp columns etc.?		
Cyclists		
<p>Have cycle routes been provided where required?</p> <p>Do shared facilities take account of the needs of all user groups?</p> <p>Can verge strips dividing footways/cycleways and carriageways be provided?</p> <p>Is specific provision required for special and vulnerable groups? (i.e. the young, older users, mobility impaired?)</p> <p>Have all cycling needs been considered, especially at junctions?</p> <p>Are these routes clear of obstructions such as signposts, lamp columns etc.?</p>	<p>Have the needs of cyclists been considered especially at junctions and roundabouts?</p> <p>Are cycle lanes or segregated cycle tracks required?</p> <p>Does the signing make clear the intended use of such facilities?</p> <p>Are cycle crossings adequately signed?</p> <p>Has lighting been provided on cycle routes?</p> <p>Are any proposed drop kerbs flush with the adjacent highway?</p> <p>Are any parapet heights sufficient? Is tactile paving proposed?</p> <p>Is it specified correctly and in the best location?</p>	<p>Do the following provide sufficient levels of road safety for cyclists on, or crossing the road?</p> <ol style="list-style-type: none"> 1. visibility; 2. signs; 3. guardrails; 4. drop kerbing or flush surfaces; 5. surfacing; 6. tactile paving.

Stage 1	Stage 2	Stage 3
Equestrians		
<p>Have equestrian needs been considered?</p> <p>Does the scheme involve the diversion of bridleways?</p>	<p>Should bridleways or shared facilities be provided?</p> <p>Does the signing make clear the intended use of such paths and is sufficient local signing provided to attract users?</p> <p>Have suitable parapets/rails been provided where necessary?</p>	<p>Do the following provide sufficient levels of road safety for equestrians?</p> <ol style="list-style-type: none"> 1. visibility; 2. signs; 3. guardrails.

Table A.5 TRAFFIC SIGNS, CARRIAGEWAY MARKINGS AND LIGHTING

Stage 1	Stage 2	Stage 3
Signs		
<p>Is there likely to be sufficient highway land to provide the traffic signs required?</p> <p>Are sign gantries needed?</p> <p>Have traffic signs been located away from locations where there is a high strike risk?</p>	<p>Do destinations shown align with signing policy? Are signs easy to understand?</p> <p>Are the signs located behind safety fencing and out of the way of pedestrians and cyclists?</p> <p>Is there a need for overhead signs?</p> <p>Where overhead signs are necessary is there sufficient headroom to enable designated walking, cycling and horse riding usage?</p> <p>Has sign clutter been considered?</p> <p>Is junction signing adequate, consistent with adjacent signing and easily understood?</p> <p>Have the appropriate warning signs been provided?</p> <p>Are signs appropriately located and of the appropriate size for approach speeds?</p>	<p>Are the visibility, locations and legibility of all signs (during daylight and darkness) adequate?</p> <p>Are signposts protected from vehicle impact or passively safe?</p> <p>Will signposts impede the safe and convenient passage of pedestrians and cyclists?</p> <p>Have additional warning signs been provided where necessary?</p>

Stage 1	Stage 2	Stage 3
	<p>Are sign posts and sign structures passively safe or protected by safety barriers where appropriate?</p> <p>Are traffic signs illuminated where required and the correct reflectivity provided?</p> <p>Are traffic signs located in positions that minimise potential strike risk?</p> <p>Is the mounting height of sign faces appropriate?</p> <p>Are traffic signs orientated correctly to ensure correct visibility and reflectivity?</p>	
Variable message signs (VMS)		
	<p>Are the legends relevant and easily understood?</p> <p>Are signs passively safe or located behind safety fencing?</p>	<p>Can VMS be read and easily understood at distances appropriate for vehicle speeds?</p> <p>Are they adequately protected from vehicle impact or passively safe?</p>

Stage 1	Stage 2	Stage 3
Lighting		
<p>Is the scheme to be street lit?</p> <p>Has lighting been considered at new junctions and where adjoining existing roads?</p> <p>Are lighting columns located in the best positions? (e.g. behind safety fences)</p>	<p>Has lighting been considered at new junctions and where adjoining existing roads?</p> <p>Is there a need for lighting, including lighting of signs and bollards?</p> <p>Are lighting columns passively safe?</p> <p>Are lighting columns located in the best positions e.g. behind safety fences and not obstructing walking, cycling and horse riding routes?</p>	<p>Does the street lighting provide adequate illumination of roadside features, road markings and non-vehicular users to drivers?</p> <p>Is the level of illumination adequate for the road safety of walkers, cyclists and horse riders?</p> <p>Is lighting obscured by vegetation or other street furniture?</p>
Poles/columns		
<p>Will poles/columns be appropriately located and protected?</p>	<p>Are poles and columns passively safe?</p> <p>Are poles and columns protected by safety fencing where appropriate?</p>	

Stage 1	Stage 2	Stage 3
Carriageway markings		
Are any road markings proposed at this stage appropriate?	<p>Do the carriageway markings clearly define routes/priorities?</p> <p>Are the dimensions of the road markings appropriate for the speed limit/design speed of the road?</p> <p>Have old road markings and road studs been adequately removed?</p> <p>Are road markings appropriate to the location?</p> <ol style="list-style-type: none"> 1. centre and edge lines; 2. hatching; 3. road studs; 4. text/destinations; 5. approved and/or conform to the Regulations. 	<p>Are all road markings/studs clear and appropriate for their location?</p> <p>Have all superseded road markings and studs been removed adequately?</p> <p>Do the carriageway markings clearly define routes and priorities?</p> <p>Have all superseded road markings and studs been removed adequately?</p>

Section 2- RSA/C Checklist

General	Checked
Departures from Standard	<input type="checkbox"/>
Consistency of standards with adjacent road network, especially at tie-ins	<input type="checkbox"/>
Effects of surrounding road network	<input type="checkbox"/>
Road users perception of road layout, including sight lines	<input type="checkbox"/>
Provision for turning traffic	<input type="checkbox"/>
Location and access of lay-bys	<input type="checkbox"/>
Minimise potential conflict points (including number of private accesses)	<input type="checkbox"/>
Arrangements for serving access and maintenance	<input type="checkbox"/>
Check speed limits are appropriate for the road environment in-line with circular 01/2013.	<input type="checkbox"/>

Alignment and Sight Lines	Checked
Horizontal and vertical alignments which may produce hazards due to reduced sight lines	<input type="checkbox"/>
Sight lines obstructed by bridge abutments, parapets, landscaping, structures or street furniture	<input type="checkbox"/>
Conspicuity of junctions on approach, and sight lines from minor road approaches and private accesses	<input type="checkbox"/>

Road Signs and Markings	Checked
Locations of signs and markings to aid, inform, and warn of hazards, without obscuring visibility or misleading drivers	<input type="checkbox"/>
Consistency of signing and marking information	<input type="checkbox"/>
Positioning of signs and markings at junctions. Is there a need for hazard perception warnings?	<input type="checkbox"/>
Suitable mounting height of signs	<input type="checkbox"/>

Vulnerable Road Users	Checked
Location and type of crossing facilities	<input type="checkbox"/>
Adequate visibility provided	<input type="checkbox"/>
Dedicated cycle lane or pedestrian facilities	<input type="checkbox"/>
Provision of facilities for people with mobility impairments	<input type="checkbox"/>

Landscaping	Checked
Potential obstruction to visibility from landscaping, taking into account future growth	<input type="checkbox"/>
Potential for trees to become collision objects: choice of appropriate species	<input type="checkbox"/>
Ability to maintain planted areas safely	<input type="checkbox"/>

Surface Characteristics	Checked
Appropriate surfacing for roads on approach to hazards such as bends and junctions	<input type="checkbox"/>
Potential for flooding due to inadequate drainage	<input type="checkbox"/>

Other	Checked
Positioning of safety barriers and guardrails to protect against vehicle conflicts or roadside objects, without obscuring visibility	<input type="checkbox"/>
Consistency of lighting within the scheme and with the adjacent network	<input type="checkbox"/>
Safe positioning of lighting columns	<input type="checkbox"/>
Lit / unlit bollards on central islands	<input type="checkbox"/>

WARWICKSHIRE COUNTY COUNCIL

Road Safety Audit Brief Template

Table B.1 Project Summary

Date:	
Design Organisation:	
Overseeing Organisation:	Warwickshire County Council
Project:	
Report title:	
PREPARED BY:	
Name:	
Signed:	
Design Organisation:	
Date:	
I APPROVE THE RSA BRIEF AND INSTRUCT THE RSA TO TAKE PLACE ON BEHALF OF THE OVERSEEING ORGANISATION	
Name:	
Signed	
Overseeing Organisation:	Warwickshire County Council
Date:	

Table B.2 General Details

General details					
Highway scheme name and road number (A and B roads only)					
Type of Scheme:			Refer to Table 1 of Warwickshire County Council's Road Safety Audit Procedure (QP 321)		
RSA Stage (tick as appropriate)	1	2	3	4	Interim
Design organisation details					
Terms of reference					
e.g. DMRB or Manual for Streets					

Table B.3 Scheme Details

Scheme description/objective
General
Define the extents of the RSA, include a brief scheme description, the scheme objectives, a start date for construction if known and a completion date. In addition, for stage 4 RSAs, confirm when all related traffic management has been removed.
Design standards applied to the scheme design
e.g. DMRB
Design Speeds
Speed limits
Existing traffic flows/queues
Forecast traffic flows
Pedestrian, cyclist and equestrian desire lines
Environmental constraints

Table B.4 Locality

Description of locality
General description
Relevant factors which may affect road safety
Factors known to the design organisation and considered as part of the design. This should also include anything that would not be immediately obvious to the RSA team – such as school crossing patrols and large events, for example.

Table B.5 Analysis

Collision data analysis		
If Warwickshire County Council are carrying out the audit, then Traffic and Road Safety Group will supply collision data.		
For external auditors please ensure that at stages 1, 2, and 3 the designer provides a summary of road traffic collision data covering both the extent of the scheme and the adjoining sections of highway. As a minimum the most recent 36 months of data.		
At stage 4, provide 12 months of post-opening validated road traffic collision data. Raw data should be provided as an appendix.		
Departures from standards		
Include status details, i.e. approved/pending/rejected, and any design strategy records produced for improvements to existing trunk roads and motorways.		
Previous road safety audit stage reports, road safety audit response reports and evidence of agreed actions		
Attach previous reports to the RSA brief, or provide an explanation where these are not available.		
Strategic Decisions		
Includes items outside the scope of this RSA which will not change irrespective of the RSA, for example route choice, junction type, approved departures from standard.		
List of included documents and drawings		
Documents		
Reference and revision	Title	Date
For example: previous RSA reports; design responses; departures; road traffic collision data; walking, cycling and horse riding assessment and reviews. This could include any relevant operational data such as damage-only collision data or incident logs. This list could be included as an attachment to the RSA brief or a hyperlink to a shared electronic location where the RSA brief information has been collated.		
Drawings		
Reference and revision	Title	Date
This list could be included as an attachment to the RSA brief or a hyperlink to a shared electronic location where the RSA brief information has been collated.		

