EPOA
Essex Planning
Officers Association

Design Details
Landscape and Greenspaces
V.1

EPOA
Essex Planning Officers Association

Content
Design Detail Section

6. Highways Technical Manual

- Street type table
- Street type description
- Parking square
- Pedestrian and cycle movement
- Bus stops, routes and termini
- One-way street
- Speed restraint within a 20mph zone
- Junction types and design
- Junction spacing
- Visibility
- Planting in sight-splays
- Turning heads
- Vertical clearance under structures
- Driveways to individual dwellings
- Bollards
- Kerbs
- Street lighting
- Access for fire tenders
- Commuted sums
- Adoption and maintainence of roads, footpaths and open spaces

7. Flooding

- What are Sustainable Drainage Systems?
- Sustainable development
- Design criteria
- Local principles
- Local standards
- What are watercourses?
- Consulting the Lead Local Flood Authority

8. Landscape and Greenspaces

- The benefits of Green Infrastructure and Biodiversity
- Landscape - key requirements
- The key principles of public open space
- Allocating space for green areas
- Community space for growing food
- Public space for growing food in developments
- Technical and practical considerations of food growing
- Use of landscape in urban spaces
- Public open space
- Recommended plant species
- Urban public space
- Mental health
- Successful criteria for public open spaces
- Ecology and Biodiversity

8. Landscape and Greenspaces

This section covers the important role landscape plays in our lives and explores how to deliver beneficial landscapes through good design.

Green development is more sustainable and delivers important environmental, social, health and economic benefits. Green space can be used as a community resource and provides recreational benefits, aids social cohesion, improves quality of life and increases property values. Trees and plants contribute to tackling climate change as well as providing habitats for different species.

Cycling and walking paths are an integral part of the landscape that encourage active modes of transport, healthier lifestyles and improved accessibility. The 'Landscape' section also includes references to community spaces for growing food and integrated sustainable urban drainage systems (SuDS) – the first time such subjects have been covered by the Essex Design Guide.

Topics discussed include:

- Ecology and biodiversity
- Protection of species
- Trees and hedge species
- Plant species
- Appropriateness of planting for specific areas within the landscape
- Materials
- Details of areas
- Public space guidance
- Factors that affect the quality of public space

Landscape is addressed within the following sections of the guide which should also be referenced:

- Garden Communities
- Health and Wellbeing

Key Messages

- Landscape and strategic open spaces should be co-located within the layouts of new developments. High-quality communal spaces should be provided with supporting facilities and infrastructure which encourage activity by all users.
- Amenity spaces should be provided in a format that is multifunctional and flexible, and which can therefore be adapted (presently and over time) to cater for a range of uses by people of all ages and abilities.
- Green infrastructure should be allowed to shape and structure developments, while good landscape design should provide wayfinding cues and sensory stimulation – features which can provide valuable reassurance to older people and those with dementia.
- Amenity spaces should be aligned to make best use of sunlight, thereby encouraging residents to use outside spaces.
- The impact of the built environment on the local environment should be mitigated with green infrastructure features including green roofs, gardens and planted walls.
- The provision and type of ground surfaces should be considered from the outset of any development, and an approach taken that balances the needs of all users in terms of patterns, colours and

materials with the technical requirements and future maintenance of highways.
- Existing ecology and natural habitats found on sites must be safeguarded and enhanced, and new opportunities for increasing biodiversity should be explored.
- Opportunities for community food production should be integrated into the proposed landscape.
- Surface water run-off systems should be considered to minimise flood risk and increase biodiversity.
- Care should be taken in the selection of tree and shrub species that are appropriate to the area, fitting in scale and colour, climatic requirements and growth habits.
- The future management and care of green spaces and infrastructure should be considered at the planning stage.
- Landscape proposals should look to ensure proposed landscape schemes complement and draw from the positive aspects of the sites wider landscape setting, this often identified through landscape or townscape character assessment.

Key Questions
- Have private communal spaces been designed to encourage a range of activities – including activities for all genders, cultures, ages and people of a range of physical and mental abilities?
- Is there a coherent network of spaces that can be created? Are spaces joined to make a coherent multifunctional green network?
- Does the proposed landscape and green space support the broader needs of residents, including their mental health?
- Do the proposals encourage residents to eat more healthily by providing opportunities for communal food-growing?
- Are amenity spaces suitably flexible to allow changes in their use over time by people of all ages and a range of physical and mental abilities?
- Have SuDS areas been integrated into the overall open space / green network and laid out so as to provide high quality open space opportunities.

The Benefits of Green Infrastructure and Biodiversity

8.1 Development which provides a greener environment can be more sustainable and deliver important environmental, social, health and economic benefits. Trees and plants can help to offset climate change as well as providing habitats for different species. Green spaces provide important recreational and health benefits, and can encourage social cohesion by acting as a multifunctional community resource. They improve the quality of life for communities by providing visually attractive spaces which can also increase property values and desirability. Attractive, well-designed cycleways and footpaths integrated into the landscape are more likely to be used than roadside routes, improving accessibility and allowing the whole community to enjoy the space.

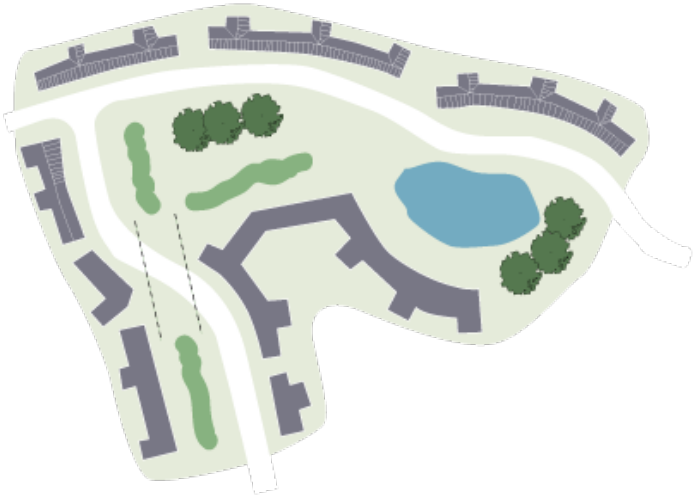
8.2 All major and strategic development sites should be designed around green infrastructure. This should form a solid starting point; any existing landforms, water, vegetation and built features should be allowed to inform and shape the development, adding unique character while contributing to effective wayfinding.

8.3 Existing ecological systems and natural habitats found on the site must be safeguarded and enhanced and new opportunities for increasing biodiversity should be explored. Where damage to functioning ecosystems, their associated habitats and species is unavoidable, measures must be proposed to mitigate and compensate for these impacts.

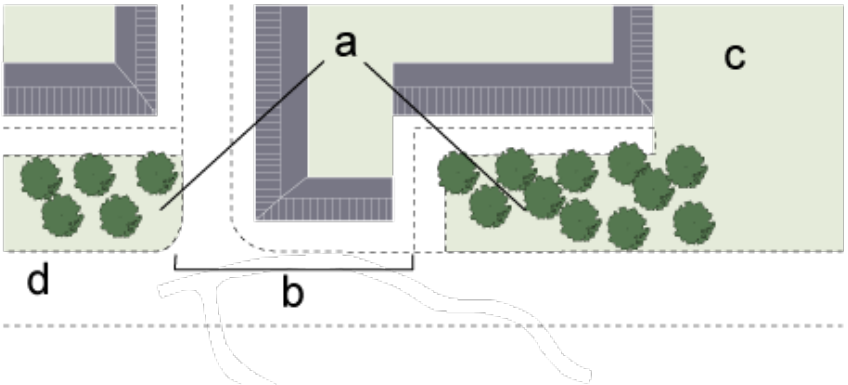
8.4 A landscape appraisal (to the Landscape Institute GLVIA3 guidelines) at the beginning of the development process can help to identify the constraints and opportunities of a site, while highlighting areas where a more detailed survey is required.

