Section 6

Ebbsfleet Public Realm
Planting Guide

Use this guidance to inform the specification of trees and planting in your public realm project, and embed a viable management strategy for planting that can be sustained into the future.

Introduction

Developing a Planting Strategy - Applying the landscape themes

Landscape Themes

Planting Design Principles

Tree planting guidance

Understorey planting guidance

Rain garden planting guidance

Vertical and roof planting guidance

Technical guidance

Maintenance Guidance

Ebbsfleet's planting strategy must acknowledge the heritage of its industrial landscapes, while interpreting 'the garden' for this 21st Century Garden City

The city's trees, plants and flowers are the very basis of its character, and their selection must embrace the essence of this dramatic landscape to enthuse and inspire.

The aim is to deliver planting that interprets the rich cultural heritage of Ebbsfleet's post industrial landscapes, but also supports the infrastructural role of enhanced air and water quality, and carbon sequestration.

The vision aims to deliver vibrant, colourful and memorable planting, but a strategy that also responds to local micro-climate and soils that continue to evolve as part of wider climate change. The planting must also consider how to incorporate productive landscapes, integrate surface water management and support biodiversity.

How to use the planting guidance

The guidance is intended to be used in steps 2 and 3 of the public realm design process, and in conjunction with;

Section 2 : Landscape Character Overview
Section 4 : Exemplary Public Realm Designs

For example, the typical plans for each of the 6 public realm typologies provide design guidance on the appropriate location, arrangement and quantity of trees and understorey planting. This guidance is then further developed in this chapter to clarify the vision, the application of the planting design principles, and technical considerations for the soft landscape within the public realm.

Items considered within this soft landscape strategy include street trees, understorey planting, and rain gardens.

The planting strategy is further developed through additional guidance outlining the technical challenges and the management and maintenance requirements for the hard landscape.

Applying landscape narratives

The section begins by translating the 4 landscape narratives defined in Section 2 into a series of planting design principles.

This includes detailed advice on how the 'Garden of England' can be translated into a family of design elements for neighbourhood parks,

Delivering high performing planting

Seven general design principles for all planting summarises the key aspects of the evaluation framework that have been formative to the development of the planting strategy.

This section includes detailed advice on how the 'Garden of England' can be translated into a family of design elements for neighbourhood parks, how trees are to be integrated into the various levels of streets, and how pictorial planting and rain gardens can play a role in the understorey planting of the public realm.

In addition, this section is supported by recommendations for the integration of vertical and roof landscapes.

Technical guidance

The final part of this section focuses on providing technical guidance for planting within Ebbsfleet. In this part, advice is given on key technical items such as soil conditions, soil permeability, the use of water, biodiversity, micro-climate, tree planting, and tree pit drainage. Additionally, two typical details for tree pits have been provided. One detail provides guidance on tree planting within the soft landscape while the other provides guidance on tree planting within the hard landscape.

Management and maintenance for planting

The chapter concludes with a series of pages outlining the management and maintenance requirements for soft landscape. The management and maintenance requirements are organised by planting type in a series of tables that provide a general description, location of application, life expectancy, outline maintenance / management specification, and an anticipated frequency.

It is expected that these management and maintenance tables are first reviewed in step 2 of the design process. At this stage the design team should review and confirm the life expectancy and management requirements align with the design guidance for each typology within their project area. Then in step 3, a more thorough review and analysis of these tables should be carried out as part of the establishment of the planting palette. It is expected that during this step the team evaluates and demonstrates the design meets the maintenance and management requirements through the analysing of alternative options. Further details of how this fits into the overall design process can be found in Chapter 1 of this document.

A vision for planting in Ebbsfleet

Photo: Pictorial Meadows, Planting for People, Sheffield

Green infrastructure

The planting at Ebbsfleet Garden City needs to work hard to provide vital green infrastructure services. Abundant tree planting will play a key role, providing attractive green leafy routes along all streets, squares and parks, to encourage walking and cycling and social interaction. The benefits of this are multiple, improving safety, physical and mental health, helping to build new communities, and creating wildlife habitat.

Benefits of street trees include:

- reducing obesity, and associated diseases, through encouraging an active lifestyle
- reducing asthma and other respiratory diseases, by reducing vehicular journeys and so reducing airborne particulates from vehicles
- reducing airborne particulates from reaching people's lungs, by trapping them on the street tree's leaves
- improving mental health, through the positive effects of living in a leafy green environment
- reducing exposure to skin cancer, by providing shade in the summer months
- supporting the development of communities, through providing streets, squares and parks which can function as social meeting spaces
- supporting mental health, through providing streets that encourage people to walk and interact with their neighbours
- supporting children in developing social skills, through providing a safe environment for them to access play and learn how to interact with others
- reducing crime or the fear of crime, through increasing the number of people walking or cycling in the public realm
- increasing biodiversity and creating wildlife habitat
- absorbing carbon dioxide, and providing oxygen
- shading and cooling streets and buildings in the summer, while also supporting solar gain in the winter
- slowing down and absorbing rainwater

Street trees and mass herbaceous planting, Walworth Road, London

Creating a distinctive sense of place

The local area has a rich history and distinctive landscape character, which has been assessed to inform this guide. This rich heritage includes:

- Agricultural history as part of the productive "Garden of England"
- Industrial history, concentrated on chalk quarrying and cement production
- A legacy of amazing landscape character features, notably white chalk cliffs, blue lakes, rivers, valleys and marshes

These elements provide a rich source of inspiration which can be used to guide the planting design, typologies and palettes, to celebrate the people, places and history of the site, and to create a distinctive new place. A summary of these themes is shown on the following pages.

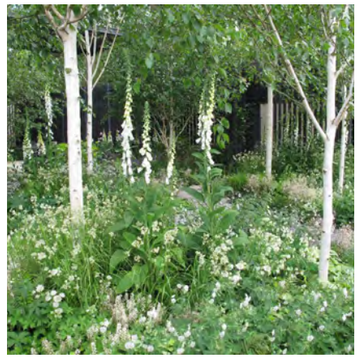
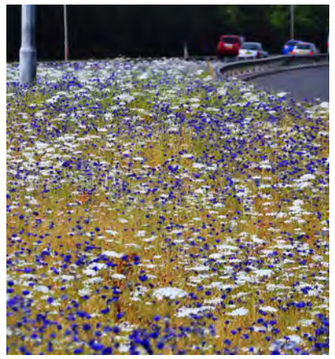
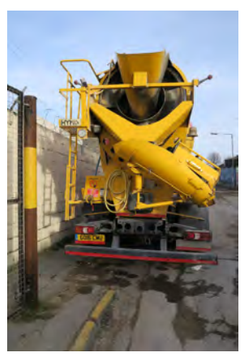
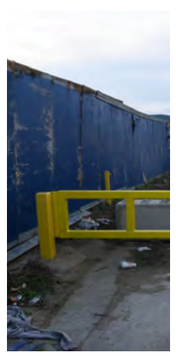
Ebbsfleet Garden City also benefits from the green image of Garden Cities and their legacy of attractive leafy streets. Given the higher density of housing anticipated at Ebbsfleet Garden City, primarily it is the public realm that will need to deliver the "garden" that has attracted residents and helped build a sense of pride in the previous generations of Garden settlements. Additionally, the legacy of the Garden of England is a rich source of inspiration for the "Edible Ebbsfleet" initiative being developed by the Ebbsfleet Healthy New Town Team. The ambition is to grow productive food crops integrated into the public realm, encouraging residents to get involved, grow, cook and eat fresh healthy food, and get to know their neighbours.

The Garden of England heritage is also inspiration for a distinctive approach to planting which values seasonal change, and the attractive dynamic of changing features of various vegetation. The wildflower meadows that you find growing in traditional Kent orchards, provide inspiration for a loose-textured, soft and naturalistic look, with vibrant and changing colour. This can be delivered with Pictorial Meadows and other Pictorial planting approaches to create a memorable and imageable landscape.

This Planting Strategy sets out examples of how inspiration can be derived from this unique site, and shows examples of how it can be applied to planting to create a 21st Century Garden City.

Planting Narratives : Chalk, water and industry

Planting colour palettes and design principles should be derived from the landscape character (Section 2) to enhance the qualities of the existing landscape character.

Theme	Inspiration	Colour & Form	Description
Chalk		 	Chalk cliffs within the landscape inspired the following principles: **Colour Palette:** Chalky white and flinty greys **Planting Form:** Structure planting to pick up the undulation, rhythm, and repetition of the chalk cliffs
Water	 	 	Water bodies within the landscape inspired the following principles: **Colour Palette:** clear blues, steely greys, warm greys **Planting Form:** Loose textured and naturalistic to pick up on wetlands and natural edges to water bodies.
Industry	   	 	Industrial heritage within the landscape inspired the following principles: **Colour Palette:** blocks of primary colours - yellow **Planting Form:** Vegetation to be loose textured, contrast to ordered orthogonal industrial infrastructure

Planting Narratives : Garden of England

Planting colour palettes and design principles should be derived from the landscape character (Section 2) to enhance the qualities of the existing landscape character.

1. Abundance of trees

2. Seasonal change

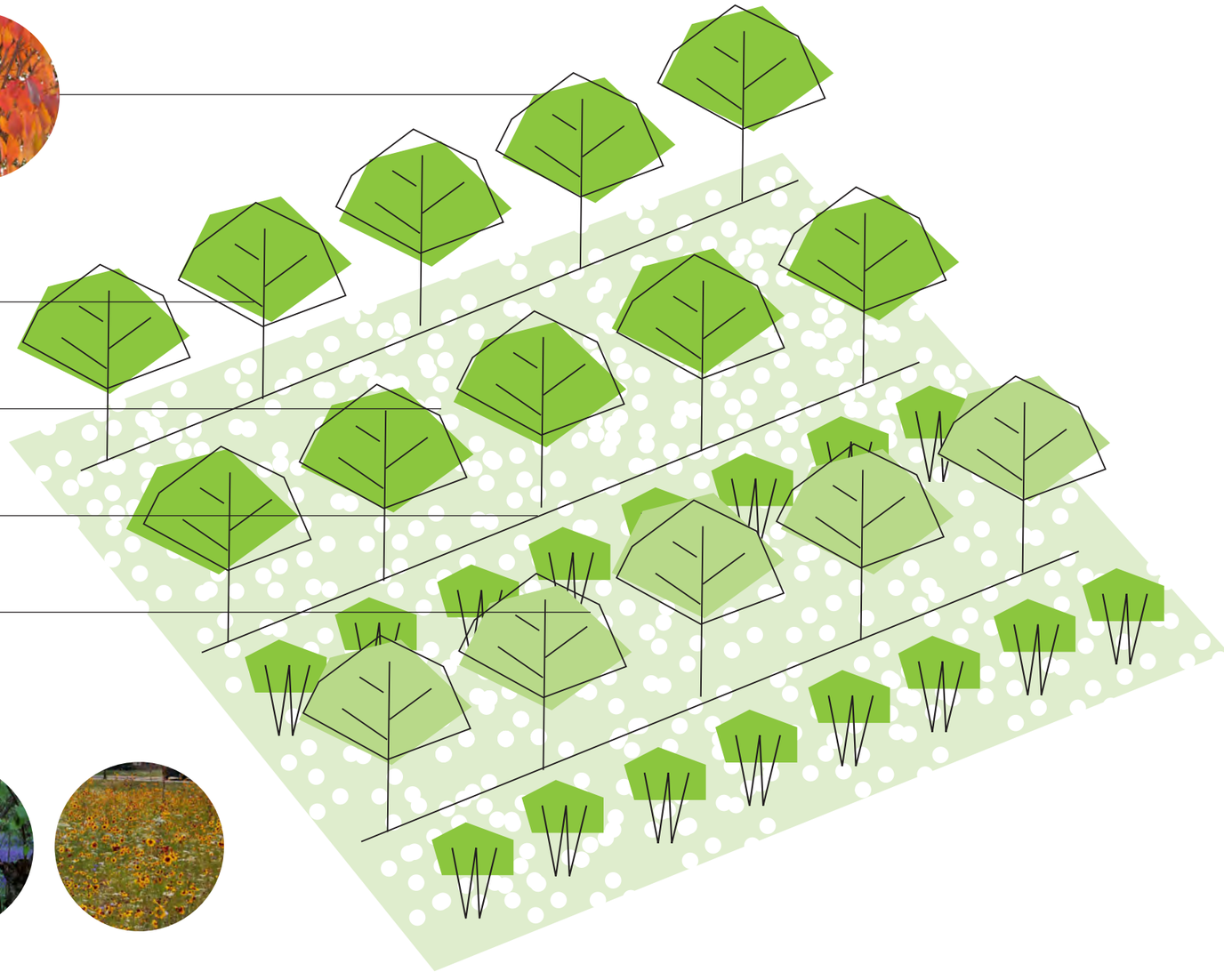
3. Productive

4. Regular orthogonal layout

5. Repetition

6. Variety

7. Multi-layered



Traditional Kent Orchards were multi-layered, making good use of available space. Standard fruit trees (apples, cherries, pears, plums) were interspersed with rows of soft fruit bushes (gooseberries, raspberries, currents, or cob-nuts (hazel bushes). Below that, wildflower meadows were grown (traditionally providing grazing for livestock).

