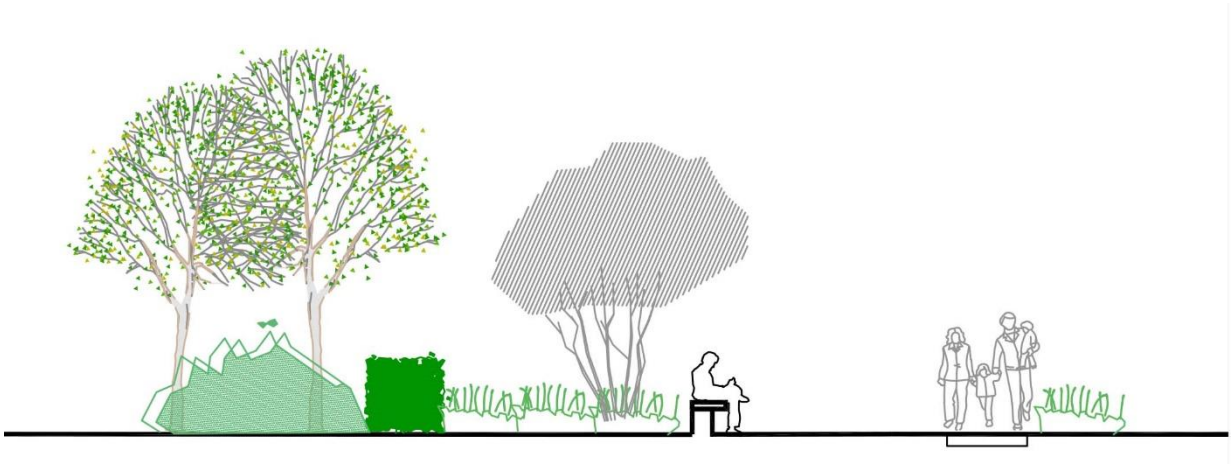
Proposed Residential Development at Farrankelly
Co. Wicklow

Planning Submission



Landscape Report & Outline Landscape Specification

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Landscape Report

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Kevin Fitzpatrick Landscape Architecture Ltd. has been commissioned by Cairn Homes Properties Ltd. to provide landscape architectural consultancy in relation to a planning application for the proposed residential development at Farrankelly, Greystones, Co. Wicklow. This report should be read in conjunction with the following drawings:

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1.0 Existing Landscape

1.1 Overview

The site is located within Greystones, Co. Wicklow. The site is in a large irregular form, defined primarily by field boundary hedgerows, woodland and surrounding roads and residential developments. The northern boundary is formed primarily by the existing 'Three Trouts Stream' and associated woodland, with Delgany Park, a residential development, beyond this. It is bounded to the east by a hedgerow along with the regional R761 road, which separates it from Glenheron, a neighbouring residential development. To the south of the site is a hedgerow and Priory Road, which makes up about a quarter of the boundary, while the remaining part of the southern boundary is formed by existing residential developments Eden Gate and Glenheron Park. The western boundary of the site is formed by a combination of hedgerow and tree groups; many of these trees are in neigbouring lands.

In the wider landscape, the lands are situated within the town of Greystones. The coast and existing traditional farmland are located to the East, Kilcoole Village and additional agricultural land are to the South and finally Delgany Village and the N11 motorway to the West and North-West. There are a number of residential areas in close proximity to the site, particularly on the southern outskirts of Greystones and Delgany, but also dispersed between Greystones and Kilcoole Village. The closest residential developments are Eden Gate, Delgany Park, Charlesland and Glenheron Park. Across the site the levels fall in various stages, the highest point on site is at approximately +57.5m in the South-West corner of the site along Priory Road. Over 238m, levels fall gently to + 47m at the centre of the site where the two central hedgerows along the East-West axis and North-South axis meet. Levels continue to fall at a moderate rate until we reach the northern boundary of the site, where levels decrease steeply down to the existing stream at approximately. Along the East-West axis levels fall gently from +47m along the eastern boundary hedgerow to the boundary with Farankelly House where the ground level is at approximately +41.5m. From this point there is a steep fall down to the hedgerow running South from Farankelly House, where the level is at 32.5m. Levels then slowly rise to +35m along the Kilcoole Road.

