PROPOSED PART 8 RESIDENTIAL DEVELOPMENT

Kishoge, Lucan – South Dublin County Council

Landscape Report

June 2024

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The proposed development includes:

i. 118 no. residential units in a mix of two storey houses, 3 storey duplex units and apartment blocks of 4 – 6 storeys comprising 26 no. 1 bed apartments; 42 no. 2 bed apartments; 21 no. 3 bed apartments; 23 no. 3 bed houses; and 6 no. 4 bed houses, with renewable energy design measures (which may be provided externally) for each housing unit;

ii. Landscaping works including provision of (a) communal open space areas (b) outdoor sports and play areas; (c) new pedestrian and cycle connections; and (d) civic plaza;

iii. Associated site and infrastructural works including provision for (a) ESB substations and switchrooms; (b) energy centre to the rear of 6 storey block; (c) photovoltaic panels; (e) car and bicycle parking; (f) public lighting; (g) bin storage; (h) temporary construction signage; (i) estate signage; and (j) varied site boundary treatment comprising walls and fencing; and

iv. all associated site development works.

Landscape Design Aims and Objectives

The landscape structure of the proposed residential development adopts the open space strategy of the Landscape Masterplan which provides for a varied, accessible and permeable open space network for community use that as it matures will become a significant resource.

As the Covid pandemic has brought into sharp relief for people's health and well-being there is a community requirement for open, natural spaces, which facilitate exercise, recreation, and free play.

The proposed open space network provides for these flexible activities in a natural environment with inclusive access.

The design incorporates wildlife considerations in the retention/ protection/ management and reinforcement of existing hedgerows/treelines. Existing trees and hedgerows on the site will be protected where possible in line with the objectives of the Arboriculture assessments & Landscape Masterplan and brought back into a managed state and reinforced with new planting.

Varied habitats are created for ecological connections and landscape visual amenity;

- detention basin and swale with profiled marginal planted shelves and integrated constructed wetlands
- bioretention tree planting pits within the residential street network
- new tree planting,
- Community Orchards and flexible amenity lawn areas

Management Structure

The landscape areas will be managed by the development management company for a period of 25 years.

Bird Season Restrictions

Vegetation clearance will take place outside the breeding bird season (i.e. the start of September to the end of February, inclusive) to avoid any potential impact on breading birds. Where this seasonal restriction cannot be observed, a check for active nests will be carried out immediately prior to any site clearance and repeated as required to ensure compliance with Irish wildlife law. This will be carried out under the supervision of a qualified Ecologist.

Ecology

The open space landscape network has been designed to provide for ecological value in the area and this function will be enhanced in accordance with further recommendations from the Ecologist Consultant.

The three main design principles of landscape and biodiversity for this site are as follows.

1. **Retention of existing ecological features**.
2. **Biodiversity enhancement in the landscaping scheme**.

3. **Biodiversity enhancement for fauna**

These are outlined further in the biodiversity chapter below.

All Ireland Pollinator Plan 2021-2025

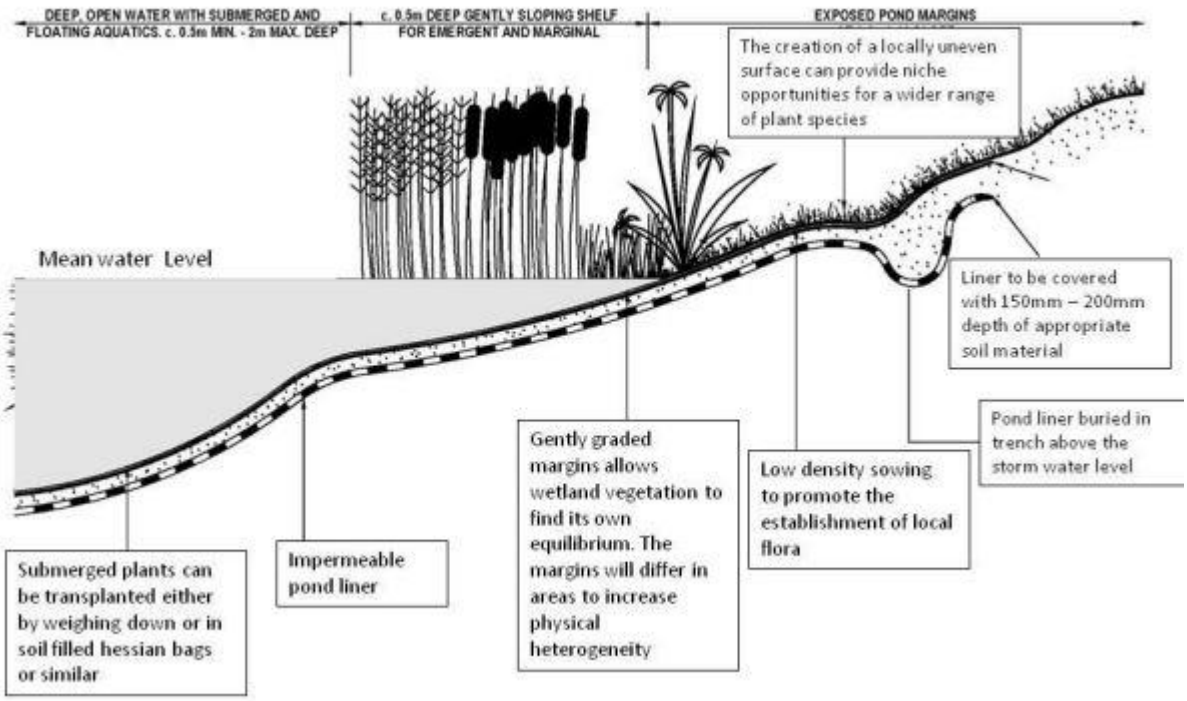
Planting and management of the landscape areas shall be undertaken in accordance with pollinator friendly management objectives as outlined in the "All Ireland Pollinator Plan 2021-2025 (Councils: Actions to Help Pollinators)" National Biodiversity Data Centre and will include interpretative signage highlighting the areas Managed for Wildlife. Varied grass cutting regimes will provide for a species richness within the grassland areas, especially in the context of their location on the outskirts of an urban area.

SUDS integration for water management (are there nature-based suds solutions)

A coordinated approach within the landscape design has been taken to site services, in particular SUDS integration for water management and habitat creation.

Integrated Constructed Wetlands

Refer to Figure : Section through margin of ICW Pond. Adapted from Vol. 4 UK DMRB



• Bank slopes will be graded unevenly to promote greater physical heterogeneity. Sections of the banks should include gently sloping sides, no steeper than a slope of 3:1;

• Sections of the sloping banks will be permanently saturated so that they are able to support aquatic and semi-aquatic vegetation. The following species will be planted permanently saturated bank slopes: Floating sweet-grass (Glyceria fluitans); Common club-rush (Schoenoplectus lacustris); Common reed (Phragmites australis); Yellow iris (Iris pseudocarus); Amphibious bistort; bottle sedge (Carex rostrata)

• In the marginal zone the following herbaceous vegetation will be sown: water mint (Mentha aquatica), water plantain (Alisma plantago-aquatica), lesser spearwort

(Ranunculus flammula), meadowsweet (Filipendula ulmaria), marsh woundwort (Stachys palustris), purple-loosestrife (Lythrum salicaria), horsetail species (Equisetum spp), marsh pennywort (hydrocotyl vulgaris), sneezewort (Achillea ptarmica), wild angelica (Angelica sylvestris), marshmarigold (Caltha palustris), cuckooflower (Cardamine pratensis), wavy bitter-cress (C. flexuosa), hairy bitter-cress (C. hirsuta), common mouse-ear (Cerastium fontanum), sedge species (Carex spp), creeping bent (Agrostis stolonifera), red fescue (Festuca rubra), smooth meadow grass (Poa pratensis), rough meadow grass (Poa trivialis), marsh foxtail (Aleopecurus geniculatus).

• The pond liner will be covered with appropriate soil material to support planted vegetation; and

• Variable depths will be installed and maintained in the pond.

