

Shropshire Manual for Adoptable Roads & Transport

SMART 2021

A Highway Design Guide and Specification
for all New Development within Shropshire

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WORKING DRAFT

INTRODUCTION

- i. Shropshire is a beautiful county with a rich heritage and history which provides a rich mix of attractive landscapes and streetscapes. It is the quality of both the natural and historic built environments which helps support Shropshire's vibrant visitor-focused economy, whilst at the same time providing a cherished environment to work and live.
- ii. We have a responsibility therefore, to ensure that all new development, whilst supporting future economic growth, must be attractive, appropriate and sustainable and respectful of the past. The aim of 'The Shropshire Manual for Adoptable Roads and Transport' (SMART) is therefore to establish well designed residential streets and neighbourhoods where buildings, streets and spaces combine to provide local places which improve the life of Shropshire residents whilst making it an attractive place to visit and invest in in the same way this has been achieved in the past.
- iii. SMART covers many elements of site development and aims to help achieve cohesive design layout and construction so that any new development is integrated, sustainable, and of the highest quality.
- iv. SMART will assist developers, designers, house builders and other professionals in preparing the right infrastructure to achieve street layouts which meet the needs of all users and do not allow vehicles to dominate. The objective is to create an environment that is safe and pleasant for everyone to use and enjoy, where people have the freedom to walk, cycle, and drive, and feel safe doing so.
- v. The new structured approach to design as set out in this document is intended to assist the design process and facilitate negotiations between developers and the Highway Authority. It aims to simplify and explain the highway planning and approval processes, to avoid the submission of abortive work and ultimately lead to the creation of more pleasant and safer residential environments.
- vi. SMART reflects the approach to design as set out in Department for Transport's 'Manual for Streets 1 & 2' which emphasise the overall importance given to place making and encourages the design of streets based on their function, rather than purely level of traffic carried. It also replaces two previous Shropshire County Council publications:
 - 'Residential Developments in Shropshire – A Design Guide' (1996) and
 - 'Specification for Residential/Industrial Estate Roads' (2000).
- vii. With further development and economic growth comes an ever-increasing maintenance liability on the Local Highway Authority, for the new streets and spaces which are created, and adopted. Therefore, consideration and advice is provided for adopting and managing roads and spaces, including the appropriate use of materials, emphasising quality, longevity and the use of local resources. Where special features are required to ensure a 'sense of place', SMART includes such considerations and mitigations, including commuted sum payments.

- viii. SMART also highlights design considerations for different road users and situations, encouraging multi-use spaces and innovative measures for speed control, such as visual perception traffic calming, where appropriate.
- ix. SMART should be used for any residential street typically serving multiple dwellings, for mixed use developments and for industrial/ commercial schemes.

WORKING DRAFT

STRUCTURE OF THE DOCUMENT

SMART is made up of several documents, colour coded as shown below, concentrating on specific topics and themes, making it easier for the reader to find the relevant information.

A. DESIGN PRINCIPLES (this document)

This is the primary policy to which all other related documents are focused. It sets out the general parameters and criteria appropriate for developers to consider and design new streets and future adoptable highway assets.

B. SPECIFICATION (for highway adoptable assets)

This outlines the general highway construction specifications and guidance for undertaking adoptable works with the necessary emphasis on health and safety.

C. LEGISLATION

This sets out the general overarching highway legislation and any other appropriate legal requirements for all new developments in Shropshire, or where a new or altered access to the existing public highway is necessary.

D. PROCEDURES

This specifically sets out the required procedures and documentation all developers should follow and use, in respect to all adoptable highway related matters.

E. TECHNICAL NOTES

These documents provide a wide range of associated information, technical resources, guidance and specifications, to assist the developer in successfully developing new or modifying existing highway infrastructure in Shropshire.

List of Documents:

1. How to Secure a Section 38 Agreement
2. How to Secure a Section 184 Agreement
3. How to Secure a Section 278 Agreement
4. Bonds, Fees & Commuted Sums
5. Flood & Water Management + SuDS Guidance*
6. Structures
7. Street Lighting*
8. Traffic Signals*
9. Car Parking Guide
10. Standard Detail Drawings
11. Refuse and Recycling Guidance*
12. Local Transport Plan (Core Document) *
13. Shropshire Bus Strategy*

14. Cycling Guide*
15. Travel Plan Guidance*
16. Mobility Guidance*
17. Private Street Works Code
18. Highway Advice on Minor Planning Applications
19. Glossary of Terms & Abbreviations

*(Note: * indicates previously published Shropshire Council documents)*

SMART should also be read in conjunction with all other appropriate and current national and local planning, design, specifications, best practice, policies and guidance.

The links provided are for ease of reference and the designer should ensure that all relevant guidance and legislation has been appropriately considered.

WORKING DRAFT

PART A

DESIGN PRINCIPLES

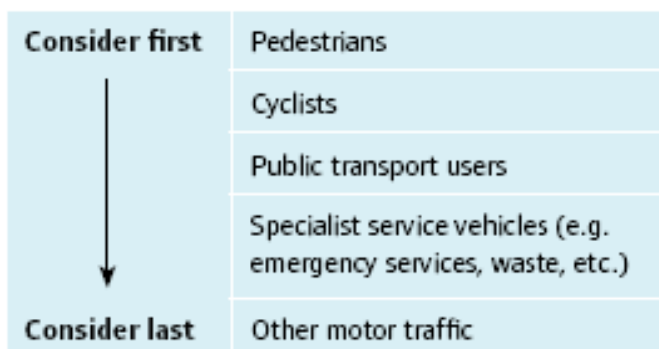
A.1. DESIGN CONSIDERATIONS

1. The following national and local design guidance, best practice and relevant legislation should also be considered in conjunction with this document.
2. It should be noted that the following list is not exhaustive and the Developer is responsible for applying all appropriate best practice guidance to ensure the proposed scheme meets Shropshire Council's requirements.
 - Manual for Streets 1 & 2 (MfS),
<https://www.gov.uk/government/publications/manual-for-streets>
 - Design Manual for Roads & Bridges (DMRB)
<http://www.standardsforhighways.co.uk/ha/standards/dmrb/index.htm>
 - Volume 1 - Manual of Contract Documents for Highway Works
<http://www.standardsforhighways.co.uk/ha/standards/mchw/index.htm>
 - Shropshire Council Flood & Water Management - SuDS Manual
<https://www.shropshire.gov.uk/media/12304/surface-water-management-interim-guidance-for-developers.pdf>
<https://shropshire.gov.uk/drainage-and-flooding/development-responsibility-and-maintenance/new-development-and-watercourse-consenting/suds-requirements-for-new-developments/>
 - Shropshire Core Strategy, SAMDev & Supplementary Planning Guidance
<https://shropshire.gov.uk/planning-policy/local-planning/local-plan-partial-review-2016-2036/>
<https://www.shropshire.gov.uk/planning-policy/local-planning/>
<https://www.shropshire.gov.uk/search/?start=0&s=Samdev>
<https://www.shropshire.gov.uk/public-transport/local-transport-plan/>
 - Inclusive Mobility, DfT (2005)
<https://www.gov.uk/government/publications/inclusive-mobility>
 - Handbook for cycle-friendly design, Sustrans (2014)
<https://www.sustrans.org.uk/for-professionals/walking-and-cycling-infrastructure-design-guidance/>
 - Building for Life 12, Design Council/CABE (2015)
<http://www.designcouncil.org.uk/resources/guide/building-life-12-third-edition>
 - Construction (Design and Management) Regulations 2015
<http://www.legislation.gov.uk/uksi/2015/51/contents/made>
 - Highways Act 1980 (HA 1980)
<http://www.legislation.gov.uk/ukpga/1980/66/contents>
 - The Health and Safety at Work Act 1974
<http://www.legislation.gov.uk/ukpga/1974/37/contents>
 - New Roads & Street Works Act 1991 (NRSWA)
<http://www.legislation.gov.uk/ukpga/1991/22/contents>
 - Traffic Signs Regulations & General Directions 2016
<http://www.legislation.gov.uk/uksi/2016/362/contents/made>

