2.1 Principles

To create a clear hierarchy of streets in the borough four street types have been identified:

Borough Centre Streets & Spaces

The town and local centre streets have the highest use in the borough and they are the places where the majority of people directly experience the public realm and these streets serve as a backdrop to the life of the borough. As such it is important that they have a simple and functional design to allow for the diverse needs of all the users of the town centre.

The aim is to provide a clear, simple streetscape that compliments rather than detracts from the architecture of the town centres. One, high-quality paving material should be used throughout the town centre streets to create continuity. Street furniture should be used only in locations where there is a requirement for it, and where it does not obstruct pedestrian movement. Where possible street furniture should be grouped together to create a more coherent appearance and reduce obstructions in the footway. To create a strong identity for the public realm in the borough a standard palette of furniture has been developed. The vision highlights the rediscovery of the green character of the borough and in the town centres this is expressed as tree planting throughout the streets and spaces.

Connecting Routes (All Borough 'A' Roads Outside of Town Centres)

The connecting routes serve a key function of allowing circulation of vehicles cyclists and pedestrians through the borough and between the town centres. The character of these routes should express the suburban nature of the borough through tree planting, grass verges and planted sustainable urban drainage systems (SUDS).

The footways of these routes are to be paved with concrete paving slabs of the same dimension as those used in the town centres to create a visual continuity.

Where the routes pass through local centres, shopping parades and transport nodes, street furniture will be required. This should be of the same type and the same principles of arrangement should be employed as in town centres.

Local Connecting Routes (All Borough 'B' Roads Outside of Town Centres)

These are important local connections between centres, and carry more traffic than the residential streets. The character of these is similar to the connecting routes, however given there narrower profile there is not space for SUDS or verges, but tree planting is to be encouraged. Street furniture should not be required but in certain circumstances seating in proximity to bus stops should be provided. Paving is the same as that used on connecting and residential streets.

Local/ Residential Streets

A large part of the borough of Merton is residential. The character of many of these streets is already principally green due to the impact of front gardens and existing trees. This character should be extended across the borough through further tree planting. Parking in front gardens should be discouraged and where it is used permeable materials should be used to decrease the impact on drainage systems, and a boundary fence maintained to keep a clear sense of ownership.

Paving on residential streets is of concrete paving slabs to match the connecting routes and there is no street furniture.

» The table on the following page breaks down the streets into their component parts and defines the difference between the various street types.

3   Public Realm Materials and Furniture Hierarchy

Location	Borough Centres (streets and public spaces)	Strategic Connecting Routes (including TLRN routes)	Local Connecting Routes	Local/ Residential Streets	Materials
Paving material	Granite where appropriate ASP elsewhere	ASP	ASP	ASP/ Asphalt where ASP is not possible	
Paving strengthening at kerb for vehicle overrun	At all Footway edges prone to vehicular overrun, unless protected by bollards, guard-railing, or safety kerbs	At footway edges where required	At footway edges where required	At footway edges where required	
Granite Kerbs	300mm at all road edges	300mm at all road edges	150mm at all road edges	150mm at all road edges	
Seats	Appropriately sited throughout borough centres	At key locations, ie. transport nodes, and local shopping parades	In association with bus stops, where space and location permits	None	
Litter bins	Type A sited appropriately sited throughout town centres	Type A sited at key Locations	Type B sited where demand requires	Type B sited where demand requires	
Cycle Stands	Appropriately sited throughout town centres	At key locations, ie. transport nodes, and local shopping parades	At key locations, ie. transport nodes, and local shopping parades	At key locations, ie. transport nodes, and local shopping parades	
Bollards	Type A Where unavoidable (through the use of safety kerbs and paving strengthening)	Type A Where unavoidable (through the use of safety kerbs and paving strengthening)	Type B Where unavoidable (through the use of safety kerbs and paving strengthening)	Type B Where unavoidable (through the use of safety kerbs and paving strengthening)	
SUDS	None	Where space allows	Where space allows	Where space allows	
Tree Planting	Where space allows	Where space allows	Where space allows	Where space allows	
Lighting	Taller posts, metal halide lighting, with lower pavement lights in areas with high pedestrian traffic	Taller posts, mercury lighting	Taller posts, mercury lighting	Smaller scale posts, sodium lighting	
Public Art	Where appropriate at key gateway locations	Where appropriate at key gateway locations	None	None	
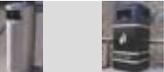
Legend

