NHS England Healthy New Towns

Cranbrook Site
Planning for Health and Wellbeing : Guidance for Policy Development

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December 2016

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Introduction:

This guidance is provided in support of the Cranbrook site's goals as part of the NHS England Healthy New Towns programme. The purpose of this guidance is to support development of town planning policies for the site that integrate health and wellbeing, initially in the form of a Preferred Options Document for the Cranbrook site. Where possible the guidance draws on existing good practice guides and toolkits to avoid 'reinventing the wheel' and also provides practical examples of good practice that are relevant to the Cranbrook site.

To deliver integrated health and wellbeing it is necessary for those involved to understand certain key concepts:

- How Healthy New Town principles can be delivered through the planning system
- Understanding good practice that is relevant to the specific context
- Engagement with a wider range of stakeholders in the public and private sector and including housing developers
- Monitoring success and implementation of Healthy New Towns and the delivery of these principles

Planning for Healthy Environments:

- A holistic approach is needed which engages all parties including healthy service, engineers, social services, designers and planners.
- Active travel is a key element to the delivery of Healthy New Towns.
- "Planning for Healthy Environments" sets out 6 elements of healthy environments which are listed below, those in bold are covered by this guidance report:

1. Movement and Access
2. Open Space
3. Healthy Food
4. Neighbourhood Spaces
5. Buildings
6. Local Economy

Planning For Healthy Environments – What Works?

Linking to the themes put forward by the TCPA the focus of what works is taken to be around the following areas:

Movement and Access

- Encourage active travel (Multi-modal choice, walkability, cycling etc)
- Linked walkable spaces
- Active frontages with houses opening onto street

Open Space

- Linked green spaces
- Central space which all can access

Healthy Food

- Edible landscaping
- Independent retail
- Space for local market

Neighbourhood Spaces

- Places for community to come together
- Safe spaces

Buildings

- Sustainable building techniques
- Local material
- Community forums
- Disabled access
- Efficient and well located community facilities

Local Economy

- Establish local business opportunities (SME, incubators)
- Home working opportunities and workspaces for people to come together for networking & innovation

Engaging With Development Partners:

- It is necessary that Planning Authorities engage with a wide range of stakeholders, both in the public and private sector, and with citizens. A key stakeholder to engage with are development partners.
- Planning for health and wellbeing should not be seen as competing with or superseding existing good design and planning practice but rather providing a new paradigm from which to holistically view a range of issues ranging from physical health, to environmental sustainability, to equality, to mental health, to jobs and social wellbeing.
- There is a need for a clear message on the benefit and the value.
- Planning policy which positively reinforces the principles of HNT is needed.
- Developers should be engaged with early on and allow them to see it through.
- There is a need to monitor success of Healthy New Towns and create lessons to be learned. The value of healthy planning needs to be shown at a short, medium, and long term vision.

NHS Healthy New Towns Programme:

Outside of this document the Healthy New Towns programme also recognises the need to help LPAs establish clear principles for Healthy New Towns including addressing issues including but not limited to:

- Planning Authorities need assistance in how they engage with developers and influence their approach to Healthy New Towns principles: identifying the value proposition of Healthy New Towns.
- The need to establish a guidance for policy making in healthy places is recognised. This needs to be evidenced so that developers are guided and officers are given the tools to assess developments for healthy principles.
- The messages of Healthy New Towns should be engrained in national planning policy to ensure it trickles down to local plan and provide support at all levels of policy for robustly supporting healthy design.
- Recognise the mirroring of sustainability principles within healthy principles
- Identifying mechanisms for monitoring the delivery of healthy principles and their success.

Theme 1: Transport and Movement

Key policy objectives for green infrastructure in the Cranbrook Healthy New Town

The policy should provide a clear vision for sustainable transport across the new town, detailing density to ensure public transport and walking and cycling viability – without which the town risks being very largely car dominant with the damage to physical and mental health, as well as contributing to poor air quality, greater congestion and traffic injuries across the local highway network. With a green field site designing for sustainable transport can happen first and the road system is adapted to the needs of the most vulnerable users first. That way it will work for all road users – and be socially inclusive. There needs to be, for example, greenways within the development with good site lines (in part to address perceived safety issues) which link across the town and this include linkages with surrounding areas including the train station. Basic requirements are set out below.

Cranbrook could become an exemplar of sustainable, active transport showcasing the health and wellbeing benefits this could provide, says the Cranbrook Development Plan. There is potential for very substantial levels of both walking and cycling across Cranbrook. It could rise to the challenge to be a Healthy New Town. If it doesn't want to look and feel like so many drab new settlements which may also have had bold plans but which faded, Cranbrook's planning policy should address the following issues.

Sustainable movement

• Compact urban forms are acknowledged to be the most effective urban system for encouraging sustainable transport and reducing dependence on private motor vehicles (Bardhan et al., 2015). People are influenced by the wider built environment around them. People tend to walk more in places with mixed land use (such as shops and housing), higher population densities and highly connected street layouts. These urban environments are associated with between 25% and 100% greater likelihood of walking. Considering the relationship between urban form and walking, mix of use has the strongest and most consistent relationship with walking. However, mix of use, density and connectivity are all important factors and in many ways are mutually reinforcing (Sinnett, et al., 2012). Walkable, mixed-use neighbourhoods have higher levels of social capital compared with those living in car-oriented suburbs. Those living in walkable neighbourhoods are more likely to know their neighbours, participate politically, trust others, and be socially engaged (Leyden, 2005).

• Quality pedestrian infrastructure: The higher the pedestrian environment quality the farther, within reason, people are willing to walk (accounting for weather) (Chaug-Ing and Yau-Ching, 2014). There also appears to be a greater willingness to walk further for the commute (Larsen et al., 2010; Weinstein Agrawal, et al., 2014). This will include walking routes to the train station where good quality pedestrian infrastructure and wayfinding will help establish health promoting behaviours. In addition, footpaths need to lead out of Cranbrook to connect with other nearby settlements.

• Quality cycling infrastructure: this should include both segregated on-road provision utilising the Design Standards listed below. Advanced stop lines should be provided at all signalled intersections. Off-road shared provision should provide 5 metre paths in order to accommodate pedestrian and cyclists safely with clear delineation. Designing for cycling should give competitive advantage for cycle traffic (achieved through enhanced permeability relative to motor traffic). Cycle routes should also extend beyond Cranbrook to connect to neighbouring settlements and into Exeter in order to provide a safe, direct commute route.