A.2. HIGHWAY DESIGN

3. The following provides information and advice to assist everyone involved in the design of new adoptable highways. This will help to create environments in Shropshire that are:
 - visually attractive,
 - safe,
 - sustainable,
 - fit for purpose,
 - secure,
 - cost effective (construction & maintenance)
4. The most lasting impression of any development is created by the spaces between the buildings, rather than the buildings themselves. The roads and footways affect the arrangement, spacing and appearance of the buildings and spaces they serve. This subsequently influences the size and shape of gardens, the choice of planting, and the location of open areas and play spaces, as well as the routes for public utility service providers.
5. The layout of the street scene (highway) is therefore an integral part of the design process of any new development and should not be regarded as a separate technical task once planning approval has been granted.
6. SMART is intended to create opportunities for designers to achieve a better balance between spatial elements by balancing the physical and visual dominance of the highway to make it easier to create attractive spaces.
7. The concept of shared vehicle and pedestrian streets where safe and appropriate is now generally accepted. This increases the opportunities to develop new residential areas with innovative designs that respond to the individual characteristics of each site. However, the overall design should be fully 'inclusive' and consider the needs of all potential users of the street.
8. This is appropriate, as the nature of development sites for house building is also changing, with an increasing emphasis being placed on the re-use of previously developed land and on the development of the more challenging sites within built up areas. Development at higher densities is also being considered, to reduce the amount of 'greenfield' land needed for new housing.
9. The design of the built environment should be treated holistically, as advocated in the Manual for Streets (MfS). This draws from the historic context to inform the character of future developments and identifies the need to create a sense of place and community as a key design objective. Therefore, a closer working relationship between highway engineers, architects, urban designers, planners and landscape architects should be encouraged to recapture this sense of overall vision.
10. Shropshire Council recommends that the design of schemes should follow the user hierarchy below.

11. This hierarchy is not meant to be rigidly applied and does not necessarily mean that it is always more important to provide for pedestrians and cyclists than it is for the other modes. However, their needs should at least be considered first, followed by consideration for the others in the order given. This helps ensure that the street will serve all users in a balanced way.



12. It should be remembered that all parts and appendices of the Shropshire Manual for Adoptable Roads and Transport (SMART) must be considered in conjunction with all other relevant national legislation, best practice, planning policy statements (PPS) and guidance (PPG). The Local Development Framework Core Strategy, supplementary planning guidance and other related Development Management Policies must also be considered.
13. Within the whole of this document, appropriate links and references to appropriate related documents have been provided. However, these links and references are not exhaustive and it is the developers' responsibility to consider and identify any reference material appropriate for the development being submitted.

A.3. DESIGN CONCEPTS

14. SMART is specific to Shropshire but draws heavily on existing legislation and best practice. It aims to set out a design philosophy for all new streets within the County to deliver a better, more sustainable highway environment for the future.
15. Shropshire Council encourages innovation in design. As sites become more challenging, then the design solutions will become less standardised. Therefore, any examples of road form and layout illustrated in SMART are neither definitive nor exhaustive. This is because standards tend to become rigid and limit creativity. The important consideration is the spirit and not the letter of the law.
16. This guide should be regarded as a flexible and creative tool, which explains a philosophy and sets out principles and design objectives, while imposing the least constraint on designers.
17. To achieve the aims of SMART it is essential to recognise the opportunities and constraints of individual sites. An analysis of the site must be the starting point in the design process with the creation of a 'masterplan' and developers shall consider seeking appropriate pre-application advice from Shropshire Council. Too often in the past, designers, developers, and planners have attempted to fit all design considerations to a pre-determined road layout with disappointing results.
18. Road layouts should be designed to contribute to a distinctive spatial identity for each scheme, giving access in ways that respect the characteristics of the site whilst meeting the performance requirements of SMART.

19. The identification of the design parameters of each site can only be decided through a systematic study of the context of each site, identifying the character of its surroundings and the important features of the site. In some settlements, Village Design Statements may be a helpful way of identifying important local design characteristics.
20. The design of residential areas can also play a part in reducing the risk of crime, vandalism and opportunities for anti-social behaviour. SMART intends to aid the creation of more secure environments, where there is less actual crime and less fear of crime. To achieve this objective, road and footpath systems, landscaping and the position of buildings, should be considered in relation to their contribution to crime reduction and personal security.
21. Nearly all new development in Shropshire will be within or on the edge of existing settlements. The fundamental principle of any new built environment is to ensure its functional integration both internally and with the wider environment, in order that all movement and activities are accommodated in logical and convenient ways, both within and beyond the site itself.
22. Pedestrian and cycle routes must provide reasonably direct and safe connections to popular destinations such as schools, play areas, shops and bus stops, particularly, in mixed use projects and on re-development sites. It should also be recognised that new facilities, within such developments, provide a wider local role by attracting movement from surrounding areas. Therefore, it may be appropriate to demonstrate how these amenities on and off the site relate to the proposed road, footpath and public transport infrastructure.
23. Mixed use developments, which provide a range of employment, shopping, social and recreational facilities alongside, or as part of the residential development will help to reduce overall distances travelled to facilities and promote cycling and walking by providing amenities locally.
24. The design of any scheme has an important role as we move towards more sustainable forms of development and patterns of movement. Considerations, ranging from the location and types of facilities being provided, to designs for individual buildings which can conserve energy and reduce water use, could all contribute to a more sustainable environment.
25. It will also be important to ensure that the materials and construction techniques are appropriate for the location and will remain in a safe, durable and visually presentable condition, without the need for frequent maintenance or premature replacement.