8.5 Well-managed green spaces also offer healthy educational opportunities, both formal and informal, within the development, allowing the general public to embrace their local environment and thereby strengthening community spirit. This can have a positive impact on crime and social disorder, raising the value of land and increasing the desirability of a place. In order for a site to be 'well-managed' post-implementation funding needs to be secured.

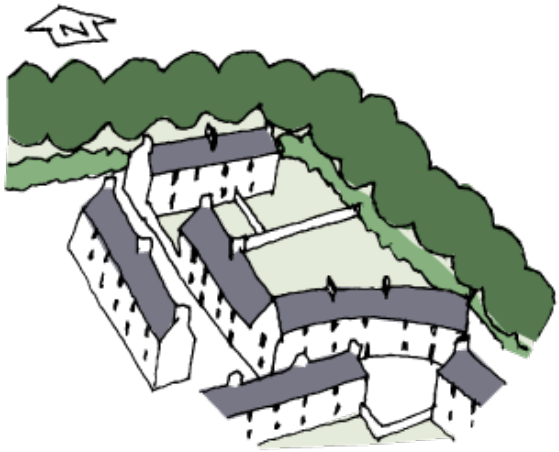
8.6 The delivery of open space as part of a development should therefore not be seen simply as providing an area free of development. The more effective the design and the greater the increased functionality that can be offered as part of that design, the more reason there will be for people to use the space – and the greater the holistic benefit that can be realised.



Retained landscape features as form-givers for development



a. Wildlife corridor
b. Short break
c. Open space
d. To next open space



Tree, understorey and hedge scheme for screening, shelter, access and wildlife

Landscape - Key Requirements

8.7 The proposed landscape structure should encompass the entire system of public open space by providing visual contrast to the built environment and constituting a legible network based on any existing trees and hedgerows. A block of trees visible above rooftops, for example, enhances the legibility of a development from outside. The incorporation of existing landscape features is particularly important to people with dementia, as familiar landmarks can serve as visual cues to aid in wayfinding.

8.8 The landscape structure should also provide opportunities for multifunctional open spaces. These should allow for a range of activities for all ages and physical and mental abilities, including space for active play.

8.9 When planning layouts designers should seek to join up these landscape features and open spaces to create coherent linked landscape networks which can be used to encourage people to be active, for example by routing paths and cycle ways through these green networks.

8.10 Stimuli targeted at each of the senses (sight, scent, touch, sound and taste) should be incorporated into the landscape structure from the outset, to ensure that the development caters for people of all physical and mental abilities. This relates to both the natural, soft elements of the landscape – such as planting – and hard elements like sculptures, water features and furniture. Planning for users of all abilities and ages from the beginning can reduce the need for costly future adaptations.

8.11 The landscape structure should, in addition, create a network of wildlife corridors linking public open spaces to nearby countryside – and if little biodiversity interest has been identified, should include features that will help to foster new habitats.

8.12 Where green infrastructure proposals are based on the retention of existing hedgerows, these should be within the public realm, not just in private gardens. The green links should be fairly continuous (short breaks are possible) and should contain mixed indigenous tree and other plant species as well as areas of long grass, which provides protection for wildlife and may attract some species of ground-nesting birds and is of a benefit to insects, particularly bees. Attention should also be given to the creation of interdependent plant communities.

8.13 Where there is an exposed edge to open countryside, the planting of tree shelter-belts (especially on a north-east edge) can reduce cold-weather heat loss from dwellings up to 150m away. Indigenous woodland tree species should be used, together with a mixture of evergreen and deciduous under-planting.

8.14 Trees also have an important role to play in urban spaces. They can provide natural shelter and shade, both in the public realm and in communal and private spaces, which can be particularly important to the younger and ageing population, as well as to those with a range of physical and mental conditions.

8.15 The design of the surface water run-off system should be considered in conjunction with the landscape structure. Balancing ponds for storm-water should contain a permanent body of water, and can be a valuable ecological and landscape feature. Planned absorption of surface water into the ground can help the water-table level, though this is unlikely to be feasible in clay areas. For more information, refer to the 'Flooding' section of this guide.

8.16 Buildings and private spaces can also be exploited to create a range of different habitats. Climbing plants can colonise walls, and green/brown roofs, roof terraces, balconies and gardens can offer habitats for wildlife.

8.17 The management and aftercare of green spaces, landscaping and protection of habitat and species will need to be considered and where necessary a management plan should be agreed with the Local Planning Authority.

The Key Principles of Public Open Space

8.18 All open space in a development should be observably useful and visually pleasant. The provision of shade, shelter, resting points and seating, a refuse receptacles as well as natural surveillance, make such places more attractive to use, particularly for the ageing population. In addition, they are equally accessible to people with a wide range of physical and mental abilities.

8.19 Such spaces should have a clear purpose and be legible to all users. All public areas – whether squares, streets, pedestrian links or parking courts – are part of the provision of different types of space, each with their own function and designed to provide a high level of amenity and activity. The provision of arbitrary pieces of 'public open space' can result in spaces that are divorced from the main pattern of public street spaces, that are neither useful nor attractive, and that become a nuisance to residents while being expensive to maintain.

8.20 Evidence shows that the most effective public open spaces are large, multi-purpose, informally supervised parks. These are best allocated by the Local Plan/Development Framework process or in a Design Brief, and those Local Planning Authorities that operate a percentage-based open-space policy should aggregate the requirements of a number of smaller developments to create these larger, more useful open spaces. This is becoming even more necessary as Parks and Leisure Departments feel the effects of financial stringency and are less willing to adopt smaller and less economically viable open spaces. In some cases, management companies may have to be established to run and maintain open spaces.

8.21 While parks should be the key form of open-space provision, there remains a role for smaller, local open spaces that help to create a more varied townscape. While smaller in size and less formal in nature, such spaces should still be clearly defined and easily accessible, located in close proximity to walking

/ cycling routes with identifiable links to, from and between them. This ensures they can still be used safely and without anxiety by older people or those with dementia. Smaller open spaces should not be of a lower quality than larger open-space provision and should retain the same multi-functional properties as larger spaces to ensure the greatest value is attained.

8.22 In certain arrangements, the private garden spaces of houses facing, backing on to or immediately adjacent to a substantial area of well-landscaped, properly maintained communal open space may be reduced in size. Such layouts lend themselves to passive natural surveillance, which in turn encourages increased use of the open spaces. Such situations are analogous to the classic Georgian square, and in such cases it is often appropriate for the space to be maintained by a management company. This provision compensates for smaller gardens and should be additional to any percentage-based open-space requirement set out by a Local Planning Authority.

8.23 Research undertaken by the Social Care Institute for Excellence (SCIE) advises that, as well as giving exposure to natural light and air, access to open space or a garden provides a place for familiar activities, which is particularly important for people with dementia. Spending time in a garden or open space can also help people to relax; people with dementia are less likely to become agitated or distressed if they have regular access to fresh air, exercise and quiet space away from others.

8.24 It is preferable for parks and public open spaces to be fronted by houses rather than tucked away behind them. This allows them to become a more obvious part of the circulation system while benefiting from informal supervision. In its turn, the open space contributes to the amenity of outlook of the houses. Open spaces should similarly be a focus for pedestrian and cycle networks – and it should not be necessary to cross a main road in order to reach one from a footway or cycleway.

8.25 Accessible Natural Greenspace Standards (ANGSt) have been devised by Natural England as a means of providing benchmarks for assessing the provision of places where people can experience and enjoy nature. Access to natural green space can make an important contribution to the quality of life in an urban area, and the ANGSt targets help to determine this accessibility.

Allocating Space for Green Areas

8.26 Through Local and Neighbourhood Plans, local communities are able to identify green areas of particular importance to them, such as allotments, and designate them for special protection. By designating land as Local Green Space, local communities will be able to rule out new development other than in very special circumstances.