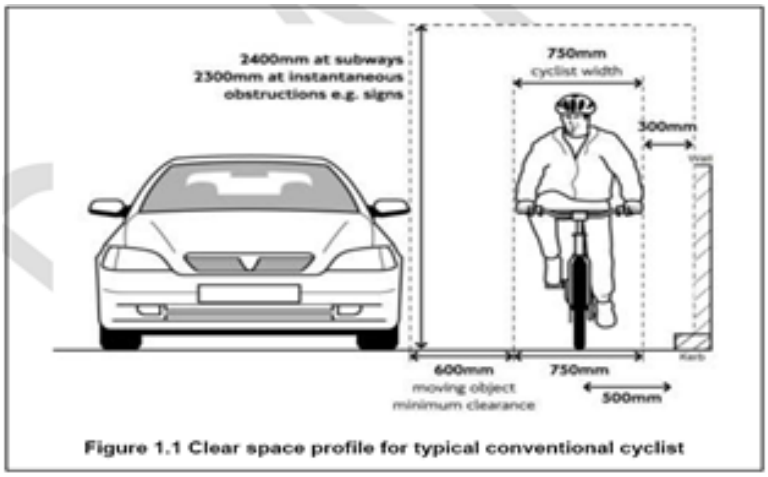
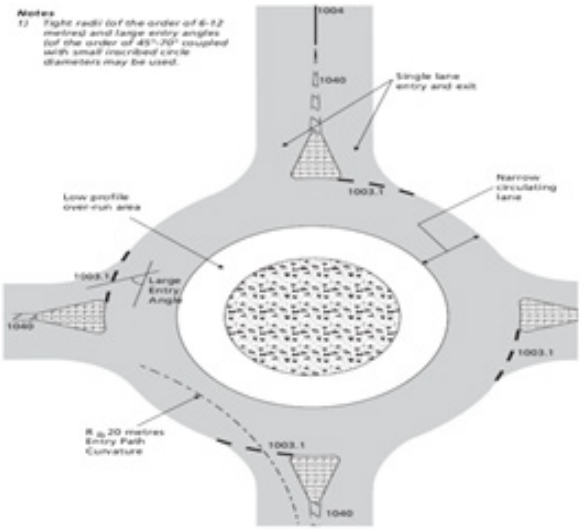


Figure 1.1 Clear space profile for typical conventional cyclist

• As noted by Highways England (2016), 'current levels of demand for cycle trips are not always a good indication of potential future levels of demand' (page 8). Moreover, they note that 'creation of a comprehensive network of good quality cycle routes has the potential to stimulate demand beyond the incremental change that demand models predict' (Highways England, 2016, page 8).

Source: London Cycle Design Standards (LCDS) https://tfl.gov.uk/corporate/publications-and-reports/streets-toolkit#on-this-page-1

• Roundabouts: many traditional designs leave cycle users exposed to harm from motorised traffic.



- Approaches and exits perpendicular
- Entries and exits 4-5 metres wide
- Entry and exit radius small, 10m
- Entry path curvature ~ 20m
- Inscribed circle diameter 25-35 metres
- Central island 16-25 metres
- Circulating carriageway 5-7 metres
- Reduces arm capacity by 10-30% (TRL Report 285)

Sources:
Lancashire: the cyclists' county (Lancashire cycle design guidelines)

www3.lancashire.gov.uk/corporate/web/viewdoc.asp?id=20844&mode=edit

Highways England Design Manual for Roads and Bridges TD16/07 Geometric design of roundabouts. Vol 6 Section 2 Part 3. www.standardsforhighways.co.uk/dmrb/

Traffic Advisory Leaflet 9/97 'Cyclists at roundabouts: continental design geometry. https://www.gov.uk/government/collections/traffic-advisory-leaflets

• 20mph speed limits: In addition to the prerequisites of pavement quality and other environmental facilitators of walking, the importance of measures to keep motor vehicle speeds to levels which do not discourage walking and cycling are key. 20mph should be the default speed limit across all of Cranbrook. Fear of motorised traffic can be ameliorated in Cranbrook so that it is not a blight on communities who are fearful to let their children walk independently beyond the end of their street. 20mph speed limits are effective in reducing speed driven in residential streets (Cairns et al., 2014). This is a critical determinant of safety, and as a result, of mode choice. Beyond reducing casualties speed influences whether people choose to walk or cycle – including whether parents/carers allow children to walk local journeys typified by the school journey. 20mph speeds result in fewer collisions and in reduced severity of collisions including injuries including car occupants (Wegman et al., 2008; MASTER Project, 1999). Repeated national surveys find that over 70% of adults support 20mph speed limits on residential streets (Department for Transport, 2012; Tapp and Nancarrow, 2014).

• Designing streets for 20mph will involve some traffic calming measures such as at junctions where speed tables help to give greater safety to pedestrians while junction radii should ensure that entry speeds are low and pedestrian are given priority at side roads. Traffic calming not only is the most effective intervention to reduce speeds but is also reported to lead to small self-reported and observed increases in walking and cycling (including children's play) both in the short and in the long term (NICE, 2008).

Figure 4.4 Indicative corner radii ranges by street type (movement function)

	arterial road high road city hub/boulevard	connector high street city street	local street town square city place
arterial / high road / city hub/boulevard	6-10m	6-10m	3-6m
connector / high street / city street	6-10m	2-6m	2-3m
local street / town square / city place	3-6m	2-3m	minimal

Source: CIHT (2010) Manual for Streets 2: wider application of the principles. Chartered Institution of Highways and Transportation, London.

• **Vulnerable road users:** Older adults constitute a major but very inactive population group, and yet there is a desire to be able to 'age in place' and maintain independence. To facilitate this while maintaining quality of life it is important to understand the role of the built environment on mobility limitations and disability (Rosso et al., 2011; Jancey et al., 2013). To gain benefits for particularly vulnerable groups such as elders and children maximum speed limits should be no higher 20mph; motor traffic should be calmed with more pedestrianized streets being a priority.

• **Walkability:** In the planning of Cranbrook there must be a clear understanding of how new facilities operate and how older pedestrians will act within given circumstances. There is a need for understanding and design of facilities to enable people, as they age, to remain active. See the following section for guidance on creating walkable streets.

• **Motor vehicle parking:** car parking spaces need to be minimised across the development otherwise by default the new town will be being planned for habitual car use. It will be important that undesignated pavement parking is designed out as much as possible, both through motor vehicle parking standards near homes and facilities but also by bollards where necessary, such as on corners, and other street furniture such as benches, and planters. Small pockets of green space should be designed with semi-mature trees (for shade) and as means of discouraging motor vehicle parking on green spaces.