A.4. CORE POLICIES & STRATEGY

26. The Council has set out its core policies and objectives for all new development, through the Shropshire Core Strategy, SAMDev & Supplementary Planning Guidance. This is a collection of various planning policy and planning guidance documents which play a crucial role in prioritising and shaping development in Shropshire up until 2026.
<http://shropshire.gov.uk/planning-policy/local-plan/>

27. Shropshire also produces a Local Transport Plan (LTP) 2011- 2026, which sits alongside the Shropshire Core Strategy, to ensure that the highway network is accessible to all, is well maintained and is kept in a safe state. It also aims to minimise and control the impact on the environment and rationalise the strategic development of the highway network.
<https://www.shropshire.gov.uk/public-transport/local-transport-plan/>
28. The LTP is regularly reviewed and updated, to maintain its relevance and flexibility with every changing demand and challenge. Currently, LTP4 is in the process of being adopted.
29. It is considered that these LTP documents play an important role in how individual planning applications and proposals for new development will be assessed. Therefore, this Design Guide has incorporated the appropriate flexibility to encompass the main direction of the Core Planning Policies and Guidance, as well as the Local Transport Plans.
30. The overall aim is to achieve better development, better transport, sustainable movement and in so doing improve the environment as well as the places where we live, work and spend our leisure time.

A.5. PRINCIPLES OF ESTATE ROAD DESIGN

31. This section of the guide provides advice on the principles of residential estate road design and encourages improved layouts that are designed to reflect the local context. The advice is intended to be sufficiently flexible to allow the design of road layouts that are both imaginative and suitable for adoption.
32. The primary function of the residential road is to create a safe, convenient, and attractive environment around residents' properties. It is therefore important that the highway standards and advice contained in this guide are used as part of an integrated approach to the design of residential areas and that full use is made of the range of road types and configurations included in this guide.
33. A journey has three components - leaving, travelling, and arriving. It is only during the travelling stage that vehicular movement is the major consideration. In the residential context, therefore, travelling roads would be the distributor and collector roads where drivers should have a greater sense of dominance. Previously these roads were referred to as Higher Order Roads, being primarily to facilitate movement. The Manual for Streets recommends that these be referred to as '**Roads**'.
34. All other roads are places where people live, i.e. where journeys start and finish, and the human environment takes priority over the needs of the vehicle. On these roads the 'Place' function takes priority and primary considerations are environmental quality and safety for pedestrians and cyclists. Previously, these roads were referred to as Lower Order Roads, but in accordance with the Manual for Streets, these will be referred to as '**Streets**'.

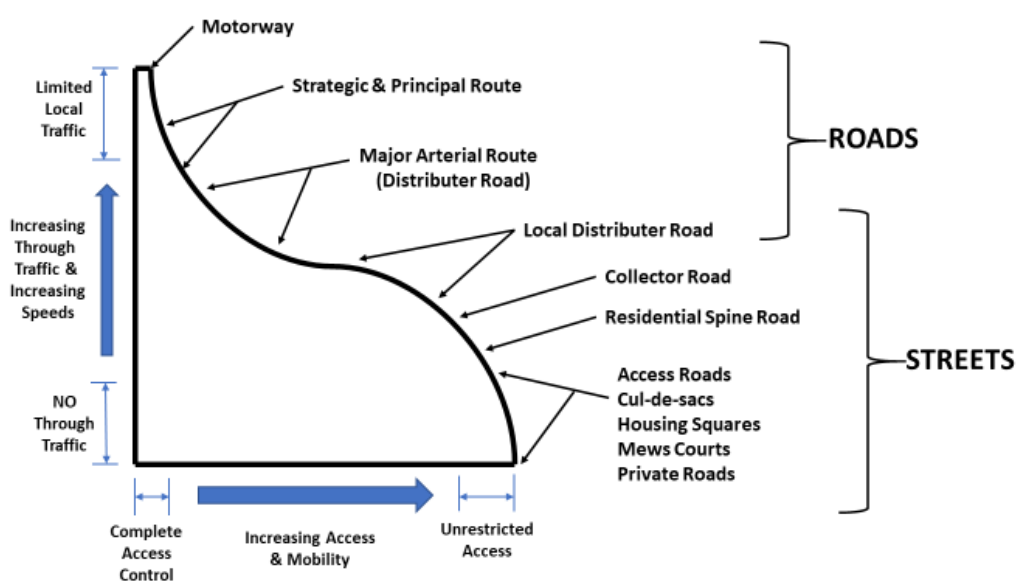
35. The principal design objectives for the highway network are:
- To achieve high environmental quality in new residential developments.
 - To ensure that the groupings of buildings, the layouts of roads, footways and spaces, combine to achieve a distinctive identity and environment for each housing development within its context.
 - To secure layouts which provide for the needs of pedestrians, cyclists, public transport, and appropriate vehicle speeds.
 - To restrict traffic within the housing area to that generated by those who live there and to those who need to be there, such as visitors, tradesmen, public utilities and refuse collection, and thus limit traffic flows near homes.
 - To provide a safe and convenient environment for all residents of new development.
 - To provide adequate access for service vehicles, including emergency service and refuse collection vehicles.
 - To ensure that the needs of the disabled are catered for. Unacceptable gradients and steps without alternative ramps should be avoided. Also, consideration should be given to the position of lamp columns, sign posts and the design of gratings etc.
 - To ensure an acceptable quality and standard of construction for adoptable areas which can be satisfactorily maintained at reasonable cost
 - To allow for the efficient provision of public utilities and other services.
36. Good highway design depends on the establishment of an appropriate Design Speed Value. The Design Speed Value of a highway is the maximum speed, which is considered appropriate. There are three controlling factors:
- Traffic volume; the number of motorists trying to use a road at a specific time affects driver tolerance towards a low design speed and hence the effectiveness of that Design Speed Value.
 - Physical discomfort for the driver; this is induced by vehicle behaviour when travelling more quickly than the design speed and is directly related to the geometric characteristics of the road.
 - Psychological unease; this arises from driving quickly through an environment which is quite obviously associated with the home and where there is a high level of visual event, pedestrian movement and children at play; this is affected by the visual perception of the layout and disposition of buildings, walls and landscaping features.
37. All three controls are important to the achievement of appropriate speeds but the most direct and effective control of speed is by careful consideration of the geometric characteristics of the road and the way it relates to its surroundings so that it is both difficult and undesirable to exceed the established Design Speed Value

A.6. ROAD HIERARCHY

38. A tree-like configuration of cul-de-sacs has become commonplace, especially in large developments. Street systems based on extensive systems of unconnected cul-de-sacs served from a local distributor road or collector road can give priority for access by car over the requirements of the pedestrian and make pedestrian routes longer and less direct.

Although they have much to commend them, other types of layout may provide better facilities for pedestrian and cycle movement and promote better social integration.