8.27 When providing for communal planting and the growing of produce, consideration should be given to providing access and availability at a variety of levels. This helps to ensure that those less active or mobile can still enjoy the activity, and can take the form of (for example) raised planters for those less able to bend or stretch, or areas with level thresholds and surfaces suitable for wheelchairs, mobility scooters and walking aids.

Community Space for Growing Food

8.28 In recent years there has been a renaissance in ‘grow-your-own’ gardening, as people have become more aware of the health and environmental benefits that come with growing food locally. The health benefits are not just linked to diet but also to the positive mental benefits of community cohesion.

8.29 The escalating popularity of 'grow-your-own' has meant that waiting lists for allotment plots have risen. The National Allotment Society estimates there are approximately 330,000 allotment plots in the UK, but that at least 90,000 additional plots are needed to meet current demand.

8.30 The personal, environmental and economic benefits of community food-growing include:

- Mental and physical health benefits from eating more fresh food and being physically active outdoors.
- Community cohesion, because food-growing sites can bring diverse groups of people together around a common interest.
- The potential for economic development through learning new skills and exploring commercial options.
- Enhanced biodiversity and local awareness of nature.
- Support for schools and educational opportunities.
- Reduced food miles and damage to the environment from production, transportation, packaging and disposal.
- Aesthetic improvements to the local environment.

8.31 Assuming these benefits are increasingly recognised, it is possible that demand for open spaces flexible enough to accommodate a variety of different activities will grow. Including flexible and temporary-use spaces in new developments is one response to the uncertainties of the future, although this is challenging for urban sites where land is limited and profitability is the key driver. Some potential solutions to this challenge are listed below.

8.32 According to the Public Health England (PHE)/Town and Country Planning Association (TCPA) report 'Planning Healthy Weight Environments' (2014), green infrastructure strategies can help to identify flexible spaces in a local area to which creators of smaller-scale developments can contribute, and which can be managed by Community Trusts responsive to local needs.

8.33 Options for providing land that may be available for growing food are:

- Allotment plots
- Land within larger community spaces
- Waste ground and derelict sites, land awaiting development – 'meanwhile spaces'
- Rooftops
- Green walls
- Balconies
- Grounds of community facilities and public buildings
- Internal atriums and courtyards

Public Space for Growing Food in developments

Allotment Plots

8.34 A further means by which the planning system can improve access to fresh fruit and vegetables while contributing to physical activity and mental wellbeing is to facilitate the release and use of land for community allotments. This functions well as part of a wider strategy for healthy urban living, retailing, green infrastructure planning and regeneration.

8.35 In recent years there has been a renaissance in 'grow-your-own' gardening as people increasingly appreciate the health and environmental benefits that come with growing food locally. The health

benefits of the practice are not linked just to diet but also to the mental benefits of community cohesion. The escalating popularity of 'grow-your-own' culture has meant that waiting lists for allotment plots have soared, leaving local authorities struggling to meet demand. The majority of allotment authorities (i.e. parish, town, district or borough councils) will have one or more allotment sites in their area and will maintain their own waiting lists of people wanting a site.

8.36 Allotment provision has a long tradition for meeting demand for locally grown food. Allotments can work effectively when included as a section of larger open community space. Consideration should be given to enabling access to allotments to be controlled by the managing group, though including a publicly accessible space within an allotment offers the wider community the chance to enjoy the allotments and engage in smaller-scale food growing.

8.37 It is recommended that a local community organisation be found to manage any new allotments, or that a new organisation involving local residents is created for this purpose.

8.38 It is also recognised that providing allotments in high-density situations may be challenging. As such, alternative provisions for growing food locally are considered below.

Land Within Larger Community Spaces

8.39 Elsewhere in this guide, we have recommended that developers consider providing well-managed formal and informal green spaces for residents.

8.40 Providing land (such as a community garden) that can be used by the community to collectively grow food is one option for increasing the different use options for public open space. Management arrangements and controlled access needs are likely to be similar to those for allotments, but of course a community garden must have open access in order to fulfil its function.

Waste Ground and Derelict Sites, Land Awaiting Development and 'Meanwhile Spaces'

8.41 Waste ground and derelict sites offer opportunities for community food production. This use may be temporary while awaiting future development, and can help in ensuring security for such sites.

Rooftops

8.42 Green roofs can be categorised as extensive or intensive. Extensive green roofs tend to consist of non-productive plants, i.e. sedums, and are designed primarily for energy efficiency or water management. They tend not to be safely accessible. Intensive green roofs are designed to be accessible for either food-growing or other recreational activities. Intensive green roofs will require deeper soil levels to support shrubs, perennials and even trees. Beds for growing can be incorporated into the roof at the time of design/construction or can be added as containers after completion or during conversion projects. Loading capacity for green roofs should be addressed at the design stage.

Green Walls

8.43 Vertical growing on external and internal walls can be adapted for food production. Green walls entail technical considerations relating to maintaining plantings and growing mediums in place, and supplying irrigation. There are various systems now on the market to help achieve this and some modular planting systems are now starting to include productive plants in their design – in particular salads and herbs.

8.44 Productive green walls require high maintenance, including regular harvesting and seasonal replanting; they therefore need to be accessible. They will also have a dormant period during the winter when no plants will grow; allowance needs to be made for the appearance of the walls at this time. Walls can also be utilised for training espaliered and climbing plants, which give rise to fewer technical considerations.

Balconies

8.45 Balconies can provide small spaces for individuals to grow a limited selection of plants, and are particularly suited to high-density residential developments. North-facing balconies overshadowed by other high-density buildings are unlikely to be suitable for food-growing. Planting containers and window-boxes can be incorporated into balcony design. Railings and structures joining neighbouring balconies can also be designed to support climbing or espaliered plants. Loading capacity for containers should be addressed at the design stage.

Grounds of Community Facilities and Public Buildings

8.46 Public buildings such as schools and hospitals have communities – staff, pupils and other users of the buildings – who can be encouraged to organise together to grow food and manage food-growing facilities.

Internal Atriums and Courtyards

8.47 Atriums or courtyards with adequate exposure to sunlight can create opportunities for food-growing, with micro-climates allowing high-value tender plants to be grown. Ground-level beds or planters can be used as well as living walls. Irrigation systems and water run-off systems will be required.

Landscaping with Edible Plants

8.48 Low-maintenance food-producing plants can be included in landscaping. These might be fruit or nut trees or vines. They can be freestanding or espaliered against walls.

8.49 Beds can include edible shrubs such as artichoke, currants, herbs, rhubarb and fruit alongside ornamental plants. Planters or containers can be used in hard landscaping designs or when no soil is available.

Raised beds

8.50 Raised beds might be used because of the presence of poor-quality soil, to provide growing space where there is hardstanding or on rooftops, or to assist access by wheelchair users or those who cannot bend down or get up easily. Beds should be up to 2ft in height for wheelchair access. They should be 3ft in width where access is from a single side; and 4ft in width where access is from either side.

Technical and Practical Considerations of Food Growing

8.51 The following technical issues should be taken into consideration in relation to the provision of any type of food-growing facility:

8.52 Land – how much land, if any, is available on the site or can be made available through the design process?

8.53 Use of Building – is there potential to incorporate growing spaces within, around or on a building or buildings?

8.54 Aspect and Light – ideally, growing spaces should be south-facing to maximise exposure to direct sunlight during the growing period. If this is not possible, the site will restrict the choice of plants that can be grown.

8.55 Water – any food-growing will need a reliable water supply. Incorporating rain-water collection into any

design is desirable, but easy access to mains water may also be necessary. Risk of legionella contagion should be controlled.