• An island habitat to provide additional habitat and refuge for fauna, particularly wetland bird species will be instated within the pond;

Design criteria for swales will include the following:

• Maximum side slopes will be 3:1. Slopes and depths should be minimised to the extent practical for aesthetic and safety reasons. The base width should be a minimum width of 2 feet.

• Check dams should be installed at regular intervals along the swales to promote ponding. Large rocks that are obvious and do not become concealed by vegetation should be used as check dams. Such rocks will create an attractive as well as effective check dam and will provide micro-habitat for species (e.g. basking sites for invertebrates etc.). Figure 3 provides examples of swales.

• Broadleaved trees should be planted along the filter strips (see example diagram in Figure 4).

• Grassy verges along retained field boundaries and new green corridors will function as natural filter strips.

Standards of Care

High standards will be maintained in all areas of service delivery.

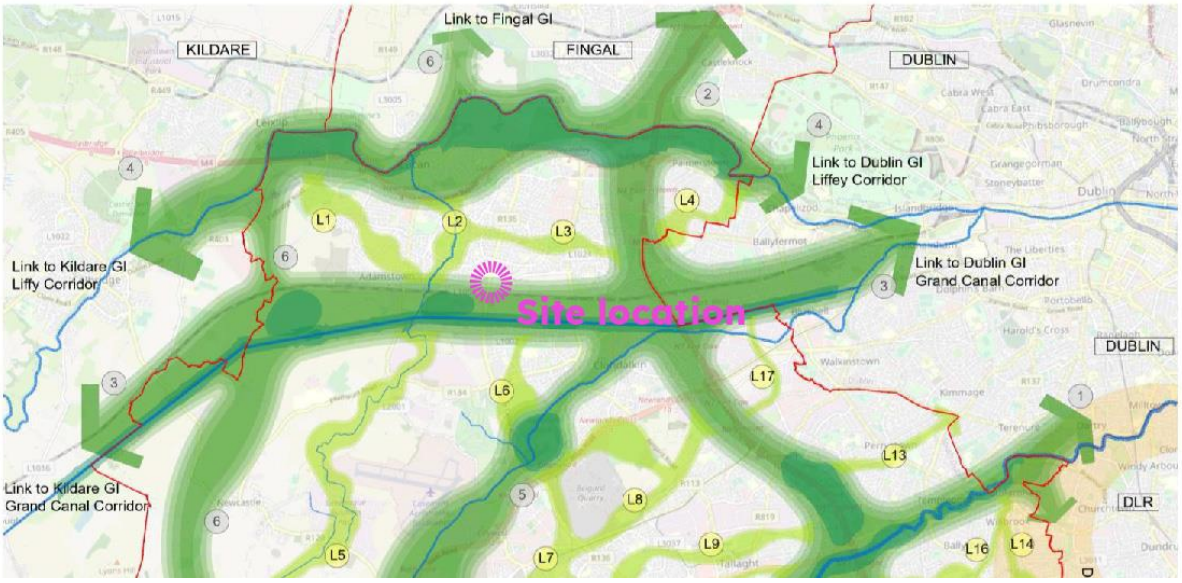
High standards of care will be achieved by:

- a landscape maintenance specification
- maintenance works to be undertaken by trained staff members, providing on-site supervision of trainees
- providing Health & Safety training for staff
- proactive maintenance of hard landscape areas, play elements and seating
- a programme of tree works
- monitoring of standards of care
- working with local interest groups to ensure community ownership of the site
- updating risk assessments for operations by the landscape staff
- periodic review of standards and procedures

- perceptions of safety will be increased, and vandalism and other anti-social behaviour discouraged with additional natural surveillance by increasing circulation, overlooking from the residential development and maintaining open views across the woodland area

Landscape design description

The development at Kishoge is located at the interface with a major green corridor. The amenity spaces provided will create additional pockets of biodiversity (stepping stone) in the context of the Green Infrastructure preservation and enhancement.



Extracts above is from the Appendix 4 Green Infrastructure: Local Objectives and Case Studies SDCC development plan (see Green Infrastructure Plan section for further information)

Site location, map credit: Google Earth

The development at Kishoge will include two areas of landscape amenity space.

A first open space is located in the centre of the site and will be treated as a Civic Square. The public open space will provide a diverse range of gathering opportunities and active and recreative features.

The second open space is surrounded by the housing development and will be treated as a communal open space, providing seating and informal play opportunities.

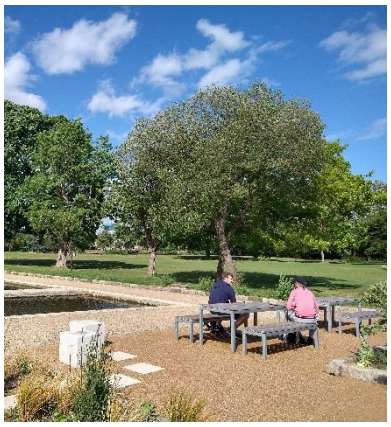
Both amenity spaces are designed to provide formal and informal recreative opportunities. Part of the proposed amenities are integrated in the SuDS features.

1. The Civic Square

The Civic Square is strategically located at the interface between the new development and the existing Kishoge community college. The space is overlooked by the future housing and the adjacent road and provides a diversity of gathering and recreative opportunities. The square will be formed by a paved open space with a wide range of seating and uplifted with urban tree planting. This is a place to meet-up. The square will also provide play opportunities for multiple group age through the implementation of a play structure and a MUGA. Finally, additional tables and seats will be provided. All seating areas will allow for universal access and will be inclusive.

An area of edible planting, taking the form of an orchard, will be implemented as part of the Civic Square. The edible planting will be planted along with meadow and bulbs. The edible planting will simply be a collective amenity that can be harvested by any residents without the supervision of a local group or a community garden structure. The orchard will provide learning and play opportunities.





2. Communal courtyard

The communal courtyard is surrounded and supervised by the housing development. The courtyard shape is dictated by its function of detention basin. The basin will not be permanently filled with water. Therefore, it can be used as a flexible lawn and provide space for recreation. The detention basin slope will be planted with marginal planting to enhance its biodiversity. Loose steps for access and seatings will be implemented

around the edge to increase the usability of the space. Additional seating opportunity such as lounge chairs will be provided.

Hedges will structure the surround of the amenity space. Focus will be given to biodiversity friendly plants.



3. Existing vegetation and Arboriculture impact.

An Arboriculture assessment has been carried out by Charles McCorkell Arborists. And is submitted as part of this application. This assessment has informed the landscape design.

Extract from Arboriculture assessment below.

"The proposed development has taken into consideration the local planning policies as they relate to trees. There are no trees or hedgerows of high quality or high public amenity value required to be removed. Proposed removals have been confined to those of low and poor quality only.
The design has taken into consideration the proposed removals and has included significant new high-quality tree and hedge planting to mitigate their loss. Such planting will enhance the overall tree cover within the local area.
The proposal has been assessed in accordance with best practice BS5837:2012 and provided the recommendations, as detailed within this report, are followed, all retained trees and hedgerows can be successfully protected for the duration of construction."

Existing hedgerows outside the north-west edge of the site will are proposed to be retained and protected during the construction period. Please refer to drawing "230427-P-92 (Tree Protection Plan)" in the arborist pack for details on the protection method recommended.

Trees and hedges within the site are of low and poor quality, and therefore will be removed. The development will compensate the loss by implementing trees and hedges that will improve the environmental quality of the site.

Planting Strategy

The general planting strategy throughout the scheme is for significant structure tree planting with 2 metre clear stems to provide a leafy canopy layer, softening the proposed buildings and a base layer of shrub planting to create low level seasonal interest and colour softening the hard surfaced areas, curtilage and car parking. Eye level between the two planting types is kept clear to maintain sight lines throughout the scheme.

Throughout the scheme, the planting palette is uplifted with edible trees and shrubs as part of the amenities provided for the future residents.

The priority is given to locally sourced and native planting, when appropriate, to enhance biodiversity and support local biome.

Amenity space trees

Native and naturalised tree species are to be planted within the amenity space to increase opportunities for native wildlife.