39. For example, a well-designed interconnected layout can discourage non-access traffic and ensure adequate speed restraint while providing better opportunities for bus, foot and cycle journeys. More connectivity in the street network results in shorter journey distances, greater permeability, clearer and more direct pedestrian routes and a more even spread of traffic volumes across the street system.
40. A combination of both types could therefore form the basis for a very effective design.
41. An effective hierarchy, which will signal the appropriate vehicle speed and the relative priority for vehicles and pedestrians, is mainly achieved by:
 - A clear indication of priorities between roads/streets which can be readily understood by motorists and other road users especially pedestrians and cyclists by distinctive junction design.
 - Clear changes in speed values between road/street types.
 - The distinctive appearance of differing types of road/street by the imaginative use of surfacing, junction design, edge detail, landscaping and the changing relationships between the road/street and development fronting onto it



ROADS - Defined as that part of the highway network used for the 'journey' between start/finish points

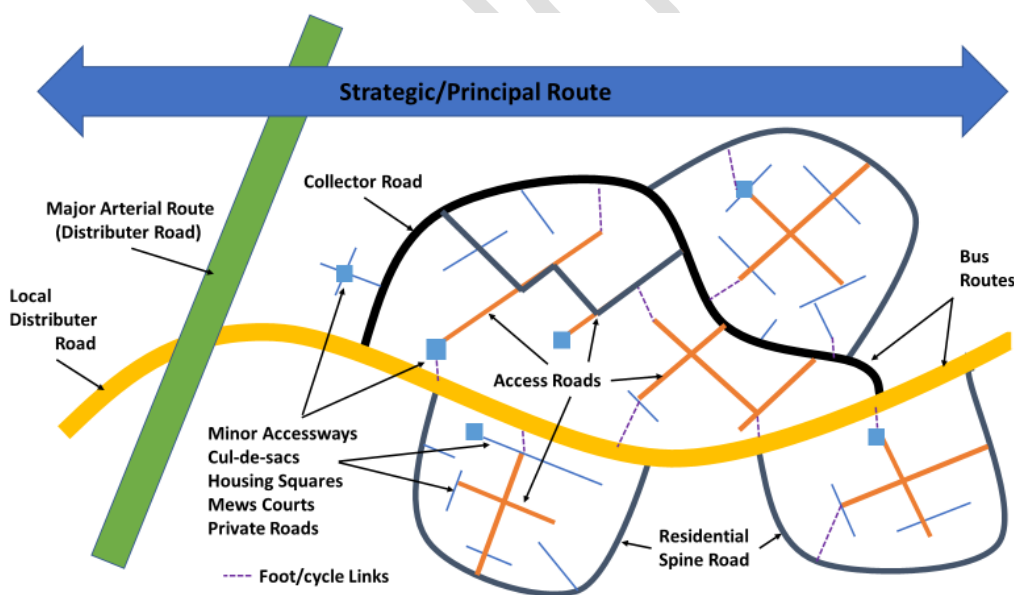
42. **Local Distributor Road** - a road distributing traffic between residential and/or industrial estates and identified communities (i.e. within a large town or between smaller settlements)
43. **Collector Road** - a residential spine road which collects traffic within a residential estate. Typically, a formal highway serving up to 500 dwellings by means of a loop road or interconnected street pattern served by at least two points of access to the distributor road network. This may be increased by 250 dwellings with each additional access point. It

provides access to Lower Order Roads, which includes a Major Access Road. The latter can form part of the same Residential Spine Road.

44. **Major Residential Access Road (or Residential Spine Road)** – this is a loop road or connected street that serves up to 300 dwellings. This street can form part of the same Residential Spine Road serving beyond 300 dwellings although to emphasise the transition a well-defined entrance feature will be required where it meets the Collector Road.

STREETS - Defined as that part of the highway network where the journey starts and/or finishes

45. **Access Road** – a loop road or connecting street serving up to 200 dwellings, or cul-de-sac serving up to 100 dwellings which gains access directly to either a Major Residential Access Road or a **Road** (Higher Order Road).
46. **Minor Access Ways** - streets serving up to 25 dwellings in the form of a cul-de-sac or up to 50 dwellings as a connecting street providing that at no point on the street there is traffic generated from more than about 25 dwellings (i.e. subject to equal traffic distribution). This can be achieved either by creating a link (two accesses onto higher category roads/streets) or by creating a loop configuration, beginning and terminating at the same junction with a higher category road/street.
47. **Mews Court** - serving no more than 25 dwellings as a loop or link subject to equal traffic distribution, or 12 as a cul-de-sac.
48. **Housing Square** - a joint use pedestrian/vehicle cul-de-sac serving up to 10 dwellings.



49.

PRIVATE STREETS – (not part of the highway network where journeys start/ finish)

50. Any proposed street serving 5 dwellings, or thereabouts, will not be adopted by the Council, as these are not considered to be of sufficient utility to the public.
51. Cul-de-sacs proposed to serve significantly more than five dwellings, may also be considered to become Private Streets (i.e. not adopted), and become the responsibility of the subsequent occupiers.

52. It is incumbent on the developer to undertake the appropriate measures to ensure that the future maintenance and management of the private street is established and continued in perpetuity. For example: through the establishment of a Maintenance or Management Company, whose terms of reference are secured by means of a Section 106 Agreement of the Town & Country Planning Act, as well as the developer seeking exemption under Section 219 of The Highways Act 1980
53. Providing careful thought is given to the design of the layout, SMART should enable all forms of housing development to be adequately served by an adopted street. Nevertheless, where private drives are used, it is recommended that they be constructed to a similar standard to that of an adoptable road to avoid future problems.

A.7. SUSTAINABLE TRAVEL, ACCESS & MOVEMENT

54. Layout designs should ensure that the convenience of access for pedestrians, cyclists and public transport operators is given priority over the need to accommodate motorised traffic. Local facilities such as shops, schools, clinics, leisure and recreation facilities should be grouped along main footpath and cycleway routes. Main footpaths and cycle routes should be built in the early phases of development.
55. Bus routes should focus on local facilities offering opportunities for interchange, and bus services should be provided at the early phases of development to establish patterns of movement. To reduce the use of private cars for local trips houses should be within 400 metres of a regular bus stop wherever possible. Ideally all houses should be less than 600 metres from a primary school or 1500 metres from a secondary school, and layouts should seek to achieve this where new schools are included in development proposals.
56. Cycling and pedestrian networks should be accessible, direct and visible. This encourages community interaction and aids natural surveillance, which discourages criminal and anti-social behaviour.
57. Further information in respect to the policies and principles of access, transport and movement are available in the following documents
 - Technical Note 12 – Shropshire Local Transport Plan (Core Document)
 - LTP4 document (<https://www.shropshire.gov.uk/public-transport/local-transport-plan/>).
 - Technical Note 13 Shropshire Bus Strategy

A.8. SURFACE WATER

58. The first consideration when ‘master planning’ a prospective new development site must be “how will the surface water be managed and/or controlled?”
59. All surface water systems **must** comply with the Shropshire Council Flood & Water Management SuDS Manual (Technical Note 5) and the SMART Part B - Specification for Highway Adoptable Assets.

