Highways Development Design Guide
<table>
<thead>
<tr>
<th>Version no.</th>
<th>Date published on North Somerset Council website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public consultation draft</td>
<td>February 2015</td>
</tr>
</tbody>
</table>
Contents

1. Context of the guide
   1.1. Introduction
   1.2. Using the guide
   1.3. Status of the guide

2. The Design Phase
   2.1. Introduction
   2.2. Types of legal agreement
   2.3. Other agreements and licences
   2.4. Fees
   2.5. Access to development
   2.6. Road network hierarchy
   2.7. Overall layout design
   2.8. Standards for classes of adopted roads
   2.9. Shared surface streets
   2.10. Private drives
   2.11. Footways and cycle tracks
   2.12. Cycle track design requirements
   2.13. Industrial estate roads
   2.14. Public rights of way
   2.15. Car parking on footways
   2.16. Landscaping and trees
   2.17. Public transport
   2.18. Structures
   2.19. Street lighting
   2.20. Traffic signals
   2.21. Signposts
   2.22. Car, cycle and motorcycle parking
   2.23. Turning areas
   2.24. Emergency services
   2.25. Reducing vehicle speed
   2.26. Securing low vehicle speeds
   2.27. Statutory authorities
   2.28. Services
   2.29. Sustainable drainage
   2.30. Traffic regulation orders
   2.31. Road safety audits
   2.32. Quality audits

3. The construction phase
   3.1. Introduction
   3.2. Adoption of highways
   3.3. Advance payment code
   3.4. Approval process
   3.5. Checklist for technical approval
   3.6. Detail for technical approval
3.7. Granting technical approval
3.8. Construction
3.9. Traffic signs and markings
3.10. Post construction
3.11. Off-site highway works
3.12. New roads and streets works act
3.13. Occupation of buildings

4. Standard and non-standard materials
   4.1. Standard and non-standard materials
   4.2. Commuted sums for non-standard materials

5. Glossary of terms, contacts and references
   5.1. Glossary of terms
   5.2. North Somerset Council contacts
   5.3. Links to other documents and publications
   5.4. Standard drawing

APPENDICES

A. Example of the spreadsheet to be used to calculate commuted maintenance sums for approved non-standard materials.

B. Guidance on Materials Testing

C. Guidance on Landscaping and Trees in adoptable areas

D. Guidance on Public Transport
1. **CONTEXT OF THE GUIDE**

1.1 **Introduction**

1.1.1 This guide is intended to provide advice on the procedures North Somerset Council will follow when assessing proposals that will affect the transportation infrastructure and highway network in North Somerset. It sets out the standards and approach to design in connection with highways, paths, accesses and a range of other aspects of highway design. It also sets out the council’s expectations in regards of future maintenance arrangements.

1.1.2 This document will assist developers, individuals and communities in understanding and meeting the expectations of North Somerset Council and will guide the planning and technical process in respect of new highway development. It expands upon National and Local Planning Policies to give clear advice on the standards expected for highways and transport infrastructure.

1.1.3 This document will apply to all highways schemes relating to new development within North Somerset, including alterations or works to the existing highway and other transport infrastructure and associated works.

1.2 **Using the guide**

1.2.1 Section Error! Reference source not found. of this guide provides general information and advice intended to assist developers present their proposal to North Somerset Council in the most efficient manner.

1.2.2 Section 3 includes technical information and advice relating to the construction phase.

1.2.3 Section 4 Provides information on our approach to standard and non-standard materials & features and commuted sums.

1.2.4 Section 5 includes other useful information.

1.3 **Status of the guide**

1.3.1 This guidance note is endorsed by North Somerset Council.

1.3.2 It expands on National and Local Planning Policies.
2. THE PLANNING AND DESIGN PHASE

2.1 This section gives general advice on adoption and design standards.

2.1.1 North Somerset Council has a presumption to adopt highways, street lighting and flood management on new developments. In the case of highways this applies to residential developments of more than six dwellings. The requirement for adoption of strategic commercial developments will be assessed on a case by case basis.

2.1.2 North Somerset Council will adopt a new highway where:

- it serves more than six dwellings or serves a multiple building and multiple occupation industrial or commercial development;
- all highway works have been designed and constructed to our satisfaction;
- an agreement under Section 104 of the Water Industry Act, 1991 has been signed with the relevant water company for the highway drainage to be adopted, or alternatively we are satisfied to adopt the drainage;
- trees and other soft landscaping exhibit good vitality and structural conditions; and
- the development served by the road is acceptable in all other highways and transportation respects.

2.2 Types of legal agreements for the adoption of roads

**Section 38 Agreement**

2.2.1 Where highways within a development are to be adopted and maintained by North Somerset Council an agreement under Section 38 of the Highways Act, 1980 will be required.

**Section 278 Agreements**

2.2.2 Where a new development requires work to be carried out on the existing publicly maintained highway it will be necessary to enter into an agreement with North Somerset Council under Section 278 of the Highways Act 1980.

**Section 106 Agreements**

2.2.3 Where highways and/or associated works or contributions are required to be carried out in relation to a planning application the developer will be required to enter an agreement with North Somerset Council under Section 106 of the Town and Country Planning Act, 1990.

2.3 Other agreements and licenses
Section 50 of the **New Roads and Street Works Act 1991**

2.3.1 This is a licence which allows for private apparatus to be placed in the public highway and be thereafter maintained by the licence holder.

2.3.2 Note: it must be obtained retrospectively if any uncharted apparatus is discovered.

Section 177 of the **Highways Act 1980**

2.3.3 This is a licence which deals with the construction or alteration of buildings which overhang the highway maintainable at public expense.

Section 247 of the **Town & County Planning Act 1980**

2.3.4 If planning permission has been granted for new development, such as housing, and the application site is crossed by an existing highway, then an application can be made under Section 247 to stop-up or divert the highway or footpath. This requires a statutory consultation period and must be prior to any commencement of the development. There must be an extant planning consent for the change of land use.

Section 116 of the **Highways Act 1980**

2.3.5 Under certain circumstances, this allows highway rights to be removed. This can only be processed by the council and is used where the land is enclosed or there is no planning application. After a statutory consultation period, the decision is made by the Magistrates Court.

**Easement**

2.3.6 An easement is implemented under the Land Registration Acts 1925-2002. This allows the council access onto private land to maintain, inspect and repair apparatus belonging to them.

2.3.7 A similar type of agreement will be required for any statutory authority apparatus installed within private land and contact shall be directed to the relevant utility company.

**Designation**

2.3.8 The **Flood and Water Management Act 2010** allows for an insert into Section 63 of the **New Roads and Street Works Act 1991**, which will permit SuDS to be designated. This will preserve the continuity and design of the SuDS into the future.

2.3.9 In the event that infrastructure is not adopted (for example on small/non strategic sites), checks are to be carried out and if necessary safeguards will be sought through planning conditions or the Section 106 process to ensure that clear plans are in place for its long-term management and that the Council/wider community does not later become liable for sub-standard or poorly maintained infrastructure.
2.4 Fees

The following areas will attract costs to the developer which should be taken into consideration when works are being costed. Details of the costs, which are subject to change, are published in Fees and Charges on the Council’s website.

Works Cost

2.4.1 The full cost of the highway construction/alterations including structures, accommodation works, landscaping, drainage works, any alterations to plant required by statutory undertakers, alteration to traffic signing, street lighting, provision of traffic signals, any temporary works, remedial/strengthening works to the existing highway will be borne by the Developer.

Works Deposit

2.4.2 A bond or deposit to cover the entire cost for North Somerset Council to complete the proposed highway works based on the approved drawing will be lodged with an approved Bondsman. The appointed council Officer may decide in liaison with the developer to base the agreed figure on the cost of the tendered works. If this is the case, full disclosure of the agreed tender price will be required.

Advance Payments Code (APC)

2.4.3 The Advance Payments Code (APC) is a legal bond between the developer and the council, secured before any construction works begin on new buildings in private streets. The purpose is to secure the sums of money likely to be needed to complete the street works, so that the streets serving the development can be completed to a standard suitable for adoption should the developer default. The bond is released upon the signing of a Section 38 agreement. North Somerset Council requires APCs for both residential and commercial development.

Inspection Fee

2.4.4 The Inspection fees charged by North Somerset Council are detailed in Fees and Charges on the North Somerset Council website.

Traffic Regulation Orders

2.4.5 A fee is required to cover the cost for producing and advertising any traffic orders necessitated by the development proposal. Details are provided in Fees and Charges on the North Somerset council website.

Committed Sums

2.4.6 Where commuted sums are payable they will be included in section 38,106 and 278 agreements in cases where:

- materials used over and above the list of standard materials and accepted levels of non-standard material use (see Section 4) ;
• additional street furniture is to be used;

• the plans include landscaping within the proposed highway, including trees and grass verges; and

• sustainable drainage systems (SuDS) are included, for example, flow-attenuation devices, swales and storage areas for highway drainage.

Legal Costs
2.4.7 A fee to cover the council’s Legal Services work to process any legal agreements. This is not required for work permits. North Somerset Legal Services charge on an actual hourly rate.

Licences and Consents
2.4.8 All costs associated with obtaining consents, licences or provisions required for the works and the procurement of any highway drainage easements or land requirements will be borne by the developer. The costs of the various licences and consents are listed in Fees and Charges on the council’s website.

Drainage Easements
2.4.9 The cost is based on the fees incurred by the council’s Legal Services and the council’s property consultants and will be calculated on a case by case basis.

Land Purchase
2.4.10 The dedication as highway of all land which will form part of the new or improved highway, including visibility splays, if not already within highway boundaries, will be borne by the developer. It is the responsibility of the developer to undertake all dealings regarding any land acquisitions required for the work. The developer must produce Title to any land to be transferred.

2.4.11 If any council owned land (other than land forming part of the Highway) is required for the works then the developer shall be responsible for all costs arising from (including the value of) North Somerset Council providing such land.

Testing of Materials
2.4.12 North Somerset Council will carry out all material testing and fees will be as set out in Fees and Charges on the council’s website. Other approved providers may be employed only with the council’s approval. See Appendix B for details of the council’s requirements.

2.5 Access to a development
2.5.1 It is important to assess at an early stage how access can be achieved to development land. For small developments with only one access, the main criteria
are the visibility at the junction with the major road, and the frontage of the development land that would be available for the estate road.

2.5.2 Larger developments are likely to raise a greater number of issues. A preliminary discussion about wider issues will help to ascertain the important considerations and any possible constraints.

2.5.3 The number of accesses which should serve a site will be influenced principally by three factors:

- the overall number of dwellings likely to be accommodated;
- the impact of the development on the existing highway network;
- the need for emergency vehicle access.

2.5.4 North Somerset Council generally adopts the standards specified in either Manual for Streets (and as elaborated in Manual for Streets 2) (MfS) or the Design Manual for Roads and Bridges (DMRB) or a blend of the two.

**Transport Statement, Transport Assessment and Travel Plans**

2.5.5 North Somerset Council will expect a Transport Statement or Transport Assessment where appropriate. The thresholds for TSs and TAs and the council’s expectations are set out in Supplementary Planning Document, Transport Assessments and Transport Statements in North Somerset. **Please note this SPD is currently being consulted upon ahead of formal adoption.**

2.5.6 The council may also require a Travel Plan. Guidance on the nature of developments where a Travel Plan will be required and guidance on developing the Travel Plan are contained in the council’s Travel Plans; Supplementary Planning Document

**Visibility and Sight Lines**

2.5.7 Plans submitted to the council as part of a planning application are expected to show acceptable visibility splays and sight lines.

2.5.8 For accesses to dwellings or residential areas on to roads with speed limits of up to 30mph the visibility splays must be in accordance with the dimensions provided in Manual for Streets. For all other accesses visibility splays must be in accordance with DMRB TD 42/95.

2.5.9 Visibility on curves, at summits and at junctions shall be indicated as measured between points 1.05m above the carriageway.

2.5.10 Occasional vertical obstruction relating to vegetation may be allowed, as per Manual for Streets 2. This mainly relates to trees, on the proviso that it does not create a solid visual barrier, or that it allows continuation of avenue-style planting where tree species have narrow, non-scrubby girth and a minimum clear stem of 3-4m.
2.6 Road network hierarchy

2.6.1 North Somerset Council uses the following hierarchy to categorise its highway network.

Table 2 - Road Hierarchy

<table>
<thead>
<tr>
<th>Code</th>
<th>Hierarchy Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motorways</td>
<td>Managed by Highways Agency in North Somerset</td>
</tr>
<tr>
<td>2</td>
<td>Strategic Route</td>
<td>Heavily trafficked roads between primary destinations, little frontage access, speed limits usually in excess of 40mph</td>
</tr>
<tr>
<td>3a</td>
<td>Main Distributor</td>
<td>Routes between Strategic Routes and linking urban centres with limited frontage access, in urban areas speed limits are usually 40mph or less</td>
</tr>
<tr>
<td>3b</td>
<td>Secondary Distributor</td>
<td>Roads between traffic centres and the Strategic and Main Distributors, generally high levels of pedestrian activity, usually 30mph speed limit in urban areas</td>
</tr>
<tr>
<td>4a</td>
<td>Link Road</td>
<td>In rural areas, these roads generally link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two-way traffic. In urban areas, they are residential or industrial inter-connecting roads with 30mph speed limits random pedestrian movements and uncontrolled parking.</td>
</tr>
<tr>
<td>4b</td>
<td>Local Access Road</td>
<td>Local roads serving limited number of properties and providing access to ‘cul-de-sac’ and ‘no exit’ type roads. In rural areas these include the very low trafficked connector roads between small villages and main roads</td>
</tr>
<tr>
<td>5a</td>
<td>Minor Access Road</td>
<td>These roads include short ‘cul-de-sac’ and ‘no exit’ roads that carry normal vehicular traffic to residences and businesses.</td>
</tr>
<tr>
<td>5b</td>
<td>Lane</td>
<td>Minor lanes principally serving agricultural needs in rural areas, generally ‘No Through Roads’, carriageway widths typically less than 2.5m</td>
</tr>
<tr>
<td>6</td>
<td>Track</td>
<td>Tracks that are unsuitable for general vehicular traffic but may be being used as a footpath, part of a cycle trail, used by horse riders or is a designated PROW</td>
</tr>
</tbody>
</table>

2.7 Overall layout design

2.7.1 The road layout should be designed to help minimise the risks of access problems for emergency services, buses and residents. In particular, emergency service vehicles must not be unduly hindered in their attempts to reach any part of an estate quickly.