• **Public bicycle parking facilities:** there should be 1 Sheffield type bicycle stand for every ten car parking spaces. At the rail station the ratio may need to be higher as it should be in the town centre. Cycle parking should be visible and accessible. It is often more useful and convenient to have plenty of small parking areas than one large one and, on shopping streets, consideration should be given to installing individual stands parallel to the kerb. In new residential developments, suitable secure cycle parking should be designed in at the outset. Off-street cycle parking should be in prominent locations near entrances to major attractions. Appropriate standards for cycle parking should be imposed on new developments (Sustrans, 2014).

• Research has shown that it is closeness to the destination that influences a cyclist's choice of where to park, regardless of the journey purpose. Studies have also identified that the use of the bicycle as a feeder to public transport can be a valuable component of a strategy for encouraging more people to cycle. For the long-term parking that this and employment trips generate, security is seen as the major determining factor when choosing to cycle (Cycling England, 2009).

Street layout and design

• Distances to facilities need to be less than 800 metres in order to encourage and support walking, not least for elders and those with mobility impairments. Better quality pavements and street scenes including shops and services encourage people to walk more. Street lighting needs to be of good quality not least in terms of perceived personal safety. Increasing attention needs to be given to Motorised Mobility Scooter use.

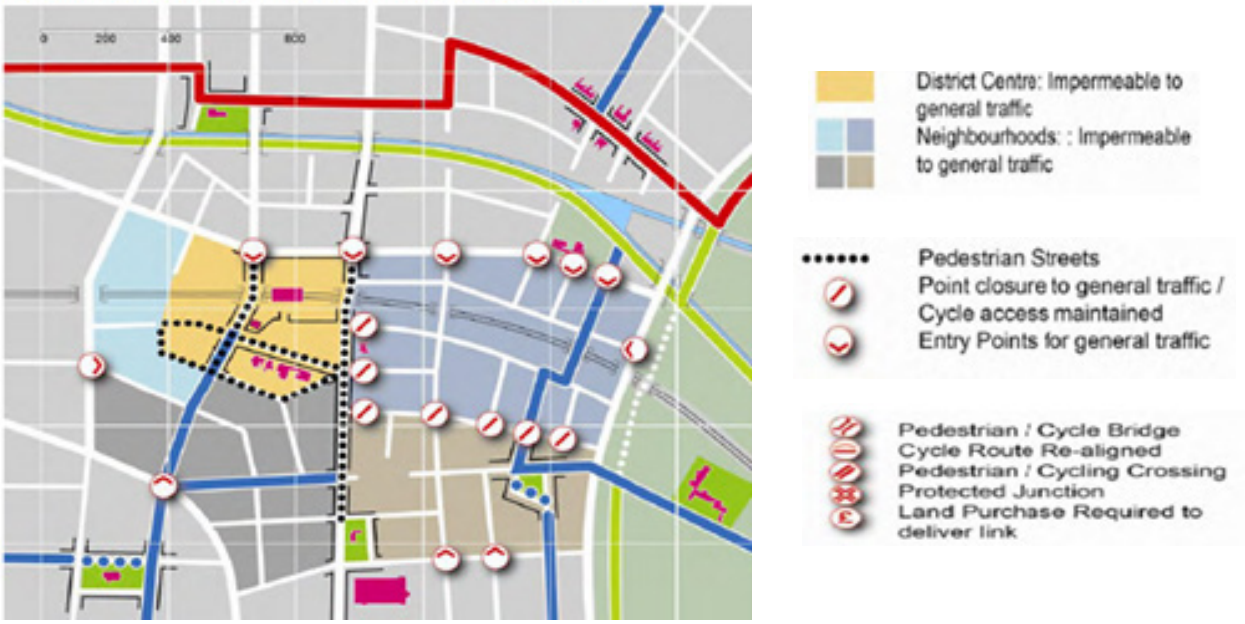
• The street network should be highly connected with short blocks and a fine grain of building plots to provide for diversity and interest in the built form. Living in highly walkable neighbourhood is associated with taking more steps in adults with a preference for sedentary transport and/ or a low intention to walk or cycle (Van Dyck et al., 2009). Importantly, it is the presence of increased opportunities afforded by the built environment to be more physically active that is most influential and not activity-oriented residents choosing to live in certain neighbourhoods (Heath et al., 2006).

• Implement the community design element, above and beyond that of the movement network and lot layout elements alone. This ensures that residents have a diversity of utilitarian destinations to walk to, thereby supporting walking for transport within the neighbourhood (Christian et al., 2013).

• Neighbourhoods require mixed use - local business, public transport and other services are viable, being close to housing. Densities no lower than around twenty dwellings per hectare are required to promote health and wellbeing, principally through walking for transport (Giles-Corti et al., 2015). Reductions in vehicle miles travelled have been estimated at 30% for compact walkable settlements compared to lower density developments (Ewing et al., 2007).

• Filtered permeability is required. This means providing separate routes for the sustainable modes from private motor traffic in order to give them an advantage in terms of speed, distance and convenience.

Figure 2.13 Filtered permeability area treatment example



• Similarly, design 'reverse priority' where pedestrian and cycle paths cross the highway.

• Greenways across Cranbrook need to be well lit and signposted to ensure that walking and cycling are easy choices for short trips (i.e. under 5km). Greenways should provide the base elements of safe routes to schools so that for much of a walk or cycle journey within Cranbrook students travel along motor-traffic free routes and limited travel along or by 20mph speed limited local roads. Greenways should also provide ease of travel to Cranbrook rail station where there should be weather protected Sheffield type stands to meet future demand.

• Shared space: Shared space improves the built environment, allows people the freedom of movement, improves ambience and enhances social capital and economic vitality.

Integration with public transport

• Public transport: It is inevitable that most door-to-door journeys include more than one mode of transport. Public transport can form part of seamless, multi-modal door-to-door journeys. In Cranbrook this requires bus services which connects with Cranbrook rail station's departure times, the town centre and routes through the town. This ambition should be pursued vigorously by the District and County Council with potential and current bus operators. This may be agreed as a pilot to test demand but if so would need to operate for at least 24 months in order to test latent and suppressed patronage demand as there is often a lag time between an intervention such as a new service and behavioural responses.

• The value of the railway station in Cranbrook will be under-utilised until it is connected both by bus services that increase the relative attraction of rail, especially into Exeter, and is supported by attractive walking and cycling routes.