8. Planned for maintenance

Grid or diagonal layouts allowed access for fruit picking and tree pruning. Fruit trees are grafted onto root stocks, which can be selected to control the potential tree size, to fit modern requirements.

Garden of England Planting Principles	Streets Levels 1-4	Parks	Squares
1. Abundance of trees	Leafy green streets to encourage walking, cycling and build communities. Street trees on all street types, levels 1-4. Trees to provide spatial structure, shade and shelter, and other green infrastructure services.	Leafy green parks to encourage walking and cycling, and social spaces for interaction and to build communities. Trees should be in included in all parks, to provide spatial structure, shade and shelter and other green infrastructure services.	Leafy green square to encourage walking and cycling, and social space for interaction and events to build communities. Trees should be in included in all parks, to provide spatial structure, shade and shelter and other green infrastructure services.
2. Seasonal change	Broadleaved deciduous trees, trees with blossom, berries, catkins, seeds or autumn leaf colour change will all add to seasonal change	Broadleaved deciduous trees, trees with blossom, berries, catkins, seeds or autumn leaf colour change will all add to seasonal change. Grassed areas in park could include productive fruit trees or bushes	Broadleaved deciduous trees, trees with blossom, berries, catkins, seeds or autumn leaf colour change will all add to seasonal change.
3. Productive	Use trees with ornamental blossom to reference orchards, avoiding soft fruit in places with hard surfaces where it could cause a slip hazard. Level 4 Home-zone streets could include hops trained on vertical supports, herbs, wild strawberries, espalier fruit. Planters could be made available to residents to grow fruit and vegetables.	Opportunities for planting community orchards, walnut trees, cob-nut bushes, herbs, and other productive plants. Keep fruit bearing plants on soft surfaces, to avoid slip hazards. Allotments - raised beds could be included in larger parks subject to space. As these require fencing to protect crops from wildlife, a water supply, shared equipment storage shed etc., they may be better accommodated in larger specific allotment areas to support community interaction.	Use trees with ornamental blossom to reference orchards, avoiding growing soft fruit in places with hard surfaces where it could cause a slip hazard. Include herbs, nut trees (e.g. walnuts), hops trained on pergolas, wild strawberries.
4. Regular orthogonal layout	Level 1 & 2 streets - symmetrical pairs of trees, regularly spaced Level 3 & 4 - more informally grouped trees	Opportunities for planting fruit trees or ornamental trees in rows or on a grid/diagonal grid, to reference the layout of traditional Kent orchards.	Opportunities for planting ornamental trees in rows or on a grid/diagonal grid, to reference the layout of traditional Kent orchards.
5. Repetition	Create character and legibility with single species blocks of trees for shorter streets	Create character and legibility with single species rows or blocks of trees	Create character and legibility with single species rows or groups of trees
6. Variety	Create character and legibility by varying the species - break up longer streets by blocks/character areas. Use the scale of trees to indicate the hierarchy of streets, to aid legibility. Biodiversity will also help to mitigate against the increasing globalisation of tree pests and diseases, and climate change.	Vary fruit trees by type and cultivar, to provide a variety of fruit, but match by pollination group. Vary form of productive plants - e.g. by rootstock (controls eventual size) and by pruning (controls shape). A varied palette of plants will create character and legibility, and biodiversity.	Create character and legibility by varying the species - break up squares to indicate functional use. Biodiversity will also help to mitigate against the increasing globalisation of tree pests and diseases, and climate change.
7. Multi-layered	Wide soft verges will provide tree rooting soil volumes. Verges can be planted with vibrant Pictorial meadows, mass herbaceous planting, perennial or shrub ground-cover, amenity grass and bulbs, or incorporate lushly planted rain gardens.	Trees planted in soft landscape to provide sufficient tree rooting soil volumes. Trees can be under-planted with Pictorial meadows, mass herbaceous planting, amenity grass, shrubs, ferns, bulbs. Train hops etc. on pergolas. Include fruit or nut bushes, hedges, espalier fruit trees, herbs and other edibles. Include lushly planted rain gardens.	Trees need sufficient root-able soil volume to establish and sustain them to reach their full potential. In hard spaces, trees will need this provided by Silva cells or Structural soil. Areas of lower level planting could include ground-cover shrubs, mass herbaceous planting, ornamental grasses, herbs, bulbs, with climbers such as hops trained on vertical supports/pergolas.
8. Planned for maintenance	Select trees that will grow to fill the space, but not to obstruct vehicles, lighting columns, or shade windows excessively. Plan for management such as crown-lifting, to keep lower tree branches from obstructing routes as the trees grow.	Ornamental flowering trees can be maintained as full sized standard trees, but productive trees may be harvested and managed more easily as half-standard trees, bushes, espaliers or cordons. Select all plants to fit the space, or specify management to keep them from obstructing access.	Select trees that will grow to fill the space, but not to obstruct vehicles, lighting columns, or shade windows excessively. Plan for management such as crown-lifting, to keep lower tree branches from obstructing routes as the trees grow.

Planting Design Principles

Based upon the Healthy Streets Evaluation Framework indicators identified in Section 3, the planting design should aim to reveal and emphasise the existing sense of place while also accommodating the following design principles:

1. STREETS PLENTIFUL IN TREES

The streetscapes of Ebbsfleet Garden City should bring the garden into the city through the plentiful planting of street trees and spectacular garden verges.

2. ENHANCE LOCAL BIODIVERSITY

The planting design should aim to enhance the local biodiversity and the overall ecological health of Ebbsfleet Garden City in line with the evaluation framework.

3. RESPOND TO THE ENVIRONMENTAL CONTEXT

All planting should be designed to suit site conditions, to ensure its long term success. Critical aspects to account for include: soil quality & permeability, local microclimate conditions, and sustainable maintenance requirements.

4. DYNAMIC YEAR ROUND QUALITIES

The planting design should provide changing year round qualities and the attractive dynamic of changing features such as blossom, fruit, berries, autumn leaf colour, distinctive twig colour, or exfoliating bark.

5. INTEGRATE EDIBLE PLANTS

Kent's role as the Garden of England should be actively promoted through the integration of growing spaces in the parks (e.g. orchard trees, hops trellis). Collectively, the public realm should form a series of productive landscapes that provides food for local residents and links to Ebbsfleet's agricultural legacy.

6. NATURALISTIC PLANTING STYLE

The planting design should promote a naturalistic planting aesthetic inspired by the existing landscape character areas and pictorial planting approach. This planting style fits with the ambition to sustainably manage surface water runoff and enhance the local biodiversity.

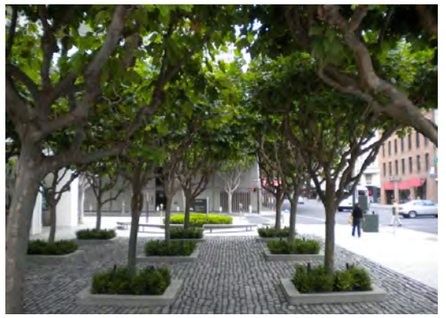
7. ACCOMMODATE WATER FLUCTUATION

The planting design should accommodate and facilitate water fluctuation within the public realm through the specification of 'rain garden' plant species.

Planting in Local Parks

N.B. This table provides examples of plant species appropriate for the Ebbsfleet Garden City public realm. A wide variety of species should be used, for biodiversity and to address plant biosecurity and climate change challenges.

Additional species should be included, which have similar spatial and character to the examples shown here, to align with the ambitions laid out in the evaluation framework (chapter 3) and design guidance (chapter 4).

Planting type	Function	Layout	Example species	
Trees: Structure	Structure space - divide it, focus views, shade and shelter. Ornamental, blossom, seasonal change	Regular rows or on an orthogonal/diagonal grid	• *Prunus avium 'Plena',* Flowering cherry cultivar • *Prunus sargentii,* Sargent's Cherry • *Acer campestre 'Elsrijk'* Field maple cultivar • *Acer x freemanii 'Autumn blaze',* Field maple cultivar	  
Tree: Orchards	Productive - providing top fruit, berries, nuts. Seasonal change	Regular rows or on an orthogonal/diagonal grid. Use appropriate rootstock and formative trained stock for std, 1/2 std, bush, espalier, cordon and required final size. Match pollinating groups.	• Malus domistica 'Kent', pyrus, prunus etc.. • Consider using Kent varieties	 
Hedge & Planted Fences	Low level windbreak, structure space, divide a quiet area from a more active area, productive - fruit, berries, nuts, blossom, seasonal change	Linear features	• *Corylus avellana,* Hazel/cob-nut bushes or multi-stem trees • Malus, pyrus, prunus, cultivars, espalier trained on fences • Mixed native species hedge	  
Shelter breaks/ woodland	Windbreak - generally or for orchards, shade, structure space, focus views, privacy, contain activity. White chalky bark, seasonal change, reference to traditional Kent orchard windbreaks	Rows, informal groups, regular blocks	• *Alnus glutinosa,* Common alder • *Betula pendula,* Silver birch • *Betula utilis var jacquemontii,* Himalayan birch • *Populus tremula,* Aspen	 

N.B. This table provides examples of plant species appropriate for the Ebbsfleet Garden City public realm. A wide variety of species should be used, for biodiversity and to address plant biosecurity and climate change challenges.

Additional species should be included, which have similar spatial and character to the examples shown here, to align with the ambitions laid out in the evaluation framework (chapter 3) and design guidance (chapter 4).