2.7.2 Each road must be designed to cater safely for the needs of the residents and others who use it. On a particular site, the optimum solution may involve a ‘hybrid’ design, containing elements drawn from two or more road types.
2.7.3 A way of accessing a large site is to provide a short “transitional” road or spur from the existing highway network to the estate entrance e.g. the point where two or more estate roads converge. This road, which should not be more than 100m long, should be free from frontage development and junctions. Nevertheless, it will provide an opportunity for the developer to give the site a distinctive identity. Landscaping will be important to avoid creating a sterile, unattractive approach to the development. The desire lines for pedestrians and cyclists will determine whether footways or cycleways are necessary within the same corridor.

2.7.4 No specific design criteria are provided in this document for “transitional” roads. Their design will be influenced by the individual circumstances of each site.

2.7.5 Details of the overall design and layout of a proposed development should be provided within the Design and Access Statement, required to form part of the formal planning application for major developments.

2.8 Standards for the classes of adoptable roads

2.8.1 In order for new residential areas to be easily accessible and to offer greater opportunity for sustainable forms of transport, it is important to emphasise the importance of the user hierarchy and to give it due consideration at the outset. This is to ensure that the desire lines and the needs of both pedestrians and cyclists, within the development and externally to common destinations (schools, shops etc.) are accommodated by the development.

2.8.2 It is preferable for pedestrian desire lines to be accommodated on or adjacent to streets. However, if there is the need for a path to diverge from the street the route must offer a quality, safe environment, offering natural surveillance from adjacent property.

2.8.3 Table 3 below summarises the criteria for each type of road in North Somerset.

2.8.4 All footways should be a minimum width of 2.0m, or if the footway is to be a shared foot/cycle route the width should be a minimum of 3.0m, in accordance with the Sustrans Technical Information Note Segregation of Shared Use Routes, April 2014.

2.8.5 Within the development the design should seek to reduce vehicle speeds by means of horizontal alignment, spacing of speed-restraining features, forward visibility and materials.
### Table 3 Criteria for road hierarchy

<table>
<thead>
<tr>
<th>Code Name</th>
<th>2 Strategic Route</th>
<th>3a Main Distributor</th>
<th>3b Secondary Distributor</th>
<th>4a Link Road</th>
<th>4b Local Access Road</th>
<th>5a Minor Access Road</th>
<th>Mews Court</th>
<th>Private Drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Width</td>
<td>7.3m</td>
<td>7.3m</td>
<td>7.3m</td>
<td>6.7m</td>
<td>5.5m</td>
<td>5.5m</td>
<td>5.5m</td>
<td>4.0m for first 6m</td>
</tr>
<tr>
<td>Typical Maximum Design Speed</td>
<td>40mph or more</td>
<td>40mph or less</td>
<td>30mph</td>
<td>30mph</td>
<td>30mph</td>
<td>20mph</td>
<td>20mph</td>
<td>20mph</td>
</tr>
<tr>
<td>Frontage Access</td>
<td>No residential</td>
<td>Limited</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Footways</td>
<td>Each side</td>
<td>Each side</td>
<td>Each side</td>
<td>Each side</td>
<td>Each side</td>
<td>Each side</td>
<td>Usually shared surface</td>
<td>As required</td>
</tr>
<tr>
<td>Bus Route</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Shared Surface Potential</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Visibility Splays</td>
<td>DMRB standard</td>
<td>DMRB standard</td>
<td>DMRB or MfS standard as appropriate*</td>
<td>DMRB or MfS standard as appropriate*</td>
<td>MfS standard</td>
<td>MfS standard</td>
<td>MfS standard</td>
<td>MfS standard</td>
</tr>
</tbody>
</table>

* A 4.5m or greater setback distance may be required for roads performing more than a residential access function.

**2: Strategic Route**

**2.8.6** These are routes for fast moving traffic on long distance journeys. These roads have few junctions and the speed limits are generally greater than 40mph. They have little in the way of frontage access or pedestrian movements. Where there are pedestrian crossings they are either segregated or controlled. On-street vehicular parking is generally prohibited.

**3a: Main Distributor Roads**

**2.8.7** These provide links between strategic routes or links between urban centres and the strategic network. There will be limited frontage access and there will be pedestrian safety measures in place. In urban areas speed limits are usually 40 mph or less. Vehicular parking is usually restricted at peak times.
3b: Secondary Distributor Roads

2.8.8 These are routes that are used to provide access and to link different areas of the development to the existing highway network; they should be designed to be suitable for a local bus route. These roads are designed as all-purpose streets, but their design may be required to discourage stopping on the carriageway.

2.8.9 The width of the road will be 7.3m with 2 x 2.0m footways (as recommended by Manual for Streets). These will be increased to 3.0m if a shared cycleway / footway is required, in line with Sustrans’ Technical Information Note 19 “Segregation of Shared Use Routes”, April 2014. Local services within the development, such as shops or a school, would also need to be taken into account in arriving at a capacity analysis.

2.8.10 Road alignment must play its part in restraining vehicle speeds to no more than 30mph; unless alternative provision for pedestrians exists elsewhere, footways will be necessary. Cyclists must also be safely accommodated and lay-bys may be required at bus stops to allow vehicles to stand clear of the main carriageway.

2.8.11 To provide an attractive setting for properties adjoining the road, the highway boundary can be landscaped. Approved landscaping, in addition to grass verges, may be planted provided that it does not obscure sight lines or interfere with services. Beyond the highway boundary, earth mounding may assist with screening of the road and will also act as a noise barrier.

2.8.12 Care will need to be taken if the proposal includes tree planting on earth mounds, as irrigation is a common problem.

4a: Link Road

2.8.13 This type of street forms the main estate road framework and would be used for a development comprising 1500 or more homes or a similar sized mixed development. It may be a public transport route and as such will be between 6.7m and 7.3m wide with footways on both sides. The road may take the form of a loop road or a through route; however any through route must be designed so as not to become a short cut for traffic passing between established destinations.

2.8.14 This road would be expected to accommodate verges / trees and footways to distinguish it from lesser streets.

4b: Local Access Road

2.8.15 This type of road will form a secondary loop or through-route within a larger estate, or would form the main street within a smaller development. The width will be a minimum of 5.5m, with a footway on both sides where possible (depending upon natural pedestrian desire lines).

5a: Minor Access Road

2.8.16 This road would be one serving a cluster of homes (approx. 100 dwellings) or other units within a larger development, with access from the Link Road or Secondary
Distributor Road. The width of the carriageway will be at least 5.5m, with footways each side, depending upon the overall character of the development. The alignment would be expected to offer natural traffic calming, but with other measures as required.

2.8.17 Cul-de-sacs will be permitted on sites that are too small to accommodate a loop road, or on sites where existing allocated or consented land is involved. These are to be designed to constrain vehicle speeds to a maximum of 20mph.

2.8.18 Direct access from dwellings is acceptable onto such roads. However, good estate layout design will seek to avoid accesses on or near junctions. Where accesses near junctions cannot reasonably be avoided, adequate turning space must be included within the curtilages.

2.8.19 Additional on-street parking spaces may be provided in specific locations to cater for parking demand. This will involve widening the carriageway, and should be accompanied by features such as landscaping.

**Mews Court**

2.8.20 A Mews Court is a street design giving access to a group of not more than 25 dwellings as a cul de sac with integral or communal parking, offering scope for developing higher density schemes with a characteristically strong urban form. The design is particularly appropriate in an urban environment or possibly for village infill sites where the narrow opening can maintain the sense of a village street and the courtyard can reflect the character of a village space. Alternatively it can be incorporated as a feature in larger developments, adding variety to the townscape.

2.8.21 The road should be 5.5m wide at its entrance and can be flanked by walls or dense planting on each side. The kerb face must be at least 0.5m from any dwelling. A turning head must be provided. A minimum width of 6m should be provided between opposite parking bays to provide sufficient manoeuvring space, as detailed in the council’s Parking Standards SPD 2013.

2.8.22 Public utilities will inevitably be located under the shared surface in a mews. The location of the services in a restricted area must be carefully considered in conjunction with the Statutory Undertakers as part of the design process with consultations undertaken to ensure that the utility apparatus can be installed in the designated area.

2.8.23 Porous paving should be used where ground conditions allow, or drainage to an infiltration area.

**2.9 Shared surface streets**

2.9.1 The Department for Transport published *Local Transport Note 1/11 Shared Space (LTN 1/11)* in October 2011. This provides the primary resource for the design and use of shared surface streets and shared spaces within North Somerset.
2.9.2 LTN 1/11 describes shared space as
“a street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional design”, and
“a design approach that seeks to change the way streets operate by reducing the dominance of motor vehicles, primarily through lower speeds and encouraging drivers to behave more accommodatingly towards pedestrians.”

2.9.3 This treatment may be appropriate for a range of classes within the road hierarchy. There are no design standards for shared spaces or shared surface streets, however the process for scheme development which was introduced in LTN 1/08 Traffic Management and Streetscape (DfT, 2008a) can be applied to shared space schemes.

2.9.4 Shared spaces can be problematic for many disabled people. Therefore developers are required to consider the Equality Act 2010 in order to consider the needs of a diverse range of people at all stages of planning and development. There is strong encouragement to engage with stakeholders during this process.

2.10 Private drives

2.10.1 Private drives are vehicle and pedestrian access ways which are not suitable for adoption as highways maintainable at public expense; they should gain access to a maximum of six dwellings. In all cases, adequate turning space should be provided at the terminus of the private road.

2.10.2 In order to prevent the grounding of vehicles, drives which fall away from the highway should have a gradient not exceeding 1:12 (8%). Steeper gradients may be considered by the council for drives which fall towards the highway. All private drives must be adequately drained to prevent surface water from discharging onto the highway.

2.10.3 Care must be taken to avoid locating private drives where drivers’ signals may be misinterpreted, for example close to junctions. Wherever possible they should meet the highway at right angles, and adequate visibility splays must be provided at private drive access points. A width of 4m for at least the first 6m from the carriageway boundary is required.

2.10.4 Private drives should be hard surfaced; a permeable surface for infiltration is strongly preferred where ground conditions allow. No loose material is permitted in the vicinity of a public street, footway or footpath.

2.10.5 The communal area of a shared private drive should be of sufficiently strong construction to cater for service vehicles. A construction specification similar to that for footway vehicular crossings should be used for private drives.
2.10.6 Maintenance of non-adoptable roads will be borne by the house owner or a management company set up by the developer. Checks will be carried out by the council and if necessary safeguards will be sought through planning conditions or the Section 106 process to ensure that clear plans are in place for its long-term management and that the Council/wider community does not later become liable for sub-standard or poorly maintained infrastructure.

2.11 Footways and cycle tracks

2.11.1 As part of any new development, developers must identify key pedestrian and cycling routes and destinations. Local Transport Note Policy LTN 1/04 ‘Planning and Design for Walking and Cycling’ and LTN 2/08 ‘Cycle Infrastructure Design’ produced by DfT, set out the policy context that supports the promotion of pedestrian and cycling facilities. These documents also describe common design principles for pedestrian and cycle provision. The road network is the most basic and important cycling facility available, and the preferred way of providing for cyclists is to create conditions on the carriageway where cyclists are content to use it, particularly in urban areas. LTN 2/08 provides a hierarchy of provision in which the making of on-road conditions suitable for cyclists is ranked higher than the provision of cycle ways away from road. LTN 2/08 details how this should be achieved.

2.11.2 Requirements for disabled needs must be met accordingly. Tactile paving at crossings is expected in all but the most rural locations with low footfall.

2.12 Cycle Track Design Requirements

Visibility

<table>
<thead>
<tr>
<th></th>
<th>Normal design speed 30kph (20mph)</th>
<th>Local access route design speed 20kph (12 mph)</th>
<th>Minimum design speed 10kph (6mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Visibility</td>
<td>25m</td>
<td>15m</td>
<td>10m</td>
</tr>
<tr>
<td>Minimum Radius of Curvature</td>
<td>25m</td>
<td>15m</td>
<td>4m</td>
</tr>
</tbody>
</table>

Gradients

<table>
<thead>
<tr>
<th>Gradient</th>
<th>Maximum permitted length of gradient</th>
</tr>
</thead>
<tbody>
<tr>
<td>3% (1:33) maximum</td>
<td>Length unrestricted</td>
</tr>
<tr>
<td>5% (1:20) maximum</td>
<td>Up to 100 metres</td>
</tr>
<tr>
<td>7% (1:14) maximum</td>
<td>Up to 30 metres</td>
</tr>
<tr>
<td>&gt;7% (1:14)</td>
<td>Not recommended except for very short lengths</td>
</tr>
</tbody>
</table>

Gradients within 10m of any junction or crossing shall be no more than 2.5% (1:40)
Crossfall

2.12.1 Crossfalls of between 1% (1/100) and 2.5% (1/40) are desirable generally but may be more, for instance, when super-elevation is required at tight bends. Widening on tight bends should be considered.

Traffic Calming

2.12.2 The developer must consider measures that allow the safe and smooth passage for cyclists through any traffic calming measures.

