

Draft for consultation

Companion Document to

Manual for Streets



Hampshire
County Council

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Manual for Streets

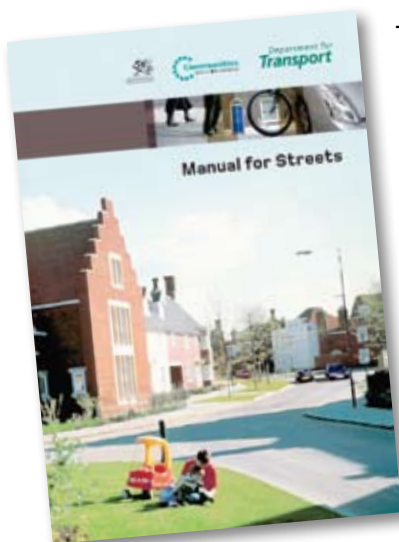
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Foreword

Introduction

Published by the Government in 2007, the 'Manual for Streets' aims to improve the quality of residential streets by providing guidance to organisations and professionals interested in their design and construction. The key difference between the Manual for Streets and earlier design manuals is that it places greater emphasis in street design on 'people and place' than on traffic movement. This means that those who help create and maintain roads and streets should take more account of 'quality of place' in their decisions.



The Manual addresses the context of streets and outlines the design process. It then deals with the principles and detailed issues of street design. The Manual is about the practical considerations of design and how practitioners should put their plans into effect.

Hampshire County Council is committed to the approach in the Manual for Streets. This 'Companion Document to Manual for Streets' is our response to the Manual: not replacing it, but sitting alongside it. The Companion Document sets out responses to specific parts of the Manual. The Document is a technical publication meant for developers, designers and planners.

Besides producing the Companion Document, the County Council is responding to the Manual for Streets through its approach to development and highway design. To reflect the Manual's principles we recommend that multi-disciplinary development teams be brought together at an early stage including highway engineers, local development planners, landscape architects, urban designers, and historic environment and biodiversity specialists. These teams should review new schemes and track them through the various stages of development, conducting quality audits, including safety and crime-prevention audits, as part of this process. The membership and size of these teams should be appropriate to the size of development, in line with the Manual's recommendations.

The design and master planning of large-scale development must take into account matters such as settlement density, green infrastructure, sustainable design and construction and how easily and safely people can walk or cycle in and around the neighbourhood. These are fundamental considerations, of which the principles of the Manual for Streets are just a part, in the creation of places that function effectively in social, economic and environmental terms. So the Companion Document is one tool among many that contribute to the creation of quality places.





By emphasising the importance of understanding context and what makes a place distinctive, the Manual for Streets challenges practitioners to ensure that design reflects or creates a strong sense of place. One way the Manual for Streets recommends for achieving this is to classify streets consistently. It suggests some possible ‘street types’ that may be used in new development, but leaves it to the design team to decide the full range of street types and their associated characteristics.

Some highway authorities have produced highway design guidance for their administrative areas as a local interpretation of the Manual for Streets. The approach in Hampshire is different, and responds to the county’s diversity of landscape and towns. Rather than prescribing design solutions, the Companion Document gives everyone engaged in the design of streets the tools to develop designs appropriate to each location. The Companion Document first sets out an approach to street characterisation that helps establish a set of baseline information that we are compiling on landscape character and townscape character. It illustrates this by looking at Lymington.

Guidance about the layout of streets, how to meet the needs of pedestrians, cyclists and drivers, street geometry, parking, signing, and lighting are all dealt with in the Manual for Streets. That guidance forms the basis of the County Council’s approach to street design and is not repeated in the Companion Document. What the Manual does not cover are the detailed technical standards for materials and construction that are needed for highways to be adopted. The Companion Document provides a series of technical papers aimed at ensuring that, by applying the principles of the Manual for Streets, new streets meet the exacting standards we require without compromising quality of design.

Section 1: Understanding streets

1.1 This section of the Companion Document explains the context and the tools needed to classify and characterise streets, under the following topic headings: The context of streets in relation to towns and the wider landscape (Landscape and Townscape Character Assessment)

- Terminology
- Classification of generic road and street types
- The street characterisation toolkit.

This amounts to:

- a list of street types, and
- a ‘toolkit’ for highway designers to analyse existing streets as the basis for identifying the elements and characteristics that, in combination, can contribute to quality of place in new streets.

1.2 The Manual for Streets (MfS) makes several references to understanding streets, as shown in these extracts from the document:

Section	Reference
1.6.1	(One of) the main changes in the approach to street design that MfS recommends is: developing street character types on a location-specific basis with reference to both the place and movement functions for each street.
3.6.20	Once the outline masterplan has been prepared, the next step will be to establish the characteristics of the various types of street that are required for the new development.
3.6.21	Street character types set out not only the basic parameters of streets, such as carriageway and footway widths, but also the street’s relationship to buildings and the private realm, and other important details, such as parking arrangements, street trees, planting and lighting.
4.7.1	Traditionally, road hierarchies (e.g. district distributor, local distributor, access road, etc.) have been based on traffic capacity. Street character types in new residential developments should be determined by the relative importance of both their place and movement functions.
4.7.2, 4.7.3	Examples of the more descriptive terminology that should now be used to define street character types are: high street; main street; shopping street; mixed-use street; avenue; boulevard; mews; lane; courtyard. The above list is not exhaustive. Whatever terms are used, it is important that the street character type is well defined, whether in a design code or in some other way.
5.4.1	Most neighbourhoods include a range of street character types, each with differing characteristics, including type of use, width and building heights. These characteristics dictate how pedestrians and traffic use the street.

The context of streets in relation to towns and the wider landscape (Landscape and Townscape Character Assessment)

- 1.3 The starting point for understanding streets is to get to know the characteristics of the place, whether rural or urban. These are covered in the updated Landscape Character Assessment (LCA) for Hampshire, and the Townscape Character Assessment (TCA) which is currently being prepared.
- 1.4 LCA is an established tool to inform land-use planning and land-management decisions that affect the landscape. It describes and evaluates the landscape at two levels: generic 'landscape types' (such as major scarps or river valley floor) and 'landscape character areas', which are specific to a geographic location (such as East Hampshire Hangers or Meon Valley). A reference to the key characteristics of a landscape character area within which a settlement is located helps in understanding the settlement in relation to the landscapes that can be seen from it, or from which it can be seen.



- 1.5 As LCA provides an understanding of the wider landscape, so TCA provides the basis for understanding the settlement. TCA is structured in the same way as landscape character assessment, with generic 'townscape types' and geographically specific 'townscape character areas'. An *overview summary* describes the relationship of the town to its setting and conveys the general character and qualities of the settlement.
- 1.6 The street(s) of interest can be located in the TCA mapping. This will establish which townscape character area(s) it falls into.



The townscape typology will enable a general understanding of the generic component parts of the town as a whole or of the different parts of the town. The townscape character area description indicates the general characteristics of the streets, blocks, plots, land use, buildings and open space within the area. This provides a starting point for the consideration of the form and function of new streets.

- 1.7 This structured approach to understanding the character of place has been applied to the understanding of streets.

Terminology

- 1.8 Street characterisation is relevant to several professional disciplines, including landscape architecture, urban design, architecture, planning, transport planning and highway engineering. It is helpful if these disciplines share a common lexicon and a consistent approach to street characterisation. First, it is important to agree on the differences between ‘road’ and ‘street’, and on the different types of roads and streets. These words are commonly interchanged, but have specific definitions:
- 1.9 The dictionary definition for **road** includes: ‘an ordinary line of communication between different places’.
- 1.10 The definition for **street** includes: ‘the road together with the adjacent houses’.
- 1.11 The thesaurus places **road** under **way**. Related words include: main road, service road, through road and arterial road. The thesaurus places **street** under **abode**. Related words include high street, avenue, lane, promenade and boulevard. This shows the need for a consistent definition of the types of road and street.
- 1.12 The Manual for Streets places road and street types in a ‘place and movement hierarchy’, as follows:



Section 1

1.13 'Roads' are dominated by traffic movement and will tend to lie in the high movement/low place status area of the hierarchy. The Companion Document will focus mainly on 'streets' with speed restrictions below 35mph, which characteristically get more pedestrian use and can contribute more to character or 'quality' of place.

Classification of generic road and street types

1.14 Roads and streets can be classified by **function**:

- By-pass/ring road
- Main road
- Service road
- High street
- Shopping street
- Residential street.

1.15 They can also be classified according to their **physical form and features**:

- Market street
- Avenue
- Boulevard
- Crescent
- Cul-de-sac
- Square
- Residential streets pre- and post-1914
- Close
- Lane
- Esplanade
- Mews
- Courtyard
- Arcade
- Alley
- Path.

1.16 The following table sets out the key characteristics of each of the road/street *functions*.

Function	Key characteristics
By-pass/ring road	<ul style="list-style-type: none"> • Dual or single carriageway roads that are designed exclusively for vehicle use • Restricted access into adjoining areas • Limited pedestrian access to cross the road • Acts as a strong barrier to lateral movement • Likely to form a boundary between townscape types and character areas, or between urban and rural areas.
Main road	<ul style="list-style-type: none"> • Single carriageway road acting as a main artery for vehicle movement through towns • Frequent intersections with residential streets • Some pedestrian use likely, but vehicles dominate.
Service road	<ul style="list-style-type: none"> • Single carriageway roads that serve large-scale employment, industrial and retail sites • Access roads to the rear of high streets and shopping streets for servicing • Mainly used by commercial and heavy vehicles, but with some pedestrian use and some footways.
High street	<ul style="list-style-type: none"> • The primary business (shopping and commercial) street of a town • Often part of or close to the settlement core • Generally high pedestrian and vehicle use • Frequent links with adjoining networks of streets.
Shopping street	<ul style="list-style-type: none"> • Secondary shopping and commercial streets • Often part of the settlement core • Generally high pedestrian and vehicle use • Frequent links with adjoining networks of streets.
Residential street	<ul style="list-style-type: none"> • Streets providing routes through residential areas, and access to properties • Vehicle and pedestrian use • Frequent on-street parking • Occasional informal on-street children's play.

1.17 The following table sets out the key characteristics of each of the road/street *forms*.

Form	Key characteristics
<p>Market street</p> 	<ul style="list-style-type: none"> • Generally the high street and part of the historic core of a town • A wide street created to accommodate market stalls • Generally wide pavements • Building frontages set on the back edge of pavements • Often flanked by buildings of high architectural and historic quality • Pavements generally surfaced with unit materials (e.g. paving slabs or bricks) • Historic features and materials such as stone entrance steps to important buildings • On-street parking.
<p>Market square</p> 	<ul style="list-style-type: none"> • Generally part of the historic core of a town • A large space with converging narrower streets; often created to accommodate a market • May be irregularly shaped • Pavements on all sides • Building frontages set on the back edge of pavements • Frequently flanked by buildings of high architectural and historic quality • Pavements generally surfaced with unit material • Historic features and materials such as stone entrance steps to important buildings • Often with a central feature (statue/fountain etc).
<p>Avenue</p> 	<ul style="list-style-type: none"> • Generally a broad street with pavements • Often with grass verges • Regularly spaced trees on both sides • Adjoining buildings, commonly residential • Buildings set back with garden frontages • Often a wide variety of frontage boundary treatments • Frequent cross-overs to provide access to frontages.

Boulevard



- Usually a wide, multi-lane thoroughfare
- Divided by a broad central reservation, often with trees or lamp columns, in paving or grass
- Can also incorporate trees on both sides of the street
- Can incorporate ornamental planting on the central reservation
- Often associated with high-quality commercial buildings
- High volume of traffic
- Rare in the UK.

Crescent



- Geometric street forming an arc or semicircle
- Variable width, but generally wide with pavements both sides
- Buildings on one or both sides
- Building frontages set on the back edge of pavements
- Generally a Georgian feature, with high-quality, tall terraced buildings, often of classical design with stepped access, creating a repeating pattern
- Pavements often surfaced with unit materials
- High level of on-street parking
- Often part of a wider area of planned, formal layout and design.

Square



- Formal, rectilinear space with roads on all sides
- Often a small local park or green space
- Mature trees and planting
- Generally associated with older parts of a town
- Often surrounded by high-quality, tall terraced buildings of classical design
- Railings often form the boundary of the open space.

Form	Key characteristics
<p data-bbox="316 255 580 331">Residential Street (Pre 1914)</p> 	<ul data-bbox="724 255 1390 779" style="list-style-type: none"> • Typically associated with suburban development since 1870 • Straight streets often set in a grid pattern, of consistent width, with pavements • Houses are typically terraced in short rows or semi-detached, set uniformly to the street, either hard to the back of the pavement or set back with small front gardens • Often show a status hierarchy, indicated by features such as position in relation to street, railings and boundary walls, tiled paths, bay windows, and other decorative features.
<p data-bbox="316 799 671 875">Residential Street (Inter-War and Post War)</p>   	<ul data-bbox="724 799 1390 1630" style="list-style-type: none"> • Variety of street forms, depending on the period of development • Carriageways of consistent width, but may be wider in some 1930s suburbs than in earlier streets. Pavements often with grass verges and trees • 1950s and early 1960s streets may include communal grassed areas with buildings set in crescents • Buildings typically set back from the street with front gardens. From the 1930s, boundaries were often low garden walls or hedges. From the 1970s, and especially the 1980s, front gardens commonly had no boundary • Late 20th century streets are often highly irregular, creating a disjointed, tight network of curving feeder streets with culs-de-sac leading off.

Cul-de-sac and close



- Generally associated with post-World War 2 residential development
- Standard width of carriageway
- Street with no exit, with turning head
- Pavements both sides, occasionally with verges
- Access to the front or rear of properties
- Properties set back in gardens, with a variety of frontage boundaries
- Occasional small trees in verges.

Lane



- Former rural road now incorporated into the urban fabric
- Irregular, informal alignment
- Varying characteristics according to context, creating three distinct sub-types: urban, suburban or semi-rural lane

Urban lane:

- close to or part of the historic core of towns
- generally narrow carriageway, with narrow pavements
- historic buildings with frontages set on the back edge of pavements



Suburban lane:

- generally incorporated into and serving residential areas
- rural character significantly altered, with kerbs, verges, pavements
- properties set back in gardens, with a variety of frontage boundary treatments

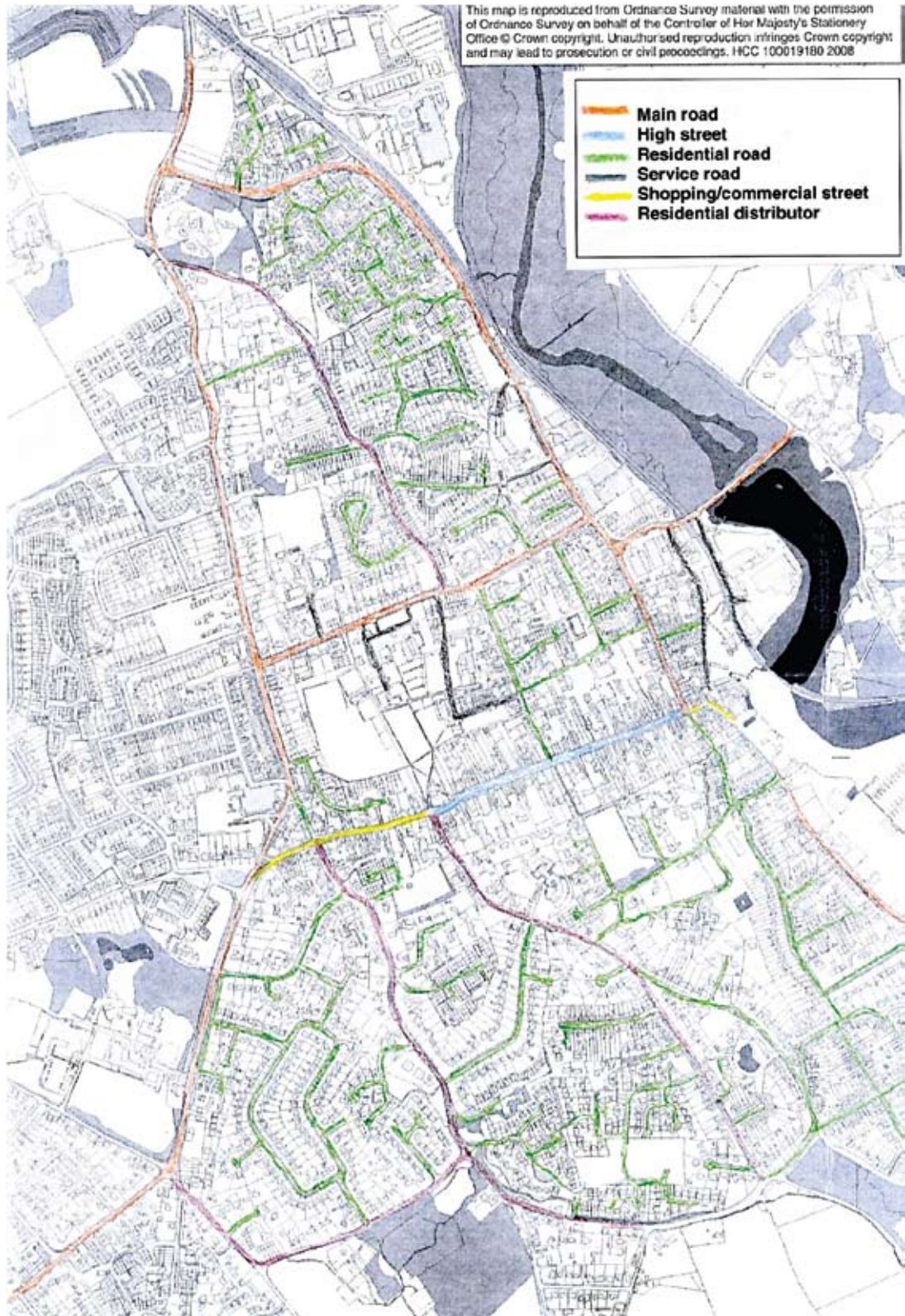


Semi-rural lane:

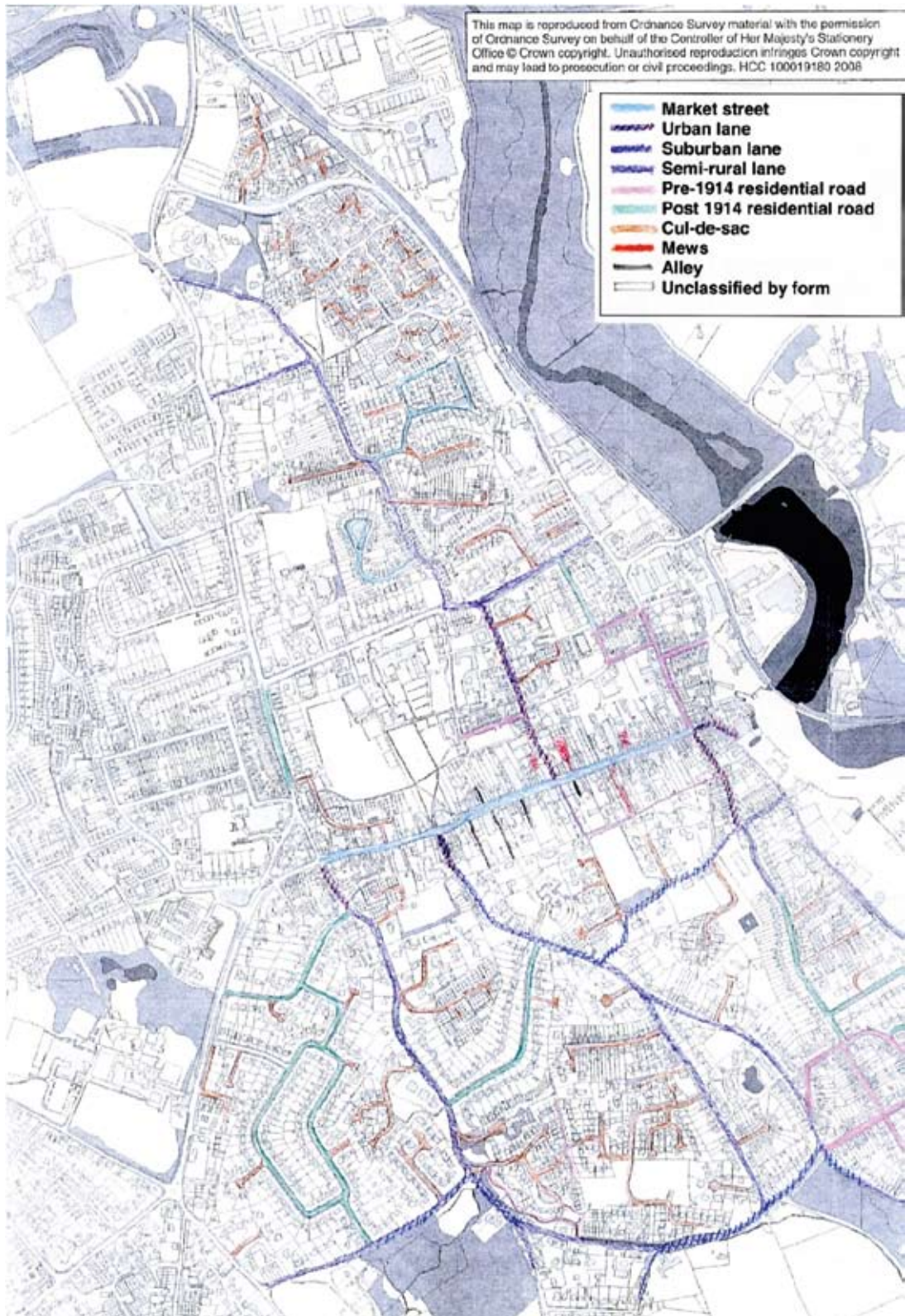
- generally incorporated into and serving residential areas
- elements of rural character still visible, including mature former hedgerow trees and remnant hedgerows; no kerbs; informal street furniture; absence of, or narrow, pavements
- Potential for conflict between vehicles and pedestrians.

Form	Key characteristics
<p>Esplanade</p> 	<ul style="list-style-type: none"> • Associated with sea-front locations • Wide level street open to the sea • Often with a wide pavement on the seaward side, forming a promenade • Landward frontage often formed by large-scale buildings with shallow frontages • Street furniture of ornamental lamp columns, seats and shelters.
<p>Mews</p> 	<ul style="list-style-type: none"> • A short, narrow no-through street in the historic core of a town • Associated with a row of former stables and carriage houses below and living quarters above, now converted to residential use • Related to the large houses that these served • Often surfaced with original materials such as stable paviers • Often with a private rather than public highway.
<p>Courtyard</p> 	<ul style="list-style-type: none"> • Principally small-scale pedestrian or off-road parking space created by the surrounding buildings/walls.
<p>Arcade</p> 	<ul style="list-style-type: none"> • Covered pedestrian shopping street.
<p>Alley/passage</p>	<ul style="list-style-type: none"> • Narrow pedestrian route, often linking a high street with rear entrances and service roads • Flanked by buildings or high walls.
<p>Path</p>	<ul style="list-style-type: none"> • Pedestrian route linking streets, generally more open than an alley • Often runs to the rear or side of properties, with a variety of boundaries.