Planting type	Function	Layout	Example species	
Climbing plants	Productive or ornamental perennial climbing plants. Hops can be used to flavour beer.	Train up vertical supports. Dwarf hops to 2m height, commercial hops to 5-6m.	Productive: *Humulus lupulus*,consider local Kent varieties: "Kent Golding", "Cobb Golding", "Redsells Estwell" etc.. Vines, kiwi, passionflower. Ornamental: *Humulus lupulus aurea,* Golden hops. Clematis.	  
Ornamental shrubs	Productive - hazel nuts, Ornamental, winter stem colour, low level structural (contain balls in kick-about spaces etc..) - year round presence	Rows, drifts, blocks. Multi-stem hazels, coppices dogwood or salix to promote winter stem colour	*Productive:* *Kentish Cobb-nuts* *Ornamental:* *Corylus avellana,* Hazel, *Cornus species,* *Salix species,* *Buddlieja*	  
Herbs and shrubs	Productive and ornamental, fragrance, flowers, seasonal changes	Rows, drifts or groups	*Lavandula angustifolia,* *Mentha spicata,* *Rosemary,* *Sage,* *Bay,* *Chives,* *Oregano*	 
Other edibles	Productive and ornamental	Wild strawberries can be planted in gaps between paving, along the base of pergolas etc.. Rhubarb can be grown in rows, or in raised beds.	*Fragaria vesca,* Wild strawberries, Rhubarb varieties	 

Street Trees Planting Guidance

N.B. This table provides examples of plant species appropriate for the Ebbsfleet Garden City public realm. A wide variety of species should be used, for biodiversity and to address plant biosecurity and climate change challenges.

Additional species should be included, which have similar spatial and character to the examples shown here, to align with the ambitions laid out in the evaluation framework (chapter 3) and design guidance (chapter 4).

Street type	Tree function	Tree layout	Soft verge width min	Planted tree size min	Typical tree size after 25 years	Offset minimums	Tree staking	Root-able soil volume
Level 1 - Fastrack / Primary	Large sized trees to create an attractive leafy street to encourage use of public transport, walking and cycling, and to identify this as this signature street and public transport spine linking Ebbsfleet Garden City	• Symmetrical pairs of trees, both sides of the Fastrack bus route • 12-14m spacing between pairs of trees • Single species groups of trees to match the character of the area (e.g. village centre, urban village, parkland)	• 4m verges both sides of street	• 30-35cms girth, • 6.0m height • Clear stem 2.4m	• 12-15m height • Canopy 4-6m • Clear stem 3.2m	• Offset 7m from building façades (tree stem centre) • Offset 1.5-2.0m from kerb edge • NB. Trees to be managed by crown lifting in the first 5 years to provide 3.2m clear stem, to avoid obstructing access as the trees grow.	Underground guying	• Large trees - 30m3 • Medium trees - 12m3 Trees to be planted in soft verges wherever possible. Alternatively, root-able soil volume above to be provided by suspended pavement system
Level 2 - Residential distributor	Medium sized trees to create a attractive leafy streets to encourage walking and cycling, and to identify this as a primary street.	• Regularly spaced trees on both sides of the street, in regular pairs or rows along the street • 8-10m spacing • Single species groups for shorter streets, species varied by development block for longer streets	• 2.0-2.4m verges both sides of street	• 20-25cms girth, • 5.0m height, • clear stem 2.4m	• 10m height • Canopy 3-5m • Clear stem 3.2m	• Offset 6.0m from building façades • Offset 1.2m from kerb edge • NB. Trees to be managed in first 5 years by crown lifting to provide 3.2m clear stem to avoid obstructing access as the trees grow.	Underground guying	• Medium trees - 12m3 Trees to be planted in soft verges wherever possible. Alternatively, root-able soil volume above to be provided by suspended pavement system
Level 3 - Residential streets	Small or medium sized trees with narrow crowns to create attractive leafy streets to encourage walking and cycling, and to identify this as a secondary street.	• Small trees on both sides of the street, or • Medium trees in verges on one side of street only • Single species groups for shorter streets, species varied by development block for longer streets	• 2.0-2.4m verges both sides of street, or • 4.5m verge one side of street	• 20-25cms girth, • 5.0m height, • clear stem 2.4m	Small trees - two verges: • 7m height • Canopy 3m Medium trees - one verge: • 10m height • Canopy 3-5m • Clear stem 3.2m	• Offset 4.5m from building façades - verge both sides of street, 6.0m single verge • Offset 1.2m from kerb edge - verge both sides, 2m single verge • NB. Trees to be managed in first 5 years by crown lifting to provide 3.2m clear stem to avoid obstructing access as the trees grow.	Underground guying or double timber stakes	• Small trees - 5m3 • Medium trees - 12m3 Trees to be planted in soft verges wherever possible. Alternatively, root-able soil volume above to be provided by suspended pavement system
Level 4 - Homezone & Mews	Small trees or multi-stem shrubs, to create attractive leafy green streets with an informal home-zone feel.	• Single trees or grouped in pairs • Single species groups for shorter streets, or mixed species for informal feel	• 2.0-2.4m min	• 20-25cms girth, • 4.0m height, • clear stem 2.4m • or multi-stem min. 3 stems, height 3.5-4.0m	Small trees: • 7m height • Canopy 3m • Clear stem 2.4m	• Offset 2.5-3.0m from building façades - verge both sides of street, 3.0-4.0m verge one side of street • Offset 1.2m from kerb/planter edge	Underground guying or double timber stakes	• Small trees - 5m3 Trees to be planted in soft verges or planters wherever possible. Alternatively, root-able soil volume above to be provided by suspended pavement system

Street type	Example tree species: North Kent Plains			Example tree species: Thames Estuary		
Level 1 - Fastrack / Primary	• *Corylus colurna*, Turkish Hazel • *Liriondendron tulipifera*, Tulip tree • *Tilia cordata 'Greenspire'*, Small leaved lime cultivar • *Ulmus 'New Horizon'*, Resista Elm			• *Acer platanoides 'Emerald Queen'*, Norway maple cultivar • *Acer pseudoplatanus 'Erectum'*, Sycamore cultivar (parkland edge) • *Tilia cordata 'Greenspire'*, Small leaved lime cultivar • *Quercus ilex*, Holm oak (broadleaved evergreen)		
Level 2 - Residential distributor	• *Acer campestre 'Elsrijk'*, Field maple cultivar • *Alnus cordata*, Italian alder • *Prunus avium 'Plena'*, Flowering cherry cultivar • *Pyrus calleryana 'Chanticleer'*, Flowering callery pear			• *Acer platanoides 'Princeton Gold'*, Norway maple cultivar • *Hippophae salicifolia 'Streetwise'*, Sea buckthorn cultivar • *Sorbus aria 'Lutescens'*, Whitebeam cultivar • *Sorbus intermedia 'Brouwers'*, Swedish Whitebeam cultivar		
Level 3 - Residential streets	• *Acer campestre 'Streetwise'*, Field maple cultivar • *Malus 'Evereste'*, Flowering crab apple cultivar • *Prunus 'Sunset Boulevard'*, Flowering cherry cultivar • *Sorbus aucuparia* 'Cardinal Royal', Rowan cultivar			• *Acer platanoides 'Globusum'*, *Norway maple* cultivar • *Sorbus aria 'Majestica'*, Whitebeam cultivar • *Sorbus intermedia 'Brouwers'*, Swedish Whitebeam cultivar • *Sorbus aucuparia 'Asplenifolia'* , Rowan cultivar		 
Level 4 - Homezone & Mews	• *Amelanchier lamarckii 'Robin Hill'*, Snowy mespilus cultivar • *Malus 'Evereste'*, Flowering crab apple cultivar • *Prunus 'Umineko'/'Snowgoose'*, Flowering cherry cultivar • *Sorbus aucuparia 'Streetwise'*, Rowan cultivar		 	• *Sorbus aucuparia 'Streetwise'*, Rowan cultivar • *Sorbus aucuparia 'Golden Wonder'*, Rowan cultivar • *Crataegus laevigata 'Paul's Scarlet'*, Hawthorn cultivar • *Crataegus prunifolia*, Plum-leaved thorn		

Understorey Planting Guidance // Streets

The table on the right provides a general rule of thumb for the use of various understorey planting types within the four levels of streets. The table references the planting types specified within the planting strategy (pages 176-181) and is to be used in conjunction with the typical plan and section drawings provided in chapter 4 for each of the defined street typologies.

It is critical to note that individual streets should not mix and match multiple planting types. The mixing and matching of planting types tends to create additional maintenance requirements and it is strongly preferred that the planting design ensures a consistent street character with large, continuous blocks of one of the preferred planting alternatives.

For all planting schemes it is critical the maintenance requirements for understorey planting are identified and a management plan has been set in place.

Typology	Preferred Alternative	Areas of Intense Use & Small Verges	Areas requiring pedestrian footfall (Desire Lines)	Sustainable Urban Drainage Systems (SuDS)
Level 1 Streets	Pictorial meadows (perennial), mass herbaceous planting, wilflower meadow or groundcover planting.	Ground cover planting	Flowering lawn with bulbs or amenity lawn.	Rain Gardens
Level 2 Streets	Pictorial meadows turf (perennial), mass herbaceous planting, wildflower meadow or groundcover planting.	Ground cover planting	Flowering lawn with bulbs or amenity lawn.	Rain Gardens
Level 3 Streets	Pictorial meadows turf (perennial), mass herbaceous planting, wildflower meadow or groundcover planting.	Ground cover planting	Amenity Lawn - only to be used adjacent to parking places to allow for access.	Rain Gardens
Level 4 Streets	Pictorial meadows turf (perennial), mass herbaceous planting, or ground cover planting. See design	Ground cover planting	All pedestrian desire lines to be accomodated by Hard Landscape.*	Rain Gardens
Notes	Individual streets should not mix and match multiple planting types. The planting design should ensure a consistent street character with large, continuous blocks of one of the specified planting types. This will aid in the development of a clear maintenance regime for each street.	Intense use areas include areas adjacent to crossing points. These areas may require more robust planting to deter pedestrian taking short cuts.	* No amenity lawn is to be used in level 4 streets. See the design guidance in chapter 4 for additional details and precedents.	See the design guidance in chapter 4 for additional details and precedents.

Understorey Planting Guidance // Parks and Public Spaces

The table on the right provides a general rule of thumb for the use of various understorey planting types within neighbourhood parks, public squares, and spaces.

The table references the planting types specified within the planting strategy (pages 176 - 181) and is to be used in conjunction with the typical plan and section drawings provided in chapter 4 for each of the defined street typologies.

The mixing and matching of planting types may be appropriate in green spaces neighbourhood parks and meanwhile spaces to fit the various uses of the design. Public squares are best served by a planting strategy based on mass herbaceous or ground cover planting.

For all planting schemes it is critical the maintenance requirements for understorey planting are identified

Typology	Ecology & Habitat Enhancements	Ornamental Planting Beds	Kickabout Spaces & Pedestrian Desire Lines	Boundary Features	Sustainable Urban Drainage Systems (SuDS)
Neighbourhood Parks	Mass herbaceous planting with select native plants or wildflower meadows. See design guidance on pages 169 & 171	Pictorial meadows / Mass herbaceous planting. See design guidance on pages 168-169	Amenity lawn. See design guidance on page 171	Ground cover planting or low hedges. See design guidance on page 170 and typical plan layout in chapter 4.	Rain Gardens See design guidance on pages 171 - pages 172
Public Square	Mass herbaceous or ground cover planting with select native plants. See design guidance on pages 169.	Mass herbaceous or ground cover planting. See design guidance on page 169	N/A	Ground cover planting or low hedges* See design guidance on page 169.	Rain Gardens See design guidance on pages 171 - pages 172
Meanwhile Spaces	Varies depending on site location and length of tenure.	Pictorial meadows annual seed mixes. See design guidance on page 168.	Amenity lawn. See design guidance on page 171	Varies depending on site location and length of tenure.	Rain Gardens See design guidance on pages 171 - pages 172
Notes & Clarifications	Design team to provide background research on how specific planting species enhance the existing ecological health and biodiversity of the site.			* Boundary planting in public squares should be limited in height to provide clear sight lines and laid out to avoid blocking pedestrian access.	See the design guidance in chapter 4 for additional details and precedents.