Surface Finish

2.12.3 A smooth machine-laid non-skid surface course is essential, and should be free of undulations. On carriageways particular attention should be paid to the condition of the surface adjacent to the kerb which is where cyclists usually ride.

2.12.4 Dropped kerb crossings must be laid flush with the road surface, but in certain circumstances an uplift of 6mm will be permitted where it will aid drainage.

2.12.5 Porous paving should be used where ground conditions allow, otherwise drainage should lead to an infiltration area.

Access barriers

2.12.6 The presumption should be to avoid installing any kind of access barrier unless there is a proven need. Refer to LTN 2/08 for further detail.

2.13 Industrial estate roads

2.13.1 In order to cater for the larger and heavier vehicles industrial roads need to be of greater width and strength compared to residential roads. This section sets out the design standards necessary to cater for industrial traffic.

Industrial Developments

2.13.2 Industrial roads are categorised as Major or Minor, with the standards specified in the DMRB being applicable for both. The main difference is that of the likely number of Heavy Goods Vehicles (HGVs) and therefore the construction details vary. Where a Minor Industrial Road is intended to serve a mainly B1 office development (with a very low number of HGVs) there may be flexibility to vary certain requirements (e.g. radii and turning facilities).

2.13.3 Industrial or commercial developments in the region of 20 Hectares are classed as major Industrial Roads. Commercial vehicles in residential areas are obviously undesirable, and for this reason the design of a large scale industrial estate should try to produce a layout which is self-contained and which segregates industrial from local/residential traffic. It should, however be acknowledged that pedestrian
and cycle movements must be catered for appropriately on industrial estate roads as people travel to their place of work.

2.13.4 Cul-de-sacs over 200m in length are undesirable but will be considered in certain circumstances up to a maximum of 400m in length, beyond which a second access to the existing highway network must be provided. Where the 200m maximum length is exceeded intermediate turning facilities must be provided at a maximum spacing of 200m.

2.13.5 Where an Industrial Estate Road joins an existing Local Distributor Road, the developer may be required to provide offside diverging lanes (right turn lanes), together with associated traffic signs, central refuges and road markings. Under normal circumstances offside diverging lanes will be required at all junctions between Distributor Roads and Major Industrial Roads. Details of pedestrian facilities may also be required to be agreed with the council. The use of roundabouts and mini-roundabout junctions will be considered where appropriate.

Visibility

2.13.6 Visibility splays within Industrial Estates are to be provided at all junctions. Where a new estate road joins the existing wider highway network visibility will be required to be in accordance with DMRB TD 41/95 and TD 42/95 and any succeeding technical directives.

2.13.7 Visibility on curves, at summits and at junctions shall be provided between points 1.05m above the carriageway.

Turning Spaces

2.13.8 A turning space must be provided at the end of each cul-de-sac. The positioning of accesses to individual premises within turning spaces is recommended as this discourages casual parking which obstructs turning movements.

Access

2.13.9 The layout of premises must be such that all vehicles can leave and rejoin the public highway in a forward direction. For access to premises radius kerbs should be provided. The width of accesses to premises will depend on the size and the nature of the premises and should be determined at the planning stage.

Parking

2.13.10 All necessary provisions for vehicular parking including deliveries should be clear of the public highway. In general, parking to serve premises is not acceptable on the highway and the developer will be expected meet the full costs of Traffic Regulation Orders (TROs), signs and road markings required to enable waiting restrictions to be implemented where appropriate.
2.13.11 The number of parking spaces required for different classes of development is set out within the North Somerset Parking Standards SPD. Residential and non-residential parking standards are expressed in the SPD as a required standard.

2.13.12 Where development includes two or more land uses to which different parking standards apply, the required parking provision should be assessed on the basis of the uses' respective gross floor areas. Developers are encouraged to make best use of any shared parking areas where this can be achieved without difficulty or adverse impact on the surrounding area.


2.13.14 Porous paving should be used where ground conditions allow, or drainage to an infiltration area.

2.14 Public rights of way

2.14.1 The design, specification and construction required for the PROW will be determined by the rating of the route in the network hierarchy.

2.14.2 The developer must ensure that where any PROW shown on the Definitive Map and Statement is affected by development:

- Provision is made for the existing PROW which will be affected by the development, alternatively provide a suitable diversion or replacement.
- Provision is made for any claimed or proposed PROW.
- Application is made in good time for a diversion order under the Town and Country Planning Act 1990.

2.14.3 If the PROW is not diverted under the above process and becomes obstructed then this may lead to significant legal issues involving the Highways Act 1980.

2.14.4 It should be noted that either of these processes can potentially lead to a negative outcome. Therefore careful consideration should be given to providing a suitable and acceptable alternative route. The timescale for these processes can be up to 18 months and will incur a fee, see Fees and Charges.

2.14.5 Further information regarding PROW may be obtained from the North Somerset Council website or the Public Rights of Way Department.

Existing rights of way

2.14.6 Written consent from the council must be obtained prior to the obstruction or diversion an existing right of way (even if planning permission has been granted). The developer should accommodate an existing footpath on its existing right of way wherever possible. If, however, the council agrees in principle to a diversion, the developer will need to apply for a diversion order.
2.14.7 In all cases, the route of existing rights of way should normally be designed in line with the guidance set out in this document. Developers should take particular care to design bridleways to prevent their misuse by motor vehicles, and should have an appropriate surface. Advice should be sought from the PROW team before a planning application is submitted.

2.14.8 Where a development requires highway rights to be extinguished (removed), for example, to stop-up a length of public rights of way, this should be done by the Public Rights of Way Team under the Town and Country Planning Act. You should ensure that this process is undertaken prior to any works being undertaken. It is advised that you seek our agreement to your proposals to extinguish highway rights before you submit a planning application.

2.14.9 The procedures involved in making diversion orders or orders to extinguish existing highway rights can be very lengthy. This should be taken into account when programming development proposals. Whether or not any order is successfully made, the developer will normally be responsible for paying all costs associated with processing it.

2.14.10 For guidance about Rights of Way in North Somerset Council contact the Public Rights of Way Team.

2.15 Car parking on footways

2.15.1 Parking on pavements is anti-social and illegal. A local authority can use traffic regulation orders to ban pavement parking in a specified area. The Police or parking attendants when the council introduces decriminalised parking, can then enforce it.

2.15.2 It is important to seek self-enforcing solutions. Streets will be designed so as to discourage or prevent parking on footways. These include the use of bollards, railings, high kerbs, street furniture and formalised on-street parking arrangements. Some of these measures may cause their own issues, such as obstruction to people with disabilities, so need to be chosen carefully. Over generous parking provision will also deter pavement parking but can also encourage increased car travel and the dominance in some places by parked cars. Parking should be provided in accordance with council’s Parking SPD.

2.15.3 For further information refer to:

- Traffic Advisory Leaflet 4/93 (DfT).
- Manual for Streets (page 109)
- Civic Voice Street Pride Briefing note 3 – Bollards

2.16 Landscaping and trees in the highway
2.16.1 Trees and other soft landscaping form an important part of the network of highways that make our communities sustainable, enjoyable and inclusive. Appendix C sets out planning and design standards necessary to successfully incorporate trees into hard landscapes.

2.17 Public transport

2.17.1 Public transport will play a significant role in the location and design of new housing development and will be a key consideration in the Transport Statement or Transport Assessment and Travel Plan. Appendix D sets out the council’s expectations of good public transport provision.

2.18 Structures

2.18.1 All publicly owned and maintained highway structures within North Somerset are referred to as highway authority structures. A structure is defined as being over, under, or adjacent to a highway and is one of the following:

- a bridge (other than a footbridge), culvert, or tunnel that has a span greater than 0.9 metres;
- a footbridge with span greater than 8 metres on a public right of way;
- a retaining wall, or headwall, with a retained height from finished ground level in front of the wall of over 1.5 metres;
- a noise attenuation barrier exceeding 1.8 metres high (standard NSC/DfT barriers would not require Technical Approval);
- a high mast for lightning, lighting systems and/or television cameras;
- a sign/signal gantry;
- a canopy or building overhanging the highway;
- a basement beneath or adjacent to the highway;
- designated by the council to be a highway structure because of its particular construction and status;
- a modification or addition to an existing structure as defined above;
- a buried water attenuation structure within or adjacent to the highway that has a span greater than 0.9 metres.

2.18.2 All structures proposed as part of a development proposal will require technical approval of the drawings and specifications (Approval in Principle) before any works can commence on site.

2.18.3 The processes for the adoption of a new highway authority structure are rigorous, lengthy and require specific expertise - refer to the council’s Technical Approval of Third Party Structures, available on request.
2.18.4  A Section 177 licence will be required where any structure overhangs the highway. The legal costs associated with this process are required to be met by the developer.

2.19  **Street lighting**

2.19.1  The council will require the developer to provide a street lighting system for roads, verges, paths, cycle tracks, parking areas and all areas to be adopted as highway maintained at the public expense.

2.19.2  Every installation of highway lighting and traffic management equipment must be installed in every instance to the council’s approval. All proposals must be submitted to the council’s Lighting Engineer for design and specification approval before works start on site.

2.19.3  It is important that the equipment used on the development is compatible with the equipment installed throughout the District to enable easy and economical maintenance, details of which will be provided by the Lighting Engineer.

2.19.4  Refer to the council’s Street Lighting Design Guide for further details, available on request.

2.20  **Traffic signals**

2.20.1  Traffic signals include road junction signals, road shuttle signals, Puffin and Pelican pedestrian crossing signals, Toucan cycle and pedestrian crossing signals, wig-wag signals, cattle and equestrian signals.

2.20.2  Associated traffic control and monitoring equipment shall comprise such items that have a controlling effect on the highway. Such systems can include UTC – SCOOT (or similar), variable message signs, red light and speed camera equipment and installations, priority vehicle tagging and barrier control.

2.20.3  Refer to the council’s Traffic Signals Design Guide for full details about traffic signal installations, available on request.

2.21  **Signposts**

2.21.1  North Somerset Council will not erect or permit to be erected on the highway signs other than those prescribed by the *Traffic Signs Regulations and General Directions 2002 as amended (TSRGD)* or for which Secretary of State approval has been granted.

2.21.2  The presumption is against erecting signs on the highway network, to help minimise clutter and maintain a pleasant street environment. New signs should only be erected where a definite regulatory, safety or informative need is being addressed.

2.21.4 Full details can be obtained from the council’s Traffic Signs and Road Markings policy document, available on request.

### 2.22 Car, cycle and motorcycle parking

2.22.1 The number of parking spaces required for different classes of development is set out within the North Somerset Parking Standards SPD. Residential and non-residential parking standards are expressed in the SPD as a required standard.

2.22.2 Where development includes two or more land uses to which different parking standards apply, the required parking provision should be assessed on the basis of the uses’ respective gross floor areas. Developers are encouraged to make best use of any shared parking areas where this can be achieved without difficulty or adverse impact on the surrounding area.

2.22.3 Refer to the *North Somerset Council Parking Standards Supplementary Planning Document, 2013*.

### 2.23 Turning areas

2.23.1 A turning area must be provided at the end of each cul-de-sac and be designed to accommodate the largest type of vehicle expected to regularly use the street, which in most residential developments is likely to be a refuse vehicle. Developers may provide an amorphous outline to the turning area so long as the minimum turning area is contained within the shape.

### 2.24 Emergency Services

2.24.1 In order to enable emergency service vehicular access, for buildings without a fire main that have a total floor area up to 2,000m² and are less than 9.0m above ground level, there should be vehicle access at least 3.7m wide, to within 45m of any point of the building. Refer to *The Building Regulations 2000 part B5* for full details.

2.24.2 Only in exceptional circumstances and with prior approval of the Council will an emergency access be provided. In these circumstances the access must be at least 3.7m wide. The Fire Service should be consulted at all stages and copies of any correspondence sent to the council.

### 2.25 Reducing vehicle speed
2.25.1 In designing new roads, the preferred option must be to control vehicle speeds by street design. This might include speed-reducing bends and junctions which can be spaced close enough to prevent significant acceleration between them. Landscaping which is integrated into the road design can also contribute to adjusting driver behaviour.

2.25.2 The following suggestions may be helpful:

- using buildings and tree planting to limit forward visibility;
- ensuring that carriageways are not wider than they need to be for the particular circumstances;
- paying special attention to “gateway” features at the estate entrance;
- adding landscaping and planting within the highway limits.

2.25.3 On existing roads or those that were designed to earlier standards, the most effective way to reduce vehicle speed is the addition of horizontal and vertical displacements (e.g. humps, tables, build-outs, chicanes). Drainage features can be incorporated into build outs to make effective use of space.

2.25.4 It is envisaged that housing developments will require a combination of speed control methods. Developers should strive to achieve a layout which intrinsically restrains speeds but which is supplemented where necessary by additional features.

2.25.5 Since it becomes a constraining factor on the layout of an estate, speed control must be considered before a scheme receives planning consent. As early as possible, therefore, developers should take into account vehicle speeds so that unsightly and unpopular “bolt-on” features are kept to a minimum.

2.26 **Securing low vehicle speed, including 20mph zones**

2.26.1 There are three principal methods of securing low speeds:

- By way of a speed limit via a traffic regulation order. This would be most likely to be suitable where speeds are low already (under 24mph);

- By creating a 20mph zone. Within a zone, the roads are designed to limit speeds to a maximum of 20mph, either by their overall layout design or by the provision of traffic calming features. For new estate roads, which can be designed in this way, 20mph zones are preferable to relying solely on signs. Zones are more efficient than speed limits at reducing vehicle speeds;

- By introducing bio retention areas into the design which will take drainage and slow traffic within the traffic calming features.

2.26.2 On the second option, 20mph zone signs are required at each entrance to a zone. The signs can form part of a “gateway” in conjunction with a change in surfacing.
material or texture. In this way drivers are alerted to the fact that they are entering an area of special character, where closely spaced traffic calming features can be expected. Additional signs at individual features are not necessary, and speed limit repeater signs are not required. Therefore a zone can contribute to a high quality, uncluttered environment.