• Legibility and signage: in supporting and enforcing safer, more comfortable, legible and coherent cycling and pedestrian infrastructure. Detailed cycling guidance is provided in the London Cycling Design Standards (TfL, 2014) and this is equally applicable in Cranbrook as anywhere else. Off-highway, signing is important to indicate where cycling is allowed and recommended, and to support cycle wayfinding. This is essential for visitors to an area but also includes new residents, and signing of key destinations from the railway and bus stops and other points of arrival is important. Where non-highway standard direction signing is used for pedestrians and cyclists, it must be clear and legible with good colour contrast between letters and backgrounds. This will require place branding across the town in the development of wayfinding. The Association for Town and City Management notes that by using consistent imagery, information and style the distinctive character of your town or city can clearly be communicated.

Key Policy tools

Inclusive walking infrastructure standards (draft guidelines for Bristol City Council, unpublished)

Inclusive walking infrastructure standards

No.	Service level type	Key specification	Value points
1	**Minimum pavement widths (Unobstructed)**	**Basic standard:** 2 lane > 250 cm* (25+100+100+25) **High standard:** 3 lane > 330 cm (25+100+100+100+25)	➔ Supports older adults, people with disabilities, parents/ caregivers and children. ➔ Allows for sociable walking. ➔ Allows tolerance for common hazards such as bins, street assets & vegetation.
2	**Raised secondary crossings**	Continuous level surface Continuous walking paving type Supportive road markings	➔ Prioritises people walking at secondary junctions. ➔ 2 step yield for vehicular traffic, and slows traffic. ➔ Supports older adults, disabled users, parents/caregivers and children.
3	**Narrowed vehicular roads**	e.g. 3.7m (e.g. single lane entrances to 2 lane streets) retains emergency service access widths	➔ Prioritises people walking particularly at junctions ➔ Adds widths (see item 1). ➔ supports 20 mph for motorised traffic
4	**Smaller turning radii**	Reduce road turning radii, can be supported by single lane entrances 1.6m footway radius (turning circle of a mobility scooter)	➔ Slows traffic turning ➔ Restores travel desire lines for people walking ➔ Based on turning radius for mobility scooter

5	**Spatial integrity**	Tree planting, parking ticket machines, lighting, signage poles, SUDS etc. in road space not pavement. Cycle lane, bench placement should not fragment minimum walking 2 lane width. Retain permeability, reduce "penning in" of pedestrians through obstructions such as barriers at crossings.	➔ Walking as the first choice ➔ Supportive for older adults, disabled users and children ➔ Integrates personal choice and mobility freedom as inherent in walking experience
6	**Consistent visual making of cycle lanes**	e.g. physically segregated cycle paths, consistent surface colouring e.g. red asphalt	➔ Supportive for older adults, disabled users and children ➔ Supports harmony between people walking and cycling
7	**Shared use & shared space**	Suitable for low flow, low speed sites only e.g. quiet residential streets <4000 journeys/day	➔ Supportive for older adults, disabled users and children
8	**Safety**	Non-slip, non-trip surfaces which also minimise damage to mobility equipment; Good lighting, natural surveillance; signals	➔ Supportive for older adults, disabled users, women and children
			➔ Perceived safety as important as absolute safety

Case studies

Example 1: Shotton Station Travel Plan

A Station Travel Plan at Shotton station in Flintshire has led to improved cycle facilities, better signage and more useful passenger information.
The station was identified as having poor interchange facilities with limited cycle parking and inadequate signage for bus services. A local action group worked closely with transport providers to develop a Station Travel Plan which identified where to focus improvements and set timescales for delivery.
As a result, Shotton station now has more cycle facilities and better information. Connections to other forms of transport have been improved through better bus stop markings at stops near to the station, improvements to pedestrian access and new fingerpost signage. In addition, a new real-time information display at the entrance to the station shows both rail and bus times.
This has not only made it easier for people to get to and from the station, but they have the added confidence of the knowing when their next rail or bus service is due to depart.

Source: Dept Transport 2013 Door to door strategy. London: DfT. https://www.gov.uk/government/publications/door-to-door-strategy

Example 2: Sustainable Travel Towns

The experience of the Sustainable Travel Towns initiative demonstrates that travel habits are more likely to be challenged when people are in the process of changing other aspects of their lives such as moving home, job or school. Targeting interventions at people with a greater propensity to change travel behaviour will make interventions more efficient and cost effective.
In total £15 million of local and government funding was invested in the three towns: Darlington, Peterborough and Worcester over a five-year period 2005 to 2009. The effectiveness of a "package" approach with Smarter Choices or “nudge” measures was explored, and by the end of the period travel behaviours were shifting towards sustainable modes. The interventions were demonstrated to be high value for money, resulting in reductions in congestion and CO2 emissions, and increases in physical activity. Across the three towns there was a reported reduction of 7-9% in the number of car trips, an increase of 10-22% of bus trips per person, an increase of 26-30 % in cycle trips per person and a 10-13% increase in walking trips per person.

Source: Dept Transport 2010 The effects of Smarter Choice programmes in the Transport Sustainable Travel Towns. Full Report. London: DfT. https://www.gov.uk/government/publications/the-effects-of-smarter-choice-programmes-in-the-sustainable-travel-towns-full-report

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Theme 2: Urban Design: Town Centre

Key policy objectives for green infrastructure in the Cranbrook Healthy New Town

The policy should provide a clear vision for the town centre and surrounds, detailing proposed land use mix and facilities, the quality of the public realm, landscaping and streetscape, as well as linkages with surrounding areas, including the train station. The design, quality and functionality of the built environment is critical as it is forms the setting for people's everyday lives (Dempsey, 2008). It influences how people feel and how they behave (Haigh et al., 2011; Carmona, et al., 2004). **Quality of place** should therefore be a leading priority, creating a safe, accessible, inclusive, attractive and functional town centre (Llewelyn-Davies, 2007). The design of the town centre should emphasise its civic role by providing a focal point for the community (Llewelyn-Davies, 2007). **Pedestrians should be prioritised** in the town centre, utilising shared space which allows people the freedom of movement, improves ambience and enhances social capital and economic vitality (CIHT, 2010).

Density, diversity, design, destination accessibility and distance to transit have been identified as the '5 D's' of urban development that affect physical, social and mental health (Ewing, et al., 2011). The more compact and interconnected a town centre and surrounding neighbourhoods are, the higher levels of neighbourliness and sense of community (Frank et al, 2003).