Proposed tree list (indicative):

- *Amelanchier lamarkii*
- *Betula utilis 'Jaquemontii'*
- *Carpinus betulus*
- *Pinus sylvestris*
- *Prunus avium*
- *Prunus padus*
- *Sorbus aucuparia*

Part of the planting strategy is to integrate edible planting as part of the park's amenity. The orchard will be planted with a variety of Irish heritage tree species.

Proposed tree list (indicative):

- Malus sp. – Heritage species
- Pyrus sp. – Heritage species
- Coryllus avellana -Hazelnut (shrub)
- Rubus idaeus – Raspberry (shrub)
- Vaccinum ssp Cyanococcus - Blueberry (shrub)
- Ribes uva-crispa – Gooseberry (shrub)

Street trees

Street tree planting will consist of species with fastigiate or neat forms suitable to the scale of the streetscape and those which will thrive in a streetscape environment. A 2m clear stem is required.

Proposed tree list:

- *Acer campestre*
- *Alnus x spaethii*
- *Amelanchier arborea 'Robin hill'*
- *Cercis siliquastrum*
- *Liquidambar styraciflua*
- *Prunus padus*
- *Sorbus aucuparia*

Part of the street trees will be integrated in the drainage strategy and implemented in detention tree pits. Therefore, the species selected along the local road will be adapted to this constraint. When the tree pit is located directly along the road and could cause visual obstruction, a 2m clear stem is required.

Proposed tree list for SuDS tree pits:

- Alnus x Spahetii
- *Betula utilis* 'Jaquemontii'
- Pinus sylvestris
- Ulmus lutece

Street tree planting is located to avoid impacts with street lighting. Street trees will be planted into a minimum of 5m3 topsoil, to comply with the council requirement, in addition with the use of urban tree soils (loamy soils) and topsoil loaded root cells to increase rooting areas outside the main tree pit area as necessary.

Garden trees

Rear gardens will be planted with small-medium scale fruit trees or flowering trees to provide softening and punctuation of the garden landscapes.)

Low level shrub planting / understorey planting

Lower shrubs and understorey planting will be used around the courtyard amenity space and as understory planting for standard street tree pits. The focus is on perennial and hardy shrubs with biodiversity interest (included in the All-Ireland Pollinators Plan)

Proposed shrubs list (non-exhaustive):

- *Hebe sp.*
- *Lavandula x intermedia*
- *Rosmarinus officialis*
- *Ligustrum ovalifolium*
- *Viburnus tinus*
- *Eleagnus x ebbingei* 'Compacta'

Proposed understorey plant list (non-exhaustive):

- *Helleborus sp.*
- *Hedera algeriensis*
- *Ajuga reptans*

- *Anemone* 'Honorine Jobert'
- *Aster frikarkii Frikarts*
- *Camassia leitchlinii*
- *Calamagrostis* 'Karl Foerster'
- *Erigeron karvinskianus*
- *Geranium* 'Rozanne'
- *Libertia formosa*
- *Luzula nivea*
- *Tiarella Spring*
- *Verbena bonariensis*

Proposed formal hedge list (non-exhaustive):

- Ilex sp.
- Laurus lusitanica

Privacy strip and terrace screening

Ground level apartments and terraces will be screened with perennials planting and hedges to ensure privacy. The focus is on perennial and hardy shrubs with biodiversity interest (included in the All-Ireland Pollinators Plan)

Proposed shrubs list (non-exhaustive):

- *Berberis darwinii*
- *Eleagnus x ebbingei* 'Compacta'
- *Hebe sp.*
- *Ilex sp.*
- Laurus lusitanica
- *Lavandula x intermedia*
- *Ligustrum ovalifolium*
- *Pyracantha sp.*
- *Rosmarinus officialis*
- *Viburnus tinus*

Woodland Buffer - Site boundary

The southern site boundary interacts with the existing train track. As a reinforcement of the existing GI and to create as strong buffer along the train infrastructure, a woodland type of hedge will be implemented.

Proposed natural hedgerow list (non-exhaustive):

- *Corylus avellana* (Hazel)
- *Crataegus monogyna* (Hawthorn)
- *Euonymus europeaus* (Spindle)
- *Ilex aquifolium* (Holly)
- *Prunus spinosa* (Blackthorn)
- *Rosa canina* (Wild rose)
- *Sambucus nigra* (Elderflower)
- *Sorbus aucuparia* (Rowan)

- *Viburnum opulus* (Guelder Rose)

The shrub mix will be highlighted with Irish native trees.
Proposed tree list:

- *Quercus pedunculata* (Pedunculate oak)
- *Pinus sylvestris* (Scot's pine)
- *Betula pendula* (Silver birch)
- *Prunus avium* (Wild cherry)
- *Malus sylvestris* (Crab-apple)

Wildflower meadow mix and bulbs

The meadows mix will be oriented toward Irish native meadow mix. The meadow (excluding swale) will be complemented with bulbs planting to provide interest through the year and enhance biodiversity.

Proposed bulbs list (non-exhaustive):

- *Crocus sp.*
- *Galanthus nivalis*
- *Colchicum sp.*
- *Tulipa sylvestris*
- *Anemone nemorosa*

The SuDS area will be sown with a mix of seeds that will be able to support temporary flooding.

Swale and raingarden planting

Proposed planting list (non-exhaustive):

- *Caltha palustris*
- *Carex pendula*
- *Eupatorium cannabinum*
- *Filipendula ulmaria*
- *Iris pseudocarus*
- *Lythrum salicaria*

Green and blue roof

Green and blue roofs are included as part of the strategy to enhance the biodiversity. The below recommendations follow best practice guidelines and will follow engineer's detail for the roof build-up and structure.

The proposed development will provide intensive green roof (topsoil depth over 200mm) planted with a mix of sedum and Irish native wildflowers. As appropriate, a diversity of habitat will be created by:

- Modulating the depth of topsoil, while maintaining appropriate depth to maintain the water storage capacity
- Installing piles of logs and stones
- Providing bare patches of soil
- Creating localised ponding/water retention.

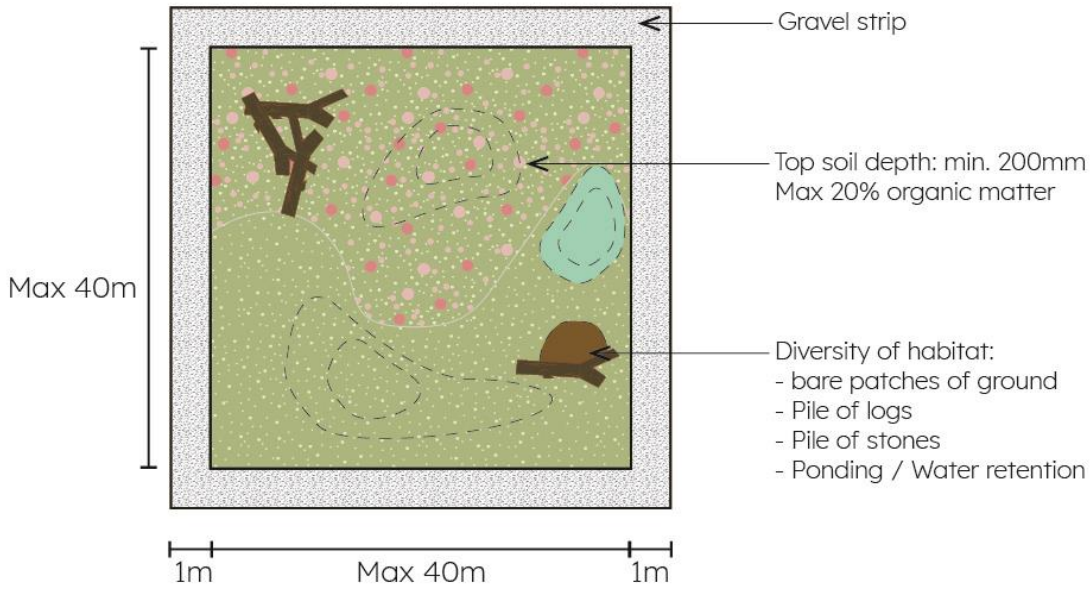


Diagramm by Mitchell+Associates based on the DCC Green and Blue roof Guide (2021)

The maintenance of the roof is essential to the development of the planting and the regulation of fire hazard. The maintenance regime must be approved with the stakeholders prior to implementation as it will dictate the appropriate planting on the rooftop. The regime maintenance should allow for:

- Removal/Regulation of invasive species that can self-seed and damage waterproofing, such as buddleia.
- Annual cutting (in autumn) of wildflower mix.
- Removal of dead and dry plants and cutting.
- Other, as appropriate.