Table B.6 Checklist

Tick all that are included and provide reasons for those that are not included			
Site location plan		Scale layout plans	
Departures and relaxations from standards		Construction/typical details	
Previous RSA reports		Previous RSA response reports and evidence of agreed actions	
Collision data and collision data analysis		Road traffic collision plot	
Traffic signal staging		Traffic counts	
Speed surveys		Pedestrian, cyclist and horse-riding desire lines and volumes	
Walking, cycling and horse-riding assessment and reviews		Items outside the scope of the RSA/ strategic decisions	
Other factors that may impact on road safety		Design speeds/ speed limits	
Design standards used		Adjacent land uses	



WARWICKSHIRE COUNTY COUNCIL

Road Safety Audit Report Template

Project Details

Report Title:	Stage Choose an item. [Insert title]
Location:	[Road name, Area]
Date:	Click here to enter a date.
Document reference and revision	RSA [2XXX]
RSA Team Leader:	Name
RSA Team Member:	Name
Other person(s) involved:	Name

Warwickshire County Council
Transport and Highways
Communities
Shire Hall
Warwick
CV34 4SX
<http://www.warwickshire.gov.uk/roadsafety>



1.0 INTRODUCTION

- 1.1** This report results from a Stage No. Road Safety Audit on the [insert scheme description]. The report was requested by [insert person's name], Choose an item.
- 1.2** No member of the Audit Team has been involved with the design process.
- 1.3** A site visit was carried out on [Click here to enter a date.](#) by both auditors between the hours 10.00 and 12.00. The weather during the site visit was [fine/sunny/light rain/heavy rain] with a [damp/dry/wet] carriageway surface. Traffic flows were noted as being [heavy/light] and varied in type. Pedestrian flows were noted as being [heavy/light].
- 1.4** [Stage 3 only] – The scheme has been [fully/partially] completed with the following items not yet completed; [Insert items].
- 1.5** The drawings and documents supplied for audit are listed in Appendix A. An annotated plan showing the location of any problems identified is located in Appendix B.
- 1.6** The audit has been carried out in accordance with Warwickshire County Council's safety audit procedure Type A (RSA/A), a Road Safety Audit carried out in accordance with GG 119 guidance. – 'Road Safety Audit' of The Highways England's Design Manual for Roads and Bridges.
- 1.7** The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria. All comments and recommendations are referenced to the design drawings and documents supplied with the brief.
- 1.8** In accordance with Warwickshire County Councils Road Safety Audit procedures, it is a requirement that the Design Team in conjunction with the Project Sponsor prepare a Road Safety Audit Response Report, in response to the recommendations made within this audit. This should be completed and a copy of the final report sent to the Audit Team Leader for their information by [Click here to enter a date.](#) All responses should be submitted using Appendix C only.
- 1.9** For any recommendations that are not being adopted, the Design Team or Project Sponsor should notify the Audit Team Leader and discuss these issues to try to achieve a mutually agreed compromise. If an agreement cannot be reached, the Project Sponsor should then submit an Exception

Report to the Assistant Director for Communities for their decision. If an Exception Report is required, a narrative of the exchanges between the Design Team, Project Sponsor and Audit Team Leader should be detailed and submitted alongside the Road Safety Audit Response Form and Exception Report to the Head of Transport and Highways for their information.

2.0 PROPOSALS

[Description of scheme proposals required]

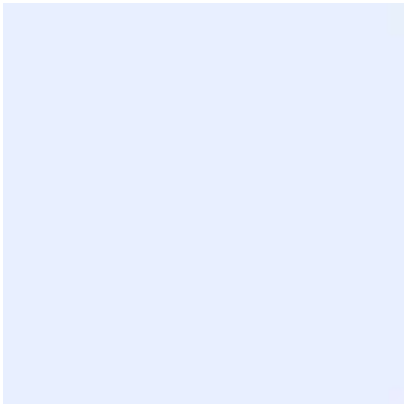
3.0 DEPARTURES FROM STANDARD


Choose an item.

4.0 ITEMS ARISING FROM PREVIOUS STAGE NO. AUDIT


- 4.1** The road safety aspects of the [scheme name] were the subject of comment in the **Click here to enter a date.** Stage NO. Road Safety Audit Report. (Items XXX and XXX) These items remain a problem and are referred to again in the Road Safety Audit Report.
- 4.2** All other issues raised in the Stage NO. Road Safety Audit have been resolved.

5.0 ITEMS RAISED AT THIS STAGE NO. AUDIT

5.1 PROBLEM	
Location:	[Insert the location of the problem and reference to a scheme drawing.]
	
Summary:	[Provide a short summary of the problem]
[Describe the nature of the problem supported by background reasoning and include the type of collisions and/or road user injuries likely to occur]	
Recommendation:	
[Provide a proportionate and viable recommendation, based on the RSA stage, to eliminate or mitigate the identified RSA problem]	

5.2 PROBLEM	
Location:	[Insert the location of the problem and reference to a scheme drawing.]
	
Summary:	[Provide a short summary of the problem]
[Describe the nature of the problem supported by background reasoning and include the type of collisions and/or road user injuries likely to occur]	
Recommendation:	
[Provide a proportionate and viable recommendation, based on the RSA stage, to eliminate or mitigate the identified RSA problem]	

6.0 AUDIT TEAM STATEMENT

We certify that this road safety audit has been carried out in accordance with GG 119 with some relaxations as per WCC Road Safety Audit procedures.	
Road Safety Audit Team Leader	
Name:	Name
Signed:	
Position:	Choose an item.
Date:	Click here to enter a date.
Road Safety Audit Team Member	
Name:	Name
Signed:	
Position:	Choose an item.
Date:	Click here to enter a date.

APPENDIX A

LIST OF DRAWINGS AND DOCUMENTS PROVIDED FOR AUDIT

List of documents e.g. Brief, PIC Data, Traffic Flows, Departures, Previous RSA's, and Designers Responses.

Drawings	
Drawing Number	Description of Drawing
Other Documents	
Drawing Number	Description of Drawing

APPENDIX B

LOCATION PLAN OF IDENTIFIED PROBLEMS

WARWICKSHIRE COUNTY COUNCIL

Road Safety Audit Response Report Template

D1 Project details

Table D.1 Project details

Report title:	Include stage of RSA
Date:	Insert date
Document Reference and revision:	Insert unique document reference
Prepared by:	Insert design organisation
On behalf of:	Insert Project Sponsor details

Table D.2 Authorisation sheet

Project:	Insert project title
Report title:	Include stage of RSA
Prepared by:	Name
	Position
	Organisation
	Date
	Signature
Approved by:	Name
	Position
	Organisation
	Date
	Signature

D2 Introduction

Include a summary of the scheme, the stage of the RSA and the date or reference of the RSA report it relates to.

Provide details of the representatives from the design organisation who prepared the RSA response report.

D3 Key personnel

Table D.3 Key personnel

Overseeing Organisation's Representative(s):	Insert details of the personnel from the Overseeing Organisation responsible for agreeing the actions
Overseeing Organisation's RSA Audit Team Reviewer(s)*:	Insert details of the personnel from the Overseeing Organisation RSA Audit Team responsible for reviewing the response report and advising the OO's Representative
RSA Team:	Insert details of the personnel from the RSA team
Design organisation:	Insert details of the personnel from the design organisation

* Delete if not applicable

D4 Road Safety Audit Decision Log

Table D.3 Road Safety Audit decision log

RSA Problem	RSA recommendation	Design organisation response	Overseeing Organisation's RSA Audit Team review*	Overseeing Organisation's Representative's response	Agreed RSA action
Insert the original problem from the RSA report	Insert the original recommendation from the RSA report	Insert the design organisation's response	Insert the Overseeing Organisation's RSA Audit Team review response	Insert the Overseeing Organisation's Representative's response	Insert the design organisation's and Overseeing Organisation's agreed action to address the problem
Add rows for each problem from the RSA Report					

* Delete if not applicable

D5 Other matters considered relevant by the overseeing organisation

Table D.4 Other matters

MATTER	
Location:	Insert the location of the problem and provide reference to a scheme drawing
Summary:	Provide a summary of the matter of concern
RECOMMENDATION	
Provide a proportionate and viable recommendation to eliminate or mitigate the identified matter. This could include further scheme development to a subsequent RSA stage of further monitoring where insufficient information can be gathered from the available data.	

D6 Design organisation and Overseeing Organisation statements

Table D.5 Design organisation statement

On behalf of the design organisation I certify that:	
1) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation; or	<input type="checkbox"/>
2) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit cannot be agreed and I wish to proceed to an exception report	<input type="checkbox"/>
Name:	
Signed:	
Position:	
Organisation:	
Date:	

Table D.6 Overseeing Organisation statement

On behalf of the Overseeing Organisation I certify that:	
1) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation and will be progressed; or	<input type="checkbox"/>
2) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit cannot be agreed and I wish to proceed to an exception report	<input type="checkbox"/>
Name:	
Signed:	
Position:	
Organisation:	
Date:	

WARWICKSHIRE COUNTY COUNCIL

Road Safety Audit Response Report (Planning Applications) Template

E1. Project details

Table E.1 Project details

Report title:	Include stage of RSA
Date:	Insert date
Document Reference and revision:	Insert unique document reference
Prepared by:	Insert design organisation
Planning Application ref:	Insert details
On behalf of:	Insert applicant details

Table E.2 Design Organisation's Authorisation sheet

Project:	Insert project title
Report title:	Include stage of RSA
Prepared by:	Name
	Position
	Organisation
	Date
	Signature
Approved by:	Name
	Position
	Organisation
	Date
	Signature

E2. Introduction

Include a summary of the scheme, the stage of the RSA and the date or reference of the RSA report it relates to.

Provide details of the representatives from the design organisation who prepared the RSA response report.

E3. Key personnel

Table E.3 Key personnel

Overseeing Organisation's Representative(s):	Insert details of the personnel from the Overseeing Organisation responsible for agreeing the actions
Overseeing Organisation's RSA Audit Team Reviewer(s)*:	Insert details of the personnel from the Overseeing Organisation RSA Audit Team responsible for reviewing the response report and advising the OO's Representative
RSA Team:	Insert details of the personnel from the RSA team
Design organisation:	Insert details of the personnel from the design organisation

* Delete if not applicable

E4. Road Safety Audit Decision Log

Table E.4 Road Safety Audit decision log

RSA Problem	RSA recommendation	Design organisation response	Overseeing Organisation's RSA Audit Team review*	Overseeing Organisation's Representative's response	Agreed RSA action
Insert the original problem from the RSA report	Insert the original recommendation from the RSA report	Insert the design organisation's response	Insert the Overseeing Organisation's RSA Audit Team review response	Insert the Overseeing Organisation's Representative's response	Options: 1. Resolved via Response Report 2. To be incorporated into design 3. To be dealt with by Exception Report
Add rows for each problem from the RSA Report					

* Delete if not applicable

E5. Other matters considered relevant by the overseeing organisation

Table E.5 Other matters

MATTER	
Location:	Insert the location of the problem and provide reference to a scheme drawing
Summary:	Provide a summary of the matter of concern
RECOMMENDATION	
Provide a proportionate and viable recommendation to eliminate or mitigate the identified matter. This could include further scheme development to a subsequent RSA stage of further monitoring where insufficient information can be gathered from the available data.	