2.26.3 If, in order to create a meaningful 20mph zone for a new development, existing streets may need to be included, there will be a need to ‘traffic calm’ speeds on those streets.

2.26.4 In many areas (such as shared surface streets) it is desirable to have average speeds much lower than 20mph. This must be achieved through the careful design of the street layout.

2.27 Statutory Authorities

2.27.1 In the planning of any development, the needs of the statutory authorities must be taken into account and it is essential the consideration of service runs is taken on board at an early stage. To facilitate future maintenance, mains will normally be located in footways or verges. If no other route is available then they may in exceptional circumstances be laid in the carriageway. In these cases the installation arrangements i.e. position, ducting, joint pits and other facilities must be agreed in advance with the Council’s highway officers.

2.28 Services

2.28.1 Where a highway has one or two footways, the services will normally locate beneath the footway (with the exception of foul water mains, which due to their size cannot be contained within the width of the footway). In a shared surface street it is usual to have a service strip which can have the appearance of being a part of a garden of a property.

2.28.2 Service Strips are areas of public highway in which statutory undertakers lay their plant and services. The strips should be 2m wide where residential properties front a shared surface street. The presence of the strips must be identified on all drawings and on site usually a brick laid in a drive or path, from which a string line can be taken to the next marker.

2.28.3 The service strip must not be conveyed to the plot purchaser but retained by the developer for eventual dedication as maintainable highway. The strip may be laid to lawn, with or without shrubs. It must be made clear (by the developer) that the owner / occupier has a requirement to maintain the strips as a part of the garden and to ensure that no planting or boundary treatment is carried out which would damage the underlying services. The developer will ensure that residents are advised that the statutory undertakers may excavate their services at any time, possibly without notice and with no obligation to replace plants.
2.28.4 When designing a new road layout consideration must be given to the position and level of utility covers, especially on bends and within braking or steering areas. If a cover is located within the normal wheel track for a car or motorcycle then consideration is to be given to the use of covers with a skid resistance similar to the surrounding road surface.

2.28.5 Refer to Section 7.4 of the council’s Highway Electrical Design Guide for details regarding the siting of Road Lighting Columns, Illuminated Traffic Signs and Illuminated/non illuminated Bollards. Consideration must be given to the location and type of any street trees which may over time grow to obscure lighting/signs.

2.28.6 Where tree planting is to be incorporated into the design, a joint working approach between utilities engineers, landscape architect and arboriculturalist is necessary, with a shared aim to maximise the limited available space below ground within the highway.

2.28.7 NJUG 4 recommends the use of shared trenches for services so that disruption to highway use during maintenance and potential damage to trees from repeated excavations can be reduced.

### 2.29 Sustainable drainage systems (SuDS)

2.29.1 The North Somerset Core Strategy requires a sustainable approach to be taken for design and construction. Policy CS2 of the Strategy requires the application of best practice in sustainable drainage systems (SuDS) to reduce the impact of additional surface runoff from development, including runoff from the highway.

2.29.2 From April 2015 this policy will be further enhanced when the National Planning Policy Framework will be strengthened and sustainable drainage approaches will become the expectation for all major developments and developments in areas at risk of flooding.

2.29.3 The expected approach to drainage will be to manage surface water at source and to mitigate for additional runoff generated by development, taking into account pollution control methods, and in accordance with the forthcoming North Somerset Sustainable Building and Places Supplementary Planning Document and the West of England Sustainable Drainage Developer Guide.

2.29.4 Drainage design for a site should be integrated with the site characteristics taking into account constraints as a result of ground conditions and the topography of the site, and where possible provide greenfield runoff rates, following the SuDS standard hierarchy:

- Infiltration to the ground
- Discharge to a surface water body
- Discharge to a surface water sewer
- Discharge to a combined sewer

**2.29.5** The unique features of the site will provide the framework for the design of SuDS. The table below is a guide to the basic SuDS techniques which are in common use. It is unlikely that a single technique will be appropriate across the whole of a site.

**Table 4 – SuDS design techniques**

<table>
<thead>
<tr>
<th>SuDS techniques</th>
<th>Key Design Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soakaway</td>
<td>Design to a 1 in 30 year rainfall event minimum</td>
</tr>
<tr>
<td></td>
<td>Infiltration test to BS Digest 365</td>
</tr>
<tr>
<td></td>
<td>Fill material - provides &gt;30% void space</td>
</tr>
<tr>
<td></td>
<td>Base of soak away at least 1m from ground water levels – (take into account seasonal variations)</td>
</tr>
<tr>
<td></td>
<td>HA we will not adopt as public highway any carriageway or footway where a soakaway feature is underneath.</td>
</tr>
<tr>
<td></td>
<td>Minimum distance from foundations – 5m</td>
</tr>
<tr>
<td>Filter Strip</td>
<td>Minimum width will depend on the slope and area drained</td>
</tr>
<tr>
<td></td>
<td>Even runoff across grass area to filter strip</td>
</tr>
<tr>
<td></td>
<td>Ideally slopes not exceeding 1 in 20 minimum 1 in 50</td>
</tr>
<tr>
<td></td>
<td>Appropriately landscaped to allow for maintenance</td>
</tr>
<tr>
<td></td>
<td>These features are generally not suitable for steep sloping sites.</td>
</tr>
<tr>
<td>Filter trenches and drains</td>
<td>Excavated trench 1.0 - 2.5m filled with stone aggregate</td>
</tr>
<tr>
<td></td>
<td>Upstream treatment to remove silt and sediment</td>
</tr>
<tr>
<td></td>
<td>This method is not suitable where ground water is vulnerable</td>
</tr>
<tr>
<td></td>
<td>Access points to the perforated pipes are required</td>
</tr>
<tr>
<td>Swale</td>
<td>Limit water velocities during events</td>
</tr>
<tr>
<td></td>
<td>Side slopes should allow maintenance</td>
</tr>
<tr>
<td></td>
<td>Base width should be designed to allow maintenance</td>
</tr>
<tr>
<td>Bioretention</td>
<td>Sufficient area to temporarily store for water quality treatment</td>
</tr>
<tr>
<td></td>
<td>The water quality treatment event should half drain within 24hrs to provide adequate capacity for multi-event scenarios</td>
</tr>
<tr>
<td></td>
<td>Minimum depth of groundwater 1m if unlined</td>
</tr>
<tr>
<td>Permeable Pavement – is acceptable on drives (on roads each application is to be referred to Highways Authority for assessment)</td>
<td>Porous sub-base to be structurally designed for site</td>
</tr>
<tr>
<td></td>
<td>Temporary sub surface storage must provide infiltration and or controlled discharge in the region of 5l/s/ha</td>
</tr>
<tr>
<td></td>
<td>Geotextile to provide filtration treatment on car parking</td>
</tr>
<tr>
<td>Geo Cellular structures – each application is to be assessed</td>
<td>Porous sub-base to structurally designed for site</td>
</tr>
<tr>
<td></td>
<td>Temporary sub-surface storage must provide infiltration and or controlled discharge in the region of 5l/s/ha</td>
</tr>
</tbody>
</table>
2.29.6 Exceedance routes (blue corridors) through the site for flows in up to a 1 in 100 year rainfall event are to be managed in conveyance routes that minimise the risks of flooding to people and property.

2.29.7 Where tree pits are integrated into the design of drainage for a road, only filtered runoff from the carriageway should be directed into the tree pits.

2.30 Traffic regulation orders

2.30.1 Some functions on the Highway need restrictions to ensure safety, accessibility and minimum disruption to local residents and businesses. Most restrictions will require a Traffic Regulation Order (TRO) to be made before they can be implemented.

2.30.2 Parking restrictions may be necessary in certain locations such as at road junctions, town centre development sites or areas where commuter/school parking may be an issue.

2.30.3 TROs may also be required to introduce other controls, including:

- Speed limits;
- One-way restrictions;
- Weight, height and width restrictions;
- Where a statutory legal document is necessary to support any enforceable traffic or highway measure;
- Certain road humps on the public highway;
- No-entry restrictions or other prohibited movements.

2.30.4 All pedestrian crossings also require formal advertising before works can commence. The procedure for these differs from other TROs as the public have a right to comment but not object.

2.30.5 TROs will be arranged by the council with the associated costs met by the developer. The developer shall liaise with council officers to ensure timely delivery of the orders.

2.30.6 TROs involve a statutory process where the outcome is not guaranteed due to the public’s right to object. It is advised that any sensitive TRO is processed before planning permission is granted to ensure that the planning permission can be delivered.
2.30.7 All TROs processed will be subject to a maximum two year period from the date of formal advertising of the restrictions in which the developer must ensure the TRO becomes operational. It is strongly advised that developers use this window to process applications before the houses are occupied.

2.31 Road Safety Audit

2.31.1 Stage 1, 2 (or combined Stage1/2) & 3 road safety audits (and if required non-motorised user audits) must be carried out where developments are to be adopted by the council or where in the opinion of the council there is likely impact to the existing highway network. All requests for road safety audits from developers should be passed through the relevant highway development officer.

2.31.2 A Stage 1 road safety audit is to be undertaken as part of the planning application process, to be completed prior to determination of the application. Where an RSA 1 has been carried out, a copy of the safety audit, exception report and confirmation of acceptance should be included in the section 38/278 submission.

2.31.3 A Stage 2 road safety audit is undertaken at detailed design. Where an RSA 2 has been completed the designer shall provide a copy of the audit, Exception Report (either confirming acceptance of the recommendations or providing detail on why the recommendations are not be implemented) and relevant drawings to the adoptions team. The council will always reserve the right to not approve the designer’s Exception Report, in which case further discussion will be required. Safety Audit actions must be agreed, audit reports ‘closed out’ and appropriate drawings amended before technical approval can be issued. Failure to provide exception reports within a reasonable timescale may delay the issue of technical approval for the scheme.

2.31.4 A Stage 3 road safety audit is to be undertaken upon completion of construction. It should be noted that no certificates will be issued for the works until the audit has been completed, and exception report received and approved and, where required works have been completed.

2.31.5 A Stage 4a road safety audit (collision analysis/monitoring) must be carried out at either 12months after completion or prior to the adoption of the development by the council. Stage 4 road safety audits will be carried out by the council at cost (fee to apply/be determined and added to council’s fees and charges register) to the developer to be paid in advance of the completion of the development.

2.31.6 All audits will be undertaken in accordance with the most up to date guidance/regulations available (current documents include HD19/03 of the DMRB and IAN 152 although these are not exhaustive). The council will undertake all road safety audits, subject to fees and charges. Other providers will only be appointed with the council’s consent.

2.31.7 A Designer’s Response is required to address all items raised in all road safety (including non-motorised user) audits. The developer or their designer must also
identify all aspects of the design for which relaxations or departures from standards or policies are required. This should form part of the road safety audit brief and should also be highlighted in the Designer’s Exception Report. For each relaxation or departure the location, relevant standard, required relaxation or departure and why the relaxation or departure is required should be clearly given. The council will always reserve the right to not approve the Exception Report, in which case further discussion will be required.

2.32 Quality Audits

2.32.1 It is recommended that a quality audit should be used at all stages of a project/development and that this process is led by a Quality Audit Coordinator/Team Leader with appropriate experience. Quality Audits should be carried out in accordance with the most up to date guidance/regulations available (currently includes the Department for Transport Traffic Advisory Leaflet 5/11).

3. THE CONSTRUCTION PHASE

3.1.1 This section sets out the process for adopting highways on once the principles of the development have been established. Adopting roads ensures that they are designed and constructed to the appropriate standards and the developer is required to pay the Council’s costs in supervising the works. The Council adopts the roads under Section 38 or Section 278 of the Highways Act, which requires the developer to maintain the works for at least 12 months following their completion. They also provide for the dedication of land for highway purposes and its maintenance. This method of management and maintenance provides an assurance that the roads delivered will be fit for purpose and up to the Council’s standards, reducing the risk of problems later on. It also offers a level of consistency that is beneficial and appropriate in relation to residents’ council tax payment.

3.2 Adoption of Highways

3.2.1 The procedure for the adoption of highways by the council is by way of an Agreement under a Section 38 or 278 of The Highways Act, 1980 to be entered into prior to commencement of the on-site road works. Development will not commence prior to the agreement being in place the inspection fee raised.

3.2.2 The works subject to a Section 38 Agreement must abut an existing highway maintainable at public expense or works relating to another Section 38 Agreement. Phasing of developments will be considered. However, no works will be adopted until those works connecting them to the existing public highway have been adopted.
3.2.3 Before any building operation on site commences the developer must:

- Enter into a section 38 agreement and provide a bond;
- Provide surety by entering into the Advance Payment Code.