A **compact urban form** that has a high level of **connectivity, a mix of land uses** and forms in an **attractive setting** can reduce local car journeys by encouraging walking and cycling (Van and Senior, 2000; Cervero and Radisch, 1996). Residents in higher density urban areas tend to walk more and have lower obesity levels than those in less dense areas (Haigh et al., 2011). Higher density areas have also be associated with better traffic safety (less traffic accidents) (Ewing and Dumbaugh, 2009) Increased walking can lead to social interaction on the street, leading to feelings of safety and improved health and wellbeing (Frank et al, 2003). **Higher residential densities** should be focussed in and around the town centre. Regardless of the density, the town centre should have a comfortable feel with buildings and public and private outdoor spaces designed at a **human scale** with high quality landscaping and public realm (Llewelyn-Davies, 2007). **Low to medium rise buildings** can also increase social encounters to the streets and public spaces where destinations within walking distance are provided (Tillett, 2015). Mixed land uses can provide urban vitality and street life and increased viability of urban facilities and space for small businesses (Llewelyn-Davies, 2007).

Urban form

- The street network should be legible and highly connected to allow for ease of movement with short blocks and a fine grain of building plots to provide for diversity and interest in the built form as well as flexibility for future adaptation
- Medium density development (3-5 storeys) along key town centre corridors. Well-designed higher density developments can improve social interaction and diversity, vitality and viability of commercial and community services and facilities, support public transport and reduce car travel, increase energy efficiency and decrease resource consumption (Llewelyn-Davies, 2007). In designing new neighbourhoods, the emphasis should be on neighbourhood units, rather than housing numbers.
- A mix of land uses within multi-use and flexible and adaptable buildings should be provided, including work hubs, cafes, restaurants, bars, community uses, places of worship, nurseries, retail, commercial, and leisure and play spaces. Provision of good levels of social infrastructure can be provided at approximately £700/dwelling (Woodcraft, et al., 2011).
- An 'all-day economy' which embraces mid-evening and evening activities through the delivery of leisure and A3 uses should be delivered. Safe spaces should considered in the design and layout of the town centre, as well as the access arrangement of the town centre (e.g. lit walkways, late bus networks and taxi services designed into the scheme).
- The street network, public spaces and buildings should be orientated to maximise solar gain, respecting the natural landscape. Views to the town centre from surrounding neighbourhoods and views from the town centre to the surrounding countryside should be maximised by street orientation and framed by the built form to provide legibility. Clear points of entry and a clear hierarchy of streets will also help to improve orientation.

Streetscape and public realm

• Town centre buildings and public realm should be high quality, attractive and diverse, providing variety and interest in the streetscape.

• Distinctive civic spaces are provided within the town centre that are high quality functional social spaces should be included (these should also be designed to accommodate temporary community events, e.g. weekly market).

• Building facades should be articulated at street level to enable personalisation of spaces in front of retail and commercial premises, including decoration and the display of goods (Mehta, 2009). Opportunities for outdoor dining/seating and retail goods to be on the street should be accommodated through wider footpaths in front of shops and commercial premises (DCLG, 2012; Mehta, 2009).

• High quality materials, street furniture and landscaping should complement the streetscape, creating an identity, sense of place and civic pride for Cranbrook Town Centre and its community (fostering a sense of community and place attachment) (New Zealand Ministry of the Environment, 2005).

• Street edges should be defined by active building frontages and street corners should be addressed on both sides with building features used to define these spaces. First floor windows should overlook the street and public spaces to allow for passive surveillance and improve feelings of safety (Ewing et al., 2015). Street trees, safe pedestrian footpaths, landscaping and street furniture should all be integrated within the streetscape so as not clutter the street (Tillett, 2015; Mehta, 2009). The presence of active frontages, the proportion of windows and amount of street furniture is associated with higher pedestrian activity (Ewing et al., 2015). The location, type and frequency of street furniture, street trees, lighting and public art should be established early in the design phase to ensure coherence and consistency across the town centre.

• Seating (e.g. benches, chairs, planters with wide edges and other surfaces) located close to shops and facilities are one of the most important features in the public realm to facilitate conviviality and supporting social interaction (Mehta, 2009).

• Street trees, awnings and overhangs along the street frontage provide shade and weather protection.

• Town centre streets should be shared spaces so that vehicles and car parking do not dominate the streetscape. This can be achieved by integrating cycle and car parking spaces into the design of the streetscape. Landscaping and street furniture can provide visual delineation of car parking spaces without the need for signage and yellow lines. The location of servicing and loading zones should also be carefully considered in the design and layout of the town centre.

• Inclusive design principles should be adopted and the streetscape, public realm and land uses should cater for a range of ages and lifestyles.
• Buildings and spaces should be flexible and adaptable to meet changing needs of the community

Design

• High quality design, materials and landscaping should create a sense of place and civic pride

• Inclusive and sustainable design principles should be adopted

• The public realm should be designed positively to encourage movement and provide strategic places to ‘dwell’ where economic activity can be facilitated

• A consistent and carefully selected pallete of materials should be prescribed for public spaces to provide a legible and high quality network of spaces

• The design of spaces and buildings should contribute to the character and distinctiveness of the town centre
Connectivity and Movement

• The policy should prioritise the pedestrian and cyclist with legible connected routes through the town centre provided

• Routes in and out of the town centre should be clearly defined

• Green infrastructure should be continued into the town centre to create networks of green movement

•Provide a legible hierarchy of streets and roads which encourage convenient movement through the town centre and separate pedestrian and vehicle movement where appropriate

• Street network should deliver convenient movement patterns that link key spaces and uses

Connectivity and Movement

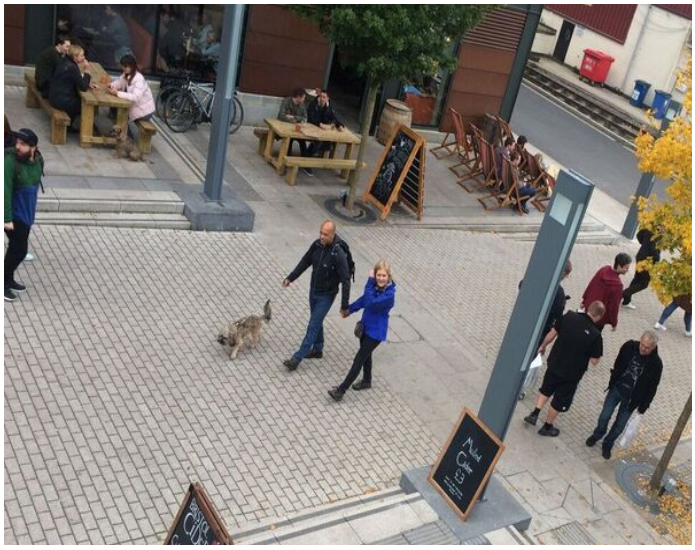
• The policy should prioritise the pedestrian and cyclist with legible connected routes through the town centre provided