E6. Design Organisation and Overseeing Organisation statements

Table E.6 Design Organisation statement

On behalf of the Design Organisation I certify that:	
1) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit have been discussed with the Overseeing Organisation; or	<input type="checkbox"/>
2) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit cannot be agreed and I wish to proceed to an exception report	<input type="checkbox"/>
Name:	
Signed:	
Position:	
Organisation:	
Date:	

Table E.7 Overseeing Organisation statement

On behalf of the Overseeing Organisation I certify that:	
1) The RSA process has been undertaken in accordance with the Overseeing Organisation's requirements. The actions and other matters identified in response to the road safety audit problems in this road safety audit have been discussed with the Design Organisation; or	<input type="checkbox"/>
2) The RSA actions and other matters identified in response to the road safety audit problems in this road safety audit cannot be agreed and an exception report is required	<input type="checkbox"/>
Name:	
Signed:	
Position:	
Organisation:	
Date:	

Use of Passively Safe Street Furniture on Warwickshire County Council Highways

1. Purpose

The purpose of this document is to provide guidance on when and where passively safe street furniture should be installed so that resources are targeted only at those sites where maximum road safety benefits may be achieved for Warwickshire's road users.

2. Background

In 2010, UK Roads Ltd produced a report on the use of passively safe street furniture on British roads. UK Roads Ltd is an independent business dedicated to encouraging a better understanding of the current standards, advice and issues relating to the provision and maintenance of features on our roads. The report draws heavily on the requirements of British Standard BS EN 12767:2019 which sets out design standards, where passively safe posts should be used and is referenced in Design Manual for Roads and Bridges (DMRB).

The approach the above document has taken is to prioritise roads by type, class and speed limit, according to collision risk, as follows:

Priority 1	All rural A roads
Priority 2	40mph urban A roads
Priority 3	All rural B roads
Priority 4	40mph urban B roads
Priority 5	30mph urban A roads
Priority 6	30mph urban B roads

Of lower priority are the following roads, which are unlikely to require passively safe infrastructure, unless specific site conditions and/or collision history indicate otherwise:

- roads with 20mph speed limits
- roads usually lined with parked cars
- residential and industrial estate roads where average traffic speeds are unlikely to exceed 25mph
- country lanes and roads with low traffic volumes.

The collision data for Warwickshire over a twelve-month period from October 2018 to September 2019 (pre Covid-19 pandemic) indicates that fatal and serious injury collisions involving street furniture are very rare. In this time period there were a total of 39 fatal and 268 serious injury collisions on Warwickshire's roads. Of these, none of the fatal collisions and just five of the serious collisions involved street furniture.

Speed and location also play their part in the severity of collisions. Within Warwickshire, routes with speed limits of 50mph or over are more prone to serious and fatal accidents. Rural A roads see higher numbers of deaths and serious injury than do urban highways.

Pedestrians and other vulnerable road users such as cyclists must also be considered when developing a policy for the use of passively safe street furniture. The risk to vulnerable road users is largely from falling lighting columns or signposts following impact by vehicles and depends strongly on the numbers exposed.

Current recommendations are that passively safe posts may not be appropriate where there are likely to be pedestrians or other vulnerable road users on a regular basis. This would apply to most of Warwickshire's urban areas. At traffic signal junctions where pedestrian facilities are implemented on certain approaches but not all, and informal crossing points are likely to exist, then it may be appropriate to install non-passively safe poles across the entire site.

3. Requirement for Passively Safe Street Furniture

Risk of death or serious injury from collision with street furniture on Warwickshire highways is very low. The widescale introduction of passively safe furniture in line with the recommendations of Roads UK Ltd is therefore not justified throughout the County.

Passively safe posts, signal and lighting columns will not be required where road restraint systems are already in place or proposed to be installed. Justifying the introduction of expensive Road Restraint Systems (RRSs) to reduce risk is a challenge for local highway authorities, especially at a time when funding for maintenance and improvements scheme is already limited. Authorities must therefore be confident that any safety measures taken represent good value for money.

Rural A roads with a speed limit of 50mph or more should be considered suitable for the installation of passively safe street furniture. For the purposes of this policy, rural roads are defined as those where housing and other indications of urban life are generally isolated rather than located together in settlements.

Signage should be compliant with BS EN 12767:2019 (Passive safety of support structures for road equipment) and BS EN 12899-5:2007 (Fixed, vertical road traffic signs) or any subsequent superseding standard. Passively safe street furniture should therefore be the default option for all new and replacement street furniture on rural A roads with speed limits of 50mph or more.

However, before installing passively safe items, consideration must also be given to the overall cost and safety benefits of installing such equipment. This consideration should take into account the risk of serious personal injury collisions involving street furniture by looking at the site's collision history, and the cost of installing and maintaining passively safe equipment for the lifetime of the infrastructure.

Where passively safe equipment is the default position, that is, on 50mph or above speed limits on rural A roads, an engineer must, in all cases, carry out an assessment and document the reasons based on the above factors where a decision not to install passively safe street furniture has been reached.

Information on the collision history of specific locations may be obtained by reference to official collision statistics or to WCC

Safety Engineering colleagues.

For all other roads, all signage should be designed in accordance with best practice design principles and passively safe posts will not be used, unless there are convincing safety reasons where to do so would have a direct and beneficial impact on collision and casualty statistics.

Temporary signage that will be removed within twelve months of installation should be designed in accordance with best practice design principles and passively safe posts will not be used unless there are significant safety reasons to do so.

In emergency situations, where immediate response and action are necessary, there may be insufficient time to procure and install passively safe street furniture. In these situations, to address the immediate public safety concerns, it will be acceptable to use standard, non-passively safe posts.

4. Approach summary

Within this policy rural roads are defined as those where housing and other indications of urban life are generally isolated rather than located together in settlements.

4.1 Rural A roads with speed limit of 50mph or above

Passively safe street furniture (signposts, street lighting columns and traffic signals) should be installed on all Warwickshire's rural A roads where speed limits are 50mph or above.

Unless any of the following apply:

- A road restraint system (RRS) is in place or proposed and the street furniture will be protected by the RRS.
- Street furniture can be installed 4.5 metres or more from the edge of the carriageway.
- Pedestrians and other vulnerable road users may be at risk from secondary collisions with falling lighting columns or posts.

- The risk of injury or death from collisions with street furniture, as assessed by analysing the preceding three-year collision history at the site, shows that the installation of such items is likely to have no effect on personal injury collisions.
- The cost of installing and maintaining passively safe street furniture throughout its lifetime outweighs the cost benefit of reducing personal injury collisions (using the latest figures from DfT “Average value of prevention per reported casualty and per reported road accident” analysis).
- An emergency deployment of non-passively safe street furniture is necessary on pressing public safety grounds.

Passively safe street furniture must be compliant with BS EN 12767:2019 (Passive safety of support structures for road equipment) and BS EN 12899-5:2007 (Fixed, vertical road traffic signs) or any subsequent superseding standard.

4.2 All other roads

On all other roads for which Warwickshire County Council is the Highways Authority, passively safe street furniture will not be installed, unless a site specific collision history indicates otherwise.

Landscaping Design – Further Information

1. Planning Obligations and Formal Agreements

Local authorities have a duty under Section 197 of the 1990 Planning Act to ensure the preservation or planting of new trees wherever appropriate when granting planning permission.

Section 278 Agreements of the Highways Act 1980 are agreements between the Highway Authority and the developer which describe the modifications to the existing highway network that are required, with the public interest in mind, to accommodate the new development. Compensation for tree losses and monies for tree planting can form part of this agreement.

Section 106 Agreements of the Town and Country Planning Act 1990 are enforceable planning obligations which may require financial contributions to help mitigate a development's local impact. Tree planting or post planting care finances can form part of these agreements.

The Community Infrastructure Levy (CIL) is a planning charge which allows a local highway authority to fund infrastructure projects by charging on new development in their area. Money raised will be put towards the cost of implementing flood defences, transport, educational, medical, sports or recreational facilities. Most new development which creates net additional floor spaces of 100 square metres or more, or creates a new development, is liable for the levy although some developments may be eligible for relief or exemption from CIL.

The Highway Authority has powers under the Highways Act 1980 Section 64 and 96 to plant and maintain trees, shrubs and other vegetation within the verge for amenity value or in the interests of safety. Individual parts of the highway, such as roundabouts, can be enhanced through planting (within the constraints of sight lines) to both improve landscape quality and, sometimes, safety.

Section 141 of the Highways Act 1980 may be used by the Highway Authority to restrict the planting of trees, shrubs or other vegetation in or near the carriageway. The landowner can apply for a licence to plant and maintain trees as part of a planning application. However, any proposed planting within the highway is *prima facie*, an obstruction, and may need to be removed by the Highway Authority.

2. Relevant British Standards

British Standard BS5837 Trees in relation to design, demolition and construction (BS 5837 2012). Table A1 set out the minimum distance between young trees or new planting and structure to avoid direct damage to a structure from future tree growth.

Type of structure	Minimum distance between young trees or new planting and structure, in metres (m)		
	Stem dia. <300 mm ^{A)}	Stem dia. 300 mm to 600 mm ^{A)}	Stem dia. >600 mm ^{A)}
Buildings and heavily loaded structures	—	0.5	1.2
Lightly loaded structures such as garages, porches etc.	—	0.7	1.5
Services			
<1 m deep	0.5	1.5	3.0
>1 m deep	—	1.0	2.0
Masonry boundary walls	—	1.0	2.0
In-situ concrete paths and drives	0.5	1.0	2.5
Paths and drives with flexible surfaces or paving slabs	0.7	1.5	3.0
^{A)} Diameter of stem at 1.5 m above ground level at maturity			

Table A.1 – Minimum distance between young or new planting and structure to avoid direct damage to a structure from future tree growth (BS 8545:2014)

British Standard BS 8545: 2014 'Trees: from nursery to independence in the landscape' is a key technical document which provides recommendations for all stages of the tree planting process, covering planning, design, production, handling, planting and management. All tree planting proposals should conform to the relevant sections of this British Standard.

3. Arboricultural Method Statements

Where planning permission or other statutory controls apply, details might need to be submitted in draft form or heads of terms to allow for changes to the design that might occur after permission has been granted. In these cases, it will be necessary for the project arboriculturist to set out a series of parameters for construction activity (e.g., where service routes and/or construction activity should not occur), based on the Root Protection Area (RPA) and the physiological needs of the tree, to which the finalized specifications and statements will apply.

A precautionary approach towards tree protection should be adopted and any operations, including access, proposed within the RPA (or crown spread where this is greater) should be described within an arboricultural method statement, to demonstrate that the operations can be undertaken with minimal risk of adverse impact on trees to be retained.

The arboricultural method statement should be appropriate to the proposals and might typically address some or all the following, incorporating relevant information from other specialists as required:

- a) removal of existing structures and hard surfacing
- b) installation of temporary ground protection
- c) excavations and the requirement for specialized trenchless techniques
- d) installation of new hard surfacing – materials, design constraints and implications for levels
- e) specialist foundations – installation techniques and effect on finished floor levels and overall height
- f) retaining structures to facilitate changes in ground levels
- g) preparatory works for new landscaping
- h) auditable/audited system of arboricultural site monitoring, including a schedule of specific site events requiring input or supervision.

The arboricultural method statement should also include a list of contact details for the relevant parties.

- A full tree survey that conforms to the requirements of BS 5837:2012, and any associated documents/advice that have been prepared as part of the planning application process.
- Details of any existing trees planned for retention within land that is proposed for highway adoption and any trees proposed for retention on adjacent land where they are within falling distance of land proposed for highway adoption.
- Drawings showing all areas proposed for highway adoption e.g., Section 38 and/or Section 278 drawings.
- The hydrology of the site.
- Existing soil type and pH.
- Tree planting proposals including:
 - a) Proposed planting positions.
 - b) Proposed species.
 - c) Planting stock specifications (including size and root preparation as a minimum but also provenance and any other related detail).
 - d) Tree pit design, dimensions, details, inclusion of any root deflector products and soil specifications, etc.
 - e) Planting methodology.
 - f) Tree support methods, irrigation system, guards, etc.