Borough Centre		Local / Residential Streets	
Strategic Connecting Routes		Open Space	
TLRN Strategic Connecting Routes		LB Merton Boundary	
Local Connecting Routes			

Wimbledon Park

WIMBLEDON PARK

A218

Wimbledon Common

WIMBLEDON VILLAGE
A219

A238

COLLIERS WOOD

A238

A217

A216

A238

A3

A238

A298

A24

A236

Bushey Mead

MITCHAM

MORDEN

Morden Hall Park

A217

A239

A24

A237

Motspur Park

Morden Park

A239

A297

Mitcham Common

A236

A24

0   1 km

It is not intended that through this guide the Borough's entire streetscape should be replaced. That would be financially and sustainably unachievable. It is intended to provide guidance for those areas which require renewal or maintenance work as well as those areas undergoing regeneration. It is also intended that where major new developments occur then funds should be sought for public realm works in the vicinity.

Before any major streetscape works are undertaken, a street audit should be carried out by a street scene officer to establish if the site contains any furniture, paving, or signage of historic importance or which contributes to the character of conservation areas such as special signs. Architectural features such as horse drinking troughs, drinking fountains, historic railings around open spaces, cast iron street name signs, cast iron coal holes should also be noted and retained.

These items contribute significantly to the local character of the area and should be kept and repaired in all circumstances. Should a historic item be placed in a position where is has to be removed, then it should be re-sited in a more suitable position nearby.

Any stone paving in the public realm should be assessed in terms of its quality. Generally stone paving should be retained and repaired where possible. If retaining the paving is not possible then the stone should be reused elsewhere.

There are a large number of conservation areas in the borough, as identified in Appendix II, each of these has a specific design guide and character assessment. Please refer to the council website for these various details.

Horse Trough, Cricket Green, Mitcham

Railings around Cricket Green, Mitcham

Drinking fountain and horse trough, Parkside Avenue, Wimbledon

Drinking fountain - Wimbledon Village

Conservation area street name sign, Cricket Green, Mitcham

Conservation area street name sign, Wimbledon Village

Granite sett channel detail, Wimbledon Village

Granite sett crossover - Wimbledon Village

5   Sustainability

5.1   Introduction

Sustainable communities embody the principles of sustainable development. They balance and integrate the social, economic and environmental components of their community; meet the needs of existing and future generations; and respect the needs of other communities in the wider region or internationally also to make their communities sustainable. Sustainable communities are diverse, reflecting their local circumstances. There is no standard template to fit them all. However, in general terms, they should be:

» Active, inclusive and safe;
» Well run and managed;
» Environmentally sensitive;
» Well designed and built;
» Well connected;
» Thriving;
» Well served; and
» Fair for everyone.

Creating a sustainable context, encouraging sustainable movement, and using sustainable materials and details can help to achieve a sustainable public realm.

5.2   Sustainable Context

An essential part of a sustainable public realm strategy is the development of the public space framework. This is a creation of a hierarchy of spaces, which relates to the overall development framework. A coherent public space framework provides a sense of place, orientation and a relationship with the surrounding townscape. Legible spaces encourage multiple outdoor activities and places where people can stop and feel the character or nature of a place. It also helps to prevent project-by-project style development, which is likely to overlook public space provision and create a series of isolated gaps within the borough rather than usable, vibrant public spaces.

5.3   Sustainable Movement

Sustainable movement includes the creation of a movement framework or transport strategy, integration of open spaces with their surrounding buildings, possibilities for renewable energy use, and an adequate maintenance provision. A sustainable movement strategy aims to minimise the reliance on the private car while advocating alternative methods of transport such as cycling, walking and public transport. This includes maximising the proximity to public transport systems, restricting car parking, creating high quality walking and cycling routes, and designing road layouts as service networks rather than through routes.