8.56 Wind – adequate protection from wind needs to be planned into any growing space to allow crops to thrive.

8.57 Soil/Growing Medium – an essential component for growing food, which will vary according to the setting. Rooftop- or container-growing may require a more lightweight growing medium.

8.58 Compost – all food-growing requires ongoing inputs to maintain the fertility of the growing medium. Provision of on-site composting should be designed-in from the outset, both to meet this requirement and to help manage organic 'waste' generated within the development.

8.59 Contaminated Land – soil in urban settings may need to be checked for contamination and quality.

8.60 Access – adequate access must be available for those who will use the site. In addition, heavyweight materials such as compost and tools may need to be taken to the site – a particular issue for rooftops or balconies.

8.61 Storage – adequate provision for the storage of tools and associated equipment will need to be integrated into the design.

8.62 Management – who will be growing the food and will there be a need to provide ongoing management of the growing areas by a caretaker or external contractor (such as the landscaping contractor)? The recommended solution is to establish an organisation, run and managed by local residents, to take responsibility for management of communal food-growing areas. Involving community organisations in the design of food-growing areas should begin, if possible, at the design stage.

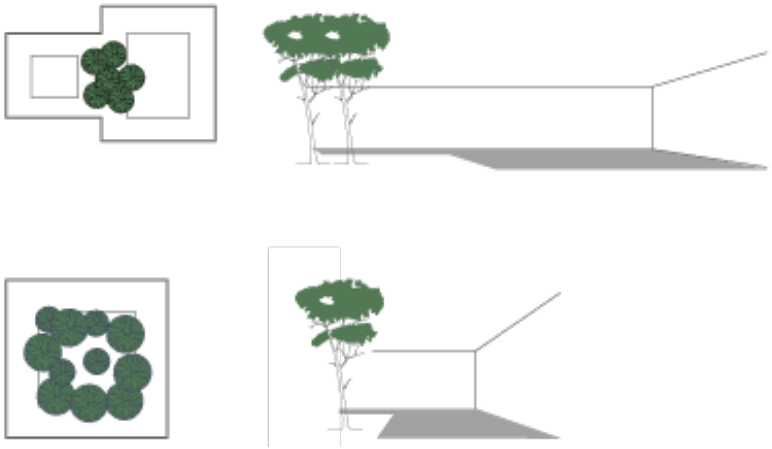
Use of Landscape in Urban Spaces

8.63 Trees and hedges can be used as part of built frontages or to articulate spaces in their own right, in the form of a barrier or screen. For example, a block of trees in the centre of a square may transform the square into a linear circuit of spaces, while a block of trees across the middle of a large or long space may transform it into two separate spaces.

8.64 A tree may also be used as a centre-point to punctuate and reinforce the character of a space. Alternatively, rows of trees may be used to give directional emphasis to a dynamic space. It is important that the design of the space is such that it can accommodate the mature growth of trees suitable for these purposes.

8.65 The use of trees as a natural or 'soft' form of enclosure is beneficial to people with dementia, who benefit from clearly defined spaces but who can perceive harder forms of enclosure as oppressive or imprisoning.

8.66 The proportion of tree enclosure to built enclosure will affect the identity of a space, giving it a 'hard' or 'soft' character. Similarly, an area with higher tree content will have a different character from one with lower tree content.



(Top) Block of trees transforms long space into two separate spaces
(Bottom) Block of trees transforms square into linear circuit

(Left) Formal space: formal pattern
(Right) Informal space: informal pattern

(Left) Wider space with higher proportion of planted surface area
(Right) Tighter space with hard-paved surface

Public Open Space

8.67 Where open, landscaped amenity space and children's play areas are proposed for adoption, the agreement of the District or Borough Council Leisure or Parks and Recreation Department is required. These areas should consist of space which provides opportunities for multifunctional activity by people of all ages and a range of physical and mental abilities, while enhancing the appearance of the development. All other 'soft' landscaped areas should remain in private ownership.

8.68 The Local Authority will adopt public open space, though this may be on the basis of a commuted sum agreed with and paid by the developer. The land will then need to be dedicated or conveyed to the Local Authority for purposes of maintenance. Section 299A of the The Town and Country Planning Act provides further detail around adoption provisions.

Recommended Plant Species

8.69 The selection of the correct tree and shrub species – fitting to the location in terms of scale and colour, climatic requirements and growth habits – can be as imperative to the success of a development as the detailing of the buildings and the floor space between them.

8.70 Trees and shrubs suitable for 'private space' often appear mean and inappropriate when planted in public spaces, and the provision of larger trees or fast-growing vegetation in private space can quickly overwhelm or dominate.

8.71 It is possible to design planting schemes to benefit the ageing population and those with dementia, and this should be considered from the outset of any new development. Such schemes may not be readily identifiable or appear different to other parts of the population – being viewed as regular landscaping – but to older people or those with dementia they can offer significant benefits to health and wellbeing. They can also help to reduce the need for future adaptation.

8.72 As a general rule, deciduous species should be chosen, as they provide visual interest throughout the year, allowing light and air to penetrate to ground level during winter. Evergreens, however, can be used to conceal unsightly features, or to act as a focal point. Furthermore, they can be used to create natural forms of enclosure, and to distinguish between public and private space. This is desirable from a general urban design perspective, but is also important for people with dementia, who can see more 'solid' or 'hard' types of enclosure as oppressive or imprisoning.

8.73 In publicly accessible places, trees should have trunks clear of branches or under-planting to avoid providing cover for anti-social behaviour.

8.74 The list of plants below is provided for illustrative purposes and as a guide to good practice. The list is not intended to preclude the use of different species or to provide a ready-made planting scheme but to provide an example of species that may be appropriate in different situations. In the preparation of planting schemes, advice from appropriately qualified and experienced people is essential.

Type of planting	Plant species	Comments
Planting in verge (ground cover)	• Ceanothus thyrsiflorus repens • Chaenomeles (Quince) • Cotoneaster dammeri (and some cultivars)* • Hedera helix 'hibernica' (Ivy) • Hypericum calycinum (St John's Wort) • Lonicera pileata • Pachysandra terminalis (London Pride) • Pyracantha (spreading cultivars) (Firethorn) • Symphoricarpos (shorter-growing forms) (Snowberry) • Cornus sanguinea (Dogwood)	* other Cotoneasters are invasive and are covered by Schedule 9 of WACA
Avenue and street tree-planting	• Liquidambar Styracifula (large) • Platanus Hispanica (London Plane) large • Quercus cerris (Turkey Oak) large • Tilia cordata (Small-leaved Lime) large • Prunus padus (Bird Cherry) medium • Robinia psuedoacacia (False Acacia) medium • Corylus colurna (Turkish Hazel) small • Crateagus monogyna(Hawthorn) small • Malus tschonoskii (Ornamental Apple and other varieties) small • Pyrus chanticleer (Ornamental Pear) small • Sorbus aucuparia (Rowan) small • Carpinus betulus (Horbeam) medium	
Hedges to front boundary	• Carpinus betulus (Hornbeam) • Corylus avellana (Hazel) • Crataegus monogyna (Hawthorn) • Fagus sylvatica (Beech) • Ilex aquifolium (Holly) • Ligustrum ovalifolium (Privet) • Prunus lusitanica (Portuguese Laurel) • Taxus baccata (Yew)	
Trees for structural planting and wildlife corridors	• Acer campestre (Field Maple) medium • Quercus robur (English Oak) large • Quercus ilex (Holm Oak) large • Tilia platyphyllos (Large-leaved Lime) large • Malus species (Crab Apple) • Prunus avium (Wild Cherry) medium	Where there is more room such as on rear boundaries, within open spaces or close to pedestrian routes, larger species can be used to form a permanent landscape structure within development.