Aftercare plans.

- The calculation of the commuted sum value (per unit) required to cover future management and maintenance costs. (A commuted sum will normally be required for the future management and maintenance of all highway assets regardless of whether or not they have been subjected to the formal technical approval process or case officer assessment).
- Plans at a suitable scale indicating north point, tree survey information, retention, categorisation and root protection areas.
- An Arboricultural Implications Assessment of development detailing trees to be retained or removed together with appropriate protection measures.
- The Arboricultural Method Statement is to be approved by WCC prior to work commencing and must be undertaken by a qualified Arboriculturist.

Following the granting of technical approval WCC arboricultural officers will also need to give formal approval as part of the final adoption stage. The key points checked at that stage include:

- That the locations of tree pits, tree species, planting stock size, supports and guards etc., are in accordance with the technical approval.
- That the aftercare plans have been followed and that stakes and guides, guy ropes, tree guards, ties, irrigation systems etc. are not in need of adjustment, replacement or removal.
- Checking the condition of new and existing trees, both vitality and structural condition.
- Checking for any evidence of damage that may have occurred to the trees or their rooting environment.
- Checking the proximity of trees to the 'as built' visibility splays, street furniture and over ground / underground services.
- Checking for root disturbance to pavements or other nearby hard surfacing.
- If any maintenance, change, replacement or remediation is required this will be taken up with the developer and rectified at their cost.

Process Flowchart

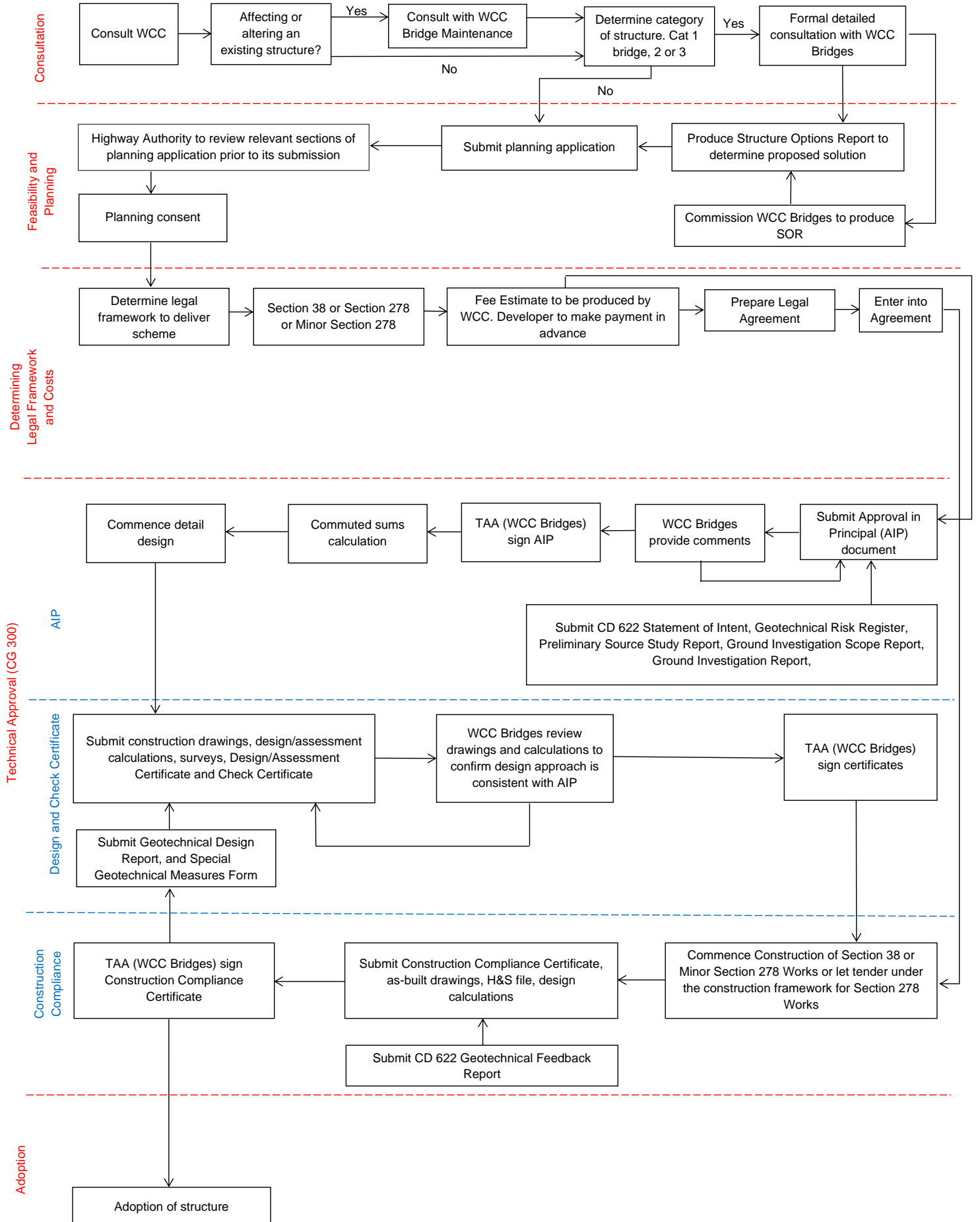


Figure 7.1.1 Process Flowchart

Relevant Structures

New structures to which this guide shall be applied are determined by the Geometric Criteria set out in CG 300 and summarised below in Table 7.2.1.

Type of Structure	Geometric Criteria
Bridge, buried structure, subway, underpass, culvert and any other structure supporting the highway	Clear span or internal diameter greater than 0.9m
Overhead crossing carrying conveyor or utility service	All
Moveable inspection access gantry, gantry rail and gantry support system	All
Earth retaining structure	The effective retained height, i.e., the level of the fill at the back of the structure above the finished ground level in front of the structure, is greater than 1.5m
Reinforced/strengthened soil/fill structure, with hard facings to be designed and constructed either in isolation or as an integral part of another highway structure	The effective retained height is greater than 1.5m
Reinforced/strengthened soil/fill which is an integral part of another highway structure	All
Portal and cantilever sign and/or signal gantry	All
Cantilever mast for traffic signal and/or speed camera	All
Lighting column	All
High mast	More than 20m in height i.e., the vertical distance from top of post to bottom of flange plate, for lighting
Mast for monitoring equipment. i.e., camera, radio and telecommunication transmission equipment	All
Catenary lighting support system	All

Environmental/noise barrier	All
Proprietary manufactured structure or product	All
Traffic sign/signal posts	More than 7m in height, i.e., the vertical distance from top of post to bottom of flange plate or top of foundation whichever is the lesser
Fitting of M&E apparatus and fixtures to existing structures, including tunnels, either permanent or temporary	All
Design, selection and installation of cathodic protection systems for reinforced concrete structures	All
Safety critical fixings as defined in CD 372 (Ref 3.N)	All

Table 7.2.1: Structures subject to Technical Approval Processes

Table of Structural Categories to CG 300

Type of Structure	Category 0	Category 1	Category 2	Category 3
Any bridge, buried structure, subway, underpass, culvert and any other structure supporting the highway, which is not identified elsewhere on this table	Any other structure with a clear span or internal diameter greater than 0.9m and less than 3m	Any other structure with a clear span or internal diameter greater than 3m and less than 8m	Any other structure with a clear span or internal diameter greater than 8m and less than 20m or with a skew greater than 25°, but less than 45°	Any other structure with a clear span or internal diameter greater than 20m or skew greater than 45°
Single span simply-supported structures having less than 25° skew	Span greater than 0.9m and less than 5m	Span of 5m or greater but less than 20m	Span of 20m or greater but less than 50m	Span of 50m or greater
Single span simply-supported structures having greater than 25° skew, but less than 45° skew	Not Applicable	Span greater than 0.9m and less than 5m	Span of 5m or greater but less than 20m	Span of 20m or greater
Single span simply-supported structures having greater than 45° skew	Not Applicable	Not Applicable	Not Applicable	All
Buried concrete boxes, buried rigid pipes and corrugated steel buried structures having more than 1m cover	A clear span/diameter greater than 0.9m and less than 3m	A clear span/diameter greater than 3m and less than 8m	A clear span/diameter greater than 8m and less than 20m	A clear span/diameter greater than 20m
Buried concrete boxes, buried rigid pipes and corrugated steel buried structures having less than 1m cover	Not Applicable	A clear span/diameter greater than 0.9m and less than 8m	A clear span/diameter greater than 8m and less than 20m	A clear span/diameter greater than 20m
Multi-cell buried structures having more than 1m cover	Cumulative span is greater than 0.9m and less than 5m	Cumulative span is greater than 5m and less than 8m	Cumulative span is greater than 8m and less than 20m	Cumulative span is greater than 20m
Multi-cell buried structures having less than 1m cover	Not Applicable	Cumulative span is greater than 0.9m and less than 8m	Cumulative span is greater than 8m and less than 20m	Cumulative span is greater than 20m
Masonry arches (for assessment only)	Span greater than 0.9m and less than 6.5m	Span greater than 6.5m and less than 8m	Span greater than 8m and less than 20m	Span greater than 20m
Moveable Bridges	Not Applicable	Not Applicable	Not Applicable	All

Type of Structure	Category 0	Category 1	Category 2	Category 3
Bridges with suspension systems	Not Applicable	Not Applicable	Not Applicable	All
Steel orthotropic decks	Not Applicable	Not Applicable	Not Applicable	All
Internal grouted duct form of post tensioned concrete structures	Not Applicable	Not Applicable	Not Applicable	All
Overhead crossing carrying conveyor or utility service	Not Applicable	Not Applicable	Span less than 20m	Span greater than 20m
Moveable inspection access gantry, gantry rail and gantry support system	Not Applicable	Not Applicable	Not Applicable	All
Earth retaining structure	<p>The effective retained height, i.e., the level of the fill at the back of the structure above the finished ground level in front of the structure, is greater than 1.5m</p> <p>Earth retaining structures with an effective retained height of greater than 1.5m</p>	Earth retaining structures with an effective retained height of 2.5m or greater but less than 7m	Earth retaining structures with an effective retained height of 7m or greater but less than 14m	Earth retaining structures with an effective retained height of 14m or greater
Reinforced/strengthened soil/fill structure, with hard facings to be designed and construction either in isolation or as an integral part of another highway structure	the effective retained height is greater than 1.5m	Effective retained height of 2m or greater but less than 7m	Effective retained height of 7m or greater but less than 14m	Effective retained height of 14m or greater
Portal and cantilever sign and/or signal gantry	Not Applicable	Span of less than 20m	Span greater than 20m, but less than 50m	Span greater than 50m
Cantilever mast for traffic signal and/or speed camera	High masts $\leq 25\text{m}$ and not situated at a very exposed site as defined in CD 354	High masts $> 25\text{m}$ or situated at a very exposed site as defined in CD 354	Not Applicable	Not Applicable