1.18 The information above can be used as a checklist or toolkit to classify most (but not necessarily all) streets and roads in towns. On this basis the street types in a town can be mapped and described as a first step in assessing their character. The following plans illustrate this in Lymington.



Lymington streets and roads classified by function



Lymington streets and roads classified by form

The street characterisation toolkit

1.19 Character assessment means identifying and describing the elements that lend distinctiveness to a particular street. This entails asking a series of structured questions on:

- location/context
- function
- form
- features and elements
- perceptions.

The elements and characteristics are then evaluated to determine the recommendations or objectives.

1.20 **Location**

What part of the town is the street in? How does it relate to townscape character areas and types?

How does it relate to the wider area? Is it part of a network of similar streets or is it individual?

1.21 **Function**

What is the street used for (drawn from the generic classification of type)?

How do people use the street?

How do vehicles use the street?

1.22 **Form**

What shape is the street?

How wide are the carriageway and footways?

Does the street slope?

1.23 **Features and elements**

What types of buildings and other built features are present?

What are the main building materials?

Are there any landmark buildings or features?

What are the main building uses?

Are there any trees, verges or other vegetation?

What are the road surface and edging materials?

What road markings are present?

What road signs are present?

What street furniture is present?

1.24 **Perceptions**

Is the street open or enclosed?

Does it feel crowded or busy, or both?

Does it feel dangerous because of traffic activity?

Is the street degraded, unattractive or derelict?

1.25 **Evaluation**

Where are there areas of conflict in the use of the street?

In what condition are the buildings?

In what condition are the carriageway and pavements?

In what condition is the street furniture?

What features, elements or qualities need to be protected, enhanced, restored, or replaced?

1.26 The toolkit can help designers of a new settlement or major development area to understand the character of an existing town and its streets as a basis for development. The new streets (which include the buildings and their frontages) can reflect the characteristics of existing streets. Detailed understanding of existing streets also helps when planning highway maintenance.

1.27. Appendix 1 gives an example of how to apply the toolkit.

Section 2: Applying landscape, townscape and streetscape characterisation to street design and maintenance

Design of new streets

- 2.1 The design of streets is just one component of master planning and the design of new development. Several initiatives have been introduced in recent years to improve the quality of design and raise the importance of context and character. These include the Manual for Streets, with 'By Design', 'Building for Life' and the introduction of Design and Access Statements into planning applications.

Building for Life

- 2.2 The information collected from an assessment of an existing settlement and its streets, as set out in section 1, can be carried forward into a comprehensive approach to design. A useful starting point for understanding the relationship between the characterisation of existing streets and the design of new development is the set of 20 criteria for assessing the quality of design, as set out in the 'Building for Life' initiative:

Environment and community

01. Does the development provide (or is it close to) community facilities, such as a school, parks, play areas, shops, pubs or cafes?
02. Is there an accommodation mix that reflects the needs and aspirations of the local community?
03. Is there a tenure mix that reflects the needs of the local community?
04. Does the development have easy access to public transport?
05. Does the development have any features that reduce its environmental impact?

Character

06. Is the design specific to the scheme?
07. Does the scheme exploit existing buildings, landscape or topography?
08. Does the scheme feel like a place with distinctive character?
09. Do the buildings and layout make it easy to find your way around?
10. Are streets defined by a well-structured building layout?

Streets, parking and pedestrianisation

- 11. Does the building layout take priority over the streets and car parking, so that the highways do not dominate?
- 12. Is the car parking well integrated and situated so it supports the street scene?
- 13. Are the streets pedestrian, cycle and vehicle friendly?
- 14. Does the scheme integrate with existing streets, paths and surrounding development?
- 15. Are public spaces and pedestrian routes overlooked and do they feel safe?

Design and construction

- 16. Is public space well designed and does it have suitable management arrangements in place?
- 17. Do the buildings exhibit architectural quality?
- 18. Do internal spaces and layout allow for adaptation, conversion or extension?
- 19. Has the scheme made use of advances in construction or technology that enhance its performance, quality and attractiveness?
- 20. Do buildings or spaces outperform statutory minima, such as building regulations?

1.3 Criteria 06 to 16 are particularly relevant to the Companion Document and the character assessment tools that support it. The assessment tools provide a means of identifying and recording the context of a new development and also existing characteristics that the designer may wish to carry forward into a new design. These may be related to a particular quality of a street, or of adjoining buildings, or of a combination of materials that serve to contribute to a distinctive character. The table below analyses the main issue that is addressed by each criterion and identifies which of the character assessment tools to use.

Criterion	Issue	Tool
06. Is the design specific to the scheme?	The overall look and feel of a new development should be considered in relation to neighbouring buildings and the local area.	LCA TCA
07. Does the scheme exploit existing buildings, landscape or topography?	New housing should respond to and reinforce locally distinctive patterns of development, landscape and culture. Historic environments and local landmarks can help give a neighbourhood a strong sense of identity, attracting residents and investors.	LCA TCA

<p>08. Does the scheme feel like a place with distinctive character?</p>	<p>A design with character needs to be supported by strong ideas. These ideas may be about reflecting contemporary society and culture or about responding to local patterns of development and landscape.</p>	<p>LCA TCA SCA</p>
<p>09. Do the buildings and layout make it easy to find your way around?</p>	<p>A development should have a clear network of streets, courtyards and alleyways that are interesting, welcoming and people-friendly. This network should link to existing routes and developments.</p>	<p>TCA SCA</p>
<p>10. Are streets defined by a well-structured building layout?</p>	<p>A successful layout will have a framework of interconnected routes which define ‘blocks’ of housing, open spaces and other uses. Streets, squares, courts, mews, circuses and avenues are tried and tested layouts which can achieve this.</p>	<p>TCA SCA</p>
<p>11. Does the building layout take priority over the streets and car parking, so that the highways do not dominate?</p>	<p>The rigid application of highway engineering standards for roads, junction separation distances and turning circles can create an environment which is unpleasant and difficult to use, especially for pedestrians. Streets and parking facilities should be designed to improve the usability and feel of an area but not to dominate it.</p>	<p>TCA SCA</p>
<p>12. Is the car parking well integrated and situated so it supports the street scene?</p>	<p>On-street parking can bring activity to the street and have a traffic calming effect. Car parking should be designed into the scheme, making sure that the fronts of properties are not dominated by cars.</p>	<p>SCA</p>
<p>13. Are the streets pedestrian, cycle and vehicle friendly?</p>	<p>A good streetscape will offer direct connections and crossings that are convenient and easy to use. It should be well lit, feel safe and make it easy for users to find and follow a route.</p>	<p>SCA</p>
<p>14. Does the scheme integrate with existing streets, paths and surrounding development?</p>	<p>Designing well-connected layouts depends on the local context (including local security issues) and how the development relates to existing areas.</p>	<p>TCA SCA</p>

Criterion	Issue	Tool
15. Are public spaces and pedestrian routes overlooked and do they feel safe?	Developments should be planned in a way that makes sure buildings overlook all public spaces, roads and footpaths to increase surveillance.	SCA
16. Is public space well designed and does it have suitable management arrangements in place?	If public space is well designed it will result in a pleasurable place that will be popular and well used. This brings with it economic, social, environmental and cultural benefits.	TCA

Key to abbreviation of tools

LCA: Landscape Character Assessment

TCA: Townscape Character Assessment

SCA: Streetscape Character Assessment

2.4 **By Design** was published by the Commission for Architecture and the Built Environment (CABE) in 2000 and is a highly regarded guide to urban design. Understanding the local context is seen as fundamental to successful design:

‘The positive features of a place and its people contribute to its special character and sense of identity. They include landscape, building traditions and materials, patterns of local life, and other factors that make one place different from another. The best places are memorable, with a character which people can appreciate easily... Development that responds sensitively to the site and its setting...is likely to create a place that is valued and pleasing to the eye.’

2.5 Again, the assessments and tools in Section 1 provide information or mechanisms to inform design decisions.

2.6 **Design and Access Statements** were introduced in May 2006, when the government introduced changes to the planning applications process. The circular *Guidance on changes to the development control system*, effective from 10 August 2006, sets out the requirement for most planning applications to be accompanied by a Design and Access Statement.

2.7 In response to the circular, CABE has produced a guidance document *‘Design and Access Statements: how to write, read and use them’*. The guidance states that: *‘The most important message to get across is that the application is based on a good understanding of local character and circumstances. That means a good statement will explain the design process that has been followed.’*

The circular recommends that applicants follow an assessment-involvement-evaluation-design process. This closely mirrors a good design process and means that the final design will be informed by the wider context of the site.'

- 2.8 The tools outlined in section 1 of this Companion Document will contribute to an understanding of context and provide a strong foundation on which to base design decisions, including those for streets.

Maintenance of and minor changes to existing streets

- 2.9 Routine maintenance of streets can often result in the unintentional loss of character and local distinctiveness, through removing features or introducing inappropriate features, materials and finishes. Similarly, small-scale development requiring changes to a street, such as a new junction or right-turn lane, can introduce inappropriate features into a street and alter its character fundamentally. The street characterisation toolkit provides the highway engineer with a means of identifying and evaluating what is important in the street. This enables engineers and designers to protect, maintain and enhance factors that create local character, quality and distinctiveness. It equally allows them to identify factors that lower the quality of the street environment and could be tackled through the maintenance programme.

Section 3: Meeting the technical requirements for adoption of the highway

- 3.1 Manual for Streets provides guidance on the physical configuration of the highway in a range of different circumstances, but recognises that each highway authority will need to provide detail on how to meet the standards required for adoption of the highway. This Companion Document provides designers and developers with all the information needed to ensure that new highways meet the standards required and that the correct processes for adoption are followed.

Section 38 Agreements

- 3.2 Appendix 2 of this Companion Document details what the County Council requires in securing section 38 agreements. Section 38 of the Highways Act 1980 relates to the creation of new highways on land owned by anyone other than the highway authority. It is an agreement between the land owner and the authority for the construction of a new highway and its adoption by the authority as a public highway. The Appendix sets out our policies and procedures in securing adoption.
- 3.3 When we adopt a highway, we take on responsibility for its long-term maintenance, sometimes with funding (a commuted sum) from the developer to offset future maintenance costs. An agreement will cover infrastructure such as the carriageway and its footways, associated margins and earthworks, planting, service strips, cycleways and the drainage system. The way these are configured and constructed must comply with standards (such as the position of underground services and trees) and specifications (such as the minimum construction requirements for different elements of the highway).

Safety audit

- 3.4 Safety audit is a critical part of the adoption process and should be addressed at an early stage. It is undertaken by an independent auditor at various stages of the design and construction, in consultation with our own safety auditor. Highway safety is not an exact science. Under the Manual for Streets, safety auditing is regarded as a matter for decision through professional judgement in relation to local circumstances, rather than through applying rigid preset standards.

Statutory undertakers

- 3.5 The location of underground services can constrain land uses within a development. If poorly integrated, pipes and cables can result in anomalies in the finished layout, or in missed opportunities, so service provision should be designed in liaison with the utility companies.

Section 3

Margins

- 3.6 To allow for vehicle overhang, at least 0.5m is required between the kerb and any boundary. This margin can often double as a reserve for underground services, but there are particular requirements for their width and surfacing which are covered in Appendix 2.

Street names

- 3.7 Street names and the design of name plates is a District Council matter.

Legal requirements

- 3.8 There are particular legal requirements in relation to adoption. The County Council drafts the agreement, for which the developer pays a fee. The number of plans to be submitted and the colour scheme for different aspects of the adoption are set out in Appendix 2. A separate agreement, which is required for the Section 38 agreement to be signed, must be made with the water authority in relation to surface and foul-water drainage.

Fees

- 3.9 The developer is expected to meet the County Council's costs for plan approvals and site inspections related to Section 38 agreements, and separate fees are charged for our legal work. We hold a bond equivalent to the value of the work until adoption is completed.

Maintenance period

- 3.10 After construction is completed the developer is expected to maintain the highway for 12 months to ensure it is fit to hand over to the County Council. Trees and planted areas are subject to a three-year maintenance agreement. During these periods, the developer repairs or replaces any defects.

Adoption procedures

- 3.11 The developer submits as-built plans, both electronic and paper, with a colour scheme as set out in Appendix 2. Once inspections have taken place, test certificates have been submitted and water authority agreements have been fulfilled, the bond is released and the County Council becomes the owner of the highway.

Visibility

- 3.12 The Manual for Streets addresses visibility in some detail. Research and evidence has demonstrated that on roads with better visibility and wider carriageways the traffic moves faster, and traffic speed is a major factor in road accidents. Many roads built to these visibility standards have been subject

to traffic-calming measures to reduce vehicle speed. While the purpose of good visibility is to make roads safer, in some cases it can clearly be counter-productive.

- 3.13 Visibility is considered in relation to the safe stopping distance of a vehicle. In the past, rigorously applied standards have been based on measurements of driver reaction, vehicle braking performance and stopping distances developed many years ago and that recent research has since shown to be too demanding. As a result, the Manual for Streets is able to recommend guidelines for less extensive forward and lateral visibility, which can improve the quality of place and the development potential of land. We intend to apply these guidelines to highways with a regulatory speed limit of 35mph or below, and where 85% of vehicles on other roads are recorded as travelling at below 35mph. In these cases the distance from which a driver approaching a junction of a minor road with a major road can see oncoming traffic on the major road (often referred to as the x distance) will be 2.4 metres.

Tree planting

- 3.14 Trees are an essential part of our towns and villages, bringing multiple benefits to microclimate, wildlife, air quality and quality of life. They can also be expensive to maintain and can cause problems in the long term, particularly if the wrong species are planted in the wrong place. To ensure that trees can be adopted as part of the highway they should be planned for at the outset, which will minimise problems as they mature.

Construction standards

- 3.15 Appendix 3 to this Companion Document sets out the construction standards necessary for adoption of the highway. It covers excavation, drainage, carriageway, footway and cycleway construction, lighting, signs and landscape works. Any departures from these standards due to particular local circumstances will need to be agreed with the County Council.

APPENDIX 1

Illustration of the application of the street characterisation toolkit

- 1.1 The approach to street characterisation has been tested in Lymington. The following section sets out the information that was gathered and the processes followed to inform an understanding of one street, Church Lane.

Townscape Character Assessment

- 1.2 The Townscape Character Assessment provides the contextual information for the street. It is structured under three headings:

- Townscape summary
- Townscape types
- Townscape character areas

Townscape summary

- 1.3 Lymington, incorporating Pennington, is a coastal harbour town, situated where the River Boldre/Lymington River meets the Solent. The town sits on the plateau gravels of the southern coastal plains, which fall away westwards towards the Avon valley. The sea and the salt marshes of the coastal plain have particularly shaped the town.
- 1.4 The earliest part of the town probably surrounded the medieval church of St. Thomas (950 AD). The town quay was built in the 12th century, and through the medieval and early post-medieval period, Lymington was an important centre for salt production. In the 12th century, the grant of a charter enabled the town to grow. The regular layout of High Street, linking the harbour to the old town, and its offshoot lanes, is a good example of medieval planning and shows the importance of the harbour to the town. In the 19th century, the town became a centre of yacht building, an industry that continues to the present day, and has led to the popularity of the marina. Lymington's ferry link to the Isle of Wight is an important transport passage, contributing to the town's income as well as affecting its traffic management.
- 1.5 Lymington is bordered on its eastern side by the Solent and by the Lymington River. To the south-east of the town, modern housing is bordered by fields which give way to the remnants of the salt marshes. Pennington forms the western side of the town, with the most recent housing on the periphery of the area, backing onto farmland and woodland. The northern tip of the town is bordered by the railway, forming a point with the A337 Southampton Road. The railway enters the town broadly parallel with the river on its western side, and crosses the river to terminate at Lymington Pier.

- 1.6 Outside the regular planned medieval core of the town, dense housing is characteristic. Most is from the 20th century, but there are areas of 19th century housing in and close to these areas. Much of this lacks any distinctive sense of place, although some pre-20th century houses show more variation and use of local materials.
- 1.7 The A337 runs through the town from north to west passing close to the salt marshes and linking Lymington to other coastal and near-coastal settlements such as Barton and Highcliffe, eventually reaching Christchurch and Bournemouth. Lymington is popular for tourism, and is within easy reach of Bournemouth, Southampton and the New Forest National Park. This places pressure on the highway network in and around the town.

Townscape types

- 1.8 These are defined mainly by period. Many townscape types have consistent and easily recognisable features and characteristics in terms of both building styles and streets, and can be found in any town in Hampshire and beyond. The townscape types are mapped and described.

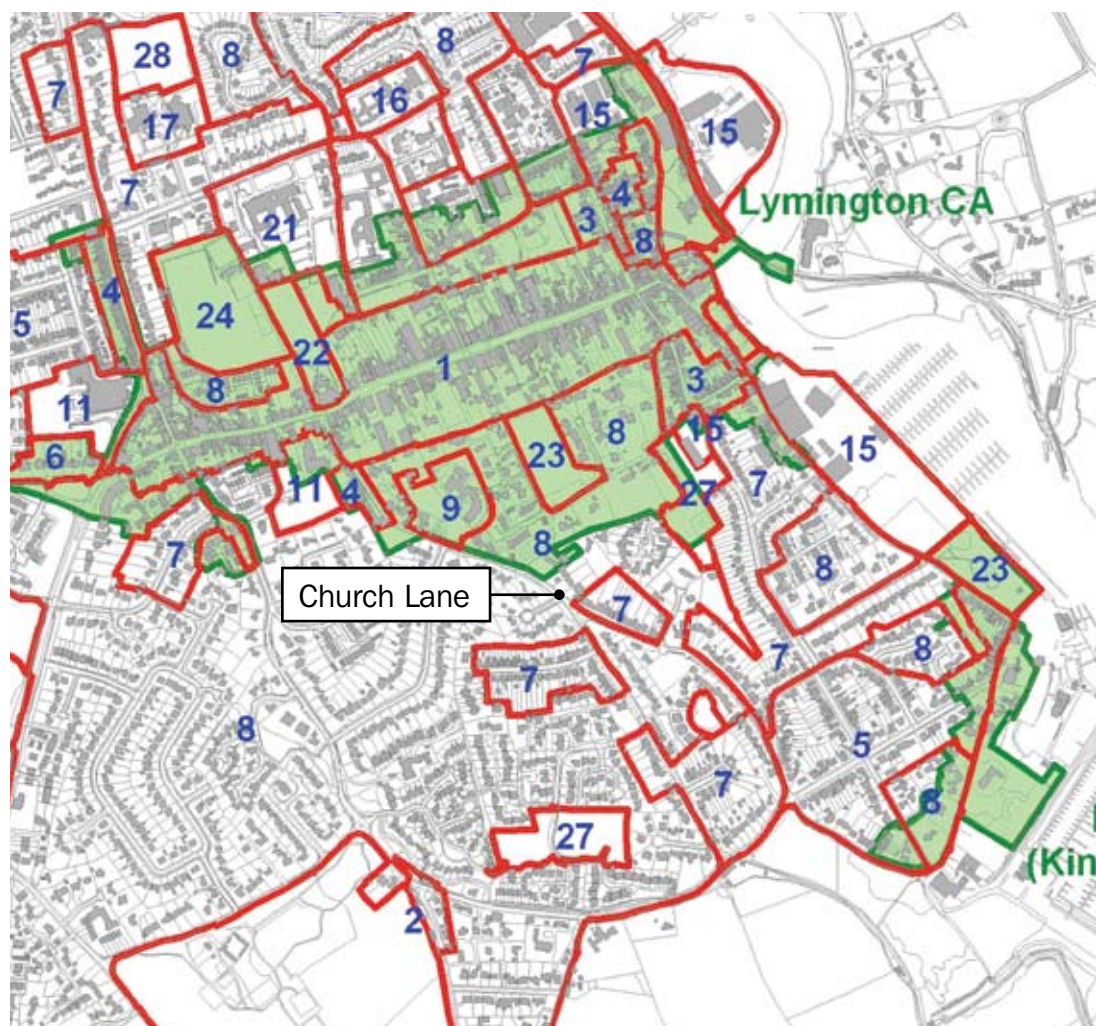


Fig 1. Extract from map of Lymington townscape types

The following are type descriptions for TCT1, TCT4, TCT8 and TCT9 through which Church Lane passes.

1.9 Townscape type description for type **01: Medieval urban settlement:**

These areas represent a town's medieval urban area, which was often deliberately planned. Not all the towns in the County will include this TCT.

Many Hampshire towns were created or underwent a significant phase of urban development in the late 12th or early 13th century which is usually evident in the form of planned burgage plots – typically long, narrow plots stretching away from a market place which may have been located in a widened street. In some cases this is the High Street; in others the market occupies a street set at an angle to the main thoroughfare. Burgage plots were usually set out with the same width, and in some cases the original plot widths are still discernible in the street frontage, but could have been sub-divided or amalgamated, even from the time of the town's foundation, to create plots of differing widths.

Areas of medieval urban settlement typically have continuous street frontages with buildings set to the back of the pavement. Access to the rear of the plots is via carriage arches or narrow passages and often by a back lane which runs along the rear boundary of the burgage plots. Today's buildings will combine commercial, office and residential uses and will typically be of two or three storeys. In Hampshire brick became fashionable in the 18th century and many timber-framed buildings which formerly overlooked the market were either replaced with more formally designed buildings or re-faced. TCT 01 will usually contain a high density of listed and historic buildings and may be designated as a conservation area.

The back land areas of the burgage plots used to provide space for workshops and gardens. The fate of such back land areas varies: where plot boundaries survive (often as high brick walls creating a series of walled gardens) they retain a high sense of enclosure and tranquillity, but some have been completely lost to the construction of car-parks, larger retail units or modern housing developments.

Within the larger area of this townscape type, TCT22 Religious/Churchyard/Precinct will often be found.

1.10 **TCT 04 Residential 1820–1849**

The period after 1820 saw a moderate increase in suburban expansion. At the start was a transition from the Georgian to the Regency period. From the middle of the period terraced housing developed, and there may be overlaps between this period and those preceding and following it.

Typically houses of this period will be of two or three storeys and are mainly of brick, which may be painted. Other surface finishes include stucco and render to imitate stone, which gained popularity when brick became less fashionable – once it had become more widely used for the houses of the working classes and industrial buildings.

Development of this period often occurred alongside existing routes into the urban area. Streets laid out at this period tend to be straight or slightly curved although more formal crescents are occasionally found.

1.11 TCT 08 Residential post-1945 – present (houses and bungalows)

The period from the end of World War II to the present has seen a range of distinctive housing estate styles, from the relatively spacious estates with communal open spaces of the 1950s to the high-density housing estates of the 1980s and 90s with intricate, twisting networks of roads giving access to cul-de-sac. While distinction between the periods is often apparent, there are no locally distinctive architectural styles.

Also within this period is the ubiquitous bungalow, a suburban form that began in the 1930s and extended into the 1970s, often with little to differentiate them stylistically by date (except where 1970s bungalows have large stone stacks).

Brick, render, and tile hanging (often green or brown) are the characteristic walling materials.

