



Highways Development Design Guide

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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 planning proposals that 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 it will guide the planning and technical process in respect of new development. It expands upon National and Local Planning Policies to give clear advice on the standards expected for highways and transport infrastructure. This guide is not a supplementary planning document.
- 1.1.3 This document will apply to all highways schemes associated with new development within North Somerset, including alterations or works to the existing highway and other transport infrastructure and associated works. There may however be some circumstances such as town and local centres, where after discussion between the council and the developer, a different palette of materials will be agreed in order to meet wider design objectives.
- 1.1.4 Early in 2019, North Somerset Council declared a Climate Emergency. The resulting North Somerset Climate Emergency Strategy (NSCES) and the accompanying North Somerset Climate Emergency Strategic Action Plan (NSCESAP) were published and adopted in November 2019. Due to this emergency, and the council's commitment to become carbon neutral by 2030, all new developments will now have to fit with the objectives and outcomes set in the NSCES and NSCESAP, which include the following:
- Become a net zero carbon council.
 - An energy-efficient built environment.
 - Renewable energy generation.
 - Replenish our carbon stores.
 - Renewable energy generation.
 - Reduce emissions from transport.
 - Repair, reuse, reduce, and recycle.
- 1.1.5 All of the above are relevant to new developments in varying scales, but the commitment to 'Reduce emissions from

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transport' is particularly important for new developments and the Highways Development Design Guide (HDDG). The following actions have been identified to help achieve this:

- Continue to drive project delivery to shift from private car use.
- Develop policies that actively encourage the demand for and delivery of connected public transport.
- Develop and secure funding for projects to grow the walking and cycling network across the district.
- Implement our project to deliver an electric charging hub in Portishead.
- Require all schools to deliver travel plans which maximise the number of students walking, cycling or travelling sustainably to school.
- Review parking planning guidance note to consider maximum parking levels and reduce the number of spaces delivered for new development.
- Encourage resident parking schemes, car sharing schemes and walking and cycling schemes.
- Encourage our residents to consider their transport choices.

1.1.6 In formulating the design of new developments developers must show how each development fits with the Climate Emergency objectives, outcomes and actions. This includes ensuring that all new developments prioritise active travel (such as walking, cycling, running and scooting) over motor vehicles wherever possible. For us to tackle the climate emergency, we must shape our new developments to be active travel neighbourhoods from the outset and connect new developments into existing and planned active travel and public transport networks. This will reduce the need to retrofit active travel and public transport measures which can be expensive and less effective than developments designed around active travel from the outset. New car-dependent developments are not acceptable in Climate Emergency terms and the emerging North Somerset Local Plan (up to 2038) is expected to provide further policies to prevent these.

1.2 Design Manual for Roads and Bridges (DMRB)

1.2.1 The Design Manual for Roads and Bridges (DMRB) is the national document providing guidance on the design of new sections of motorway and Trunk Road networks and improvements to that network within England. Volume 0, Section 1 states that the document sets a standard for good practice, principally for Trunk Roads. It may also be applicable in part to other roads with similar characteristics. Where it

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is used for local road schemes, it is for the Local Highway Authority (LHA) to decide on the extent to which the documents in the manual are appropriate in any particular situation.

1.2.2 While the DMRB may be used by the LHA, such authorities should ensure that their application to local road schemes does not compromise health and safety; result in poor value for money; or have an unacceptable impact on the environment. DMRB recommends that any local authority making use of the manual should establish formal procedures for considering whether it is appropriate to relax or depart from particular requirements.

1.2.3 Given the diverse nature of the adopted public highway within North Somerset the council considers it appropriate that all new development and related improvements to the existing adopted public highway accord with the requirements of MfS and DMRB. North Somerset Council require future developments to refer to the DMRB foremost before seeking alternative guidance.

1.3 [Manual for Streets \(MfS\) and Manual for Streets 2 \(MfS2\)](#)

1.3.1 In accordance with the recommendations of DMRB, North Somerset Council is aware that there will be instances where it will be necessary to relax or depart from particular requirements of DMRB in order to implement new developments and related highway improvements. The authority acknowledges that, in some instances, the requirements contained in both Manual for Street (MfS) and Manual for Street 2 (MfS2) may be more appropriate.

1.3.2 The Department for Transport (DfT) launched "The Manual for Streets" (MfS) in March 2007 and it provides design guidance for lightly trafficked residential streets, but many of its key principles may be applicable to other types of street, for example high streets and lightly-trafficked lanes in rural areas.

1.3.3 In September 2010, The Chartered Institute of highways and Transportation published "Manual for Streets 2, Wider Application of the Principles", (MfS2). It should be noted that while endorsed by the DfT this second document has not been subject to formal government consultation and, subsequently, has not been adopted as formal Government guidance or policy.

1.4 [Using the guide](#)

1.4.1 Following the Introduction, this guide has been split into the following sections:

- Section 2 – The planning application process.
- Section 3 – Legal agreements.

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3. [Legal agreements](#)

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- Section 4 – Fees.
- Section 5 – Design requirements.
- Section 6 – The construction phase.
- Section 7 – Standard and non-standard materials for adoptable roads.
- Section 8 – Glossary of terms, contacts and references.

1.5 Status of the guide

1.5.1 This guidance is approved by North Somerset Council Executive Committee.

1.5.2 It expands on national and local planning policies.

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2. The planning application process

2.1 Introduction

- 2.1.1 This section gives general advice on the planning application process.
- 2.1.2 North Somerset Council appreciates the advantages of the quality of development that result from early engagement between developers and its officers. The Authority urges developers to take advantage of its pre-planning application enquiry service.
- 2.1.3 For a **fee** a developer, or their agent, will be able to submit a pre-planning application enquiry to the planning case officer who will undertake internal consultation with their relevant colleagues before preparing and providing a formal response from the council. **Pre-application advice** is available at North Somerset's website. The advantages of this are: the developer receives a clear steer on whether a formal application will be recommended for approval or refusal; the council provides advice on amendments required to the pre-planning application enquiry in order to satisfy its requirements; and the developer, or their agent, receives a 'whole council' response. Highways and Transport only offer advice on formal pre-applications. Any advice requested prior to the submission of an application will be directed to a formal pre-application enquiry at www.n-somerset.gov.uk.
- 2.1.4 Following pre-planning application advice, a developer, or their agent, should submit a formal planning application to the authority.
- 2.1.5 North Somerset Council would expect a formal planning application to be supported by the following information.

2.2 Access to the development

- 2.2.1 Access to development land should be considered at an early stage of the planning process. 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.
- 2.2.2 Larger developments are also likely to need additional pedestrian and cycle accesses in order to minimise the length of these journeys, create more direct access to public transport where possible and make them more attractive than going by car. Consideration should be taken of likely desire lines, existing adjacent paths and opportunities for new paths.

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- 2.2.3 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.
- 2.2.4 There will be a general presumption that no more than 300 dwellings (or equivalent size of development) should be served from a single point of access to the wider road network. However, this is just a starting point and each case should be assessed against local circumstances. In accordance with paragraph 6.7.3 of Manual for Streets the local fire service should be consulted at an early stage to allow them to carry out a risk assessment against their requirements and response times. If circumstances prevent the provision of more than one point of access to serve more than 300 dwellings, special approval must be agreed and obtained in writing from the highway and planning authorities.

2.3 Transport statement, transport assessment and travel plans

- 2.3.1 North Somerset Council will expect a Transport Statement (TS), Transport Assessment (TA) and Travel Plans where appropriate. The thresholds for TS's, TA's and Travel Plans and the council's expectations are set out in Appendix A.
- 2.3.2 The responsibility for drafting a scoping report for a Transport Assessment or Transport Statement lies with the applicant. As part of the pre-application advice, officers will consider and discuss the drafts with applicants and/or their agents with a view to agreeing the extent of the analysis required to support a planning application.
- 2.3.3 Larger developments and those in traffic-sensitive areas also require a Travel Statement or Plan. For thresholds and guidance on the Travel Statement or Plan requirements refer to North Somerset Council's most recently adopted Travel Plan Supplementary Planning Document (SPD).

2.4 Overall layout design

- 2.4.1 The overall design and layout of a proposed development should be provided within the Design and Access Statement and a site-specific design code as appropriate, required to form part of the formal planning application for major developments.

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2.5 Road safety audit

- 2.5.1 A Stage 1 road safety audit, complying with DMRB GG119 Road Safety Audit, is to be undertaken as part of the planning application process, to be completed prior to the determination of the planning application. Where an RSA 1 has been carried out, copies of the safety audit report, the designer's response and confirmation of the council's acceptance of those documents and resultant should be included in subsequent Section 38; Section 278; and Section 106 Legal Agreement submissions.

2.6 Visibility and sight lines

- 2.6.1 Plans submitted to the council as part of a planning application are expected to show acceptable visibility splays and sight lines. Subject to acceptable track runs, junctions crossed by footways and cycle routes (on and off-carriageway) the radii should not exceed 9m due to users having to cross a wider junction and traffic speeds at these junctions will be increased. This will be assessed on a case by case basis and the exceptions are A38, A370, A371, A368, A369, A4174, B3128, Northern Way (Clevedon) and the length of the B3130 between its junction with Northern Way (Clevedon) and its junction with the B3128 as these are routes identified by NSC as providing a strategic function.
- 2.6.2 For accesses from dwellings or residential developments onto roads with measured 85%ile speeds above 37mph (60kph), the recommended stopping sight distances (SSDs) and visibility splays in the Design Manual for Roads and Bridges (DMRB) apply. The DMRB must be used as the primary guidance document during the design of such accesses; this is to ensure that underlying design principles are designed to high safety standards and that best practice is achieved. The designer may then explore a leaner solution via Manual for Streets (MfS) and must be shown to be appropriate in the design strategy. Where designers do refer to MfS, it is recommended that they bear in mind the principles of the DMRB in a way that respects local context. A design strategy is to be submitted with the proposals demonstrating the process and appropriateness of the guidance used. For example, where DMRB is used as guidance and the designer concludes that MfS standards are adopted for reasons such as low vehicle speeds and flows a proportionate assessment and judgement of risks should evidence the decision why DMRB standards have not been applied.
- 2.6.3 For accesses to dwellings or residential developments where the measured 85%ile speed is 37mph (60kph) or below, the recommended stopping sight distances (SSDs) and visibility splays in Manual for Streets apply. The exceptions to this are routes identified by the council as performing a strategic

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function where DMRB must be used as the primary guidance, including A38, A370, A371, A368, A369, A4174, B3128, Northern Way (Clevedon) and the length of the B3130 between its junction with Northern Way (Clevedon) and its junction with the B3128.

- 2.6.4 Visibility on curves, at summits and at junctions shall be indicated and measured between a range from 1.05m to 2.0m above the carriageway. The vertical plane visibility must be considered in the detailed design to ensure it does not affect the envelope of visibility. Dependant on the location where Manual for Streets applies consideration will be made to moving the visibility sight line to 0.5m from the kerb line where a permanent structure is outside of the application boundary and within the visibility splay.
- 2.6.5 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. Once provided visibility splays must be retained and kept clear, it is recommended that trees and shrubs are to be planted at least 3m to the rear of the visibility splay to allow for future growth. Where an existing hedge is to be retained to keep the character of the rural area such as a mixed native hedge it must be annually cut back to 0.5m behind the visibility splay to allow for its likely yearly growth.

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3. Legal agreements

3.1 Introduction

3.1.1 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.

3.1.2 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.
- The development served by the road is acceptable in all other highways and transportation respects.

3.2 Types of legal agreement that secure adoption

3.2.1 Section 38 Agreement

3.2.1.1 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.

3.2.2 Section 278 Agreements

3.2.2.1 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.

3.2.2.2 Some examples of S278 agreements are:

- Improvements to existing junction(s) close to the developments site.
- New signalised pedestrian crossing.
- New access into a development site; (such as a roundabout, signalised junction, turn right lane or a simple priority junction.)

3.2.2.3 The developer must make early contact with NSC Highways Department to process the order and to not impede the

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implementation of the planning consent. The developer will be required to agree to the specification of the works and meet NSC's costs in drawing up of the order, provide a bond or cash equivalent and meet the inspection charges. Once the S278 has been completed construction work can commence in the public highway.

3.2.3 Section 106 Agreements

3.2.3.1 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.

3.2.3.2 Planning obligations are legal obligations entered into in order to mitigate the impacts of a development proposal and can be referred to as 'Section 106', 'S106', as well as 'developer contributions' when considered alongside highways contributions and the Community Infrastructure Levy. Planning obligations assist in mitigating the impact of unacceptable development to make it acceptable in planning terms. They must be:

- necessary to make the development acceptable in planning terms
- directly related to the development
- fairly and reasonably related in scale and kind to the development.

3.2.3.3 These tests are set out as statutory tests in [regulation 122](#) (amended by the 2011 and 2019 Regulations) and as policy tests in the National Planning Policy Framework. These tests apply whether or not there is a levy charging schedule for the area.

3.3 Other agreements and licenses

3.3.1 Section 50 of the New Roads and Street Works Act 1991

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

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

3.3.2 Section 177 of the Highways Act 1980

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

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3.3.3 Section 247 of the Town & County Planning Act 1980

3.3.3.1 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.

3.3.4 Section 116 of the Highways Act 1980

3.3.4.1 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.

3.3.5 Easement

3.3.5.1 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.

3.3.5.2 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.

3.3.6 Designation

3.3.6.1 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.

3.3.6.2 In the event that infrastructure is not adopted (for example on small/nonstrategic 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.

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4. Fees

4.1 Introduction

- 4.1.1 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.

4.2 Works cost

- 4.2.1 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.

4.3 Works deposit

- 4.3.1 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.

4.4 Advance Payments Code (APC)

- 4.4.1 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.

4.5 Inspection fee

- 4.5.1 The Inspection fees charged by North Somerset Council are detailed in fees and charges.

4.6 Traffic Regulation Orders

- 4.6.1 A fee is required to cover the cost for producing and advertising any traffic orders necessitated by the development proposal and any associated works including temporary traffic

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management costs. Details of the TRO costs are provided in fees and charges.

4.7 Commuted sums

4.7.1 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 7)
- 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.

4.8 Legal costs

4.8.1 A fee to cover the council's legal services work to process any legal agreements. This is not required for work permits. North Somerset Council legal services charge on an actual hourly rate.

4.9 Licences and consents

4.9.1 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.

4.10 Drainage easements

4.10.1 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.

4.11 Land purchase

4.11.1 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. 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.

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4.12 Testing of materials

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 C for details of the council's requirements.

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5. Design requirements

5.1 Street character types

5.1.1 North Somerset Council uses the following street character types to categorise its highway network:

- Strategic route.
- Main distributor.
- Secondary distributor.
- Link road.
- Local access road.
- Minor access road.
- Mews Court.

5.2 Overall layout design

5.2.1 The road layout should be designed to minimise the risks of access problems for emergency services, buses and all residents. In particular, the emergency services must not be unduly hindered in their attempts to reach any part of an estate quickly. Designers are also directed to paragraphs 6.7.1 to 6.7.3 of MfS.