3.2.4 Two flow charts detailing the process are shown below.
Table 5 – Highway adoption procedure – Section 38

**Section 38 (Highway Act) Agreement Procedure**

1. **Planning Application** to include stage 1 / 2 safety audit.
2. **Planning Approval**
3. **Agree extent of adoption calculate bond figure and APC notice to be agreed.**
4. **APC Notice received.**
5. **Section 38 design submission received. To include all aspects of the proposed works Application Fee Paid**
6. **Advance Payment Code bond lodged**
7. **Technical approval granted.**
8. **Section 38 Agreement provide coloured up layout drawings and all other relevant details regarding developers bondsman & solicitor.**
9. **Section 38 agreement signed Highway bond lodged - Inspection n fee paid**
10. **Construction Works Commence**
11. **Works to Part 1 Complete**
12. **Part 1 Completion application**
13. **Bond / Deposit reduced**
14. **Part 1 certificate issued**
15. **Works to Part 2 Complete**
16. **Part 2 Completion application**
17. **Bond / Deposit reduced**
18. **Part 2 Certificate / Completion Certificate Issued**
19. **Construction complete . 12 Months maintenance period commences**
20. **Road Safety Audit stage 3**
21. **All maintenance remedials including actions associated with safety audits stage 3 completed. Wessex Water confirm Adoption of SW sewers. CCTV of highway drainage received As built drawings received**
22. **Yes**
23. **No**
24. **Extension to maintenance period until all outstanding actions complete**
25. **Final certificate application**
26. **Bond / Deposit Released**
27. **Final Certificate and adoption**
28. **Required prior to construction commences**
29. **Required prior to Part 1 / Part 2 completion certificate**
30. **Required prior to final adoption certificate**
Table 5 – Highway adoption procedure – Section 106

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Planning Application received, including Road Safety Audit Stage 1</td>
</tr>
<tr>
<td>2</td>
<td>Full Planning Approval granted</td>
</tr>
<tr>
<td>3</td>
<td>Application to enter a section 106 / 278 agreement, Application fee paid</td>
</tr>
<tr>
<td>4</td>
<td>Detail Design &amp; Layout received for technical approval. Road Safety Audit Stage 2 (Detailed Design) Received</td>
</tr>
<tr>
<td>5</td>
<td>Submission Fee Paid. Commuted sums agreed</td>
</tr>
<tr>
<td>6</td>
<td>Technical approval granted</td>
</tr>
<tr>
<td>7</td>
<td>Section 106 /278 Agreement provide coloured up layout drawings and all other relevant details regarding developers bondsman &amp; solicitor.</td>
</tr>
<tr>
<td>8</td>
<td>Section 106 /278 agreement signed. Bond lodged. Inspection fee paid.</td>
</tr>
<tr>
<td>9</td>
<td>Works programme Agreed. Traffic Management Plan Agreed. Road space booked</td>
</tr>
<tr>
<td>10</td>
<td>Works Commence</td>
</tr>
<tr>
<td>11</td>
<td>Certificate Number 1 Substantial Completion</td>
</tr>
<tr>
<td>12</td>
<td>Certificate Number 1 Substantial Completion application</td>
</tr>
<tr>
<td>13</td>
<td>Construction complete. 12 month maintenance period Completion certificate issued</td>
</tr>
<tr>
<td>14</td>
<td>Final certificate Application</td>
</tr>
<tr>
<td>15</td>
<td>Road Safety Audit 3</td>
</tr>
<tr>
<td>16</td>
<td>Maintenance period ends. All maintenance remedials including actions associated with safety audits completed</td>
</tr>
<tr>
<td></td>
<td>Wessex Water confirm adoption of SW sewers. CCTV of highway drainage received</td>
</tr>
<tr>
<td></td>
<td>As built drawings received</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Extension to maintenance period until all outstanding actions complete</td>
</tr>
<tr>
<td></td>
<td>Bond / Deposit Released</td>
</tr>
<tr>
<td></td>
<td>Final Certificate and adoption</td>
</tr>
<tr>
<td></td>
<td>Required prior to construction commences</td>
</tr>
<tr>
<td></td>
<td>Required prior to Certificate number 1</td>
</tr>
<tr>
<td></td>
<td>Required prior to final adoption certificate</td>
</tr>
</tbody>
</table>

Section 106 (Town and Country Planning Act) 278 (Highway Act) Agreement Procedure

No
3.3 **Advance Payments Code**

3.3.1 In order to protect the interests of house purchasers in the construction of new streets the Advance Payments Code pursuant to *Section 219 - 225 of the Highways Act, 1980* will normally apply throughout North Somerset Council.

3.3.2 On the granting of a building regulation approval or on receipt of a Building Notice, the appropriate cost of the street works shall be paid or secured by the developer in accordance with Advance Payments Code. This will be returned on completion of a Section 38 Agreement relating to those works.

3.3.3 It should be noted that this requires the serving of a notice by the Council specifying the sum to be deposited or secured and that sum shall be determined by the Council’s highway officers.

3.3.4 The sealing of a Section 38 agreement secures exemption from the need to provide a surety for the highway works in advance of building construction in accordance with the code. However if a developer commences construction prior to a Section 38 being signed it will be necessary to complete the required APC for the site.

3.3.5 The boundary of all areas to be adopted must be physically defined by the use of kerbs, setts or other approved materials.

3.3.6 Developers are required to notify the council of the anticipated date of the commencement of any work on proposed public highways in order that inspection may be arranged. Failure to do so may prejudice adoption.

3.3.7 Once the Part 1 works have been completed (see table 6 below) the bond will be reduced to 60% of the original figure, the road or roads will become a highway or highways maintainable by the developer and shall then remain open to the public.

3.3.8 Once the Part 2 works have been completed (see table 6 below) to the satisfaction of the Council, the maintenance period will commence, the bond will be reduced to 10% of the original figure, and once the works have been adopted the bond will be released.

3.3.9 On the issue of Part 2 the works will become subject to a Maintenance Period of a minimum of twelve months after which, and subject to any remedial works being satisfactorily carried out, the works will be adopted and will be maintainable at the public expense.

<table>
<thead>
<tr>
<th>Works required for Part 1</th>
<th>Works required for Part 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>All highway drainage</td>
<td>All outstanding kerbing not completed in part 1.</td>
</tr>
<tr>
<td>All other drainage within the highway</td>
<td>Pedestrian ways wearing course.</td>
</tr>
<tr>
<td>All kerb foundations and kerbs</td>
<td>Carriageway wearing course.</td>
</tr>
<tr>
<td>Carriageway sub base and supporting structures.</td>
<td>Visibility splay and verges.</td>
</tr>
<tr>
<td>Carriageway and footway base course surfacing</td>
<td>Street furniture.</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Demarcation of sight lines.</td>
<td>Road markings</td>
</tr>
<tr>
<td>Street lighting.</td>
<td>All other associated works shown on the drawings.</td>
</tr>
<tr>
<td>Pedestrian ways base course surfacing.</td>
<td>Tree planting</td>
</tr>
<tr>
<td>Street name plates.</td>
<td></td>
</tr>
<tr>
<td>Tree pits</td>
<td></td>
</tr>
</tbody>
</table>

### 3.4 Approval process

3.4.1 The Council will not give technical approval unless there is a valid planning permission and/or reserved matters approval.

3.4.2 If the scheme is required to have an independent Stage 1/2 Road Safety Audit at the planning stage this should be included with your submission. Technical approval of drawings and specifications/materials must be obtained from the council prior to commencement of the highway works.

### 3.5 Checklist for technical approval

3.5.1 The submission for technical approval of drawings should comprise the following:

- A location plan.
- The approved planning layout
- A coloured plan showing prospective adoptable areas, including drainage, verges, trees etc.
- A plan to 1 : 500 scale showing the roads, footway and sewers, the positions of private drives, car parking areas, retaining walls, visibility splays (both forward and junction), tree pits and private drainage areas.
- Road and drainage long sections to 1:500 horizontal scale and 1:100 vertical.
- A typical carriageway and footway cross-section.
- Construction details.
- A Street lighting design, North Somerset offer this service (at a cost) please contact the lighting section if this service is required.
- Details of any proposed structures including plans, calculations and technical approval certificates, leading to an ‘approval in principal’ (AIP) certificate.
- Details of road markings and traffic signs.
- Stage 1 and 2 Safety Audits.
- Maintenance schedules and ownership of SuDS elements.
- A Technical Approval minimum fee of (1% of the inspection fee) £1,100 min
- A submission minimum fee of (50% of the inspection fee).
Contact details of developer, Solicitor and Bondsman.

3.5.2 Technical approval will not be granted until either the corresponding fees have been paid or the relevant agreement is signed.

3.6 Detailed requirements for technical approval

3.6.1 In the first instance all documents requiring technical approval will be submitted to the council. The technical approval process is applicable to all types of legal agreements.

Layout

3.6.2 A general arrangement plan covering the extents of the entire scheme/development, clearly indicating the proposed area for adoption, should be provided at a recognised scale. All visibility sight lines, drainage, signage, structures, cable runs, etc that may affect the highway boundary should be shown on the same drawing. The developer must be aware that the proposed highway boundary shown on the detailed design may be subject to change during the construction phase of the development.

Survey Data

3.6.3 Detailed design should be based on a topographical survey carried out on site; reliance should not be made on Ordnance Survey plans. Levels should be to Ordnance Datum with GPS position and level shown on the general arrangement plan. The survey should show existing surface finishes, accesses, frontage of new and existing buildings facing the highway in the vicinity of the site, all street furniture, manholes, road markings, service company covers, overhead cables, trees, etc. Levels should be given for existing accesses, both pedestrian and vehicular to 5 metres from the highway boundary if possible. Survey data should be delivered in electronically, ideally in AutoCAD file format.

Geometric Design

3.6.4 Sufficient information must be given to enable all aspects of the design to be checked. For alignments all tangent points, transitions and radii must be specified. All lane, carriageway, footway, cycle track and verge widths, traffic island and splitter island dimensions junction radii, table and hump dimensions etc. must be specified. Location of all dropped kerbs for existing and proposed pedestrian and vehicular accesses, tactile paving, guard-rails, etc should be specified. Level information should be provided at all changes in cross section gradients.

3.6.5 Sufficient level information should be provided outside the highway boundary to be able to determine the flow of surface water. This may be in the form of levels, contours or gradients. Contour drawings should be provided for all roundabouts.
and other junctions. Contours may be required for simple junctions where drainage is likely to cause problems.

3.6.6 Clear and understandable vehicle track drawings should be provided for all permitted movements for all expected vehicle types.

Visibility

3.6.7 For residential accesses on to roads with speed limits of up to 30mph the visibility splays must be in accordance with the dimensions provided in Manual for Streets. For all other accesses visibility splays must be in accordance with DMRB TD 42/95.

3.6.8 The full extent of all visibility splays at junctions should be shown. Where these may be affected by the vertical profile, longitudinal sections should also be provided. On tight radius curves where the forward visibility falls outside the proposed back of verge or footway the visibility curve should be shown. Where the road alignment or roadside features may limit the visibility to traffic signs then the visibility lines should be shown. At traffic signals all visibility requirements, as specified in DMRB TD 50/04 ‘The Geometric Layout Of Signal Controlled Junctions And Signalised Roundabouts’ should be shown.

Drainage

3.6.9 Sustainable Drainage Systems (SuDS) - should be implemented and integrated from the beginning of the design phase and preferably be included in the Development Plan or Master Plan for the site. Typical examples of SuDS:

- permeable paving;
- swales;
- retention ponds;
- wetland basins;
- filter drains.

3.6.10 The highway drainage design, incorporating SuDS shall be appropriate for the site and to the approval by the Authority. When considering drainage SuDS should be the drainage system of choice and the following hierarchy should be used in order of preference:

- Discharge to ground (infiltration);
- Discharge to a surface water body;
- Discharge to a surface water sewer, highway drain;
- Discharge to a combined sewer.

3.6.11 Water quality from SuDS systems should be managed in a treatment train.

3.6.12 Where conventional drainage is the only option the location of all existing and proposed gullies, pipe runs, chambers, gullies, ditches, headwalls, outfalls, etc
should be shown and clearly differentiate between those to be adopted as highway drains and those to be adopted as public sewers by Wessex Water.

3.6.13 Calculations should be provided for gully spacing and the highway drains. Where the highway drains form part of an existing system then the calculations should cover the complete system from its head to discharge point.

3.6.14 Drainage and manhole schedules should be provided giving details of all pipe diameters, gradients, levels, cover, chamber invert and cover levels etc. The retained height and dimensions of all headwalls should be provided.

3.6.15 If the design does not accord with the council’s standard folios, then calculations etc. should be provided as required for structures. Copies of all consents from Wessex Water and any easements restricting work on or above the asset should be provided.

3.6.16 Where approval is required for the drainage from the council, the timescale will be 7-12 weeks in line with planning application timescales.

**Earthworks**

3.6.17 Where substantial earthworks are required a copy of the geotechnical survey together with a copy of the consultants’ recommendations should be provided. Details of capping material and depth are to be specified. It is accepted that the final decision on capping depth may be dependent on tests carried out after excavation or fill. Details of all cutting and embankment slopes, fill material, etc should be specified. Where ditches are involved sections and levels should be provided.

3.6.18 Drainage patterns across the site must be considered particularly where exceedance routes are planned.

**Pavement Design**

3.6.19 Surfacing depths and the specification of all materials shall be provided as contained in this document. On roads with high traffic flows, details of design life, millions of standard axles and supporting calculations will be expected.

3.6.20 Where possible and where ground conditions are suitable porous paving or infiltration should be used.

**Construction Details**

3.6.21 Construction details and specification of materials for all aspects of the works should be provided. This should include the construction of such items as: carriageway, footways, vehicular crossovers, tactile paving, kerbing and edging details, drains and gullies, tables, humps, chevron paving, street furniture including foundations, longitudinal and transverse pavement tie-ins, etc. Recyclable materials should be specified where possible.

**Traffic Signs and Road Markings**
3.6.22 All traffic signs, road markings, road studs, etc should be shown referenced to *The Traffic Signs Regulations and General Directions 2002* or any subsequent revision or superseding document. The location of all signs should be shown, especially for large signs such as advanced direction signs. A schedule of all signs should be provided which should include such information as size, x-height, mounting height, materials, post dimensions, foundation details, illumination, etc. For advanced direction and direction signs the layout and destinations should be shown. The materials to be used for all road markings, studs, etc should be specified.

**Structures**

3.6.23 All AIP documents, calculations, drawings and design/check certificates should be provided as specified in the council’s Technical Approval of Third Party Structures.

**Safety Fences and Other Street Furniture**

3.6.24 Details of materials to be used, foundations, dimensions, etc of all street furniture, safety fences, posts, bus stops, environmental barriers and other street equipment should be specified. The requirement for passively safe signposts or traffic signal poles shall be discussed with the councils Highways Engineers and clearly indicated on the drawings.