1.12 TCT 09 Residential post-1945 – present (flats)

The development of purpose-built flats is mainly a feature from the 1960s onwards. Characteristic materials are brick and concrete. Blocks of flats often have flat roofs and are set in communal grounds.

Townscape character areas

1.13 Having understood the generic townscape type components, the specific and distinctive character of the relevant part(s) of the town are mapped and described:

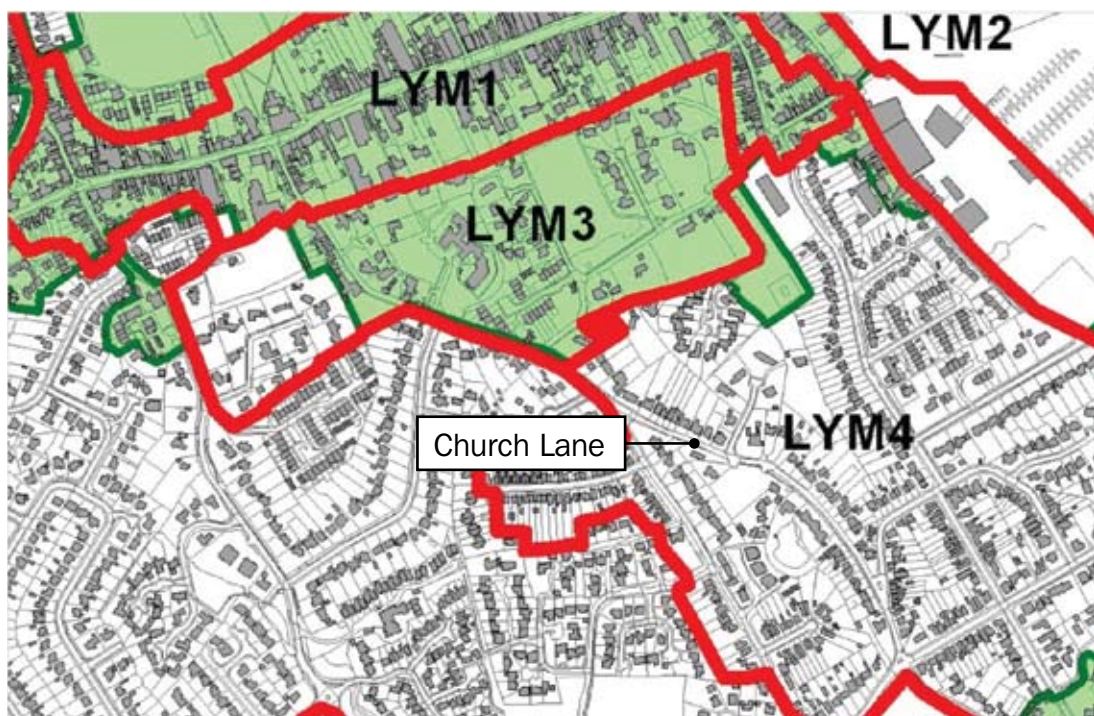


Fig 2. Extract from townscape character area map of Lymington

The following example descriptions are for character areas LYM3 and LYM4:

LYM3 Grove House environs

Boundaries and setting

This area formerly had several large houses set in generous grounds. Although most of these houses have been replaced, many of their high brick boundary walls and gate piers survive. These, with the informal lanes, give this area its distinct character despite the high level of 20th century development in the former grounds of some of the large houses. The area lies to the south of the Historic Core LYM1 and is bounded by LYM2, LYM4 and LYM9.



Key characteristics

- Quiet semi-rural area with historic routeways running through the area
- Historic brick boundary walls including two important serpentine garden walls and large gate piers
- Some surviving large detached houses of the 18th and 19th centuries.

Designations

Entirely within the Lymington Conservation Area.

There are 21 listed buildings in the area, all of which are Grade II except for the listed serpentine wall to Grove House, which is Grade II*.

Townscape types present

T C T1, 2, 4,11, 14

Topography

The land slopes gently from north to south.

Streets and property plots

The streets in this area have the character of urban and semi-rural lanes. The irregular line of Church Lane and Grove Road have the feel of historic routeways, which contrasts with the regular street pattern of the historic core and the areas of planned late 19th to 20th century development surrounding the character area. The rural feel of the area is enhanced by the mature trees and hedges.

Property plots are generally large, or at least give the impression of being so. Houses are mainly detached houses (two or two-and-a-half storeys) with some bungalows. The area of park is the former grounds to Grove House, a large house that stood to the west where the flats of Grove Place now stand. The plots within the western part of the area are smaller but contain detached houses.

Buildings and materials

The characteristic buildings of this area are its brick boundary walls, including the excellent examples of serpentine walls along Church Lane. The boundary walls, with several examples of large gate piers, make the area feel as if it contains large houses, though few survive. The 18th century East Grove is the finest house in the character area and there are some late 19th and early 20th century detached houses on Grove Road. Detached houses of early to mid-20th century date overlook the park. There has been considerable 20th century development in this area, including the flats of Grove Place and the houses in the western part of the area, which are also in the former grounds of a large house. Although most of the walls in this latter area are modern, they continue to be the dominant feature of the area.

Red brick, roughcast render and stucco with clay tile and slate for roofing are the main building materials. Tile hanging is used occasionally. The flats at Grove Place are in a pale buff brick.

Uses

This is mainly a private residential area with single occupancy houses but there are flats at Grove Place.

Vegetation

The former presence of extensive gardens to large detached houses continues to influence the character of the area, as many large trees and boundary walls have survived. The trees and some hedges alongside the principal lanes through the area reinforce its semi-rural character.

Public realm

Footpaths are narrow or non-existent in parts. Along the south edge of the park the footpath is separated from the road by a row of trees and grass verge. The park is an attractive open green space that is buffered from the road by a wide grass strip and a line of trees.

LYM4 Waterford

Boundaries and setting

This is a large area of mid-20th century residential development that infilled the area between LYM3 (where there were large houses set in grounds on the fringe of the historic urban area) and an area of late 18th and 19th century development at Waterford, which probably developed because of its proximity to a public bath near the present-day marina. LYM2, Waterfront, bounds this area to the east and LYM9 lies to the west. South of the area is open countryside stretching down to the coast.



Key characteristics

- An area mainly consisting of residential development
- Two small earlier centres of development along the north part of Bath Road in the north and along Saltern Road to the south
- Subsequent housing development, mainly from the early and mid-20th century, has in-filled the area
- Saltern Road is a relatively busy road but other streets have a quiet suburban character.

Designations

The Lymington Conservation Area extends into the northern part of the character area along Quay Road and takes in the open area south of Grove Road. The earlier core along Saltern Road lies in the Lymington (Kings Saltern) Conservation Area.

There are 12 listed buildings in the area, mostly at the north of the area along the north part of Bath Road but with four at the southern part of the character area. All listed buildings in the area are listed at Grade II.

Townscape types present

TCT3, 4, 5, 14

Topography

This is a generally flat area with a slight slope from north to south to the coastal plain.

Streets and property plots

Some of the roads through the area such as Waterford Lane and Bath Road are historic lanes leading from the town to the former salterns and bath house on the coast. Within this framework of earlier routes there is a planned, slightly irregular grid of streets of more than one phase of development; some of the irregularity probably being the result of the earlier routes.

Property plots tend to be regular within small groups representing phases of development. Houses are generally set back from the street with front gardens bounded by low walls or hedges. There are some small areas of late 20th century development which are of a higher density than the late 19th or early 20th century development.

Buildings and materials

The buildings of the area are mainly detached and semi-detached houses of two storeys. There is a short terrace of earlier buildings on the northern side of Stanley Road.

Red brick and roughcast are the main walling materials, with some painted brick. Tile and slate is used for roofs.

Uses

This is almost entirely a private residential area; there is a public house forming part of the earlier core of houses near the former bath house at the southern end of the character area.

Vegetation

While there are not many trees in the character area, there are enough, combined with garden shrubs and hedges, to make trees and greenery a feature in most views in the area. The main group of trees line the southern part of Queen Katherine Road.

Public realm

There is limited public open space in the character area. There are pavements to most streets, occasionally separated from the street by a narrow grass verge. At the east end of Stanley Road there is no pavement, where the road is lined to one side with historic buildings. The twisting road, historic buildings and lack of a pavement all contribute to the feeling of entering an area of earlier development when approaching from the east.

- 1.14 Having established the context of the street, Church Lane itself is then described and evaluated. The information is drawn from contemporary and historic mapping, aerial photographs and on-the-ground observation:

Characterisation of Church Lane, Lymington

Street type

Church Lane is a residential street. From the classification mapping shown in section 2 of this document, it is a lane, with the short northern section at its junction with the High Street being an 'urban lane' and the southern section being a 'semi-rural lane'.



Location/context

What part of the town is the street in? How does it relate to townscape character areas and types?

Church Lane lies in Townscape Character Areas Lym1, Lym3 and Lym4. It incorporates townscape types TCT1, 2, 3, 4 and 11. Oriented northwest-southeast, it joins Waterford Lane to connect central Lymington with the countryside to the south.

How does it relate to the wider area? Is it part of a network of similar streets or is it individual?

Formerly a rural lane, Church Lane is now joined by more recent residential streets. Grove Road, which joins Church Lane from the east, is also a semi-rural lane, but otherwise these are not part of a network of similar streets.

Function

What is the street used for? It is mainly a residential street with some social facilities associated with it (medical and day care centres). The main vehicle use is for access for residents to and from the town centre, as a distributor road to adjoining residential areas, and for access from outlying rural areas to the south.

How do people use the street? The narrow footway makes it difficult for two users to pass. People often step into the carriageway. A high proportion of users are elderly.

How do vehicles use the street? Vehicles generally move slowly in the northern part due to the narrowness and irregular form, which create natural traffic calming. Wider sections in the southern part provide informal parking, but vehicles move faster.

Form

What shape is the street? There are relatively short straight sections with short curves. Sudden changes create an irregular form. The southern section has a comparatively long straight stretch with greater forward visibility. There is an area of green at the fork junction of Waterford Lane and Broad Lane.

How wide are the carriageway and footways? The carriageway varies in width (x-y metres wide) with widening at the junction with High Street. Two vehicles can pass with care along the full length. There is a narrow footway (x-y metres wide) on one side only (west side from Waterford Lane to Monmouth Mews, then east side to the junction with High Street).

Does the street slope? The street falls gently and relatively evenly away from the High Street.

Features and elements

What types of buildings and other built features are present? The north end has historic (possibly Georgian?) terraced buildings of two or three storeys, mostly very individual. A mix of cottages and higher-status houses form a historic group near the junction with the High Street and along the western side of the 'urban lane'. More modern development in the south includes flats, a surgery and a day centre. There are also large individual later-20th century houses in large gardens, set back from the 'semi-rural lane' further south. Smaller bungalows and houses are in adjoining connecting streets. Brick garden walls are characteristic of the central section, with very distinctive serpentine walls on both sides of the carriageway.

What are the main building materials? Variable in the south – brick, render, pebble dash. At the north end, mainly red brick walls with some whitewash (especially on the cottages) and some colour-washed render.

Are there any landmark buildings or features? There are groups of buildings at the junction with High Street and next to Monmouth Court (one building is three-storey and dominant), and a pink colour-washed building south of this, as viewed from High Street. Serpentine walls are highly individual and distinctive.

What are the main building uses? Chiefly residential, with one commercial property linking Church Lane with High Street; the rest are for social/community use.

Are there any trees, verges or other vegetation?

Mature trees and occasional remnant hedgerows, as well as clipped hedges, form garden boundaries with the highway. There are mature trees in gardens; areas of verge on west side; and an area of green with mature trees at the fork with Broad Lane. A section of the high wall on the east side (north end) is ivy covered.

What are the road surface and edging materials? The carriageway is of tarmac. Some sections on the eastern side of the carriageway, south section, do not have kerbs. Pavements vary: the north end east side has original limestone flag paving with a stone kerb. Concrete and stable pavers are at the entrance to South End House. At the crossover on the west side, concrete slab and concrete conservation kerb change to machine-cut, smooth limestone paving and concrete kerb. From Elm Grove House the paving changes to tarmac, of varying width and sometimes with a verge.

What road markings are present? There are faded white broken lines at road junctions and on bends. Narrow yellow lines at the north end have been repainted in the south section.

What road signs are present? Very limited, non-intrusive.

What street furniture is present? Victorian pattern lamp columns (original?). Simple tubular steel road sign mounting.

Perceptions

Is the street open or enclosed? At the north end of the street the narrow footway and two-to-three-storey buildings create a sense of enclosure. South of this section, the street opens out as garden walls form the boundaries, although these contribute to a strong sense of privacy, and it becomes still more open in the southern section.

Does it feel crowded, busy or both? It has moderately heavy traffic use for a minor road, but does not feel busy as few people walk along it.

Does it feel dangerous because of traffic activity? Despite the narrow footways and restricted carriageway width, slow speeds reduce the sense of danger from traffic.

Is the street degraded, unattractive or derelict? It is generally very well-maintained and prosperous, with an informal semi-rural character in the southern section.

Evaluation

Where are there areas of conflict of use? There are potential areas of conflict between pedestrians and vehicles in particularly narrow sections of pavement, as observed at the north end.

In what condition are the buildings? The buildings are well maintained. Some boundary walls lean and their foundations are exposed in places.

In what condition are the carriageway and pavements? The carriageway is worn and its sub-base exposed, especially on the centre line. The original stone-flag area of pavement presents some trip hazards.

In what condition is the street furniture? Lamp columns in the north section have been repainted. Those in the south section need attention. Road-sign mounting is dilapidated.

What features, elements or qualities need to be protected, enhanced, restored, or replaced? Retain or enhance the semi-rural character of the southern section. Protect historic walls and consider essential repairs in the central section. Keep limestone pavings. Restore lamp columns. Replace tubular steel road-sign mounting with timber (to keep the semi-rural quality). Consider a 'shared space' approach at the north end to reduce risk of injury relating to the narrow footway.

What are the possible links with other opportunities/partners? Discuss maintenance of walls with adjoining property owners.

This information can be summarised as 'key characteristics':

Church Lane, Lymington: key characteristics

Function and use

- Former rural lane, now an 'urban lane' at the northern end with the rest being a 'semi-rural lane'
- Residential distributor road
- Moderately heavy vehicle use, with limited pedestrian use.

Form

- Gently sloping from north to south
- Mainly curvilinear form. Variable carriageway width and narrow footways create natural traffic calming
- Irregular pattern of intersecting roads and built elements.

Characteristic qualities and features

- A highly distinctive street, formerly a country lane, with diversity of character along its length. Shares some characteristics with the western end of Grove Lane
- Historic 'urban core' urban lane character in northern section up to junction with High Street, with many historic buildings and some original footway materials
- The central section has a semi-rural 'historic estate' character deriving from high walled boundaries, including highly individual snaking walls that create a strong sense of privacy. There are more modern buildings within some of these walled areas, including flats and a day centre
- Semi-rural character in southern section, with no kerbs on one side and with mature trees, hedges and a triangular green area. Mainly detached houses in large gardens, partly hidden behind hedges
- Adjoining streets (with the exception of Grove Lane) characterised by post-WW2 estate development
- Victorian or Victorian-pattern lamp columns in need of some restoration in the south section
- Buildings and built elements generally of high quality and well maintained.

Appendix 2: Technical standards and processes

Overview

- 2.1 The principles and standards for the layout of streets, how to meet street users needs, street geometry, parking, signing, and lighting are all addressed in the Manual for Streets. Those principles form the basis of the County Council’s approach to street design and are not revisited in the Companion Document. However, the Manual recognises that there is a need for the principles to be translated into clear technical standards for materials and construction that meet the needs of long term economic viability, planting, drainage and statutory services. As the Highway Authority the County Council has responsibility for the maintenance of the publicly maintainable highway network.
- 2.2 The purpose of this section is to ensure that new streets and associated areas are constructed to a standard acceptable to the County Council for adoption as publicly maintainable highway in accordance with:
- latest Section 38 precedent agreement
 - HCC policies and procedures
- 2.3 **Definitions:**
- ‘Engineer’ means the officer acting on behalf of the Director of the Environment.
 - ‘Highway Specification’ means the current version of the Highways Agency Specification for Highway Works, published by HMSO, incorporating any substitute or additional clauses or requirements as set down in this document
 - ‘Number’ refers to clauses in the Highway Specification. A list of current substitute and additional clauses is available on request from the Director of Environment.
 - ‘Developer’ means any company, body or individual, and their agents, carrying out the development.
 - ‘Highway Authority’ means the Hampshire County Council.
- 2.4 The following areas will normally be considered for adoption by the Highway Authority.
- All carriageways and footways adjacent or related to them, and any structures which are a necessary part of the highway, including highway earthworks.
 - Lay-bys, turning areas and unallocated, casual parking spaces additional to the minimum requirement for each individual unit as defined by the Planning Authority policies.
 - Margins adjacent carriageways and footways designed as an integral part of the highway
 - Service margins, strips or areas required by utility companies.
 - Visibility splays and sight lines.
 - Landscape works.

- Footpaths not related to carriageways but which form the primary access to dwellings.
- Footpaths linking housing areas, or forming part of a major pedestrian network.
- Pedestrian cycleways and greenways.
- Gullies, manholes, soakaways, headwalls and pipes, including sustainable drainage systems, concerned with the drainage of surface water from the above areas of highway.

NB: Roof water, private surface water and foul water systems are covered by an agreement under Section 104 of the Water Industry Act with the relevant water company and will not be adopted by the County Council.

2.5 **Safety Audit**

2.5.1 All new development sites to be covered by a Section 38 agreement will require a safety audit as part of the quality audit process at various stages. A safety audit must be carried out by an independent specialist at the developers expense at the following stages:

2.5.2 It is advised that at minimum, the Stage 1 safety audit is carried out and issues identified addressed prior to seeking planning permission.

Stage 1 - Preliminary Design

Stage 2 - Detailed Design

Stage 3 - Completion of Works

2.5.3 If a safety audit highlights any safety concerns which are not addressed by the developer, the County Council reserves the right not to enter into a Section 38 agreement or ultimately adopt the road.

2.6 **Statutory Undertakers and Margins**

2.6.1 Service apparatus must be considered as a basic design element of the estate and developers will need to liaise with the utility companies as part of the initial design process to ensure a coordinated approach to the routing of apparatus and the location of new or existing trees.

2.6.2 Developers must ensure that all utility company apparatus is laid or fixed to lines, levels and positions to be agreed with the Highway Authority and in accordance with National Joint Utilities Group publication "Guidelines on the positioning of Underground Utilities Apparatus for New Development Sites" Volume 2.

- 2.6.3 Utility companies have rights to lay apparatus in public highways and other controlled land. Wherever possible, services should be laid in adopted areas in order to minimise installation and repair costs and disruption.
- 2.6.4 If the adopted highway or other public space is insufficient for statutory undertakers' needs, for example where the provision of control gear is required, then the developer should provide service routes with secure easements, acceptable to the utility companies. It is the responsibility of the developer to agree easements with the statutory undertakers concerned.
- 2.6.5 Where services are to be laid in a service margin which is continuous with 'open plan' type gardens, the utility companies will normally require it to be delineated as highway (see paragraph 2.2.2) and, in special circumstances, may wish to require additional measures to protect their apparatus. The developer must ensure that the boundary of the service margin, if not otherwise defined by a fence, wall or hedge, is defined by markers along the highway verge and by a line of setts, bricks or similar laid across the private drives at the highway boundary.
- 2.6.6 Developers should make it clear to purchasers that access may be required to service margins at any time and that planting will not be permitted unless agreed with the Highway Authority and/or covered by a cultivation licence. As a further safety precaution utility companies may wish to attach a notice to meters or other apparatus warning against digging or planting in the service margin.
- 2.6.7 Where services are laid under the carriageway or where ground cover planting over service margins is proposed in conjunction with other traffic calming measures, statutory undertakers may require the provision of ducts to accommodate their apparatus. Special attention should be given to the routing of surface and foul water drains in relation to trees, shrubs and pinch points. Where the carriageway is constructed in concrete blocks the Highway Authority will require ducts. The coordination of service provision with planting proposals is essential and a multi-disciplinary approach is required. In all cases apparatus must be laid and trenches reinstated permanently prior to application of the final wearing surface.
- 2.6.8 Where there are no footways contiguous with the carriageway, highways margins for services and for the support of the highway should normally be 2.0m minimum width on at least one side of the road, measured from the outer face of the kerb, or edge restraint (see Diagram A). Generally, service margins should be placed on the side of the road that has the greater number of building frontages, in order to reduce the number of road crossings by services. Where services are to be laid, but this width is not required on the other side of the road, a margin of 1.0m minimum width should be provided. These widths should normally be regarded as minimum widths, and may need to be increased in special circumstances, for instance, where foul water sewers are to be laid within the service margin or where it is desirable to accommodate existing trees or new highway planting.

Appendix 2

- 2.6.9 At entrances to courts or squares that are paved with modular materials, water supplies may require to be metered, and ducted to individual dwellings. Access chambers will be required at changes in direction.
- 2.6.10 In certain situations, for example where no development fronts on to the carriageway, statutory undertakers may require less width of service margin. In these cases, prospective developers must be able to demonstrate that, having consulted all statutory undertakers, the collective requirements can be adequately accommodated in a reduced margin (see Diagram A). Where no public utilities, other than street lighting, are to be laid adjoining a carriageway, a margin of 0.5m minimum width must be provided to give support to the carriageway.
- 2.6.11 The minimum distance between the edge of the carriageway and any wall, fence, hedge or building should be 0.5m and where less than 1.0m must be of hard surfacing or porous paving or planted with appropriate shrubs. Species selection can be critical and professional advice should be sought.
- 2.6.12 Margins of less than 1.0m width between the carriageway and the footway should not be sown with grass. Adopted margins should be clearly defined on the ground, even though the margins may not contain statutory undertakers' plant. In vehicle turning areas where vehicle overhanging will occur, the provisions of paragraph 3.5.4 of the NJUG guidelines will apply.
- 2.7 **Street Names**
- 2.7.1 The developer is responsible for the provision of street name plates. The street name(s) and location of name plates should be agreed with the relevant District Council prior to the issue of the Certificate of Completion (ie the commencement of the maintenance period). The specification for name plates and posts will be agreed with the District Council. Where ever possible street name plates should be affixed to existing buildings, boundary walls or railings and the appropriate wayleave be provided to the District Council by the developer.
- 2.8 **Signing**
- Temporary direction signs leading to the development will only be allowed if permission is obtained from the local Highway office (tel: 0845 6035633). If temporary signs are erected without permission, these may be removed by the Highway Authority who will seek reimbursement from the developer.
- 2.9 **Programming of Works**
- The developer must notify the engineer before any works commence and provide a programme of work so that regular inspections may be carried out. Work must not commence prior to the surety in accordance with APC or S38 having been deposited.

2.10 **Section 38 Agreements**

2.10.1 Under Section 38 of the Highways Act 1980 developers can request to enter into an agreement with the County Council relating to the construction of new estate roads and associated areas which will be adopted as public maintainable highway and thereafter maintained at public expense.

2.10.2 A Section 38 agreement can only be entered into with the owner of land which is to be developed. The agreement will allow for the collection of fees associated with the approval/design check of the developers proposals and for supervision of the works.