5.2.2 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 street character types. The design must not compromise the needs of people with disabilities, pedestrians and cyclists.

5.2.3 At the outset of the design process, it is vitally important to consider the likely types of vehicles that will access the development. For example, on larger developments it may be necessary to design to accommodate a bus route and for delivery vehicles to reach local centres, schools etc. The needs of these vehicles will drive character type selection for the routes that they will be expected to use. In this context it will be important to demonstrate with swept path analysis that these vehicles can be safely accommodated.

5.2.4 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

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and cyclists will determine whether footways or cycleways are necessary within the same corridor.

- 5.2.5 No specific design criteria are provided in this document for 'transitional' roads. Their design will be influenced by the individual circumstances of each site.
 - 5.2.6 Where possible the road design shall minimise the generation of noise from both vehicle operation and the interaction of vehicles and the road surface. While these aspects may be of little consequence in small feeder roads to new housing development, they become more significant to highway development that might form part of a road that will see greater traffic. Under these circumstances, road design can have significant impact on the noise arising from both these aspects and have potential subsequent consequences under Noise Action Plans.
 - 5.2.7 Where unavoidable manhole/service covers that are located on wheel track lines within junctions or on bends following agreement with NSC Maintenance Officers shall be fitted with a suitable product with high skid resistance to assist motorcyclists and pedal cyclists.
- 5.3 **Standards for the street character types**
- 5.3.1 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.
 - 5.3.2 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.
 - 5.3.3 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 CD 195 Designing for cycle traffic (formerly Interim Advice Note 195/16) (<https://www.standardsforhighways.co.uk/dmrb/search/5bb8f60c-737b-49f8-8c40-522a49038eff>)
 - 5.3.4 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.
 - 5.3.5 A 4.5m or greater setback distance may be required for roads performing more than a residential access function.

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5.3.6 Strategic route

5.3.6.1 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.

5.3.7 Main distributor roads

5.3.7.1 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 40mph or less. Vehicular parking is usually restricted at peak times.

5.3.8 Secondary distributor roads

5.3.8.1 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.

5.3.8.2 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 CD 195 Designing for cycle traffic (formerly Interim Advice Note 195/16). 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.

5.3.8.3 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.

5.3.8.4 To provide an attractive setting for properties adjoining the road, the highway boundary can be landscaped. Street design should look to incorporate tree planting wherever possible. 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.

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

5.3.9 Link road

5.3.9.1 This type of street forms the main estate road framework and would be used for a development comprising 1500 or more

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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.

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

5.3.11 Local access road

5.3.11.1 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 (minimum width of 2m) on both sides where possible (depending upon natural pedestrian desire lines). Additional width will be required where the road services bus routes or schools.

5.3.12 Minor access road

5.3.12.1 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 (minimum width of 2m), depending upon the overall character of the development. The alignment would be expected to offer natural traffic calming, but with other measures as required.

5.3.12.2 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.

5.3.12.3 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.

5.3.12.4 Additional on-street parking spaces may be provided in specific locations to cater for parking demand.

5.3.13 Mews Court

5.3.13.1 A Mews Court is a street design giving access to a group of 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.

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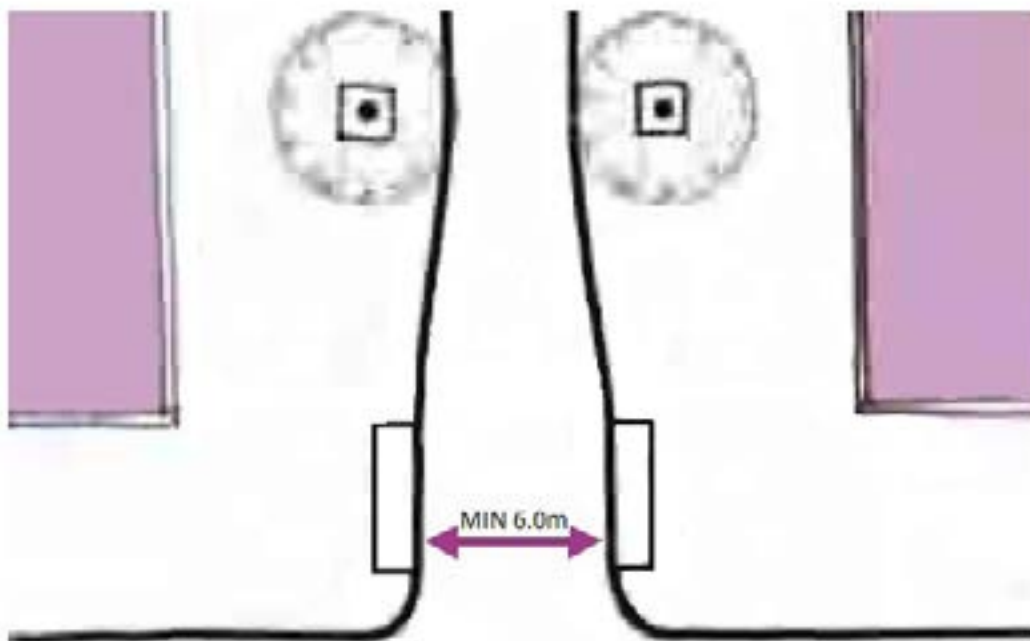
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- 5.3.13.2 The road should be 5.5m wide at its entrance and can be flanked by walls or dense planting on each side. The kerb face must be at least 0.5m from any dwelling. A turning head must be provided. A minimum width of 6m should be provided between opposite parking bays to provide sufficient manoeuvring space, as detailed in the latest published North Somerset Parking Standards SPD.
- 5.3.13.3 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.
- 5.3.13.4 Porous paving should be used where ground conditions allow, or drainage to an infiltration area.
- 5.3.14 Local and minor access roads and Mews
- 5.3.14.1 For any new access from a local, minor or mews type of road the carriageway should be 6.0m wide at its entrance and can taper down to 5.5m wide.

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5.4 Shared space

5.4.1 All shared space schemes will be considered using the relevant Department for Transport guidance, National Planning Policy Framework and local guidance and developers should consult with NSC officers.

5.4.2 Shared space schemes can be considered within new or redesigned residential areas with very low levels of traffic such as mews and cul-de-sacs with 25 properties or less and the distance of shared space would not exceed 100 metres. The space should have a carriageway width of at least 5.5 metres.

5.4.3 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.

5.4.4 Shared spaces can be problematic for many disabled people. Therefore, developers are required to consider the Equality Act 2010 and The Inclusive Transport Strategy (DfT 2018) 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 and direction is required from the NSC Access Officer. Consultation with the community and users should be carried out, particularly with disability groups and is essential when any shared surface scheme is proposed. Early indications are that, in many instances, a protected space, with appropriate physical demarcation, will need to be provided, so that those pedestrians who may be unable or unwilling to negotiate priority with vehicles can use the street safely and comfortably.

5.5 Private drives

5.5.1 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. All private drives should meet the accessibility criteria set out in the Building Regulations for gradients.

5.5.2 In order to prevent the grounding of vehicles and avoid creating adverse slopes for disabled people 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.

5.5.3 Care must be taken to avoid locating private drives where drivers' signals may be misinterpreted, for example close to

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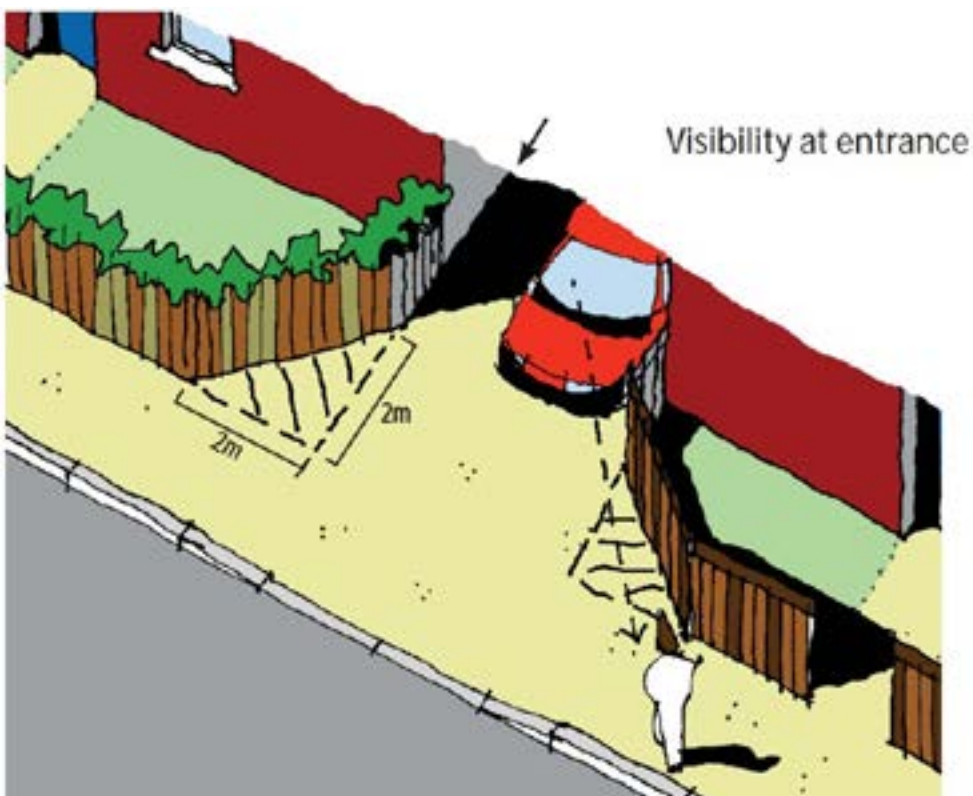
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junctions. Wherever possible they should meet the highway at right angles, and adequate visibility splays must be provided at private drive access points. A width of 4.8m for at least the first 6m from the carriageway boundary is required.

5.5.4 Where an emerging vehicle needs to cross a footway or service margin from a shared or individual private driveway, pedestrians and cyclists must be given sufficient warning of the vehicle's approach. In such circumstances a visibility splay of 2m x 2m is required from the back edge of the highway limit as shown (below). There should be no obstruction to visibility between the heights of 0.6m and 2.0m above footway level within this visibility splay.

5.5.5 To enable drivers to see and be seen by other drivers and other highway users proceeding along the road, visibility is required in accordance with the DfT guidance. Visibility areas for shared and individual driveways are not normally included in the adopted highway areas. In exceptional circumstances a planning condition may be imposed to control the visibility splays.



5.5.6 Where infiltration is not possible hard surfaces will be considered. Porous paving should be used where ground conditions allow, or drainage to an infiltration area. No loose material is permitted in the construction of a driveway joining a public street, footway or footpath.

5.5.7 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.

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5.5.8 The council's preference will be to adopt highways serving more than six dwellings and commercial sites will be assessed on a case-by-case basis. All new infrastructure should be built to adoptable standards and adoption will be subject to the approval of North Somerset Council in adherence with current development management policies. Where highways are not adopted, a robust alternative must be put in place that can demonstrate maintenance of non-adoptable highways 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 of unadopted infrastructure and that the council/wider community does not later become liable for sub-standard or poorly maintained infrastructure.

5.5.9 Gates at an access must be set back approximately 6 metres from the edge of the carriageway for residential properties or 12 metres back for a site requiring larger vehicles. This will provide sufficient space to ensure the vehicle can pull off the highway safely.

5.6 Footways and cycle routes

5.6.1 As part of any new development, developers must identify key pedestrian and cycling routes and destinations. Local Transport Note Policy LTN 1/20 Cycle Infrastructure Design, produced by DfT, sets out the policy context that supports the promotion of pedestrian and cycling facilities.

5.6.2 The guidance is updated periodically so ensure that the latest guidance available is used. Further reference should be made to CD 195 Designing for cycle traffic. 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 which cyclists are content to use, particularly in urban areas. The West of England Joint Local Transport Plan 4 (JLTP4), adopted in March 2020, outlines how walking and cycling needs to be prioritised in the design of new developments under the following 'interventions':

- 'We will continue to encourage new developments in locations that are accessible by existing walking, cycling and public transport networks, and discourage proposals that fail to actively encourage mode shift away from the private car'.
- 'We will engage with developers at the start of the planning process to ensure key services to be provided on site, based on the thresholds included in guidance, are high-quality, but also in the best location to maximise their accessibility via active travel modes and public transport'.

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- 'We will work with developers to ensure they are using existing street design principles, but increasingly focus on providing an attractive, integrated network that offers segregated areas for active modes, if required'.
- 'We will work with developers to ensure the high-quality walking and cycling infrastructure provided on-site does not stop at the site boundary, but integrates into the wider walking and cycling network, facilitating seamless onward active travel for the necessary journeys between villages, towns and city neighbourhoods'.

5.6.3 JLTP4 goes onto state that:

'For smaller development sites that do not require the provision of on-site facilities or services, there will be a stronger emphasis on working with developers for transport improvements and mitigations to include high quality, direct walking and cycling linkages to off-site local facilities. Accessibility is maximised through a consistent walking and cycling-focused street pattern, ensuring the necessary safe and direct cross-site permeability that makes active travel attractive. Clear priority for pedestrians and cyclists at junctions should be incorporated, wherever possible. With integrated on-site provision and access, more trips are retained within local areas so people are not forced to travel to access basic services, thereby encouraging the use of more active modes. The improvement and expansion of our walking and cycling network, including strategic cycle routes, is critical to providing access to local services and to ongoing economic growth.'

5.6.4 This is supported by North Somerset Council's Emerging Active Travel Strategy, which includes the objective:

5.6.5 'Guide development planning by identifying schemes to be delivered through developer contributions and helping create communities centred around sustainable and active travel'.

5.6.6 The Active Travel Strategy also contains recommendations from the National Institute for Health Care Excellence (Ref NICE Guidance PH 43 and PH8), who recommend in their guidance that local authorities and their partners adopt a series of interventions to increase active travel, including:

- Adoption of the road user priority hierarchy to protect those who use active forms of transport. Ensuring pedestrians, cyclists and users of other modes of transport that involve physical activity are given the highest priority when developing or maintaining streets and roads.
- Ensure planning applications for new developments always prioritise the need for people (including those whose mobility is impaired) to be physically active as a routine part of their daily life.

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- Plan and provide a comprehensive network of routes for walking, cycling and using other modes of transport involving physical activity.
- Ensure public open spaces and public paths can be reached on foot, by bicycle and using other modes of transport involving physical activity.