60. All surface water systems should be designed to capture as much surface water as possible. The objective being to control its discharge to local streams, ponds, or to recharge aquifers through maximum use of absorbent rather than hard surfaces. Swales, filter strips and storm water balancing basins/ponds could also be provided in areas of open space to channel water over absorbent ground. Depending on ground conditions, roofs and hard surfaced areas within house plots can be drained by soakaways, where appropriate, sited a minimum of 5 metres clear of the highway boundary
61. The suitability of these features will depend upon site characteristics, together with any maintenance and/or safety aspects should be carefully considered and discussed with the land drainage authority (Shropshire Council).
62. Further information in respect to the policy and principles of surface water management is available in Technical Note 5 - Flood & Water Management & SuDS Manual

A.9. HIGHWAY DRAINAGE

63. **SUSTAINABLE FORMS OF WATER MANAGEMENT (SuDS) MUST BE CONSIDERED IN THE FIRST INSTANCE FOR ALL SITES. PLEASE REFER TO SMART PART E, TECHNICAL NOTE 5**
64. Details of the proposed highway surface water drainage systems **must** be provided for all development sites.
65. If and only when the use of more sustainable forms of drainage have been eliminated and demonstrated as unsuitable, can more traditional forms of highway drainage be considered.

DESIGN PARAMETERS

66. **(In all cases)** Calculations for traditional highway drainage system designs (i.e. gullies & pipes) will be based on a DMRB HA102 (equivalent to 5-year 15-minute storm) with flow widths of:
- 0.5m on all carriageways with footways (or other kerbed channel), or;
 - 0.75m on all carriageways adjacent to a flush soft verge, or;
 - 1.0m on carriageways which have a hard-shoulder.
 - Gully spacing shall be no less than 20m. (If the spacings are shown to be closer than this then either the vertical profile should be amended or alternatively the use of kerb drains can be considered)

EXCEEDANCE FLOWS

67. In addition, Shropshire Council's "Flood and Water Management & SuDS Manual" (Technical Note 5) requires that exceedance flows up to the 1 in 100 years plus climate change level should not result in the surface water flooding of more vulnerable areas within the site, or contribute to surface water flooding of any area outside of the development site.
68. The proposed management of exceedance flows generated by this return period **must**, therefore, also be considered and catered for. This will be demonstrated by the provision of a contoured plan of the finished road levels showing the proposed management of any

exceedance flow. (The discharge of any such flows across the adjacent land would not be permitted)

VULNERABLE AREAS OF THE DEVELOPMENT

69. Where there are any areas of the development where exceedance is likely to result in the flooding of property, or contribute to flooding outside of the development site, highway gully spacing **should be doubled over the entire length of highway contributing to the vulnerable area** to ensure a 1 in 100-year 15-minute storm is managed or attenuated on site. Where this might lead to an impractical level of gully provision (i.e. less than 20m spacing) then kerb drainage or the re-profiling of the carriageways should be considered.
70. By calculating highway gully spacings in this way it will ensure a highway surface water drainage system for a site which is fully compliant with regulations and is of a sufficiently robust design.

A.10. DESIGN OF CONSTRUCTION THICKNESS

71. The developer is required to undertake, prior to undertaking initial design, appropriate ground investigations, including: core samples, trial pits, ground penetration radar, etc., of all and any land on which a road is to be constructed, and/or where such a road is tying into an existing carriageway. This is required to establish the local ground and existing pavement conditions present, to facilitate and inform an acceptable pavement design.
72. Material taken for testing is to be sourced from trial pits, boreholes and/or cores taken through the centre line of the proposed highway at intervals of no more than 30m. However, this frequency may be amended dependent on the prevailing site conditions.
73. Where the development is to be undertaken in areas that exhibit soft ground, buried structures, landfill sites etc. special design measures may need to be considered by the Developer. The detailed design so produced to cater for these eventualities must be approved by the Council prior to any construction works taking place.
74. Sampling and testing shall be undertaken in accordance with the relevant current British Standards. All laboratory analyses are to be reported on UKAS certificates. It is possible that other reporting formats may be utilised, however, they must be approved by the Council prior to use.

A.11. ADOPTABLE CONSTRUCTION STANDARD

75. The Council requires that all new streets are constructed to adoptable standards. In exceptional circumstances this requirement may be waived, for privately maintainable roads, subject to approval of the Council. Thereafter these private streets will remain unadopted and shall be privately maintained in perpetuity.
76. Inspections of the construction of all new streets and the payment of the Council's reasonable fees for inspection, will be required as a condition of approving plans.

ADOPTION OF NEW STREETS

77. The Council will agree to adopt all new streets where it is considered appropriate. The exception will be when a street is not considered to be of sufficient utility to the public to justify it being maintained at the public expense.

78. New streets will generally not be of sufficient utility to the public and therefore will not be adopted where: -

- The Council is satisfied that the street is not and is not likely within a reasonable time to become joined to a Highway maintainable at the public expense.
- No more than 5 properties are served off a private drive on a new housing estate or are served on a street with direct access to an existing adopted road.
- No more than 7 properties in a barn conversion complex are served on a street with direct access to an existing adopted road.
- 75% of the frontages on both sides are likely to consist of industrial premises.
- In all cases where the Council adjudges the street to be of insufficient utility to the public.

VISIBILITY SPLAYS AND SIGHTLINES

79. The Council requires all visibility splays and sightlines to be within the adopted highway.

SERVICE STRIPS

80. All service strips on new developments shall have the highway boundary delineated by means of either:

- a pre-cast concrete continuous edging kerb laid flush with the surrounding surfaces, or:
- an approved pavior block, or granite sett, fixed in concrete and laid flush with the surrounding surfaces.

81. The planting and maintaining of service strips in all new developments shall be controlled by means of a licence, under S142 (HA1980)

82. The costs incurred granting the licence and an annual charge of a reasonable amount for administering the licence shall be recovered from the occupier or owner of the premises adjoining the part of the highway in question. It should also be noted that the owner/occupier will also require appropriate public liability insurance. Further information can be found in SMART: Part C – Legislation (s.142 Highways Act 1980 – Planting of trees & shrubs in the highway)

A.12. FINANCIAL CONSIDERATION

(SMART: Part E - Technical Note 5 – Bonds, Fees & Commuted Sums)

CHARGING MECHANISM

83. A charging mechanism is in place to recover the Council's costs in administering all adoptable highway infrastructure and assets.

INFRASTRUCTURE COSTS

84. The Council will seek to ensure that where improvements to the infrastructure (including highway capacity and drainage) are required to enable a new street to be developed, these costs will be borne by the Developer.

COMMUTED SUMS

85. The Council will make use of commuted sums in any highway agreement where there is a dedication of asset or transfer of liability by the developer to Shropshire Council. This will be used to cover all additional maintenance costs likely to be incurred by the Council, within the future public realm (i.e. where non-standard materials and/or where high maintenance items are used).

PRIVATE STREET WORKS - APPORTIONMENT

86. In settling the apportionment of costs, consideration will be given to the degree of benefit derived by any premises from the street works, and the amount and value of any work already done by the owners or occupiers of any premises.