Type of Structure	Category 0	Category 1	Category 2	Category 3
Post Top Lighting Columns	Less than 20m nominal height and not situated at a very exposed site as defined in CD 354	Greater than 20m nominal height or situated at a very exposed site as defined in CD 354	Not Applicable	Not Applicable
Lighting Columns with brackets	Less than 18m nominal height with bracket projections not exceeding the lesser of 0.25 x nominal height or 3m and not situated at a very exposed site as defined in CD 354	Greater than 18m nominal height or with bracket projections exceeding the lesser of 0.25 x nominal height or 3m or situated at a very exposed site as defined in CD 354	Not Applicable	Not Applicable
High mast	Greater than 20m in height i.e., the vertical distance from top of post to bottom of flange plate and not situated at a very exposed site as defined in CD 354	Greater than 20m in height or situated at a very exposed site as defined in CD 354	Not Applicable	Not Applicable
Mast for camera, radio and telecommunication transmission equipment	Nominal height less than 25m and not situated at a very exposed site as defined in CD 354	Nominal height greater than 25m and not situated at a very exposed site as defined in CD 354	Not Applicable	Not Applicable
Catenary lighting support system	All	Not Applicable	Not Applicable	Not Applicable
Environmental barrier	Less than 3m high and without overhangs	Environmental barriers 3m or more in height or with overhangs	Not Applicable	Not Applicable
Traffic sign/signal posts	More than 7m, but less than 9m in height (i.e., the vertical distance from top of post to bottom of flange plate or top of foundation whichever is the lesser) and not situated at a very exposed site as defined in CD 354	Greater than 7m, but less than 9m in height (i.e., the vertical distance from top of post to bottom of flange plate or top of foundation whichever is the lesser) or situated at a very exposed site as defined in CD 354	Not Applicable	Not Applicable

Table 7.3.1 Structural Categories to CG 300

AIP Guidance Notes

Name of Project _____

Name of Bridge or Structure _____

Structure Ref No _____

1. HIGHWAY DETAILS

1.1 Type of highway

Please provide the type of highway as per the descriptions in CD 109, e.g., Dual two-lane All-Purpose Road.

1.2 Permitted traffic speed

For a bridge, please provide the permitted speed of the road over and/or under.

1.3 Existing restrictions

For a bridge, please provide the existing restrictions of the road over and/or under. This should include; weight, height, width and any environmental restrictions at or adjacent to the bridge.

2. SITE DETAILS

2.1 Obstacles crossed

For a bridge or culvert please provide the road over and the obstacle (Road or Water Course) under.

3. PROPOSED STRUCTURE

3.1 Description of structure and design working life

Provide a simple physical description of the structure, its constituent principal elements and geometry.

For bridges, this will include: the type of bridge, the no. of spans, skew, deck span and width between parapets, details of the deck construction, principal materials, support conditions and geometry of principal elements, the principal materials used and geometry of abutments and intermediate piers and wingwalls.

For retaining walls, headwalls and wingwalls, this will include: the type of wall, principal materials, the retained height and dimensions for embedment depth/cantilever base, etc.

For culverts and pipes, this will include the type of pipe/culvert, its length and internal dimensions, slab and/or wall thickness the depth of cover beneath the highway.

Provide a statement of the design working life.

Provide a General Arrangement Drawing with the appendices.

3.2 Structural type

A detailed technical description of the structure, which informs how it is to be modelled at design stage,

3.3 Foundation type

A detailed technical description of the foundations, which informs how they will be modelled at design stage.

3.4 Span arrangements

Only applicable to bridges and culverts. A detailed technical description of each span, their clear and square elevations, including variations according to skew and curvature.

3.5 Articulation arrangements

Only relevant to bridges. Provide a detailed description of the support conditions for the superstructure, including bearing arrangements, fixed-ends and details of movement joints.

3.6 Classes and levels

3.6.1 Consequence class

Consequence Class should be in accordance with Table B1 of BS EN 1990:2002, cl. NA 3.2.1 from the associated UK National Annex and Table 7.2 of CD 350. This should be stated in this section.

3.6.2 Reliability class

Reliability Class should be in accordance with Table B2 of BS EN 1990:2002 and Table 7.2 of CD 350. This should be stated in this section.

3.6.3 Inspection level

The Inspection Level should be in accordance with Table B5 of BS EN 1990:2002 and Table 7.2 of CD 350. This should be stated in this section.

3.7 Road restraint systems requirements

This should include the road restraint system requirements for the permanent state. It should be determined through a Road Restraint Risk Assessment Process (RRRAP) in accordance with CD 377. A detailed technical description of the restraint system transitions and terminals should be provided, including the principal materials, height, containment class and working width.

3.8 Proposals for water management

Outline how water management will be integrated within the design of the structure and individual components, in accordance with CD 350.

3.9 Proposed arrangements for future maintenance and inspection

3.9.1 Traffic management

The Traffic Management (TM) should be that required to gain access for future maintenance and inspection only, not during construction. It should include the type and location of the TM e.g., single lane closure of lane 1. Where appropriate, the TM arrangements should consider specific maintenance activities, e.g., replacement of parapets and waterproofing, concrete/masonry repairs and replenishing the steel corrosion protection system.

3.9.2 Arrangements for future maintenance and inspection of structure. Access arrangements to structure.

This should discuss how to gain access for future maintenance and inspection. It should include the type e.g., access to all parts of the structure can be obtained by foot. If specialist equipment is needed e.g., the soffit can be inspected through the use of a mobile elevated working platform (MEWP) then it needs to be stated. If the access requires specialist equipment this needs to be discussed with the Bridge Maintenance team and may need to be reflected in the commutative sum e.g., if the structure is a confined space and should be inspected by a suitably trained team, or the inspection should be carried out by CCTV or drones.

3.10 Environment and sustainability

A summary of the features of the design which improve the sustainability of the structure. This might include use of recycled/recyclable materials, prefabricated elements, durability and ease of maintenance and ecological features and protections.

3.11 Durability. Materials and finishes

A detailed description of component materials, their properties and quality of finishes.

3.12 Risks and hazards considered for design, execution, maintenance and demolition. Consultation with and/or agreement from CDM co-ordinator

A list of the risks and hazards to be considered in the design. Alternatively, the CDM Designer's Risk Register can be appended to the AIP Document.

3.13 Estimated cost of proposed structure together with other structural forms considered (including where appropriate proprietary manufactured structure), and the reasons for their rejection (including comparative whole life costs with dates of estimates)

This is the Estimated Construction Cost the structural elements subject to Technical Approval. This will also be used as the basis for calculating Commuted Sums for Future Maintenance, where the structure is to be adopted by the Highway Authority.

For Category 0 and 1 Structures, provide a simple physical description of any alternative options considered and summary of the options appraisal. For Category 2 and 3 Structures refer to the Feasibility Report approved by the Highway Authority.

3.14 Proposed arrangements for construction

3.14.1 Construction of structure

An outline construction sequence, including utility diversions, traffic management phasing and temporary works. This is for the purposes of establishing buildability. It is understood that a contractor may employ a different methodology.

3.14.2 Traffic management

An outline description of the envisaged traffic management, road closures and diversions

3.14.3 Service diversions

A simple description of temporary and permanent service diversions

3.14.4 Interface with existing structure

The extents of any modifications and/or protection to existing structures that could be affected by the works

3.15 Resilience and security

A description of any design features which will improve the resilience and security of the structure i.e. How will the structure be designed to resist and recover from deliberate damage which may arise from the actions of vandals, thieves and terrorists.

4. DESIGN CRITERIA

4.1 Actions

4.1.1 Permanent actions

All permanent actions should be in accordance with BS EN 1991-1-1:2002 and its associated National Annex. Typical densities for materials should be listed here as well, e.g.:

Normal weight reinforced concrete = 25 kN/m³

Carriageway and pavement surfacing = 23 kN/m³

Compacted granular fill = 19 kN/m³

4.1.2 Snow, Wind and Thermal actions

Live load surcharge effects will be considered using the same vehicle in accordance with clause NA2.34.3 of the UK National Annex to BS EN 1991-2:2003, or with the loading recommended by clause 7.6 of PD 6694-1:2011.

4.1.3 Actions relating to normal traffic under AW regulations and C&U regulations

This should focus on the application of Load Models 1 and 2 (vehicular traffic) in accordance with BS EN 1991-2:2003.

Live load surcharge effects associated with the Load Models in Figure NA.6 as defined by clause NA2.34.2 of NA to BS EN 1991-2, or with the loading recommended by clause 7.6 of PD 6694-1:2011.

4.1.4 Actions relating to General Order traffic under STGO regulations

This should focus on the application of Load Model 3 will be represented by special vehicle type SV80, SV100 and SV196 will be considered. Application to be in accordance with Table 7.6.2 of CD 350 based on the proposed residential streets being classified as 'other public road'.

Live load surcharge effects will be considered using the same vehicle in accordance with clause NA2.34.3 of the UK National Annex to BS EN 1991-2:2003, or with the loading recommended by clause 7.6 of PD 6694-1:2011.

4.1.5 Footway or footbridge variable actions

This should focus on the application of Pedestrian (Load Model 4) to BS EN 1991-2:2003, and its UK NA for use in load group gr1a.

4.1.6 Actions relating to Special Order traffic, provision for exceptional abnormal indivisible loads including location of vehicle track on deck cross-section

Consult with the Highway Authority in advance to agree the assumptions and parameters used to model Special Order Traffic and Exception Abnormal Load Effects.

4.1.7 Accidental actions

Focus on such actions including;

Presence of accidental vehicle on the verges will be considered in accordance with BS EN 1991-2:2003 Cl.4.7.

4.1.8 Action during construction

Provide a technical description of the construction stages where critical load effects need to be modelled which differ from those included in the permanent design, for example

- *Staged backfill of bridge abutments prior to deck construction*
- *Supporting wet concrete prior to forming an integral connection between abutment and deck*
- *Support of temporary falsework*

4.1.9 Any special action not covered above

Such actions might include seismic action, atmospheric icing, floating debris etc.

4.2 Heavy or high load route requirements and arrangements being made to preserve the route, including any provision for future heavier loads or future widening

Consult with the Highway Authority in advance for advice about known existing or future heavy or high load requirements or plans for future widening of the highway.

4.3 Proposed minimum headroom to be provided

Describe the clearance criteria above the obstacle crossed where this is a highway, railway canal or public right of way. Similarly, where the structure includes overhead bracing or a roof, the headroom provided shall be stated here.

- 4.4 Authorities consulted and any special conditions required
Organisations such as Local Authorities, Statutory Undertakers, National Highways, the Canal and Rivers Trust, Network Rail, Environment Agency etc, with assets which could be potentially affected by the scheme should be consulted prior to submitting the AIP document. Any requirements stipulated by those Authorities such as clearances, protective measures and design details should be recorded here and where appropriate they should be visible on the drawings supplementing the AIP document.
- 4.5 Standards and documents listed in the Technical Approval Schedule
The Technical Approval Schedule can be provided as an appendix based upon the standard National Highways schedule, which is freely available online
- 4.6 Proposed Departures relating to departures from standards given in 4.5
It is recommended that the Highway Authority is consulted on any potential Departures from Standard before submitting an Approval in Principle document. Typically, Departures are only approved where site constraints prohibit compliance with current technical standards. A simple summary of the necessary Departure and its justification are provided here.
- 4.7 Proposed Departures relating to methods for dealing with aspects not covered by standards in 4.5
As Section 4.6
- 4.8 Proposed safety critical fixings
Provide a description of the fixture supports, the location on the structure, the design working life of the fixing, and the future maintenance arrangements.