Root Barriers

8.75 Avenue tree-planting or trees in urban spaces may cause problems to the foundations of nearby buildings due to root spread. It is therefore recommended that a root barrier be installed between trees and nearby buildings in those cases where the face of the building would lie within the root spread at the eventual maturity of the tree. Whether a root barrier is necessary in order to protect underground services will depend on the depth of the services as well as their proximity to the trees. It is recommended to seek advice from a professional Arboriculturist.

The Ageing Population and People with Dementia

8.76 In order to ensure that the needs of the ageing population and those with dementia are met, landscaping and amenity spaces should provide for multi-sensory stimulation (sight, touch, smell, sound and taste) while taking into account a range of sensory and mobility issues.

8.77 Trees should provide both shade and shelter, but should not appear too dark; deciduous trees such as birch and cherry provide light cover. Evergreen trees and shrubs can provide enclosure and screening without creating the impression of oppression or imprisonment.

8.78 Herbs, lavender and other scented plants release fragrance when touched or brushed. These should be planted at a variety of heights and locations to ensure that people of all ages and levels of mobility can benefit from them, both in terms of touch and smell.

8.79 Herbs, fruit, vegetables and salad can provide both the 'edible' experience (taste) and opportunities for outdoor activity and interaction. Other plants should be non-poisonous to avoid any confusion.

8.80 Spiky and thorny plants can be included to provide some structure and architectural attributes to landscaped and amenity spaces, but these should be located in non-hazardous places, such as at the rear of borders.

8.81 Ornamental grasses can be visually stimulating, through their movement in the wind. A variety of colours and shades is also appropriate, and combinations can provide specific zones within a space. Hot, vibrant colours can evoke a sense of liveliness while cool, pastel colours can be relaxing and therapeutic.

8.82 A mix of deciduous and evergreen plants together with plants that flower throughout the year can ensure that amenity spaces are stimulating, inviting places all year round. This applies both to the experience of physically being in the space and the experience of viewing it from inside a dwelling.

Urban Public Space

8.83 The success and popularity of urban environments relies strongly upon the design and quality of public space. It is in urban environments that the competition for space is fiercest and the density of population (and attendant demands on resources) the greatest.

8.84 In addition to the technical requirements that enable the urban area to function, public space must be attractive, safe and well-maintained, as well as accessible to users of all ages and a range of physical and mental abilities.

8.85 Achieving this requires considerable resources and co-ordination, and the most successful places are a demonstration of developer commitment and civic pride. Streets, parks and squares – and their relationship to surrounding buildings – dictate the overwhelming character and identity of places to a greater extent than the architecture and detailing of the built form. Well-designed spaces provide for the

complex needs of the residential and business communities and offer a satisfactory balance between competing interests. Public space should also be designed to accommodate and encourage biodiversity.

8.86 It is important to move away from a view of space as comprised of separate functional areas and towards a conception of the public realm as one shared environment. This necessitates a change in the way such places are designed and built.

Components of Urban Public Space

8.87 Streets – the space enclosed by the fronts of buildings comprising highway space, meeting space, commercial space, utility and recycling infrastructure, play space and green routes.

8.88 Paths – neither streets nor footways; not often incorporated in new designs but can be vital in linking streets, squares and other places.

8.89 Squares – visually static spaces suitable for sitting and socialising accommodating a range of acitivty and uses including community activity sessions or shared games.

8.90 Pocket parks – small spaces within the urban block structure, including parklets.

8.91 Recreation Grounds – usually a legacy of earlier open-space planning; provision made for sport.

8.92 Open space – for socialising, informal play, nature, landscaping, informal recreation, water management, cultural activities and entertainment.

8.93 Parks – formal landscape but possibly with open spaces and sports facilities. Provision for a variety of functions depending on size.

8.94 Waterfront – may host any of the above.

8.95 Invariably, the public space network and the movement and activities it enables will connect with the surroundings to become part of a wider urban system. Collectively, this shapes the sustainability of the town.

8.96 Understanding both local and global spatial and operational relationships is essential, and the Context Appraisal is a convenient platform from which to discuss the needs and opportunities for good collaborative design. Evidence that this has occurred should be submitted with any planning application for site development.

Mental Health

8.97 There is a clear link between the nature and quality of the built environment and the mental health of those engaging with it. As part of the Greater Greener Essex project, much work is being undertaken to understand and take advantage of the positive impact green space can have on the mental health of residents.

8.98 Living in an urban environment can lead to numerous mental health benefits – for example, increased opportunities for taking part in economic, cultural and educational pursuits that keep the mind active. There are also, however, aspects of urban living that are considered to have the potential to have a negative impact on mental health. The Centre of Urban Design and Mental Health (UD/MH) categorises these potential impacts into two groups – those which relate to increased stimuli and those which act to strip away factors or activities with positive mental health associations.

8.99 Factors which create a mental imbalance as a consequence of increased stimuli include a general feeling of density and lack of open space, overcrowding, noise, smell, constantly changing visual stimuli, a sense of disarray and pollution. In response, the individual seeks out quiet, private spaces they can control; over time, this can evolve into a more permanent social isolation, which may then manifest in feelings of depression and anxiety.

8.100 The urban environment may also act to remove factors that maintain mental health and wellbeing: a commonly recognised issue is the reduction in opportunity to access open green space that comes with a more urbanised living environment. Commuting may also have a negative impact, both in terms of mental stress and commuting's impact on free time to devote to leisure and exercise (both of which are associated with mental health benefits). Factors such as pedestrian footfall, light and noise are more likely to lead to sleep deprivation in urban environments than in their rural equivalents. In addition – and it is accepted that this is a generalisation – urban environments may be less likely to give rise to strong social networks of friends and family than smaller, more rural communities, in part due to their more dispersed nature.

8.101 Ease of orientation and familiarity help to make environments more accessible to people with dementia, which makes it important that developments and their constituent areas are visually distinct. A variety of landmarks and architectural features in diverse styles and materials can help to achieve this, while practical features such as trees and street furniture can be used to the same effect. Indeed, using benches and public toilets in this manner has the dual benefit of also providing benefits to the wider population.

8.102 Another positive measure in this respect is a reduction in unnecessary clutter and potentially disorienting visual and auditory stimuli, which can be screened through planting. The Royal Town Planning Institute (RTPI) has suggested that planners consult people with dementia, asking them to explain how they make decisions about where to go and gaining insight into how clearly they understand their environment.

8.103 Therapeutic and mental health benefits that have been attributed to interactions with green spaces and natural environments include reduced anxiety, increased self-esteem and psychological wellbeing, improved mood, improved academic performance and improved cognitive functions. Research by the UNESCO UK Man and Biosphere (MAB) Urban Forum has shown that colourful and interesting urban green spaces help to build a sense of civic pride.

8.104 Nature-based therapy has also been suggested as a treatment to relieve mental and physical illness and improve recovery time from stressful situations or medical procedures. One study showed that views of trees reduced the amount of moderate-to-strong analgesics needed by patients post-surgery, as well as reducing the number of days they spent in hospital compared to those whose view consisted of a brick wall. (Green Space and Health Postnote 538, Houses of Parliament – Parliamentary Office of Science & Technology, 2016).

8.105 The Chartered Association of Built Engineers (CABE) report 'Community Green' (2010) drew on clinical evidence to suggest that exposure to an outdoor green environment can considerably reduce stress. Simply being able to view nature can produce significant recovery or restoration from stress within 3-5 minutes.

8.106 Through the Green Care project, Essex County Council is actively working to develop strategies aimed at making more effective use of green spaces, so as better to support the broad needs (including mental health needs) of Essex residents. This project is being taken forward under the Greater Greener Essex

principles, which seek to establish multifunctional priorities for green spaces across the county. Using green assets such as country parks to support the health and wellbeing of residents is a new concept for the council, but it is recognised that the opportunities to improve health and wellbeing could be significant. The Green Care project launched in Spring 2017 and involves reviewing evidence, mapping current assets, scoping and establishing pilot schemes and establishing both a vision and intended outcomes.