2.10.3 The agreement will be supported by a bond of surety or a cash deposit to cover the cost of roadworks should the developer fail to meet the obligations of the agreement.

2.11 **Commuted Sums**

2.11.1 Developers will be required to pay a commuted sum towards maintenance of items that have a higher maintenance cost compared with conventional items or materials, or materials or items where their use cannot be demonstrated as fit for purpose, or would not be required save for the development.

2.11.2 Commuted sums shall be paid by the developer prior to the issue of the Certificate of Completion (ie at the start of the maintenance period).

Companion Document to **Manual for Streets**
Appendix 2

2.11.3 A schedule of items for which commuted sums will be sought is shown below:

	Item	Unit/Basis for Calculation	Notes
1	Unusual paving, surfacing and HFS	m ²	1 off replacement
2	Traffic signals including Controlled Crossing	20% of Works cost	
3	Illuminated Signs	Works cost	1 off replacement cost
4	Decorative – Non Standard Lighting	Works cost	1 off replacement cost
5	Street furniture	Works cost	1 off replacement cost
6	Bus Shelters, including passenger information and variable message signs	Works cost	1 off replacement cost
7	Structures including Culverts over 900 diameters, head walls and retaining walls	20% of Works cost	
8	Trees – new	Number	Based on Term Highway Contract rates – average cost on likely operations over 50 years
9	Trees – existing	Number	Based on Term Highway Contract rates – average cost on likely operations over 50 years
10	Shrub beds/grass/landscaping	m ²	Based on Term Highway Contract rates – average cost on likely operations over 40 years

	Item	Unit/Basis for Calculation	Notes
11	Soakaways	Works and Maintenance Cost for 25 year period	1 off replacement cost
12	Hydrobrakes	Works cost	1 off replacement cost
13	Petrol Interceptor	Works cost	1 off replacement cost
14	Pebble Drains and Linear Ditches	Works and Maintenance Cost for 25 year period	1 off replacement cost

Other items may be included in exceptional circumstances.

2.11.4 The Advance Payments Code (A P C) under Part XI of the Highways Act 1980 has been applied throughout the county for many years. Under the provisions of the Code developers are required to pay to the Council the cost of street works associated with the development. A form of surety is also acceptable. The payment/surety must be provided before works commence and failure to comply with an A P C notice may result in legal proceedings. These payments safeguard purchasers of new properties on new development as they offset potential road charges should there be a requirement for the County Council to complete the roadworks if the developer defaults. A P C notices are recorded as a local land charge and will be nullified once a Section 38 agreement has been signed.

2.12 **Legal Requirements**

2.12.1 The drafting and signing of the Section 38 agreement will be carried out by the Legal Practice of the Chief Executive's Department.

2.12.2 The developer will be required to provide copy of their title to provide documentary evidence of ownership of the land to be developed. A commons registration search must also be provided. The developer will also be required to provide copies of planning consents and notice of conditions as approved.

2.12.3 Legal fees associated with the preparation and signing of the agreement will be charged separately by the Chief Executive.

2.12.4 15 copies of the proposed road layout drawings will be required to a 1:500 scale showing the following information:

- Road layout (including road widths and sight lines)
- Surface Water Drainage
- Street lighting positions
- Road construction details
- Site location plan to 1:2500 scale
- Plot numbers
- North Point
- Red line around limits of development site
- Retained existing trees and shrubs
- Proposed tree and shrub planting details
- Surface water drainage easement details (if appropriate)

The Drawings should be coloured as follows:

Carriageway	Orange
Footways/footpaths	Brown
Verges	Green
Proposed Planning areas (including individual tree planting)	Pale green with dark green hatching for trees
Cycleways	Mauve
Surface water drainage	Blue
S W Easement	Purple
Street Lighting Columns	Red dot
Limits of Developers Ownership	Red line
Retained existing trees	Black line

The Plans will also be submitted electronically on disk as an image file (jpg) and in AutoCAD .dwg format.

2.12.5 Hampshire County Council will not enter into a Section 38 agreement unless the developer confirms that he has or will be able to enter into a Section 104 agreement with the relevant Water Authority for surface and foul water systems. Failure to enter into such an agreement will make it difficult to progress the Section 38 agreement.

2.13 **Fees**

- 2.13.1 Fees of 10% of the total estimated cost of the works or £2,000 whichever is the greater must be paid by the developer to cover the cost of checking the developer's proposals and the inspection of the works. An initial fee to cover costs of administering the Section 38 application and where appropriate, on-site inspections will be required. The fee is currently a £2,000 non returnable sum which will be deducted from the inspection and technical approval costs. The County Council reviews fees on a regular basis and these fees may change
- 2.13.2 Technical approval of any structure requires a fee of 10% of the estimated cost of the structure or £1,000, whichever is the greater.
- 2.13.3 All fees shall be paid by the developer prior to the signing of the Section 38 agreement. Legal fees shall be paid separately.
- 2.13.4 Additional inspection fees may be sought from developers if timescales within the Section 38 agreement are exceeded. An additional fee of 2% of the outstanding bond will be charged.
- 2.13.5 The Section 38 agreement will be supported by a bond. The bond figure will be the total estimated cost of the works plus the value of any commuted sums plus 10%.
- 2.13.6 The cost of any traffic regulation orders required to facilitate the works shall be paid by the developer.
- 2.13.7 The bond may be reduced at the discretion of the engineer as works progress.
- 2.13.8 The rates for the calculation of the bond are based on the Council's Term Highway Contract.

2.14 **Maintenance period**

- 2.14.1 Following the satisfactory completion of the works contained within the Section 38 agreement there will be a maintenance period of normally 12 months whereby the developer shall be responsible for the areas contained within the Section 38 agreement. During the maintenance period the developer shall be responsible for the following:
- sweeping the roads of dust/debris etc particularly the channels
 - weed control
 - cleansing of the surface water system
 - maintenance of the street lighting system
 - carrying out of any other repairs which become necessary and as directed by the engineer
 - Maintenance of soft landscaping (36 month maintenance period).
- 2.14.2 It should be noted that some types of materials (ie anti-skid surfacing) may require an enhanced regime of maintenance which will be agreed with the engineer.

- 2.14.3 In certain circumstances the normal period of maintenance may be extended with the agreement of the developer and the engineer. Maintenance periods for larger sites will vary according to the nature of the development. It is not County Council policy to adopt roads which have no direct connection to a publicly maintainable highway.
- 2.14.4 The maintenance period for trees and planted areas will be 36 months and will include annual replacement of any plant failures and weed control throughout the 36 month establishment period. The developer must provide contact details of his Representative to the Arboricultural Officer together with a copy of 'as built' drawings showing the landscaping works. A representative from the Arboriculture Section will monitor the landscaping during the maintenance period and will issue a certificate of maintenance at the end of the 3 year period subject to satisfactory establishment.
- 2.15 **Adoption procedures**
- 2.15.1 At the end of the maintenance period a final inspection will be carried out with the developer and the Engineer and a representative from the Local Highway unit.
- 2.15.2 If all remedial works have been satisfactorily completed, electrical test certificates have been received and sewers constructed under a Section 104 agreement have been vested with the appropriate Water Authority, adoption can be completed.
- 2.15.3 Adoption Plans provided by the developer must detail 'as built' works. The drawings will be checked on site to ensure that the areas to be adopted are correct and comply with the Section 38 agreement and the planning permission.
- Drawings must show:
 - all subjective and adjacent road names;
 - all constructed buildings and/or associated property boundaries;
 - the limit of the developer's ownership outlined in red;
 - the full extent of adopted highway, showing:
 - carriageways – shaded orange
 - footways – shaded brown
 - verges – shaded green
 - landscape areas (existing and proposed) – shaded green and cross dark hatched dark green
 - cycleways – shaded mauve
 - drainage easements – shaded purple
 - full highway drainage information and locations (grid references for soakaways etc);
 - full street lighting information and locations (shown by red dots);
 - Drawings must include a comprehensive key describing all colours and symbols utilised.

- All drawings must also incorporate:
 - a north point;
 - the drawing scale @ print size – e.g. 1:1250@A1
- Developers should submit:
 - one hard copy drawing
 - one CD-ROM containing corresponding electronic images
 - i) in AutoCAD .dwg format
 - ii) in .jpg format

NB: The electronic versions must precisely reflect the image supplied in hard copy. The .dwg file must be supplied with irrelevant layers excluded.

2.15.4 Upon adoption of works contained within a Section 38 agreement the outstanding bond will be released. The Chief Executive's Legal Practice will notify the surety company accordingly.

NB: A bond of 5% will remain in place in respect of landscape works and will be released upon the expiry of the 3 year maintenance period subject to a satisfactory standard being achieved at handover.

2.16 **Tree Planting**

2.16.1 This guidance encourages sustainable tree planting as an integral element of new development in Hampshire. The benefits of trees to microclimate, air quality, wildlife and the quality of life for people are well documented. The nature of high density new development, and the trend to smaller gardens, makes the provision of trees with an expectation of a healthy life to maturity a difficult ambition to achieve. The need for Local Authorities and the Highway Authority to manage trees in open spaces and the highway with modest revenue budgets has serious implications on the design of tree planting intended for adoption. Subsidence and structural damage with their associated litigation problems, interference with street lighting, underground services, costly tree canopy pruning, and the damage of tree canopies by high sided vehicles on carriageways are problems the Authorities wish to minimise, through these guidelines. Design constraints are identified in Section 19 of this Companion Guide, where they relate to trees intended for adoption by the Highway Authority.

Tree Provision: Design Issues

2.16.2 It is essential that adequate space be allocated, as part of the initial design of layouts, to provide for the scale of tree canopies sought, to maturity. Where street trees are proposed, a realistic understanding of their eventual canopy size is a fundamental guide to the selection of appropriate species, and the provision of space on the ground required to accommodate them must be designed in. Generally, large trees such as plane, oak, and lime, will not be acceptable to the Highway Authority unless placed at least 10 metres from proposed buildings. Initial design concepts of tree lined boulevards can be decimated at the detailed

design stage, when the reality of their spatial requirements is understood. Appropriate professional advice should be sought and included in the design team from an early stage.

- 2.16.3 It may be that the design of buildings, the provision of green roofs, generous balconies and roof gardens can compensate in high density development, where street trees cannot be accommodated, to achieve greenery and contact with nature above street level, or shrub and other smaller scale planting in private spaces at frontages. Trees of any scale may be accommodated in squares and perhaps at junctions, whilst smaller columnar species may be provided along the wider streets, where buildings are set back from the Highway, or within gardens.
- 2.16.4 The width of individual building frontages also has implications for street tree provision, where on street parking is proposed. Wider individual buildings allow more flexibility to include street trees between parking bays, and are characteristic of the Georgian period of some Hampshire country towns.
- 2.16.5 Close liaison between those preparing development briefs, design codes, or outline applications, and the Highway Authority is recommended to achieve tree planting proposals acceptable for Highway adoption, and at an early stage of design, as recommended in the Manual for Streets (p38, para 3.9.1, and p 127, para 11.1.2). Production of a tree planting strategy, indicating species and their spatial allocation within particular street profiles, is recommended for larger scale developments at the outline stage.
- 2.16.6 Local soils assessment and their implications for tree planting related to structures and foundations should be included. Detailed co-ordination of lighting and utility provision with tree planting proposals (and tree retention where applicable) will be required at an early stage. Mature canopy sizes will need to be shown.
- 2.16.7 Clarity regarding the location of the proposed Highway boundary and private or open space boundaries is required. This information is required to identify the future maintenance responsibilities (and therefore the design parameters to be applied) for tree planting and other infrastructure. Detailed planning application drawings must show these boundaries clearly, and the intentions for future maintenance arrangements of open spaces and streets be identified at the outline stage.
- 2.17 **Visibility Standards**
- 2.17.1 For all major/minor junctions and single lane dualling (as defined in T D 42/95) an 'x' distance (from the junction of the minor with the major road) of 2.4m is required on roads subject to a 40 mph speed limit or less.
- 2.17.2 On roads with speed limits above 40 mph an 'x' distance of 4.5m will normally be required unless these use circumstances which require a reduction.
- 2.17.3 Application of Manual for Streets criteria in relation to other aspects of junction design or new accesses within existing network continues to be formulated.

Appendix 3: Minimum Construction Standards for Residential Roads, Cycletracks, Footways and Footpaths

3.1 General Instructions

- 3.1.1 This specification should be read in conjunction with the various British and European Standards which are applicable and also the Highways Agency Specification for Highway Works (S H W). Specific attention is drawn to the lettered appendices to the S H W and the quality requirements for materials and processes therein. Design, construction and materials must all comply with the current Highways Agency Design Manual for Roads and Bridges as amended by this document. In cases of doubt or apparent conflict the specification in this document will prevail. When any material or article is required to comply with a British or European Standard the current Standard will apply. Attention is drawn to Table N G1/1 which details the levels of testing required to demonstrate compliance with the specification. The developer will be required to demonstrate that such testing has been undertaken and satisfactory results obtained before any highway infrastructure will be adopted. Additionally, the developer shall supply or make available such further materials as are required by Hampshire County Council (the Highway Authority) for audit testing to ensure compliance with the specification. Any cost incurred in respect of such sampling/testing shall be at the expense of the developer. The County Highways Laboratory may be able to assist developers in undertaking sampling/testing work by arrangement (tel: 01962 774502).
- 3.1.2 The developer is strongly advised to discuss all aspects of the work with the Highway Authority at an early stage. The purpose of this specification is to advise developers of the requirements of the Highway Authority so that roads serving residential development, once built, can be taken over as publicly maintainable. Where ranges of alternatives are suggested, these are not necessarily exhaustive, but any alternative type of construction should be a matter for discussion at an early stage between the developer and the Highway Authority. The precise specification for all materials etc to be used must be agreed with the Highway Authority before works commence.
- 3.1.3 The basic principles of design of all structures (including highway earthworks) within the highway, including general arrangement drawings, should be submitted to and agreed by the Highway Authority at an early stage. Subsequently, design details, calculations and drawings should be submitted to the Highway Authority for approval before works commence - See Clause 17. Retaining walls, where needed to support the highway, should be shown, and agreement as to responsibility for future maintenance made at an early stage in negotiations.
- 3.1.4 Developers are reminded of the need to submit for approval detailed working drawings of the road construction and the relevant numbered appendices to the specification prior to the commencement of the works, to comply with the planning consent. Works should not commence prior to the technical approval of the detailed working drawings.

3.1.5 Developers must give the Highway Authority adequate notice of the commencement of the various stages of construction, all of which need to be approved. Failure to do this may result in the Highway Authority refusing to adopt completed roads until an investigation can be carried out and/or sufficient time has elapsed to prove that the construction was adequate. If the roads fail, the costs of testing and necessary remedial works will have to be carried out by the developer before they can be adopted.

3.1.6 Developers must consult with all utility companies at an early stage, preferably before seeking formal planning consent, so that mutual agreement may be reached with the undertakings as to the relative positions of the developer's sewers and the undertakings' plants, mains and cables, and so that all mains, cables, pipes, services, chambers, poles etc can be laid, constructed or erected before the final road and footway surfaces are laid. The Highway Authority should be advised as to the outcome of these consultations. If all installations are not completed, the Highway Authority may refuse to adopt the roads until such time as all the required services have been installed, the reinstatement carried out and a sufficient period of time elapsed to ensure that the reinstatement has been carried out satisfactorily. This requirement includes the installation of street lighting cables, where appropriate.

3.2 **Preparatory Work**

3.2.1 The developer shall set out the lines and levels of the proposed carriageway, margins, drains and all other works in accordance with the drawings and shall be responsible for their accuracy. All drainage works shall be set out with proper sight rails or laser techniques to the approved levels as shown on the sections.

3.3 **Dealing with Water**

3.3.1 The formation and excavation shall be kept free from water during the progress of the works. This may involve the provision of specialised sub-grade drainage subject to the agreement of the Highway Authority. Where water is to be discharged from the site during construction the measures required to protect receiving waters shall be agreed with the Environment Agency.

3.4 **Excavations**

3.4.1. Trees, hedges and undergrowth affected by roadworks and which are subject to planning permission, the removal of which has been agreed by the District/ Borough Council, shall be taken down and the roots grubbed up and removed from the site. Care should be taken not to remove more trees and hedges than agreed in the detailed planning consent and to protect those to be retained. On site burning of waste vegetation is not permitted; mechanical shredders are to be used or alternatively vegetable waste may be removed to an appropriate composting facility.

3.4.2 Existing turf and top-soil may be removed and stockpiled near the site of the works for re-use later, however in so doing care shall be taken to minimise

damage to the structure of the soil. The location of stockpiles shall have regard to the retention of existing shrubs and trees and to eventual landscape proposals. Excavation of any material over the site of the works shall be to lines, levels and contours shown on the plans and sections. If approved by the appropriate Authority, excavated material shall be transported, spread and levelled or used in making up embankments or low ground. Any material not so required shall be hauled to a recycling facility or tip to be provided (licensed as appropriate) by the developer.

- 3.4.3 Excavations for the laying of all surface water sewers shall be to the lines and levels shown on the drawings. Where deep sewers are to be laid beneath the carriageway care shall be taken to ensure the backfilling operation is designed and executed to minimise any subsequent consolidation. This work shall be undertaken far enough in advance to ensure any consolidation of the backfill that does occur takes place before the road pavement is constructed.
- 3.4.4 Developers are reminded of the legal obligation to provide safe working conditions, including access to the site at all times. Timbering of trenches and fencing of excavations is of particular importance. Nearby public highways must be kept free of mud at all times. Wheel washing facilities shall be provided on site as directed by the Engineer.

3.5 **Ditching**

- 3.5.1 Working drawings should show details of all ditches into which surface water drainage outfalls discharge. The developer may be required to carry out certain work to these ditches and possibly to construct new ditches to ensure an efficient drainage system. Where the solution requires discharge to or conveyance along a privately owned ditch or ditches the developer shall be responsible for establishing the necessary third party permissions. Developers shall demonstrate that adequate measures are being taken to ensure that the times of concentration of water flows in ditches, as development proceeds, are adequately catered for. It may be necessary to construct temporary balancing ponds, attenuation basins or other features to prevent environmental damage during the construction phase.

3.6 **Destruction of Weeds**

- 3.6.1 The developer shall take all necessary precautions against the growth of pernicious weeds on the site of the works from the date of commencement until the termination of the maintenance period. Particular attention in this respect shall be paid to the footways and margins and planted areas.
- 3.6.2 Perennial weeds shall be destroyed by an application of a herbicide approved under the Control of Pesticide Regulations 1986 (as updated by the Control of Pesticides (Amendment) Regulations 1997), distributed at an appropriate rate onto the formation. Care shall be taken not to apply weed killer in close proximity to vegetation, trees, etc, which are to remain and only an approved selective weed killer shall be used on margins. Developers should work to an

approved Code of Practice such as that “For the Use of Approved Pesticides in Amenity and Industrial Areas” published by the National Association of Agricultural Contractors and the British Agrochemicals Association. Approval must be sought from the appropriate Authority before application.

3.7 **Existing Materials**

3.7.1 Subject to securing the necessary licences or exemptions from the Environment Agency, the stockpiling and reuse of any excavated road metal or concrete/masonry from demolition works is encouraged. Any such materials must be crushed, screened and otherwise processed such that the resultant material complies fully with the appropriate clause/s of the specification. The developer shall ensure that such recycled material is free of deleterious materials or materials hazardous to health, preferably through adoption of the WRAP quality protocol for the production of recycled aggregates. Any surplus materials arising from reprocessing shall be disposed of to a recycling facility or landfill holding the appropriate waste management licence.

3.7.2 If any historic building is to be demolished on the site, this will require prior consent of the District/Borough Council planning authority and may be subject to listed building, Ancient Monument or Conservation Area consents. The developer shall consult the Planning Authority on whether the historic building materials are to be salvaged for re-use.

3.8 **Filling**

3.8.1 Where filling is to be carried out, the permitted grade or grades of fill material to be used and the criteria for acceptability must be agreed with the Highway Authority in advance of the filling operation.

3.8.2 The developer shall be responsible for monitoring the condition of the fill material to assess acceptability throughout the period of the works. All data must be made available to the Highway Authority.

3.8.3 Fill materials may be site-won or imported although preference should be given to the use of site-won materials if possible to minimise vehicle movements to and from the site.

3.8.4 Developers are reminded that the acceptability of all earthworks materials depends to a greater or lesser extent on moisture content and approval in principle of site-won or imported material does not necessarily imply the material will be acceptable under all conditions.

3.8.5 Where site-won material is deemed unacceptable due to excess moisture or any material becomes unacceptable due to excess moisture then consideration should be given to the stabilisation of that material using lime, cement or other stabilising additives rather than importing additional material.

3.8.6 Unless otherwise agreed any turf and/or topsoil containing vegetable matter under the site of any filling shall be removed before depositing the fill material.

3.8.7 Fill shall be deposited and compacted in layers in accordance with Clauses 608 and 612 as referred to in general instructions. Each layer of fill shall be fully compacted and confirmed as being stable before any further layer is placed.

3.9 **Consolidation of Formation**

3.9.1 In all cases the formation shall be thoroughly compacted to the satisfaction of the Highway Authority and in accordance with Clause 616. Should any depressions appear as a result of the compaction they shall, unless otherwise directed, be filled in, levelled and recompacted before sub-base material is laid. Any soft spots shall be dug out, refilled and compacted as in paragraph 3.9.1 above.

Drainage of Highways

3.10 **General**

3.10.1 Arrangements for dealing with surface water runoff from any new development shall be considered at the earliest possible stage of design in accordance with the philosophy set down in the joint Defra/Environment Agency Technical Report W5-074/A/TR/1. The design for highway drainage must incorporate sufficient inlets and sufficient capacity within the system to accommodate what is traditionally regarded as a 1 in 30 year storm event plus a 30% allowance for climate change without surface water flooding. Designs must additionally consider the implications of overland water flow in the event this capacity is overtopped during more severe weather events. As part of an overall flood management strategy for the development the developer will be required to demonstrate that no properties will be damaged by flooding and that no highway will become impassable during what is traditionally regarded as a 1 in 100 year storm event plus a 30% allowance for climate change. The Highway Authority requires that all drainage designs shall be verified by an appropriately qualified and independent drainage consultant and the necessary certification made available prior to adoption.

3.11 **Groundwater Regeneration**

3.11.1 The current drainage philosophy, as set out in Planning Policy Statements, the Regional Spatial Strategy and Local Development Frameworks is that drainage should set out to mimic nature as far as possible. Wherever it is practicable rainwater falling on a site should be retained within that site to recharge underground aquifers as close to the source as possible using measures commonly referred to as Sustainable Urban Drainage Systems (SUDS).

3.11.2 Reference should be made to the Interim Code of Practice for Sustainable Urban Drainage Systems published by the National SUDS Working Group regarding implementation, adoption and ongoing maintenance of SUDS.

3.11.3 Wherever possible, hard surfaces other than highway should be permeable to rainwater, to avoid piped drainage and surges in watercourses whilst aiming to maximise percolation into groundwater.