Pictorial planting - Streets, Parks, Squares & meanwhile spaces

Creating a vibrant, colourful and memorable public realm

Photo: Pictorial Meadows, Street verge

Photo: Pictorial Meadows, Public park, Sheffield

Photo: Pictorial Meadows, Meanwhile space, Sheffield

The vision for Ebbsfleet Garden City is for colourful vibrant and memorable planting to permeate all areas of the public realm.

We look at four methods of planting on the following pages which create a colourful, loose textured, naturalistic look. They share roots in natural plant communities, such as meadows, prairies, woodland ground flora. They are designed for low maintenance and so are suitable for extensive areas, such as

- Street verges,
- Parks, squares, and
- Meanwhile spaces.

1. Pictorial meadows

The Pictorial planting approach was pioneered by Nigel Dunnett at Sheffield University. Nigel writes that he was inspired by childhood memories of poppy fields in Kent, to design urban meadows that create the same colour, energy and excitement. He trialled mixes of native and non-native flowers that provide attractive vibrant displays from April to October, and tested these out in the public realm in Sheffield. Designed for successional layering, as early species finished flowering, they are grown over by the later flowering species. An annual cut at the end of the flowering season means that these meadows can be maintained on an extensive scale.

Pictorial Meadows are available as seed mixes and turf. The Pictorial Meadows website provides comprehensive guidance on site preparation, establishment and maintenance techniques. Perennial seed mixes take a year to establish, whereas perennial turf can provide instant impact. Establishing from seed, a temporary informal hooped fence can protect establishing meadows from trampling. Annual seed mixes would be especially suitable for temporary sites.

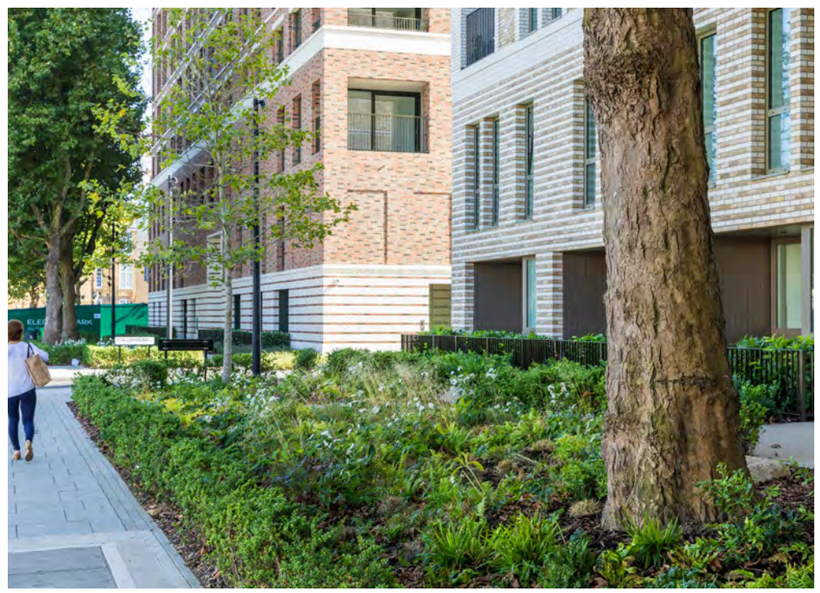
NB. Pictorial meadows are 100% flowering plants, with no grass species. They are therefore not designed to support walking on, like amenity grass. Desire lines should be supported with mown amenity grass or paved paths to avoid trampling. Surrounding areas of Pictorial Meadows with a neatly mown edge of amenity grass will help to show that this is an intentionally wild and natural area.

Pictorial meadows are suitable for verges adjacent to a carriageway, as they are low height planting, with the bulk of planting within 60cms height, to meet any visibility splay requirements. They would also keep views open and support natural surveillance to increase feelings of safety for pedestrians and cyclists.

The Pictorial Meadows range includes mixes designed for a wide variety of site conditions, and so turf or seed should be selected to suit individual site conditions. The mixes include some with strong overall colours e.g. golden yellow in the image above, and these offer great potential to respond to the landscape themes of water, chalk and industrial heritage (page 157).

Mass herbaceous planting, Sloterdijk Station, Amsterdam. Species include: Sesleria autumnalis, Molinia caerulea, Salvia nemorosa, Hemorocalis, Phlomis suffruticosa.

Mass herbaceous planting, Sloterdijk Station, Amsterdam. Species include: Sesleria autumnalis, Molinia caerulea, Salvia nemorosa, Hemorocalis, Phlomis suffruticosa.



Mass herbaceous planting, Gillespies, Walworth Rd, Elephant Park, London. Species include: Carex elata 'Aurea', Anemone x hybrida 'Honorine Jobert', Hyacinthoides non-scripta, Aquilegia vulgaris 'Munstead White', Dyopteris affinis, Tellima grandiflora, Narcisus 'Thalia', Polystichum setiferum 'Dahlem

2. Mass herbaceous planting

Garden designer and nurseryman Piet Oudolf lead the way in inspiring planting approaches using mass herbaceous planting, inspired by native plant communities such as prairies and wildflower meadows. A mixture of native and non-native plants are used, in large drifts or combined in matrices, to provide a long season of interest. Components include bulbs, ornamental grasses, ferns, biennials, annuals and perennials, including species with attractive seed-heads. Closeness of planting minimises spaces for weeds, and again successional layering means that earlier flowering plants are covered over by later flowering plants.

Plants are selected which will work together over the years without much intervention - long-lasting, hardy, robust species, avoiding mixes where one species will dominate, including some ephemeral plants which will fill any gaps. Maintenance can be therefore be reduced to a single cut back at the end of the season, making this approach suitable for extensive areas.

Mass herbaceous planting is typically implemented with container grown plants. An instant impact can be achieved with larger plant sizes, e.g. 5L sized. Species need to be selected to match site conditions - e.g. sunny and open (example above left and central), shady and dry under mature trees (example above right).

For street verges, plant species selected should keep the bulk of planting within 60cms height, for visibility splay requirements and natural surveillance.

Prairie planting in it's native setting, Street verge, Elk River, Minnesota, US, Prairie Restorations Inc.

Pictorial planting - Streets, Parks, Squares & meanwhile spaces

Creating a vibrant, colourful and memorable public realm

Ground-cover shrub planting, East Side City Park, Birmingham

Ground-cover shrub planting, Elephant Park, London. Ilex crenata

Ornamental grass planting, Anchorparken, Western Harbour housing development, Malmo. Calamagrostis x acutiflora 'Karl Foerster'

3. Ground-cover planting

The use of low growing evergreen shrubs is a well-established approach. This type of planting is particularly robust and is suitable for smaller verges or tree pits, or verges in streets with intense use. Single species in bold blocks work well.

This style can be developed to create a softer feel using long-season grasses, referencing the arable crop fields of the Garden of England, or with ferns or flowering shrubs. Inter-planting with spring bulbs extends the flowering season, and provides interest when plants need to be cut back at the end of winter. Plants to be low height, bulk within 60cm height, for visibility splays and to support natural surveillance.

Ground-cover - drifts of ornamental grasses

Ground-cover - drifts of ferns

Ground-cover - drifts of lavender

Wildflower meadow - Castle Hill Northern Boundary, Ebbsfleet Garden City

Wildflower meadow with amenity grass edge, East Village Park

Flowering lawn with bulbs - Oxford

Amenity grass, Elephant Park, London

4. Wildflower meadows

Native perennial wildflower meadows are another option. They will not have such a long flowering season as Pictorial Meadows, and take several years to establish from seed. However wildflower meadow turf is also available for instant impact, from suppliers including “Wildflower Turf” and “Lindum”.

Options include 100% wildflowers, which is not suitable to walk on, or mixes of wildflowers and grasses, which can have grass paths mown in it along desire lines.

Once established, maintenance is typically one or two cuts a year, so practical for large areas.
The photo above shows a wildflower meadow with mown edge of amenity grass - framing wildflower meadows works well to define the edges so that they are interpreted as wild, and not seen as unkempt, especially during the winter.

Wildflower meadows would be suitable for areas of local parks or for street verges which won’t be walked on frequently.

5. Flowering lawns with bulbs

Flowering lawns are a mixture of amenity grasses with 30% low growing wildflowers which can be mown throughout the growing season, but can still flower. Wildflowers typically include daisies, buttercups, clover and yarrow. Bulbs such as crocus, narcissus and tulips can add seasonal colour, these areas would not be mown until the bulbs have died back. The advantage of flowering lawns is that they can be walked on. As they are maintained by mowing, with spot weed-killer only, they are a relatively high maintenance option.

Flowering lawns are available as seed mixes, e.g. Emorsgate “EL1 Flowering lawn mix”, or as turf e.g. “Species rich lawn turf” from Wildflower turf.

6. Amenity grass

Amenity grass will be required for areas which people will walk on - large areas of open space in local parks, for kick-about areas, sunbathing, picnicking and informal play.

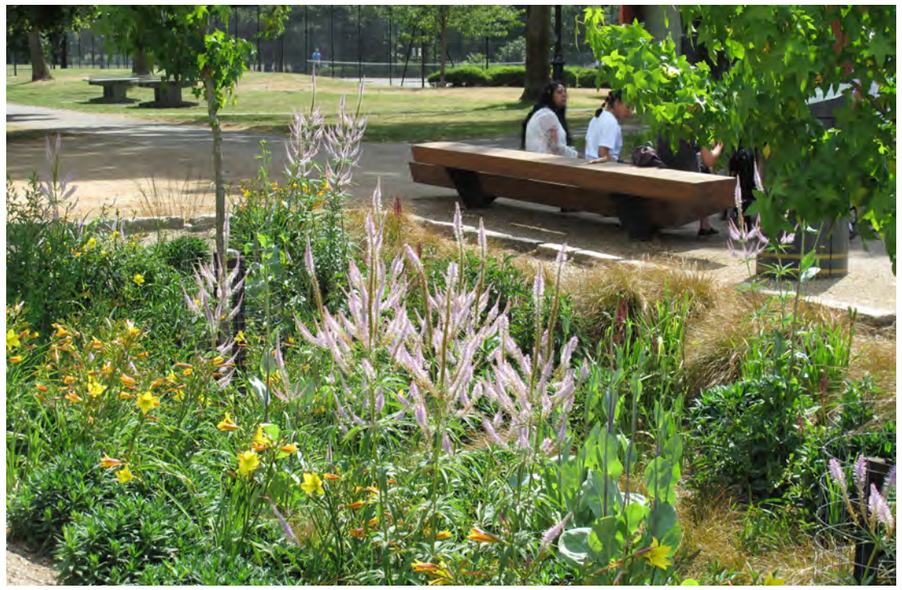
This requires regular mowing and so is a relatively high maintenance option.

Rain gardens/water sensitive design - parks and open spaces

Bringing in the blue and the green

Example of Soft Edge Rain Garden along lake edge

Example of Soft Edge Rain Garden



Example of Hard Edge Rain Garden, Burgess Park

Rain Gardens

Rain gardens can be incorporated into larger spaces such as parks in the form of softer edged ponds and swales. These planted depressions can be multi-functional, providing informal play, attractive planting, wildlife habitat, and can be used as boundary features for soft spaces to keep them clear of car parking.

Rain gardens in streets may be more constrained for space, therefore are typically more formal in layout with harder edges to guide people and cars around them.

Design needs to be developed in coordination with Drainage Engineers, and based on site conditions, such as soil permeability and rainfall, to provide adequate volume for storm-water.