The nature of open spaces is reliant on the surrounding buildings in terms of microclimate, quality of the design, and surrounding activities and uses. To ensure a positive climate in the public realm, the effect of building form on wind flow patterns in external spaces should be considered as well as the provision of basic shelter. This can be achieved though covered walkways, tree planting, sheltered seating and building overhangs. To ensure a level of high quality urban design, a number of factors affect the public realm. They include:

» The relationship of building height to street width;
» The siting of main entrances to provide visual quality and interest
» Mixed-use developments should be encouraged with a level of density appropriate to enliven public spaces.
» Some outdoor structures such as kiosks, bus shelters and information points require a power supply that could be locally produced from renewable energy sources such as solar or wind.

5.4   Sustainable Materials

Ideally, as part of a holistic and sustainable approach to street design, all materials used within the public realm should be subjected to a sustainability review. This information will enable the council, stakeholders and design professionals to lower the environmental impact of projects, improve upon existing benchmarks at the same time as monitoring construction costs. The sustainability credentials used in selecting materials can be broken into five performance indicators which take into account the total lifespan of a product:

» Embodied energy (including raw material processing, manufacturing and transportation to site);
» Energy consumption during a products lifetime;
» Choice of environmentally responsible materials;
» Sourcing 'locally'; and
» Durability/Reusability/Recycle-ability.

A broad sustainability review has been implicit in the selection of the materials specification for Mertons' public realm. A simple palette of durable and long lasting materials will ensure that ongoing maintenance costs are reduced, materials need to be replaced less often, materials are selected for their functionality and that initial and ongoing costs are balanced.

Value for Money
Whilst it is ackowledged that higher quality materials installed well often save money in the long run, affordability and best value must be taken into consideration when selecting materials. This is essential to ensure that the available budgets for street scene works are used to achieve best value across teh whole Borough.
Further details about the sustainability of materials and their selection criteria are presented on the following sections.

5.5   Energy in the Public Realm

Merton has been a leader in the provision of renewable energy with the adoption of the 'Merton Rule'- an adopted policy which requires the use of renewable energy onsite to reduce annual carbon dioxide (CO_2) emissions by 10% in all new major development projects. Hundreds of local authorities look set to follow Merton's lead, throughout the UK. The ;policy at present only applies to development of 10 dwellings or more (for residential properties) or floor space of 1000sq metres or more. However the energy consumption of the public realm, especially lighting energy consumption is likely to become an area of increasing focus in coming years.

An established energy hierarchy method (usually applied to built development) establishes the priority for all energy-related issues, and planning for major improvements in the public realm should reflect this prioritisation. The different elements of this hierarchy include:

» Reduce the need for energy; The public realm design should minimise the potential energy consumption of the scheme, for example utilising reflective signage as opposed to internally illuminated wherever possible;
» Use energy more efficiently; Public realm elements such as lighting should use the most energy efficient fixtures and fittings as possible, for example utilising LED fixtures wherever possible;
» Supply energy from renewable sources; Investigate on or off site strategies for generating a proportion of the energy consumed from renewable sources.
» Following this energy hierarchy is the most cost effective way to obtain maximum carbon reductions in the built environment.

5.6   Renewable Energy in the Public Realm

From a design perspective the provision of renewable energy within the public realm, such as solar PV or wind technologies, should be treated with caution. A strategic approach to their use needs to be developed to ensure that other key goals of the public realm strategy are not compromised. For example the provision of solar panels on a myriad of signage and other furniture within the public realm could create an even more cluttered effect unless carefully designed. Similarly the Borough's public spaces could become unpleasant places to relax if several wind turbines were placed within them. There is also a danger of the public realm becoming littered with varying types and styles of equipment once new technologies arise.

The issue of energy consumption, reduction and generation involves more diverse issues and stakeholders than public realm design alone and it is therefore recommended that a strategic approach is developed to avoid a piecemeal approach which could impact negatively on the character and quality of Merton's public realm. It is felt that the greatest steps that could be achieved within the public realm initially are energy reduction and efficiency for example through a review of street lighting practices and fittings to ensure that the latest techniques and technologies are being utilised.

5.6   Sustainable Urban Drainage Systems

Central Government's 'Future Water' strategy (DEFRA, Feb 2008) makes clear that Sustainable Urban Drainage Systems (SUDS), including permeable paving, will be central to the country's water management plans to tackle the ever increasing risk of flooding in our streets, towns and cities.