**Street Lighting and Illuminated Signs**

3.6.25 The location of all street lighting columns and illuminated signs (including passively safe apparatus) shall be clearly indicated, together with lighting level calculations. Please refer to section 4.0 of the council’s Street Lighting Design Guide for more detailed requirements.

**Bus Stops**

3.6.26 All bus shelters and associated infrastructure shall conform to the requirements set out in appendix D

**Traffic Signals**

3.6.27 Traffic Signal drawings and completed TR2500 forms should be provided in accordance with the council’s Traffic Signal Design Guide. Only equipment approved by North Somerset Council is acceptable.

**Site Limits and Highway Boundary**

3.6.28 The limit of the works, existing and proposed highway boundaries and any easements for land ownership or other purposes should be clearly shown.

**Statutory Undertakers**

3.6.29 The location and depth of all existing service company plant and proposed diversions shall be shown. The location, dimensions, depth and number of all ducts should be provided.
Traffic Regulation Orders

3.6.30 The processing of traffic orders will be carried out by the council, normally at the developer’s expense.

Trees and Landscaping

3.6.31 All planting proposals as part of a development proposal will require technical approval of the drawings, specifications, method statements and the post planting maintenance schedule before any highway works can commence on site. Drawings shall include location of all below and above ground services.

3.6.32 Details of distances from retained and new trees to over and underground services and drainage shall be provided, including any protection measures. Details of measures to protect retained trees shall be provided.

3.6.33 All works to comply with relevant British Standards and current best practice.

Road Safety Audit

3.6.34 Following a Stage 1 and Stage 2 or Stage 1/2 road safety audit, and a non-motorised user audits if required, a Designer’s Response is required to address all items raised. The developer or their designer shall also identify all aspects of the design for which relaxations or departures from standards or policies are required. This should form part of the road safety audit brief and should also be highlighted in the Designer’s Exception Report. For each relaxation or departure the report should clearly provide the location, relevant standard, required relaxation or departure and reason why the relaxation or departure is required.

3.7 Granting of technical approval

3.7.1 The council will advise the developer in writing of its approval of the design. If the works are not commenced within twelve months of this approval the approval will lapse and the developer will need to resubmit the design for approval.

3.7.2 If the works have not commenced within six months of the approval being given and new standards relevant to the works have been issued, the council may review the submission and request alterations be made to the design to comply with such amendments.

3.8 Construction

Protection of the Public

3.8.1 At all times the developer is responsible for ensuring the safety of all users of the highway from the commencement of the works until the issue of the Completion Certificate adoption. The developer must ensure that at all times the site is adequately protected, road works signage is provided in accordance with Chapter
8 of the Traffic Signs Manual, all areas open to the public are kept free of mud or other hazardous substances and minimise any nuisance from noise or dust. A record of all complaints received from the public and actions taken must be maintained on site. This record must be available for inspection by the council.

**Construction (Design and Management) Regulations 2007 (CDM 2007)**

3.8.2 It is a legal requirement that the developer must comply with the CDM 2007 Regulations. The developer is responsible for appointing a CDM-C and Principal Contractor. The council has no involvement with this process but can advise on ways to achieve this (see CDM Regulations L144 Para 117). The developer is the client for developer Works. The developer shall therefore take on all client and designer duties under the CDM Regulations and the Approved Code of Practice. The developer shall ensure projects are properly managed at all times and MUST coordinate all measures relating to the health and safety of people affected by their project. The council will ensure the construction of the works follows the approved design and meets the detailed specifications. However council Inspectors or Clerks of Works will not make design decisions. These will need to referred back to the designer.

**Inspection**

3.8.3 Regular inspection of the works will be undertaken by the Council’s Clerk of Works. Larger sites may have resident staff. The developer is required to give the Highway Engineer, Clerk of Works or Inspector and any other duly authorised council officer free access to the site to enable the works and materials to be inspected. This includes access to any premises where materials are stored or being prepared or manufactured. Inspection hours will generally be within normal working hours Monday to Friday excluding bank holidays. Details of any works to be carried out outside of these times should be given to the council Engineer or Inspector so a decision can be made if attendance is required. The council will always reserve the right to undertake material tests.

**Inspection Notification**

Before commencement of the works on site: 14 working days

Before commencement of any road construction: 3 working days

Response to design changes: 2 working days

Any other inspections, including the covering up of works: 24 hours

3.8.4 All costs of testing and replacement of materials to be borne by the developer. Any rejected materials must be removed from site or stored separately.

**3.9 Traffic signs and markings**
**Traffic Signs**

**3.9.1** Mounting heights and placement of signs shall be as prescribed in the *Traffic Signs Manual, 1982*.

**3.9.2** Mounting height, defined as the distance from the lower edge of the sign to the ground, shall be as follows:

<table>
<thead>
<tr>
<th>Location Type</th>
<th>Minimum Mounting Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>On or over footways and anywhere else pedestrians are likely to walk</td>
<td>2.1m</td>
</tr>
<tr>
<td>On or over cycleways and anywhere else mounted cyclists can be expected</td>
<td>2.3m</td>
</tr>
<tr>
<td>In other locations</td>
<td>1.5m</td>
</tr>
</tbody>
</table>

**3.9.3** Sideways clearance of signs, defined as the distance from the nearest edge of a sign to the edge of the carriageway, must be as shown below. Those responsible for the erection of signs will ensure that sideways clearance is measured from the edge of the sign face closest to the carriageway and not from the sign post. Under no circumstances shall signs be erected so that they project over a carriageway.

<table>
<thead>
<tr>
<th>Speed Limit</th>
<th>Min Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 30mph</td>
<td>450mm</td>
</tr>
<tr>
<td>40mph or more</td>
<td>600mm</td>
</tr>
<tr>
<td>70mph</td>
<td>1000mm</td>
</tr>
</tbody>
</table>

**3.9.4** Sign posts in footways and shared use cycle and pedestrian paths shall be located as far as practical out of the general line of pedestrian traffic. The preferred location for sign supports is the back of the footway. The use of cranked posts or offset brackets should be considered to achieve both a clear line of travel for pedestrians and good visibility of the sign by motorists.

**3.9.5** Sign posts present a hazard to the visually impaired, particularly where the contrast between the post and background is poor. To mitigate this, consideration will be given to applying colour-contrast banding to the posts; *Inclusive Mobility, DfT, 2005* provides guidance on the need and layout of banding.

**3.9.6** Signs in footways shall not reduce available width of the footway to less than 1.2m and not be erected on more than two posts. Where two posts are used an absolute minimum of 1.2m clear distance between posts shall be maintained.

**3.9.7** Signs in shared use or segregated use cycle and pedestrian paths shall not reduce the usable width of the path to below 3.0m.

**Road Markings**

43
3.9.8 Road markings shall comply with the requirements of the *Specification for Highway Works of the Manual of Contract Documents for Highway Works (MCHW)* and the specification in Annex 1.

3.9.9 Only standard yellow and white markings, as referred to above, shall be used. In cases in which white and yellow markings are to be applied to stone cobbles or block paving, the marking shall be produced from chlorinated rubber lining paint.

3.9.10 Full details can be found in the council’s Traffic Signs and Road Markings Policy document, available on request.

3.10 **Post Construction**

3.10.1 When the developer is confident that all works have been completed in accordance with the approved drawings they should apply in writing to the council requesting the issue of a Completion Certificate or Part 2 Certificate stating that all works have been completed.

**Part 1 Certificate (for Section 38 works only)**

3.10.2 On receipt of a request from the developer for the issue of a Part 1 Certificate, the council will arrange for a Part 1 inspection. The Part 1 Certificate can be issued when all highway drainage (and all other drainage contained within the highway), all kerbing with foundations, carriageway sub base, carriageway base course and vehicle visibility sight lines are completed and to the approval of the councils Clerk of Works/inspector. Upon issue of the certificate, the council’s Engineer will arrange for the works deposit to be reduced by 40%.

**Completion Certificate (Part 2 certificate for Section 38 works)**

3.10.3 On receipt of a request from the developer for the issue of a Completion Certificate the council will arrange for a Stage 3 Road Safety Audit and completion inspection, to be funded by the developer. When all matters raised in the Road Safety Audit and completion inspection have been addressed by the developer to the satisfaction of the council a completion certificate will be issued subject to the following being satisfactorily complete:

- A street lighting inspection (if applicable);
- A structural inspection (if applicable);
- A structural maintenance manual (if applicable);
- Confirmation received from the Term Traffic Signals Consultant that any signal installation is acceptable;
- A tree pit/ tree planting inspection (if applicable);
- All agreed Traffic Regulation Orders are operational;
• One paper set of ‘As Built’ drawings have been received plus a copy on CD-Rom including a plan showing edged in red the land dedicated as public highway and all drains to be adopted by the council. Note: If the highway boundary has been altered in any way then a Deed of Variation will be required;

• A Health and Safety file (unless exempt by virtue of Regulation 3 of the CDM Regulations). A copy of the approved Health and Safety File should also be provided on CD-Rom. Upon issue of the certificate, the council’s Engineer will arrange for the works deposit to be reduced by 90% for Section 38 works. If all the expected works are not complete or there are concerns on any aspects of the works, then a higher percentage of the highway works deposit may be retained.

**Final Certificate (for both Section 278 and Section 38 works)**

3.10.4 Following the issue of the Completion Certificate or Part 2 certificate a maintenance period (normally of twelve months duration) will commence. During this period the developer is responsible for the repair of all defects and amendments to the design that the council considers to be necessary. At the end of the maintenance period the developer should apply in writing to the council to request the issue of the Final Certificate.

3.10.5 On receipt of a request from the developer for the issue of a Final Certificate the council will arrange for an end of maintenance inspection and a Stage 4 Road Safety Audit. When all the matters raised in the Road Safety Audit and maintenance inspection have been addressed by the developer to the satisfaction of the council a Maintenance Certificate will be issued, subject to the following being satisfactorily completed:

• Maintenance inspection

• Stage 4 Road Safety Audit (if applicable);

• Street Lighting inspection (if applicable);

• Traffic Signals inspection (if applicable);

• Structural Inspection (if applicable);

• Tree vitality inspection / tree planting inspection (if applicable).

3.10.6 Upon issue of the certificate, the council will arrange for the works deposit to be released in its entirety.

**3.11 Off-Site Highway Works**

3.11.1 If the development requires highway work outside of the site, such as alterations to the existing public highway, links to pedestrian/cycle routes, bus stops and shelters, the development will be the subject of a Section 106 agreement (Town &
Country Planning Act 1990) or Section 278 (Highways Act 1980), to secure the works, put bonds in place and also commit to supervision fees for the works. The planning agreement will normally be required to be in place prior to the determination of the planning application, but in order not to delay the approval process, the works can be the subject of a ‘negative’ condition, which will then require a planning agreement to be entered into at a later date.

3.11.2 If there are off-site works associated with a development the planning application should be accompanied by a Stage 1/2 Safety Audit of the proposed works.

3.11.3 Alternatively, the developer may be required to enter a Section 278 agreement (Highways Act 1980), whereby the works are funded and undertaken by the developer acting as the council’s agent. As with the planning agreement there will be a need to ‘bond’ the works and meet the council’s reasonable costs.

3.11.4 Works within the highway must be undertaken by contractors with the appropriate accreditation and public liability insurance of £5,000,000.

3.11.5 The Traffic Management Act (2005) requires local highway authorities to ‘manage’ works within the highway. As such developers who have to undertake works within the existing highway must give adequate notice of their intentions (minimum 3 months) so that the works can be allocated ‘road space’. However, the submission of an intention is no guarantee of the council being able to meet the request.

3.12 **New Roads and Street Works Act 1991**

3.12.1 The developer is to contact the Council Network Manager (contact details in section 5) where the proposed works affect the public highway and agree timings, programme of the works.

3.13 **Occupation of Buildings**

3.13.1 No dwelling shall be occupied until such time as that dwelling having an appropriate means of access for both pedestrians and vehicles. Street lighting is to be operational.
4. **STANDARD AND NON-STANDARD MATERIALS FOR ADOPTABLE ROADS**

4.1.1 This section sets out where non-standard materials can be used and the commuted sums associated with their use.

4.1.2 Materials do not just fulfil aesthetic purposes. They also assist in aspects such as ‘Secured by Design’ principles, street hierarchy creation, legibility, traffic calming, safety and place-making. A key aim of the Materials Adoption and Maintenance chapter in Manual for Streets is to “Encourage authorities to adopt a palette of materials which allow for more creative design.” An integrated and innovative approach to design, particularly in large new housing developments can help to counteract the sense of sprawl and formlessness which sometimes can result. The council may therefore be prepared to allow the use of alternative (non-standard) materials and construction details, and will encourage landscaping treatment and the incorporation of features where appropriate in the highway.

4.1.3 For clarity table 8 lists materials that the council considerers to be ‘standard’ and table 9 lists those the council considers to be acceptable ‘non-standard’

**Table 8 - Standard Materials**

<table>
<thead>
<tr>
<th>Road Hierarchy Class</th>
<th>Surfacing¹</th>
<th>Kerbs / Drainage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footways</td>
<td>Asphalt Concrete surface course</td>
<td>Pre-cast concrete kerbs / edging / channels</td>
</tr>
<tr>
<td>Cycleways</td>
<td>Asphalt Concrete binder course</td>
<td>Pre-cast concrete drainage system gullies</td>
</tr>
<tr>
<td>Mews Court</td>
<td>Asphalt Concrete base course</td>
<td>Not a combined kerb drainage system</td>
</tr>
<tr>
<td>Minor Access Road</td>
<td>Type 1 sub-base (stone aggregate)</td>
<td></td>
</tr>
<tr>
<td>Local Access Road*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared Surface Streets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Link Road</td>
<td>Hot Rolled Asphalt surface course to BS942</td>
<td>Pre-cast concrete kerbs / edging / channels</td>
</tr>
<tr>
<td>Secondary Distributor Road</td>
<td>Asphalt Concrete binder course</td>
<td>Pre-cast concrete drainage system gullies</td>
</tr>
<tr>
<td>Main Distributor Road</td>
<td>Asphalt Concrete base course</td>
<td>Not a combined kerb drainage system</td>
</tr>
<tr>
<td>Strategic Route</td>
<td>Type 1 sub-base (stone aggregate)</td>
<td></td>
</tr>
</tbody>
</table>
1 All surfacing materials are to be HAPAS approved. Note that not all HAPAS certified materials will be acceptable within the design. Specification of all materials will be site/location specific.