Example of Soft Edge Rain Garden, Barking Riverside

4. Rain gardens/water sensitive design - streets levels 1-4

Bringing in the blue and the green

Example of Hard Edge Rain Garden, Stockholm

Example of Hard Edge Rain Garden in streetscape

Example of Hard Edge Rain Garden in streetscape

Example of Hard Edge Rain Garden, Ebbsfleet

Carex elata 'Aurea', Goatsbeard
Aruncus dioicus, Bowles' golden sedge

Juncus inflexus, Hard rush
Typha angustifolia, Lesser bulrush

Example Rain Garden Planting Palette

Planting needs to be specified to suit the specific rain garden conditions. This includes the specific soil type / mixture within the rain garden as well as the typical inundation periods.

The following plants would be suitable for swales which vary from wet to dry. Ponds with some permanent water will need marginal and aquatic planting. Plants with year round presence should be included (e.g. Dogwood or Hard rush) and mulches (bark mulch or gravel). Phragmites australis (common reed) has nodules on its roots which clean water. However, it is very invasive, so should only be used in lakes.

Lithrum salicaria,
Purple loosestrife

Iris pseudacorus, Yellow flag iris

Persicaria bistorta, Common bistort

Cornus sericea 'Flaviramea',
Golden twig dogwood

Vertical & Roof Landscapes

Integrating landscape to support and enhance the public realm

Vertical Landscapes

Design teams should explore opportunities for planting on vertical surfaces of buildings, structures and retaining walls. This is especially critical in narrow public spaces such as level 4 streets and pedestrian passageways.

Four principal options are available:

- Climbing plants – twining species: These can be planted at the base of the wall, and utilises frames, trellis or wires to allow them to climb. An alternative to this system is the use of pre-established panels of ivy, which can be layered to extend the height beyond 3m.
- Climbing plants – self-clinging species: Planted at the base of the wall, these use a robust solid, textured surface to cling to. This approach may take some time to establish fully.
- Trailing plants: Trailing plants planted in irrigated troughs at the top (and intermediate intervals if needed) and allowed to hang down. The appearance can be 'loose'
- Green-wall system: Usually modular, pre-planted panels with integral irrigation. Expensive to install and maintain, but instant and highly effective. Best suited to northerly orientations to avoid high water-use.

Designers should select the most robust and sustainable type of green wall appropriate to the situation, and should look to avoid systems with intensive maintenance requirements and high maintenance costs. Safety implications of installation and maintenance operations should be considered from the outset.

Example of climbing plants in a Mews - Accordia, Cambridge

Example of climbing plants - Accordia, Cambridge

Example of Green Wall, University of Leicester

Example of robust trellis and vine

Vertical & Roof Landscapes

Integrating landscape to support and enhance the public realm

Roof Landscapes

Rooftops provide an opportunity to enhance the 'greening' of streets below, and provide additional habitats, climate management in highly visible higher level locations. These can be incorporated into private terraces, communal areas or public viewing areas.

The Gro Green Roof Code categorises rooftop planning as:

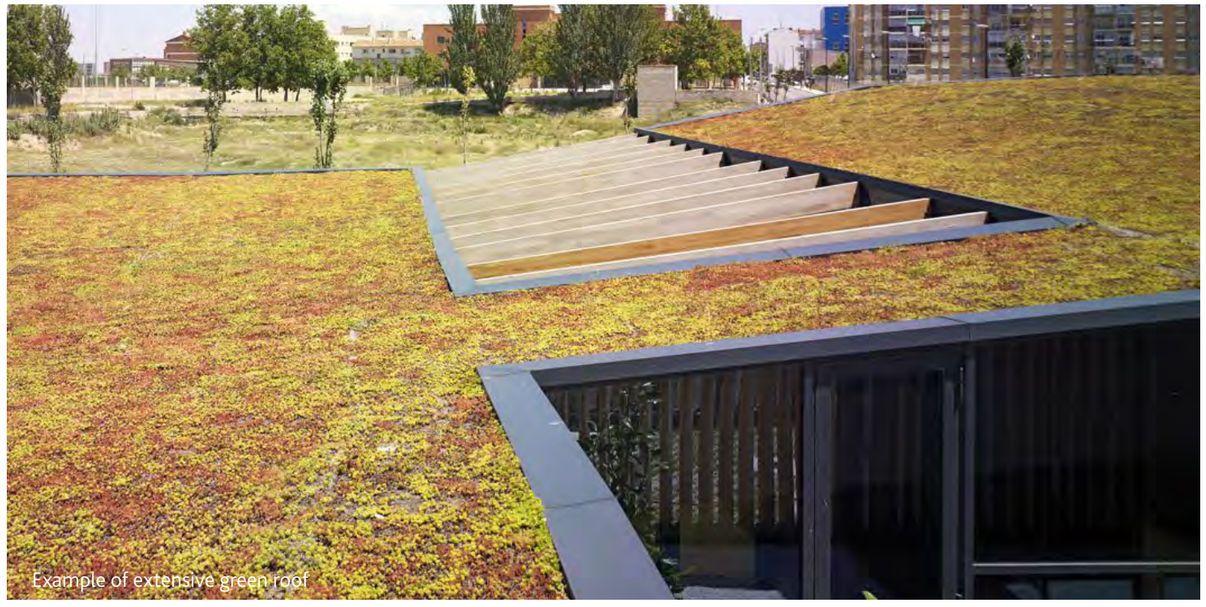
Extensive green roof: Extensive roofs serve as an ecological covering that provides society with environmental benefits and the building owner with life cycle cost benefits. A lightweight, low-maintenance roof system, typically with succulents or other hardy plant species (often sedum) planted into a shallow substrate (typically less than 100 mm) that is low in nutrients. Irrigation is not normally required.

Biodiverse roof: A roof that is similar in composition to an extensive roof, but designed specifically to create a habitat that will attract a particular flora and fauna; whether replicating the original footprint of the building or enhancing the previous habitat. This category includes a brown roof, which is a non-vegetated version. The growing medium is purposely-selected to allow indigenous plant species to inhabit the roof.

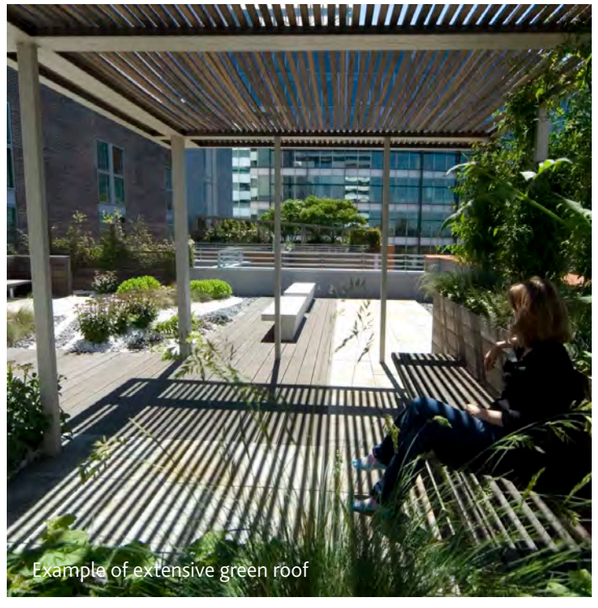
Semi intensive green roof: An intermediate green roof type that can include characteristics of both extensive and intensive roofs. Typically requiring a depth of substrate between 100 mm to 200 mm, a wider range of plants can be included, compared to extensive roofs, including shrubs and woody plants. Irrigation and maintenance requirements are dependent upon the plant species installed.
Intensive green roof: A version of a green roof, often referred to as a roof garden, which provides benefits akin to a small urban park or domestic garden. Designed primarily for recreational use, intensive roofs are typically configured with 200 mm+ of substrate and often require regular maintenance and irrigation.

Design teams should explore ways of optimising roof space to establish useful amenity and habitat areas according to the four categories of green roof described in 'Gro'. Good practice described within Gro should normally be followed in the establishment and management of green roofs.

Installation and maintenance ease and safety should be considered from the outset.



Example of extensive green roof



Example of extensive green roof

Example of extensive green roof

Technical Planting Guidance

Soil

Quarrying and cement manufacture in the Ebbsfleet Garden City site has resulted in large areas of made ground, areas where all topsoil has been removed, quarry overburden e.g. Thanet Sand, or areas with unusually high alkalinity (parts of Swanscombe Peninsula).

To support planting, topsoil may often need to be imported, or manufactured on site using site-won materials or imported quarry waste and green compost. All topsoil will need to be tested to ensure suitability for the proposed planting, at a minimum to BS3882, and ameliorated as necessary to reach that standard. Subsoil likewise to BS8601.

Typical soil depths required:

Planting type	Topsoil depth	Subsoil depth
Trees, ornamental planting	400mm	500mm
Native shrubs	300mm	300mm
Pictorial meadows, Amenity grass	150mm	300mm
Wildflower meadows	0mm	300mm

Soil Permeability

Appropriate drainage is required for all planting typologies. Permeability/percolation tests need to be carried out to guide species selection and remediation measures. These measures include ripping subsoils, avoiding compaction, avoiding handling plastic soils when wet. Where permeability is low, land drainage may be required for areas of amenity grass, and positive drainage will be required in tree pits, to avoid muddy wet areas of lawn, or trees failing to establish due to anaerobic conditions in tree pits.

Right plant, Right place

Appropriate plant species should be selected to suit the particular environment of each site, including drainage, aspect and soil. Species should be specified to suit site conditions, to avoid undue stress that can lead to longer term management issues caused by ill-health, pests and diseases.

Plant Provenance

UK grown plant stock should be specified to minimise environmental impacts. These impacts include reducing transportation distances and the potential spread of plant pests and diseases. Using plants grown in similar conditions to the project site, particularly with a similar climate, and ideally with similar soil types, should increase establishment rates. All these benefits can be further increased by specifying locally grown stock, so where practical, locally grown stock should be specified.

Use of Water

The majority of planting should be specified to suit site conditions, to minimise the need for irrigation to the establishment period, or exceptionally dry hot periods. Watering pipes should be included in tree pits for this purpose.

Exceptions to this are planting on decks, e.g. above car parking, or in high profile areas of courtyards. Automatic irrigation systems may be considered using drip systems, ideally using recycled grey water or rainwater.

Productive food growing will need irrigation, and water taps should be provided for this purpose in local parks or allotment areas.

Biodiversity

Planting a wide palette of plants will enhance site biodiversity, and provide habitat for a wider variety of wildlife. This also creates a more robust public realm, as it provides resilience to the increasing globalisation of plant pests and diseases.

Planting for Pollinators

The use of plants from the Royal Horticultural Society “perfect for pollinators list” will provide pollen and nectar for bees. Select plants with simple flower petal arrangements that bees find easy to navigate.

Globalisation of plant pests and diseases

Trees in particular are subject to an increasing number of pests and diseases. Avoiding over reliance on a narrow range of all types of plants will limit the impact of these.

Check Forestry Commission for specific restrictions on plant pest and diseases at the following website:

https://www.forestry.gov.UK/pestsanddiseases

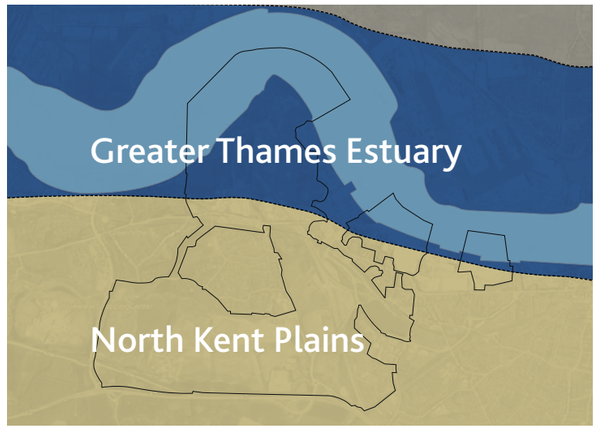
Check for any current or likely plant movement restrictions:

https://www.gov.UK/guidance/importing-trees-and-plants-to-england-and-wales-from-the-eu

Technical Planting Guidance

Micro-climate

Ebbsfleet Garden City is located within two landscape character areas as shown on the diagram below.