87. Any premises which do not front the street, but have access to it through a court, passage or otherwise as a primary means of access and which shall gain benefit from the works shall be included in the apportionment. The apportionment shall be fixed by reference to the degree of benefit to be derived by those premises.

A.13. STRUCTURES

88. No works shall be carried out adjacent to or at the approaches to, below, or through, on, or over any existing highway structure without the written permission the Council. Such permission will be withheld where the Council considers the works, or the way the works are to be carried out, may endanger the structural condition, stability or safety of the structure. Also refer to Technical Note 6 – Structures

89. Structures supporting, carrying, spanning or adjacent to the adopted highway require technical approval in accordance with Section 167 - Highways Act 1980. All submissions will be based on the premise of DMRB - BD 2, Technical Approval of Highway Structures, published by Highways England via their website.

90. All designs are to be in accordance with Eurocodes and “Well-managed highway infrastructure” – A Code of Practice – Oct 2016, as detailed in SMART Part E -Technical Note 6 – Structures

A.14. SECURITY AND CRIME

CRIME DEPENDS ON CONCEALMENT AND ANONYMITY PROVIDES OPPORTUNITY FOR CRIME

91. Well used and overlooked streets significantly deter criminals. Therefore, the design of housing layouts can make a major contribution to the prevention of crime and anti-social behaviour, as well as alleviating the fear of crime.

92. There should be a clear definition of ownership and responsibility for all parts of a development, and defensible space around buildings. Routes through a development for all forms of movement should be as clear and direct as possible.
93. Crime reduction measures must be considered as an integral part of the overall design and moderated by the design concept for the whole residential environment. Normally this will lead designers to rely on natural surveillance and overlooking to act as a deterrent. This will also impose fewest restrictions on the permeability of the development especially for pedestrians and cyclists, whilst improving the public realm quality and opportunities for community development and interaction.
94. Security and crime deterrence will always be assisted if the following basic principles are adhered to in designing housing development:
- Front gardens, the approach to front doors and car parking areas should be visible from neighbouring houses.
 - Long segregated footpaths should be avoided, where possible footpaths should follow the line of roads and be visible to road users.
 - Any segregated footpaths should be well lit with visibility from end to end with no places where criminals can hide from view.
 - Shared car parking areas or garage courts should be no larger than 15-20 parking spaces and visible from windows in the houses they serve.
 - All open spaces should be overlooked from the front of some houses and play areas for small children should also be within earshot of nearby houses.
 - Open spaces or segregated footpaths adjoining the rear gardens of houses should be avoided wherever possible.

DEFENSIBLE SPACE

95. Designs should clearly establish the hierarchy of spaces from public to private. The spaces related to residential streets should be designed as semi-public spaces where only residents or visitors to individual houses or groups of houses are expected. These should be directly supervised from surrounding houses.
96. Front boundaries of private gardens should be clearly defined, although the boundary treatments and structural planting should be part of the overall spatial concept.
97. Private spaces in rear gardens should not be overlooked except by immediate neighbours and should not abut public or semi-public spaces without secure boundary treatment such as walls or high fences.
98. Segregated footpaths linking cul-de-sacs can provide alternative escape routes for criminals to avoid pursuit and should be used sensibly, and be overlooked by adjacent properties. Footpaths should be part of the overall movement strategy and linked to facilitate easy and direct routes for pedestrians. In high crime areas this ease of movement may need to be tempered by concerns for safety.
99. Entrances into semi-public areas should always be visible from adjoining buildings to oversee the entrance, providing natural surveillance over comings and goings.

PROMOTION OF NEIGHBOURLINESS

100. The design objectives for roads and footpaths that are set out in this guide will also assist the development of community spirit. Places which achieve these objectives will make residents feel more secure and deter crime. The key elements are:
- Safe and attractive public spaces where traffic moves slowly.
 - Direct, short connections for pedestrians and cyclists to local facilities.
 - Overlooked and supervised public spaces where residents can meet each other, children can play in safety, neighbours can support each other, and strangers can be identified.
 - All development must take account of elderly and disabled people. Care and attention need to be given to parking (and servicing) arrangements for sheltered housing and retirement homes; this includes development that, whilst not dedicated to such uses, is attractive to the elderly or infirm.

A.15. MANAGEMENT AND MAINTENANCE

101. The issue of maintainability is an important consideration in the design of any development. All schemes must therefore be designed to minimise future maintenance requirements or mitigate any on-going financial burden to the Council.
102. At an early stage, the responsibility for the future maintenance of roads, cycleways, footways/footpaths, verges and open spaces must be identified. Developers will be required to submit maintenance proposals with their planning applications indicating the intended responsible maintenance organisation for all areas of land that are not intended to be conveyed to the owners of dwellings.
103. SMART Part B Specification for Adoptable Assets & the associated Appendices, provides detailed advice on the permissible specification for the various elements of new street works, where no 'commuted sum' maintenance payment will be required. The use of alternatives should only be used where justified by the design objectives and when considerations of durability and maintainability are satisfied.
104. To ensure that new street infrastructure is retained in a safe and durable condition, developers may be required to provide a commuted maintenance payment, via a legal agreement, to offset any abnormal future maintenance costs likely to be associated with the use of some materials
105. It will be necessary to ensure that the materials used within the limits of the public highway, as well as the form and function of amenity landscaping, are acceptable to the responsible directorates within Shropshire Council. (SMART Part B - Specification for Adoptable Assets)

A.16. CARRIAGEWAY AND FOOTWAY MATERIALS

106. The following broad principles should be followed when choosing the most appropriate materials:

- In most developments the permissible range of materials attracting the least maintenance liability shall be used.
 - Modular block paving is to be avoided in adoptable areas, which are subject to traffic use, as it can fade, absorb oil, become loose/unstable and rapidly become unsightly. Where its limited use is accepted, it will be subject to a commuted maintenance payment;
 - Coloured or natural finished aggregate surface dressings can be used for small developments not exceeding 50 dwellings. They should generally be restricted to locations where such materials will provide a recognisable continuation of existing surface treatments and for the construction of some speed restraints. Their use is likely to give rise to a requirement for a commuted maintenance payment due to their limited durability.
 - In situations where the road construction is subjected to higher traffic stresses and volumes, such as at junctions, roundabouts, signalised pedestrian crossings, humps, plateaus, or other speed restraints. In these situations specialist materials will be considered to reduce the likelihood of highway construction failure and subsequent increased maintenance.
 - All footways/footpaths that accommodate utility equipment shall have a conventional surface specification to avoid attracting a maintenance payment. The construction thicknesses will also be increased in front of properties to reduce early failures and damage to services, due to vehicular overrun.
 - Similarly, all ironwork and chamber covers within the proposed adopted highway, including footways, will be to D400 specification.
 - The use of recycled or secondary aggregates should also be considered, wherever possible.
107. Further information in respect to the policy and principles of managing surface water is available in SMART: Technical Note 5 - Shropshire Council Flood & Water Management & SuDS Manual.