- 5.6.7 The design for new developments in North Somerset must therefore prioritise walking and cycling provision both within and connecting to and from their developments wherever possible.
- 5.6.8 Designers are also directed to the CD 195 Designing for cycle traffic (formerly Interim Advice Note 195/16) and Designing for Cycle Traffic – international principles and practice published by ICE. Note that CD 195 defines a cycle design vehicle as 1.2m wide x 2.8m long as standard; all cycle facilities will be required to cater for vehicles of these dimensions.
- 5.6.9 Requirements for disabled needs must be met accordingly. Tactile paving at crossings is expected in all but the most rural locations with low footfall.
- 5.6.10 As part of Refuge island design on:
- Strategic routes – refuge will be a minimum of 2.0m wide (3.0m on cycle routes), with tactile paving width to match the footpath width down to a minimum of 2.0m wide, or 3.0m width on a cycle route.
 - All other routes – refuge will be a minimum of 2.0m wide (3.0m on cycle routes), absolute minimum of 1.5m will be consider if site is constrained. Tactile paving width to match the footpath width down to a minimum of 2.0m wide or 3.0m width on a cycle route.
 - Carriageway width will be preferably 3.5m on a gritting route, absolute minimum of 3.3m will be allowed if site is constrained. 3.0m will be considered on non-gritting routes.
- 5.6.11 Where there are a high number of cyclists, designs should avoid refuges that retain a running lane width of between 3.1m and 3.9m. This range of dimensions causes difficulties for cyclists using the carriageway because drivers attempt to pass cyclists at the refuge where there is inadequate lane width. Where lane widths are 3.0m or less, drivers tend to wait behind cyclists at the refuge.
- 5.6.12 Pedestrian crossing assessments should be carried out in consultation with highways officers to ensure the suitability of proposed crossing facilities.

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5.7 Cycle track design requirements

5.7.1 Visibility

Type of cycleway	Design speed	Minimum stopping distance ⁽¹⁾	Sight distance in motion ⁽²⁾	Minimum radius of curve
Commuter route	20mph	25m	80m	25m
Local access route	12mph	15m	50m	15m

⁽¹⁾ Add 50% for unsealed surfaces

⁽²⁾ Sight distance in motion is the distance a cyclist needs to see ahead when riding in order to feel safe and comfortable

5.7.2 Gradients

Gradient	Maximum permitted length of gradient
3% (1:33) maximum	Length unrestricted
5% (1:20) maximum	Up to 100m
7% (1:14) maximum	Up to 30m
>7% (1:14)	Not recommended except for very short lengths
Gradients within 10m of any junction or crossing shall be no more than 2.5% (1:40)	

5.7.3 Crossfall

5.7.3.1 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.

5.7.4 Traffic calming

5.7.4.1 Traffic calming measures should be avoided through good design, but where required, should allow for safe and smooth passage for cyclists through any traffic calming measures.

5.7.5 Surface finish

5.7.5.1 A porous surface should be used where ground conditions allow, otherwise drainage should lead to an infiltration area.

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

5.7.5.3 A smooth machine-laid surface course is essential and should be free of undulations. The finished surface should have a skid resistance of at least 55PSV. On carriageways particular attention should be paid to the condition of the surface adjacent to the kerb which is where cyclists usually ride.

5.7.5.4 Refer to *Wheels for Wellbeing's Guide to Inclusive Cycling* <https://wheelsforwellbeing.org.uk/campaigning/guide/>

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and also <http://Wheelsforwellbeing.org.uk/wp-content/uploads/2017/11/v2-Nov-2017.pdf>. This recognises that wheel friendly smooth services are critical to supporting use by wheelchair users (jarring of spines) as well as reducing physical effort to roll the wheels (ensure the up-to-date guidance is used as updates are periodically issued).

5.7.6 Access barriers

5.7.6.1 The presumption should be to avoid installing any kind of access barrier unless there is a proven need. Refer to CD 195 Designing for cycle traffic (the Interim Advice Note 195/16) for further detail.

5.8 Industrial estate roads

5.8.1 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.

5.8.2 Industrial developments

5.8.2.1 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).

5.8.2.2 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. Pedestrian and cycle movements must be catered for appropriately on industrial estate roads as people travel to their place of work. Secure cycle parking should be provided for employees as required by the most recently adopted NSC Parking Standards Supplementary Planning Document.

5.8.2.3 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.

5.8.2.4 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

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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.

5.8.3 Visibility

5.8.3.1 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 CD123 (Geometric design of at-grade priority and signal-controlled junctions) or MfS depending on the local circumstances.

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

5.8.4 Turning spaces

5.8.4.1 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.

5.8.5 Access

5.8.5.1 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.

5.8.6 Parking

5.8.6.1 All necessary provisions for vehicular parking including deliveries should be clear of the public highway. Whilst the aim is to avoid servicing from the highway, it is acknowledged that in some instances this will be necessary. Where parking to serve premises is required/necessary to be from the highway, the developer will be expected meet the full costs of Traffic Regulation Orders (TROs), signs and road markings including temporary traffic management costs required to enable waiting restrictions to be implemented where appropriate.

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

5.8.6.3 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

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to make best use of any shared parking areas where this can be achieved without difficulty or adverse impact on the surrounding area.

- 5.8.6.4 Porous paving should be used where ground conditions allow, or drainage to an infiltration area. Consideration will be given to installing an oil/petrol/diesel interceptor to ensure no contamination from spillage.

5.9 Public Rights of Way

- 5.9.1 The design, specification and construction required for the PROW will be determined by the rating of the route in the network hierarchy.
- 5.9.2 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.
- 5.9.3 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.
- 5.9.4 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.
- 5.9.5 Further information regarding PROW may be obtained from the North Somerset Council website or the Public Rights of Way Department.
- 5.9.6 Attention is drawn to the North Somerset Rights of Way Improvement Plan (ROWIP). Opportunities will be sought to achieve the aims and objectives for the ROWIP where possible.
- 5.9.7 Existing rights of way
- 5.9.8 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.
- 5.9.9 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

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appropriate surface. Advice should be sought from the PROW team before a planning application is submitted.

- 5.9.10 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.
- 5.9.11 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.
- 5.9.12 For guidance about Rights of Way in North Somerset Council contact the Public Rights of Way Team.

5.10 Car parking on footways

- 5.10.1 It is important to seek self-enforcing parking solutions. Streets will be designed so as to discourage or prevent parking on footways. This may mean ensuring appropriate road widths, kerbs and formalised on-street parking where appropriate. Street furniture can also be used and whilst bollards and railings can be effective, the extensive use of them should be avoided as sourcing matching replacements for damaged elements can present problems for future maintenance. Bollards and railings can also present a hazard for cyclists especially at night if not well lit and can present problems for users with disabilities. The quantity of parking provided should be in accordance with the council's most recently adopted Parking Standards Supplementary Planning Document.
- 5.10.2 For further information refer to:
- Traffic Advisory Leaflet 4/93 (DfT).
 - Manual for Streets (page 109).
 - Civic Voice Street Pride Briefing note 3 – Bollards.

5.11 Landscaping and trees in the highway

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

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5.12 Public transport

5.12.1 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, Transport Assessment and Travel Plan. The following sets out the council's expectations of good public transport provision.

5.12.2 Bus route design

5.12.2.1 Roads which are designed for use by public transport will be between 6.7m and 7.3m wide with footpaths on both sides. Swept path analysis should be used to confirm the suitability of proposed bus routes. The developer should identify the proposed route/s for local bus services as early as possible in the planning process, for the council and local operatives to review and determine suitability.

5.12.2.2 Consideration will need to be made for on-street parking and how this may affect the operation of local bus services throughout the development.

5.12.2.3 For larger developments, bus priority measures should be considered to 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 set out in the Transport Assessment and agreed with the council in conjunction with bus operators prior to the development commencing.

5.12.3 Bus stop location and design

5.12.3.1 The locations of bus stops and shelters should be identified and agreed as early as possible in the planning process to ensure that any potential buyer is aware of where they are located.

5.12.3.2 All bus stops should be located within a reasonable walking distance of a maximum of 400m for all dwellings within the development. A walking distance of 200-300m is desirable in urban areas. Distances should be reduced where steep gradients are involved.

5.12.3.3 Where distances of 400m are not achievable, a maximum walking distance of 600m may be granted where clear and compelling reasons are provided. For example, where this would challenge the commercial viability of an existing bus service or cause significant impacts for users of an existing route.

5.12.3.4 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.

5.12.3.5 The minimum footway width at a bus stops site should 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 2m

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between the shelter and the edge of the carriageway to allow for pedestrian access, including wheelchairs and pushchairs.

- 5.12.3.6 Ownership of any infrastructure installed by the developer should be transferred to the council's ownership (at no cost to the council) upon adoption of the highway.
- 5.12.3.7 Developments situated on, adjacent to or in close proximity of a current or proposed future metrobus corridor may need to provide bus stop infrastructure that adheres to the specifications listed in under Schedule 4 of the metrobus Quality Partnership Scheme (2017) (see link below). Proposed future metrobus corridors are detailed in the West of England Joint Transport Strategy (2017) and the Joint Local Transport Plan 4 (JLTP4) but developers should also check with the highway and planning authority whether their development site is to provide (or provide contributions to) metrobus-compliant bus stop infrastructure.
- 5.12.3.8 Consideration should be given to the proposed layout of the development and the location of bus stops. A fully accessible design with level access at bus stops is required. A minimum acceptable footway width of 2.0m with 7m length to incorporate the raised kerbing. This consists of two transition kerbs either side of 3 access kerbs 220mm high. If the stop is located on either the A370 or A369, the new guided wheel kerbing is required to allow for possible future guided routes. The bus stop marking should conform to TRSGD diagram no. 1025.1. Any further specific information or guidance should be sought from NSC design officers prior to installation. Further considerations include;
- Where possible, locate bus stops away from dwellings to reduce noise and disturbance.
 - Make sure bus drivers and passengers waiting at the bus stop have ample time to see each other.
 - Make sure vehicles overtaking a stationary bus have satisfactory forward visibility.
 - Prevent parked vehicles blocking bus stops.
 - Avoid safety conflicts with road junctions, pedestrian or cycle crossings etc.
 - Avoid interference with access to properties.
 - Avoid locations where passing traffic speeds.
 - Make sure there is satisfactory drainage where raised kerbing is installed.
 - Minimise risks to personal safety and opportunities for crime.
 - Protect bus stops from obstructions.

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5.12.3.9 Pedestrian routes should be available between any proposed development and the nearest bus stop and 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
- be carefully designed to minimise opportunities for crime.

5.12.3.10 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 and business parks. Examples of facilities might include:

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

<https://travelwest.info/projects/metrobus/quality-partnership-scheme-qps>

5.12.3.11 For recommended bus shelter specifications and other considerations please refer to Appendix E.

5.12.4 Bus services

5.12.4.1 Where a development requires a new public transport provision, one of two options may be considered:

5.12.5 Extending or diverting an established service and commissioning a new service

5.12.5.1 Where a new bus service is proposed, these should be of a suitable peak-time and daytime frequency so as to encourage modal shift from private car use. A minimum of an hourly frequency should be provided in urban and sub-urban areas. A minimum of a two-hourly frequency should be provided in rural areas. Evening and Sunday services should also be considered.

5.12.5.2 The Transport Assessment and/or Travel Plan should highlight the projected levels of public transport use, existing or proposed bus routes and proposed frequency of service.

5.12.5.3 Most local bus services in North Somerset are operated on a commercial basis. Therefore, there will likely be a cost

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associated with commissioning any new service or diverting an existing bus service.

5.12.5.4 For more information about phasing the introduction of bus services to a new development, please refer to Appendix E.

5.13 Home to school transport

5.13.1 Developers are required to contribute proportionately to mitigating measures to reduce the dependency on motorised transport from home to school. Developers should ensure that a safe walking route is provided from each dwelling in the development to both local primary and secondary schools. NSC provide help with transport for children who meet the following conditions;:

- are aged up to eight years-old and live further than two miles from their nearest school by the shortest walking route
- are aged eight and above and live further than three miles from their nearest school by the shortest walking route
- need to use a route that has been classed as dangerous
- have certain medical conditions, disabilities or a statement of complex needs.

5.13.2 A safe walking route means that the route taken between a child's home address and their nearest school entrance has no particular hazards or dangers along the route based on an accompanying adult being present. This may include pavements, sealed footpaths, bridleways and other suitable pathways in anticipation of the volume of traffic. Walking routes should be well lit, and able to be used at all times of the year. The assessment procedure will consider the safety of an available route with the potential risk of traffic together with the highway and topographical conditions. For roads without a footway or verge, the width of the carriageway, traffic speed, type of traffic, sight lines affected by sharp bends, high hedges or other obstructions must be considered. Where roads are to be crossed, availability of crossing facilities should be taken into consideration and the age of the person and nature of the routes they could reasonably be expected to take.

5.13.3 If a safe walking route cannot be provided or the location of the development is further away than the maximum walking distances (as above), the council will require the developer to provide a contribution towards the cost of home to school transport for the full duration of statutory education up to a period of 10 years (in line with the adopted Development Contribution Supplementary Planning Document). The contributions apply to ages 4 to 18 and up to age 26 for Special Educational Needs and Disability Students. The mix of dwellings in a development will be used to

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determine the projected student numbers and the transport that may be required.

5.13.4 Depending on the number of children, the transport provision may include one of the following:

- Sustainable travel such as a new footpath, bridleway or cycle path.
- A public bus or rail pass, where suitable services are available.
- A private hire taxi.
- Minibus.
- Coach.

5.14 Structures

5.14.1 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 1.5metres.
- A noise attenuation barrier exceeding 1.8metres 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 cattle grid.
- 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.

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

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- 5.14.3 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.
- 5.14.4 A commuted sum may be required for the adoption of a Third-Party Structure. This will be calculated using a standard calculator and is based on the structural type and dimensions.
- 5.14.5 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.
- 5.14.6 Please see North Somerset Council’s [Structures Technical Approval Guidance Note](#) for further information and approval procedures for highway structures.
- 5.14.7 Any queries regarding proposed new highway structures or adoption issues should be directed to structures@n-somerset.gov.uk.

5.15 Street lighting

- 5.15.1 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.
- 5.15.2 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.
- 5.15.3 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.
- 5.15.4 Refer to the council’s Street Lighting Design Guide for further details, available on request.
- 5.15.5 Developments must also assess their effects on the North Somerset Bats Special Area of Conservation (SAC) and provide mitigations if appropriate. Early engagement with NSC officers and reference to planning guidance via the Supplementary Planning Document (SPD) for the North Somerset Bats SAC (produced by Natural England and North Somerset Council) is required. The SPD aims to identify types and locations of development that presents risks to the bat populations within the SAC. It gives advice on how to avoid or mitigate impacts to ensure the proposals will not impact on the designated bat population. These publications are based on extensive surveys and compiled by experts based on scientific evidence and best practice.

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5.15.6 A link to the Supplementary Planning Document (SPD) for the North Somerset Bats SAC (produced by Natural England and North Somerset Council) is provided in Section 8.3 Links to other Documents and Publications.

5.16 Traffic signals

5.16.1 Traffic signals include road junction signals, road shuttle signals, puffin and toucan crossing signals, wig-wag signals, cattle and equestrian signals.

5.16.2 Associated traffic control and monitoring equipment may 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.

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

5.17 Signposts

5.17.1 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 2016 (as amended) or for which Secretary of State approval has been granted.

5.17.2 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.