1.2 Landscape Character

The lands have been in agricultural use and consist of field patterns and sizes typically common in the wider landscape. The character is that of a traditional agricultural and tillage landscape with traditional hedgerow field boundaries. The area to the North of the site contains the existing 'Three Trouts stream' and adjacent woodland. Native hedgerows within and around the site vary considerably in quality. The above areas would be considered of high landscape value as they are both historical landscape elements and an integral part of existing green infrastructure links.

The aesthetic quality of the existing stream, woodland, mature Scots Pine trees and native hedgerow are the most important components in defining the landscape character of the site. Other than these elements, the general character of the landscape would be considered that of a traditional agricultural landscape mixed with adjoining

developing residential use with no inherent aesthetic qualities. In a wider context, Glen of the Downs and coastal areas would be of considerable landscape character.

1.3 Existing Trees and Vegetation

The trees and hedgerows on the subject lands have been surveyed by a qualified arborist (Arborist Associates Ltd) and the arborist's report forms part of this submission. The majority of the trees in the site are classed as category B and C by the Arborist with a number or U category trees. There is also one Category A tree found on the site. The hedgerows are typical in their species make up being primarily Hawthorn and Blackthorn although bramble is well established. The higher quality hedgerows are found along the site boundary and running along the north-south axis as well as the east-west access through the middle of the site, intersecting at certain points. The high number of moderate value trees on site can be enhanced and strengthened along with the hedgerow species to produce healthier and longer lasting hedgerows throughout the site. The species mix of the trees found on the site varies but consists mostly of Scots Pine, Ash, Beech and Sycamore. The larger trees are found throughout the roadside hedgerow and along the small access laneway. There a large number of moderate value Scots Pine on site which will be retained in compliance with Objective T06 of the Local Area Plan (LAP). The prominent hedgerow running from Farrankelly House south to the site boundary contains a mix of moderate quality Beech, Ash and Scots Pine. The wooded area alongside the 'Three Trouts Stream' also contains many moderate value trees and adds biodiversity and amenity value to the local landscape.

Fig 1 – View of existing Scot's Pine trees

2.0 Landscape Strategy

2.1 General Aims

The character of the landscape proposed is one of large trees, copses of native trees, formal clipped hedges, ornamental shrub and groundcover planting, woodland planting and native hedgerows. The landscape strategy aims to integrate the proposed residential development with the existing landscape and create a network of attractive and useable open spaces while contributing to local biodiversity. The public green areas are designed as landscape spaces that offer the opportunity for meeting, walking and formal and informal play. The protection and enhancement of existing landscape features, notably woodland belts, the existing stream and native hedgerows is an important aspect of the overall strategy, providing a structure for circulation and the connection of proposed open spaces, while continuing to develop green infrastructure links in the area. The development of a green route along the 'The Three Trouts Stream' will also be an integral part of the overall landscape strategy. The long-term development and maintenance of the landscape is an integral part of the design strategy.

The landscape is divided into multiple open space and transitional areas, all with a different character and use. The largest area is the Active Open Space which comprises of 4.5 hectares, this space incorporates multiple sports pitches, a fitness trail and a public park. The 'Three Trouts Greenway', a green route provided through the existing woodland, provides a link from the south-western corner of the site to the north-eastern corner of the site along the Kilcoole Road and contributes to 2.4 hectares of open space. Three main public open spaces located in easily accessible locations provide 1.8 hectares of usable open space for residents. There is 0.2 hectares of communal space, while 1.3 hectares of green infrastructure links are provided through out the site, linking the various landscape spaces and ecologically connecting to other landscape elements outside of the site boundary boundary.