Proposed sedum species (installed as plugs or blanket):

- *Sedum album*
- *Sedum ellacombianum*
- *Sedum floriferum*
- *Sedum hybr. Czar's Gold*
- *Sedum montanum*
- *Sedum kamtchaticum*
- *Sedum oreganum*

- *Sedum pulchellum*
- *Sedum reflexum*
- *Sedum rupestre Angelina*
- *Sedum sexangulare*
- *Sedum spurium 'coccineum'* (Purple Carpet)
- *Sedum spurium*
- *Sedum spurium* 'Summer Glory'
- *Sedum stenopetalum*
- *Sedum stoloniferum*
- *Sedum saxifraga granulate*

Proposed Irish native wildflower species (installed as seeds, plugs or blanket):

- *Achillea millefolium*, Yarrow
- *Agrimonia eupatoria*, Agrimony
- *Aquilegia vulgaris*, Columbine
- *Bellis perennis,* Daisy
- *Briza media*, Quaking-grass
- *Campanula rotundifolia,* Harebell
- *Centaurea nigra*, Knapweed (common)
- *Chicorium intybus*, Chicory
- *Daucus carota,* Carrot (Wild)
- *Dipsacus fullonum*, Teasel
- *Echium vulgare*, Viper's-bugloss
- *Feoniculum vulgare*, Fennel
- *Linaria vulgaris*, Toadflax (common)
- *Lotus corniculatus*, Bird's-foot-trefoil (common);
- *Lythrum salicaria*, Purple Loosestrife
- *Malva moscahta*, Mallow Musk
- *Origanum vulgare*, Marjoram (wild)
- *Papaver rhoes,* Poppy (field or common)
- *Pilosella aurantiaca*, Fox-and-cubs
- *Primula veris*, Cowslip
- *Primula vulgaris*, Primrose
- *Ranunculus acris,* Buttercup (meadow)
- *Rumex acetosa* Sorrel (common)
- *Salvia verbenaca*, Clary (wild)
- *Silene dioica*, Campion red
- *Silene flos-cucculi,* Ragged-Robin
- *Silene uniflora*, Campion; White
- *Tanacetum vulgare*, Tansy
- *Trifolium pratense*, Clover; Red
- *Viola riviniana,* Common dog violet
- *Viola tricolor,* Pansy (wild) or Heartsease

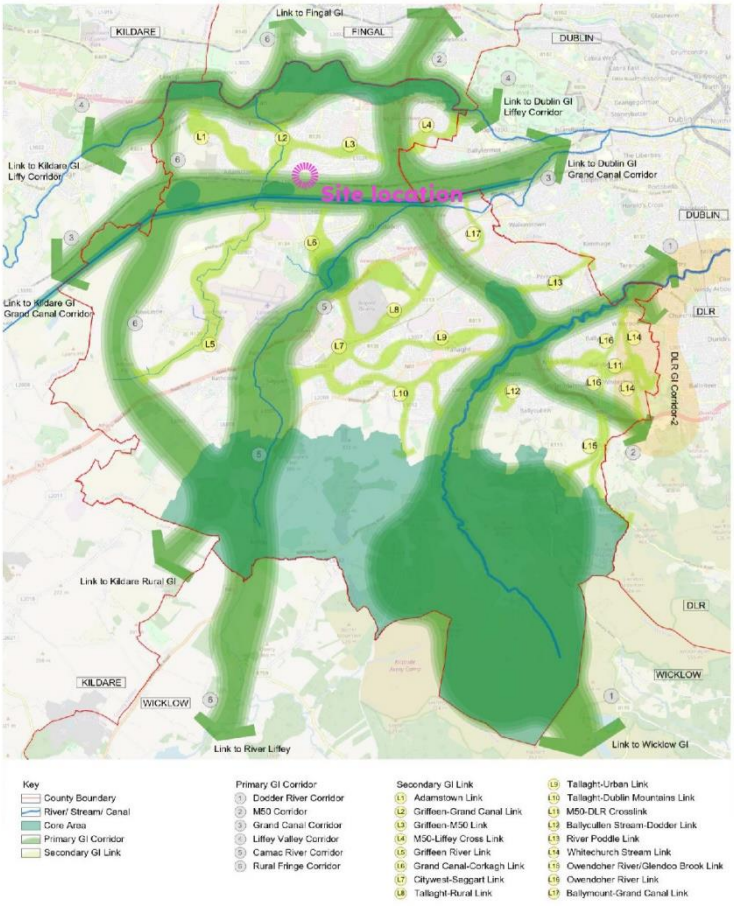
Furniture and Finishes

Proposed Furniture and finishes are outlined on the landscape drawings and associated legends, and on the detail sheets.

- SHB5-CSD-DR-MAL-L-P-100
- SHB5-CSD-DR-MAL-L-D-300
- SHB5-CSD-DR-MAL-L-D-301

Site location plan

The development at Kishoge is located at the interface with the primary GI identified as Canal Green Corridor. It is a structural GI for the SDCC area as it connects with various secondary GI but also connects with GI outside of the SDCC boundary.



Extracts above is from the Appendix 4 Green Infrastructure: Local Objectives and Case Studies SDCC development plan. The site is directly adjacent to the Canal Green Corridor which is classified as the primary corridor no. 3.

The development adds to the green infrastructure network in the area providing additional routes and access along the railway and the green corridor adjoining. It also provides pockets of biodiversity internally, that can be used as stepping stones across the area and support the core GI. The connections and routes are designed to tie in with the adjacent infrastructure and the proposed green links of future development plans.

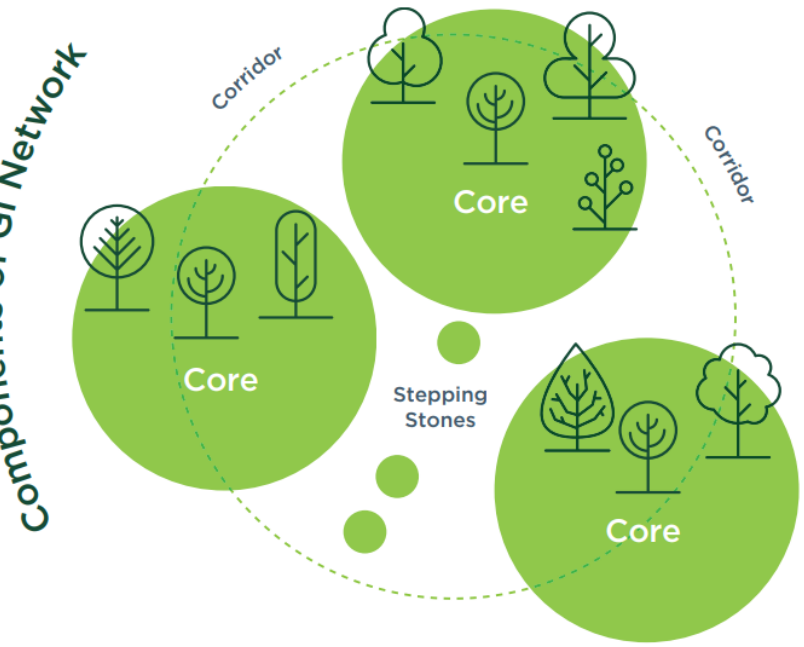


Figure 4.2: Components in a GI Network

Extracts above is from the Appendix 4 Green Infrastructure: Local Objectives and Case Studies SDCC development plan.

Green Space Factor (GSF)

The development sits within the Clonburris Strategic Development Zone issued in May 2019. GSF documentation is included as part of this application for reference, as the green spaces will be provided at a regional level across the SDZ.
All GSF areas calculated using the landscape masterplan submitted with this application.