With more properties being built at higher densities, the amount of hard standing in urban areas is increasing. The London Assembly has estimated that around two-thirds of front gardens in the London area – equivalent to an area 22 times the size of Hyde Park – are already at least partially paved over, primarily to provide off-road parking spaces. With climate change, winter rainfall could increase in some regions by as much as 30% by the 2080s, while rainfall intensity could increase both in winter and summer. The rising risks of flooding and pollution from an ageing drainage system unable to cope with more intense rainfall are extremely important.

Under natural conditions, a high proportion of the water that falls as rain soaks into the ground and/or is carried away by rivers. But in urban areas, properties and roads alter the natural drainage of water through the catchment, as hard surfaces increase both the rate and amount of rainwater that turns into run-off. Large amounts of surface water run-off can also cause water quality problems. As water runs over land, it picks up pollutants and transports them into watercourses. Run-off from roads will often contain heavy metals and hydrocarbons. This has serious implications for water quality.

Drainage infrastructure helps to manage surface water run-off by conveying rainwater away from properties and other receptors, such as roads. Piped infrastructure, which is primarily below-

ground, has only a limited capacity to cope with surface water. Heavy rainfall events generate surface water run-off, causing flooding when the capacity of one or several parts of the drainage system are exceeded. Sustainable drainage systems (SUDS) provide an alternative approach to piped systems. Whereas piped systems are characterised by a limited capacity, fast conveyance and no reduction in volume, SUDS mimic natural drainage processes with the characteristics of storage, slow conveyance and some volume reduction. There are a number of techniques that encompass the essential elements of SUDS such as green roofs, porous paving and ponds.

The Government has indicated in its water strategy that intends to change householders' permitted development rights to allow them to pave over their front garden without planning permission only if the surface is porous, such as by using permeable paving or gravel. Legislation to this effect is indicated to be introduced in late 2008.

Initial costs of some types of permeable paving may be higher than for traditional forms but there remain cheaper, readily available permeable options, such as gravel. As more households start to use permeable materials for paving, the market price is likely to drop, since the materials are not inherently more costly. Permeable paving can cost less to maintain, so costs over the lifetime of the paving may be lower. Any additional costs would be more than offset by the benefits of reducing flood risk and improving water quality.
(Future Water-The Government's water strategy for England, DEFRA, Feb 2008)

Slowing water down – infiltration and soakaways
Infiltration is an important measure in managing surface water in a more sustainable way by mimicking natural processes. However, implementation requires careful consideration and

Example of open detention basin SUDS used in a tight urban condition
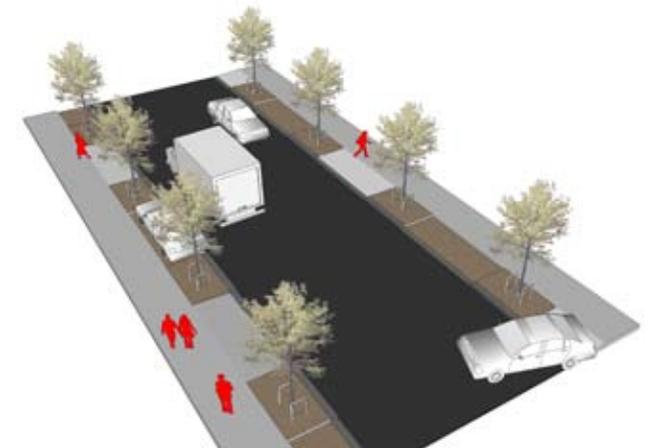
Example of street layout using permeable bound gravel paving for parking areas

it is not applicable in all situations, depending on soil and ground conditions. In general, infiltration techniques are more appropriately located close to the source of run-off, before flows have concentrated into large volumes. There are a number of infiltration techniques, including:

» Soakaways: These may take the form of stone filled trenches or porous chambers. They can be used for draining surface water from roofs, or run-off from roads, parking areas and other surfaces. Building Regulations set out in detail where and how soakaways can be used.

» Porous surfacing: This can consist of concrete blocks, porous tarmac, porous bound gravel or loose gravel. All are applicable to situations within private properties. Blocks, porous bound gravel and porous tarmac may also be applicable to public highways although it is recommended that these are trialled within the borough to determine their effectiveness.