Table 9 – Acceptable non-standard Materials, features and infrastructure

- Coloured aggregate in surface course;
- Surface dressing on wearing course;
- Coloured surfacing;
- Block paving;
- Granite / Conservation kerbs and channel;
- Non standard drainage systems (beanie blocks or similar);
- Non standard street lighting and bollards;
- Street furniture (seats, planters);
- Imprinted surface course

Please note this is not a definitive list. Please consult with the relevant council Officer.

4.1.4 There will be specific areas where use of special materials and street furniture will be required by the Council as part of regeneration proposals, either to replace existing damaged high quality historic materials, or to secure an appropriate or distinctive character or quality. This is reflected in the fact that for these areas, the list of ‘normally acceptable’ materials is wider than for other areas. This is most likely within Conservation Areas, Town or district centres or selected areas within new or refurbished housing developments subject to adopted SPDs, Master Plans, Design or Development Briefs or Codes or mixed use estates. Pre-planning application discussions will identify where these are to be sought.
4.1.5 The council will not support the use of non-standard surfacing materials where:

- there will be a high proportion of HGVs or on bus routes, where more damage is likely;
- there are likely to be a high proportion or volume of sharp turning manoeuvres, particularly at low speeds by buses or HGVs;
- there are known problems of ground conditions, subsidence, or inadequate sub-surface preparation is proposed or has been used by the developer;
- it will not be suitable for safety or accessibility reasons including access for the disabled; and
- use of other special features where they will be vulnerable to damage, vandalism or disproportionately costly to replace or maintain or will conflict with other objectives.

4.2 Committed sums associated with non-standard materials

4.2.1 Whilst the council recognises the important role that non-standard materials can play in design quality it also has to consider the additional cost of maintaining these materials in perpetuity. Currently the council does not seek a committed maintenance sum in relation to standard materials. However as the initial costs of non-standard materials are greater than those of standard materials, so are the on-going maintenance and replacement costs. Therefore the council will require committed maintenance contributions based upon the difference between the maintenance liability between standard and non-standard materials.

4.2.2 All non-standard materials used will attract a committed maintenance contribution. However, the council wish to encourage use of non-standard materials in appropriate locations. Therefore, at officer discretion, the council may contribute up to 5% of the agreed committed maintenance contribution. The developer will meet the remainder.

4.2.3 The cost differential, and thereby the committed maintenance contribution, will be determined by the schedule of rates for materials held by the council. The developer will enter on to an Excel spreadsheet the square meterage of each material used. The spreadsheet will then be submitted to the council with, or prior to, submission of the planning application. An example of the spreadsheet is included in Appendix A. **Please note the spreadsheet is not currently available on the council’s website**

4.2.4 All committed sums will be payable to the council prior to issue of the final adoption certificate.
5. **GLOSSARY OF TERMS, CONTACTS AND REFERENCES**

5.1 **Glossary of terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways Engineer</td>
<td>A Highways Engineer working for North Somerset Highways &amp; Transportation</td>
</tr>
<tr>
<td>Highway authority</td>
<td>North Somerset Council Highways &amp; Transportation</td>
</tr>
<tr>
<td>UKAS</td>
<td>The UK Accreditation Service</td>
</tr>
<tr>
<td>DfT</td>
<td>Department for Transport</td>
</tr>
<tr>
<td>HGV</td>
<td>Heavy Goods Vehicle (&gt;7.5T)</td>
</tr>
<tr>
<td>DMRB</td>
<td>Design Manual for Roads and Bridges</td>
</tr>
<tr>
<td>PROW</td>
<td>Public Right of Way</td>
</tr>
<tr>
<td>SPD</td>
<td>Supplementary Planning Document</td>
</tr>
<tr>
<td>APC</td>
<td>Advance Payment Code</td>
</tr>
<tr>
<td>AIP</td>
<td>Agreement in Principle</td>
</tr>
<tr>
<td>NSC</td>
<td>North Somerset Council</td>
</tr>
<tr>
<td>SuDS</td>
<td>Sustainable Drainage System</td>
</tr>
<tr>
<td>SAB</td>
<td>SuDS Approval Board</td>
</tr>
<tr>
<td>MfS</td>
<td>Manual for Streets</td>
</tr>
</tbody>
</table>

5.2 **North Somerset Council contacts**

Development Management – [email@n-somerset.gov.uk](mailto:email@n-somerset.gov.uk)

Highways Development Management – [H&T.developmentmanagementl@n-somerset.gov.uk](mailto:H&T.developmentmanagementl@n-somerset.gov.uk)

Highways Engineering Design – [email@n-somerset.gov.uk](mailto:email@n-somerset.gov.uk)

Street Lighting and Traffic Signals – [streetlighting@n-somerset.gov.uk](mailto:streetlighting@n-somerset.gov.uk)

Highways Drainage – [email@n-somerset.gov.uk](mailto:email@n-somerset.gov.uk)

Rights of Way – [email@n-somerset.gov.uk](mailto:email@n-somerset.gov.uk)

Highway Network Manager – [email@n-somerset.gov.uk](mailto:email@n-somerset.gov.uk)

Senior Tree Officer – [StreetsAndOpenSpaces@n-somerset.gov.uk](mailto:StreetsAndOpenSpaces@n-somerset.gov.uk)

5.3 **Links to other Documents and Publications**

- Building Regulations, Part B5 (Fire safety), HM Government, 2010
- Construction (Design and Management) Regulations, HSE, 2007
- DMRB TD 41/95 ‘Vehicular Access to All-Purpose Trunk Roads’
DMRB TD 42/95 ‘Geometric Design of Major/Minor Priority Junctions’

DMRB TD 50/04 ‘The Geometric Layout Of Signal Controlled Junctions And Signalised Roundabouts’

Equality Act 2010

Flood and Water Management Act (2010)

Guidance on Transport Assessment, DfT, 2007

Highways Act, 1980

Inclusive Mobility, DfT 2005

Local Transport Note 1/04 ‘Planning and designing for walking and cycling’, DfT, 2004


Local Transport Note 2/08 ‘Cycle infrastructure design’, DfT, 2008

Local Transport Note 1/11 ‘Shared Space’, DfT, 2011


New Roads and Street Works Act 1991

NSC Parking Standards Supplementary Planning Document, 2013

NSC Street Lighting Design Guide; available on request

NSC Technical Approval of Third Party Structures; available on request

NSC Traffic Signals Design Guide; available on request

NSC Traffic Signs and Road Markings Policy; available on request

NSC Biodiversity and Trees (Supplementary Planning Document)


Town and Country Planning Act, 1990


Traffic Signs Manual, DfT, 1982

Traffic Signs Regulations and General Directions, DfT, 2002

Trees in Hard Landscapes, Trees and Design Action Group, 2014

Water Industry Act, 1991

National Planning Policy Framework

Planning Practice Guidance
Policies contained in the local plan for North Somerset, especially policies contained in the adopted North Somerset Core Strategy and extant policies from the North Somerset Replacement Local Plan 2007;

- Core Strategy policies
- CS10 Transportation and Movement,
- CS11 Parking,
- CS12 Achieving high quality design and place-making,
- CS34 Infrastructure Delivery and Development Contributions, and
- RLP policies GPD/3 Promoting good design and sustainable construction and the transport policies.

Full details of these as well as advice contained in adopted and emerging Supplementary Planning Documents (SPD’s) and other emerging local policy can be found on our website [www.n-somerset.gov.uk/planningpolicy](http://www.n-somerset.gov.uk/planningpolicy)

### 5.4 North Somerset Standard Drawings for Highways Construction

Contact North Somerset Highways Engineering Design (contact details above) to obtain any of the standard drawings.

<table>
<thead>
<tr>
<th>Carriageways, footways, kerbing, channels</th>
<th>Reinstatement of carriageways</th>
<th>Drainage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSD/1100/001A</td>
<td>HSD/0700</td>
<td>HSD/500/006A</td>
</tr>
<tr>
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<td>HSD0700</td>
<td>HSD/500/007A</td>
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<tr>
<td>HSD/1100/003A</td>
<td>HSD0700</td>
<td>HSD/500/008A</td>
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<td>HSD/1100/008A</td>
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<td>HSD/1100/51B</td>
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<tr>
<td>HSD/1100/52A</td>
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</tbody>
</table>
End
APPENDICES

Appendix A – Example of spreadsheet to be used to calculate commuted maintenance sums for approved non-standard materials.

Materials for Adaptable Highway Works

<table>
<thead>
<tr>
<th>Carriageway Criteria</th>
<th>Standard Material Sq metres</th>
<th>Approved Non-Standard Materials Sq metres</th>
<th>Description of Non-Standard Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Route (7.3m Min)</td>
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<td></td>
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<td>Main Distributor (7.3m Min)</td>
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<td></td>
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<tr>
<td>Secondary Distributor (7.3m Min)</td>
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<tr>
<td>Link Road (6.7m Min)</td>
<td></td>
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<tr>
<td>Local Access Road 5.5m Min)</td>
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<tr>
<td>Minor Access Road (5.5m Min)</td>
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<tr>
<td>Mews Court (5.5m Min)</td>
<td></td>
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<tr>
<td>Footway (2.0m Min)</td>
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<tr>
<td>Cycleway (3.0m Min)</td>
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<tr>
<td>Kerbs / Channels</td>
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<tr>
<td>Drainage</td>
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<td>Gullies</td>
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<td>Channels</td>
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<td>Culverts</td>
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<td>Street Lighting</td>
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<tr>
<td>Columns</td>
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<tr>
<td>Illuminated signs</td>
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<td></td>
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<tr>
<td>Illuminated bollards</td>
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<tr>
<td>Traffic Signals</td>
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<td>Highway Landscaping</td>
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<td>Trees</td>
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<tr>
<td>Verges</td>
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<tr>
<td>Structures</td>
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<tr>
<td>Other adoptable works</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Appendix B - Guidance on Material Testing

Unless otherwise specified, all materials shall comply with the current edition of the appropriate British Standard or British Standard Code of Practice (BS), European Standard (EN) or Harmonised European Standard Specification that supersedes the relevant BS.

All materials shall be transported, stored and used in accordance with the requirements or recommendations of that Specification. Where available and unless otherwise specified, materials and articles produced under a Sector Scheme for Quality Management in Highway Works, Kite Mark or Safety Mark, Highways Authorities Product Approval Scheme (HAPAS) or other accredited third part certified scheme shall be used.

Samples of construction materials shall be taken and tested by the Engineer. The Developer will provide all necessary assistance. The names of the suppliers shall be submitted for approval in advance of materials being ordered, and no source of supply shall be changed without the Engineer’s consent prior approval.
Bituminous materials may only be obtained from plants accredited to the National Sector Scheme for Asphalt Production (Sector Scheme No. 14). When any material or article is required to comply with a European or British Standard such material or article or its container shall bear the stamp of the UKAS registered certification trademark. Alternatively, the Contractor shall submit test certificates furnished by the supplier or manufacturer of the material or article indicating compliance with the relevant British Standard. Testing to be carried out by a UKAS laboratory accredited for the particular test. A UKAS testing service is available from the North Somerset Highway Services Laboratory. Contact Paul Stewart Principle Engineer 01275463097.

All bituminous surfacing shall be carried out by companies certificated to National Highways Sector Scheme 16 for the Laying of Asphalt Mixes.

All delivery tickets will be made available to the Engineer.

Subbase shall be from a council-approved source that has been assessed as capable of supplying compliant material under an appropriate quality control regime. Certificates of compliance for frost heave and required aggregate properties from a UKAS accredited laboratory shall represent the current production quality and be no more than 12 months old.

**Appendix C - Guidance on Landscaping and trees in the highway**

Trees and other soft landscaping form an important part of the network of highways that make our communities sustainable, enjoyable and inclusive. This section sets out planning and design standards necessary to successfully incorporate trees into hard landscapes.

It is essential that tree planting is considered in detail at the early stages of the design process. This is because a tree is a growing structure, and a mature tree will be many times bigger, and need many more times the space both above and below ground, than it did when it was once viewed on a drawing, or at the time of planting. Tree canopy size and soil volume requirements at maturity are often overlooked at both the design and construction phase, regularly resulting in poor vitality and short life span. This in turn leads to a reduction in visual amenity and an increase in maintenance costs.

The council will not adopt highway trees unless the proposal and implementation meet our requirements. We will adopt trees which at the time of completion of the development show good vitality (leaf size/leaf colour/leaf canopy density/extension growth/incremental girth development/stem taper development) and structure. Spot checks will be carried out throughout the maintenance period and developers prompted to take remedial action if required. This may assist developers in achieving Final Certificate/Section 38 or 106 Agreement. The council uses a variety of tools in assessing tree health and condition, including visual assessment methods, soil probing and chlorophyll fluorescence tests.

Successful incorporation of healthy growing trees in the highway is largely dependent on a collaborative approach throughout the project lifecycle. The role of trees should form part of the project strategy/ vision and the scheme value assessment. An initial tree feasibility survey (above and below ground) should be carried out at this stage. Budgets should include cost of
post planting care. The design phase should include a cross disciplinary approach to techniques which include above and below ground space provision for both growing trees and other highway components. Species selection should adhere to the rule ‘the right tree in the right place’. Tendering documents should include specifications relating to installation and post planting maintenance of trees to ensure contractors are adequately trained and experienced. We encourage early discussions with council officers/engineers in relevant teams (e.g. trees, highways, lighting, road safety, drainage, urban design).