Successful Criteria for Public Open Spaces

8.107 The Context Appraisal process makes it unnecessary to require an arbitrary amount of green space for every home or for every development, as planning policies requiring this rarely take into account the extent of existing green space already serving an area. The result can be an 'oversupply' of green areas that are underused and which place pressure on the already overstretched ground maintenance budgets of local authorities. The requirement therefore is to provide green space that meets the needs of the new community and, if necessary, contributes to the improvement of the surrounding facilities.

8.108 If there is ample green space already within the vicinity of the site, no additional provision may be needed. However, where green space is provided it must be of a very high quality and should be:

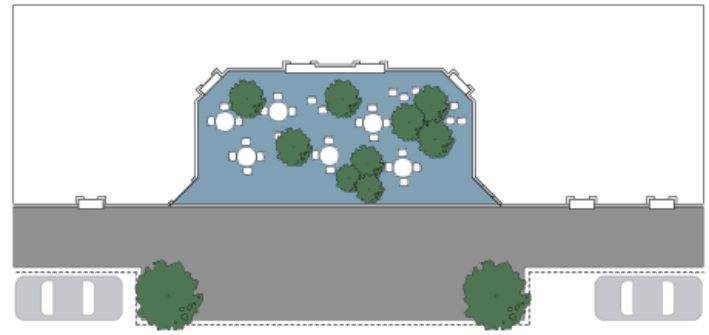
- part of a wider network, connected internally and to its surroundings;
- overlooked by building frontages;
- well-maintained and appropriately managed, designed to support management aver a long-period of use;
- accessible to all;
- of high biodiversity value;
- of varied character and functionality to meet identified needs;
- able to offer opportunities for multifunctional activity for all;
- secure and safe;
- sufficiently well-designed and well-equipped as to become a destination – larger public spaces may be appropriate to support with facilities such as toilets an café's to encourage people to spend more time in the open spaces;
- well-connected to walking and cycle routes;
- connected to smart infrastructure to encourage flexible use of the space for all ages and for a variety of activities;
- provisioned with seating and resting spots;
- legible to all users, with clear wayfinding; and
- provisioned with shelter and shade.

8.109 Every development is expected to make a positive contribution to the public space system through the provision of quality streets, green space or both, tested against the previously mentioned criteria. Green Space Strategies produced by Local Authorities will provide information on the wider green space provision and needs within an administrative area. However, the strategies are unlikely to include all public space, such as urban squares and landscaped streets, and all urban developments should therefore consider how the public space network at the smallest scale can link effectively with the public space network at the more strategic scale – from doorstep to countryside.

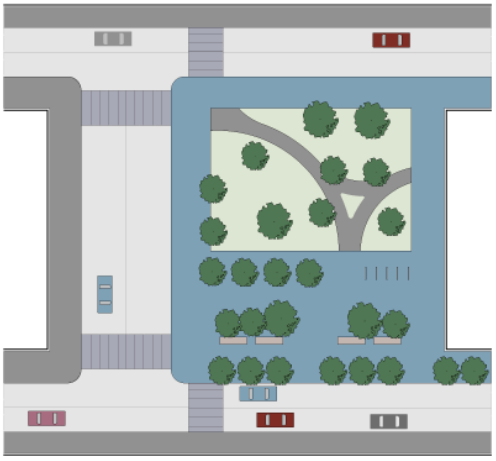
New development should assist in creating a continuous network of public space, including green space
a. Site
b. Connecting the green space network

8.110 The local public space system should be mapped at a neighbourhood level within the Context Appraisal. In discussion with the Local Authority, the need for additional green space, its type and location, can be set against the baseline green assets previously identified. Every urban development should provide or contribute to public space and biodiversity and most should incorporate green space, linked as well as possible to the surrounding system.

8.111 Pocket parks, for instance, can be very small spaces knitted into the built fabric of a town that provide places for sitting and socialising; they can be particularly important for the ageing population and those with dementia. When such spaces are positioned close to the home, they are more likely to be used and can contribute to social inclusion and positive health impacts. They may be predominantly hard-paved, are usually too small for ball games and may include public art installations, which can aid in wayfinding. Small areas of grass can be difficult to maintain and should be avoided but, where appropriate, carefully chosen native planting can be used instead. The materials used should be suitable for use by all ages and levels of physical and mental ability, while planting should seek to stimulate a range of senses. The maintenance and adoption of pocket parks needs to be established and agreed with all relevant stakeholders. Such small-scale spaces often offer the greatest opportunity to integrate smart infrastructure and digital technology, making them more accessible and worth visiting for all members of the community. Examples of this include recycling or waste management points, open-access wi-fi networks, smart street furniture or innovative play infrastructure.



Example of a pocket park



Example of a square

(Left) Pedestrian link connecting a network of green spaces, Vauban, Freiburg, Germany
(Right) Pocket park in Montpellier, France

8.112 The quality of public space relies on a number of factors including:

- Scale
- Enclosure
- Materials
- Detailing
- Continuity
- Security and safety
- Workmanship
- Street trees
- Microclimate
- Adoption
- Construction standards
- Public art

8.113 It is important to recognise that quality can only be achieved by adopting the same co-ordinated approach to design and detailing within the public realm as is required for the design of the enclosing buildings. All public space should be designed to be accessible: schemes should not provide segregated provision for less mobile members of the community, or those with physical or mental conditions.

8.114 Designing new spaces within a development provides a special opportunity to combine a consideration of these elements with a close attention to detail.

(right) Wheelchair and pushchair ramp incorporated with steps, Paddington Basin, London Image
(left) Intimate urban environment with street trees

Scale

8.115 Understanding the power of scale within an urban context is vital. It can be used to create a sense of drama or visual intimacy or it can reflect the functional or symbolic importance of a place. It can be almost imperceptible or it can be striking – and it is these contrasts that help to define the character of a town.

8.116 Generally, the scale of a space ought to reflect its importance in relation to the area as a whole. Large-scale enclosed spaces must have a substantial civic meaning for them to make sense, and it is unlikely that many places in Essex will have more than one such space, usually at their centre. More common is

the hierarchy of smaller-scale spaces that make up the spatial system – but even here, the same rule on symbolic importance applies. A mixed-use street, for example, needs to be wider and scaled to its functional commercial role. The space should be scaled to accommodate a greater robustness for user demands, as should the enclosing buildings.

Large-scale commercial street

Small-scale residential street

8.117 In the same way, the scale of residential streets ought to mirror their place within the spatial system hierarchy. However, it is also important to ensure that these spaces are able to function without undue inconvenience or conflict arising between users; for example, they must be easily accessible by service vehicles.

Enclosure

8.118 A pedestrian-scaled environment relies upon achieving, in part, a degree of spatial enclosure that feels comfortable. The general ideal is for the width of a space to be equal to or less than the height of the enclosing buildings.

8.119 In practice, this can be difficult to achieve for lower density development, but it should become increasingly possible as densities and building heights increase. Higher densities therefore offer the potential to design spaces that are more dynamic and visually captivating than are typically found in lower density suburbs.

8.120 The enclosure and width of spaces will, of course, vary according to their function. The proposals found elsewhere in this guide for new street types and car parking provide the designer with a great deal of flexibility; it remains important, however, to keep a clear distinction between public and private space.

8.121 For example, it is possible to create a 14m-wide street (measured between building frontages) that combines on-street parking, a 6m-wide carriageway and 2.5m-wide pavements to each side. The height-to-width ratio for such a street containing four-storey buildings would be approximately 1:1.

8.122 Very narrow pedestrian spaces that link more important routes can add drama to the urban environment, but their design will need to take account of access for emergency vehicles.