» Unlined open conveyance and storage features: These include swales and detention basins which work by conveyance, storage and infiltration. They are applicable to both private and public situations. It is felt that these would only be appropriate with Merton in large open spaces or significant green verges adjacent to streets.

As part of a Borough SUDS bioretention may be provided in the central highway medians and side verges where space allows. These can help provide additional storm water filtering, cleansing and attenuation prior to discharge into water bodies, with the aim to maintain higher water quality throughout the Borough. They could also improve the Boroughs' biodiversity generate a distinctive streetscape aesthetic planted with sedges and iris etc. and provide additional habitats for wildlife.

Detention basin planted with damp loving species.

Water from road flows to the kerb line, then then passes through openings in the kerb, into detention basins

Water from footway flows directly into detention basins

Grating over detention basin opening

Pipe links detention basins below ground and overflows into the traditional drainage system
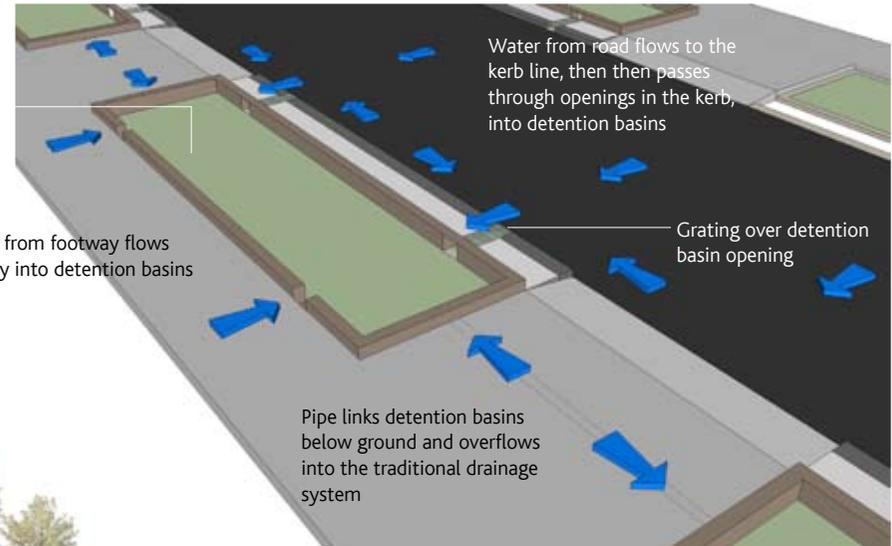
Diagram showing water movement in SUDS with detention basins
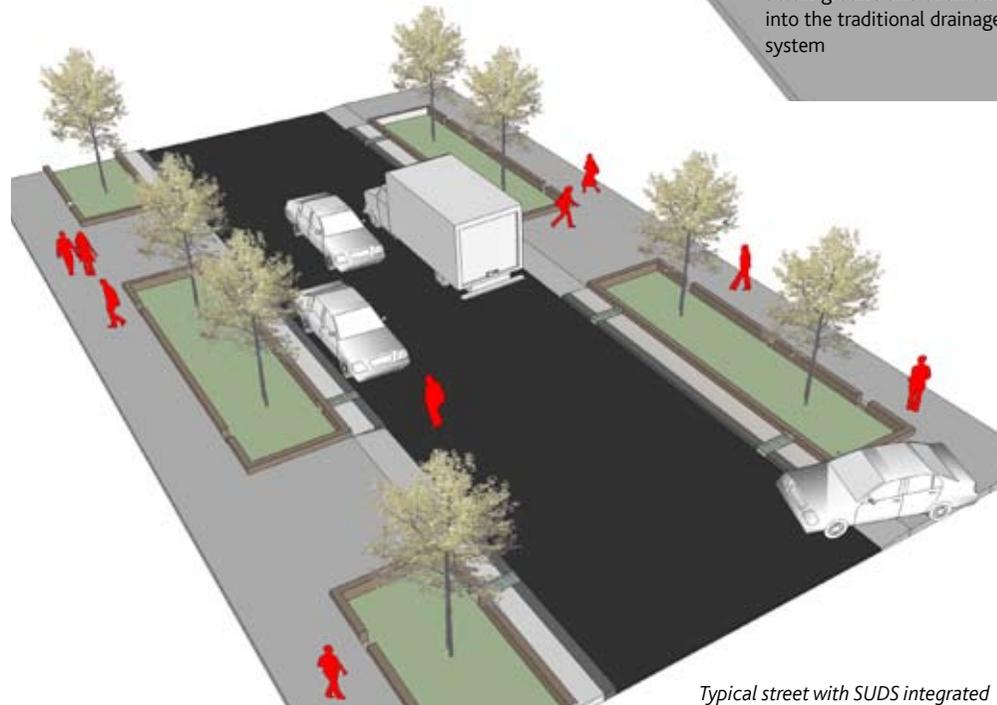
Typical street with SUDS integrated