Landscape character areas diagram - based on Natural England National Character Areas

The landscape character of these areas have been shaped by many factors, a key one of which is the micro-climate.

- The "Greater Thames Estuary" area is generally low lying, flat and open, on the banks of the tidal River Thames, so it is exposed to salt-laden winds from the North Sea.

- By comparison, the "North Kent Plains" area is inland from the Thames, sheltered behind a chalk spine. Quarrying has lowered land levels, creating relatively enclosed and sheltered conditions.

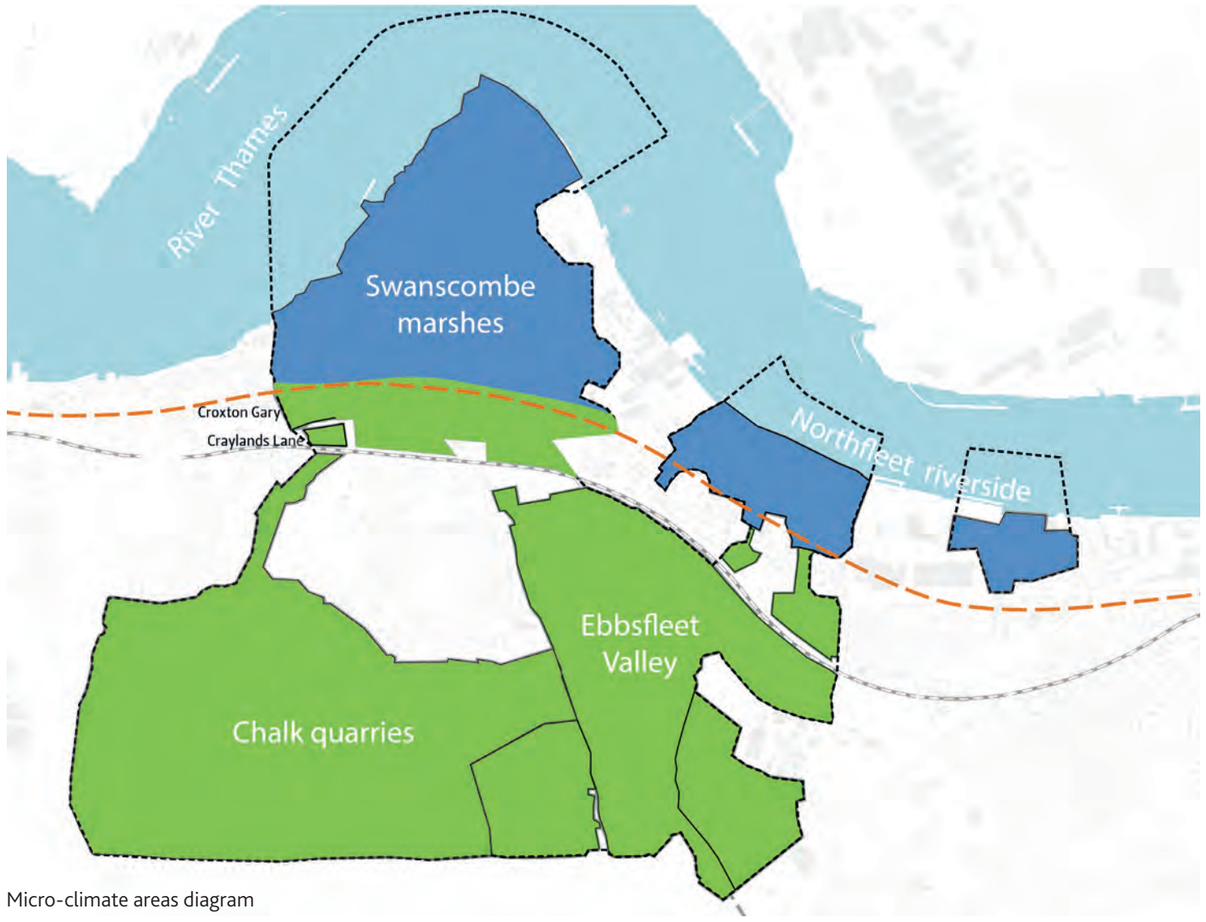
The landscape character reflects these climate differences. The Swanscombe Peninsula has few trees, and these are often wind pruned. Field boundaries are typically formed by drainage ditches, rather than hedges. Northfleet Embankment has some sheltered areas adjacent to chalk cliffs, including the site of the former Rosherville Italian Garden, but is more exposed on the cleared terraces areas along the Embankment.

Many site have little or no existing vegetation, except around the edges, so new planting will be exposed to wind. Kent generally has a low annual rainfall.

Micro-climate will be a key factor in plant selection, and plants need to be selected to address the site conditions. The diagram on the right gives an indication of where these two main micro-climate zones are, but these should be checked on site.

Plants should be specified which will establish in these challenging conditions, or measures introduced to provide either temporary shelter whilst plants establish, or long term protection.

Traditional Kent windbreak - North Kent Plains



Micro-climate areas diagram

Greater Thames Estuary
- Exposed to salt-laden winds

North Kent Plains
- Inland, relatively sheltered

Ebbsfleet Garden City

Technical Planting Guidance

Tree planting

The preferred approach is to plant trees in soft landscape, rather than hard paved areas, wherever practical. Soft landscape areas can provide trees with the conditions they require for establishment and growth in the long term.

The tree planting details on the following pages illustrate best practice for planting semi-mature trees in either soft or hard landscape.

Where planting in hard surfaces is unavoidable, suspended pavement systems must be incorporated to provide both support to paving around the tree pit, and sufficient rootable soil volume for the proposed trees.

There are a range of approaches to this, including:

- Deeproot 'Silva Cells'
- GreenBlue Urban 'Strata Cells'
- Heicon 'Amsterdam Tree Sand'

Research has identified that the Cell systems are more effective in supporting tree growth.

Rootable soil volume

Trees require a minimum volume of soil that their roots can grow into, to support their growth after the establishment period, and sustainability over their potentially long lives. The table below shows the volume required. The rootable volume includes topsoil and any layers of washed sand or subsoil that the tree roots can access, up to a combined depth of 1m in soft verges.

Mature tree size	Canopy diameter in metres	Example tree species	Root-able soil volume, cubic metres
Small	3m	Prunus 'Unimeko', Amelanchier lamarckii 'Robin Hill'	5m3
Medium	5m	Prunus sargentii, Acer campestre	12m3
Large	8m	Liriondendron tulipifera, Platanus x hispanica	30m3

Tree rootable soil volume table

Tree pit drainage

Positive drainage from tree pits will be required if ground conditions have low permeability. This is key to tree establishment, and will need to be established by percolation testing at each site. The drainage will only be required during the establishment period.

Tree support

Underground guying should be used for trees in streets and where people need to pass close by them, to avoid creating trip hazards. This method is suitable for trees planted at 20cms girth and above.

Root barriers

Where root barriers are required, these should be positioned as close to the services as possible, and as far away from the tree pits, to enable tree roots to gain access to soil for oxygen, nutrients, water and anchorage. Avoid root barriers on more than one side of trees.

Street tree planting

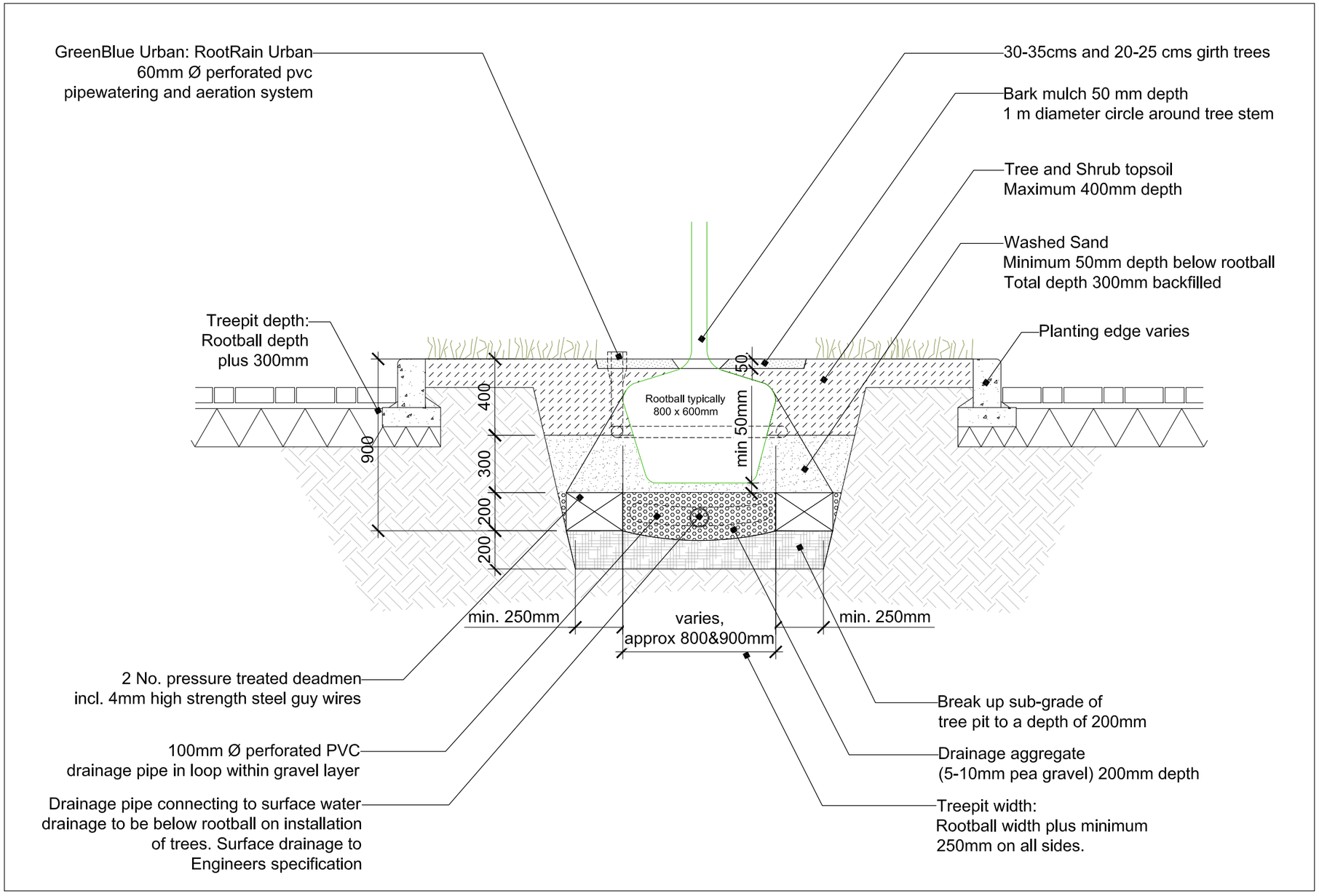
Planting location and conditions are critical in tree selection. In streets, space can be restricted above and below ground and trees with an appropriate rooting structure and low to medium water demand should be selected. Species for these locations will also have a narrow crown, with modest leaf and branch drop. Where space is less restricted species with wider crowns can be used. The example street tree species in this guide have been drawn from plants that have either been hybridized or have an intrinsic characteristic that makes them suitable for the location. Street trees in general must have a narrow, fastigiate or columnar form which is maintained through its mature life. Individual selection of the trees for the streets will be required to suit each location.