Where existing trees are to be retained as part of a new road network, proposals should comply with BS 5837 Trees in relation to design, demolition and construction – Recommendations.

The council expects a project to incorporate current and best practice relating to new tree planting and development near existing trees. The aim of any project should be to achieve a harmonious and sustainable relationship between trees and structures. We expect to see evidence of the criteria, guidance and methods within the following documents being incorporated into the project:

- Manual for Streets
- BS 8545 Trees: from nursery to independence in the landscape – Recommendations
- BS 5837 Trees in relation to design, demolition and construction – Recommendations
- BS 3998 Tree Work – Recommendations
- BS 3936-1 Nursery stock Part 1: specification for trees and shrubs
- BS 4428 Code of practice for general landscape operations
- BS 5489-1 Code of Practice for lighting of roads and public amenity areas
- Trees in Hard Landscapes – A Guide for Delivery (Trees & 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 amendments apply)

Location of trees

The size of the tree canopy at maturity must be taken into account when designing a planting layout so that the risk of future problems relating to canopy spread is reduced. Joint working with lighting/road safety/highways engineers, CCTV manager, and project arboriculturist is necessary to achieve a result which allows structures in the highway to co-exist satisfactorily with trees.

Consider joint working with utilities and highways engineers to provide a solution where services share trenches where possible. This allows for minimum disruption to tree roots during
laying and maintenance of apparatus, as well as reduced risk of damage to services from tree roots.

The trunk of trees should not be located within 1.0m of the kerb. Footway width may have to be increased to accommodate the tree pit and mature tree trunk.

Large species trees should preferably be positioned with a minimum of 3.0m from the edge of a carriageway.

Grass verges shall be at least 3.0m wide if they are to support tree planting.

The maximum height of plants within visibility splays should not exceed 300mm above ground level, or a top vertical sightline of 600mm. However, the council will make allowances for occasional vertical obstructions within visibility splays provided that in combination they do not create a solid visual barrier or it allows continuation of avenue-style planting where the species has narrow, non-scrubby girth and a minimum clear stem to between 3.0 and 4.0 metres.

Tree planting shall not take place directly over live services unless they are in excess of 3.0m deep, or in the case of mains water and drains, 5.0m deep.

Trees may be located within canopy spread of water and sewer pipes provided adequate protection measures are taken, such as welded pipes, PVC pipes assembled with solvent cement joints or use of geotextile liners along the backfill material to discourage root growth into the pipe bedding.

The location should reflect species choice and size at maturity to ensure a suitable vertical clearance between the road and the lowest branches of the crown can be maintained, without the need for extensive pruning works at tree maturity. Some allowances may be made dependent on location and tree species. The development of a crown shape suitable for highways begins in the nursery but must be further progressed during post planting maintenance when the tree is still young and semi-mature.

The vertical clearance between the between the road surface and the lowest branch should be 5.5m. 2.6m unrestricted clearance should be available over footway areas and 3.0m over cycle ways. Some allowances may be made dependent on location and tree species.

**Species specification**

Landscape architects will be required to consider the design effects of individual trees to determine whether avenues, or group of trees are appropriate for the location and streetscape character area. This must be done in liaison with an arboriculturist who will advise on species selection and whether the design intention is achievable in terms of ground conditions. Input from ecologists may also be required in the choice of species where the project is in or adjacent to an area of biodiversity interest.

The maximum proportion of any one species should not exceed 10%. An understanding of the composition of the local existing tree population is essential so that any new planting makes a contribution to the resilience of the overall tree population to pests, diseases, and climate change.
In urban situations it is recommended that newly planted trees have a minimum girth of 14cm. Where there is a high risk of damage, the minimum recommended girth is 18cm.

New trees should be of high quality and meet current British Standards. They should be sourced from a reputable supplier. A list of tried and tested suppliers is available from the Senior Tree Officer on request.

In urban situations it is recommended that newly planted trees have a minimum girth of 14cm. Where there is a high risk of damage, the minimum recommended girth is 18cm.

Street trees should have a clear stem to 2.0m when planted; feathered stems may only be suitable in wide verges.

The tree pit

The term “tree pit” can be misleading as it conveys the image of a confined space below ground. The space required to accommodate a tree as it grows has to be larger than the planting hole. Joint working with highway engineers is necessary to find a solution that allows tree roots to expand beyond the planting hole without significant disruption to services and the highway. In this document, “tree pit” means the surface treatment and below ground rooting volume of soil available to each tree.

Trees planted in hard surfacing are likely to require provision for some root-growing medium under the load-bearing hard surfaces. Several technical solutions are available in the literature. We expect solutions to include structural growing media, modular crate systems or raft systems.

Soil volume per tree should be calculated using realistic mature tree canopy projections. A common calculation used is:

Projected mature canopy area (m²) x 0.6m = Target soil volume.

Minimum soil volume of 5m³ is required.

The shape of the soil area need not be regular and can be altered to suit site conditions. For example, a continuous planting pit along the kerb line will increase rooting space. Volume cannot be achieved by providing extra depth. The maximum useful depth of topsoil for tree planting is 900mm.

Existing soil should be tested and re-used where fit for purpose, rather than importing top-soil.

Tree pit surface area opening to be approximately 1500mm x 1500mm. Trees in grassed verges will usually establish well in pits of 1200mm x 1200mm x 800mm deep, if surrounding soil is uncompacted and free-draining.

Root deflectors are not suitable as they inhibit natural root growth patterns and may result in whole tree failure once the tree reaches maturity.

Root barriers constitute only a short-term solution unless they are installed to a maximum depth and at the edge of the service duct.
Where tree pits are to have an edging of paving slabs or similar; an internal edging of stainless steel should be installed.

Drainage

Drainage tests must be carried out as part of the technical design phase, and poor drainage improved prior to planting. A drainage layer of grit or similar at the base of the pits does not meet this purpose, but instead further inhibits water movement through the soil horizon.

The design of roads and drainage must ensure that unfiltered surface water run-off from the carriageway is not directed into tree pits.

Below ground irrigation

Below ground irrigation is expected in hard surfaces. This should consist of perforated pipe or similar located at the top of the root ball to ensure water percolates through the entire root ball.

Tree pit surface treatment

It is essential that water and air can enter the rooting area below ground. Materials which form an impermeable barrier over the unpaved surface of a tree pit, such as tarmac, have been proven not to work and should not be used.

Footway sealants should not be used near trees and root zones.

Flexible permeable rubber surfacing may be used provided a ring of mulch is included immediately around the tree trunk (and regularly re-filled).

Permeable resin-bound aggregate is less suitable for the surface of tree pits, as it may crack under the pressure from growing buttress roots, it is often subject to clogging – particularly where mechanical sweepers clean the surface. If used, a ring of mulch should be included immediately around the tree trunk (and regularly re-filled).

Where trees are to be planted into a bitumen macadam surface, the area surrounding the pit surface and overlying the soil into which the roots will grow should be constructed using an open-textured permeable bitmac. This will be a 60mm thick wearing course of 10mm aggregate laid over no-fines aggregate or a porous no-fines concrete.

Where trees are planted in grass verges, it is expected that mulching is used. The typical minimum mulch circle radius for a 14-16cm girth young tree is 1.0m.

Support systems

Underground guying is expected in areas with high footfall and traffic count. The stake and tie system is acceptable in grass verges, and other roads where the risk of vandalism is reduced.

Tree guards

Trees should be guarded from vehicular damage where necessary using low metal barriers at the edge of the tree pit, or similar.

Tree grilles
Tree grilles and grids present maintenance difficulties and should only be used where the larger opening (400mm) can be achieved.

Grilles must be supported by a frame which in turn is supported on at least two sides. This is to avoid the grille being situated directly onto the soil which is likely to result in an uneven surface.

Post planting maintenance log and operations

A maintenance log should be kept and presented to the tree officer at spot checks and final assessment prior to adoption. Trees may not be adopted if there is evidence of post planting maintenance discrepancies.

Operations during the maintenance period must include:

Watering – a minimum of 40 litres per tree at a slow pace, at weekly intervals between April and September. Supplementary watering may be unnecessary if the season/month is particularly wet. Irrigation is likely to be required during the first two full growing seasons (the establishment phase).

Pit surfaces should be kept weed free throughout the establishment phase.

If pit surfaces are mulched, the layer of mulch should be maintained at between 75mm – 100mm. At no point shall mulch be placed against the tree trunk.

Support systems and guards should be checked for and adjustments made if necessary.

Grilles, grates and other furniture should be checked so that they do not damage or compromise the tree, with adjustments made where necessary.

Formative pruning should be carried out to reduce the risk of trees developing defects and ill-health.

Appendix D – Public Transport

In the interests of sustainability, new development should be located in areas well served by alternative means of transport alternative to the private car, including public transport. Public transport services and facilities should be considered and discussed at the earliest opportunity.

Streets that could be used by bus services should be identified early in the design process, working in partnership with local bus operators and the council to ensure integration of local services into the wider network.

Appropriate bus stop infrastructure should be provided. The specification of such infrastructure should be agreed with the council and would normally be secured through a Section 106 Agreement. Bus stop infrastructure may include associated elements including, shelters, electrical connections, lighting, real time passenger information, raised kerbs, carriageway markings, signage and any other local bespoke elements.

The locations of bus stops/shelters should be indicated and agreed early on in the design process to ensure that any potential buyer is aware of where they are located. As far as
possible, the site layout should ensure that all dwellings are located within a target walking
distance to a bus stop of 400m. Where this is not possible, the walking distance should ideally
be no greater than 600m which is widely accepted as the maximum distance most people
would be prepared to walk to a bus stop.

**Bus Services**

Discussions should be held at an early stage to identify the best approach for the provision of
public transport services. Preference will be given to extending or diverting an established
service, as these have the greatest chance of being commercially viable at an early stage.
However, for larger developments, it may be more appropriate to provide a new service.

Where new bus services are proposed, these should be of a suitable peak-time and daytime
frequency so as to encourage modal shift from private car use. As a minimum, an hourly
frequency should be provided. In central urban areas, the frequency should be half-hourly or
greater. Evening and Sunday services should also be considered for larger developments.

Development proposals will be considered on a site by site basis. The council will assess any
estimates for likely levels of public transport use included in any transport assessments or draft
travel plans, against existing or proposed bus route, vehicle capacities and timetables. The
council will need to be satisfied that a public transport service can be provided that is
realistically capable of achieving the proposed level of use by the development’s occupants.

Phasing will be important for larger developments. Issues that will need to be discussed and
agreed include:

1. the initial service provision to a development site, for example community buses, demand-
responsive transport, or low frequency bus services, to serve the first occupiers of new
residential developments;

2. at what stage the growing numbers of houses, employees and shoppers will trigger an increase
in the capacity and frequency of services;

3. the need for priming initial services by using subsidised or free travel tickets, resident travel
packs etc; and

4. if and when a new service might becoming self-funding or commercially viable.

Support for new bus services and details relating to phasing will be secured through a Section
106 Agreement.

**Bus stop location and design**

Careful consideration should be given to the proposed layout of the development in the
immediate vicinity of bus stops to:

1. make sure bus drivers and passengers waiting at the bus stop have ample time to see each
other;

2. make sure vehicles overtaking a stationary bus have satisfactory forward visibility;

3. prevent parked vehicles blocking bus stops;
avoid safety conflicts with road junctions, pedestrian or cycle crossings etc;

avoid interference with access to properties;

make sure there is satisfactory drainage where raised kerbing is installed;

minimise risks to personal safety and opportunities for crime; and

protect bus stops from obstructions

Bus stops should not be sited within 30m of vertical traffic-calming features (including domed mini roundabouts). This is to minimise the risk of any standing passengers falling within the bus, and to allow sufficient time for boarding passengers to sit down.

The minimum footway width at a bus stop site will be 3m. Where a shelter is to be provided, there should be a minimum of 0.5m clearance between any part of the shelter and the edge of the carriageway. There should be a clear footway of 2.0m between the shelter and the rear edge of the footway. Where this cannot be achieved, consideration should be given to site-specific shelter designs.

**Pedestrian access to bus routes**

Generally walking distances to bus stops in urban areas should be a maximum of 400m. In other locations or where this is not possible, the walking distance should not be more than 600m which is widely accepted as the maximum distance most people would be prepared to walk to a bus stop.

Pedestrian routes to bus stops should be as direct, convenient and safe as possible to encourage use of public transport. Routes should:

- have good natural observation from neighbouring buildings;
- be well lit; and
- be carefully designed to minimise opportunities for crime.

Bus stops in employment or commercial areas should be placed near building entrances and should avoid locations where passing traffic speeds would be high. Footways should be available between any proposed development and the nearest bus stops.

**Bus route design**

Roads which are designed for use by public transport must be a minimum of 6.7m wide, subject to consideration of any on-street parking which may reduce the available width. Swept path assessments should be used where necessary to confirm the suitability of proposed bus routes.

Bus priority measures should be considered for larger developments, or where these would assist the ease of movement for local bus services. Such measures could include bus lanes, bus-only links, bus gates and other prioritisation at junctions. The design of such measures should be agreed with the council in conjunction with bus operators.
It may be appropriate for particularly large developments which generate high passenger numbers, and which are located at key points on the road network, to provide public transport interchange facilities. Typical developments that may be applicable would include major retail parks, hospitals, business parks and significant new housing estates. Examples of facilities might include:

- a waiting room or small bus station;
- comprehensive timetable and route information;
- real time bus information;
- secure facilities for leaving luggage;
- toilets;
- refreshment facilities; and
- secure cycle parking.

End