2.2 Spatial Uses

The overall landscape strategy is to provide usable public open space for future residents. A series of three open spaces with a total area of 1.8 hectares, are connected by linear green links which are based on existing landscape features. These existing features form part of the existing green infrastructure links within the site and surrounding area. The three primary open spaces are located centrally within the overall site and each space is easily accessible from the surrounding properties.

In all of the open spaces the levels have been carefully considered to accommodate a large flat area for passive recreation, formal play and ball games. Overlooking each of the lawn and play spaces, a seating space is located including benches, ornamental planting, flowering trees and feature paving.

The desire lines through the landscape spaces are reflected in the path layout and will integrate with the general street layout to provide a high level of pedestrian permeability. The pedestrian circulation network is designed to accommodate movement through the space at a gradient of less than 1:20. The layout of the paths and planting allows smaller areas of lawn suitable for passive uses by smaller children and other alternative uses to the large kickabout space. Pedestrian permeability throughout the site and to adjoining sites has been provided linking with the existing and future proposed footpath network and passive surveillance has been considered throughout all of the open spaces.

The total open space contributes to 15 percent of the net residential area, which follows Appendix 1 of the Wicklow County Development Plan.

Fig 2. Landscape masterplan

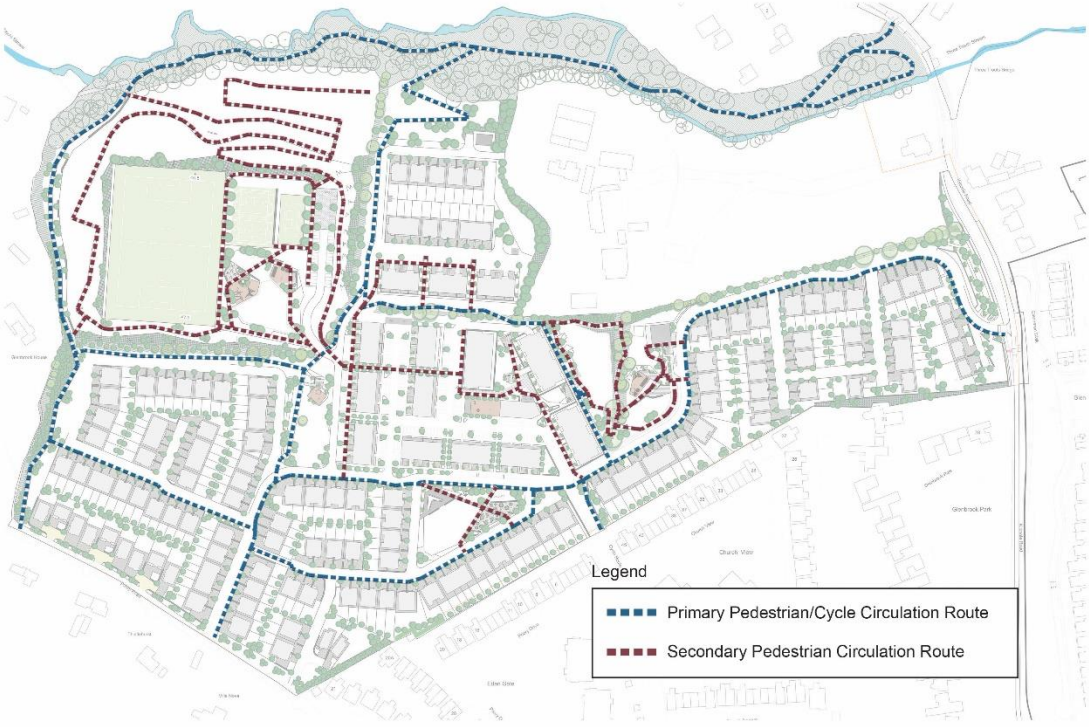

Fig 3. Circulation and Permeability Diagram

2.3 Open Space 1

This is the largest of the three open spaces and composes a series of sub-spaces providing a range of amenity uses for the residents of the proposed development.