Materials

8.123 Hard landscaping materials need to be aesthetically pleasing, structurally robust, with good weathering characteristics and simple maintenance requirements. These materials should be imaginatively applied so as to make places attractive, and sufficiently detailed that the surfaces are not easily damaged. It is therefore vital to assess the suitability of materials for the intended purpose before they are approved for use.

8.124 In the case of footways, materials must be able to withstand occasional vehicle traffic; in most cases, a footway should be able to withstand the axle loads of commercial servicing vehicles (approx. 8200kg = 1 standard axle).

8.125 Different surface materials can be used to sub-divide large areas of hard surfacing so as to create different spatial effects or to define routes and areas of different use. However, incidental changes in material or colour to identify land ownership or responsibility for maintenance are not acceptable.

8.126 Generally, the highest quality materials (such as granite setts and yorkstone paving) should be reserved for locations of special significance. For example, urban or neighbourhood centres and squares which are designed to attract people in large numbers should ‘show off’ their civic importance through the use of more expensive materials. Elsewhere, a limited and subtle palette of materials, sizes, shades and textures should be used as a backdrop to street activity and architecture. At the same time, there are opportunities for innovation in terms of the materials used in the public realm – for example, smart technology integrated into the public space can allow for the collection of energy generated through pedestrian footfall on hard landscaping; this can then be returned to the local power grid. The Highway Authority needs to be consulted and must approve all matters relating to existing and proposed

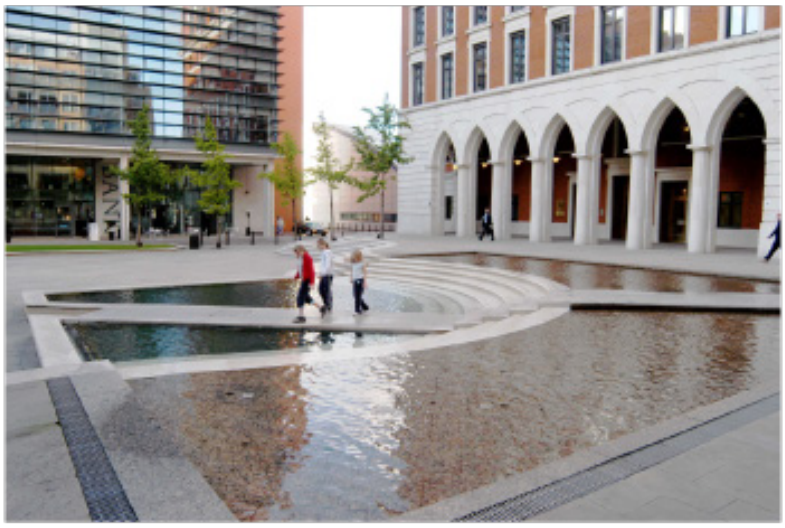
highways, including materials. Commuted sums will be sought for the use of materials that require more costly maintenance.

8.127 The provision and type of ground surfaces should be considered from the outset of any new development, and an approach taken that enables the development to strike an appropriate balance between meeting the needs of all users over its lifetime, without the need for adaptation in the future, and addressing the technical requirements and future maintenance of highways.

8.128 Consideration needs to be given to the colours, patterns and types of surface used for ground cover. A varied mix of colours can be confusing for people affected by certain health conditions, including dementia, where black and/or dark colours can be viewed as holes, trip hazards or barriers. On a related note, a variety of patterns can create the illusion that there is no clear route to follow, and result in disorientation and anxiety.

8.129 Consideration should also be given to the potential for conflict between the provision of tactile surfaces designed for the blind or partially sighted, and the implications of such surfaces on accessibility for less mobile people, who may be using wheelchairs, mobility scooters or walking aids.

8.130 As a general rule, the quality of the design of public space is more important than the quality of the materials used. A well-designed scheme would not necessarily be compromised by the employment of simple, inexpensive materials, whereas a poorly designed scheme does not become successful through the use of expensive materials. It is therefore more cost-effective to engage competent design teams for public space than to rely upon the specification of elaborate paving.



High-quality materials and design mark important public spaces
Treatment of Ground Surface

8.131 The ground surface is one of the enclosing planes of any space. It can therefore be treated in such a way as to complement or contrast with the character of the space and its enclosing planes. It may have a greater or lesser proportion of hard paving to soft planting, and it may be designed in a more formal or less formal manner.

8.132 For example, a wider space may have a higher proportion of soft or planted surface area, as otherwise the space would be dominated by a monotonously large expanse of paving. A tighter, more enclosed space may be hard-paved without creating the same negative effect.

8.133 A continuity of materials between paving and the elevations of buildings will give a strongly unified effect to a space. Where there is opportunity within a development, flexibility should be integrated into the design of existing hard landscaped areas, such as on-street parking and parking courts, so that such spaces can be converted into parklets or small green spaces should the space no longer be deemed necessary for vehicles in future. This is particularly important in urban, built-up areas where the amount of available green space can be limited.

Detailing

8.134 The quality of the public realm can be badly impacted by poor attention to detailing, both in terms of aesthetic appearance and functional accessibility. Where this occurs, it is often because there has been a failure to apply some of the basic requirements of good design, such as working in close collaboration with other design disciplines and utility companies. It can also be a result of inadequate on-site supervision of contractors.

8.135 Detailing should be considered as an integral part of public space design, to include:

- Junctions between materials, kerbs and crossings and changes in direction of paving
- Location and orientation of manhole and access covers
- Columns, poles and ground fixings and the design of paving around them
- Integration and pattern of tactile paving
- Tree pits, root barriers and irrigation
- Combining and grouping of signs and street furniture
- Location and design of drainage gullies and grilles, where technically possible
- Design of falls
- Road markings
- Paving textures

8.136 Underground ducting for utilities and services should be incorporated into new highway construction wherever possible. Refer to the 'Streets and Roads' section of this guide for more information on ducting and services provision.

8.137 Ducting has many long-term benefits, including reduced maintenance costs and increased longevity of highways. It is best applied to new developments as and when services are branched off from the main utility supply line. Where streets are not adopted by the Highway Authority, easements should be put in place to allow for access by third parties for works and repairs.

8.138 Routes and the futureproofing of services should be planned early in the design process, so that manholes and access cover locations can be co-ordinated with surface finishes and aligned with block paving. Where alignment is not possible, round covers should be used.

8.139 Where legal adoption or ownership boundaries need to be marked on the ground, the preferred option is the use of small metal studs. These studs can be of any non-ferrous metal fixed at 1m intervals to the relevant hard surface. The maintenance of such boundary indicators will be the responsibility of the developer, landowner or management company. The paving material should always be continuous between building or garden front and the road kerb.

8.140 The preferred method for introducing tactile paving into the footway for the benefit of the visually-impaired is a blistered surface that replicates the surrounding paving material, laying pattern and colour – avoiding random, patchwork footways. Alternatively, milled granite studs can be incorporated into the paving.

a. Carefully detailed ground fixings
b. Heritage paving
c. Crude utility meter casing on footway
d. Benches and other street furniture designed into the scheme
e. Trees can have a high impact in the street
f. Pre-cast concrete blister units create patchwork footways
g. Thoughtful detailing helps to integrate existing features
h. Custom-designed street furniture could include artist commissions
i. Edge detail

What not to do: plot demarcation ignoring the existing footway creates a disjointed public realm

Continuity

8.141 It is important that, for large development projects brought forward by a number of different developers or in regeneration areas where the entire network is to be upgraded, the design of streets and the choice of materials are consistent and logical across the entire area. In these circumstances, continuity in design and material use is essential.

8.142 A level of consistency can be achieved by adopting design codes for the public realm developed in conjunction with an area Master Plan. Special consideration should be given to the transition between a new area of public realm and the existing public space network.

8.143 Consideration needs to be given to how the existing landscape relates to that of the proposed development allowing a better transition between the new development and existing areas.