A.17. SOFT LANDSCAPING

108. Where landscaping is proposed within the limits of the new street intended for adoption as a publicly maintainable highway, the following broad principles should be observed:
- Tree, shrub and hedge planting should be sited well clear of utility providers. This is in order that the root systems (at maturity) will not damage underground apparatus and that the planting will not be damaged by excavations to maintain the services.
 - In visibility splays, caution is necessary in the treatment of areas critical to visibility, for highway safety reasons. This is also true in respect to street lighting and care should be taken to ensure effective illumination of the street, junctions and footways in the interests of safety and security.
 - Where areas of soft landscaping are proposed in new street areas, intended for adoption as publicly maintainable highways, it is important to ensure that a satisfactory maintenance arrangement is established and agreed with the Highway Authority so that they may be considered for adoption as a publicly maintainable highway.

A.18. ROAD SAFETY

109. Safety in housing areas must be a priority for designers and local authorities.
110. Highway safety studies indicate that the number of personal injury accidents is very much reduced where:
- traffic is moving slowly,
 - through traffic is eliminated,
 - On-street parking is minimised.
111. Potential risks must be minimised even though the level of vehicular traffic movement will be low within new housing areas. Shropshire Council will demand the desirable design speed values be achieved and a level of off-street parking provision appropriate to the location of the site and the size and type of house being provided.
112. SMART aims to achieve safe speeds by advocating a three-dimensional approach to layout design and by encouraging alternative highway layout arrangements. Vertical speed restraints such as humps and speed tables may be used as a last resort, but only as an integral element of a coherent design strategy - not as an afterthought.
113. Clear differentiation between road types is a key requirement in improving safety, influencing the way in which drivers behave and the speeds at which they travel. This can be achieved by providing distinct physical characteristics for each type of road and at the junctions between them, both in the details of the road and in the spatial environment around the highway. Shared surfaces must be clearly distinguishable from segregated highways.

A.19. SPEED RESTRAINT

114. All new residential developments containing a road system must be designed to ensure that the average speed of traffic is maintained at no greater than the “design speed” of 20 mph (30 kph). Unless otherwise directed by the highway authority.
115. The aim should always be to achieve the desirable design speed values set out in this guide by layout design. In the great majority of developments this should be using junction design and changes in horizontal alignment. This approach should be complemented with the careful arrangement of buildings and landscaping so that forward visibility and sight lines at junctions reflect the design speed.
116. It is also recognised that occasionally additional speed restraint measures may be required or may even be considered necessary to aid the overall design.
117. There are many different speed controlling devices that achieve the necessary levels of physical discomfort and psychological unease to achieve the design speed value. If necessary, these should be supplemented by changes in vertical alignment.
118. Physical restraint measures should be distinguished by use of different surface materials from the rest of the carriageway and should be well lit.

A.20. ACCESS TO BUS SERVICES

(SMART: Part E - Technical Notes 13 – Shropshire Bus Strategy)

119. Large developments are likely to lead to the introduction of specific new bus services. Operators will wish to consider adapting existing services for all but the smallest housing schemes.
120. The aim is to have at least one bus stop within 400 metres walking distance of every dwelling. This should be reduced to 200 metres on hilly sites. The type of bus to be used by operators when development is complete and the roads most likely to be used by buses should be identified at the **Design Concept** Stage.
121. Ideally the Local Distributor Road layout should permit circular routes but, in some cases, turning areas for buses may be necessary. **Roads** (Higher Order Roads) and, where appropriate, **Streets** (Lower Order Roads), should therefore, be designed to accommodate bus provision. Local bus operators should be consulted and the Council's Passenger Transport Team can also provide advice.
122. The construction phasing of large-scale developments should consider allowing bus service access to conveniently serve the development from the earliest possible time, even if this means making temporary arrangements for stops, shelters etc.
123. The Council's Passenger Transport Team can provide guidance on the need for bus stops and shelters. Where these are required they should generally be located at intervals of about 300-500 metres to satisfy local demand. Bus stops on opposite sides of a road should be staggered in order that buses stop 'tail to tail' and move away from each other. The staggered stops should be approximately 45 metres apart. Care should be taken to attempt to locate bus stops where they will not cause a nuisance or loss of privacy to residents.
124. Pedestrian routes should link to all bus stops. At bus stops, it may be appropriate, in addition to bus passenger shelters, to also locate post boxes and information boards. Where this is carried out the footway must be well lit and be widened, usually to a minimum of 3 metres.
125. Attention will be necessary to ensure that safe set-down and pick-up arrangements are made at schools for timetabled services and for special school buses that bring pupils in from other neighbourhoods. Ideally these facilities should be off-street but where this is impractical then lay-bys may be necessary and these can be extensive at larger schools.
126. Further information in respect to the policy and principles of access, transport and movement is available in TN12, 13, 14 and 15 of Part E within SMART.

A.21. FOOTWAYS AND CYCLEWAYS

127. The provision of footways, footpaths and cycleways should be considered at the masterplan stage to ensure safe and convenient access between dwellings and to local facilities such as schools, shops and employment areas. It is essential that footpaths and cycle-routes

within the site and which are to connect to external routes are established at the earliest possible time before car dependent travel habits become established.

128. The Council may require walking and cycle audits to be undertaken to ensure that schemes provide improvements to, or, at least, have no negative impact on routes used by pedestrians and cyclists.
129. Depending on the size and location of the development, the provision for cyclists may include cycleways (separate or in combination with roads or footways), and cycle by-passes may be used at traffic calming measures. Cycle stands outside shops and community facilities will also be required.
130. In developments of up to 200 houses, pedestrians and cyclists can usually be accommodated safely within the adoptable highway (i.e. carriageway and footway). For larger schemes or where small schemes combine with existing housing it may be necessary to consider the specific provision of appropriate facilities to connect to key walking and cycling routes.
131. These could take the form of cycle lanes within the road, or where this is not possible, segregated cycleways next to footpaths or footways. The need for segregated cycle routes must be considered at the masterplanning stage.
132. Cycle networks are being provided and planned jointly by the Highway Authority and Planning Authority through the Council's Cycling Strategy, along with external organisations (i.e. Sustrans) and Developers should check the latest position.
133. Roundabouts are recognised as being particularly difficult for pedestrians and cyclists. Therefore, consideration for these movements must be applied to ensure the continuity and safety of these non-motorised routes through roundabouts.
134. Footways and footpaths should be located to maximise their use by pedestrians. Routes should be as direct as possible from point to point, especially between dwellings and local shops and employment, schools, play areas and all community buildings. They should not generally be segregated from passing traffic and dwellings.
135. Pedestrian crossings such as Zebra, Puffin and Toucan crossings should be included to serve schools or shopping areas to aid pedestrian movement and safety and avoid severance between residential areas and associated amenities.
136. The provision and location of adequate places for pedestrians to cross roads is a key safety consideration and needs to be considered at the masterplanning stage. This will enable consideration to be given to combining crossing points with speed restraint measures where these are required. It will also ensure that crossings are not only convenient and safe points to cross but also on 'desire' lines. Appropriate dropped crossings and tactile paving will be required.
137. Further information in respect to the policy and principles of access, transport and movement is available in the following documents:
 - Inclusive Mobility, DfT (2005)

<https://www.gov.uk/government/publications/inclusive-mobility>

- <https://www.sustrans.org.uk/our-blog/opinion/2018/february/space-for-cycling-in-new-developments/>
- Handbook for cycle-friendly design, Sustrans (2014)
- <https://www.sustrans.org.uk/for-professionals/walking-and-cycling-infrastructure-design-guidance/>
- Building for Life 12, Design Council/Cabe (2015)
<http://www.designcouncil.org.uk/resources/guide/building-life-12-third-edition>
- Shropshire Council Cycling Guide – TN14 within PartE of SMART.