- 3.11.4 The same overall philosophy applies to highway surface water drainage, however, it must be recognised that local factors may sometimes over-ride this general policy in respect of the infiltration of highway surface water. Developers should consult the Environment Agency regarding constraints on groundwater regeneration, considering Groundwater Source Protection Zones, proximity to “special” sites e.g. S S S I’s, S P A’s, S A C’s, RAMSAR etc as well as overall flood risks. Particular attention is also drawn to restrictions on infiltration drainage in the Horndean/Rowlands Castle area, where such drainage may exacerbate or encourage the development of swallow holes.
- 3.11.5 Where SUDS are appropriate for highway drainage the location and extent of any balancing pond(s), swales, permeable paving, soakaways or other measures to deal with storm water drainage must be agreed by the developer with the Environment Agency and the Highway Authority at a very early stage (prior to planning application) as the resulting land-take may dictate the overall layout of the development. It is often impossible to impose SUDS retrospectively.
- 3.11.6 SUDS are to be designed in accordance with The SUDS Manual (C I R I A Document C697). As with all drainage, due consideration must be paid to the consequences of surface water flow in the event SUDS features are over-topped. To minimise and preferably avoid such occurrences the developer must also work up a forward maintenance plan for all SUDS features such that appropriate commuted sums can be set aside to fund the necessary maintenance after adoption.
- 3.11.7 Where drainage systems rely on infiltration the developer must undertake a soil/ groundwater survey to characterise the underlying strata including infiltration testing at representative locations/depths and monitoring groundwater levels over time to confirm that infiltration is a viable proposition. The Environment Agency requires a minimum of one metre clearance between the base of any infiltration feature and the maximum ground water level. The fieldwork and analysis shall be carried out in accordance with the general guidance contained in the C I R I A report 156 “Infiltration Drainage – Manual of Good Practice”, using the design method specified in Building Research Establishment Digest 365.
- 3.11.8 Where infiltration drainage is not appropriate or not permissible for some other reason the water utilities and/or the Environment Agency will advise on site discharge rates and whether surface water run-off from highway areas will be accepted into existing open ditch /watercourse systems (including any pre-treatment necessary) or whether a piped surface water sewer must be used.
- 3.11.9 The principal objective is to resolve these issues at the planning application/ permission stage, so that there is no uncertainty as to the location of drainage features and which agency will be responsible for the adoption and future maintenance of such facilities.

3.12 **Piped Surface Water Sewers**

- 3.12.1 If the highway drainage is to form part of a piped sewerage system being offered for adoption, then the sewers shall be constructed in accordance with “Sewers for Adoption – A Design and Construction Guide for Developers” issued by the Water Authorities Association.
- 3.12.2 Where positive drainage systems are to be provided there should be a presumption in favour of conventional gully gratings in the channels for ease of maintenance. However, where gully gratings are not appropriate e.g. in on-carriageway cycle-routes or on very slack gradients then Weir Kerbs or combined Kerb/Drainage systems may be considered at the discretion of the Highway Authority, subject to the following restrictions.
- 3.12.3 Where combined Kerb/Drainage systems are to be permitted the capacity of the system shall be designed using the same criteria as for a conventional gully and pipe system and carriageway geometry shall be designed and the finished road level installed to afford effective drainage of surface water to inlets in the kerb face.
- 3.12.4 Sumps for the collection of silt and detritus shall provide the same degree of protection to water quality as a conventional trapped gully pot and shall be of the same capacity and provided at the same frequency as for a conventional gully and pipe system. Additional access points for rodding and jetting shall be provided at each significant change in direction, wherever the cross section of units is reduced (e.g. at dropped crossings) and in any case at a spacing of no greater than 25m.
- 3.12.5 Where Kerb/Drainage units of multipart construction are proposed it will be necessary to demonstrate that the units will not be dislodged/damaged due to potential over-riding by goods vehicles. Kerb/Drainage units of multipart construction will not be permitted in areas of block paving due to the reduced frontal restraint provided by this type of construction.
- 3.12.6 Combined Kerb/Drainage will not be permitted adjacent to any grouted surfacing due to the tendency for grout to enter and block such systems.
- 3.12.7 Where combined Kerb/Drainage systems are proposed the developer will be required to work up a forward maintenance regime compatible with each specific location and where maintenance costs will be significantly greater than for a conventional gully and pipe system then an appropriate commuted sum will become payable.
- 3.12.8 Pits and trenches shall be in conformity with Clause 502 and H A 40/01 as referred to in the general instructions. Trench sides shall be adequately supported at all times to minimise disturbance of soils beneath the road formation.
- 3.12.9 Soft spots in the bottom of drainage trenches shall be removed and the void backfilled as specified in Clause 502. Any void due to over-excavation shall be treated in a similar manner.

Appendix 3

- 3.12.10 Power rammers shall not be used over pipes on the first 300mm of any filling. No trench shall be backfilled without the approval of the Highway Authority. Backfilling shall otherwise be in accordance with Clause 505.
- 3.12.11 Where it becomes necessary to undertake excavation of the completed road surface prior to adoption the excavation shall be reinstated generally in accordance with Highway Standard Detail drawing HCC9/C/090 except that the surface course shall be reinstated over the full width of the carriageway and over a minimum length of 10metres.
- 3.13.1 Flat-bottomed, horseshoe-shaped plastic pipes are not permitted for drainage purposes in Hampshire. Other pipes complying with Clause 501 (including twin-wall plastic pipes with an appropriate B B A certificate for Highway drainage) shall be coupled together by means of approved flexible watertight joints to Clause 504. In all cases pipes of adequate strength and with suitable bedding shall be used in accordance with the principles laid down in HA40/01. Pipelines shall be laid to tolerances set out in Clause 503.1. Pipes laid within the highway should have a minimum cover of 1.2m. Where this is not practical, special protective measures may be required such as concrete bed and surround in accordance with Clause 504.5 or ductile iron/steel pipes suitably protected against corrosion. Any such measures must be agreed with the Highway Authority and the utility company/ies involved prior to construction as should any additional measures required to protect shallow services during construction.
- 3.13.2 Any pipe in excess of 900mm in diameter is considered to be a culvert and thereby subject to structural approval. The use of large diameter pipes under the highway for attenuation purposes is not encouraged because of difficulties with inspection and maintenance. Under circumstances where under -carriageway attenuation is required, additional runs of conventional sized pipes, which can be maintained in a conventional manner, is the preferred solution. Where large diameter pipes are unavoidable, such structures must be designed such that they can be accessed without the need for road closures and be subject to full structural approval. An appropriate commuted sum will be payable to cover ongoing inspection and future maintenance.
- 3.13.3 Connections to existing systems shall comply with Clause 506.
- 3.14 **Testing of Drains and Sewers**
- 3.14.1 Developers shall ensure that testing to confirm integrity and effectiveness of all drains and sewers that pass under the highway is carried out before construction of any part of the carriageway or footway. Any defects discovered as a result of these tests shall be made good before carriageway or footway construction begins.
- 3.14.2 Drains and sewers up to and including 750mm diameter will be required to hold an air or water test as set out in Clause 509. Drains and sewers with a greater

diameter than 750mm will be visually inspected. In addition, the developer will be required to undertake a CCTV survey of all highway surface water drainage runs connecting into manholes, in accordance with the specification produced by the Water Research Centre, including a requirement for pre-cleaning as appropriate. Any defects identified by means of this survey shall be remedied by the developer at his cost prior to final adoption of the road. Drains should be thoroughly cleaned immediately prior to adoption.

- 3.14.3 At surface water outfalls into ditches/balancing ponds, etc. headwalls shall be constructed in concrete, bag work or brickwork in accordance with Highway Standard Detail Drawings HCC9/D – 090, 095, 100, 105, 110 or 115 as appropriate. Concrete for this purpose shall comply with Clause 2602 (ST5). Bricks shall be HD type Class B solid engineering bricks conforming to the requirements of BS EN 771-1. Cement mortar shall be designation (iii) as specified in Clause 2404 as referred to in the general instructions. Weirs and/or hydrobrakes shall be incorporated as appropriate to control discharge rates. Grilles shall be fitted as appropriate to limit access and appropriate measures put in place to ensure the adopting authority can gain access for future maintenance.
- 3.14.4 Prior to adoption the internal surfaces of gullies, combined kerb/drainage units, chambers, drains and sewers are to be flushed from end to end with water and left free from obstructions and deleterious matter, without such matter being passed forward into existing public sewers or watercourses.
- 3.14.5 Particular care should be given to the detailing of headwalls, grilles, etc to ensure that their appearance is in character with their location.

3.15 **Standard Details of Manholes and Other Drainage Features**

- 3.15.1 The Developer should refer to Hampshire County Council “Highway Standard Details for Gullies, Catchpits, Manholes, Soakaways, Headwalls and Protection to Ditches and Watercourses.”
- 3.15.2 Gully gratings and manhole tops shall be of ductile iron complying with BS EN 124 : 1994. Manhole covers in all carriageway situations and any areas subject to overriding shall be Class D400. Manhole covers shall be set flush with the surface. Gratings shall be of the ‘captive hinge’ type and shall include a non-rock feature when located in the kerbside (group 3) or carriageway (group 4) of roads. The orientation of slots to be as Table 5, from 45° to 130° in relation to the direction of traffic. (Groups 3 and 4 and Table 5 refer to BS EN 124.) Hinges shall be specified and gratings installed such that if left open accidentally any contact by a passing vehicle would be likely to close the cover. **Only UKAS approved third-party quality-assured products carrying the BSI kite mark or equivalent are to be used.** The frames shall be set in polyester resin mortar over the gully to a tolerance of -5 to -10mm from the specified level, and the surface course shall be rolled down locally to be flush with the surface of the grating.

3.16 Hydraulic Design and Gully Spacings

- 3.16.1 Reference should be made to documents published by Hydraulics Research Limited, Wallingford and the Highways Agency:
- Design and analysis of urban storm damage – volume 1, 3 and 4
 - Tables for the hydraulic design of pipes and sewers and channels (8th Edition)
 - HA102/00 “Spacing of Road Gullies” – giving due consideration to HA 71/06 “The Effects on Flooding of Highway Construction on Flood Plains”.
- 3.16.2 Wherever possible, manholes and inspection covers, particularly those pertaining to soakaways, should be placed in areas of adopted open space rather than in the carriageway or in cycle track surfaces.
- 3.16.3 The developer shall be required to demonstrate (by rodding) that all gully connections are clear prior to adoption.

3.17 Soakaways

- 3.17.1 Although infiltration drainage is to be preferred, soakaways will only be permitted where acceptable to the Environment Agency and where tests can show that the subsoil will accept the volume of water to be expected. The Highway Authority must be satisfied with the result of soakage tests and capacity calculations carried out in accordance with BRE Digest 365 but subject to additional requirements set out below. The developer shall provide calculations to show the anticipated run-off from each section of road (including the adjacent highway catchment) related to each proposed soakaway. Given satisfactory soakage, more than one gully may be connected to each soakaway but the normal maximum will be three. The presumption shall be in favour of open chambers surrounded by 300mm of granular backfill (see Standard Detail drawings HCC9/D/070, 075 and 080). The concrete base shall be in the form of an annular ring and the base of the chamber shall be covered by a 150mm layer of gravel rejects to prevent scour. Where soil conditions dictate, generally in sands or silts where rapid clogging of the granular fill can be anticipated the granular fill shall be surrounded by an appropriate geotextile.
- 3.17.2 All calculations regarding storage capacities, surface area of soakaways and commuted sums for maintenance shall be based on the volume of the open chamber only and will ignore the contribution of the granular surround. This is to provide a factor of safety, assuming the granular surround will become blocked with silt over time. Storage capacities shall be measured from the base of the chamber to the invert of the lowest inlet pipe or pipes. Where linked soakaways are to be used the volume of connecting pipe work shall be excluded from the capacity calculations.
- 3.17.3 Soakaways must be located in such a position that access is unrestricted for future maintenance, preferably in areas of adopted open space. Generally soakaways are not to be sited within 6 metres of any structure. Where sited within chalk of low density soakaways must be positioned at least 10 metres

away from any structure. In areas of chalk where dissolution features are known to be prevalent, soakaways should be avoided but if unavoidable must be positioned at least 20 metres away from any structure. Additionally soakaways must also be positioned such that the chamber (defined as where the chamber wall meets the annular concrete base) lies wholly outside the notional 45 degree load line from the channel line of the carriageway. Where this requirement cannot be met, additional measures will be required to protect the structural integrity of the road pavement e.g. thickening the pavement road base locally and/or substituting no-fines concrete for the granular surround on that side of the soakaway closest to the carriageway. Where soakaways are to be clustered or linked together there shall be at least 5m between the granular fill to adjacent chambers. If it becomes necessary, under exceptional circumstances to site soakaways under private drives then the deeds of conveyance for that property or properties must ensure the Highway Authority has rights of access at all times for maintenance purposes.

- 3.17.4 When bricks or concrete blocks are to be used for the construction of soakaway chambers these shall be laid in honeycomb construction in English Bond. The wall thickness shall be 225mm and the bricks or blocks shall be set in cement mortar. The walls of the soakaway shall be bedded on footings of concrete 530mm wide and not less than 150mm deep. The soakaway chamber may be square, rectangular or circular and the honeycomb effect shall be obtained by the vertical joints being made 25mm wide with no mortar. The internal dimensions shall be based on the dimensions in paragraphs 4.8.5 or 4.8.6 below to the satisfaction of the Engineer.
- 3.17.5 Soakaway chambers shall be covered with a pre-cast concrete slab. The slab shall be at least 150mm thick, using C40 grade concrete and reinforced as appropriate to the dimensions of the slab. Within the slab shall be a hole 600mm by 450mm over which a shaft shall be built in brickwork or block work 225mm thick. The appropriate manhole cover and frame shall be bedded on the shaft.
- 3.17.6 Alternatively, the soakaway may be constructed of pre-cast perforated concrete rings having a minimum internal diameter of 1.05m, set upon an annular concrete base. In this case a taper section may be used to reduce the diameter of the soakaway. A brickwork shaft will be required on top of the taper section on which the manhole cover and frame will be bedded. The brickwork or block work above the cover slab or taper section shall not have open joints. In the majority of cases pipes running into the soakaway will be connected into the shaft. Perforated rings shall have not less than 27 perforations for each 900mm of depth. The space between the brickwork, block work or concrete and the face of the excavation shall be backfilled with approved gravel rejects or other approved material.

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- 3.17.7 Where space constraints dictate an unusual configuration for soakaways then proprietary plastic geocellular systems may be considered subject to the approval of the Highway Authority. Approval will be subject to the incorporation of appropriate features to minimise the passage of silt into the structure and to monitor, flush or otherwise remove such silt as may accumulate within the structure over time.
- 3.17.8 In developments exclusively of residential housing, trapped gully pots will generally provide adequate protection against excessive silting or contamination. However, in mixed developments, where run off from adjacent land is anticipated or where the Environment Agency has particular requirements, then it will be necessary to build additional re-treatment into the soakaway system e.g. petrol interceptors, wet wells etc as appropriate (see HCC Standard Details).
- 3.17.9 The Environment Agency requires that soakaways shall be sized such that a separation of at least 1 metre is maintained between the base of the soakaway and the maximum anticipated ground water level. In any case soakaways shall extend no deeper than 3m below ground level.
- 3.17.10 Highway Authority requires that the developer pay a commuted sum to cover future maintenance of soakaways. The commuted sum should be deposited with the Environment Department of Hampshire County Council. This standard commuted sum is based on a soakaway with a capacity of not more than 5 cubic metres. For soakaways with a capacity greater than 5 cubic metres a larger commuted sum will be required and allowance should be made accordingly. The filter medium is not to be included in the capacity calculations.
- 3.17.11 Where circumstances dictate that geocellular soakaways are to be constructed and adopted the commuted sum payable for future maintenance will be calculated on the basis of the equivalent number of conventional soakaways.
- 3.17.12 The requirement for such commuted sums will be written into the Section 38 Agreement. However, as site layouts can be subject to change after the issue of the Agreement, it is considered appropriate that monies should be deposited prior to the issue of the Part 2 Certificate, ie on the commencement of the maintenance period.
- 3.18 **Permeable Paving**
- 3.18.1 The design and detail of permeable paving, must be approved by the Highway Authority prior to construction.
- 3.18.2 Where Permeable Pavements are put forward for adoption these will, as a matter of principle, only be considered in situations where future invasive maintenance could be carried out without causing unacceptable disruption to traffic ie where there is a workable alternative means of access/egress. Permeable Paving will not normally be considered in culs-de-sac.

- 3.18.3 On grid type developments, Permeable Paving must be confined to straight sections of carriageway set back at least 25 metres from the centre-line of any junction to minimise the need for trimming of paving blocks and to facilitate effective traffic management for future maintenance.
- 3.18.4 Proposals for Permeable Paving must be properly designed and engineered both in terms of structural performance and hydraulic performance in general accordance with the procedures set down in the Interpave document “ Permeable Pavements – Guide to the design construction and maintenance of concrete block permeable pavements “ subject to further restrictions as set out below.
- 3.18.5 Unless the permeable paving is to be tanked, design for structural performance must consider the bearing capacity of the formation in a fully saturated condition. Permeable paving incorporating infiltration will not be permitted in any area where the long term equilibrium CBR is predicted to be less than 5%. Sub-base materials shall be crushed rock or crushed recycled aggregate with angular or sub-angular particles. Rounded aggregates will not be permitted.
- 3.18.6 In all cases a dense bituminous binder course and if necessary base will be required beneath the bedding course to facilitate passage by construction traffic. The bituminous binder course/base shall be perforated by coring (100mm diameter) at 1 metre centres. The resulting perforations shall be filled with a 2/6 mm single sized aggregate immediately prior to application of the geotextile, bedding course and blocks. Perforation by punching may be considered as an alternative to coring, but only if it can be demonstrated that this operation can be carried out without cracking or otherwise damaging the binder course. Since the binder course will be trafficked prior to application of the block work, the binder course material shall incorporate coarse aggregate with a PSV appropriate to the level of traffic anticipated and temporary alternative measures shall be put in place to deal with surface water running off at binder course level. Where aggregates prone to stripping (e.g. basalt) are employed in the binder course, the material shall incorporate an appropriate quantity of lime or cement filler to aid durability.
- 3.18.7 Design for hydraulic performance must deliver a capacity within the pavement to accommodate a 30 year storm event plus a 30% allowance for climate change. During construction the contractor will be required to demonstrate on a regular basis that the void content of the open graded sub-base/drainage layer is equal to or exceeds the figures assumed at the design stage.
- 3.18.8 Proposals for infiltration drainage must consider the risk of contamination of ground water and will only be considered in areas where infiltration is acceptable to the Environment Agency. Where infiltration drainage is proposed the design must be based on appropriate infiltration criteria established through a suitable and sufficient ground investigation, including the monitoring of ground water levels over time and accurate measurement of soil permeability criteria conducted at appropriate depth.

- 3.18.9 Proposals for permeable paving must consider the topography of the site and the design must address the influence of gradient. It is preferable that permeable pavements be designed to have a zero gradient. Permeable pavements may be considered on gradients up to 1 in 100 providing it can be demonstrated that surface water permeates the surface effectively without excessive runoff and providing the formation is profiled/benched, incorporating check dams as necessary, so that the full capacity of the granular sub-base is exploited and to maximise attenuation/infiltration.
- 3.18.10 Where Permeable Paving abuts any area of conventional construction the interface shall be a straightforward vertical joint with no steps and a full depth impermeable membrane shall be incorporated to separate the two constructions terminating at top of binder course. The conventional design must also consider the bearing capacity of the formation in a fully saturated condition where it adjoins an infiltration area ie the thickness of sub-base may need to be reinforced or thickened locally but in no circumstances should this be deeper than the adjacent permeable pavement.
- 3.18.11 Where sewers are to run beneath Permeable Paving these sewers must be fully commissioned and confirmed as suitable for adoption prior to construction of the Permeable Paving. Additionally, where sewers are more than 3 metres deep a sufficient settlement period shall elapse such that any consolidation of the backfill is completed before the Permeable Paving is constructed.
- 3.18.12 With the exception of sewers as detailed in 4.9.11 above, no services shall be permitted to run within or beneath Permeable Paving. Where services are required to cross Permeable Paving, a service crossing of conventional construction at least 10 metres long shall be provided. The extents of such areas shall be permanently marked in situ by some appropriate means. All areas of Permeable Paving are to be safeguarded through a designation of Streets of Special Engineering Difficulty under the New Roads and Street Works Act.
- 3.18.13 Absolutely no ironwork of any kind will be permitted within areas of Permeable Paving.
- 3.18.14 Where road markings are required in areas of Permeable Paving, these shall be applied using Methyl Methacrylate road marking paint and an appropriate primer system.
- 3.18.15 Permeable Paving for adoption by the Highway Authority must be designed to exclude surface water from adjacent properties which must be dealt with within their own boundaries.
- 3.18.16 Where developments are to be constructed in phases and areas of completed Permeable Paving are to be overrun by construction traffic from subsequent phases the Permeable Paving shall remain the responsibility of the developer who shall implement such protection measures and/or regular suction sweeping necessary to ensure the Permeable Paving continues to function as it is

intended. If surface infiltration becomes impaired significantly the developer will be required to take up and clean/replace the geotextile, bedding course and blocks before the road will be adopted.

- 3.18.17 The adoption of Permeable Paving will be subject to payment of an appropriate commuted sum to cover regular routine suction sweeping/ weed killing and the potential need to relay the blocks bedding course after 15 to 20 years. The commuted sum for Permeable Paving will be calculated from the area to be adopted.

3.19 **Flood Control Balancing Ponds and Attenuation Basins**

- 3.19.1 Balancing ponds and/or attenuation basins may sometimes be provided for flood control purposes, where surface water run-off from highway surfaces would otherwise be too rapid to be safely dealt with by the receiving watercourses, where flooding or damage downstream of the pond/basin would be a serious hazard or as an alternative/supplement to underground soakaways. Maintenance of such features must not be neglected and responsibility for it must be agreed at an early stage in parallel with the design process. The ideal solution is one where the Local Planning Authority or the relevant Leisure/Parks Department wish to make a water feature or wildlife habitat of these features. **The Highway Authority will not normally adopt such features unless they serve highway storm water exclusively and are located wholly within the highway boundary.**
- 3.19.2 The location of any pond/basin and its proximity to housing or industrial estates is a key consideration regarding health and safety, since children are attracted to running water and tragedy can occur if they become trapped in the deep liquid mud of a balancing pond or swept into outfall culverts at a time of flash run-off. Reference should be made to the extensive best practice guidance which is now available in respect of pond design/maintenance/ perimeter planting to minimise any such risks. A balance must be struck between amenity value and safety however grilles/fencing etc must be provided as appropriate. Where fencing is to be provided, access for maintenance equipment, including a tractor and mower, if appropriate must be considered and lockable gates provided as necessary.
- 3.19.3 Irrespective of the Authority taking on responsibility, the Highway Authority must be consulted before planning permission is granted to agree the dimensions of ponds, stability of side slopes (if necessary, clay seals must be formed around the periphery of ponds, etc to prevent the highway being undermined), any planting thereon, requirements for fencing around ponds and warning/ safety notices, etc. Calculations and drawings must be submitted to show that adopted highways served by such ponds/basins will not become flooded during a 30 year storm event making a 30% allowance for climate change predictions. The implications of flooding which may occur during more severe deluges – up to a 100 year event making a 30% allowance for climate change must be

analysed and evidence provided to demonstrate no properties will be affected adversely. All designs must be independently verified in accordance with Clause 4.1.1.