• Routes in and out of the town centre should be clearly defined
• Green infrastructure should be continued into the town centre to create networks of green movement
• Provide a legible hierarchy of streets and roads which encourage convenient movement through the town centre and separate pedestrian and vehicle movement where appropriate
• Street network should deliver convenient movement patterns that link key spaces and uses

Key Policy tools

• By Design (2000) identifies the critical aspects of urban form to be considered:

Case Studies



Mixed use development and high quality urban realm: Wapping Wharf, Bristol (including temporary retail and restaurant uses during phased development)

Example design guidelines for mixed use development: River District Design Guidelines (2008) – https://www.portlandoregon.gov/bps/article/58869

Example of high quality streetscape: Caernarfon Town Square, IBI Group

"Example design code: *Taunton Design Code.* This design code sets out street hierarchies, requirements for street trees, seating, lighting, other street furniture and footpaths based on street type. It includes useful cross-sectional diagrams, on-street parking and landscaping requirements, as well as building-street interface diagrams for different block types."

Example design policy: Brighton and Hove revised Preferred Options Document, (page 94) *"All new development will be expected to: 1. Raise the standard of architecture and design in the city; 2. Respect the diverse character and urban grain of the city's identified neighbourhoods; 3. Preserve or enhance the city's built and archaeological heritage; 4. Protect or enhance key strategic views into, out of and within the city; 5. Provide a legible distinction between public and private realm; 6. Incorporate design features which deter crime and the fear of crime; and 7. Be inclusive, adaptable and accessible."*

• Quality of high quality streetscape: Kidderminster Public Realm, IBI Group

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Theme 3: Urban Design: Street Design

Key policy objectives for green infrastructure in the Cranbrook Healthy New Town

Streets are key components of the urban landscape, providing connections and significantly contributing to the character of a place. They make up the majority of public space and therefore should be designed to encourage maximum use by all of the community for movement, socialising and play, not just as thoroughfares and parking space for vehicles. High quality streets can improve health and wellbeing though a sense of belonging and social cohesion, reduction of crime and fear of crime and encouraging walking and cycling (Roger Evans Associates, 2007).

Street network

• Each neighbourhood should have a different character (Falk and Carley, 2012)
• The street network, public spaces and buildings should be orientated to maximise solar gain
• The natural landscape should be reflected in the street layout and network. Views to landmarks and the countryside should be maximised by street orientation and framed by the built form to provide legibility. Clear points of entry and a clear hierarchy of streets will also help to improve orientation.
• A hierarchy of streets should be established based on capacity and character (including filtered permeability) taking into account legibility and landmarks. This hierarchy should be reflected visually through the width, scale and enclosure of streets as well as street furniture, street trees and plantings. Key routes such as walking routes to schools should be identified and designed to promote a high quality, safe walking environment.
• Fine grain network of streets and buildings should be created through small, narrow plots set within small blocks. This gives a vertical rhythm to the streetscape.
• Within each block, a variety of different dwelling types, sizes and tenures should be provided to add to vitality and diversity to the neighbourhood and community. Mixed communities offer the opportunity for a balanced community and for people to move within the community as their circumstances change (Falk and Carley, 2012; New Zealand Ministry of the Environment, 2005). Vathorst in Amersfoort successfully used design codes to achieve high quality design and each block has its own character (Falk and Carley, 2012).
• A range of spaces for community use should be provided throughout neighbourhoods. These spaces should be an appropriate size and shape to meet an anticipated function, whilst allowing for flexibility and personalisation of the space by the community.

Streetscape

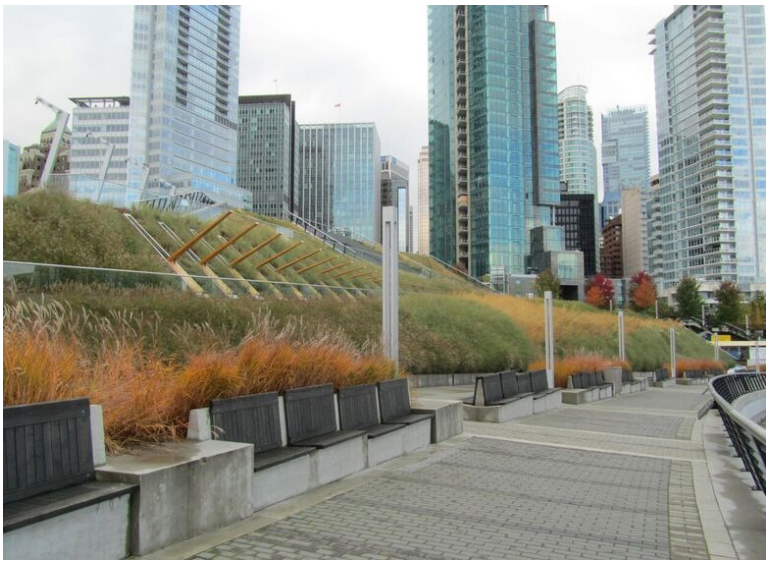
• Shared streets should be prioritised and cars should not dominate public spaces. The design of on-street car parking should make parking spaces obvious without the need for signs or yellow lines. Courtyards should be prioritised for use as amenity space by pedestrians and include cycle parking. Where developments are less than 30 units/hectare car parking should not be provided in courtyards as on-street parking works better (Falk and Carley, 2012).
• The street should be well-defined and designed as a complete space, providing sufficient room for street trees, footpaths, street furniture, integrated parking and other landscaping.
• Continuous building lines can provide a clear definition to the street and a sense of enclosure. Projections and set-backs adding emphasis but maintaining a defined edge to the street. Perimeter blocks should be maximised so buildings face the street and allow opportunities for private amenity space within the 'courtyard' (Llewelyn-Davies, 2007). Bin storage and collection should be considered in street layout and housing design (Falk and Carley, 2012).
• Non-traditional street layouts and designs that incorporate permeable paving, rain gardens, bioswales and stormwater collection be explored (TfL,2016; Lamond, 2015)
• Landscaping and street furniture features (e.g. Pearl District in Portland, USA) should be provided to create an attractive environment and to encourage social interaction and pedestrian activity (Ewing, et al., 2015).
• Cycle routes and cycle parking should be integrated into the street design from the outset. Car parking should not dominate the streetscape and should be broken up with landscaping and public spaces.
• Streets should be safe, well lit, with passive surveillance from adjoining buildings. Windows on the street have been found to be associated with higher levels of pedestrian activity (Ewing et al., 2015). All dwellings should have a clearly identifiable front door which is visible from the public realm, with terraces, porches and steps and should maximise opportunities for living walls and roof terraces (Burton, 2015; GLA, 2010). This interest and variety to the streetscape and aids passive surveillance. Blank walls facing the street should be strictly avoided.