Clonburris Site Area 23142m2
Final GI score: 0.25
(GSF documentation submitted as an appendix to this report.)

LANDSCAPE MANAGEMENT STRATEGY

Maintenance should maximize the biodiversity potential of the site, providing new opportunities for expansion of (and cross-interaction between) habitats whilst also providing an attractive area of green open space with high amenity value. The open space network can be broken down into the following softworks planting types for maintenance:

Amenity Active Use Grassland

Objective: To produce a firm hard wearing sward with the appropriate cover of acceptable species, and adequate control of weeds, pests and diseases. The lawn is to be maintained to 40mm height to create a close mown turf for active and passive recreational use.

Operations: Grass maintenance strips to be cut at 2-week intervals to a height of 40mm during the growing season of April to October. Grass cuttings to be broken down and spread evenly across the area and remain on site. Lightly roll Amenity Grass areas in spring and autumn annually to consolidate the soil. Carry our when ground conditions are appropriate when soil is moist but not waterlogged. Any settlements or local depressions should be made good.

Grass Footpaths

Objective: To produce a firm hard wearing sward with the appropriate cover of acceptable species, and adequate control of weeds, pests and diseases to a width of 3m to clearly indicate the circulation network.

Operations: Grass maintenance strips to be cut at 2-week intervals to a height of 40mm during the growing season of April to October. Grass cuttings to be broken down and spread evenly across the area and remain on site.

Maintenance Grass Strip to All Pathways

Objective: To produce a firm hard wearing sward with the appropriate cover of acceptable species, and adequate control of weeds, pests and diseases to a width of 2m to both sides of all pathways. This maintenance strip is required to all tarmac, concrete, compacted gravel and grass footpaths. Mown grass edges to present a maintained appearance to the open space and prevent overhanging of tall grasses or planting encroaching upon the circulation network.

Operations: Grass maintenance strips to be cut at 4-week intervals to a height of 40mm during the growing season of April to October. Grass cuttings to be broken down and spread evenly across the area and remain on site.

Pollinator Friendly Grassland Area

Objective: These are areas for amenity use that are maintained to a higher level of 75mm and cut less frequently than general amenity grass areas. This is to create a different character to the woodland area and to promote biodiversity following the recommendations of the All Ireland Pollinator Plan 2021-2025.

Operations: Grass shall not be mown until the 15th of April. Thereafter grass shall be cut on a six-weekly rotation (5 cut and lifts per year). Second cut at the end of May, third cut in mid-late July to maximise growth of Clovers and other wildflowers, fourth cut at the end of August and the fifth cut after mid-October. Remove cutting arisings to off-site compost facility. Carry out when ground conditions are appropriate when soil is moist but not waterlogged. Any settlements or local depressions should be made good.

Meadow Grassland Areas

Objective: Meadow areas are to produce and promote a species rich meadow providing for increased biodiversity and different character areas to the park network.

Operations: Meadow areas shall be cut once a year in late September to a height of 75mm. Meadow areas that are cut should be left for 3-5 days so that insects can move to refuges as moisture content is lost from the cut areas. Meadow cuttings are then to be removed from site. As a general rule always remove 'cut' materials as most wildflowers will die if grass cuttings are not removed. If winters are mild meadow can be mown or toped between October and April if growth exceeds 250mm.

Grassland Slopes

Objective: Grassland slopes are general areas of grassland and areas where gorse or brambles should not be allowed to colonise on banks of the site.

Operations: Gorse, brambles, herbaceous and scrub growth to be cleared to ground levels of 75mm height. Grass cuttings to be broken down and spread evenly across the cut area to remain on site. Grassland slopes to be cut at the end of July and the end of September annually.

Hedgerows Management

Box Cut Hedgerow

o Treatment 1 will comprise an Urban type "Box-Cut Hedgerow", which may incorporate a swale;

Natural Hedgerows

o Treatment 2 will comprise a "Natural Hedgerow", a minimum of 2m in width. This hedgerow may incorporate an existing swale to the side finished with a grassy meadow verge a minimum of 2m bounding both sides; and

o Treatment 3 will incorporate a swale along the mid-line, a "Natural Hedgerow", a minimum of 2m in width on both sides of the drainage ditch/swale and a grassy meadow verge, with a minimum of 2m bounding both sides.

The Natural Hedgerows will be maintained so that a diversity of hedgerow structure is provided. Tall and short (≤3m) sections will be provided. Thick and dense cover at the base of the hedgerow will be maintained and gaps along hedgerows will be minimised. Gaps to facilitate pedestrian access or visual permeability will be provided at selected locations along hedgerows. The outer edges of the Natural Hedgerows will be maintained so that they undulate, or have a wavy plan profile.

Natural Hedgerows will be managed as follows:

o Hedgerow trimming will be undertaken on two to five year rotations to create diversity in hedge structure and allow some species to produce fruit (an important food source for birds) in different years.

o Hedgerow trimming will be alternated between sections of hedgerows so that at least one-third of the hedgerow length remains uncut.

o Hedgerow trimming will be undertaken between the months of January and February.

Box-Cut Hedgerows will be a minimum width of 1m and a minimum height of 1.5m. They will be comprised of typical native hedgerow species.

Box-Cut Hedgerows will be cut on an annual basis during the months of January and February. Hedges should not be cut between March and August as this is the main breeding season for nesting birds. Encourage a bushier and denser hedge by cutting at least 2cm above the previous year's growth. This keeps the hedge full of vigor and growth. It is easy to prune a hedge too heavily and lose the fruit. Remove all hedge cuttings from the site.

Woodland Planting Areas

Objective: Areas planted with trees and shrubs to promote and develop native deciduous and mixed woodland in the development. The woodland area protects and retains existing trees, provides habitat and seasonal interest in the park and provides an amenity space for community use.

Operations: Woodland planting areas to remain clear of weeds to a diameter of 1m circle around each plant planted. Achieved by a circle of mulch 75mm deep being maintained to the base of each tree planted. At all times, weed cover to be less than 5% and no weed to exceed 100 mm high. Check condition of stakes, ties, guys and guards. Replace broken or missing items. Adjust if necessary
to allow for growth and prevent rubbing of bark. Review presence of rabbits within the woodland area and if risk of damage to juvenile planting is low remove spiral rabbit guards after three years all other guards to be removed after five years. Gently firm loosened soil around trees. Straighten leaning trees/ shrubs.

Frequency of checks: Every month or after periods of strong winds. Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters
and similar powered tools. A two-meter strip of unmown grass will surround all areas of woodland planting to form a buffer zone and to increase species biodiversity.

Constructed Wetlands

Objective: A wetland is an area of land whose soil is saturated with moisture either permanently or seasonally and that contains shallow pools of water. Wetlands are considered the most biologically diverse of all the ecosystems as they contain a wide range of plant and animal life. Wetlands to be protected and extended to offer natural flood water storage and improved water quality, lock away huge amounts of carbon, provide havens for wildlife and interesting places for people to visit and enjoy.

Operations: Maintain a dense canopy of wetland plants across the wetland to resist weed growth. Replant any bare ground or dead areas with a plant species that seems to be growing well in the wetland. This should be monitored annually with new planting as per plant species list as necessary. Harvesting is not required, as direct plant uptake of nutrients generally only accounts for a small proportion of nutrient removal. If harvesting is practiced, it should ideally be done in midsummer, allowing sufficient growth season for the growth of a canopy before winter. If not managed correctly, harvesting of the plant canopy can enable weed invasion. Weeds and any pests should be controlled as the plants establish. Hand weeding should be normally be sufficient, but needs to be done before weeds become well established and deeply rooted. Remove weeds by hand when they are young. If you leave them to grow large, they can develop extensive root systems that can be hard to pull out. Invasive plant species such as algal growth and plant dieback to be physically removed as necessary. If plants look to be suffering from lack of water, check water levels are correct and water is inflowing freely. This may indicate a problem with leakage in the system, or may be due to low water flows and high plan evapotranspiration rates in dry summer conditions. Sediment should be removed as necessary to maintain a minimum of 50% of the design depth. Care should also be taken in the event that fertilisers or herbicides are applied adjacent to any of the wetlands to avoid an increased level of nutrients entering the

wetland which promotes excessive plant growth and decay, favouring simple algae and plankton over other more complicated plants, and cause a severe reduction in water quality. Avoid shading of wetland vegetation by overhanging trees, or accumulation of leaves from around the site. Trim surrounding vegetation to maintain open air space above the wetland. Other maintenance works such as monitoring of inlets/outlet, flow regulating devices, siltation of storage areas are not detailed as part of these works.