5.17.3 Sign faces and signposts will 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.

5.17.4 Details can be requested of the council's current policies and refer to the DfT guidance.

5.18 Car, cycle and motorcycle parking

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

5.18.2 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

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can be achieved without difficulty or adverse impact on the surrounding area.

5.19 Car clubs and electric vehicle charging points

5.19.1 Developers installing car club bays and EVCPs (Electrical Vehicle Charging Points) in the highway will need to follow the principles in the North Somerset Parking Standards SPD. From 1 July 2019 all government funded charge points must use 'smart' technology to contribute to the government's net zero emissions target for future transport to be cheaper and greener by 2040.

5.19.2 Designs should address highway safety (particularly pedestrians and cyclists), Traffic Regulation Orders for on street bays, and infrastructure such as power supply, signage, drainage and the access and payment arrangements.

5.19.3 With the climate emergency and the UK Government's commitment to ban the sale of all private petrol and diesel cars by 2035, the role of the electric vehicle and car clubs are becoming increasingly important in the design of new developments. The West of England JLT4 states that: 'Together with sustained investment in active and sustainable modes of travel, low emission vehicles have a pivotal role to play in improving local air quality and addressing climate change'. It continues, with the following interventions:

- 'Through changes to existing parking standards include a requirement for new developments to provide greater levels of electric vehicle charging infrastructure for residential, commercial and industrial developments'.
- 'We will support the uptake and expansion of a car club network of low emission vehicles'.

5.19.4 Developers installing car club bays and EVCPs (Electrical Vehicle Charging Points) in the highway will need to follow the principles in the most recently adopted North Somerset Parking Standards SPD and the emerging West of England's Electric Vehicle SPD, which is due to be adopted later in 2020/21.

5.19.5 Designs should address highway safety (particularly pedestrians and cyclists), Traffic Regulation Orders for on street bays, and infrastructure such as power supply, signage, drainage and the access and payment arrangements.

5.19.6 The design of a cycle stand must include a tapping rail across the bottom for visually impaired people to identify if using a long cane. The council require consideration to the location of the stand ideally out of desire lines against buildings or on the outer edge of footways with inclusion of broad bands of colour to highlight the stand.

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5.19.7 Refer to the most recently published North Somerset Council Parking Standards Supplementary Planning document.

5.20 Turning areas

5.20.1 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.

5.21 Emergency services

5.21.1 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 current Building Regulations for full details.

5.21.2 Designers are also directed to paragraphs 6.7.1 to 6.7.3 of MfS.

5.22 Reducing vehicle speed

5.22.1 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.

5.22.2 The following suggestions may be helpful:

- Using buildings and tree planting to limit forward visibility to levels commensurate with the design speed.
- 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.

5.22.3 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.

5.22.4 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

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but which is supplemented where necessary by additional features.

5.22.5 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.

5.23 Securing low vehicle speed Including 20mph zones

5.23.1 A new approach to the introduction of 20mph limits (signs and lines only) or zones (use of physical traffic calming with signing and lining) is recommended. This is to encourage wider community benefits for vulnerable groups, such as child pedestrians and the elderly. Other positives include addressing suppressed demand for walking, cycling and other active modes of travel, reducing speeds and any collision issues within communities and residential areas.

5.23.2 There are three principle methods of securing low speeds;

- 20mph limit (signs and lines only) by way of a speed limit change via a traffic regulation order. This would be most likely to be suitable where speeds are low already (under 24mph) as per national DfT guidance and best practice.
- By creating a 20mph area. 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. New estate roads 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.

5.23.3 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.

5.23.4 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 retrospectively ‘traffic calm’ speeds on those streets.

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5.23.5 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.

5.24 Statutory authorities

5.24.1 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.

5.25 Services

5.25.1 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.

5.25.2 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.

5.25.3 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. The owner/occupier may maintain the strips as a part of the garden but must ensure that no planting or boundary treatment is carried out which would damage 'no planting or boundary treatment is carried out which would damage or prevent access to 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.

5.25.4 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.

5.25.5 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/

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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.

5.25.6 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.

5.25.7 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.

5.26 Sustainable drainage

5.26.1 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. For further guidance refer to current Development Management Policies and relevant Neighbourhood Plans.

5.26.2 National Planning Policy Framework (NPPF 2019) has strengthened this policy and sustainable drainage approaches have become the expectation for all major developments and developments in areas at risk of flooding.

5.26.3 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 North Somerset Sustainable Building and Places Supplementary Planning Document and the West of England Sustainable Drainage Developer Guide. Please see link <https://www.n-somerset.gov.uk/my-services/planning-building-control/planning-advice/supporting-documents/strategies/sustainable-drainage-strategy>.

5.26.4 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 SuDS Manual (C753):

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

5.26.5 The unique features of the site will provide the framework for the design of SuDS. It is unlikely that a single technique will be appropriate across the whole of a site. See (C753) SuDS

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Manual as NSC work to these standards. Calculations for all SuDS components should be provided.

- 5.26.6 Exceedance routes (blue corridors) through the site for flows above design capacity and events in excess of 1 in 100 year rainfall event are to be managed in conveyance routes that minimise the risks of flooding to people and property.
- 5.26.7 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.
- 5.26.8 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.
- 5.26.9 The principles of a SuDS management should be used to best mimic natural drainage of the area. This approach uses a variety of drainage components and techniques in sequence to incrementally manage pollution, flow rates and volume.
- 5.26.10 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.
- 5.26.11 As the Highway Authority we will not normally adopt as public highway any carriageway, footways or cycleways where a geo-cellular feature is underneath.
- 5.26.12 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.
- 5.26.13 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.

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5.26.14 If the design does not accord with the council's standard detailed drawings, or the SuDS Manual (C753) 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.

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

5.26.16 Earthworks

5.26.16.1 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.

5.26.16.2 Surface Water Drainage patterns across the site must be considered particularly where exceedance routes are planned. Where possible no culverting of watercourses should take place, and any access culverting must be accompanied by a Land Drainage Consent (Land Drainage Act 1991)

5.26.17 Pavement design

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

5.26.17.2 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.

5.27 Traffic Regulation Orders

5.27.1 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.

5.27.2 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.

5.27.3 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.

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- Certain road humps on the public highway.
- No-entry restrictions or other prohibited movements.

5.27.4 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.

5.27.5 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.

5.27.6 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.

5.27.7 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.

5.28 Road safety audit

5.28.1 Stage 1, 2 (or combined Stage 1/2) and 3 Road Safety Audits that conform to the requirements of DMRB GG119 (and if required Walking, Cycling and Horse-Riding Assessment and Review) must be carried out where developments are to be adopted by the council, where in the opinion of the council there is likely impact to the existing highway network, or where works to mitigate the impact of the development are to be undertaken on the adopted public highway.

5.28.2 All Road Safety Audits must be undertaken by an independent audit team. The CVs of the audit Team Leader and Team Member must be submitted along with an audit brief to be approved in writing by the council prior to the audit being undertaken. This will highlight issues and sensitive sites prior to the audit. An NSC Highway Engineer/Officer should be invited to be present at any audit site visit. If the approval process is not followed there could be a risk of the audit being rejected.

5.28.3 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

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reports within a reasonable timescale may delay the issue of technical approval for the scheme.

- 5.28.4 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.
- 5.28.5 A representative of Avon and Somerset Police must be invited to attend all Stage 3 Road Safety Audits.
- 5.28.6 A Stage 4 road safety audit (post opening monitoring) must be carried out using 12 months of validated post highway scheme-opening road collision data or prior to the adoption of the development by the council (a minimum of 12 months traffic collision data must be available). Stage 4 road safety audits will be carried out by the council at cost (as per North Somerset Council Fees and Charges) to be paid in advance of the completion of the development. The Stage 4 road safety audit can be carried out by the developer with prior agreement of the NSC Highway Engineer/Road Safety Officer. Following discussions with NSC highway officers a Stage 4 RSA report may not be required if safety issues have not been highlighted in the vicinity of the highway scheme over a 12-month period of post-opening validated road traffic collision data. If a Stage 4 RSA is not carried out, an Exemption Statement as per Appendix A of GG119 shall be recorded and kept on the highway scheme file (or equivalent).
- 5.28.7 A Road Safety Audit Response Report 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. The Road Safety Audit response report shall contain a response from the Overseeing Organisation and a Road Safety Audit action for each problem agreed between the design organisation and Overseeing Organisation. Example from GG119 below:
- 5.28.8 Road Safety audit decision log
 - 5.28.8.1 Insert RSA decision log. This can be a spreadsheet appended to the RSA response report.

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5.28.8.2 Table F.4 Road safety audit decision log

RSA problem	RSA recommendation	Design organisation response	Overseeing organisation response	Agreed RSA action
Insert the original problem from the RSA report.	Insert the original recommendation from the RSA report.	Insert the design organisation's response.	Insert the overseeing organisation's response.	Insert the design organisation's and the overseeing organisation's agreed action to the problem

5.28.8.3 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 Road Safety Audit Response, in which case further discussion will be required.

5.29 Quality audits

5.29.1 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).

6. The construction phase

6.1 Introduction

- 6.1.1 This section sets out the process for adopting highways 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.

6.2 Adoption of highways

- 6.2.1 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 and the inspection fee being raised.
- 6.2.2 The works subject to a Section 38 Agreement must abut an existing highway maintainable at public expense or works relating to another signed Section 38 Agreement with the benefit of a Part 1 Certificate. Therefore phasing of developments will be considered. However, no works will be adopted until they connect to either the existing public highway or works that are subject to a signed Section 38 Agreement that benefits from a Part 1 Certificate.
- 6.2.3 Before any building operation on site commences the developer must:
- Enter into a section 38 agreement and provide a bond.
- or
- Provide surety by entering into the Advance Payment Code.
- 6.2.4 Two flow charts detailing the process are shown on pages 52 and 53.

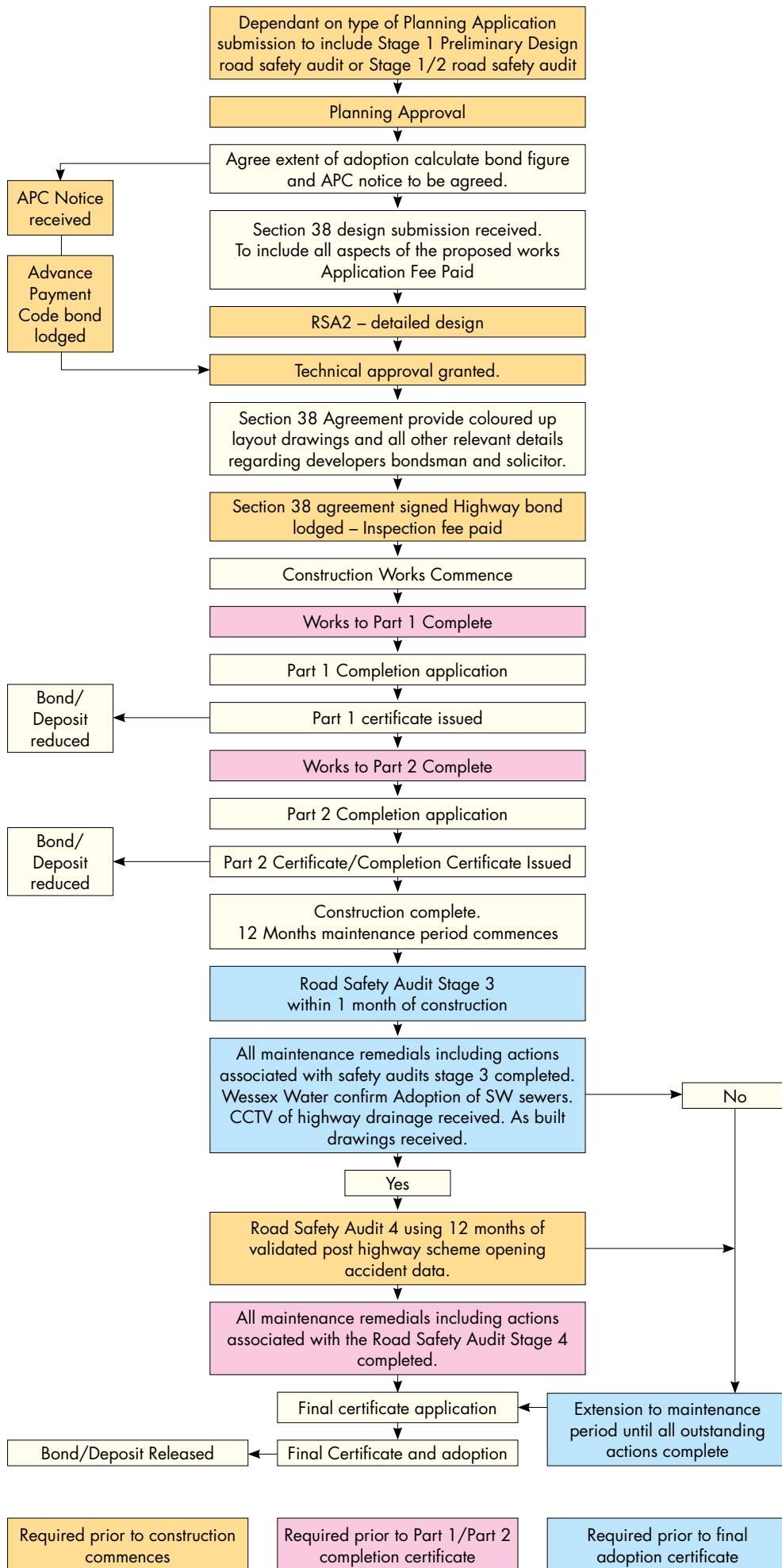
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6.3 Advance payments code

- 6.3.1 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.
- 6.3.2 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.
- 6.3.3 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.
- 6.3.4 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.
- 6.3.5 The boundary of all areas to be adopted must be physically defined by the use of kerbs, setts or other approved materials.
- 6.3.6 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.
- 6.3.7 Once the Part 1 works have been completed (see table 1 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.
- 6.3.8 Once the Part 2 works have been completed (see table 1 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.