• Street furniture and opportunities to stop and rest along streets can encourage walking (Ewing at al., 2015) and should be provided for those who are not able to walk very far at a time or those who wish to sit and enjoy the public realm.

• Public art, local plantings and high quality local materials can contribute to the creation of distinctive places that are long-lasting. These features can also contribute to visual interest and diversity along routes. High quality, attractive streetscapes are important community infrastructure that can encourage physical activity (Giles-Corti and Donovan, 2002). A well-designed streetscape can also benefit residential prices and retail rents (CABE, 2007)

• Provide local opportunities for food growing. This could be within formal areas, such as allotment, community gardens or orchards, or small-scale opportunities within the public realm, on roof terraces and balconies. Improving the food environment can help address health inequalities, improve physical and mental wellbeing and increase social interaction (Marmot et al., 2010).

• Provide opportunities for live-work arrangements within house and street design.



Key Policy tools

• ATLAS Guide to large scale developments [online] provides an easy-to-use guide with web links to useful guidance documents on a wide range of topics. Available at http://www.atlasplanning.com/page/index.cfm

• By Design (2000) identifies the following key objectives: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7665/158490.pdf

• Essex Mixed Use and Residential Design Guide (1997) - http://www.uttlesford.gov.uk/CHttpHandler.ashx?id=2982&p=0

Case Studies

“The following residential developments have provided high quality residential streetscapes and public realm that would be useful to look at as precedent studies for Cranbrook (case studies, with images, are available online as indicated):

• Newhall, Harlow: diversity of housing, high quality public realm, home zones, use of design codes http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/case-studies/be?photos=true and http://urbed.coop/sites/default/files/SUNN%20final%20report_0.pdf (and case study on the design code used: http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/masterplans/newhall-harlow)

• Graylingwell Park, Chichester: high quality streetscape, terrace housing, Sustainable urban drainage systems, PV roof panels, communal compost and recycling facilities, green travel plan, home zones http://urbed.coop/sites/default/files/SUNN%20final%20report_0.pdf

• Stanmore Place, Harrow, London: mixed use development, high quality public space and landscaping, water features, car-free streets, good enclosure http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/case-studies/stanmore-place

• Gun Wharf, Plymouth: low speed, pedestrian priority streets, high quality public spaces: http://webarchive.nationalarchives.gov.uk/20110118095356/http:/www.cabe.org.uk/files/streets-gunwharf.pdf”

Example of high quality home zone streetscapes: Vauban, Freiburg – home zone streets, used by whole community

Example of Design code: that has facilitated each block having a unique character: Vathorst in Amersfoort, NL – design code.
Vathorst in Amersfoort, NL – design code - http://www.creatingasenseofplace.com/place/140/vathorst

• Example of a Preferred Options Policy: Brighton and Hove revised Preferred Options Document (page 96-97) *"Preferred Option - CP3 Public Streets and Spaces The quality, legibility and accessibility of the city's public realm will be improved in a comprehensive manner, in conjunction with other partners, though new development schemes, transport schemes and regeneration schemes. Such improvements will be required to produce streets and public spaces that enrich the quality of life for users by: 1. Positively contributing to the network of public streets and spaces in the city; 2. Enhancing the local distinctiveness of the city's neighbourhoods; 3. Preserving or enhancing the setting of the city's built heritage; 4. Utilising high quality, robust and sustainable materials for all elements of the street scene; 5. Incorporating street trees and/or other suitable street planting wherever possible; 6. Providing for the needs of all users and allowing for adaptability; 7. Helping to create safe public spaces; 8. Incorporating an appropriate public art element; and 9. Minimising the adverse impact of vehicular traffic. New developments will be expected to make an appropriate contribution to achieving these requirements."*

• Example of a Streetscape Guide: Shoreham Harbour Streetscape Guide (2012). This includes technical specifications for: • Seating • Benches • Bins • Cycle Stands • Bollards • Signage • Lighting • Guardrails • Walls and Fences • Footpaths • Carriageways and Kerbs • Tree Surrounds • Vegetation

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Vauban, Freiburg – home zone streets, used by whole community - https://www.itdp.org/wp-content/uploads/2014/07/26.-092211_ITDP_NED_Vauban.pdf

Vathorst in Amersfoort, NL – design code - http://www.creatingasenseofplace.com/place/140/vathorst

Stanmore Place - Harrow, London -http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/case-studies/stanmore-place?-photos=true

Gun Wharf shared community space http://www.lhc.net/projects/gun-wharf/

Theme 4: Urban Design: Green and Blue Infrastructure

Key policy objectives for green infrastructure in the Cranbrook Healthy New Town

Green (and blue) infrastructure (GI) provides an opportunity to deliver or contribute to multiple objectives at Cranbrook. However, the most effective way to achieve this is through ensuring that the GI features implemented as part of the development meet the definition of GI as 'a network of multifunctional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities' (CLG, 2016). This means that it should be designed, planned and delivered as a strategic multifunctional network across the development and adjoining landscape. This means that GI cannot be dealt with in isolation from other policy objectives, for example solely as part of landscape and biodiversity. Although the definition of GI specifies 'green space' planning policy is clear that GI 'is not simply an alternative description for conventional open space. As a network it includes parks, open spaces, playing fields, woodlands, but also street trees, allotments and private gardens. It can also include streams, canals and other water bodies and features such as green roofs and walls' (CLG, 2016).

The policy should encompass all aspects of GI and provide a clear indication of how GI will contribute to the delivery of multiple objectives. The strategy could be positioned around each of the priority areas at Cranbrook in response to local needs identified for example, in the Local Plan or the Joint Strategic Needs Assessment.

Health and wellbeing

• There is a body of robust evidence related to the benefits of GI to health and well-being (University of Exeter, 2016). The evidence is particularly strong for physical activity and mental health, the prevention of which are priorities for Cranbrook. In order to deliver these benefits the policy should make provision for green spaces that are accessible and close to where people live, which includes ensuring that the wider street connectivity and public realm provides a walkable environment. The Accessible Natural Greenspace Standards (ANGSt) from Natural England provide a good starting point (Natural England, 2009).