Long Term Objective: Harvesting and replanting of emergent plants once every 15-20 years.

Hard Surfaces including: Insitu Concrete and Tarmac Pathways, Compacted Gravel and Paved Areas

Note: Paved areas that drain into grass areas/rain gardens, tree pits and planted areas avoid use of high concentrations of salt, detergent or soil-acting herbicides. Materials used in repairs should match the existing surface material specification, and be laid to the same depth as originally specified and, where applicable, to a similar degree of compaction.

Objective: Tarmac pathways and steps throughout the area are to provide a solid surface for users of the open space to circulate. Maintain clean, even, consistent surfaces, safe for use by normal traffic in all weather conditions.
Hard surfaces to be kept free from the following:
• litter including autumn leaf fall,
• dust and accumulated grit,
• stains, e.g. oil or paint spillage,
• graffiti,
• weeds, moss and algae
• standing water

Operations: Arisings or cuttings to be removed from pathways after maintenance of planting. Surface of tarmac pathways to be clean, not slippery, build up of algae etc to be removed.

Insitu concrete –
Refer to Engineers documentation for repairs compliance
If litter accumulates, increase the frequency of sweeping.
Where weeds colonise cracks and joints, remove and repair.
If moss and algae grow, treat by scraping or sweep.

Tarmac –

If litter accumulates, increase the frequency of sweeping.
Where weeds colonise cracks and joints, remove and repair.
If moss and algae grow, treat by scraping or sweep.
Where the surface becomes uneven or there is a drainage problem, patch or replace to falls. Repair cracking and frost damage by raking out and repairing or replacing the surface. Potholes to be reinstated should be cut back to sound material, the sides cut vertically to a square/rectangular shape, painted with bitumen emulsion, and filled with new bitumen.

Compacted Gravel – Ballylusk aggregate dust, well compacted on hardcore subbase.
If litter accumulates, remove by picking or sweeping.
If the surface is stained, replace it.
Where weeds colonise, remove.
Surfaces should be raked/rolled at least once a year in winter when wet.
Where the surface becomes uneven or there is a drainage problem, rake and roll when wet, and make up levels to falls.
Surfaces should be repaired by loosening, raking and making up with matching material to maintain profiles, levels and gradients, followed by rolling.

Furniture
Play Equipment
Objective: To provide opportunities to play and exercise within the open space network for individuals of all ages and abilities. Including opportunities for social interaction, physical activity, imaginative or intellectual stimulation, creative
achievement, emotional and educational development.

Operations: A visual inspection is to be carried out when on site carrying out other maintenance works or at 2 week intervals whichever is more frequent, or immediately in response to reports or complaints from the public. This inspection must bring any defects to the immediate attention of the management company. As a general policy, equipment is repaired as soon as possible. Every twelve months a full ROSPA inspection shall take place using independent inspectors. This results in a full written report with a safety assessment and recommendations for action. The recommendations are acted upon immediately, or should they require large capital investment, they will be used as justification to support the
application for funding.
Play equipment is repaired by the manufacturer/supplier other than routine replacements.

Stone mulch banding, dry stone walls

Objective: Provide an area on site for the collection of stones cleared from the site as part of soil preparation/excavations. Stone mulch bands provide refuge locations for eco-system invertebrates.

Operations: Any stones unveiled during maintenance practices to be positioned in these areas. Keep free of weeks, do not allow soil to enter areas. In advance of grass or meadow cutting replace dislodged stones back onto the areas.

Planting Seasons

• Bare Root Deciduous Stock: November to Mid March
• Rootballed Deciduous Stock: November to Mid March
• Rootballed Evergreens and Conifers: late September or October or between March and early May
• Container Grown Stock: Any time of the year
• Grass Seeding: Spring or Autumn – when the soil is still warm and there is the promise of rain.

No planting should take place during periods of frost, drought, cold drying winds or when soil in water logged, or when the moisture of the soil exceeds field capacity (the maximum amount of water that soil can hold).

Grass Seeding

Grass seeding should only be carried out at the correct season from late summer to mid autumn and in suitably calm but moist weather conditions. If the opportunity to sow grass in autumn is not possible sow seed in mid Spring, but only if there is the promise of rain as it is critical to provide the seed with sufficient water to prevent it from shriveling up and dying. Ideal growing conditions for grass seed to germinate is warm soil damp from rain. Seed should be cross sown in two directions at right angles to each other (half the seed to be used in each direction) to prevent striping.

Replacements

In September or each year, the Landscape Maintenance Team shall provide a list of all trees and plants that are dead, dying, vandalised or not growing in a vigorous condition. These are to be replaced during the November – December of the same year or for evergreens April/May of the following year. All plants shall be planted at the size as shown in the Planting Schedule.

All replacement planting shall be in accordance with the Specification/Planting Schedule.

Dead Plant Removal

Remove dead plants and dead parts of plants as soon as possible and replace plants within the appropriate planting seasons.

Topsoil

Topsoil should be clean, free from stones, perennial weeds, roots and other plant matter, sticks, sub soil or any waste, toxic, rotting or foreign matter. The soil should be fertile with a humus and fibre content and be of a medium texture having a pH value of between 6.0 and 7.5 (unless imported for specific wildflower meadow seeding areas. Imported topsoil should not contain stones greater than 40mm in size, nor have a total stone content exceeding 10 per cent by mass.

Topsoil should be spread evenly on formation levels. Grass areas and shrub/groundcover areas should have a minimum of 150mm and 450mm respectively, after firming. Stones should be removed up to 40mm in diameter.

Plant Material

All plants should be well grown, sturdy and bushy, according to type, and free from all disease and defects. All plants should be adequately hardened off prior to planting, where frost or cold winds may be a problem. This is particularly relevant to planting at the Dublin foothills.

• Shrubs should be bushy, well established nursery stock with a good fibrous root system.
• All trees should be full and well shaped, bark unmarked and have healthy root systems. Rootballed trees should be rootballed immediately when lifted at the nursery.
• The rootball should be suitable for the size of crown and the rootball should be flat bottomed.
• The rootball should be formed through regular transplanting; every 2-3 years minimum. The rootball should be wrapped in hessian and steel wire netting or other suitable and approved decomposable material. Trees should have a well defi ned, straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown should be well shaped, balanced, of a form and habit natural for the species.
• All coniferous trees should be supplied rootballed or container grown, with a good fibrous root system. Trees should conform to specified height with well developed, uniform branching systems.

Planting Preparation

The proper preparation of the ground, the quality of plants and materials, and good planting techniques are essential for proper plant growth and establishment, ensuring minimal loss of plants and ease of maintenance. Where the project requires earthworks such as the formation of subsoil levels and topsoiling works it is important that it is done in the right way to avoid compaction, so that the best conditions are available for planting.