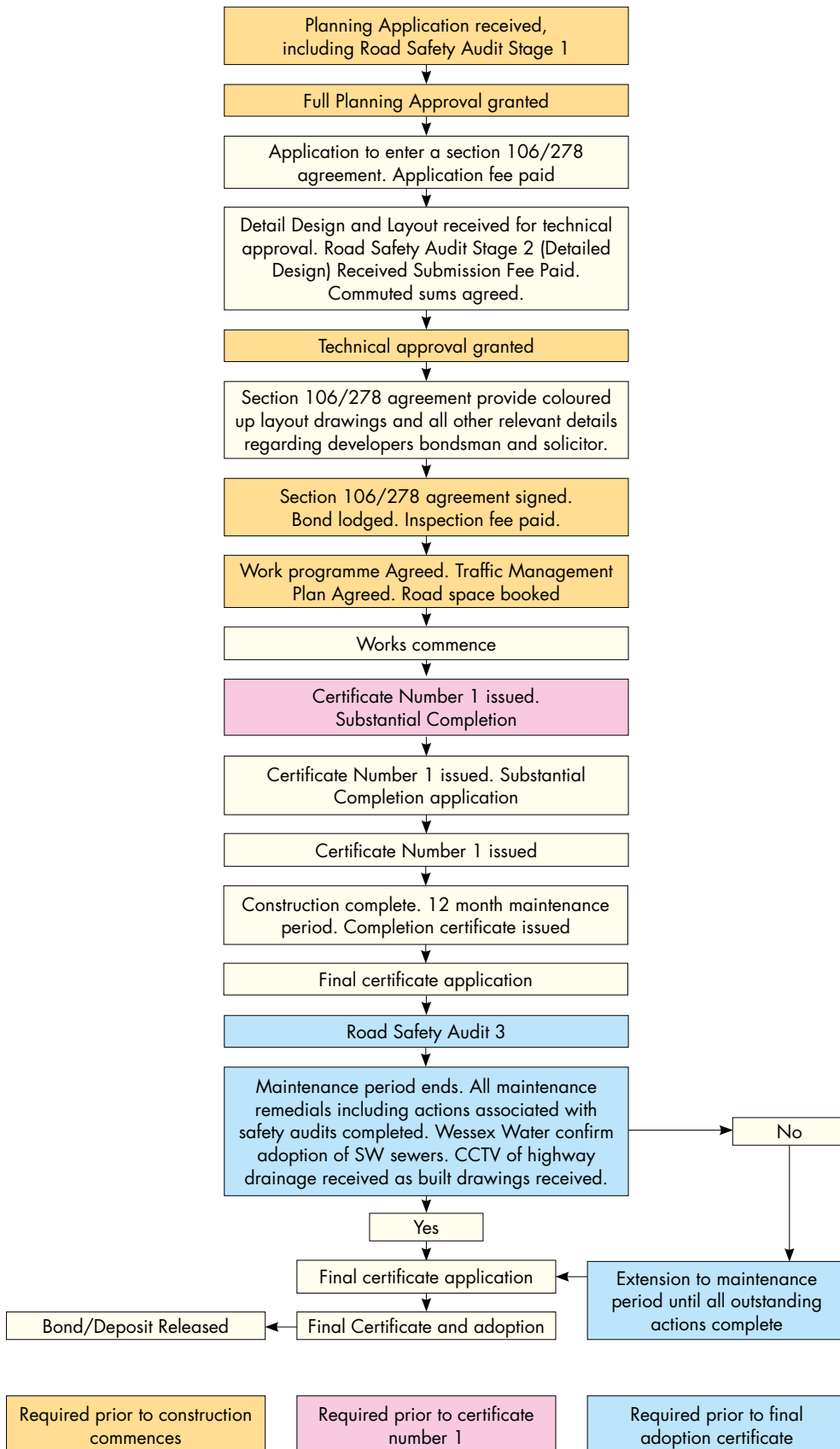
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Table 1:
Highway Adoption Procedure – Section 38 Agreement



- Stage 1
Road Safety Audit – Completion of preliminary design
- Stage 2
Road Safety Audit – Completion of detailed design
- Stage 3
Road Safety Audit – Completion of construction
- Stage 4
Road Safety Audit – Post opening monitoring

Table 2:
Highway Adoption Procedure – Section 106/Section 278
Agreements



- Stage 1
Road Safety Audit –
Completion of preliminary design
- Stage 2
Road Safety Audit –
Completion of detailed design
- Stage 3
Road Safety Audit –
Completion of construction
- Stage 4
Road Safety Audit –
Post opening monitoring

6.3.9 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 specifications, sourcing and any other relevant information regarding the details of the materials must be submitted to NSC in an agreed format. This will be prior to the works being adopted and being maintainable at the public expense.

6.3.10 Table 3: Works required for Part 1 and Part 2 Certificates

Works required for Part 1	Works required for Part 2
All highway drainage	All outstanding kerbing not completed in part 1.
All other drainage within the highway	Pedestrian ways wearing course.
All kerb foundations and kerbs	Carriageway wearing course.
Carriageway sub base and supporting structures.	Visibility splays and verges.
Carriageway and footway base course surfacing	Street furniture.
Demarcation of sight lines.	Road markings
Street lighting.	All other associated works shown on the drawings.
Pedestrian ways base course surfacing.	Tree planting
Street name plates.	
Tree pits	
Sustainable Drainage	See C753 SuDs manual for maintenance requirements

6.4 Approval process

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

6.4.2 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.

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6.4.3 Checklist for technical approval

6.4.4 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.

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

6.5 Detailed requirements for technical approval

6.5.1 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.

6.5.2 Layout

6.5.2.1 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.

6.5.3 Survey data

6.5.3.1 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 electronically, ideally in AutoCAD file format.

6.5.4 Geometric design

6.5.4.1 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.

6.5.4.2 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

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other junctions. Contours may be required for simple junctions where drainage is likely to cause problems.

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

6.5.5 Visibility

6.5.5.1 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 CD123 (Geometric design of at-grade priority and signal-controlled junctions).

6.5.5.2 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 CD123 (Geometric design of at-grade priority and signal-controlled junctions) and CD116 (Geometric design of roundabouts) should be shown.

6.5.6 Construction details

6.5.6.1 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.

6.5.7 Traffic signs and road markings

6.5.7.1 All traffic signs, road markings, road studs, etc should be shown referenced to *The Traffic Signs Regulations and General Directions 2016* 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.

6.5.8 Structures

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- 6.5.8.1 All AIP documents, calculations, drawings and design/check certificates should be provided as specified in the council's Technical Approval of Third Party Structures.
- 6.5.9 Safety fences and other street furniture
 - 6.5.9.1 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 use of passively safe street furniture is encouraged; any specifications for passively safe street furniture should also be easily replaceable without the need to excavate (for example, socketed bollards).
 - 6.5.9.2 Where more substantial street furniture is required such as on HGV routes/access points it is recommended that the design of the street furniture achieves suitable deflection of vehicular traffic away from pedestrian routes and cyclists upon impact (for example, bell bollards).
 - 6.5.9.3 The requirement for passively safe signposts or traffic signal poles shall be discussed with the councils Highways Engineers and clearly indicated on the drawings.
- 6.5.10 Street lighting and illuminated signs
 - 6.5.10.1 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.
- 6.5.11 Bus stops
 - 6.5.11.1 All bus shelters and associated infrastructure shall conform to the requirements set out in Appendix E.
- 6.5.12 Traffic signals
 - 6.5.12.1 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.
- 6.5.13 Site limits and highway boundary
 - 6.5.13.1 The limit of the works, existing and proposed highway boundaries and any easements for land ownership or other purposes should be clearly shown.
- 6.5.14 Statutory undertakers
 - 6.5.14.1 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.
- 6.5.15 Traffic Regulation Orders
 - 6.5.15.1 The processing of traffic orders will be carried out by the council, normally at the developer's expense.

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6.5.16 Trees and landscaping

6.5.16.1 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.

6.5.16.2 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.

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

6.5.17 Road safety audit

6.5.17.1 Following a Stage 1 and Stage 2 or Stage 1/2 road safety audit, and a Walking, Cycling and Horse Riding Assessment and Review 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.

6.6 Granting of technical approval

6.6.1 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.

6.6.2 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.

6.7 Construction

6.7.1 Protection of the public

6.7.1.1 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

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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.

6.7.2 Construction (Design and Management) Regulations 2015 (CDM 2015)

6.7.2.1 It is a legal requirement that the developer must comply with the CDM 2015 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 Guidance L153 Paragraph 73). 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 be referred back to the designer.

6.7.2.2 A free copy of the CDM Guidance is available at:
<https://www.hse.gov.uk/pubns/books/l153.htm>

6.7.3 Construction or highway management plans

6.7.3.1 The council may require a construction or highways management plan to manage the impacts on surrounding highways and neighbours for proposed developments.

6.7.4 Inspection

6.7.4.1 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.

6.7.5 Inspection notification

- Before commencement of the works on site: 14 working days.
- Before commencement of any road construction: 3 working days.

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- Response to design changes: 2 working days.
- Any other inspections, including the covering up of works: 24 hours.
- 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.

6.8 Traffic signs and markings

6.8.1 Traffic signs

6.8.1.1 Mounting heights and placement of signs shall be as prescribed the latest guidance please see; <https://www.gov.uk/government/publications/traffic-signs-manual>.

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

Location type	Minimum mounting height
On or over footways and anywhere else pedestrians are likely to walk	2.1m
On or over cycleways and anywhere else mounted cyclists can be expected	2.4m
In other locations	1.5m

6.8.1.3 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.

Speed limit	Minimum clearance
Up to 30mph	450mm
40mph or more	600mm
70mph	1000mm

6.8.1.4 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.

6.8.1.5 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

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be given to applying colour-contrast banding to the posts; Inclusive Mobility, DfT, 2005 provides guidance on the need and layout of banding.

6.8.1.6 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.

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

6.8.2 Road markings

6.8.2.1 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.

6.8.2.2 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.

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

6.9 Post construction

6.9.1 When the developer is confident that all works have been completed in accordance with the approved drawings (see table 3) 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.

6.9.2 Part 1 Certificate (for Section 38 works only)

6.9.2.1 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%.

6.9.3 Completion Certificate (Part 2 Certificate for Section 38 works)

6.9.3.1 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

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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 either on AutoCAD dwg format, pdf or a format compatible with BIM. Include 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. 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.

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

6.9.4.1 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.

6.9.4.2 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).

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- Traffic Signals inspection (if applicable).
- Structural Inspection (if applicable).
- Tree vitality inspection/tree planting inspection (if applicable).

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

6.10 Off-site highway works

6.10.1 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.

6.10.2 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.

6.10.3 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.

6.10.4 Works within the highway must be undertaken by contractors with the appropriate accreditation and public liability insurance of £5,000,000 (subject to review).

6.11 Temporary Works (New Roads and Street Works Act 1991)

6.11.1 Management of Temporary Works

6.11.1.1 The developer is to contact the Network Management Team (email: streetworks@n-somerset.gov.uk) where temporary works affect the public highway to agree timings the programme of works and is subject to The Traffic Management Act 2004. All temporary works are required to be co-ordinated where possible and discussions undertaken to share traffic management. Early engagement is necessary for all measures especially for requirements such as TTRO's (temporary traffic regulation orders, such as road closures, speed restrictions, amendments to the highway network) and temporary traffic signal switch offs. Authorisation is required from Network

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Management Team for any temporary traffic/pedestrian management requirements. Contractors are required to be accredited to work in the highway with sufficient public liability insurance (min £5 million cover subject to future review) and adhere to the 'Safety at Street Works and Road Works A Code of Practice' and Chapter 8 Regulations for traffic signs and management. NSC require developers to provide utility service strips to encourage co-ordinated works and ease disruption.

6.12 Objects or structures on the highway

- 6.12.1 A licence is required if the works require objects or structures on the highway such as building materials, hoardings, mobile elevated work platforms, scaffolding, skips or a tower crane oversailing the highway. All requests and fees to Network Management Team: <https://www.n-somerset.gov.uk/business/licences-permits/roads-highway-licences>

6.13 Highway record searches

- 6.13.1 A fee is charged for providing information about the extent and status of roads according to our records. Email highway.searches@n-somerset.gov.uk.

6.14 Dropped kerbs

- 6.14.1 A dropped kerb may be required to form a permanent or temporary access to a development and if this is not subject to any other agreements (such as S38 or S278) a request and fee is to be made to Network Management Team. For the NSC Dropped Kerb Policy please use link <https://www.n-somerset.gov.uk/my-services/parking-travel-roads/parking-access/dropped-kerbs>

6.15 Fees and charges

- 6.15.1 Please follow link for the current North Somerset Council Fees and Charges <http://www.n-somerset.gov.uk/council-democracy/accounts-spending-insurance/fees-charges>

6.16 Occupation of buildings

- 6.16.1 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.

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7. Standard and non-standard materials for adoptable roads

7.1 Introduction

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

7.1.2 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. Consideration will be given for a more diverse and higher quality palette of materials to encourage good design across the district. Ideally materials should be locally sourced, to be agreed with NSC officers and consideration to be within a reasonable maintenance expense. Some major planning applications may be reviewed by a design consultancy to ensure high quality design and opportunities are maximised.

7.2 Standard and non-standard materials

7.2.1 For clarity Table 4 lists materials that the council considers to be ‘standard’ and Table 5 lists those the council considers to be acceptable ‘non-standard’.

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7.2.2 Table 4 Standard materials

Street character types	Surfacing ¹	Kerbs/Drainage
Footways	Asphalt concrete surface course	Pre-cast concrete kerbs/edging/channels
Cycleways	Asphalt concrete binder course	Pre-cast concrete drainage system gullies
Mews Court	Asphalt concrete base course	
Minor access road	Asphalt concrete base course	
Local access road*	Type 1 sub-base (stone aggregate)	
Shared surface streets	Type 1 sub-base (stone aggregate)	
Link road	Hot rolled asphalt surface course to BS942	Pre-cast concrete kerbs/edging/channels
Secondary distributor road	Asphalt concrete binder course	Pre-cast concrete drainage system gullies
Main distributor Road	Asphalt concrete base course	
Strategic route	Type 1 sub-base (stone aggregate)	

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.

7.2.3 Table 5

Acceptable non-standard materials, features and infrastructure

- Coloured aggregate in surface course.
- Surface dressing on wearing course.
- Coloured surfacing (full depth of surface course).
- Concrete block paving.
- Granite/Conservation kerbs and channel.
- Non-standard drainage systems.
- Non-standard street lighting and bollards.
- Street furniture (seats, planters).
- Porous materials.
- Imprinted surface course.

Please note, this is not a definitive list. Please consult with and receive agreement from the relevant council officer.

7.2.4 There will be specific areas where the retention of existing historic materials and street furniture or use of special materials and street furniture will be required by the council as part of regeneration proposals, to preserve or replace existing damaged high quality historic materials, or to secure an appropriate or distinctive character or quality. This is most

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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.

7.2.5 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 volume of sharp turning manoeuvres.
- 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.
- 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.

7.2.6 To make certain a match can be made when repairing a surface detailed the 'as built' records are to include the specification of the material, size, colour, manufacturer etc relating to the highway infrastructure including areas of public open space (POS) NSC will be taking responsibility for is to be provided in an agreed format with NSC officers. This information should be included in the CDM Health and Safety File at completion or adoption of the scheme and provided to the NSC, who will distribute the information to Maintenance Teams and can arrange for reinstatement information to be provided to utility companies on request.

7.3 Commuted sums for non-standard materials

7.3.1 While 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 commuted 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 commuted maintenance contributions based upon the difference between the maintenance liability between standard and non-standard materials.

7.3.2 All non-standard materials used will attract a commuted maintenance contribution. However, the council wish to encourage use of non-standard materials in appropriate locations. Therefore, at officer discretion, the council may

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contribute up to 5% of the agreed commuted maintenance contribution. The developer will meet the remainder.