- 3.19.4 Where balancing ponds/basins are to be adopted by the Highway Authority, the developer will be required to work up an effective maintenance regime and a commuted sum will become payable to fund said maintenance. The commuted sum must be in the form of a cash payment or a bond/surety entered into with a reputable financial institution and must be agreed before the grant of detailed planning permission.
- 3.19.5 Notwithstanding any commuted sum payable, balancing ponds, basins etc. are particularly vulnerable to silting/blockages/etc. during the construction phase and the developer shall be responsible for undertaking remedial works and maintenance as appropriate until such time as the features are adopted.
- 3.19.6 The Environment Agency is setting up a register to record responsibilities for the maintenance of balancing ponds and similar facilities, and names of such bodies/authorities should be communicated to the Agency once agreements have been finalised. If it is to be the Highway Authority then the balancing pond will be included in the Section 38 Agreement.
- 3.19.7 It is essential that balancing ponds, etc. where used, are included in an inventory with clear Geographical Information Systems (GIS) location references, for maintenance purposes. The locationally referenced inventory shall include the more important ancillary items associated with the drainage, which is the responsibility of the Highway Authority, including all sluices, tidal flaps, pumps, and inlet or outlet grilles.

3.20 **Carriageway Construction on Housing Developments – Excluding Bus Routes and Through Roads**

General

- 3.20.1 With the exception of permeable pavements which can be laid with minimal falls, all carriageways must have suitable longitudinal and transverse falls to deal adequately with surface water. The minimum permitted longitudinal fall shall generally be 1:100 to facilitate effective surface water drainage. Under exceptional circumstances gradients as slack as 1:200 may be permitted over very short lengths at crests or troughs in the vertical alignment. Where gradients are slacker than 1: 120 channel blocks shall be used to promote effective surface water drainage. The transverse fall may be either a camber or a single crossfall depending on the alignment of the carriageway but in no case shall the crossfall be flatter than 2.5 per cent and not steeper than 5 per cent. The maximum permissible longitudinal gradient shall be 10 per cent. The final surface of the carriageway shall be laid according to the lines and levels shown on the drawings.

3.21 **Carriageway Foundation Design**

General

3.21.1 The failure of a road foundation can be expensive to remedy, because complete removal and reconstruction of the pavement may be unavoidable. It is important to ensure, during design and at each construction stage, that each layer of the foundation is sufficiently robust to fulfil its purpose during the construction period as a working platform on which to construct succeeding layers, and to give a subsequent performance that will last the whole life of the road so that maintenance operations are confined to surface layers. The developer's proposals for design CBR and Capping Layer/Sub-Base thickness are to be agreed with the Highway Authority in advance. On subgrades classified as shrinkable clays, particularly where trees exist or are to be planted within 10 metres of the carriageway or footway, then the impact of potential volume change on pavement performance must be assessed. Where the risk of pavement damage is shown to be high engineering measures must be incorporated to overcome the problem. Such measures shall include tree root barriers/deflectors and/or pavement reinforcing fabrics/grids incorporated as appropriate. All such measures shall be subject to the approval of the Highway Authority prior to construction.

3.22 **California Bearing Ratio**

3.22.1 For the purpose of pavement design the California Bearing Ratio (CBR) is to be used as a measure of the strength of subgrade. Since the in-situ CBR of the subgrade determined at the time of a site investigation is likely to differ from the equilibrium value which will appertain once the pavement has been constructed, reference should be made to table A below to select an appropriate equilibrium CBR value for design purposes.

3.22.2 For mixed soils (which the table does not cover) and for all areas of permeable paving irrespective of soil type, undisturbed samples or bulk samples for recompaction should be taken for CBR evaluation. The laboratory determined CBR value (soaked test) to BS 1377 – 4 should be considered in the light of experience with similar soils to derive a suitable equilibrium CBR value for design purposes. The County Highways Laboratory may be available to carry out CBR testing and to advise on pavement design by arrangement (tel 01962 774502). All such testing and advice will be at the developer's expense.

Table A: CBR Values for Pavement Design - from Table C1 of TRL1132

Type of Soil	Plasticity Index %	Anticipated Construction Conditions		
		Wet	Average	Dry
Heavy Clay	70	1.5	2	2
	60	1.5	2	2
	50	1.5	2	2
	40	2.0	2.5	2.5
Silty Clay	30	2.5	3	3.5
Sandy Clay	20	2.5	4	4.5
	10	1.5	3	3.5
Silt*		1	1	2
Sand (poorly graded)		10	15	20
Sand (well graded)		20	30	40
Sandy gravel (well graded)		20	40	60

* estimated assuming some probability of material saturating

3.22.3 Using the equilibrium CBR values determined in paragraph 6.2.2 and Table A the nominal thickness of capping layer and sub-base (or total sub base) required for design purposes for conventional pavements shall be selected in accordance with Table B below. For permeable paving, sub base thickness shall be determined in accordance with 4.9.4 and 4.9.5. Confirmatory testing of CBR shall be carried out at the time of construction. If the CBR is found to be less than the design value the construction shall be thickened accordingly. Otherwise construction shall proceed as per the approved design. **It is not permissible to reduce construction thickness just because the CBR at the time of construction is greater than the design value.**

Table B: Capping layer and sub-base thicknesses

Subgrade CBR	Equilibrium	Capping Layer Thickness	Sub-Base Thickness	Total Sub-Base Thickness
CBR 15% - 30%		-	150mm	150mm
CBR 5% - 15%		-	225mm	225mm
CBR 2% - 5%		350mm	150mm	400mm*
CBR less than 2%		600mm	150mm	N/A

* There may be some circumstances where a sub-base only construction will not be acceptable in this category.

- 3.22.4 Where the use of a capping layer is indicated, preference should be given to the use of soil stabilisation techniques, where feasible, in lieu of granular replacement. Where soil stabilisation is to be employed the developer must investigate and design the stabilisation process in accordance with HA74/07 and demonstrate that the required end performance characteristics have been delivered in accordance with Clauses 614/615 as appropriate. Where granular capping layers are to be employed they are to comply with 6.3 below.
- 3.22.5 Where the CBR of the subgrade at the time of construction is less than 2 per cent, irrespective of soil type, a geotextile separator will be required in addition to the capping layer. Where the subgrade is a shrinkable clay, where trees have been cleared and/or where trees are to be planted or retained within 10 metres of the carriageway edge, geogrids shall be incorporated within the pavement construction as appropriate to minimise the effects of cracking caused by clay shrinkage. Where the subgrade is frost susceptible, the overall construction thickness should not generally be less than 450mm, irrespective of the subgrade CBR value. Where a site specific frost index evaluation has been carried out (e-mail climate@metoffice.gov.uk quoting Mean Annual Frost Index – Fee payable) it may be possible to justify reducing the minimum cover to 350mm.
- 3.23 **Capping Layer : Selected Granular Fill Class 6F1/6F2/6F4/6F5**
- 3.23.1 Selected fill for capping layers shall be well-graded, crushed concrete, crushed demolition debris, or other recycled/secondary materials e.g. spent railway ballast, approved by the Engineer. Natural sands, gravels or virgin crushed rock may only be used where it can be demonstrated that recycled or secondary materials are not available locally.
- 3.23.2 The material shall have a Resistance to Fragmentation (Los Angeles test) value of less than 60. Asphalt plantings shall be deemed to comply without testing.
- 3.23.3 The material shall be compacted to the requirements of Clause 802 at a moisture content within the range 1 per cent above to 2 per cent below the optimum determined in accordance with the vibrating hammer method of BS 1377. After compaction it shall have an in-situ CBR value of not less than 15 per cent when tested by a method approved by the Engineer, or a laboratory CBR value of not less than 15 per cent when tested in accordance with BS 1377 Part 4 at the in-situ moisture content following compaction.
- 3.24 **Sub-Base**
- 3.24.1 The Sub-Base shall be recycled granular material in accordance with HCC Clauses 891AR or 892 AR (*Hampshire County Council Master Contract Documents*). Virgin crushed rock Sub-Base may only be used where it can be demonstrated that recycled or secondary materials are not available locally.

3.25 BASE AND SURFACING MATERIALS

General

- 3.25.1 The materials that may be used for the various structural elements of a carriageway using flexible construction, with the consolidated thickness to which they shall be laid, are set out in Diagram B. Each material shall comply in all respects with the appropriate clause of the specification and each source/mix must be approved by the Highway Authority prior to laying. Approval for hot-mix materials will only be granted for supplies from plants accredited under Highway QA Sector Scheme 14 and able to demonstrate an Operational Compliance Level (OCL) of B4 or better. Preference will be given to the use of laying contractors accredited under Highway QA Sector Scheme 16 with the intention of making this requirement mandatory in 2010
- 3.25.2 When Sector Scheme 16 is implemented the Developer must provide results of all of the Contractor's relevant quality control testing. Until such time as Sector Scheme 16 is fully implemented the developer is required to demonstrate through an appropriate programme of monitoring and testing that base and surfacing materials are laid and compacted in accordance with the appropriate clause/s of the specification and that the required end performance criteria are met. If the developer does not have a standing agreement with an appropriate test house, the County Highways Laboratory (01962 774502) may be available to undertake this work by arrangement. Sampling and testing are to be at the expense of the developer.

Diagram B - Carriageway construction thicknesses

* For roads serving more than 50 houses, see section 13.

Element	Material	Minimum thickness of material	
		Shared Surface and Residential Roads serving up to 25 dwellings	Residential Roads serving more than 25 and up to 50 dwellings
Base	Cold Recycled Bitumen Bound Material to Clause 948SR Minimum Characteristic Stiffness 2500 MPa	110mm	160mm
Binder course	Dense Asphalt Concrete Binder Course to Clause 906	65mm (20mm nominal size)	65mm (20mm nominal size)
Surface Course (Note 1)	10mm proprietary thin surface course system with a 1.2mm minimum surface texture complying with Clause 942	N/A	30mm
	or close-graded asphalt concrete surface course 10mm nominal size to Clause 912 - fines of crushed limestone and/or natural sand (see Notes 1 & 3)	N/A	30mm
	or dense asphalt concrete surface course 6mm nominal size to Clause 909 - fines of crushed rock or slag, excluding limestone (see Notes 1 & 2)	25mm	N/A

Note 1: The coarse aggregate in Surface Course mixtures for residential roads serving up to 50 dwellings shall have a Polished Stone Value not less than 55 and an Aggregate Abrasion Value not greater than 14. For higher stress sites, appropriate values (in accordance with HD36/06 and HCC skidding resistance policy) must be agreed with the Highway Authority. All other properties shall be in accordance with clause 901. Proprietary Thin Surface Course systems may include a high performance bond coat.

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Note 2: It must be recognised that 6mm dense surface course achieves very little surface texture and should not be used on steep gradients or sharp bends where skidding is likely to be a problem. Under such circumstances 10mm close graded wearing course laid 30mm thick should be used instead.

Note 3: On access roads expected to carry more than 50 commercial vehicles per carriageway per day the option to use 10mm close graded wearing course shall not apply.

Note 4: For Base, Binder and Surface Course materials 100/150 penetration grade bitumen shall be used at all times.

Note 5: Where tying into or widening existing carriageways which may not conform to current standards, details must be worked up to provide a durable surface finish and to prevent the formation of sumps in which groundwater may become trapped. Where a tie-in or widening less than 1 metre wide is required, wet lean concrete (C10) internally vibrated may be used in lieu of granular sub-bases to overcome difficulties with compaction. If it is considered that this will interrupt drainage paths then pipes of 100 mm diameter shall be provided beneath the concrete from the existing construction to at least 100 mm beyond the edge of carriageway. The pipes shall be filled with 4/10 mm clean aggregate and the ends closed with a permeable geotextile. These pipes shall be placed at approx. max.10m intervals and coincide with low spots. Where wet lean concrete is used a paving grade reinforcing grid will be required on top of the Base layer to prevent reflective cracking over the concrete and at joints. Care must also be taken to avoid variations in skidding resistance across the carriageway.

Note 6: Where alternative surfacing materials are proposed for aesthetic reasons the developer will be required to demonstrate that the material is equivalent structurally to the defined material, fit for purpose and to develop a maintenance plan such that the implications of using such materials are fully appreciated. Where maintenance is likely to be more onerous than conventional materials an appropriate commuted sum will become payable. Materials may also be required to be provided and delivered to store for future maintenance.

3.25.3 All materials shall be spread and compacted mechanically and the Base, Binder Course and Surface Course shall be laid by an approved paving machine. Cold Recycled Bitumen Bound Material shall be sealed and allowed to cure for a minimum of 12 hours after final compaction prior to application of subsequent pavement layers.

3.25.4 Compaction shall be in accordance with Clause 802, or Clause 901 as appropriate. Cold Recycled Bitumen Bound Material shall be compacted to a mean density not less than 95% of the refusal density (no individual value to be less than 93%). Binder Course and Surface Course materials shall be compacted such that the final void content is no more than 8%.

- 3.25.5 Each layer shall be laid to the lines and levels shown on the approved plan. Road construction shall be completed up to and including the Binder Course before main building operations commence. In no case should vehicles other than surfacing vehicles be allowed to travel on Base material. The Binder Course shall be blinded with lightly coated grit to seal the surface prior to trafficking. Where the Binder Course is to be trafficked for more than two weeks, the requirements for the coarse aggregate shall be as for Surface Course. If the aggregate used is prone to stripping the Binder Course shall include hydrated lime or cement filler as an adhesion agent.
- 3.25.6 CCTV inspection of sewers and any remedial works necessary should be carried out prior to the laying of the Surface Course on carriageways and footways. See Clause 4.3.10
- 3.25.7 Any layer shall be swept clean and a tack or bond coat applied before any subsequent layer is applied. The tack or bond coat shall be in compliance with BS 594987 Clause 5.5 and applied at a uniform rate of spread appropriate to the circumstances as specified in sub-Clause 5.5.2 of that standard. The emulsion film shall be allowed to break completely, turning from brown to black before the overlay is applied, thus ensuring optimum adhesion.

Where the Binder Course has been trafficked for an extended period and the aggregate has become polished a high performance bond coat shall be applied in lieu of a tack coat before the Surface Course is laid.

3.26 **Blockpaved Roads**

- 3.26.1 Block paving is the preferred surfacing on shared surface roads and may be acceptable on other roads subject to appropriate design for increased traffic load and approval of Highway Authority. However, block paving is generally only permitted where the gradient is less than 1 in 15. Block paving may be permissible on gradients exceeding 1 in 15 (subject to approval by the Highway Authority) if an effective form of transverse restraints can be incorporated into the design at appropriate intervals to prevent longitudinal creep.

Block paved roads are to be designed in accordance with BS 7533 “Structural Design of Pavements constructed with Clay or Concrete Block Pavers” for a minimum design traffic loading of 0.6 MSA. A bound Base will be required in all cases to facilitate construction traffic and for block paved construction only it will be permissible to traffic this Base.

- 3.26.2 Concrete blocks are preferred over Clay pavers. Clay pavers will not be permitted in shaded situations where the growth of moss, lichen etc can be anticipated. Precast concrete paving blocks shall comply with BS EN 1338 and be laid in accordance with BS 7533 : Part 3. Clay pavers, where permitted, shall comply with BS EN 1344 Class T4 with frost resistance to Class FP100 and should be laid in accordance with BS 7533 : Part 3. The bedding layer (30mm thick) shall be non-degradable natural sand complying with category II

of BS 7533 : Part 3 or crushed glass sand complying with category III of BS 7533 : Part 3.

- 3.26.3 Unless otherwise agreed by the Highway Authority, blocks shall be of standard rectangular shape 200mm x 100mm and shall generally be laid in a 45° herringbone configuration as this bond offers the lowest noise and best resistance to ‘creep’ caused by the action of traffic. ‘Stretcher bond’ or ‘Running bond’ pattern shall not generally be used in trafficked situations as they have insufficient stability to withstand the forces to which it will be subjected. The approval of the Highway Authority must be sought for any departure. In trafficked situations blocks shall not be less than 80mm thick. Kiln dried jointing sand shall be applied and reapplied as many times as necessary until a well-bound and stable pavement is achieved. Once stable, a sealant compatible with the chosen blocks shall be applied to prevent early loss of jointing sand in situations where suction sweeping will occur during the life of the road.
- 3.26.4 The developer will be required to demonstrate that the chosen sealant does not compromise skid resistance in the long term and does not reduce skid resistance to less than 45 SRV at the time of application. **Block paved surfaces will not be adopted until they have stabilised .**
- 3.26.5 Concrete /clay pavers to be used on the highway shall have a minimum Polished Paver Test Value (PPTV) of 55 or whatever higher value is required under HD36/06 and HCC skid resistance policy and a maximum abrasion resistance (wide wheel abrasion) of 23mm for concrete blocks or class A2 for clay. Additionally, evidence shall be submitted to demonstrate that the skidding resistance as supplied/installed is not less than the PPTV value.
- 3.26.6 Where any area of block paving abuts conventional flexible construction the detail shall be as set out above except that the first two rows of blocks adjacent to the flexible construction shall be bedded on 150mm of Designated Mix Concrete Class GEN3 to BS EN 8500 and haunched up on one side.
- 3.27 **Area Constructed of Natural Stone Setts**
- 3.27.1 Natural Stone Setts may sometimes be used in limited areas (no more than 5m wide) as a feature but these are not be used in areas of heavy braking/turning. Setts shall comply with the general requirements of BS EN 1342 and shall be nominally 100mm x 100mm x 200mm to be laid with the 200mm dimension vertical. Setts shall have a “coarse textured” finish as defined in BS EN 1342 and shall have a minimum PPTV of 55 or such higher value as may be required under HD36/06 and HCC skid resistance policy and a maximum abrasion resistance (wide wheel abrasion) of 23mm. The joint pattern and joint detail must be agreed with the Highway Authority in advance. Bedding mortar shall be in accordance with BS 7533 -7.

Element	Material	Minimum thickness of material
Capping layer	granular fill	as appropriate
Sub-base	granular material to Clause 891 AR or Clause 892 AR	150mm
Base	Designated Mix Concrete Class GEN3 to BS EN 8500	150mm
Base course	cement mortar to Clause 2404 designation (i)	Not less than 20mm Not greater than 40mm
Surfacing	setts	

The joints between the setts shall not be greater than 10mm nor less than 5mm and shall be filled with cement mortar in accordance with BS 7533-7, which may be coloured to complement that of the setts. The row of setts adjacent to the flexible construction shall be haunched with concrete to within 50mm of the road surface and the joint between flexible and rigid construction shall be caulked with an appropriate hot applied or cold poured flexible sealant.

3.28 **Colour Variations**

- 3.28.1 In certain circumstances such as hard landscaping, parking areas and conservation areas it may be beneficial to use variations in colour and/or texture to define boundaries. In addition to the use of coloured blocks, consideration should be given to the use of pigmented bituminous surface courses.
- 3.28.2 Pigmented bituminous materials are readily available from a number of suppliers but considerable attention must be paid to the detailed specification to ensure that short-term and long-term colour meet the desired requirements. A greater range of colour and the best possible colour retention are provided only when a clear binder is used. Long-term colour retention will only be achieved by incorporating an aggregate similar in colour to the pigment. However, overly bright colours should be avoided as they are likely to be both politically and environmentally undesirable. Colours and textures to reflect those of locally occurring materials in the particular area of Hampshire being developed are promoted to help reinforce the local sense of place.
- 3.28.3 Coloured surfaces are required to meet the same specifications as black materials in regard to aggregate / binder properties, etc and must be agreed with the Highway Authority in advance of the works. In carriageway situations where different coloured aggregates are used for demarcation purposes (e.g. cycle tracks) then the PSV of the aggregate shall ideally be the same but not be more than 5 units of PSV different from that used on the main route.

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3.28.4 Surface dressing type processes are not encouraged due to a generally reduced life expectancy. They may be acceptable under exceptional circumstances with the approval of the Highway Authority but the design must be agreed on a site specific basis.

3.28.5 Where coloured surfaces or dressing type processes are employed a commuted sum will become payable to fund the anticipated additional cost of future maintenance.

3.29 Roads Constructed of Other Materials

3.29.1 The Highway Authority will consider any other type of carriageway construction which can be shown to meet the requirements of pavement life, resistance to skidding and resistance to water penetration. Alternative designs must be the subject of early and detailed discussions with the Highway Authority in each case.

3.30 Traffic Calming

General

3.30.1 It is preferable for traffic calming to be achieved by the geometric design and visual context of the highway rather than specific features. However, where traffic calming measures are to be incorporated these shall be designed in accordance with the Highways (Traffic Calming) Regulations and statutory approval must be sought in accordance with the Traffic Calming Act 1992.

3.30.2 There shall be a presumption against traffic calming features on designated Abnormal Load Routes. Where traffic calming features must be installed on designated Abnormal Load Routes they shall be designed such that they do not restrict abnormal load movements.

3.30.3 Where the introduction of traffic calming features is likely to induce increased vertical or lateral loads on the adjacent carriageway, the construction of the adjacent carriageway shall be thickened locally to compensate.

3.30.4 Traffic calming features likely to induce increased vertical or lateral loads on the adjacent carriageway, or increase the construction depth, shall not be built within 20m of any bridge.

3.31 Traffic Calming and New Developments

3.31.1 In new developments, the developer is required to ensure that any traffic calming devices included as part of the highway layout conform with the requirements of current Regulations and advice. Non-conformity with current Regulations may prevent adoption of the new highway by the Highway Authority.

3.32 Traffic calming on existing roads funded by developers and others

3.32.1 All traffic calming devices and features to be introduced on existing highways at Developers' expense must conform with the requirements of current Regulations and advice. Scheme details are to be supplied by the Developer for technical approval by the Highway Authority. It should be noted that schemes involving

road humps will require public advertisement and consideration of public objections by the Executive Member for Environment or the relevant District/Borough Council where authority has been delegated. Advertisement and processing costs will be borne by the Developer irrespective of whether the order is implemented or not.

3.33 **Changes in surface**

- 3.33.1 Features such as flat-topped humps, junction tables, speed cushions and pedestrian crossovers may be incorporated into the design at specified locations, e.g.. at the approaches to pinch points or near the entrance to culs-de-sac.
- 3.33.2 When the carriageway is of flexible construction, these changes in surface may incorporate setts, and/or concrete/clay pavers in accordance with the appropriate sections of this document although in all cases ramps shall be constructed using bituminous materials . The running surface of the strips shall, in general, continue the longitudinal and transverse falls of the adjacent carriageway. Adequate drainage and falls must be provided to avoid any ponding adjacent to ramps.
- 3.33.3 Where setts are used a smooth strip not less than 700mm in width shall be provided adjacent to the edges of the carriageway to permit easy passage for cyclists. It is suggested that the flexible carriageway construction be continued through this strip.
- 3.33.4 When concrete blocks are used, the construction shall be as for a concrete block carriageway except that the rows of blocks adjacent to the flexible construction shall be bedded on 150mm of concrete to ST4 Clause 2602 and haunched up on one side. In this case, the 700mm smooth strip will not be required.
- 3.33.5 When the final running surface of the carriageway is of concrete or clay pavers, changes in surface should be marked using setts or contrasting pre-cast units.
- 3.33.6 The length of a change in surface should be approximately the width of the carriageway at the point where it is provided. Where the carriageway is tapering, the length shall be equivalent to the greatest width. If greater lengths are proposed, special attention will have to be paid to joints and the design agreed with the Highway Authority.