To avoid conflicts with roots, branches, leaves and shading, the location of trees at detailed design stage must be undertaken with careful consideration of the requirements of service runs, of highway standards, of public safety, lighting standards, owner liability, species type and useful life expectancy, and adoption and whole life costs.

A coordinated approach needs to be undertaken that engages: service providers, adopting organisations, and the detail design team.

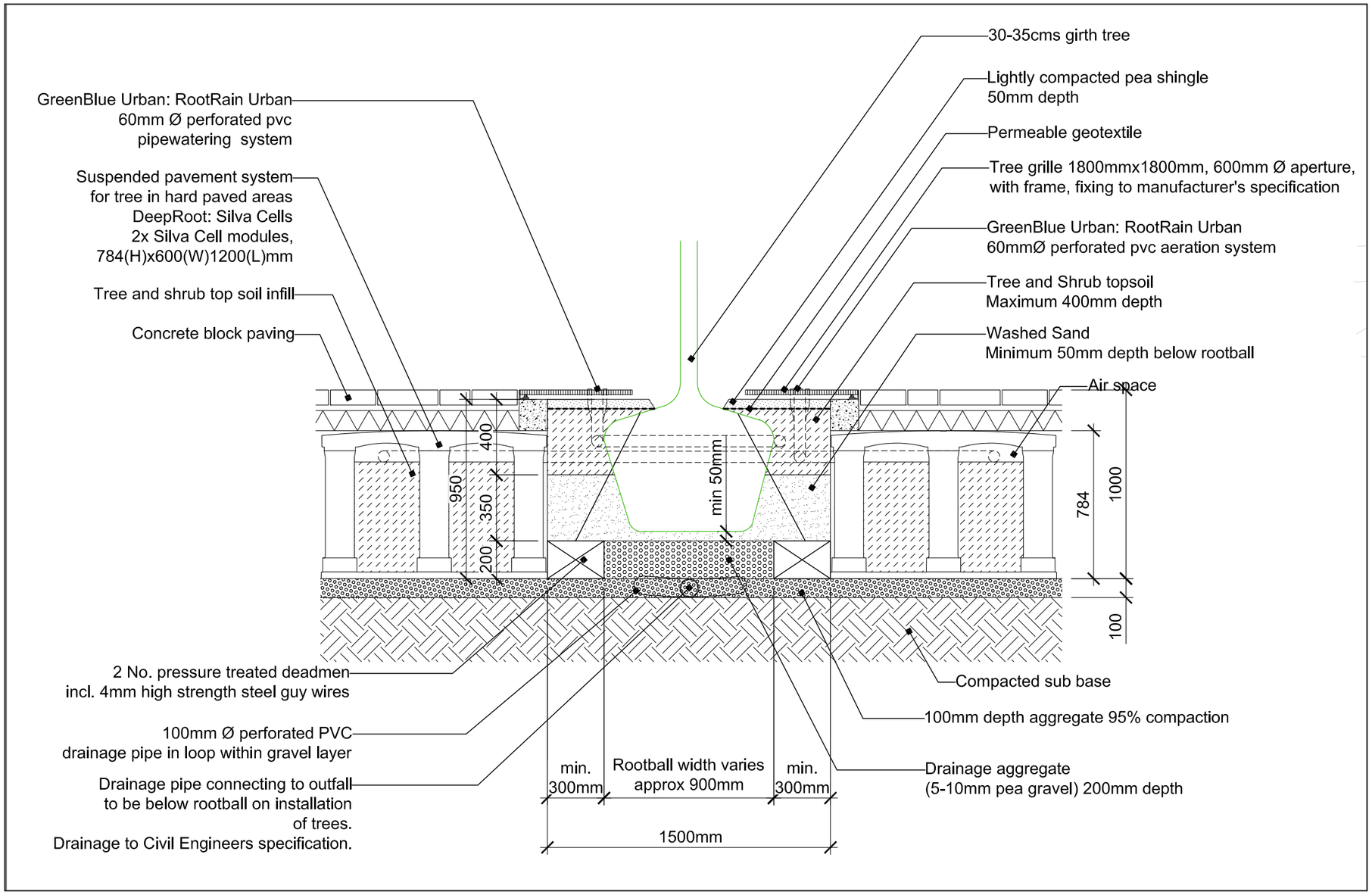
Service zones need to be clearly established in the public domain, but these must be controlled and regulated with discipline throughout the entire delivery process. The intention is to define the importance of the tree pit zones, ensure that any conflicts are avoided or mitigated thereby avoiding a situation where tree planting design objectives cannot be achieved.

Technical Planting Guidance : Tree planting - soft detail



Typical tree planting detail - Semi-mature trees planted in soft landscape.

Technical planting guidance: tree planting - Hard detail



Typical tree planting detail - Semi-mature trees planted in hard landscape.

Soft landscape - specification, management & maintenance

Specification

A full and detailed specification for all planting will be required at the detail design stage that is appropriately drafted with references to the relevant British Standards and the National Building Specification (NBS). This specification will cover all aspects of the quality of the planting stock, handling, planting and establishment.

Landscape Management

Landscape Management Plans should be produced for each of the development areas setting out the long term objectives for the public realm, identified by typology and location. Plans should include details of the body that will be responsible for long term management of the public realm assets, and will provide guidance for that body to provide continuity in management to deliver the Ebbsfleet Garden City vision. This is particularly key for planting which grows and develops over time, and the management plan should address this dynamic.

Landscape Maintenance

An appropriate soft landscape maintenance regime is required to ensure that the public realm meets the high standards required for Ebbsfleet Garden City. Sustainable soft landscape maintenance should be considered at an early stage in developing the public realm design and coordinate with the hard landscape maintenance recommendations outlined in Chapter 5.

Details of soft landscape maintenance should be set out for each public realm typology and location, including schedules of operations and programme.

Guidelines for the soft landscape maintenance of Streets Levels 1-4, Parks and Squares are provided in the following pages.

Soft landscape maintenance guidelines

Ebbsfleet Garden City - Public Realm Maintenance

Type	Element	Description	Location	Life expectancy	Outline maintenance/ management	Anticipated frequency *
Trees	**Trees: Streets, Squares and Parks**					
	Street trees - Level 1	Specimen tree planted: 30-35cm girth, min clear stem 2.4m, 6.0m height, CG/RB. Underground guys, watering and aeration tubes. Positive drainage subject to soil percolation.	Level 1 Street	70 years	**Tree inspections** • To be undertaken annually to record general health and damage . • Refirm all planting to upright positions, annually and after strong winds. Check and adjust tree stakes, ties and surrounds. **Weed control** • Maintain weed free area mechanically / by hand around each tree (minimum diameter of 1 metre for trees in soft landscape) **Mulching** • Top up where necessary to 50 mm depth medium grade bark mulch. Keep free of weeds and fungus. **Fertilizer/ Feeding** • Apply approved slow release fertilizer annually in March or April. Scott's Enmag or similar approved equivalent. Applied to manufacturer's/suppliers recommendations. Ensure mulching 3 days after application. **Watering** • Water all tree stock as required to ensure the establishment and healthy growth of the plant. (Note: If availability of mains potable water is limited then supplies of 2nd class water must be secured) **Pruning** • To be in accordance with good arboricultural/horticultural practice and BS 7370-4. Minimal pruning to remove diseased or dead branches. All pruning to leave plants with a well-balanced, natural appearance. **Crown lifting - keeping lower branches from obstructing vehicular routes - Street Levels 1-3** • Lower branches of wider canopy trees to be gradually removed over the first six years as the trees grow taller to lift the crown and provide an eventual clear stem of 3.2m to avoid any potential obstruction to taller vehicles. **Pruning - keeping foliage from obstructing lighting columns** • All street trees to be managed to maintain the dead minimum of 4m from the outer most edge of the tree canopy to street lighting columns. **Pruning - productive orchard trees/bush/espalier/cordon etc. only** Prune as required to develop or maintain the required shape and encourage fruit bearing. E.g. Prune fruit trees to maintain a strong branch framework of 8 to 10 main branches. Tip bearing apple trees (e.g. Discovery) - Prune out a good proportion of the older shoots that have bourne fruit to encourage new shoots to develop. Spur bearing apple trees (e.g. Cox's orange pippin) - Cut back young laterals to 3 to 6 buds of the current growth. Prune back the current season's growth on branch leaders by one third. **Dead and Dying Stock** Remove all dead, dying and diseased plant stock at the end of each growing season and replace if necessary with specified plants	**Tree Inspections:** Annually in October and after strong winds **Weed Control:** Monthly from April to October **Mulching:** Bark: Top up twice annually. March/ April + August **Feeding:** 1 x p.a March/April **Watering:** Between April and October, Year 1-2 for establishment only **Pruning:** October to end February, or as required to meet the requirements of individual species. **Dead and Dying Stock:** End of November - end of March
	Squares - Structural trees	Specimen tree planted: 30-35cm girth, min clear stem 2.4m, 6.0m height, CG/RB. Underground guys, watering and aeration tubes. Positive drainage subject to soil percolation.	Squares	70 years		
	Squares - Ornamental trees	Specimen tree planted: 20-25cm girth, min clear stem 2.4m, 5.0m height, CG/RB. Underground guys, watering and aeration tubes. Positive drainage subject to soil percolation.	Squares	70 years		
	Parks - Structural trees	Specimen tree planted: 30-35cm girth, min clear stem 2.4m, 6.0m height, CG/RB. Underground guys, watering and aeration tubes. Positive drainage subject to soil percolation.	Parks	70 years		
	Parks - Ornamental trees	Specimen tree planted: 20-25cm girth, min clear stem 2.4m, 5.0m height, CG/RB. Underground guys, watering and aeration tubes. Positive drainage subject to soil percolation.	Parks	70 years		
	Parks - Shelter breaks/woodland	Trees planted: Feathered 3.5-4.0m height, or 12-14cm girth, or multi-stem min 3 stems, CG/RB. Double timber stakes, watering and aeration tubes. Positive drainage subject to soil percolation.	Parks	70 years		
	Parks & Level 4 Streets/Homezones - Orchard trees	Trees planted: Standard, half standard, bush, espalier, cordon, stepover, with root stock to suit final size requirments.Timber stakes or support wires as required. Larger trees - watering, aeration tubes and positive drainage subject to soil percolation.	Parks	70 years		

Soft landscape maintenance guidelines

Ebbsfleet Garden City - Public Realm Maintenance

Type	Element	Description	Location	Life expectancy	Outline maintenance/ management	Anticipated frequency *
Shrubs	**Shrubs: Streets, Squares and Parks**					
	Hedges	Instant pre-formed hedges or CG stock planted in staggered rows.	Parks, Streets, Squares	25 - 60 years	**Weed control** • Maintain weed free area mechanically / by hand. Do not use herbicide. **Mulching** • Top up where necessary to 50 mm depth medium grade bark mulch. Keep free of weeds and fungus**.** **Fertilizer/ Feeding** • Apply approved slow release fertilizer annually in March or April. Scott's Enmag or similar approved equivalent. Applied to manufacturer's/suppliers recommendations. Ensure mulching 3 days after application**.** **Watering** • Water all shrub stock as required to ensure the establishment and healthy growth of the plant. (Note: If availability of mains potable water is limited then supplies of 2nd class water must be secured) **Pruning** • • To be in accordance with good arboricultural/horticultural practice and BS 7370-4. **Pruning shrubs:** • Minimal pruning to remove diseased or dead branches. All pruning to leave plants with a well-balanced, natural appearance, with no straight sides or angular surfaces. • Cut back if encroaching on footpaths. **Pruning instant pre-formed hedges:** • Clip hedges to maintain at required height in a neat formal shape. **Pruning CG hedges: individual plants** • Second year, cut back strong laterals by 1/3. • Subsequent years, cut leaders when final height of 1.5m is reached. Remove selected vigorous shoots to keep within bounds. Pruning sides of hedgerow on alternate years, for wildlife benefit. **Dead and Dying Stock** • Remove all dead, dying and diseased plant stock at the end of each growing season and replace if necessary with specified plants	**Weed Control:** Monthly from April to October **Mulching:** Bark: Top up twice annually. March/ April + August **Feeding:** 1 x p.a March/April **Watering:** Between April and October, as required for establishment Year 1-2 only. **Pruning:** October to end February, or as required for species. Annually, or two-three times a year depending on species **Dead and Dying Stock:** End of November - end of March
	Ornamental shrubs	CG stock.				