- 7.3.3 The cost differential, and thereby the commuted 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 B.
- 7.3.4 All commuted sums will be payable to the council prior to issue of the final adoption certificate.

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8.1 Glossary of terms

Highways engineer	A highways engineer working for North Somerset Highways and Transport
Highway authority	North Somerset Council Highways and Transportation
Council	North Somerset Council (NSC)
Officer	Individual(s) working within departments and carry out decisions and apply policies of NSC
UKAS	The UK Accreditation Service
DfT	Department for Transport
HGV	Heavy Goods Vehicle (>7.5T)
DMRB	Design Manual for Roads and Bridges
PROW	Public Right of Way
SPD	Supplementary Planning Document
APC	Advance Payment Code
AiP	Agreement in Principle
NSC	North Somerset Council
SuDS	Sustainable Drainage System
MfS	Manual for Streets
NJUG 4	National Joint Utilities Group Volume 4 – Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

8.2 North Somerset Council contacts

Highways Development Management
H&TDevelopmentManagement@n-somerset.gov.uk

Street Lighting and Traffic Signals
streetlighting@n-somerset.gov.uk

Highway Network Management Team
streetworks@n-somerset.gov.uk

Senior Tree Officer
StreetsAndOpenSpaces@n-somerset.gov.uk

For Highways Engineering Design, Public Rights of Way and Highway Drainage contact Council Connect 01934 888 888.

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8.3 Links to other documents and publications

Guidance notes are updated regularly. Please ensure that the latest information and guidance is used.

Building Regulations, Part B5 (Fire safety), HM Government, 2010

Construction (Design and Management) Regulations, HSE 2015

DMRB TD 41/95 'Vehicular Access to All-Purpose Trunk Roads'

DMRB CD123 (Geometric design of at-grade priority and signal-controlled junctions)

DMRB CD123 (Geometric design of at-grade priority and signal-controlled junctions and CD116 (Geometric design of 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 1/08 'Traffic management and Streetscape', DfT, 2008

CD 195 Designing for cycle traffic.

Local Transport Note 1/11 'Shared Space', DfT, 2011

Manual for Streets, DfT, 2007

National Joint Utilities Group Volume 4 – Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.

New Roads and Street Works Act 1991

North Somerset and Mendip Bats Special Area of Conservation (SAC) – Guidance on Development: Supplementary Planning Document. Adopted by North Somerset Council in January 2018.

<https://www.n-somerset.gov.uk/sites/default/files/2020-02/NSC%20and%20Mendip%20Bats%20SAC%20guidance%20-%20supplementary%20planning%20document.pdf>

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

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NSC Traffic Signs and Road Markings Policy; available on request

NSC Biodiversity and Trees (Supplementary Planning Document)

Specification for Highway Works (of the Manual of Contract Documents for Highway Works), DfT

Technical Information Note 19, 'Segregation of Shared Use Routes' 2014

Town and Country Planning Act, 1990

Traffic Advisory Leaflet 5/11 'Quality Audit', DfT, 2011

Traffic Signs Manual, DfT, 1982

Traffic Signs Regulations and General Directions, DfT, 2016

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 2017, Development Management Plan 2016 and Site Allocations plan 2018 especially:

- Core Strategy policies.
- CS9 Green Infrastructure.
- CS10 Transportation and Movement.
- CS11 Parking.
- CS12 Achieving high quality design and place-making.
- CS34 Infrastructure Delivery and Development Contributions.

Development Management Plan Policies

- DM20-31 Transport Policies, DM 32-33, DM 37 Delivering strong inclusive communities.

Site Allocations Plan Policies

- Such requirements as may be relevant in Schedule 1.

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

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8.4 North Somerset standard drawings for highways construction

Contact North Somerset Highways Engineering Design to obtain any of the standard drawings.

Carriageways, footways, kerbing, channels	Reinstatement of carriageways	Drainage
HSD/1100/001A	HSD/0700	HSD/500/006A
HSD/1100/002A	HSD0700	HSD/500/007A
HSD/1100/003A	HSD0700	HSD/500/008A
HSD/1100/004A		HSD/500/010A
HSD/1100/005A		HSD/500/013A
HSD/1100/008A		
HSD/1100/011A		
HSD/1100/012A		
HSD/1100/013A		
HSD/1100/51B		
HSD/1100/52A		

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Appendix A

1.1 Transport Statement, Transport Assessment and Travel Plans

North Somerset Council Transport Statement and Transport Assessment – version control	
Version description	Publication context
Consultation draft	February 2015, e-consult, public consultation
Final draft (not typeset)	October 2015, Incorporated into the Highway Development Design Guide
Published	December 2015, within Highway Development Design Guide
Review draft	August 2019, e-consult Public consultation
Final draft (not typeset)	June 2020, Executive Member Decision approved
Published	September 2020

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3. Guidance on preparing a transport statement
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1. Introduction

- 1.1 This appendix offers guidance on the thresholds that determine where a Transport Statement or a Transport Assessment might be appropriate and guidance on the scope of a Transport Statement and a Transport Assessment. The table includes thresholds for Travel Plan Statements and Travel Plans. Contact the Sustainable Travel Team for the adopted SPD for travel plans.
- 1.2 Paragraph 111 of the National Planning Policy Framework (NPPF) requires that all developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment.
- 1.3 The requirement to provide a Transport Statement or Transport Assessment is determined by the scale of development. This document gives examples of the thresholds that determine where a Statement or Assessment might be appropriate. However, the authority emphasises these are only indicative thresholds for guidance. The authority will always reserve the right to request a Statement or Assessment dependent upon the nature of the proposed development. Developers should always discuss requirements with the authority's officers before embarking on any Statement or Assessment.
- 1.4 Paragraph 111 of NPPF states that all developments which generate significant amounts of movement should be required to provide a Travel Plan. Developers should consult officers and refer to the council's Travel Plans; Supplementary Planning Document.
- 1.5 This document refers to North Somerset Council (or the council). In this context the council is both the Local Highway Authority and the Local Planning Authority.
- 1.6 The document also refers to Highways England (HE). Only the M5 motorway within North Somerset falls within the jurisdiction of HE. Highways England's requirement for assessment of the M5 can differ from that of the Local Highway Authority, and it is recommended that early engagement is sought with HE if any development is likely to impact on the M5 or its junctions. Circular 02/2013 'The strategic road network and the delivery of sustainable development' provides details on how HE considers planning applications.

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2. Indicative thresholds for a Transport Statement or Transport Assessment and a Travel Plan Statement or Travel Plan.

2.1 The table below sets out the indicative thresholds relating to a Transport Statement or Transport Assessment and a Travel Plan Statement or Travel Plan. Thresholds based on size or scale of development.

	Development	Description	Size	Transport Statement and Travel Plan Statement	Transport Assessment and Travel Plan
1	Food retail	Retail sale of food goods to the public – food superstores, supermarkets, convenience food stores.	GFA	>250 <800 sq.m	>800 sq.m
2	Non-food retail	Retail sale of non-food goods to the public; but includes sandwich bars – sandwiches or other cold food purchased and consumed off the premises, internet cafés.	GFA	>800 <1500 sq.m	>1500 sq.m
3	Financial and professional services	Financial services – banks, building societies and bureaux de change, professional services (other than health or medical services) – estate agents and employment agencies, other services – betting shops, principally where services are provided to visiting members of the public.	GFA	>1000 <2500 sq.m	>2500 sq.m
4	Restaurants and cafes	Restaurants and cafés – use for the sale of food for consumption on the premises, excludes internet cafés.	GFA	>300 <2500 sq.m	>2500 sq.m
5	Drinking establishments	Use as a public house, wine-bar or other drinking establishment.	GFA	>300 <600 sq.m	>600 sq.m
6	Hot food takeaway	Use for the sale of hot food for consumption on or off the premises.	GFA	>250 <500 sq.m	>500 sq.m

	Development	Description	Size	Transport Statement and Travel Plan Statement	Transport Assessment and Travel Plan
7	Business	(a) Offices other than those noted under Financial and Professional Services. (b) Research and development - laboratories, studios (c) Light industry	GFA	>1500 <2500 sq.m	>2,500 sq.m
8	General industrial	General Industry (other than those described within the Business section).	GFA	>2500 <4000 sq.m	>4000 sq.m
9	Storage & distribution	Storage or distribution centres – wholesale warehouses, distribution centres and repositories.	GFA	>3000 <5000 sq.m	>5000 sq.m
10	Hotels	Hotels, boarding houses and guest houses, development falls within this class if 'no significant element of care is provided'.	Bedroom	>75 <100 bedrooms	>100 bedrooms
11	Residential institutions – hospitals, nursing homes	Used for the provision of residential accommodation and care to people in need of care.	Beds	>30 <50 beds	>50 beds
12	Residential institutions – residential education	Boarding schools and training centres.	Student	>50 <150 students	>150 students
13	Residential institutions – institutional hostels	Homeless shelters, accommodation for people with learning difficulties and people on probation.	Resident	>250 <400 residents	>400 residents

	Development	Description	Size	Transport Statement and Travel Plan Statement	Transport Assessment and Travel Plan
14	Dwelling houses	<p>Dwellings for individuals, families or not more than six people living together as a single household.</p> <p>Not more than six people living together includes students or young people sharing a dwelling and small group</p> <p>Homes for disabled people living together in the community.</p>	Dwelling unit	>40 < 60 units	>60 units
15	Non-residential institutions	<p>Medical and health services – clinics and health centres, crèches, day nurseries, day centres and consulting rooms (not attached to the consultant’s or doctor’s house), museums, public libraries, art galleries, exhibition halls, non-residential education and training centres, places of worship, religious instruction and church halls.</p>	GFA	>500 <1000 sq.m	>1000 sq.m
16	Schools	<p>Education facility for children up to age 16.</p>	TBD	Discuss with North Somerset Council	Discuss with North Somerset Council
17	Assembly and leisure	<p>Cinemas, dance and concert halls, sports halls, swimming baths, skating rinks, gymnasiums, bingo halls and casinos. other indoor and outdoor sports and leisure uses not involving motorised vehicles or firearms.</p>	GFA	>500<1500 sq.m	>1500 sq.m

Development	Description	Size	Transport Statement and Travel Plan Statement	Transport Assessment and Travel Plan
18	Other	TBD	Discuss with North Somerset Council	Discuss with North Somerset Council

2.2 Planning use classes are not included in this appendix. For the most up to date information on Planning use classes please visit; https://www.planningportal.co.uk/info/200130/common_projects/9/change_of_use

Thresholds based on other criteria

Other considerations	Transport Statement	Transport Assessment	Transport Assessment and Travel Plan
1 Any development that is not in conformity with the adopted development plan.			x
2 Any development proposing 100 or more parking spaces.			x
3 Any development that is likely to increase accidents or conflicts among motorised users and non-motorised users, particularly vulnerable road users such as children, disabled and elderly people.			x
4 Any development generating significant freight or HGV movements per day, or significant abnormal loads per year.		x	
5 Any development proposed in a location where the local transport infrastructure is inadequate. – for example, substandard roads, poor pedestrian/cyclist facilities and inadequate public transport provisions.			x
6 Any development proposed in a location within or adjacent to an Air Quality Management Area (AQMA).			x

2.3 It is recommended that where a Transport Assessment has been determined necessary, or where a new highway access is proposed in close proximity of a M5 junction, early engagement with Highway England is sought.

3. Guidance on preparing a Transport Statement

3.1 Set out below are, but not limited to, the council's expectations of a Transport Statement. The actual requirements will be determined having regard to the scale, nature and location of the development.

3.2 A Transport Statement should set out the transport issues relating to the existing site and details of the development proposals.

3.3 Existing Conditions

3.3.1 The developer should provide a full description of:

- Existing site information – describing the current physical infrastructure and characteristics of the site and its surroundings.
- Baseline transport data – background transport data and current transport infrastructure details.

3.4 This information should be accurately established to understand the context of the development proposal. The description should include:

- Existing site information.
- A site location plan that shows the proposed development site in relation to the surrounding area and transport system.
- The permitted and existing use of the site.
- The existing land uses in the vicinity of the site, including development plan allocations, or potential future use in the case of undeveloped sites.
- Existing site access arrangements including access constraints, where appropriate.
- Whether the location of the site is within or near a designated Air Quality Management Area (AQMA).
- Any abnormal load uses of the current site.
- Baseline transport data.
- A qualitative description of the travel characteristics of the existing site, including pedestrian and cyclist movements and facilities, where applicable.
- Existing public transport provision, including provision/frequency of services, location of bus stops/train stations, park-and-ride facilities.
- A description of the highway network and how it functions in the vicinity of the site.
- An analysis of the injury accident records on the public

highway in the vicinity of the site access for the most recent three-year period, or five-year period if the proposed site has been identified as within a high accident area.

3.5 Proposed development

3.5.1 The developer should provide a full description within the TS including:

- Plans and drawings showing the proposed site layout, particularly the proposed pedestrian and vehicular access points into the site.
- The proposed land use.
- The scale of development, such as numbers of residential units and/or gross floor area (GFA), subdivided by land use where appropriate.
- The main features (design layout and access points) of the development.
- The person-trip generation of the proposed development and distribution of trips across mode.
- A qualitative and quantitative description (based on recent site observations) of the travel characteristics of the proposed development, including pedestrian and cyclist facilities/movements, in the vicinity of the site.
- Proposed improvements to site accessibility via sustainable modes of travel, such as provision/enhancement of footpath and cycle path linkages, public transport improvements, and servicing arrangements where appropriate.
- A proposed parking strategy and internal vehicular circulation (including number of spaces, parking accumulation, parking layout in relation to other site elements, ratio of operational to non-operational spaces, method of car park operation, overspill parking considerations, disabled parking, motorcycle parking, cycle parking, taxi drop-off points).
- Residual vehicular trip impact.
- The transport impacts of site construction, including the requirements of abnormal loads in the construction, use and decommissioning the present development.
- The transport impacts of freight or service operations.
- If the site of the proposed development has a current use or an extant planning permission with trip patterns/volumes, the net level of change that might arise out of the new proposals should be set out.

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4. Guidance on preparing a Transport Assessment

4.1 Set out below are, but not limited to, the council's expectations of a Transport Assessment. The actual requirements will be determined having regard to the scale, nature and location of the development.

4.2 Pre-application engagement

4.2.1 Where, using the above tables, the requirement for a TA is anticipated, Developers should enter in to pre-application discussions with North Somerset Council officers. The scope, methodology, data requirements and limits should be agreed before the Assessment commences.

4.3 The design of the development should address the following:

- Reducing the need to travel, especially by car – ensure that, at the outset, thought is given to reducing the need to travel; consider the types of uses (or mix of uses) and the scale of development in order to promote multipurpose or linked trips.
- Sustainable accessibility – promote accessibility by all modes of travel, in particular public transport, cycling and walking; assess the likely travel behaviour or travel pattern to and from the proposed site; and develop appropriate measures to influence travel behaviour.
- Dealing with residual trips – provide accurate quantitative and qualitative analyses of the predicted impacts of residual trips from the proposed development and ensure that suitable measures are proposed to manage these impacts.
- Mitigation measures – ensure as much as possible that the proposed mitigation measures avoid unnecessary physical improvements to highways and promote innovative and sustainable transport solutions.