3.34 **Construction of Carriageways which are Principal Roads, Bus Routes, Through Routes (residential roads serving more than 50 dwellings are considered through routes) or Serve Industrial Estates**

- 3.34.1 The developer will need to discuss with the Highway Authority the width, the alignment of the carriageway, surfacing, the appropriate construction depth and the need to provide bus bays.
- 3.34.2 The depth of sub-base and capping layers shall be determined in accordance with Section 6.

- 3.34.3 The materials that may be used for the base and surfacing elements of the carriageway using a flexible construction and the consolidated thickness to which they are to be laid shall be in accordance with the relevant parts of Volume 7 of the Highways Agency Design Manual for Roads and Bridges for a design life of 60 years.
- 3.34.4 The use of block paving on such routes is to be avoided wherever possible as they can give rise to major maintenance problems. Where permitted by the Highway Authority, block paving on such roads shall be designed in accordance with Section 8, except that the thickness of Base shall be increased as necessary to yield a 60 year design life up to a maximum traffic loading of 12 Million Standard Axles (after allowing for any special cases as defined in sub-clause 3.2 of BS 7533). Designs for loading in excess of 12 Million Standard Axles are outside the scope of BS 7533 and are currently unacceptable due to the high risk of maintenance works.
- 3.34.5 On principal roads, bus routes, industrial estates and through routes it will be necessary to provide a higher grade of aggregate in the surfacing to provide the necessary skid resistance in service. The exact criteria for each individual site must be determined in accordance with HD36/06 and HCC Skid Resistance Policy.

3.35 **Carriageway Edge Details**

- 3.35.1 Guidance on the use of kerbs is contained in ‘The Highway Environment : Design Guidelines for Special Areas’. In general there is a presumption against the use of kerbs in rural areas. Elsewhere, great care should be taken to ensure that the type of kerbing used is appropriate to the local environment.
- 3.35.2 In most housing developments some form of restraint is required at the edge of carriageways, including the end of a carriageway abutting an unmade road or a future extension. This restraint may be a channel, a kerb, or a combination of both, appropriate to the construction employed. Kerbs with an upstand will be needed where a positive drainage system is proposed on any side of the carriageway and where the footway is adjacent to the carriageway. Where no upstand is provided, some means of ensuring that vehicles do not overrun the verge may be necessary. Restraint may also be required at a change of carriageway construction.
- 3.35.3 Kerbs and channels may be of concrete, including reconstituted stone, or natural stone. Concrete, including reconstituted stone, units shall be hydraulically pressed and comply with BS EN 1340. Weathering resistance shall be to Class 3, Bending strength to Class 2 and Abrasion resistance to Class 3. Additionally, the upper face of kerb units shall have a minimum polished Slip/Skid resistance (PPTV) of 45. The properties of natural stone products shall be equivalent.
- 3.35.4 The cross-sectional dimensions of concrete units shall be as set out in BS EN 1340 National Annex and units of natural or reconstituted stone shall have a similar profile. Other sections e.g. modular kerbing, available as a complement

to certain block paving systems may be used on shared surface roads by agreement with the Highway Authority.

- 3.35.5 The upstand face of the kerb, when laid where a footway is immediately adjacent to a carriageway, shall normally be 100mm. The kerb face need not be vertical. Reference should be made to Standard Details HCC9/ C010/015/020/025/030 and 035. Other means of segregating vehicles and pedestrians may be considered in consultation with the Highway Authority.
- 3.35.6 At vehicular accesses, dropped kerbs shall be provided with an upstand of 25mm, and the change of level from the carriageway to the footway shall not exceed 8 per cent.
- 3.35.7 At pedestrian crossings, pram crossings etc, a flush surface is required, which will assist those with a disability. Where flush crossings are incorporated blister tactile paving shall be provided within the footway in accordance with the guidance set down in Department for Transport document “Inclusive Mobility” – A guide to best practice on access to pedestrian and transport infrastructure. Reference should be made to Standard Details HCC 9/C 060 / 065 and 070. The positioning of service covers within areas of tactile paving shall be avoided wherever possible. Where service covers must be positioned within areas of blister tactile paving they shall be of the inset type so that the blister pattern can be continued uninterrupted. Inset covers shall be appropriately marked to identify the underlying service.
- 3.35.8 At pedestrian crossings, etc where a flush kerb is specified, this requirement is absolute with no tolerance permitted. Accordingly square section channels shall be used over the flush section instead of bullnosed kerbs. Falls and drainage shall be designed and executed to ensure there will be no ponding either on the footway or carriageway.
- 3.35.9 On bus routes, all stopping facilities must be considered carefully in association with the Highway Authority and local bus operating companies. Where appropriate, ‘access’ type kerbs shall be incorporated into the kerb line to serve the new generation of low floor buses now operating on many routes. The upstand of such ‘access’ type kerbs shall be 160mm.
- 3.35.10 The kerbs and channels shall be laid to the lines and levels shown on the approved plan. They shall be installed in accordance with Standard Details HCC9/C/ 010, 015, 020, 025 or 030, 035 or 040 as appropriate.

In all cases, the concrete used for bedding and backing shall be of a strength equivalent a Designated Mix Class GEN 1, complying with the general requirements of HCC Clause 2602SR ie incorporating recycled aggregates. The kerbs and channels shall be butt-jointed with a clearance of 2mm between units. In the case of pre-cast concrete units, kerbs and channels of appropriate radius shall be used at bends of 12m radius or less. The minimum radius permitted at any transition shall be 305mm to avoid damage to vehicle tyres/wheels.

3.36 Footway Construction

General

3.36.1 All footways shall be designed in accordance with the guidance in “Inclusive Mobility” – the Department for Transport Guide to Best Practice on Access to Pedestrian and Transport Infrastructure. Particular attention shall be paid to guidance on transverse and longitudinal gradients to ensure sites are accessible by wheelchair users. The maximum longitudinal gradient shall generally be 5%. Gradients up to 8% may be permissible over short lengths under exceptional circumstances subject to the agreement of the Highway Authority. Footways should have a transverse fall which normally will be of 2.5 per cent towards the carriageway to encourage surface water runoff. Any variation from this should be discussed with the Highway Authority. Various types of footway construction are permitted, subject to the agreement of the Highway Authority.

3.36.2 Flexible Construction Footways

Element	Material	Minimum thickness of layer
Sub-base	Recycled granular material in accordance with HCC Clauses 891AR or 892 AR	100mm – to be increased or capping layer provided if subgrade CBR < 5%
Binder course	Cold Recycled Bitumen Bound Material 14mm nominal size complying with HCC Clause 948SR. Where site layout is such that it can be anticipated that vehicles will regularly over-run or park on footways the thickness of Binder Course shall be increased to 100mm	50mm
Surfacing	6mm Dense Asphalt Concrete Surface Course to Clause 909	25mm

Note 1: Services laid beneath new footway construction are to be backfilled with granular sub-base prior to construction of the footway.

Note 2: On heavy clay soils, or where new planting is to be undertaken adjacent to the footway, a geotextile will be required surrounding the sub-base to limit problems with cracks arising from shrinkage or swelling.

Note 3: Where footways are to be constructed in the vicinity of existing trees a permeable paving non – dig solution is likely to be required in consultation with the Highway Authority – see 15.3.2

Note 4: Coated or uncoated 6mm chippings may be rolled into the surface to provide surface texture and/or a colour variation subject to the agreement of the Highway Authority.

Note 5: If the Cold Recycled Bitumen Bound Material is to be used as a temporary surface, the curing/seal spray must be blinded with coated grit 3mm nominal size spread at the rate of 3.5-5.0kg/m².

3.37 **Slab Footways**

3.37.1 Slab footways should only be used, where appropriate, within conservation areas or other areas where special design criteria apply. Slabs shall be either sawn natural stone or pre-cast concrete. The colour and finish shall be agreed with the Highway Authority before work commences. Slabs shall be installed in accordance with Standard Detail HCC9/C/045 and the general requirements of BS 7533-4.

3.37.2 Pre-cast concrete paving slabs shall be hydraulically pressed and shall comply with the requirements of BS EN 1339 and Natural Stone paving slabs shall comply with the requirements of BS EN 1341. The slabs shall be not less than 50mm thick and unless otherwise agreed shall be size 450mm X 450mm. A satisfactory bond shall be achieved with the joints being at right angles to the line of the carriageway. The basic design shall be as shown below:

Concrete Slab Construction

Element	Material	Thickness of material
Sub-base	granular material as specified in HCC Clauses 891AR or 892AR	100mm - to be increased or capping layer provided if subgrade CBR < 5%
Laying course	Sand to BS 7533 – 4 Table 5 mixed 10 : 1 with hydrated lime	Not less than 20mm
Surfacing	paving slabs	Not less than 50mm

Note 1: The skid resistance of paving slabs should be specified in terms of a minimum PPTV to BS 7932. A minimum PPTV of 45 is required for footway works with the exception of more heavily pedestrianised areas and slopes steeper than 5 per cent where a minimum PPTV of 55 is required. PPTV results (not more than 12 months old) shall be submitted to the Highway Authority to verify that the proposed slabs meet the standards of skidding resistance specified. Additionally evidence shall be submitted to demonstrate that the skidding resistance as supplied and installed is not less than the PPTV value.

Natural stone slabs should be supplied with a sawn or fine picked finish. A polished finish will not be acceptable.

Note 2: Where slab footways are likely to be over-ridden by anything heavier than a family car, slabs incorporating reinforcement shall be used and an additional base layer will be required. The base should be 150mm of lean mix concrete (CBM 3) or 125mm of Cold Recycled Bitumen Bound Material or Dense Binder Course Asphalt Concrete 100/150.

3.38 **Block Paved Footways**

3.38.1 Pavers should be manufactured in accordance with BS EN 1338 or BS EN 1344 as appropriate and laid in accordance with BS 7533-3 . The basic design shall be as shown below. The bonding pattern shall be agreed with the Highway Authority. Details of the aggregate, colour and strength should be submitted for approval before laying is commenced. The blocks shall not be less than 60mm thick. They shall be laid on a bed of sand (clean natural sand or crushed glass sand) to BS 7533-3, 30mm thick after compaction. Kiln dried jointing sand to BS 7533-3 shall then be swept and vibrated into the joints of the blocks. Application shall be repeated as required until the block work is stable. Where subject to suction sweeping – e.g. town centre developments the block work shall be sealed using an appropriate proprietary sealant.

Block Footway Construction

Element	Material	Thickness of material
Sub-base	granular material as specified in C1.891AR or 892 AR	100mm- to be increased or capping layer provided if subgrade CBR < 5%
Bedding course	Natural Sand or crushed glass sand to BS 6717 : Part 3	30mm
Surfacing	concrete or clay pavers	60mm

Note 1: The slip resistance of concrete blocks/clay pavers should be specified in terms of a minimum PPTV to BS 7932. A minimum PPTV of 45 is required for all footway works with the exception of a more heavily pedestrianised areas and slopes steeper than 5 per cent where a minimum PPV of 55 is required. PPTV test results (not more than 12 months old) shall be submitted to the Highway Authority to verify that the proposed blocks/pavers meet the standards of skidding resistance specified. Additionally evidence shall be submitted to demonstrate that the skidding resistance as supplied and installed, including the application of sealant, where required, is not less than the PPTV value.

Note 2: Clay pavers will not be permitted in shaded situations where the growth of moss, lichen etc can be anticipated.

Note 3: Where block paved footways are likely to be over-ridden by anything heavier than a family car an additional bound base layer will be required. The base should be 125mm of Dense Binder Course Asphalt Concrete or Cold Recycled Bitumen Bound Material.

3.38.2 Where there is an over-riding need for footways to be permeable, e.g. across the roots of retained trees, it may be feasible to use a proprietary permeable block system. The appropriate proprietary specifications should be used with the agreement of the Highway Authority subject to demonstrating the necessary structural performance and slip resistance requirements are met. Permeable footways shall not be used adjacent to permeable carriageways and vice versa since this configuration provides inadequate support for kerbs.

3.39 **Cycle Tracks/Greenways – Riding Quality**

General

3.39.1 Cycle tracks and other facilities for cyclists are provided to encourage safer cycling by reducing potential conflict with other road users. However, facilities will only be used by cyclists if they are well maintained, reasonably direct and have a riding quality which is acceptable compared with alternative routes.

3.39.2 Cycles tracks should be designed and built in accordance with the current Local Transport Note/s dealing with the Policy, Planning and Design for Walking and Cycling produced by the Department for Transport. Local Transport Notes are downloadable from www.dft.gov.uk

3.39.3 Undulations, slopes and crossfalls should be as gently as possible. Transverse slopes and crossfalls should be no greater than 1 in 15 and longitudinal gradients should be no greater than 1 in 10. Care should be taken to avoid sudden transitions between adjacent levels.

3.39.4 In general, cycle tracks shall be constructed to the same standard as flexible footways. However, when measured using the rolling straight-edge, the riding quality of the finished track shall comply with the following requirements:

Maximum Permitted Number of Surface Irregularities

Surfaces of cycle tracks incorporated as part of the carriageway			
Irregularity	4mm	7mm	10mm
Length(m)	75	75	75
> 250 cvd	9	1	0
< 250 cvd	18	2	0

Surfaces of cycle tracks laid separate from the carriageway (traffic category does not apply)				
Irregularity	4mm	7mm	10mm	12mm
Length (m)	75	75	75	75
	20	10	3	0

Note: If cycle tracks are installed within the carriageway and the narrowness of the road might require vehicles to run their nearside wheels in the cycle track then the PSV/PPTV of the aggregate/pavers used shall be the same as for the remainder of the road surface. Where the facility is separated from the carriageway the PSV/PPTV shall be a minimum of 55.

3.40 **Vehicle Crossings over Footways**

3.40.1 Reference should be made to Standard Detail HCC9/M/035. These crossings need not be constructed to the same finish as the adjacent footpath or carriageway.

For flexible crossings the construction shall be as for flexible footway construction but the thickness of the cold recycled bitumen bound base shall be increased to 100mm.

Where slabs are used, a lean mix concrete base (CBM 3), Cold Recycled Bitumen Bound Materials or Dense Binder Course Asphalt Concrete 125mm thick, shall be provided on top of the sub-base material specified in paragraph 15.2.2. The slabs shall be laid on a mortar bed not less than 20mm thick.

Where block paving is used, the thickness of blocks shall be increased to 80mm and an additional bound base layer will be required. The base should be 125mm of Dense Binder Course Asphalt Concrete or Cold Recycled Bitumen Bound Material.

The colour, aggregate, strength and bonding pattern shall be agreed with the Engineer.

Where vehicle crossings are to be trafficked by heavy commercial vehicles or emergency vehicles the crossing shall be constructed to the same standard as shared surface/access roads.

3.41 **Footway Edging**

3.41.1 Some form of restraint will be required to support footways. This support may be provided by the carriageway edge detail or by property walls. Where neither is the case, reference should be made to Standard Detail HCC9/C/045. Edgings of concrete, stone, brick or recycled plastic may be used. Where concrete edgings are used, they shall comply with BS EN 1340 Bricks shall comply with BS EN 771-1 high density, Class B.

3.41.2 The edging shall be laid flush with the footway surfacing, unless otherwise directed by the Engineer. Where the footway abuts a landscaped area a vertical face of 50-75mm shall be provided. The edging shall be bedded on 100mm thickness of concrete to Clause 2602SR and haunched up 100mm thick on each side and splayed at 45 degrees to within 50mm of the top edge. Topsoil adjacent edgings shall be finished level or up to 10mm above after settlement (to avoid mower damage). Where there is no footway, edging laid to indicate the highway boundary shall be flush with the margin.

3.42 Design and Construction of Bridge and Other Highway Structures are to be Adopted

General

- 3.42.1 When highways are to be adopted, any structure that supports the highway whether it be a bridge, culvert, retaining wall or reinforced earth embankment is considered to be part of the highway and is therefore included in the Adoption Agreement.
- 3.42.2 These structures are generally considered to be development for the purposes of the Planning Acts and it is therefore vital that the local planning authority is fully involved in any discussions and negotiations on design. Appearance and choice of materials should be in keeping with the character of the locality.
- 3.42.3 In order to ensure that such structures have an adequate margin of safety and are constructed so as to minimise maintenance costs it is necessary for the Director of Environment to approve proposals put forward by developers for such structures.
- 3.42.4 Hampshire County Council as Highway Authority has therefore established a policy that the design and construction of all new structures proposed for adoption shall comply with the same technical approval procedures as are followed when the County Council itself designs and constructs highway structures. These procedures are incorporated in Document SP/030 which is available from the Chief Structures Engineer.
- 3.42.5 Certain smaller structures do not fall within the definition of a highway structure (e.g.. a culvert under 1.5m span) and compliance with the technical approval procedure is not required. The Director of Environment will notify the developer if any proposed structure does not require technical approval.
- 3.42.6 In cases where an Agreement has been or is to be concluded under Section 38 of the Highways Act 1980 or under the advanced payment code, or as a condition proposed under Section 106 of the Town and Country Planning Act 1990, the Director of Environment will act as the Technical Approval Authority (TAA).

3.43 Approval in Principle (AIP)

- 3.43.1 A formal submission known as the Approval in Principle (AIP), setting out the outline proposals, must be made to the Director of Environment; the developer is strongly advised to discuss his preliminary proposals with the Chief Structures Engineer before making the formal submission. The submission must indicate who will be responsible for the design; these persons/ organisations should be experienced in the design of highway structures and will be subject to the consent of the Director of Environment. Design checks will normally be carried out by staff in the Environment Department. The details required in the AIP are set out in the Document SP/030, as are the requirements for payment of a fee to cover Environment Department costs.

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3.43.2 Approval in Principle (where appropriate) will be given by the Director of Environment by returning a countersigned copy of the AIP. Detail design work should not be commenced until this has been received by the developer.

3.44 Design and Checking

3.44.1 Once the design has been completed and independently checked as defined in BP2, the detailed drawings, specifications, calculations and certificates shall be submitted to the Director of Environment. Countersigned copies of the certificates shall be returned to the developer. Once they have been received, and subject to the approval of the Director of Environment, construction may proceed. At least two weeks notice of commencement shall be given to the Director of Environment. Where work affects an existing highway, start dates shall be determined having regard to the requirements for notification under the Traffic Management Act 2004 and the New Roads and Street Works Act 1991 (NRSWA) as appropriate.

3.45 Construction

3.45.1 During construction the developer shall supervise the works and shall carry out any necessary testing of materials. In addition staff of the Environment Department will carry out such inspections as are needed and any defects or shortcomings found during inspections shall be made good by the developer. All testing shall be paid for by the developer.

3.45.2 There shall be no departure from the certified design drawings without the prior consent of the Director of Environment. Significant changes may well require submission under the Technical Approval Procedure ie. revised Approval in principle and new design and check certificates.

3.45.3 On completion of the structure one copy of the 'as built' records, comprising drawings, H & S file and a maintenance report, together with one copy of the final calculations shall be sent to the Director of Environment. Additionally a Certificate of Construction with original signatures shall be submitted confirming that the structure has been built in accordance with the agreed drawings and specifications. The requirements for 'as built' records are given in Document SP/040, a current copy of which will be supplied when confirmation that work may start is given.

3.46 Maintenance

3.46.1 When the Director of Environment has agreed that the structure has been completed to his satisfaction the developer will be informed of the commencement of the 12 month period of maintenance or such other period appropriate to specialist materials. This period will normally coincide with that for the adjacent roads.

3.47 Agreements Under Section 38 of the Highways Act or of the Advanced Payments Code

- 3.47.1 The initial approach following granting of planning permission will be to the appropriate County Section 38 Engineer. If the development includes a structure the County Section 38 Engineer will refer the application to the Chief Structures Engineer who will decide whether technical approval procedures have to be followed.
- 3.47.2 Where technical approval is required the developer will be asked to pay a fee to cover the Environment Department staff costs in administering the process. This will be in addition to any charges made for the roads and carrying out any structures' design check.
- 3.47.3 The fee will be payable in two instalments.
- prior to Approval in Principle being given; a standard charge; and
 - prior to acceptance for adoption; total actual costs less previous payments.
- 3.47.4 The developer should note that the standard charge reflects the cost of administering a straightforward, well-presented submission prior to start of construction. The final charges, prior to acceptance for adoption, will include the fees for the design check and may be significantly more where unusual or special features, are involved or where problems arise during any of the stages described in procedure.
- 3.47.5 No Agreement under Section 38 of the Highways Act or the Advanced Payments Code shall be drawn up for a structure unless the developer has a countersigned copy of the AIP.
- 3.47.6 Before the structure can be adopted the developer shall have sent to the Director of Environment all the documents, certificates and fees referred to above.

3.48 Statutory Undertakers

- 3.48.1 Unless otherwise agreed with the Director of Environment, the developer shall provide four spare ducts in 100mm diameter brown coloured UPVC in each verge/footway over any new structure.
- 3.48.2 Where statutory undertakers wish to place apparatus in bridges their powers are laid down in their respective enabling Acts.
- 3.48.3 Any proposals to place public utility apparatus in highway structures shall be indicated in the AIP submission.
- 3.48.4 The developer shall comply with the requirements of the "New Roads and Street Works Act 1991" (NRSWA) in all his dealings with statutory undertakers.
- 3.48.5 All consultations that are needed with statutory undertakers and other authorities, such as the Environment Agency, shall be carried out directly by the developer.

3.49 SPECIFICATION FOR LIGHTING AND SIGNS

- 3.49.1 Street lighting shall comply with the County Council’s “Street Lighting Policy” and the references referred to there, the Council’s street lighting standard detail drawings, and the specific arrangements under the Section 38 Model Agreement and any specific Section 278 Agreement.
- 3.49.2 Illuminated signs shall comply with the “Traffic Signs Regulations and General Directions” and the further requirements of the County Council.
- 3.49.3 All items of illuminated street furniture shall be provided with a single phase, 230v earthed underground power supply from the utility company unless otherwise specified by the engineer.
- 3.49.4 The developer shall liaise with the Engineer concerning the lighting requirements. In rural areas lighting is to be discouraged. The Engineer shall prepare a lighting design brief for each scheme.
- 3.49.5 The developer shall be responsible for designing the scheme and submitting detailed proposals to the Engineer for approval. Lighting systems should generally be continuous with existing highway lighting outside the areas offered for adoption and may include replacement of existing street lighting in favour of a more appropriate system due to changed usage of the highway. The Engineer may revise the design layout submitted by the developer.
- 3.49.6 Context, sustainability and energy efficiency should be key factors in the lighting design. The street lighting scheme should position columns at or on house boundary lines, not close to windows or existing or proposed trees, and ensure that trees are not within 5m or more, depending on tree species, of a street light. Plans showing lighting proposals shall include locations and mature spread of existing and proposed trees to ensure coordination is achieved.
- 3.49.7 Lighting provided for unadopted areas is not specified by this document and is subject to local authority’s requirement for that particular area. It is recommended that any equipment installed in private areas is distinguished from the adoptable lighting, whether by colour of posts or distinctive separate numbering. Attention is drawn to the ILE’s “Guidance Notes for the reduction of obstructive lighting”.
- 3.49.8 The developer shall ensure purchasers are informed that a plan of the street lighting scheme is displayed in the sales office so that purchasers and existing residents can be made aware of the impact of lighting units on adjacent properties. Customers should also be advised that street lighting is an integral part of the highway.
- 3.49.9 The developer shall install the street lighting and illuminated sign units as required using a street lighting contractor conversant with the County Council’s street lighting and illuminated sign specification and with operatives registered as competent under the HEA Sector Scheme.