Soft landscape maintenance guidelines

Ebbsfleet Garden City - Public Realm Maintenance

Type	Element	Description	Location	Life expectancy	Outline maintenance/ management	Anticipated frequency *
Climbers	**Climbing plants: Streets and Parks**					
	Climbing plants	e.g. Hops. Ornamental e.g. Golden hop *Humulus lupulus 'Aureus'* Productive *e.g. Humulus "Kent Golding".*	Parks, Level 4 Streets/ Homezones	15 years	**Training** • Provide a framwork for the hop plants to grow up - a permanent structure e.g a pergola or wire screen, or traditional coir string on hop poles. Train hops up to the base of the support structure. **Hops for flavouring beer - Pests and diseases** • Check for pests and diseases and spray as required, Spring-summer. **Hops for flavouring beer - Harvesting hops** • Check for pests and diseases and spray as required, September-October **Pruning - bine cutting** • Cut down to the ground in late autumn, or for ornamental hops, leave till February- March to enjoy attractive hops. **Gapping up** • Remove all dead, dying and diseased plant stock at the end of each growing season and replace if necessary with specified plants **Fertilizer/ Feeding** • Apply approved slow release fertilizer annually in March or April. Scott's Enmag or similar approved equivalent. Applied to manufacturer's/suppliers recommendations.	**Weed Control:** Monthly from April to October **Training** April - May **Mulching:** Bark: Top up twice annually. March/ April + August **Feeding:** 1 x p.a March/April **Watering:** Between April and October, for establishment Year 1 only **Pruning:** November, or leave till Feb-March for ornamental hops **Dead and Dying Stock:** End of November - end of March
Herbs	**Herbaceous perennials: Streets and Parks**					
	Herbs & sub-shrubs	Culinary herbs (e.g. Rosemary), Fragrant herbs (e.g. Lavender)	Parks, Level 4 Streets/ Homezones	5-10 years	**Weed control** • Maintain weed free area mechanically / by hand. Do not use herbicide. **Mulching** • Top up where necessary to 50 mm depth medium grade bark mulch. Keep free of weeds and fungus. **Watering** • Water all plant stock as required to ensure the establishment and healthy growth of the plant. (Note: If availability of mains potable water is limited then supplies of 2nd class water must be secured) **Pruning** • To be in accordance with good arboricultural/horticultural practice. All pruning to leave plants with a well-balanced, natural appearance, with no straight sides or angular surfaces. Cut back if encroaching on footpaths. **Pruning lavender:** • Remove flower stalks and 1 inch of the current year's growth, leaving some green growth. **Dead and Dying Stock** • Remove all dead, dying and diseased plant stock at the end of each growing season and replace if necessary with specified plants	**Weed Control:** Monthly from April to October **Mulching:** Bark: Top up twice annually. March/ April + August **Watering:** Between April and October - first year establishment only **Pruning:** Annually, timing to suit species requirements **Dead and Dying Stock:** April- May

Soft landscape maintenance guidelines

Ebbsfleet Garden City - Public Realm Maintenance

Type	Element	Description	Location	Life expectancy	Outline maintenance/ management	Anticipated frequency *
Pictorial planting approaches - understory	**Pictorial planting approaches - street verges, borders in parks, meanwhile spaces**					
	1. Pictorial Meadows - Perennial meadows	Pictorial Meadows perennial turf or seed. Add perennial bulbs planted through the turf in year two in gaps in between plants	Streets level 1-4, Parks	15 years	**Pictorial Meadows Turf** • Cut and collect at the end of the growing season (October, or leave later for winter seedheads, but cut by late January early February). • Spot weed. **Pictorial Meadows Seed establishment - First year:** • Sow late spring to end October, irrigate. • Cut twice to 10mm late June and mid-August. • Spot weed. **Second and subsequent years - as PM Turf above.**	**Cut and collect** **PM Turf** - Cut and collect once annually Oct-late Jan. **PM** **Seeded** - cut twice in first year, second year onwards - cut and collect once annually, Oct-late Jan.
	1A. Pictorial Meadows - Annual meadows	Pictorial Meadows annual seed	Meanwhile/ temporary spaces	1 year	**Cut and Collect** • • Cut at end of growing season, Oct-Dec. • Remove arisings or leave for wildlife over winter. **Re-seed annual meadows** • Prepare soil and sow at start of next growing season, Nov-Dec. • Refer to Pictorial Meadows website for soil preparation and sowing.	**Cut and collect** Cut and collect once annually - October-Dec **Prepare soil and sow** Once annually - March-May
	2. Mass herbaceous planting "new wave perennial planting".	CG stock, matrix of perennials and ornamental grasses and ferns	Streets level 1-4, Parks, Squares	5-15 years	**Weed control** • Spot treatment with gyphosate based herbicide, to manufacturer's instructions. **Annual cut and collect** • Cut back old flowered stems and leaves to the base, (Remove cuttings Dec, or leave for winter seedheads, remove end Jan). **Mulching** • Top up where necessary to 50 mm depth medium grade bark mulch. Keep free of weeds and fungus. **Watering** • Year 1 & 2 establishment only, or for gapping up etc.	**Weed Control:** Twice annually, March-April & October **Cut and collect.** Annually **Mulching:** Bark: Top up twice annually. March/ April + August **Watering:** Year 1 & 2 establishment only, or for gapping up etc.
	3.Ground-cover planting	CG stock, very large drifts of single species mass shrubs, perennials, ornamental grasses and ferns	Streets level 1-4, Parks, Squares	5-25 years	**Shrubs** - please see "shrubs" above. • Cut back vegetation to keep from encroaching on paths **Perennials, ornamental grasses and ferns:** **Weed control** • Maintain weed free area mechanically / by hand. Do not use herbicide. **Mulching** • Top up where necessary to 50 mm depth medium grade bark mulch. Keep free of weeds and fungus. **Watering** • Year 1 & 2 establishment only, or for gapping up etc. **Annual cut and collect** • Cut back old flowered stems and leaves to the base, Dec-Jan	**Shrubs** - see "Shrubs" above. **Perennials, ornamental grasses and ferns:** **Weed Control:** Twice annually, March-April & October **Mulching:** Bark: Top up twice annually. March/ April + August **Cut and collect.** Annually, Dec-Jan **Watering:** Year 1 & 2 establishment only, or for gapping up etc.

Soft landscape maintenance guidelines

Ebbsfleet Garden City - Public Realm Maintenance

Type	Element	Description	Location	Life expectancy	Outline maintenance/ management	Anticipated frequency *
Pictorial planting approaches - understory	**4. Wildflower meadows**	Turf or seed, mix of perennial wildflowers and grasses. Add bulbs planted with seed, or planted in holes cut through turf.	Streets level 1-4, Parks	60 years	**Weed control** • Spot treatment with gyphosate based herbicide, to manufacturer's instructions. **First year establishment** • once the grass exceeds a height of 50mm, cut four times over the year to a height of 20-50mm to encourage good root development. • Remove cuttings within 7 days of cutting to allow light in and reduce fertility. **Second and subsequent years** • cut annually after flower seeds have ripened and fallen to a height of 20-50mm. • Remove cuttings within 7 days of cutting to allow light in and reduce fertility. **Fertilizer/ Feeding** • Do not fertilize.	**Weed Control:** Twice annually, March-April & October **Year 1 mowing:** 4 times between April & September **Year 2 mowing:** Annual cut and collect. **Watering:** First year establishment only, or for re-seeding repairs etc.
	5. Flowering lawns with bulbs	Turf or seed, mix of grasses with low growing perennial wildflowers, that can thrive in mown lawns e.g. daisies. Bulbs planted with seed, or planted in holes cut through turf.	Streets level 1-4, Parks, Squares	60 years	**Weed control** • Spot treatment with gyphosate based herbicide, to manufacturer's instructions. **Grass cutting** • Remove litter/debris, cut to a height of of 75-100 mm trim path edges, base of trees, manholes etc, remove cuttings. • In areas of bulb planting in grass, do not cut grass until spring bulbs have died back. Mow around areas to leave a neat mown edge. **Watering** • 1st & 2nd year establishment only, for seeding repairs etc. **Fertilizer/ Feeding** • Apply approved slow release fertilizer annually, rate 60g/m	**Weed Control:** Twice annually, March-April & October **Grass cutting:** Every 2 weeks from March to October/as required, and 3 cuts between October/March. **Watering:** Year 1 & 2 establishment only, or for re-seeding repairs etc. **Feeding:** 1 x p.a March/April
	6. Amenity grass	Turf or seed. Grasses.	Parks, Streets, and other soft landscape areas where people will need to walk regularly.	60 years	**Weed control** • Selective herbicide, to manufacturer's instructions. **Watering** • 1st & 2nd year establishment only, for seeding repairs etc. **Grass cutting** • Remove litter/debris, cut to a height of of 75-100 mm trim path edges, base of trees, manholes etc, remove cuttings, keep sward free of broad leaved weeds. **Fertilizer/ Feeding** • Apply approved slow release fertilizer annually, rate 60g/m	**Weed Control:** Twice annually, March-April & October **Grass cutting:** Every 2 weeks from March to October/as required, and 3 cuts between October/March. **Watering:** Year 1 & 2 establishment only, or for re-seeding repairs etc. **Feeding:** 1 x p.a March/April

Soft landscape maintenance guidelines

Ebbsfleet Garden City - Public Realm Maintenance

Type	Element	Description	Location	Life expectancy	Outline maintenance/ management	Anticipated frequency *
Rain water gardens	**Rain water gardens: Streets and Parks**					
	Rain water gardens	CG stock, drifts of perennials and shrubs to suit rain garden conditions ie: levels and length of periods of wetness and dryness.	Streets level 1-4, Parks & Squares	5-25 years	**Shrubs** - please see "shrubs" above. **Marginal perennials:** **Weed control** • Remove aggressive weeds by hand. Do not use herbicide. **Cutting back** • Annual cut and collect of flowered perennials. **Cutting back and silt removal** • Remove plant growth, litter, and silt which are obstructing water flow as required, at least every seven years or more as required. Cut on a rotational basis to maintain wildlife habitat. • Remove excess areas of aquatic or marginal plants by digging/cutting/pulling/raking by hand. • Remove cuttings. Do not allow cuttings to enter watercourses (avoid nutrient build up in water) **Watering** • 1st & 2nd year establishment only, for repairs etc. **Dead and Dying Stock** • Remove all dead, dying and diseased plant stock at the end of each growing season and replace if necessary with specified plants	**Shrubs** - please see "shrubs" above. **Marginal perennials:** **Weed Control:** Monthly from April - October **Cutting back:** Annually - cut and collect perennials. **Vegetation and silt removal** every 7 years, Nov - end Feb **Watering:** Year 1 & 2 establishment only, or for re-seeding repairs etc. **Dead and Dying Stock:** April- May

Ebbsfleet
Development
Corporation

Ebbsfleet Public Realm Toolkit

The Toolkit has been produced on behalf of EDC
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