4.4 Existing condition

4.4.1 In preparing a TA, a full description of existing site information should be provided. These baseline conditions need to be established accurately to understand fully the context of the development proposal. This description should include:

- Existing site information.
- Site location plan that shows the proposed development site in relation to the surrounding area and transport system.
- The permitted and existing use of the site.
- A detailed description of the existing land uses in the

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vicinity of the site, including development plan allocations or potential future uses in the case of undeveloped sites.

- Existing site access layout and access constraints, where appropriate
- Whether the location of the site is within or near a designated Air Quality Management Area (AQMA).
- Any abnormal load uses of the current site.
- Baseline transport data.
- the quantification of the person trips generated from the existing site and their modal distribution, or, where the site is vacant or partially vacant, the person trips which might realistically be generated by any extant planning permission or permitted uses.
- existing public transport facilities (including provision/frequency of services, location of bus stops/train stations, park-and-ride facilities) in the study area; if available, the current level of patronage or usage on the public transport network in the vicinity of the site.
- parking facilities available in the vicinity of the site.
- existing pedestrian and cycle facilities in the vicinity of the site.
- pedestrian and cyclists movements in the vicinity of the site
- a description of the highway network and how it functions in the vicinity of the site.
- current traffic flows on links and at junctions within the study area.
- identification of the critical links and junctions on the highway network, with calibrated capacity tests to reflect existing conditions.
- for the study area, establish the current personal injury accident records for the most recent three-year period, or five years if this is considered to be more appropriate.
- a summary of planned transport improvements within the study area (including type of improvement, implementation schedule and sponsoring agency or highway authority).
- identify current peak periods on the adjacent road network and, as required, daily traffic flow data to and from the development site or in the vicinity of the site.

4.5 Public transport assessment

4.5.1 A key issue in seeking the most sustainable solution for a particular development is the need to encourage the use of public transport. An assessment should be made of the available capacity on the existing public transport infrastructure relevant to the development. The capacity of a

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public transport route or service is the maximum number of people that can be accommodated on the route within the licensing laws of that particular mode.

- 4.6 For major developments, it is important to identify the spare capacity on buses and trains in order to establish the ability of the public transport network to accommodate any increase in demand associated with a proposed development. This is particularly important when considering rail network capacity, which is generally more problematic to expand than the bus network.
- 4.7 Such assessments will inform later stages in the TA process in respect of determining modal split, travel plan objectives and in appropriate cases, public transport infrastructure enhancement as part of an overall mitigation package.
- 4.8 A suggested methodology for assessing the capacity of the public transport network includes the following:
- Identify the analysis period, particularly the peak hours of the development and/or the entire transport system.
 - Establish the total person trip generation from the proposed development for all travel modes.
 - Estimate the likely modal split for the public transport network (buses, rail and tram).
 - Identify the public transport services relevant to, and in the vicinity of, the proposed development.
 - Estimate the existing capacity of the bus/train/tram service by multiplying the number of services by the maximum passenger capacity for each mode (bus, train carriages).
 - Estimate the current level of patronage or usage on the public transport network, using the most comprehensive data publicly available.
 - Estimate the spare capacity on the public transport network.
 - Identify measures to address any shortfall in capacity, where applicable.
- 4.9 The methodology suggested above is intended to provide a general framework for assessing the capacity of the public transport network. It is important that further guidance is sought from council officers and public transport operators.
- 4.10 Walking/cycling assessment
- 4.10.1 Another key issue in assessing the sustainability of a development's location will be its accessibility for those walking and cycling. An assessment should be made of the available capacity of the existing cycleway and footpath network in the area of the development. This assessment will

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help to inform the later stages of the TA process in respect of determining modal split, and travel plan objectives. It will also indicate what enhancements, if any, are required to the local cycleway and footpath network. These assessments should be undertaken using the appropriate analytical tools and methodologies. Where appropriate a HD 42/17 Walking, Cycling & Horse-Riding Assessment and Review should be carried out as agreed with NSC council officers. NSC has introduced the DfT's Local Cycling and Walking Infrastructure Plans (LCWIP) methodology for assessing walking and cycling routes reflected in the emerging Active Travel Strategy which is to be consulted upon in early 2020 and will be subsequently adopted.

4.11 Road network assessment

4.11.1 An assessment of the available vehicular capacity on the road network in the vicinity of the site should be undertaken in order to establish the potential impacts from the development, as well as the likely mitigation measures that may be required to sustain the development.

4.12 Consideration should be given to the available parking facilities in the vicinity of the site and the impact that development could have upon them. This assessment should be made in the context of the parking strategy set by North Somerset Council.

4.13 These assessments should be undertaken using the appropriate analytical tools and methodologies, as agreed with council officers.

4.14 Traffic data and traffic forecast

- The assessment should include recent counts (normally surveyed within the last three years) for peak period turning movements at critical junctions. In certain instances, for example, where there is known to be a significant level of heavy goods vehicles (HGV) traffic, a classified count should be provided. Additional counts that may be required could include:
- manual turning counts (should be conducted at 15-minute intervals) to identify all relevant highway network peak periods.
- 12-hour/24-hour automatic traffic counts (ATC).
- queue length surveys at signal junctions to establish demand and actual traffic flows.
- journey time surveys.
- freight counts.
- abnormal load counts.
- pedestrian and cyclist counts.

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- 4.15 The traffic data should reflect the normal traffic flow conditions on the transport network (for example, non-school holiday periods, typical weather conditions etc.) in the vicinity of the site and should be valid for the intended purposes. It should also take account of holiday periods in tourist areas, where peaks could occur in periods that might normally be considered non-neutral. The recommended periods for data collection are spring and autumn, which include the neutral months of April, May, June, September and October as described in DMRB Volume 13, Section 1, Part 4.
- 4.16 The criteria for the use of historical traffic data in a TA should be agreed by council officers at the pre-application stage.
- 4.17 Where there is a need to project existing or historical traffic data for future year assessments, the preferred option is the use of appropriate local traffic forecasts (such as TEMPRO), provided they offer a robust assessment.
- 4.18 The use of any area-wide traffic models or background growth rates should be agreed with council officers at the pre-application stage.
- 4.19 Where developers choose to use their own traffic count data, North Somerset Council reserves the right to cross-reference such data against its own traffic count data and to reject the developer's data if deemed as unsuitable.
- 4.20 Safety considerations and accident analysis
- 4.20.1 The assessment should identify any significant highway safety issues and provide an analysis of the recent accident history of the study area. The extent of the safety issue considerations and accident analysis will depend on the scale of the proposed development and its location. The need to minimise conflicts between vehicles and other road-user groups should be adequately addressed.
- 4.21 Critical locations on the road network with poor accident records should be identified. This is to determine if the proposed development will exacerbate existing problems or, if proposed, whether highway mitigation works or traffic management measures will help to alleviate the problems. The accident records at a particular location should be compared with local average accident rates. Up-to-date casualty data can be requested from NSC Highways and Transport for a fee.
- 4.22 Site inspections should be conducted to determine if the proposed location and design of access roads (including visibility/sight distance restrictions) would create an increased potential for accidents. North Somerset Council will require road safety audits where appropriate.

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4.23 Proposed development

4.23.1 A detailed description of the proposed use or uses of the site should be provided. This should include:

- site plan – provide plans and drawings showing site location and site layout and use.
- describe all the proposed land uses.
- scale of development – such as the number of residential units or gross floor area (GFA) of development – subdivided by land use where appropriate.
- site area in hectares.
- hours of operation – specify a weekly profile, including weekends where appropriate, over a 16 or 24 hour period. If the operation is seasonal, then this also needs to be specified.
- proposed access – describe arrangements, locations and method of linkage to existing transport infrastructure for all modes of travel (private cars, public transport, cycling, walking).
- servicing arrangements – describe routes and facilities for service vehicles.
- the traffic impacts of site construction works, including the requirements of abnormal loads in the construction, use and decommissioning of the present development.
- proposed parking strategy (number of spaces, parking accumulation, parking layout in relation to other site elements, ratio of operational to).
- non-operational spaces, method of car park operation, overspill parking considerations, establishment of/ proximity to controlled parking zones, disabled parking, motorcycle parking, cycle parking).
- development phasing (where applicable) – provide years of first and full occupation, as well as intermediate years if appropriate.

4.24 When preparing a Transport Assessment, the applicant should have consideration of the following:

4.25 Accessibility

4.25.1 Developers or promoters of sites should undertake accessibility modelling to establish the level of accessibility of the site, and the results should be included within the TA.

4.26 The accessibility issues that should be assessed include:

- access to the transport system – locating access points and links for pedestrians and cyclists to the wider transport network.

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- access to the local area – providing transport nodes or interchanges for the proposed development that will benefit other developments and the local community as a whole.
- community severance – ensuring that the development does not create barriers to access within the local community.

4.27 In order to determine the level of accessibility (in respect of public transport, cycling and walking) for a specific site, or relative levels of accessibility for multiple sites, the preferred methodology would be to undertake accessibility modelling. This can be achieved by using a standard assessment tool such as **ACCESSION**, or any other appropriate tool.

4.28 Safety

4.28.1 The safety issues that should be assessed, including and in addition to the highway accident statistics, include:

- the potential for development-related or other transport accidents in the vicinity of the site.
- perception of personal insecurity in and around the development site.

4.29 Economy

4.29.1 The economy issues that should be assessed include:

- non-motorised road users' journey time.
- motorised road users' journey time reliability.
- user costs.
- the construction, land, preparation, supervision and subsequent maintenance costs of development proposals (including mitigation works).

4.30 In addition to public transport and pedestrian/cycle accessibility, accessibility modelling tools may be used to calculate vehicle journey times as an extension to the work undertaken by developers to address accessibility issues in their TA.

4.31 Environment

4.31.1 The environment issues that should be assessed include:

- nuisance to people caused by transport-related noise and vibration generated by the development.
- the emission of greenhouse gases as a result of the transport implications of the development and the impact of changes in local air quality on people.
- the transport-related impacts of the development on areas of designated landscape importance.
- whether the site is in an air quality management zone or is likely to cause a breach of current legislation.

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- the transport-related impact of the development on areas of nature conservation or biodiversity and Earth heritage interests (such as geology) where they interact with roads.
- heritage of historic resources where they interact with development-generated transport and/or proposed mitigation measures.
- the transport-related impact of the development on the townscape.
- appraisal of the transport-related impacts of the development on the water environment.
- the impact of the transport implications of the development on physical fitness.

4.32 The potential for environmental impacts that would breach a statutory limit should be addressed. North Somerset Council and HE have a statutory duty to prevent a breach of statutory limits (for example, air quality) due to incremental change of volumes of vehicular traffic on their networks.

4.33 If a development is likely to generate significant vehicle trips on the council's network, which in turn would be likely to cause a breach of statutory limits, the council could be held legally responsible if a breach were to occur. In these circumstances, the developer may be required to propose mitigation measures that will avoid such a breach. If a breach remains likely, this could be a material consideration in the assessment of the planning application and may result in the refusal of planning permission.

4.34 Therefore, where a development proposal is likely to generate significant traffic-related environmental impacts, the TA should address such matters. Alternatively, if the development requires a formal environmental impact assessment (EIA), which deals with these issues separately, this should be cross-referenced in the TA.

4.35 In any event, it is likely that the developer would be required to provide mitigation measures to address any adverse environmental impacts arising from the proposed development and not simply those where breaches of statutory limits may be likely to occur.

4.36 Integration

4.36.1 The integration issues that should be assessed include:

- the potential for the development to influence interaction among all transport modes (motorised and non-motorised), either in isolation or in combination with other developments.
- interaction between the development proposal and wider issues of Government policy such as environmental sustainability and health.

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- integration of the development proposals with local, regional and national land use policies.
- bringing communities together/social inclusion.
- separating communities as a result of cutting off existing movement paths – severance/social exclusion.

4.37 Assessment years

4.37.1 The assessment year(s) in respect of capacity analysis for the transport network should be consistent with the size, scale and completion schedule of the proposed development, and that of other major developments in the vicinity of the site, as well as planned improvements to the transport system.

4.38 The appropriate horizon assessment year should be agreed with the council officers during pre-application consultations.

4.39 In addition to the opening year, one or two further assessment years should be considered. For the local transport network, a development should be assessed with regard to the Core Strategy, and for a period of no less than five years after the date of registration of a planning application. Should the development take place over a longer period, it would be appropriate to extend the length of the assessment period.

4.40 The assessment years should consider person trips from all committed developments that would impact significantly on the transport network, particularly where they substantially overlap, such as at the same junctions and/or on roads as the proposed development. The committed developments will typically include development sites that have extant planning permission as well as development plan allocations in an adopted or approved plan. Developments that have been completed but not fully occupied should be included in these assessments. The inclusion or exclusion of committed developments in the assessments should be agreed with council officers at the pre-application stage.

4.41 Analysis Period

4.41.1 The analysis period should reflect the person trip generation characteristics of the proposed development, as well as conditions on the adjacent transport system. It should be related to known and anticipated peak patterns of demand both for the transport system and development-generated trips. The analysis period should be agreed with the council officer at the pre-application stage where possible.

4.42 A TA should normally consider the following analysis periods:

- weekday morning and evening peak period trips for the adjacent transport system, with particular focus on the peak period traffic flows on the road network.

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- weekday morning and evening peak period trips for the proposed development.
- an off-peak period selected to assess level of greatest change resulting from the development.
- weekend peak period if the development is anticipated to generate significant levels of new trips at weekends or the adjacent transport system suffers from greater levels of congestion than during weekdays.

- 4.43 The analysis period should also include an assessment of the combination of development-related and non-development-related trips.
- 4.44 The analysis period should be agreed with the council officer at the pre-application stage.
- 4.45 Development trip generation
- 4.45.1 The first step in quantifying the impact of a proposed development on the transport system is to provide an estimate of the person trips (for all modes) that are likely to be generated by the development.
- 4.46 In preparing trip estimates, the travel characteristics of the proposed development should be established, and this should be based on a multimodal assessment that identifies the number of person trips by mode and time period.
- 4.47 There is a range of trip rate database tools available that contain national, or in some cases more local, trip rates measured for typical land use sites. However, obtaining an accurate comparison is not always straightforward, especially for atypical developments. In these instances, it is recommended that, unless there is a clear valid comparable situation, the assessment trips should be constructed from first principles based on a detailed analysis of the daily operation of the proposed development.
- 4.48 In all cases, analyses of development-related trips by using an appropriate database or an alternative methodology should be agreed with council officers, as this will form the major element of the TA.
- 4.49 Typically, trip generation assessments are based on the identification of suitable (person or vehicle) trip rates, having regard to industry standard databases such as TRICS, GENERATE and TRAVL. These trip rates should be derived on the basis of site-specific details of the proposed development – for example, proposed gross floor area, number of dwelling units, number of hotel rooms, availability and accessibility of non-car modes of travel, provision and nature of travel plans.
- 4.50 If sites with comparable accessibility as well as scale and location cannot be found when using a standard database

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system, 85th percentile trip generation rates should be considered as a starting point for assessment of the baseline trip generation. The reasons for this are:

- since the level of public transport and non-car mode travel for sites within such trip databases is often unknown, a true like-for-like comparison is unlikely to be achieved.
- It is considered that the use of average trip rates with deductions for sustainability measures could result in overly optimistic trip rates for the proposed development.