A feeling of safety and security (as much as actual safety) are essential components of successful public spaces. By reducing the incidence and fear of crime, safe spaces improve the quality of life for residents and workers of an area. There are several ways in which the detailed consideration of public realm design can help crime prevention and fear of crime. In 2004, the then ODPM published "Safer Places: The Planning System and Crime Prevention" which identifies seven main attributes that contribute to safer, sustainable communities. They are not to be seen as guidelines or rules, but as a starting point for thinking about the role of design in crime prevention:

Access and movement
Places with well defined and legible routes, spaces and entrances that provide for convenient movement without compromising security. A successful movement framework will identify routes and spaces that are clearly legible, well connected, and well-lit at night. Crime tends to occur in places that are isolated, disorienting, and poorly lit.

Structure
Places that are structured so that different uses do not cause conflict. The form and layout of buildings, spaces and activities can affect a place's safety. For example, streets designed with active street frontages and natural overlook of streets and spaces can create an element of natural surveillance that reduces the risk of crime.

Surveillance
Places where all publicly accessible spaces are overlooked. Many of the attributes that contribute to safer places are underpinned by the theory of the positive impact of natural surveillance. In design terms, this surveillance can be natural or electronic, but all efforts should be made to create places that can naturally sustain a level of activity and occupation that provides surveillance. Parked cars can be particularly vulnerable to crime and unless parked in private garages, should be overlooked. Well-designed lighting increases the opportunity for surveillance and sends a message about the management and maintenance of a space. Only in extreme cases, where all other measures have been employed and are not effective in reducing crime, electronic measures such as CCTV cameras may be effective in reducing the incidence and fear of crime.

Ownership
Places that promote a sense of ownership, respect, territorial responsibility and community. Encouraging a sense of ownership helps to promote a feeling of responsibility for surroundings and can make an important contribution to the overall safety of a place. Alternatively, a lack of responsibility for a space can lead to inactivity and poor management and maintenance, which can promote unsafe environments.

Physical Protection
Places that include necessary, well-designed security features. Target hardening measures such as doors, windows and sometimes high quality designed gates can help to enforce safety while not necessarily taking away from the quality of the public realm. Such measures provide a level of security for the properties bordering the public realm.

Activity
Places where the level of human activity is appropriate to the location and creates a reduced risk of crime and a sense of safety at all times. The design of mixed-use areas with active street frontages and entrances to homes and other buildings facing onto the street can enliven an area at all times of the day and night. The public realm should be designed to cater for different cultural, age, and even interest groups, which allows for a wide variety of uses. In addition, the creation of a positive night time culture can ensure that places are used both night and day. Often retail areas, which consist mainly of shops are empty during the evening and can adversely affect the visual environment if roller shutters are used. Either creating a visual display of the first floor frontages or mixing a variety of uses can help to remedy this.

Management and maintenance
Places that are designed with management and maintenance in mind, to discourage crime in the present and the future. Attention to the design and maintenance of the public realm discourages crime in relation to the attribute of ownership above. The attention to spaces promotes a greater natural respect towards them.

Lighting
Lighting can be a key tool in creating a feeling of safety in the public realm during the hours of darkness. A well lit space encourages people to use the area, increasing natural surveillance. The use of white light in public spaces also renders skin tones in a more natural way aiding facial recognition and has been shown to discourage anti-social behaviour.

The council's own research in this area has highlighted that elderly residents are especially influenced in their use of public space by a lack of well lit spaces and streets.