5. STRUCTURAL ANALYSIS

- 5.1 Methods of analysis proposed for superstructure, substructure and foundations
The Technical Approval Schedule can be provided as an appendix based upon the standard National Highways schedule, which is freely available online
- 5.2 Description and diagram of idealised structure to be used for analysis
The description and appended diagram shall describe the geometry, loading criteria and support conditions of the critical structural section(s) to be designed.
- 5.3 Assumptions intended for calculation of structural element stiffness
Describe the simplified material and section properties to be assumed in the models for different structural elements
- 5.4 Proposed range of soil parameters to be used in the design of earth retaining elements
The appropriate range of soil parameters will depend upon the type of structure being designed. Typically, these will include: the bearing capacity, angle of friction, lateral earth pressure coefficients, spring coefficients and any other variable property or

parameter needed for the design process. As well as site specific soil strata, the properties of engineering fill materials incorporated into the works may also be relevant.

6. GEOTECHNICAL CONDITIONS

- 6.1 Acceptance of recommendations of the ground investigation report (reference/dates) to be used in the design and reasons for any proposed changes

A statement accepting the recommendations of the GDR providing its unique reference number will suffice. Alternatively, if the GDR is not yet available, provide reference to a Ground Investigation Report supplemented by recommendations based upon interpretations of factual geotechnical data.

- 6.2 Summary of design for highway structure in the Geotechnical Design Report

Summarise the available geotechnical design information presented in the GDR. Alternatively, if a GDR is not yet available

- 6.3 Differential settlement to be allowed for in the design of the structure

Describe the simplified material and section properties to be assumed for different structural elements

- 6.4 If the Geotechnical Design Report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations

Describe the simplified material and section properties to be assumed for different structural elements

7. CHECK

- 7.1 Proposed Category and Design Supervision Level

The Proposed Category shall be determined using the geometric criteria set out in CG 300. The Design Supervision Level shall be in accordance with Table B.4 of BS EN 1990:2002 + A1:2005 & Corr. April 2010 and Table 7.2 of CD 350.

- 7.2 If Category 3, name of proposed Independent Checker

Where applicable, please provide details of the proposed Independent Checker including their name, job title, employer and professional qualifications

- 7.3 Erection proposals or temporary works for which Types S and P Proposals will be required, listing structural parts of the permanent structure affected with reasons

Provide a simple physical description of any Temporary Works which will affect or support the Public Highway including the carriageway, footways and verges or any Public Right of Way and which will require Technical Approval to CG 300.

8. DRAWINGS AND DOCUMENTS

- 8.1 List of drawings (including numbers) and documents accompanying the submission

Include, without limitation:

a) Technical Approval Schedule (TAS).

- b) General Arrangement Drawing.
- c) Relevant extracts from the Ground Investigation Report or Geotechnical Design Report.
- d) Departures.
- e) Relevant correspondence and documents from consultations.

9. THE ABOVE IS SUBMITTED FOR ACCEPTANCE

Signed _____
Name _____
Design Team Leader

Engineering _____
Qualifications _____
Name of Organisation _____
Date _____

10. THE ABOVE IS REJECTED/AGREED SUBJECT TO THE AMENDMENTS AND CONDITIONS SHOWN BELOW

Signed _____
Name _____
Position held _____
Engineering _____
Qualifications _____
TAA _____
Date _____

APPENDIX A – TECHNICAL APPROVAL SCHEDULE (TAS)

A basic template for the TAS is available on the Standards for highways website, link below. However, this is only a template, it is the responsibility of the author of the AIP to ensure the TAS is up to date and includes all the relevant dates and parts, together with the amendments. Advice for compiling the TAS is also available in Appendix H of CG 300.

Link: www.standardsforhighways.co.uk/ha/standards/dmr/vol1/section1.htm

APPENDIX B – LOCATION MAP

A general location map identifying the location of the structure in relation to nearby road, towns and cities, together with eastings and northings (preferred).

APPENDIX C – AIP DRAWINGS

The AIP drawings should be sufficient to give an idea of how the structure will look at the materials used. Generally, there would consist of the General Arrangement Drawings. unless It may include existing as-built drawing information which can be requested by the Reinforcement Drawings are general not required

APPENDIX D – IDEALISED MODEL

The idealised model should show how the structure will be analysis, either by hand or on a computer analysis software. It should include the application of all key loads, the assignment of section properties and the idealisation of the boundary conditions.

APPENDIX E – GEOTECHNICAL INFORMATION

The geotechnical information should only include that which is relevant to the structure discussed in the AIP.

Table of Procedures to CD 622

	Category 1	Category 2	Category 3
Statement of Intent To be completed before Preliminary Consultations with the TAA	1. Prepare and Submit the Statement of Intent and prepare Geotechnical Risk Register 2. Agree Geotechnical Category with the TAA at the Planning Stage	1. Prepare and Submit the Statement of Intent and prepare Geotechnical Risk Register 2. Agree Geotechnical Category with the TAA at the Planning Stage	1. Prepare and Submit the Statement of Intent and prepare Geotechnical Risk Register 2. Agree Geotechnical Category with the TAA at the Planning Stage
Preliminary Source Study Report and Ground Investigation Scope Report To be completed during Preliminary Consultations with the TAA	1. Prepare the Preliminary Sources Study Report (PSSR) and Ground Investigation Scope Report and submit to TAA for approval 2. Update and Submit Geotechnical Risk Register	1. Prepare the Preliminary Sources Study Report (PSSR) and Ground Investigation Scope Report and submit to TAA for approval 2. Update and Submit Geotechnical Risk Register	1. Prepare the Preliminary Sources Study Report (PSSR) and Ground Investigation Scope Report and submit to TAA for approval 2. Update and Submit Geotechnical Risk Register
Ground Investigation Report To be completed before submitting the Approval in Principle	1. Review Geotechnical Classification 2. Undertake a Ground Investigation 3. Submit the Ground Investigation Report (GIR) to the Geotechnical Advisor for approval	1. Review Geotechnical Classification 2. Undertake a Ground Investigation 3. Submit the Ground Investigation Report (GIR) to the Geotechnical Advisor for approval. 4. If available, include the Special Geotechnical Measures Form (SGM) or Outline SGM with the AIP Document. 5. If available, include the Geotechnical Design Report (GDR) or Outline GDR with the	1. Review Geotechnical Classification 2. Prepare the Preliminary Sources Study Report (PSSR) and Geotechnical Risk Register and submit to the TAA for approval 3. Undertake a Ground Investigation 4. Submit the Ground Investigation Report GIR) to the Geotechnical Advisor for approval. 5. If available, include the Special Geotechnical Measures Form (SGM) or Outline SGM with the AIP Document. 6. If available, include the Geotechnical Design Report (GDR) or Outline GDR

		AIP Document.	with the AIP Document.
Geotechnical Design Report and Special Geotechnical Measures Form To be completed before submitting the Design and Check Certificates	1. Review Geotechnical Classification 2. Prepare and submit the Geotechnical Design Report (GDR) and accompanying Geotechnical Certificate to the TAA for approval 3. If strengthened earthworks are to be designed, submit a Special Geotechnical Measures Form (SGM) or Outline SGM to the TAA for approval	1. Review Geotechnical Classification 2. Prepare and submit the Geotechnical Design Report (GDR) and accompanying Geotechnical Certificate to the TAA for approval 3. If strengthened earthworks are to be designed, submit a Special Geotechnical Measures Form (SGM) or Outline SGM to the TAA for approval	1. Review Geotechnical Classification 2. Prepare and submit the Geotechnical Design Report (GDR) and accompanying Geotechnical Certificate to the TAA for approval 3. If strengthened earthworks are to be designed, submit a Special Geotechnical Measures Form (SGM) or Outline SGM to the TAA for approval
Additional GI during Main Works Updated AIP and Design and Check Certificates, to be submitted as necessary	1. On completion of the additional GI, prepare and submit the revised GDR and accompanying Geotechnical Certificate to the TAA for approval 2. On completion of the additional GI, prepare and submit the revised GDR and accompanying Geotechnical Certificate to the TAA for approval	1. Prepare and submit the revised Annex A to the PSSR and accompanying Geotechnical Certificate to the TAA for approval 2. On completion of the additional GI, prepare and submit the revised GDR and accompanying Geotechnical Certificate to the TAA for approval 3. If Strengthened Earthworks are to be designed, attach the updated SGM to the GDR	1. Prepare and submit the revised Annex A to the PSSR and accompanying Geotechnical Certificate to the TAA for approval 2. On completion of the additional GI, prepare and submit the revised GDR and accompanying Geotechnical Certificate to the TAA for approval 3. If Strengthened Earthworks are to be designed, attach the updated SGM to the GDR
Geotechnical Feedback Report To be completed before submitting the Construction Compliance Certificates	1. Prepare and Submit the Geotechnical Feedback Report (GFR)	1. Prepare and Submit the Geotechnical Feedback Report (GFR)	1. Prepare and Submit the Geotechnical Feedback Report (GFR)

Table 7.5.1 Procedures to CD 622

Specification for the Structural Maintenance Manual

Where a highway structure has been constructed or modified as part of a roadworks scheme, a Structural Maintenance Manual shall be produced as a separate document informed by or incorporating parts of the Health and Safety File that are relevant to the structure. The Structural Maintenance Manual shall be in a format to be agreed and as a minimum contain the following elements:

- a) Cover page, with Structure Name, ECC (Engineering and Construction Contract) Number and date when completed.
- b) List of contents.
- c) Location plan and grid reference.
- d) Copy of accepted Approval in Principle form complete with TA Schedule and Appendix.
- e) Copy of accepted Design and Check Certificates.
- f) Copy of Construction Compliance Certificate.
- g) Description of structure with general arrangement drawing.
- h) Copy of any licenses required for construction.
- i) Plan showing the highway boundary, and any agreement for access for future inspection and maintenance.
- j) Details of any plant running over or under the structure.
- k) Details of construction methods used for the structure where these may have health and safety implications for future work.

- l) Details of materials used in the construction of the structure where these may have health and safety implications for future work.
- m) Details of specific maintenance requirements and procedures for the structure.
- n) Details of access to the structure for inspection.
- o) List of designers, principal designer, principal contractor, subcontractors and suppliers for all work and materials used in the construction of the structure, together with their addresses.
- p) List of As Constructed drawings.
- q) Copies of test results and certificates (cube results, Agreement Certificates etc.) for all materials used in the construction of the structure.
- r) Copies of proprietary products brochures and pamphlets (annotated).
- s) If applicable, a diagram showing minimum headroom over carriageways, footways and central reserve.
- t) Photographs showing the bridge elevations and the road scene.
- u) Copies of the Legal Agreements, Wayleaves and Licences permitting access to private land for future inspection and maintenance activities.
- v) Details of all known utilities' apparatus.
- w) Details of ecological features, specifically mounted on or part of structures.

Highway Works Agreements

10.1 General Introduction

The purpose of this annexure is to provide information for developers about the different, most common types of highway works agreements, when each is applicable, and the procedures to be followed in each case to ensure matters can be dealt with expeditiously.

A condition or conditions imposed on a planning consent may require alterations or improvements to the public highway to be completed before a development is occupied or, in some instances, before it is commenced. For the necessary works to be executed the developer must enter into an appropriate form of highway works agreement with the Highway Authority.