4.51 In cases where the degree of comparability of source data sites to the development proposals is difficult to determine, it may be appropriate (in consultation with council officers) to undertake a sensitivity analysis using both 85th percentile and average (50th percentile) trip rates to inform the process of the differences between these two assumptions.

4.52 Calculating vehicular trip generation

4.52.1 As certain types of development, particularly retail, can have a significant effect on vehicular traffic, consideration may be given to the different types of vehicular trips that are likely to be generated, such as:

- New trips – these are trips that do not appear anywhere on the road network prior to the opening of the development. For many types of development, this element of generated trips can be relatively small; however, it is customary to consider all trips from residential developments as being new to the network.
- Pass-by trips – these are trips that are already present on the road network directly adjacent to the point(s) of access to the site, which will turn into the site. This type of trip is likely to be relevant only where the site is located on a major arterial route within an urban area. If it can be clearly demonstrated that there will be a proportion of true 'pass-by' trips that were already on the network, then these can be deducted from the calculated generation for the development.
- Linked trips – these are trips that will have multiple destinations either within the proposed development site. Examples include trips to food and non-food retail, between both the development site and existing adjacent sites or between the development site and an established town centre. Where there is a high probability that there will be a proportion of linked trips between two uses on a development, it is customary only to 'count' those trips once for the development as a whole, and not effectively double-count them by attributing two visits and departures affecting the sections of highway network being assessed.

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- Diverted trips – these are trips that are already present on the local road network but not the road(s) from which site access is taken and will divert from their existing route to access the site. These are similar to pass-by trips, but they have to deviate to make use of the development under consideration. It is important to identify the potential for such diversion to occur so as to ensure that the correct flows are assessed at specific junctions on the highway network. Diverted trips will tend to return to their original route after visiting the development under consideration.
- Transferred trips – these are trips that are already present on the local road network, accessing similar existing sites in close proximity to the proposed development and will have the potential to transfer their destination to the proposed development. Slightly different from diverted trips, these wholly transfer from using an existing development to a new one, e.g. shoppers switching to a new supermarket that is more conveniently located for them.

4.53 The level of reduction in vehicular trip generation based on the mix of trips, as set out above, will be to a degree subjective and dependent on the specific characteristics and location of the proposed development. The methodology for deriving the development's vehicular trips and appropriate level of trip reduction, if any, should be agreed during the pre-application consultations.

4.54 For large developments, the impact of construction traffic will require separate consideration. The assessment of construction traffic should identify the time period(s) during which construction activities will take place, the numbers of trips likely to be generated, the vehicle type and, for heavy construction traffic, an appropriate diversion route or a traffic management plan to minimise local impacts.

4.55 Adjustment of development vehicular trips

4.55.1 In some circumstances, the extent of access by non-car modes of transport may suggest an adjustment of development-generated vehicle trips. This is likely to be the case where new sustainable transport infrastructure, such as cycleway or bus services, is proposed by the developer. It may also be appropriate when a proposed development is located where there is a particularly high-quality and accessible existing public transport system.

4.56 The work undertaken to analyse public transport network capacity will be important at this stage, to ensure that assumptions are not erroneously made regarding the ability of existing services to cope with development trips. At this stage the TA should identify whether the intended level of public transport trips from the development can be met by existing

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services, or whether the development mitigation package should enhance the level of service.

- 4.57 Where a development proposal includes significant improvements to non-car infrastructure, it is more likely that the council will accept reductions in car-related trip estimates, discuss with officers.
- 4.58 The element of development trips that is likely to be the least sustainable is single occupancy private car. Hence it would be beneficial to place significant emphasis on reduction of this category of trips throughout development proposals and the TA preparation.
- 4.59 It is important that the appropriate level of reduction, if any, should be agreed at the pre-application consultation stage.
- 4.60 Trip distribution and assignment
 - 4.60.1 Prior to the distribution and assignment of development-related person trips, it is important to establish a development catchment area and identify the main population zones within it. This catchment area should be discussed and agreed with the council officers from the outset. It is important to note that proximity to the highway network and, in particular, the SRN or other higher standard routes may have a significant impact on the extent of the catchment area to be considered.
 - 4.61 It is recommended that the distribution of development-related person trips be based on an appropriate methodology. These include, but are not limited to, the use of Geographical Information Systems (GIS) based census data analysis, a gravity model, existing traffic flow patterns, areawide traffic models (if available) and, by analogy, travel patterns for similar developments in the vicinity of the site.
 - 4.62 The agreed trip distribution should then be used to assign development trips to the transport network, taking due account of the impact of the various trip types, as noted earlier.
- 4.63 Environmental impact issues
 - 4.63.1 The environmental impacts of any significant development need to be addressed. This might be covered by a separate Environmental Statement (ES), which involves an assessment of a development's potential environmental implications, including those that are transport-related. This will help ensure that the significance of the predicted impacts and the scope for mitigating them are properly addressed at the outset.
 - 4.64 As part of the scoping exercise for the ES, it may be decided that an assessment of air quality and noise impact is required. Such an assessment should identify, in particular, traffic data such as peak hour traffic flows, 18hour traffic flows, Annual Average Daily Traffic (AADT) flows, percentage of HGVs,

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traffic speeds for the surrounding highway network and daily traffic generation forecasts for the development proposal. Where appropriate, daily traffic generations of the extant or historic site use may also be required.

- 4.65 North Somerset Council will require assessment of the environmental impact from any increase of traffic on the highway network where statutory limits might be breached. The same is true if any highway mitigation measures were to be proposed as a result of the development. Further details on environmental assessments can be found in Circular 02/99.
- 4.66 A Travel Plan aims to reduce single occupancy car travel to and from a development site and improve the availability and use of sustainable and active travel modes. It also promotes practices that reduce the need for travel. It is a detailed document laying out site details, aims and outcomes, travel mode targets, site-specific initiatives and monitoring methods.
- 4.67 Along with a Transport Assessment, the Travel Plan provides the mechanism for assessing and managing access to a development site, and helps to improve accessibility, both to and from the site, and to local amenities and services.
- 4.68 Measures within a Travel Plan may include personalised journey planning, information packs, marketing initiatives to publicise sustainable travel options, travel incentives such as bus and cycle equipment vouchers and car sharing schemes. Measures that reduce the need to travel such as video conferencing and flexible working may also be included.
- 4.69 Transport impacts and mitigation measures
- 4.69.1 Government transport policy is, wherever possible, to seek alternative solutions to building new roads, by reducing the impact of road users on each other and the environment, improving road performance through improved network management and facilitating smarter journey choices. The presumption should be to give preference where possible to solutions other than the construction of new roads.
- 4.70 The information provided at the pre-application stage and in the TA will be reviewed by the council with the aim of determining the type and scope of mitigation measures to be provided.
- 4.71 The TA, along with other supporting documents, will form the basis for the council's response to a proposed development and, in particular, the type or level of mitigation that will be required. Typically, mitigation could be required where the proposed development is likely to impact adversely upon the transport system and/or result in breaches of statutory environmental limits.

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- 4.72 Where mitigation is proposed, following agreement on the scope of mitigation to be provided, the council will require that appropriate conditions be attached to any planning permission granted. The conditions or obligations will specify the improvements that will be required to accommodate the proposed development's trips by all modes. They will also ensure the safety of all road users, including non-motorised users or vulnerable users. Conditions or obligations may require that necessary mitigation measures be completed before first occupation of units on the site, or before work on the development site itself commences if construction traffic is a major issue.
- 4.73 In all cases, the transport mitigation plan or package of measures will focus on maximising sustainable accessibility to the development. At the outset, the mitigation plan should consider measures such as: improvements to development site layout to facilitate walking and cycling as well as accessibility to the local public transport infrastructure; improvements to walking and cycling provisions in the vicinity of the development site; and improvements to the local public transport network.
- 4.74 If the TA confirms that a development will have material impact on the highway network, the level of impact at all critical locations will need to be established. Development proposals are likely to be refused on transport grounds where residual cumulative impacts cannot be accommodated within the existing capacity of a section (link or junction) of the network, or they increase demand for use of a section that is already operating at over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed.
- 4.75 If the mitigation measures require physical improvements to the highway network, the developer should ensure that, in any design of mitigation works, appropriate design guides and parameters are used. Road Safety Audits may be required for any development-related highway works and, when produced, should be conducted in compliance with the relevant standards.

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Appendix B

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

Materials for adoptable highway works

Carriageway criteria	Standard material sq metres	Approved non-standard materials sq metres	Description of non-standard material
Strategic route (7.3m min)			
Main distributor (7.3m min)			
Secondary distributor (7.3m min)			
Link road (6.7m min)			
Local access road (5.5m min)			
Minor access road (5.5m min)			
Mews Court (5.5m min)			
Footway (2.0m min)			
Cycleway (3.0m min)			
Kerbs/Channels			
Drainage			
Gullies			
Channels			
Pipes			
Cambers			
Culverts			
Street lighting			
Columns			
Illuminated signs			
Illuminated bollards			
Traffic signals			
Highway landscaping			
Trees			
Verges			
Structures			
Other adoptable works			
Sustainable drainage systems designed to C753			

Appendix C

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 (at the NSC test laboratory) by the Engineer at the Developer's cost. 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 production facilities that provide materials with CE marking to indicate compliance with British and European standards. The facility should also operate a product quality system that complies with BS EN 12697-21:2012 Factory production control. The system should be complimented by the operation of a ISO 9001 Quality management system. 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 Principal Engineer 01275 884932.

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

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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.

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Appendix D

Guidance on landscaping and trees in adoptable areas

After North Somerset Council declared a climate emergency in early 2019, followed by a North Somerset Climate Emergency Strategy (NSCES) and accompanying North Somerset Climate Emergency Strategic Action Plan (NSCESAP), the importance of landscaping, trees and rewilding has increased even further, as we try to reduce our carbon usage and replenish our carbon stores. 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

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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

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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.

Consult with the individual statutory undertakers in the vicinity before undertaking any tree planting works.

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 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

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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.

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:

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

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 a minimum of 800mm deep, if surrounding soil is un-compacted and free draining. Consult and check the location of services with all statutory undertakers.

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.

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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.

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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.

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Appendix E

Public transport

Phasing of new bus services

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

- 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.
- At what stage the growing number of houses, employees and shoppers will trigger an increase in the capacity and frequency of services.
- The need for priming initial services by using subsidised or free travel tickets, resident travel packs etc.
- If and when a new service might become self-funding or commercially viable.

Support for new bus services and details relating to phasing will be secured through a Section 106 Agreement or the CIL, depending on the size of the development.

Bus shelter specification

Where new bus shelters are required, these should be built to the following specification:

- All bus shelters must meet the BS EN 1090 certification and bus shelters must be procured from a supplier who is CE marked and has a Factory Production Certificate.
- Bus shelters shall be of modular design with a module size of 1m and shall have an approximate width between 1.1m and 1.5m.
- Bus shelters shall be constructed with high-grade metal posts (60 x 60 SHS). All sections to be properly pre-treated and finished to achieve appropriate strength and durability. The shelters shall incorporate suitable foundations to ensure safe and efficient installation on site.
- Roof supports shall be fully welded high-grade metal. An extruded aluminium glazing system shall be provided with hidden tamper proof fixings. All aluminium sections to be appropriately pre-treated.
- All metal components to be finished with all visible surfaces to be appropriately coated to give a hard-durable finish.
- Side glazing shall be glass or polycarbonate with options for a solid back metal panel or graffiti resistant

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polycarbonate. Where polycarbonate is used shall be a minimum 6mm thick and be UV stabilized. Glazing members shall be fitted with easily removable security fittings to ensure swift replacement of damaged panels using the correct tools while also making access difficult. The use of rivets to be avoided.

- Each shelter shall be provided with an integral perch seat. Options shall be available for the shelters to include:
- A timetable display/information case. Minimum size 594mm x 210mm, with preference for displays up to 940mm x 560mm in key town centre locations.
- A bus stop flag bracket at the corner.
- The colour specification for North Somerset is Dark Green RAL 6028 but other colours may be required in certain locations (such as in Portishead, where developers should liaise with Portishead Town Council).
- Consideration should be given to providing solar lighting where footfall indicates this would be appropriate.
- Shelters should be capable of accommodating Real Time Information displays, with the necessary bracketry and power supply. The shelter and roof to be designed to accommodate RTI units including the pre-installation of an RTI bracket and the required power cable from fuse spur to the RTI bracket. The RTI units will normally be mounted in a transverse position at the approach end of the shelter. A gap of at least 75mm should be allowed between the RTI unit and shelter panel for access. The design should allow for units up to a maximum size of W1000mm/H250mm and D250mm.
- The shelter design should include an advertising board(s) with the specific design requirements agreed with the NSC transport unit.
- Alternatives to the bus shelter specification above will be considered and subject to the approval of the council.

Bus stop and/or shelter supply and erection:

- All NRSWA enquiries are to be carried out by the supplier to determine the whereabouts of existing services and mains. The supplier shall take the necessary measures to locate, avoid or support and protect all pipes, cables and apparatus during the installation of the requested shelters and the subsequent reinstatement. It may be necessary to remove an existing shelter for which a separate quotation will be sought. Reinstatement shall include hot and cold lay bituminous materials; concrete slabs; and modular surfaces and concrete footways.

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- Staff carrying out the work shall be accredited to work on the highway and hold NRSWA qualifications with a minimum of one supervisor and one operative and be fully insured to work on the highway. The minimum amount of Public Liability Insurance to be not less than £10 million.
- Prior to commencing the erection of shelters, it will be agreed with the council the arrangements that will be made for the management of traffic if necessary. Such arrangements will also include the safe movement of cyclists and pedestrians. The shelter supplier shall be responsible for the maintenance and removal of any traffic management arrangements.
- The council's representative will obtain the necessary opening and closure notices for the works to construct new shelters to be undertaken.
- Except in the case of traffic sensitive roads and streets all work will be carried out between 08.00hrs and 18.00hrs on Mondays to Fridays. In exceptional circumstances a work programme to be undertaken on Saturdays and Sundays may be considered. In the case of roads and streets identified by the council as traffic sensitive all work must be carried out between 09.30hrs and 15.00hrs Monday to Friday. The works must be to the council's specification and prior to any works the shelter supplier must arrange with the council's Network Management Team (tel; [01275 888 802](tel:01275888802) email; streetworks@n-somerset.gov.uk) for the authorisation of the any works and traffic management within the highway.

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