• The planning, design and maintenance of the GI should encourage all groups to use the spaces. Particular attention should be paid to children, and vulnerable or excluded groups who are most likely to suffer from health inequalities. This could be achieved through effective use of lighting, street furniture and ensuring the placement of spaces throughout Cranbrook meets ANGSt for all housing types.

• The use of GI for climate change adaptation also provides numerous health and well-being benefits and the policy should also consider the role of GI in providing wider environment improvement, for example reducing air and noise pollution.

Energy and climate change

Cranbrook should enable residents now and in future to be resilient to the changing climate and GI is a key feature in ensuring this is achieved. National planning policy states that 'New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change' (DCLG, 2012) and GI is highlighted as a key mechanism to achieve this.

The GI should be designed and planned to provide shade, reduce surface water run-off and temperatures for the lifetime of the neighbourhoods.

• It should also be designed and delivered to minimise the demand for water ensuring the GI itself is sustainable in the long-term as water becomes scarcer.

• The use of Sustainable Drainage Systems (SuDS) can effectively mitigate flood risk but should be designed and managed using current good practice (e.g. CIRIA, 2015) as well as enhancing the local distinctiveness of the area.

• In addition, GI provides an opportunity to improve water quality both within the boundary of the development and downstream and this should be included in the policy.

Education, culture and community

Numerous cultural and social benefits can be provided by GI.

• Urban environments have been linked to the 'extinction of experience' of nature and GI provides an opportunity to reconnect with nature in towns and cities (Sinnett, 2015). This can provide an educational resource to learn about nature and environmental stewardship.

• Green spaces can also provide places for social interaction, volunteering and community groups all of which can improve social capital and cohesion (University of Exeter, 2016). The policy should specifically address opportunities for community engagement with the GI resource at Cranbrook and, where possible, make provision for stakeholder and community consultation with the design of the GI and its long-term management.

Landscape and biodiversity

The GI should be designed and managed to protect and enhance biodiversity. Planning policy states that 'minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures' (CLG, 2012) and GI is the primary way of delivering this in new developments.

• The GI in Cranbrook should set out to deliver ecological enhancement, providing net biodiversity gain based on national and local action plans, and engagement with local nature conservation groups. This means considering the impact on biodiversity in all aspects and phases of construction, for example, by creating and conserving high quality habitats and integrating ecological enhancement throughout Cranbrook (e.g. using appropriate species in street planting).

• Ecological corridors are extremely important in nature conservation providing increased species movement and climate change resilience. However, they are difficult to recreate successfully (Gilbert-Norton et al., 2010), therefore a design and implementation that conserves existing networks should be prioritised and the GI should provide an effective, functional connection to wider, coherent ecological networks including those out with the development (Sinnett, 2015).

• The policy should outline how the GI will be designed and managed for nature conservation including the provision for areas of Suitable Alternative Natural Greenspace (SANG) to ensure sufficient green space for people and nature.

Housing and design

High quality GI is essential to good placemaking and urban design.

• Street trees and other soft landscaping make streets more welcoming and attractive and have been associated with greater walking activity (Sinnett et al., 2011). However, this requires sensitive design to ensure that the GI fits with the wider landscape (for example, using local species) and built character of the locale and considers safety and security (TDAG, 2014).

• The policy should set out how GI will be integrated throughout the design of the wider public realm in Cranbrook.
Transport

• The explicit focus on multifunctionality of GI and the importance of street trees and soft landscaping in encouraging active travel (Sinnett et al., 2011) provides an opportunity for the policy to effectively contribute to transport objectives.

• In addition, GI can improve the visual appearance of transport corridors, provide shading and, if designed appropriately, reduce air pollution (TDAG, 2014).

Transport

• The explicit focus on multifunctionality of GI and the importance of street trees and soft landscaping in encouraging active travel (Sinnett et al., 2011) provides an opportunity for the policy to effectively contribute to transport objectives.

• In addition, GI can improve the visual appearance of transport corridors, provide shading and, if designed appropriately, reduce air pollution (TDAG, 2014).

Long term management and maintenance

Planning policy recognises the importance of long-term management and maintenance of GI to ensure that it delivers its objectives. It expects that 'arrangements for managing green infrastructure, and for funding its management over the long-term, should be identified as early as possible when planning green infrastructure and factored into the way that it is designed and implemented' (CLG, 2016).

• The policy should therefore set out how management, maintenance and monitoring of all GI features post-development will be achieved to ensure that their multiple-functions are sustainable over time. This may include provision for community involvement, service charges for management and/or the involvement of a community trust.

Education, culture and community

Numerous cultural and social benefits can be provided by GI. Urban environments have been linked to the 'extinction of experience' of nature and GI provides an opportunity to reconnect with nature in towns and cities (Sinnett, 2015). This can provide an educational resource to learn about nature and environmental stewardship. Green spaces can also provide places for social interaction, volunteering and community groups all of which can improve social capital and cohesion (REF). The GI Strategy should specifically address opportunities for community engagement with the GI resource at Cranbrook and, where possible, make provision for stakeholder and community consultation with the design of the GI and its long-term management.

Case Studies

SUDS, integrated into the streetscape, Green and Blue Infrastructure - IBI Group

SUDS, integrated into the streetscape, Green and Blue Infrastructure - IBI Group

Key Policy tools

The following GI guidance documents are particularly useful:

• *Arup (2014) Cities alive. Rethinking green infrastructure. Arup, London. Available at: http://www.arup.com/cities_alive/rethinking_green_infrastructure.

• Department for Communities and Local Government [DCLG] (2016) Planning Practice Guidance. Green infrastructure. Available at: http://planningguidance.communities.gov.uk/blog/guidance/natural-environment/green-infrastructure/.

• *Natural England (2009) Green infrastructure guidance. Natural England. Available at: http://publications.naturalengland.org.uk/publication/35033.

• *Trees and Design Action Group (2012) Trees in the Townscape: A guide for decision makers. Available at: http://www.tdag.org.uk/trees-in-the-townscape.html.

• *Trees and Design Action Group (2014) Trees in Hard Landscapes: A guide for delivery. Available at: http://www.tdag.org.uk/trees-in-hard-landscapes.html.

TO NOTE: A new benchmark for GI being developed in a partnership between the University of the West of England and Gloucestershire Wildlife Trust, which could help the LPA assess future planning applications and emerging policy.

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