A.22. FACILITIES FOR THE DISABLED

138. Public access to any development should be equally available to all sections of the community and therefore the housing layout should consider the special needs of the disabled and elderly. Attention needs to be paid to the latest Department for Transport guidance on pedestrian crossing points and use of tactile paving surfaces.
139. Dropped kerb crossings with tactile paving on adjacent footways will be required at any obvious crossing point or junction radius area of priority junctions on Local Distributor Roads, Residential Spine Roads and Minor Access Roads.
140. The design for the construction of new footways/footpaths should aim for a general maximum gradient of 5% (1in 20) or an absolute maximum gradient of 8% (1in 12). In these circumstances special provisions might be required dependent on the circumstances e.g. handrails, landing areas, anti-slip surfacing etc.
141. Further information in respect to the policy and principles of access, transport and movement is available in Technical Note 10 - Shropshire Local Transport Plan (Core Document) and Technical Note 14 - Mobility Guidance

A.23. CAR PARKING AND SERVICING

142. The standards for off-street car parking provision should be consistent with the local area strategy in the Local Transport Plan (LTP) and/or the appropriate Local Plan.
143. All dwellings should have safe, secure and convenient parking arrangements to minimise the dangers that can be caused by on-street parking and ensure easy access for the emergency services.
144. Car parking must be considered in relation to the surrounding area to ensure existing on-street parking conditions are not compromised or exacerbated.
145. Care and attention needs to be given to parking (and servicing) arrangements for site locations which are highly accessible by walking, cycling and public transport. This also applies to instances where dwellings are provided to meet special needs where the demand for car parking is likely to be less.
146. Further information and examples of car parking and servicing arrangements can be found in Technical Note 9 of Part E – Car Parking Guide

A.24. REFUSE & RECYCLING COLLECTION

147. An area which is often overlooked during the design phase is the storage and collection of household refuse and recycling. Shropshire Council uses a system of 2 wheelie bins and several coloured boxes and bags appropriate to the type of material being recycled.
148. Not only do these bins and boxes need suitable storage within the property curtilage, but also on collection days. As these items need to be both accessible from the highway, yet not be stored in a manner which can obstruct the highway.
149. In addition, the refuse collection vehicles currently in use by Shropshire Council are generally larger than those previously used to assess estate road design and turning head geometry. Therefore, it is important that such vehicles are considered in the design and demonstrated to be able to move through the proposed development without undue hindrance.
150. Details of the vehicles specification and the Shropshire Council policies planning guidance can be found in SMART Part E, Technical Note 11.

A.25. SAFETY AUDITS

151. Safety Audits will be required to be undertaken, in accordance with national guidance (link to website) and undertaken by an independent assessor (who is not part of the design team), for all proposed works which will affect the existing public highway.
152. Safety Audits for internal streets/junctions within a new development will not normally be required, unless the proposed new street/junction is to become a public thoroughfare or an innovative design layout is being proposed.
153. Footway and verge crossings supporting minor development will generally be exempt from Safety Audit, unless requested by the Highway Authority. Therefore, early discussion with Shropshire Council, in respect to possible Safety Audit requirements, is encouraged.
 - A Stage 1 Safety Audit for any new or modified junction on to the public highway must be undertaken and submitted to support the development proposals sought through the planning process.
 - A Stage 2 Safety Audit must be submitted to support the detailed design for any proposed Section 278 Agreement.
 - A Stage 3 Safety Audit will be required following completion of any Section 278 Agreement works and any approved amendments will be implemented, at the developer's expense, prior to subsequent adoption of the S278 works.
 - A Stage 4 Safety Audit may also be required, at the Council's discretion, on all major highway improvement or enhancement schemes, delivered as part of any new development under Section 278 Agreement. Any approved amendments identified by the Audit will be implemented, at the developer's expense, within a time scale to be agreed with the Council.

A.26. TRANSPORT STATEMENTS & TRAVEL PLANS

154. Supporting documentation which may be requested to accompany planning proposals by Shropshire Council include a Transport Assessment or Statement (for smaller developments and generating less traffic) and a Travel Plan.
155. Travel Plans, Transport Assessments and Statements are all ways of assessing and mitigating the negative transport impacts of development to promote sustainable development and make the site accessible and attractive for walking and cycling.
<https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements>
156. They are generally required for developments which generate significant amounts of movements. Travel Plans are generally required to accompany Transport Assessments but can also be developed on a voluntary basis.
157. Travel Plans are typically a package of practical measures to encourage employees and users to choose alternatives to single occupancy car use and even reduce the need to travel for work at all. Travel Plans should be site specific and should offer a range of measures that will make a positive impact at that site.
158. Typical examples of measures include: car sharing schemes, flexible working schemes, offering good walking and cycle facilities, negotiating for improved public transport facilities with providers, restricting or charging for car parking, and setting up video conferencing to reduce business travel.
159. Developers are advised to check at an early stage with Shropshire Council to establish what type of document and level of information is required or desirable.

A.27. PLANNING OBLIGATIONS

160. New developments have a direct and indirect impact on the transport system in the County. Therefore, as a general principle, development should contribute towards the cost of any additional highway and transport infrastructure provision that would not have been necessary, but for their development.
161. Where a development has a specific and direct impact on the local highway and/or transport system, and where the appropriate planning tests can be applied (i.e. Necessary, Related, Fair, Relevant & in all other respects Reasonable) then a Planning Obligation, under Section 106 Town & Country Planning Act, will be sought by Shropshire Council. This is usually (but not limited to) a financial contribution, to cover the expenses incurred by the local authority in the making of legal orders, such as Traffic Regulation Orders (i.e. speed limits, waiting restrictions, etc.)

A.28. COMMUNITY INFRASTRUCTURE LEVY

162. CIL was introduced within the National CIL Regulations, and Shropshire Council was one of the first Authorities to introduce a CIL Charging Schedule. The Schedule came into effect

on the 1 January 2012 and applies to all eligible development approved after this date.
<https://www.shropshire.gov.uk/planning-policy/community-infrastructure-levy-cil/>

WORKING DRAFT