In some cases, where a condition has not been imposed, the requirement may be in the form of a planning obligation contained in an agreement made between the developer and Local Planning Authority under Section 106 of the Town and Country Planning Act 1990 relating to the planning consent.

The highway works agreements discussed are;

- 10.2 Section 38 Highway Agreement
- 10.3 Section 278 Highway Agreement
- 10.4 Section 219/200 Agreement (Advanced Payments Code)
- 10.5 Section 278 Minor Works and Section 184 Agreements

This document also includes details on how commuted sums are calculated.

10.2 Section 38 Agreement

Section 38 is a power allowing Highway Authorities to adopt newly constructed roads by agreement with landowners and developers. To facilitate adoption, Warwickshire County Council (WCC) requests that all new roads on developments are constructed to standards suitable for adoption.

Areas for adoption will always include the following elements where these are provided: carriageways; cycleways; footways; verges; service strips, and highway drains where no public sewer is provided. For WCC's requested standards developers should refer to the guidance contained within all parts of the Warwickshire Design Guide and [County Surfacing Strategy](#).

10.2.1 Section 38 Submission

To secure the adoption of roads it will be necessary, once the relevant planning consent has been issued, for the developer to apply in writing to the Highway Authority to enter into an agreement under Section 38 of the Highways Act 1980. The application form can be found at [WCC's Estate Roads for Adoption](#).

The developer will be required to deposit a secured bond with the Highway Authority to the value of the highway works. Where a developer deposits a bond or payment with the Highway Authority for the construction of the roads under Section 219 of the Highways Act 1980 - the Advance Payments Code - then such a bond or payment may be transferable to the Section 38 Agreement.

Under the terms of the agreement the Authority will, amongst other things, undertake regular site inspections and issue such instructions as may be appropriate regarding construction materials and procedures. However, it should be noted that design changes should be approved in writing by WCC's Approving Engineer.

A staged release of the bond will be in accordance with the agreement:

- A reduction at completion of binder within the carriageway, subject to satisfactory material testing.
- A reduction at completion of the binder course within the footway.
- A reduction at completion (maintenance period).

At the end of the maintenance period, subject to the satisfactory completion of any remedial works which may in the opinion of the Highway Authority be necessary, the highways will be adopted and therefrom will be maintainable at public expense.

Within your Section 38 submission, you should provide:

- A cheque for £1500.00 made payable to Warwickshire County Council to cover technical approval. Note, a charge of £500 will be made for every set of comments made above the first three.
- A completed application form.
- A copy of the planning permission.
- A coloured layout, using the convention detailed below.
- Results from a full ground investigation, to include, in situ CBR's and Plasticity Index testing. Without this information the submission will not be considered as this information is crucial to ascertaining the 'design' CBR of the roads. Should the PI testing not be carried out, then a sub-base layer of 600mm will need to be specified as per the guidance in County Surfacing and Structural Maintenance Strategy.

WCC require the technical approval drawings to contain the following;

- A coloured layout, using the following colours:

Carriageways (asphalt and blocks)	Brown
Footways and drive crossings	Yellow
Verges and service strips	Green
Cycleways (shared or segregated)	Grey
Highway drains and gully connections	Blue
Land ownership boundary	Edged red
Works within the highway	Edged and hatched pink above carriageway, footway or verge colouring

- The coloured plan should detail chainages, annotated drainage (manholes, pipe runs, etc)
- The coloured drawing should also include a table, detailing the adoptable linear and square metreage of the carriageway, the footway, and the verge

- A drainage plan, clearly marking the difference between highway drainage and Section 104 drainage, and any other drainage within the adoptable highway and its status i.e., Private/Water Authority adopted
- An engineering layout
- A contour plan
- Longitudinal sections, detailing channel levels, horizontal and vertical curves, drainage details etc.
- Construction details
- A manhole schedule
- A kerbing and surfacing plan
- A Stage 2 Road Safety Audit (RSA2) (and accompanying Designer's Response)

10.2.2 Technical Approval

Technical approval will not be granted until the various consultations, i.e., street lighting, drainage and highway landscaping have been agreed.

At this stage, the bond will be calculated at 110% of the total cost of works plus commuted sums, using WCC rates. The inspection fees will be calculated as follows:

- 8.5% of the bond (excluding commuted sums) should the developer agree to not commence Section 38 works until technical approval has been granted.
- +1% over and above the 8.5% every calendar month, that the developer wilfully constructs Section 38 works without the benefit of technical approval.

It is possible that a Section 38 inspector may be released to site prior to technical approval being granted, but the following conditions must be met:

- The long sections are required to be approved.
- The construction details are required to be approved.
- CBR's and PI testing are to have been carried out, and the design CBR and construction depths agreed with the Engineer. (N.B. If PI testing has not been carried out then a capping layer of 600mm will be assumed).
- The 8.5% fees will have been paid (with the balance to be paid on signing of the agreement).

Provisional commuted sums will be calculated using the method below, with the final balance to be paid prior to adoption.

10.2.3 Site Inspections

Upon receipt of the inspection fees, a pre-start meeting should be arranged with the relevant site inspector, and then regular inspections will be carried out.

10.2.4 Material Testing

Details for the material testing, along with GI information outlined above, can be found within [WCC's County Road Construction Strategy](#). However, further to the information held within this document, relating to cores (973AR Compaction Requirements), given the large number of singular cul-de-sacs generally within developments, the developer is also required to take three pairs of cores per cul-de-sac.

The core information provided by the developer, should be shown within a full 'Field Test', i.e.

- Nuclear Density readings
- Temperatures (arrival and laid)
- A laying plan showing what material was laid on what day and where. If a different plant was used within a day, then this should be shown on the plan. (If this information cannot be provided, then maximum density's will be required for each core pair).

Subject to satisfactory core results, along with satisfactory highway drainage air testing, the bond will be reduced to 70% of the total bond value.

Following construction of the footway up to binder course, a further 15% of the total bond value will be released.

Upon completion of the development the Provisional Certificate of Completion will be issued and the bond may be reduced further, at the discretion of the engineer. During this time, known as the 'maintenance period', the developer is expected to arrange the adoption of both the foul and storm sewers with the relevant Water Authority. Please note the Provisional Certificate of Completion will only be issued if evidence is provided that the foul and storm sewers have either been adopted or are on maintenance with the Water Authority.

10.2.5 Adoption as Highway Maintainable at Public Expense

Following on from the maintenance period, which shall last a minimum of twelve months, and the developer has secured the adoption of the sewers, the Highway Authority, at the request of the developer, will undertake a final inspection to agree any remediation works required prior to the Final Sign Off. once these works have been completed, and agreed, the developer shall provide:

- A set of as built drawings (both as pdf and Autocad)
- Health and Safety files
- Street light test certificates
- Confirmation from Warwickshire Fire and Rescue, that they have approved the firefighting provisions (in line with the Section 38 agreement)
- CCTV of any (if applicable) highway drainage
- A Stage 3 Road Safety Audit (RSA3)

At this point, the Final Certificate of Completion will be issued, the remainder of the bond released, and the scheme will be considered as Highway maintainable at public expense.

Unless the Section 38 Agreement has been sealed, then it is not acceptable for the developer to use this agreement as a means of accessing the development. A separate Section 184 Agreement must be entered into, details of which can be found below.

Dedicated parking areas for residents, businesses and visitors will not be adopted, but defined on- street parking spaces for all users will.

10.3 S278 Agreement

Section 278 of the 1980 Highways Act is a power allowing Highway Authorities to secure improvements to existing roads by agreement with landowners and developers. This type of agreement will be required where the execution of the highway works will have a significant impact on the day-to-day operation of the public highway either during the construction of the works or upon completion of the development. Typical examples are where road widening, roundabouts or traffic signals are proposed, or where construction requires significant temporary traffic management.

Before making an application to enter into an Agreement, the developer or their consultant should be entirely satisfied as to the scope of the works involved. If required, they may request a meeting at a mutually acceptable time and location with an appropriate County Council Officer and/or engineer to discuss such matters. Fees will not normally be charged for this service but, where a meeting is particularly protracted or more than one meeting is requested, the Highway Authority reserve the right to consider their Officer's or engineer's attendance as part of the design process and will advise the developer in writing that fees may as such be retrospectively levied.

It is recommended therefore, where a developer considers time to be of the essence, they request a pre-Agreement meeting with an appropriate Highway Officer and/or engineer at the earliest practicable date to enable the legal formalities and technical review to proceed as expeditiously as possible.

10.3.1 Section 278 Submission

Detailed requirements for developers required to enter into a Section 278 Agreement with the Authority are contained within [WCC's S278 Developer Guidance Document](#) which can be found on www.warwickshire.gov.uk/roaddesigns.

10.4 Section 219/220 Agreements (Advanced Payments Code) (Highways Act 1980)

Under Part XI of the Highways Act 1980, the Advanced Payment Code (APC), Section 219/220 requires that anyone proposing to build houses served by a private street must deposit enough money with the Highway Authority, to cover the eventual cost of making up the street to an adoptable standard.

The aim of this is to relieve house buyers fronting these streets of road charge liabilities under the Private Street Works Code, should the developer default.

A street is considered to be private until such time as it is adopted as public highway, or subject of a legal agreement which provides for it to become highway maintainable at public expense.

The Highway Authority is required to serve the appropriate Notice, detailing the sum required under Section 220, within six weeks of formal notification of Building Regulation Approval being granted.

Where a charge has been issued, it is an offence to do work in contravention of the Code, which is to start building the houses before depositing the funds or securing a bond.

The Highway Authority will use the appropriate legal system to recover the outstanding monies.

10.4.1 Section 219/220 Exemptions

There are certain exemptions to the operation of the APC, one of which is an agreement under Section 38 of the Highways Act.

The Highway Authority encourages developers to enter into a Section 38 agreement as an alternative to the deposit of money required by Section 219. However, the Highway Authority is aware that the sealing of the Section 38 agreement can often far exceed the timeframe of the APC, and the developer should be aware that they would be in breach of the APC should building work commence prior to the Section 38 agreement being sealed.

Where it is the applicant's or developer's intention not to offer roads for adoption this should be made clear when submitting the planning application in order that appropriate conditions can be recommended to the Local Planning Authority. It is still recommended that roads are constructed to adoptable standards to ensure that durability will be guaranteed for both public and private roads and mitigate the need at a later date for the Authority to use powers under the Private Street Works Code. Developers must note that the APC will still apply.

10.4.2 Section 219/220 Submission

As part of the APC process, the developer is encouraged to have early discussions with the engineer. The developer is required to pay inspection, administration and legal fees, as part of the appraisal in line with the current rate.

To reduce the on-going APC liability, the requirements are as follows:

1. All drawings, specifications etc must be submitted to the Highway Authority for technical approval.
2. The construction, on site, to be in accordance with the approved drawings, inspected and approved by the relevant Highway Authority Inspector.
3. Provisions for the on-going maintenance of the street to be considered, and details of the legal mechanism, or management company will be required, along with the planned maintenance regime, including an Operations and Maintenance Schedule.
4. Details of the legal mechanism to prevent the developer/Management Company/Resident from asking the Highway Authority to adopt the road via Section 37 of the Highways Act 1980.
5. An APC appraisal fee of 8.5% of the estimated cost of the works will be charged for these services. Should the highway works commence on site prior to technical approval being granted, then an appraisal fee of 10% will be charged.
6. An exemption notice under 219 (4)e will be served once the roads have been certified acceptable by the Highway Authority, and the appropriate legal mechanisms are in place to secure its future maintenance. Any secured monies will be returned, or if bonded, this will be cancelled. Part refund of the deposits will not be permitted.