Ecology and Biodiversity

8.144 Living with nature is possible within urban places, and there are a variety of reasons why natural habitats should form part of higher density urban developments:

- Wildlife can contribute substantially to the health and wellbeing of an urban community and be an educational resource for local schools.
- Vegetation can reduce the risk of flooding, contribute to pollution control, provide shade and reduce the effects of wind created by streets.
- Natural habitats can significantly increase the quality of residential and mixed-use urban areas and, from a developer's perspective, have the potential to contribute to the market value of new development.

8.145 Effective protection of the environment is one of central government's key sustainability objectives, to be achieved simultaneously with economic growth and employment, social progress and prudent use of natural resources. It requires protection of existing species and habitats, as well as management and aftercare of areas that are to be retained, enhanced or created.

8.146 Essex has a rich variety of urban wildlife. As well as ancient woodlands, grassland and wetlands, urban sites can provide a refuge for once widespread plants and animals. Industrial land, urban commons, gardens and buildings can offer unique habitats which often support uncommon species and unique assemblages of plants. Parks, cemeteries, allotments, railway sidings and derelict land all make a significant contribution to biodiversity in urban areas.

Ecology Park, Millenium Village, London

Planning for Biodiversity

8.147 In general, new developments in Essex will be expected to enhance existing biodiversity and to create new habitats, together with providing resources for the management of those habitats into the future.

8.148 Good design can provide many opportunities for biodiversity and these should be maximised. Furthermore, all developments should ensure that networks of habitats are maintained to prevent fragmentation and isolation.

8.149 Biodiversity should be considered at an early stage, within the framework of the Context Appraisal and any required ecological surveys. An Ecological Strategy should be produced for each development by a professional ecologist as part of the overall design package. The Ecological Strategy should be guided by what is appropriate for biodiversity for the particular site and should include consideration of the ecological surveys.

8.150 The Ecological Strategy should inform a Scheme of Management, which should be provided to demonstrate how any habitat or vegetation is to be established and managed in the future. This should be based on information from ecological surveys and the Ecological Strategy.

8.151 The Essex Biodiversity Project (EBP) has produced guidance for planners and developers entitled 'Integrating Biodiversity into Development'. The most up-to-date version can be found on the EBP website. Another valuable reference is the Town and Country Planning Association (TCPA) report 'Planning for a Healthy Environment – Good practice guidance for green infrastructure and biodiversity' (2012).

Protection of Existing Habitats and Species

8.152 Some areas of habitat are statutorily protected and have international or national designations for the particular animals and plants that they support; these reflect the relative importance of the sites or the species. There is a general presumption against development that may harm any site of international or national importance. In addition, non-statutory areas exist which are often referred to as Local Wildlife Sites (LoWS). http://www.essexwtrecords.org.uk/lowsfinder

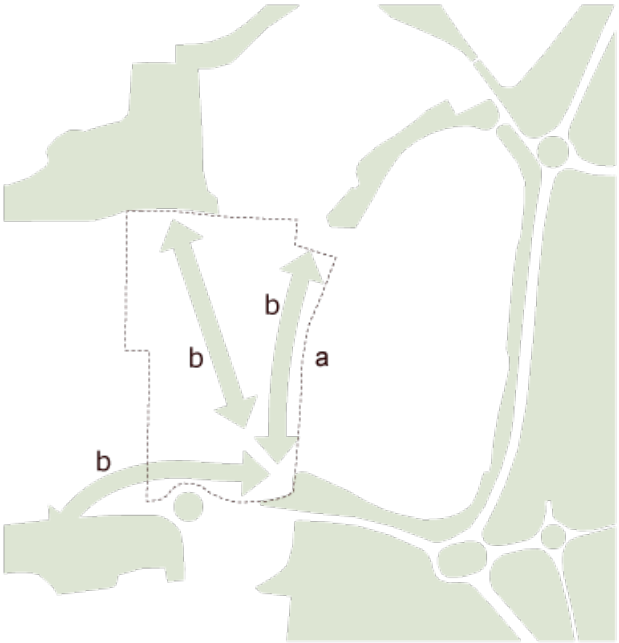
8.153 Statutorily protected plants and species need special consideration but can co-exist with development if adequate site management arrangements are in place. In addition, the Ecological Strategy should consider habitats and species listed in the UK and Essex Biodiversity Action Plans.

8.154 While brownfield sites may be contaminated and have poor soils, they can have a high ecological value and the design of new development in these locations needs to be considered with special care. A comprehensive site de-contamination proposal, for example, is likely to destroy the special conditions that produced a habitat that supports any flora or fauna on the site.

New Opportunities

8.155 In general, new development should include measures to encourage biodiversity by creating varied habitats and a rich diversity of trees and planting throughout the built environment. Preferred habitats for enhancement and creation will be those listed as of principal importance in Government Circular 06/2005 and highlighted within the UK and Essex Biodiversity Action Plans.

8.156 Within high-density urban developments, green public space provides one of the main opportunities to incorporate biodiversity. Water management strategies should consider opportunities for wetland habitat where possible. The Context Appraisal should assess how green spaces and habitats within the locality can be linked to provide corridors for the movement of wildlife.

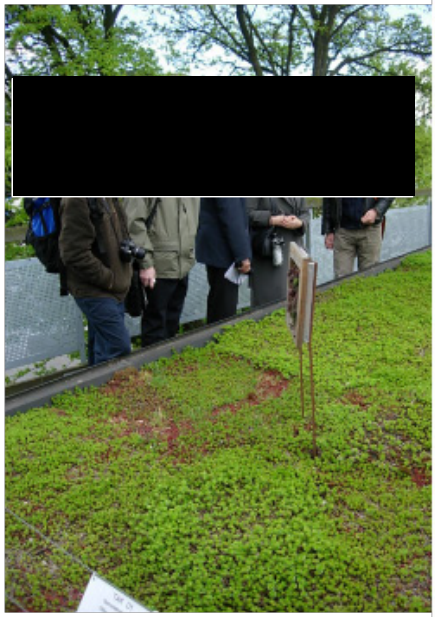


a. Site
b. Potential green corridors

Buildings and Biodiversity

8.157 Various opportunities exist for buildings to support biodiversity and it is desirable that habitats be integrated into the design of buildings. Consideration should be given to the use of living roofs and planting on facades, roof terraces and balconies through the provision of climbing wires and planters. The popularity of the conservatory suggests a desire to merge internal and external spaces, enabling planting to be brought inside and the garden or balcony used as an outdoor living area.

8.158 Living roofs can support large and elaborate vegetation, including trees, using deep soil bases and food-growing opportunities. These are referred to as 'intensive' green roofs. Alternatively, they can support mainly mosses and sedums using shallow soil layers; these are referred to as 'extensive' green roofs.



Examples of living roofs

8.159 Intensive green roofs are flat and usually require additional irrigation, ideally from harvested rainwater stored in on-site tanks. The deeper soil layer has structural implications for the building, which needs to be designed to cope with the extra imposed weight. When mature, these roofs often have the appearance of a typical planted garden or park. Places such as the deck above communal parking in higher density development can be designed as an intensive green roof.

8.160 Extensive green roofs can be laid on a roof pitch of up to 30 degrees and are lightweight but still provide additional thermal insulation and encourage biodiversity.

8.161 Brown roofs are flat roofs that can be used to recreate brownfield habitat. They can support rare plants and animals that can tolerate the conditions of brownfield sites, using a mix of aggregates as the substrate for natural colonisation by plants. This option would be particularly suitable where the designer wished to recreate habitat lost through redevelopment or where Biodiversity Action Plan species within a particular area would benefit from additional habitat.

8.162 Nesting boxes and other spaces for birds and bats should be provided on buildings or in communal green spaces as part of a development's Ecological Strategy. Specially designed bricks are available to provide roosting sites for bats.

Greening of buildings – important in creating sustainable developments Vauban, Freiburg, German