If topsoil is stockpiled on site it should be stored in mounds of maximum height 1.5m constructed so that they shall shed water and not puddle. Care should be taken that no trafficking of placed topsoil and no mixing of topsoil and subsoil take place. Any Topsoil stockpiles should be kept weed free.
The areas for planting should be prepared prior to planting by ensuring that the subsoil is free draining and well cultivated and suitable for topsoiling. The aim of cultivation is to produce a well-drained and textured soil suitable for plant growth.
All areas to be planted or seeded should be cultivated to a minimum depth of 450mm or deeper if needed. Areas where obvious compaction has occurred should be ripped to allow adequate drainage.
Subsoil should be placed in layers not exceeding 150mm in depth.
To create the best growing environment for the planting in subsoil a combination of actions were applied to each planting pit. Any future planting works into subsoil should follow the following these principles:
• The pits should be dug prior to delivery of plants so that the tees are out of the ground for as short a time as possible.
• Planting to be into pits which are excavated 200mm deeper and 300mm greater in diameter or 1/3 greater depth and diameter than the root size (whichever is greater)
• The plant must be planted to the same level relative to top of soil as that grown in the nursery.
• The sides and bottom of the planting pits are to be thoroughly broken up by forking to alleviate compaction and to facilitate drainage.
• When planting on slopes ensure that an area made by a 0.3m diameter circle from the centre of each plant is level (horizontal) at the ground surface upon completion of backfilling.
• The backfill or soil placed back in around the plant roots will comprise of broken up (to a loose friable state) soil removed to form the planting pit. Large solid soil / clay clods larger than 50mm will be rejected and deficiencies made up with topsoil.
• Bare root stock to be dipped in root dip gel containing sufficient species of mycorrhizae for the tree or shrub being planted, water holding gel and bio-stimulant.
• 100mm bark mulch to be applied to surface for weed suppression and water retention

Planting Seasons
• Bare Root Deciduous Stock: November to Mid March
• Rootballed Deciduous Stock: November to Mid March
• Rootballed Evergreens and Conifers: late September or October or between March and early May • Container Grown Stock: Any time of the year
• Grass Seeding: Spring or Autumn – when the soil is still warm and there is the promise of rain.

No planting should take place during periods of frost, drought, cold drying winds or when soil is water logged, or when the moisture of the soil exceeds field capacity (the

maximum amount of water that soil can hold). Grass Seeding Grass seeding should only be carried out at the correct season from late summer to mid autumn and in suitably calm but moist weather conditions. If the opportunity to sow grass in autumn is not possible sow seed in mid Spring, but only if there is the promise of rain as it is critical to provide the seed with sufficient water to prevent it from shrivelling up and dying. Ideal growing conditions for grass seed to germinate is warm soil damp from rain. Seed should be cross sown in two directions at right angles to each other (half the seed to be used in each direction) to prevent striping. Replacements In September or each year, the Landscape Maintenance Team shall provide a list of all trees and plants that are dead, dying, vandalised or not growing in a vigorous condition. These are to be replaced during the November – December of the same year or for evergreens April/May of the following year. All plants shall be planted at the size as shown in the Planting Schedule. All replacement planting shall be in accordance with the Specification/Planting Schedule.

Works near Existing Trees and Softworks

When developing near existing trees, ground levels, especially under their canopies should remain unchanged. Most roots are found in the top 600mm of soil. They often grow out further than the trees height. The majority of these roots can be thin in diameter. Some species of trees can tolerate a small increase in level – generally up to 75mm but since most of the roots occur in the top 600mm of soil, raising the ground level can reduce the air available to the root zone and change the feeding of the tree by these roots and lead to the demise of the tree.

Paths of underground service runs should avoid the tree root spread of existing trees and if this is unavoidable then any excavations should be carefully done by hand and services ducting placed through the roots by hand.

Ideally no roots should be severed, so where construction is of necessity within the root spread, damage must be minimized by careful routing of services, with any excavation carried out by hand to allow larger roots to remain undamaged. No root over 25mm in diameter should be cut; they can be left bridging a trench while pipes or cables are laid. Smaller roots should be cut cleanly by hand. Pipes and cables can be passed through or under root systems that have been given minimum disturbance by hand digging. If services cannot be routed clear of trees, they can be laid below the root run level, at about 1.2m or greater depth.

When back-filling trenches, the correct sequence of topsoil above subsoil should be observed.

Services

No digging below 300mm depth using powered machinery will be permitted near to known sub-surface pipe and infrastructure locations. In all other areas the depth restriction will be 600mm deep.

Tree Surgery and Emergency Tree Works

A tree survey condition report on the condition of the existing trees on site has been undertaken. Any recommendations should be implemented by qualified personnel in compliance with British Standard B.S. 3998: 1989 ‘Recommendations for tree work.”

Following this initial tree condition survey, trees seen to be in good condition should undergo regular visual safety inspections. A visual inspection should be carried out as part of the routine maintenance works on site coupled with specific visits following storm events or periods of very heavy rain.

Trees should be reviewed for dead wood in the canopy, storm damage, decline in vigor in the crown or damage caused following other maintenance practices.

In addition to regular visual surveys of the existing trees a professional tree condition survey should be undertaken by a suitably qualified arboricultural consultant every 3 years producing a report on condition of trees.

Any recommendations should be implemented by qualified personnel in compliance with British Standard B.S. 3998: 1989 ‘Recommendations for tree work.” Any wind damaged

trees or tees requiring emergency works should be made as safe as possible and contact made with the management company.
An annual inspection of the trees will establish and programme restorative/remedial pruning, and in order to prevent an aging tree stock, some new trees will be planted to reinforce the existing tree planted structure.

Scheduling of works

Pre-construction tree works will follow that outlined below

• Remedial works to trees being retained throughout the site as per the Tree Survey document.

• The erection of tree protection fencing

Protected Tree Zone.

The 'Protected Tree Zone' should under no circumstances be used for storage of materials, equipment, or site debris. No fires should be lit within the Protected Tree Zone, or equipment washed or cleaned.
Code of Practice for the preservation of trees.
The Code of Practice will be brought to the attention of all site personnel
including Contractors, Sub-Contractors and Engineering Specialists associated with works on site. All operations to be in accordance with BS 5837 Trees in Relation to Construction (2005). The management company should purchase and make available on site a copy of the above.

The Arboricultural Contractor will:

• Submit a full method statement containing machinery to be used, removal of wood etc to the CA.

• Carry out works to the most up to date arboricultural practices available e.g. BS 3998. Recommendations for tree work (as amended).

• Undertake work only with suitably qualified operatives in constant consultation with the Site Arborist.

• Trees identified for removal will be section felled in wooded areas so as not to damage remaining trees.

Control of dogs

It is recommended that dogs should be kept on a lead when walking the path network within the open spaces, except for in the designated dog park to prevent disturbance to wildlife. Signage should be erected to encourage public cooperation. This may help to reduce disturbance impacts to bird species.

Introduction

The aim of this chapter is to describe aspects of the landscaping scheme that are intended specifically for biodiversity. It includes the retention of existing features, (e.g. the hedgerow on the western boundary of the site), biodiversity enhancements included in the landscaping scheme (e.g. the attenuation pond), and biodiversity enhancements for fauna.

Some features have been discussed in detail elsewhere in this report, in which case we will refer readers to relevant locations rather than repeating information.

This document should be read in combination with the Ecological Impact Assessment for the development (NM Ecology Ltd, 2024), which provides information on the baseline condition of the site.

Green and Blue Infrastructure

The proposed landscape design aims to strengthen the value of the site as a place for delivering green/
blue infrastructure whilst protecting and enhancing the natural/built and cultural assets of the site.