10.5 Section 278 Minor Works and Section 184 Agreements

This type of agreement will be required where the execution of the highway works will not have a significant impact on the day-to-day operation of the public highway either during the construction of the works or upon completion of the development.

Section 184 clauses may be incorporated into a Minor Highway Works Agreement where the construction of, or improvements to, the site access or accesses is included as part of the works.

Section 38 clauses may be incorporated into a Minor Highway Works Agreement where the developer is dedicating land as highway maintainable at public expense in connection with the works, such as making provision for a public highway footway to be constructed outside the limits of the existing highway.

10.5.1 Section 278 Minor Works and/or Section 184 Submission

The developer should appoint a qualified consultant to produce a full suite of drawings to include:

1. An Ordnance Survey based land plan to a suitable standard scale to clearly show:
 - The name and number of the relevant public highway.
 - All relevant land within the developer's ownership edged red.
 - Any land proposed to be dedicated by the developer as highway maintainable at public expense shaded pink.
 - Any areas of the existing public highway required to be stopped up to enable the works hatched red.
 - The route and number of any public right of way affected or adjacent to the proposed works.
 - A north point.
 - The name of the site, name of the applicant, date and scale in a title box.

2. A topographical survey to an appropriate scale to clearly show:

- All surface details of the relevant highway and adjacent land including existing ground levels extending beyond the proposed limits of the works for a sufficient distance in all relevant directions to ensure horizontal and vertical carriageway alignments can be checked appropriate to the design speed along all approached.
- The locations and details of all piped ditches, culverts, voids and underground watercourses.
- The locations and details of all underground and over-ground services, cables, ducts, inspection chambers and manholes etc.
- The positions and details of all sewers and drains including gullies and manholes and invert level information.
- Survey control information.
- A north point.

3. A layout plan to clearly show the following proposals or information:

- The horizontal design of the highway works including carriageway, cycleway and footway alignments together with tie-in details.
- Verges and landscaping.
- Carriageway markings, traffic signs and other street furniture.
- Street, footway and footpath lighting.
- Highway drainage including gully, interceptor, catch-pit and manhole positions, gully connections, pipe runs and outfalls.
- Alterations required to existing sewers and underground or over-ground services and equipment.
- Works required to any public rights of way including gates, stiles, surfacing etc.
- A north point.

4. A vertical section drawing or drawings clearly showing the following proposals or information:
 - The longitudinal vertical design of the highway works including carriageway, cycleway and footway alignments providing both existing and proposed level information, together with tie in details.
 - The longitudinal vertical design of underground sewers including manhole locations, invert levels and ground cover details.
 - Cross sectional vertical design of the highway works including carriageway, cycleway and footway cross falls.
5. Full construction details including:
 - Carriageway, cycleway, footway and verge, kerbing, gullies and manholes (in compliance with the Highway Authority's standard construction details, and material specification).

The following additional information should also be provided:

- All trial pits and survey details.
- An independent RSA Stage 2, with accompanying designer's response.
- Copies of correspondence with STATS detailing costs of relocating both underground and overground services, plant or other equipment.
- A draft bill of quantities.
- Copies, where appropriate, of any application made to the Government Office for the West Midlands, and related correspondence to stop-up any areas of existing public highway under Section 274 of the 1980 Highways Act which is required to enable the proposed highway works.
- Copies, where appropriate, of any application made to the LPA (Local Planning Authority) and related correspondence to stop-up or divert any existing public right of way under Section 257 of the 1980 Highways Act which is required to enable the proposed highway works.
- A cheque for £1500.00, made payable to Warwickshire County Council, to cover technical review. Note, a charge of £500 will be made for every set of comments made above the first three.

This submission, along with the payment (to cover the technical review), a copy of the relevant planning permission and a completed application form, should be forwarded to:

Planning, Development and Flood Risk Group
Warwickshire County Council
Shire Hall
Market Place
Warwick
CV34 4RL

10.6 Commuted Sums

Commuted sums are financial contributions made by third parties to Highway Authorities as compensation for taking on the future maintenance responsibility for newly created highways or highway improvements. Section 38 (Highways Act 1980) (sub-section 6) and Section 278 (sub-section 3) provides for making payments to the Highway Authority for maintaining the works the relevant agreement relates to.

Circular 1/97 Planning Obligations refers to the payment of commuted maintenance sums where specifically provided for in legislation (the Highways Act 1980).

10.6.1 Calculation

A commuted sum is a single payment that is invested over an agreed period. From this sum, the cost of maintenance is drawn down and at the end of the agreed period the commuted sum is £0.

WCC has adopted the generally accepted application and method of calculation.

$$\Sigma Mp / (1 + D/100)^T$$

Mp = Estimated periodic maintenance cost

D = Discount rate (effective annual interest rate) (%)

T = Time period before expenditure will be incurred (years)

- Maintenance unit costs (Mp) - Maintenance unit costs are based on contract rates current at the time of calculation and the frequency of treatment or intervals of replacement, based on planned frequencies or historic information. A sum of 10% of the works costs will be added to cover our design and supervision costs.
- Discount rate (D) - The discount rate (effective annual interest rate) is worked out as follows:
 - $D = (1.045/1.0225) - 1 = 2.2\%$
where 1.045 is the interest rate (4.5% based on long-term neutral base rate) 1.0225 is the inflation rate (2.25% based on RPI-X that is RPI excluding mortgage payments)
- Time period (T) There is a case for using a time period equal to the expected life of the development in the case of development roads. However, for the time being, a time period of 60 years (maximum) will be used to calculate the commuted sums, with the exception of highway structures when a 120-year period will apply, in accordance with the standard design life requirement. The 60 year period reflects the recommendation of the CSS publication 'Commuted Sums for Maintaining Infrastructure Assets'.

Developers must be aware that items considered as 'non-standard' by WCC may incur requirement for commuted sums.

For the avoidance of doubt, the following items are considered to be 'standard' items by WCC and will not incur requirements for commuted sums.

Standard Items
Carriageways surfaced in accordance with WCC's County Road Construction Strategy, excludes block/modular and tegula paving and high friction/psv paving
Footway surfaced in accordance with WCC's County Road Construction Strategy, excludes block/modular and tegula paving
Cycleways surfaced in in accordance with WCC's County Road Construction Strategy
Pre-cast concrete kerbing
Gully drainage and connection pipes
Standard highway lighting layouts, columns and lanterns
Standard illuminated and non-illuminated highway signs
Passively safe sign posts where required for road safety
Road markings
Grass verges

Table 10.1.1 - WCC 'Standard' Items

The following items within Warwickshire that incur requirement for commuted sums are:

Traffic Signals	Commuted Sum
Traffic signal junction	Actual sum depends upon detail but will be based upon 50% of the annual maintenance cost over a 20 year life together with a full refurbishment after 15 years. A provisional estimate of £85,600 can be used for budget purposes
Vehicle Activated Signs	Whole life costs including replacement
Puffin and Toucan crossings	Actual sum depends upon detail but will be based upon 50% of the annual maintenance cost over a 20 year life together with a full refurbishment after 15 years. A provisional estimate of £36,750 can be used for budget purposes
CCTV camera infrastructure	Actual sum depends upon detail. A provisional estimate of £14,000 can be used for budget purposes
Counting device	Actual sum depends upon detail. A provisional estimate of £6,500 can be used for budget purposes
Traffic and Road Safety	Commuted Sum
Gateway features	To be determined on a site by site basis
Raised Tables	To be determined on a site by site basis
Chicane	To be determined on a site by site basis
Speed Cushion	To be determined on a site by site basis
Safety Inspections	To be determined on a site by site basis
Sign Cleaning	To be determined on a site by site basis
Vehicle Activated Signs (VAS)	Whole life costs including replacement To be determined on a site by site basis
Drainage	Commuted Sum
Attenuated highway drainage system	Annual maintenance costs over a 60 year period
Soakaways	Annual maintenance costs over a 60 year period
Retention ponds	Annual maintenance costs over a 60 year period
Other SuDs features (subject to adoption)	Annual maintenance costs over a 60 year period

Connection to highway drains	Additional annual maintenance costs to reflect increased liability
Highway carrier drains	Annual maintenance costs over a 60 year period
Highway drainage chambers	Annual maintenance costs over a 60 year period
Jetting	To be determined on a site by site basis
Gully Emptying	To be determined on a site by site basis
Combined Kerb Drainage	To be determined on a site by site basis
Green Landscaping	Commuted Sum
Tree	To cover cost of pruning per tree
Tree grille	To cover cost of replacement
Hedges	Annual maintenance cost per sqm
Soft Landscaping	Annual maintenance cost per sqm
Verge Maintenance	Annual maintenance cost per sqm
Weed Spraying	To be determined on a site by site basis
Bridges and Structures	Commuted Sum
Bridges	Whole life costs including replacement after 120 years
Culverts and trash screens	Whole life costs including replacement after 120 years
Subways	Whole life costs including replacement after 120 years
Retaining Walls	Whole life costs including replacement after 120 years
Head Walls	Whole life costs including replacement after 120 years
Sign/signal gantries and cantilever road signs	60 year life – maintenance and replacement
Street Lighting	Commuted Sum
Non-standard columns	Dependent upon type
Non-standard fixings	Dependent upon type
Illuminated street furniture	Dependent upon type
High lighting mast	Dependent upon type
Street Lighting Bulk Lamp Cycle	Dependent upon type
Surfacing	Commuted Sum
Surface Dressing	Overlay per sqm
Hot or cold applied coloured surfacing	Overlay per sqm

and high friction surfacing	
Modular/Tegula paving	To be determined on a site by site basis
Footways	Commuted Sum
Modular/Tegula paving	To be determined on a site by site basis
Fencing and barriers	Commuted Sum
Vehicle Restraint System (VRS)	Replacement
Acoustic Fencing	Dependent on type
Pedestrian guard railing	Dependent on type
Knee rail fencing	Replacement
Boundary fencing	Dependent on type
Street furniture	Commuted Sum
Bollards	Dependent on type
Retro reflective bollards and marker posts	Dependent on type
Public Transport	Commuted Sum
Bus Shelters	To be determined on a site by site basis
RTI equipment	To be determined on a site by site basis
Transport Monitoring	Commuted Sum
ATC, ANPR or Active Travel/AI monitoring equipment	Actual sum depends upon detail. A provisional estimate of £8,000 per monitoring site can be used for budget purposes, to cover 10 years maintenance, communications and support costs. Transport monitoring infrastructure requirements should be scoped prior to submission of Section 278 Technical Review

Table 10.1.2 - WCC 'Non-Standard' Items

This list is not exhaustive, but it reflects the most common occurrences of commuted sums being required. The developer/consultant is advised to approach the Highway Authority at an early stage to agree when a commuted sum will be required.

It may be that we do not know the full cost implications of the site at this stage; therefore, we will calculate the final value immediately before we adopt the development. The agreement will contain provision for re-calculating commuted sums based on actual quantities used, and a price fluctuation factor specified within the agreement.

The 'provisional' commuted sum will be included in the bond requirement under the Section 38/Section 278 but will be taken out of the inspection fee calculation.

The actual commuted sum will be payable before the Highway Authority agree to issue the Final Certificate.