- 3.49.10 Before the developer allows houses to be occupied, all lighting linking with the existing highway network must be fully operational to provide safe access.
- 3.49.11 All columns shall be numbered, taking into account the existing numbering of adjacent installations and the possible need to renumber existing items into a coherent sequence. Each named street should be separately numbered. The Engineer can advise on numbering.
- 3.49.12 The developer must be aware of the responsibility to maintain the lighting before adoption and should ensure that the scheme is defect free at the time the units are offered for adoption. Defects that are identified by the Engineer shall be rectified by the developer within ten working days of notification.
- 3.49.13 Inspection of the lighting units prior to the issuing of completion certificates and maintenance certificates can only be undertaken after the developer has provided the Council with electrical test certificates as required by BS 7671.
- 3.49.14 Formal adoption of the street lights and illuminated signing can only be agreed when the developer has submitted:
- 3.49.15 The appropriate street lighting inventory form;
- The appropriate County Council Certificate of Installation (HCCCIA);
 - Up-to-date electrical test certificates as required by BS7671 and the Electricity at Work Regulations;
 - As-built layout including column and sign identification numbers.
- 3.49.16 Further guidance on street lighting processes ins contained in Hampshire County Council’s documents “Street Lighting Procedures for New Works” and “Guidelines for siting of illuminated street furniture on the highway”.
- 3.49.17 If further information is required, please contact the Street Lighting Client Section.

3.50 **LANDSCAPE SPECIFICATION**

General

- 3.50.1 It is important that soft areas in or adjoining, highways should be an ‘integral part of the overall landscape scheme for the area. A landscape and development checklist is to be found at Appendix B. It is required that layout design and planting proposals be prepared by a qualified landscape architect, and that tree surveys and any proposals for works to or the protection of existing trees be prepared by an appropriately qualified Arboriculturalist.

Where new or existing planting can be shown to support one or more of the six guiding principles underpinning this guidance it may rank for adoption. It is expected that development will include proposals for planting on a mix of privately owned, public open space and adopted highway land, to secure a shared community responsibility for long term tree cover in particular.

- 3.50.2 Developers should discuss with the Highway Authority at an early stage the adoption of particular hard and soft landscape features and should discuss with the district council the adoption and future maintenance arrangements for proposed amenity areas which are not to be adopted by the Highway Authority.
- 3.50.3 The Environment Agency should be consulted about groundwater regeneration. They should also advise on flood control measures such as balancing ponds and open ditches within landscaped areas and whether surface water run-off from highway areas will be accepted. Responsibilities for maintenance of balancing areas should be established at an early stage.

Designing for future maintenance

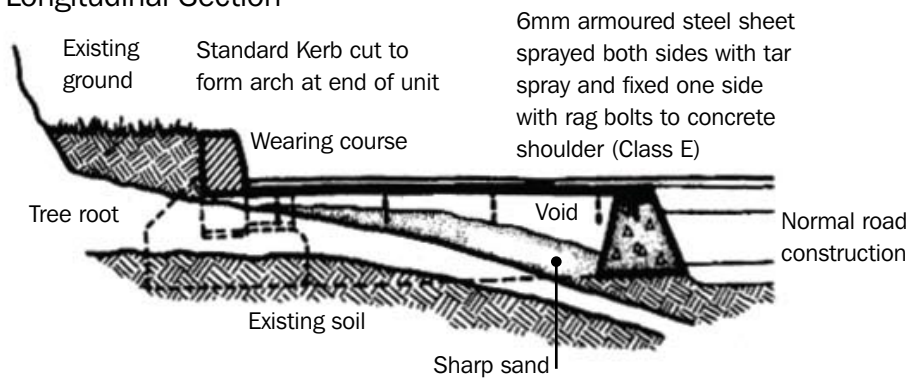
- 3.50.4 It is most important to design landscape areas with a view to achieving prudent costs of future maintenance. Designs should be simple and should avoid the use of small and isolated shrub beds and grass areas adjoining the highway. Spacings, species selection and the placing of shrubs and trees should seek to minimise the need for frequent trimming and tree surgery. Temporary protection may be appropriate to aid plant establishment.

Retaining existing trees

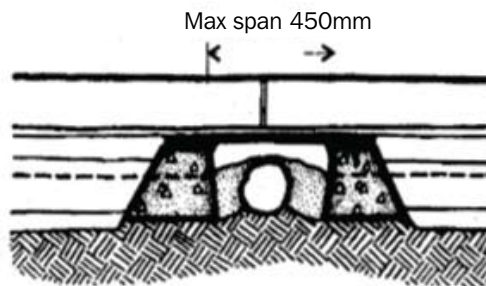
- 3.50.5 In order to give existing trees the greatest chance of survival, it is essential to follow the guidance set out in BS 5837 – 2005: Trees in Relation to Construction. The following conditions should be observed:
- 3.50.6 A realistic assessment of tree care is required and arboricultural advice must be sought, and a report provided. See Section 19.40. Trees must be put into good order prior to adoption by the Highway Authority, and any damage during construction be addressed.
- 3.50.7 In situations where any excavations are likely to affect roots, hand digging is required. See also 2.67.9 and 2.67.10.
- 3.50.8 Sufficient space should be allowed to retain the existing root system and canopies without undue cutting. Wherever possible, new underground services must not be laid within root systems. Where this is unavoidable, services must be laid beneath root systems in ducts provided by the developer and in accordance with National Joint Utilities Group Guidelines Volume 4 “Guidelines for the planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees”. New roads and footways will be required to be sensitively designed when in close proximity to existing trees. Where particularly important specimens are to be retained adjacent to a new highway, it is likely that special measures for the accommodation of roots will be necessary.

The diagram illustrates one proven method by which this may be achieved:

Longitudinal Section



Cross section



- 3.50.9 Prime consideration should be given to the well-being of trees to be retained. In exceptional circumstances some limited excavations under tree canopies may be carried out. Such works must be done by hand. No roots over 25mm in diameter should be severed. Careful assessment of the impact of such works must be made by a qualified Arboriculturalist. Tree removal and replacement planting may be required if substantial root loss is likely. See also paragraph ???
- 3.50.10 As far as possible the existing ground levels within the Root Protection Zone of existing trees should not be altered although it is accepted that any new road or footway will need to be raised over existing roots.
- 3.50.11 Special consideration should be given to trees when designing foundations of adjacent walls and buildings. These foundations should be designed to take into account the growth of existing and proposed trees, and their impact on soil conditions and proposed structures..Where necessary, a barrier (e.g. a concrete ground wall) should be placed at an appropriate distance from the tree at a point between the tree and the structure to be protected. The barrier shall be at an adequate depth in the ground and of sufficient length to safeguard the protected structure; the top of the barrier must extend above ground level.

3.50.12 The protection of trees and hedges during site construction is essential; developers should refer to the Code of Practice relating to the Protection of Trees on Building Sites published by Hampshire County Council and to BS 5837 2005: Trees in Relation to Construction, and any site specific Arboricultural Method Statement prepared for the development.

Tree and shrub planting within or adjoining the adopted highway

3.50.13 The following practical guidelines should normally be followed:

3.50.14 The choice of shrub or tree species should be carefully considered following a thorough study of the area. The majority of the new plants should be within the range of species occurring naturally nearby, and be tolerant of a range of climatic conditions to allow for their healthy growth in relation to anticipated climate change. The wildlife value of planting is to be taken into account. Where a high level of vandalism is expected, and where it is horticulturally favourable, extra heavy standard trees should be planted. In rural areas, where it is most important to use naturally and locally occurring species, smaller planting sizes may be more appropriate. Plants and their handling should comply with BS 3936: 1992 and National plant specifications published by the Horticultural Trades Association (HTA) and “Handling and Establishing Landscape Plants” published by the Committee for Plant Supply and Establishment (CPSE), obtainable from the HTA.

3.50.15 Careful consideration should be given to the positions and species of trees where these are to be planted close to new or existing structures (including roads and footways).

3.50.16 Roots should be allowed to grow as naturally as possible so as not to affect underground services and damage hard surfaces. Where tree or shrub planting is proposed, statutory undertakers may require the provision of ducts or barriers to accommodate their apparatus or re-routing of the service. Adequate volumes of good quality topsoil (not screened materials) to support a well-developed root system and healthy plant growth will be required. Topsoil for rooting should conform to BS 3882 – 2007: Specification for Topsoil. The volume of topsoil required for tree rooting must consider the ability of the surrounding soil to provide nutrients and shall be a minimum of 10m³ in sterile strata such as chalk. A minimum of 300mm depth shall be provided for shrubs and 0-150mm depth for grass areas (subject to individual site conditions and requirements). Tree roots must not be constrained within pits surrounded by barriers as they will not develop stable, healthy and long term street trees, but deflectors may be appropriate. Topsoil should not be overly compacted.

3.50.17 Tree roots must not be constrained unreasonably within pits surrounded by barriers as they will not develop stable, healthy and long term street trees. Barriers may be required to protect specific features (see 2.67.11) but deflectors are more likely to be appropriate in the majority of circumstances.

Where tree pit rooting zones will extend under new roads or footways, support for the pavement structure and associated edge details must be provided using a proprietary root-cell system. The root-cell system shall be capable of supporting the anticipated traffic loading without deformation. Measures shall be incorporated to facilitate breathing, watering and drainage of roots as appropriate.

- 3.50.18 Tree trunks or stems should be planted at least 1m back from the carriageway or footway edges and, together with shrub planting, should not obstruct visibility within any sight lines required at junctions..
- 3.50.19 Trees planted in the adoptable highway must be selected and planted to avoid adversely affecting underground and overhead services and street lighting. A minimum distance of 5m between tree stems and the light source is generally considered desirable. This will be subject to consideration of relevant detailed specifications including lighting, building elevations and tree species.
- 3.50.20 Shrub planting densities should be appropriate for the selected species, and be capable of achieving substantial ground cover/canopy closure within the three year establishment period. Selection should aim to discourage pedestrians taking short-cuts through them, provide all season impact, and reduce the amount of weed growth. Some temporary protective fencing may be required to assist plant establishment. The use of species with spreading habits should be avoided where planting will encroach on adjacent footways or carriageways to avoid the need for frequent trimming.
- 3.50.21 Shrubs should be selected and planted to define, separate, or contain spaces as appropriate to the overall design objectives; where space allows, the use of mass planting with a limited number of species with low maintenance requirements are most appropriate.
- 3.50.22 Shrub species should be those which will stand up to ill treatment and which will withstand vandalism by their hardiness of structure and ability to respond to hard pruning if vandalised.. Shrub borders should be of sufficient width to achieve and sustain their function.
- 3.50.23 Planting proposed for adoption by the highway authority must be maintained for a minimum of three years.
- 3.50.24 A commuted sum will be required from the developer to cover costs of future maintenance of planting (see DoE Circular 16/91) following the initial minimum three year establishment period for highway planting.

3.51 **Ground cover for use in visibility splays**

- 3.51.1 Ground cover plants should be selected which can easily be maintained (by annual strimming, or trimming with a reciprocating cutter, or high blade setting on mowers) or which require no pruning to achieve a general height when fully grown of below 600mm above carriageway level. Wherever possible, species occurring locally should be used to help reinforce the local sense of place. Specialist advice should be sought.

3.52 Grassed areas

- 3.52.1 Grass should be used for its particular qualities and not simply as an initially low-cost alternative. Grass should not be used where pedestrians are likely to wish to walk regularly. In these areas hard surfacing should be provided or, alternatively, the likely route should be effectively obstructed by shrub borders of hard, spiky shrubs and/or a suitable form of enclosure, where this is appropriate.
- 3.52.2 Grass should not be subjected to wheeled traffic. However, there are situations where reinforced grass blocks may be used although it should be stressed that grass cannot tolerate oil spillage in any form.
- 3.52.3 Grass should not be expected to survive under large evergreen trees or bushes or in areas heavily shaded by buildings.
- 3.52.4 Good quality topsoil to BS 3882 : 1994, (unless otherwise agreed), and free from all builders' material, should be used. Excavated materials from the development may be used in the construction of the cores of mounds and banks, and this should then be covered by an appropriate depth of topsoil (usually 100mm – 150mm, depending on the situation).
- 3.52.5 Informal grassed areas should not be completely level. A minimum fall of 1:150 is necessary for drainage and banks with slopes of up to 1:4 may be used. For maintenance reasons, areas proposed for short grass cover require modelling with gently rolling contours so that ridges do not occur and localised low spots are not created.
- 3.52.6 The amount of grass edging to be trimmed should be minimised. Moreover, grass should not be laid up against vertical structures as mowing against them is difficult, requiring trimming by hand. It is advisable to provide either a mowing strip of approximately 200mm wide small-scale paving material, constructed in one of the ways specified for footway construction including edge restraint as appropriate. An alternative would be a narrow border of about 500mm width in which shrubs can be planted. Adequate access for mowing machines must be allowed and areas should not be surrounded completely by fencing or shrub borders. Where an area is large enough to justify it being mown by gang mowers, an access of at least 2.7m width should be available and edge curves should be not less than 5m radius.
- 3.52.7 Where trees are planted within areas where gang mowers are to be used, they should be placed at least 3m apart (most tree planting should exceed this in any event for cultural reasons) and consideration given to the ability to carry out grass maintenance without damaging the trees. Trees may be protected by planting in areas of longer grass where regular mowing is not required, within areas of shrub planting, or by other 'design features'.
- 3.52.8 The soil types for grasses are not critical although lawn grasses do not thrive on highly acid soils. Extremely dry and wet areas should be avoided for lawns and excessive shade will discourage healthy grass growth. It may be appropriate for shallow soil depths to be provided in some grass sight-line zones.

- 3.52.9 The selection of the seed mix is most important as soil etc may vary between sites. Slow growing ‘low maintenance’ grass is normally required so as to reduce the frequency of mowing.
- 3.52.10 The provision of wild flower mixture appropriate to the locality may be considered for some situations. The advice of an ecologist regarding establishment and maintenance requirements should be sought. Generally, thin topsoil depths (25-50mm) are required for the successful establishment of wild flora and subsoils may be suitable in some situations, but soil fertility is also a critical factor. The use of carefully retained topsoils rich in seed content may be preferable to the introduction of wild flora seeds of ‘non local’ provenance.

3.53 Road verges and all other areas

- 3.53.1 The following list illustrates a range of seed mixes for different uses and soil types. The list is not intended to be exhaustive and it is recommended that professional advice is sought as regards appropriate species and the choice of fertiliser and its application.

(a) Light sandy soils

Hard Fescue; Biljart	40 per cent
Creeping Red Fescue; Novorubra	30 per cent
Chewings Fescue; Koket	20 per cent
Browntop; Highland	10 per cent
	100 per cent

(b) Clay soils

Smooth-stalked Meadow Grass; Monopoly	60 per cent
Creeping Red Fescue	35 per cent
Browntop; Hihgland	5 per cent
	100 per cent

3.53.2 Adoption of planting within the highway

Detailed discussions are required between the developer and statutory undertakers at a very early stage to establish requirements concerning the minimum vertical and horizontal clearances for their equipment, any existing trees to be retained on site and new trees so the layout can take account of this. Similarly the detailed routing of the statutory undertakers apparatus must take account of the detailed landscape proposals so that it can form part of the detailed planning consent. The coordination of tree planting and the retention of existing trees with lighting and signage proposals will be required.

- 3.53.3 Where new or existing planting can be shown to support one or more of the six guiding principles underpinning this guidance it may rank for adoption. It is expected that development will include proposals for planting on a mix of privately owned, public open space and adopted highway land, to secure a shared community responsibility for long term tree cover in particular.

Appendix 3

3.53.4 Planting provided to enhance the use or operation of the highway for pedestrians, cyclists or drivers will be considered for adoption, for example, where robust substantial planting provides a visual narrowing of the route to help maintain low speeds and shorten forward visibility, or tree planting within streets designed to accommodate their mature canopy size. Small isolated area of shrubs or grass will not normally be considered for adoption, due to their high cost of maintenance and vulnerability to damage.

3.54 **Arboricultural requirements for Section 278 and Section 38 Agreements**

3.54.1 Consultation with the Arboricultural Section will be necessary when any existing trees, hedges, significant shrub areas, or tree and shrub planting are proposed within the prospective Adopted Highway.

3.54.2 Proposals should clearly identify the Highway limits and the location of any of the above features within the proposed Highway.

3.54.3 Where existing trees, hedges or shrub areas are to be Adopted, an Arboricultural Report will be required from an appropriately qualified arboricultural consultant (eg Arboricultural Association Registered Consultant) to include:-

- Survey (to BS 5837 2005) of such features including details of species, dimensions, age, vigour, condition, class, growth potential and legal status, e.g. Tree Preservation Orders.
- Schedule of any defects and remedial works required to bring them into appropriate condition for Adoption.
- Arboricultural Implications Assessment to assess the impact of proposed works, including below-ground utilities.
- Documentation detailing Root Protection Areas, Tree Protection Plan and Arboricultural Method Statement
- Subsidence Risk Assessment if necessary (see 6.58.4).

3.54.4 Where tree or shrub planting is proposed within the prospective Adopted Highway, the Highway Authority will require:-

- Full details and specifications for ground preparation, plants, planting, and 3 years' maintenance.
- The design and specifications should be prepared by a qualified landscape architect, and preferably supervised by the same to successful establishment.

3.54.5 Where any vegetation, existing or proposed, is considered for Adoption a geotechnical investigation and report will be required to identify whether shrinkable clays are present. If so, the Arboricultural Report must include an assessment of the risk of subsidence to adjacent pavements/structures, existing or proposed (see 6.58.2) and proposals to ameliorate such risks.

3.54.6 Sub-contractors for arboricultural works shall be selected from the current Directory of Arboricultural Association Approved Contractors or approved by the County Arboricultural Officer.

3.54.7 Works shall comply with the following British Standards, or other current best practice industry guidelines as appropriate:

Topsoiling	BS 3882 : 2007
Tree Work	BS 3998 : 1989
General Landscape Operations	BS 4428 : 1989
Trees in Relation to Construction	BS 5837 : 2005

In addition, all Utilities shall be reminded of their obligations under NJUG Guidelines Volume 4 “Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees”.

3.54.8 An agreed Commuted sum for existing and proposed trees and shrubs will need to be determined.

3.54.9 There must be a formal handover involving the Arboricultural Section when existing or proposed trees and shrubs are Adopted at the end of the 3 year maintenance period. This is to ensure standards have been complied with and to allow release of final Bond sums.

If further clarification is required in respect of Clause 3.3 please contact the County Council – **put in a general contact numberArboricultural Officer**

APPENDIX 4. GLOSSARY

The following terms appear in the Companion Document, or in documents referred to, or are commonly used in relation to design and construction.

Accessibility	The ability of people to move round an area and to reach places and facilities.
Active frontage	Provided by a building or other feature whose use is directly accessible from the street or space which it faces.
Backland development	The development of sites at the back of existing development, such as back gardens.
Block	The area bounded by a set of streets and undivided by any other significant streets.
Building line	The line formed by the frontages of buildings along a street.
Built form	Buildings and structures.
Connectivity	A property of linked streets and routes that enables passage through an area.
Context	The setting of a site or area, including factors such as traffic, activities and land uses as well as landscape and built form.
Defensible space	Public and semi-public space that is 'defensible' in the sense that it is surveyed, demarcated or maintained by somebody.
Design and Access Statement	A document to support a planning application, covering context and how the design responds to policy and criteria.
Design code	A document setting out with some precision the design and planning principles that will apply to development in a particular place.
Desire line	An imaginary line linking facilities or places which people would find it convenient to travel between easily.
Fenestration	The arrangement of windows on a facade.
Footfall	The level of pedestrian use in a particular area.
Human scale	The use within development of elements which relate well in size to an individual human being.
Landmark	A building, structure or feature that stands out from its background by virtue of height, size or some other aspect of design.
Landscape	The natural, cultural, economic and perceptual elements that combine to create a particular place.
Landscape character assessment	A process by which landscape is analysed and classified to establish generic landscape types and unique landscape character areas.
Legibility	The degree to which a place can be easily understood and traversed.

Appendix 4

Local distinctiveness	The positive features of a place and its communities which contribute to its special character and sense of place.
Massing	The combined effect of the height, bulk and silhouette of a building or group of buildings.
Mixed uses	A mix of uses within a building, on a site or within a particular area. 'Horizontal' mixed uses are side by side, usually in different buildings. 'Vertical' mixed uses are on different floors of the same building.
Movement	People and vehicles going to and passing through places, spaces and buildings.
Node	A place where activity and routes are concentrated.
Permeability	The degree to which a place has a variety of pleasant, convenient and safe routes through it.
Public art	Permanent or temporary physical works of art visible to the general public, whether part of the building or free-standing: can include sculpture, lighting effects, street furniture, paving, railings and signs.
Public realm	The parts of a village, town or city (whether publicly or privately owned) that are available, without charge, for everyone to use or see, including streets, squares and parks. Also called public domain.
Settlement pattern	The distinctive way that roads, paths and buildings are laid out in a particular place.
Street furniture	Structures in and adjacent to the highway which contribute to the street scene, such as bus shelters, litter bins, seating, lighting and signs.
Townscape	The built and natural elements that combine to create a settlement.
Townscape Character Assessment	A process by which settlements are analysed and classified to establish generic townscape types and unique townscape character areas.
Urban design	The art of making places. Urban design involves the design of buildings, groups of buildings, spaces and landscapes, in villages, towns and cities, and the establishment of frameworks and processes that facilitate successful development.
Urban design framework	A document which informs the preparation of development plan policies, or sets out in detail how they are to be implemented in a particular area where there is a need to control, guide and promote change. Area development frameworks are also called a variety of other names, including urban design strategies, area development frameworks, spatial masterplans, and planning and urban design frameworks.

Urban grain	The pattern of the arrangement and size of buildings and their plots in a settlement; and the degree to which an area's pattern of street-blocks and street junctions is respectively small and frequent, or large and infrequent.
Vernacular	The way in which ordinary buildings were built in a particular place, making use of local styles, techniques and materials and responding to local economic and social conditions.
Visual clutter	The uncoordinated arrangement of street furniture, signs and other features.