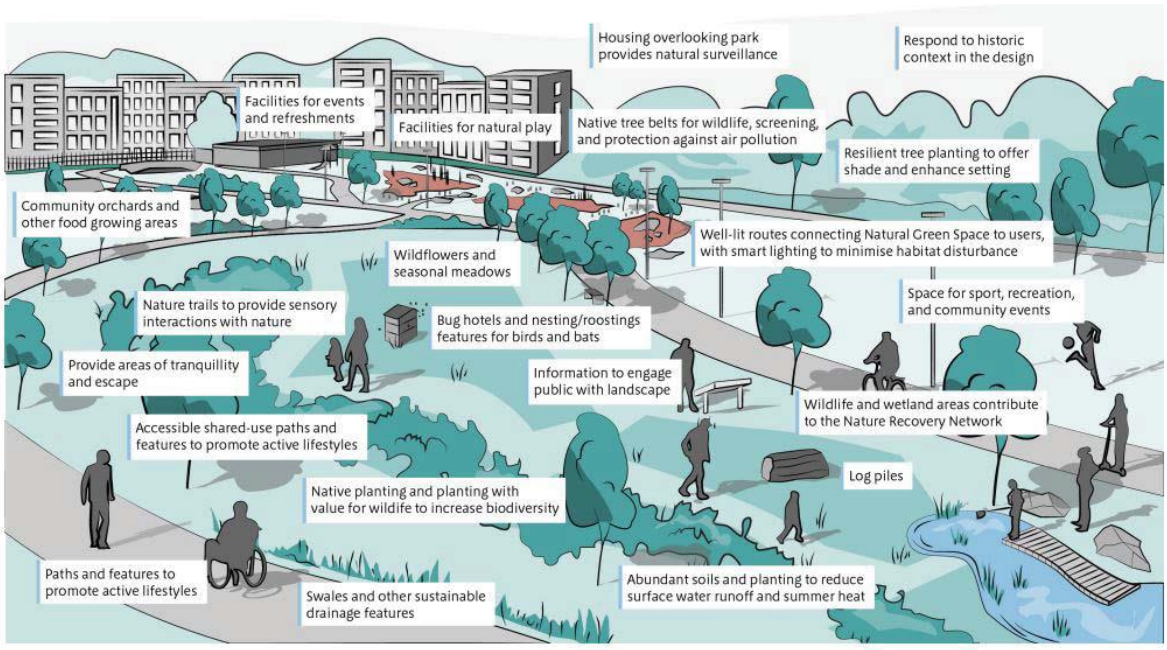


Figure 21: Parks and Green Space

Figure Extract from “Green Infrastructure Planning and Design Guide” published by Natural England

Green Infrastructure is designed and managed to provide and facilitate the following:

- High quality open spaces which provide health and social benefits for people through the provision of formal and informal nature-based play areas, safe and attractive areas and routes for meeting with a variety of seating areas for socialising and relaxing, accessible walking and cycling routes facilitated.

- Adaptation to the impacts of climate change and flooding.
- Space for biodiversity (nature and wildlife) to flourish
- A sense of place and local distinctiveness.
- The design facilitates connections for people and wildlife; active travel routes are maintained through the site for neighbours and residents through green spaces, the network of open space is designed to connect with the existing surrounding movement/open space networks to access adjacent neighbourhood amenities and facilities.
- Retention of ecological connectivity/ stepping stone function of the site to facilitate movement of fauna, to keep foraging and commuting routes, and as a nesting resource.
- Features are multifunctional, they are designed to benefit people and wildlife.

Biodiversity National Guidance

Planting and management of the planted areas shall be undertaken in accordance with pollinator friendly management objectives as outlined in the "All Ireland Pollinator Plan 2021-2025 (Councils: Actions to Help Pollinators)" National Biodiversity Data Centre and will include interpretative signage highlighting the areas Managed for Wildlife.

Ecology Design Elements

1. **Retention of existing ecological features.**

An Arboriculture assessment has been carried out by CMK Arborists for this site and submitted as part of this application. It outlines General tree descriptions, Arboriculture impact, impact of the development, tree protection. And has informed the landscape and biodiversity design of this project.

Native hedgerows and trees

Additional planting is recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible. These hedgerows and trees will provide connectivity between habitats, shelter and a food resource for nesting birds.

Birds

Breeding Bird Season Restrictions

Any removal of vegetation, including trees and hedges within the site will take place outside the breeding bird season (i.e. the start of September to the end of February, inclusive) to avoid any potential impact on breeding birds. Where this seasonal restriction cannot be observed, a check for active nests will be carried out immediately prior to any site clearance and repeated as required to ensure compliance with Irish wildlife law. This will be carried out under the supervision of a qualified Ecologist.

2. Biodiversity enhancement in the landscaping scheme.

Outlined above in the landscape proposals and the landscape masterplan submitted with this application.
These measures will partially compensate for some of the habitats removed during site clearance (hedgerow, meadow) and create some features that are not currently present at the site (open water)

Native hedgerows and trees and pollinator friendly grasslands
Additional planting is recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible. In keeping with the recommendations of the All-Ireland Pollinator plan it is proposed to plant boundary hedgerows with native Irish hedgerow species with 75% “Hawthorn” and 25% of four other native species, we are proposing 10% “Hazel”, 10% “Field Maple”, 2.5% “Blackthorn” and 2.5% “Dogrose”. These hedgerows and trees will provide connectivity between habitats, shelter and a food resource for small invertebrates. These also provide connectivity between habitats for many species including bats.

- Grassland meadow habitat maintained
- Management regime for pollinators

3. Biodiversity enhancement for fauna.

This would include swift / swallow nest boxes on the buildings (they need to be at least 5 m above ground level), other bird nesting boxes for finches, tits, etc, bat boxes in the retained hedgerow on the western boundary, the hedgehog box (also on the western boundary), and the 'hedgehog highway' between gardens

- Existing grassland retained to support invertebrate's habitat as a food source for birds
- Bird nest boxes of a variety of sizes/typologies will be installed as per Ecologist recommendations
- Swallow and Swift bricks to Apartment structure
- House Martin nest structures to Apartment structure
- Ground nesting bird habitat to Living Roof to Apartment structure

Bats

Native hedgerows and trees and pollinator friendly grasslands

Additional planting is recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible. In keeping with the recommendations of the All-Ireland Pollinator plan it is proposed to plant boundary hedgerows with native Irish hedgerow species with 75% “Hawthorn” and 25% of four other native species, we are proposing 10% “Hazel”, 10% “Field Maple”, 2.5% “Blackthorn” and 2.5% “Dogrose”. These hedgerows will provide connectivity between habitats for bat species and trees with bat boxes will provide for roosting.

- Grasslands managed for invertebrates as a food source for the bats

- Night scented climbers and plants to attract food source for the bats

- Bat friendly lighting

- Bat boxes are proposed to be installed in locations and guidelines to Ecologist recommendations

Mammals

Additional planting is recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible.

In keeping with the recommendations of the All-Ireland Pollinator plan it is proposed to plant boundary hedgerows with native Irish hedgerow species with 75% “Hawthorn” and 25% of four other native species, we are proposing 10% “Hazel”, 10% “Field

Maple”, 2.5% “Blackthorn” and 2.5% “Dogrose”. These hedgerows and trees will provide connectivity between habitats, shelter and a food resource for small mammals. - Garden habitats ideal for hedgehogs, access into and through house gardens is proposed by provision of a Hedgehog highway with small openings min 13x13cm in the boundary fence network. Signage will be erected next to openings to alert house owners to intent of openings.

- Hedgehog boxes positioned as per Ecologist recommendations in suitable habitat locations on site

Appendix 1 – Green space Factor calculation detail

Green Space Factor Tool
South Dublin County Council

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

User input indicated by Orange fields

User Input	
Zoning lookup	Minimum GI Score
SDZ	0.5

1. Enter Development Site Area m² HERE►		23142	
Surface Type (see tab for detailed descriptions)	**Factor**	**Proposed Surface Area m²**	**Factor Values**
1. Short Lawn	0.3	2449	734.7
2. Tall Lawn (wild, not mown)	0.5	1537	768.5
Permeable Paving	0.3	2303	690.9
Vegetation		0	0
4a. Vegetation-Shrub below 3m	0.4	0	0
4b. Vegetation-Shrub / Hedgerow above 3m	0.5	1063	531.5
4c. Vegetation-Pollinator friendly perennial planting	0.5	838	419
4d. Vegetation-Preserved hedgerow	1.2	0	0
Trees		0	0
5a. New trees	0.6	31	18.6
5b. Preserved trees	1.2	0	0
7. SuDS intervention (rain garden, bioswale)	0.6	3078	1846.8
Green Roof		0	0
9a. Green Roofs - Intensive green roof (substrate is 200-1200mm in depth)	0.7	83	58.1
9b. Green Roofs - Extensive green roof (substrate is 80-200mm in depth)	0.6	1321	792.6
10. Green wall	0.4	0	0
11. Retained Open Water	2	0	0
12. New open water	1.5	0	0
Total Equivalent Surface Area of Greening Factors		12,703.00	

Green Factor Numerator	5860.70

Minumum Required GI score	Final GI score	Result
0.5	0.25	Fail