A central landscape element within the space is the existing native hedgerow which runs on a north-south axis through the space, this hedgerow will be enhanced and strengthened, and the old lane way associated with the hedgerow will be reinstated as a gravel path. This hedgerow also defines the two main parts of the overall space. The sub-space to the east has more accommodating levels and will provide for a range of active uses. Within this area, there is a central lawn area provided for passive recreation and active play, which is defined by formal clipped hedges and shrub planting. Overlooking the lawn is a seating area defined by ornamental planting and feature paving. A formal playground and second seating space are located centrally and are contained by ornamental planting. As the levels start to fall to the north, two level artificial grass areas have been provided adjacent to the proposed 'Residential Amenity Building'. These provide a space for outdoor activities such as yoga, meditation, tai chi and so on.

To accommodate levels in other parts of the open space an 'Evo Geo' green wall retaining system has been used, which runs from the proposed 'Residential Amenity Building' to the entrance into the semi-private apartments. A 2.5m grass verge has been provided between the edge of the road and the top of the green wall, which allows space for a crash barrier and safety handrail. A pedestrian ramp brings the user from the amenity building to the central kickabout space and connects to the other footpaths in the open space, while steps provide a more direct route into the space.

Fig 4. Open Space 1

To the west of the central hedgerow is the secondary sub-space. The levels have also been reprofiled in this space to accommodate a flat lawn area. Along the western side of this space is a buffer zone which runs alongside the apartments fronting onto the open space. The buffer zone is composed of sections of native understory planting and copses of native trees strategically located to maintain a visual connection between the semi-private apartments and the open space. This zone acts as a visual screen while also providing amenity and habitat value to the proposed development. A walkway/cycle track through the buffer zone provides an attractive secondary pedestrian route.

The northern section of the open space is bounded by the site boundary, the treatment to this boundary will be to retain healthy and strong sections of the existing native hedgerow, while adding native woodland planting to fill in the gaps. This will provide a visual screen between the site and the neighbouring Farankelly House to the west, while also contributing to local biodiversity and green infrastructure links.

To the west of the buffer zone mentioned above, steps connect the public open space to a series of courtyards associated with the apartment blocks and the creche facility. The composition of the courtyard spaces is simple. Each space contains a small seating area which looks out onto a grass area provided for passive recreation. Seating areas and lawn areas are defined by ornamental planting, copses of native trees and formal hedges, which also provide visual interest and spatial qualities.

2.4 Open Space 2

The design of the space is focused around a central lawn which is overlooked by a seating area. The main seating area is defined by ornamental planting, feature paving and a central raised planter. The raised planter also provides a seating option and its central positioning allows movement through and around the space. Stepping stones, timber stilts and balance beams, tree copses and other features provide opportunities for natural and creative play (Refer to Section 2.8). The overall space is defined by shrub and groundcover planting along with formal clipped hedges and tree planting. The main south-east to north-west footpath, in the context of the overall site, acts as a link between Open Space 3 and Open Space 1.

Fig 5. Open Space 2

2.5 Open Space 3 and Western Boundary Open Space

The spatial design of this space is focused on a formal children's playground at the northern end of the space. A seating space is provided adjacent to this which is designed to provide inward and outward orientated seating options surrounded by planting with a specific planting mix to attract insects and birds. From this seating area views are provided of the open space and of the playground. The planting design has been carefully considered to define all of the sub-spaces within the overall space. Shrub planting around the edges of the open space helps to define it, while also providing screening.

Tree planting is designed in copses to maintain the views into and out of the space. The circulation has been designed to allow full pedestrian connectivity through the space while connecting with both the primary and secondary circulation routes throughout the site.

At the northern end of this open space, there is an important connection with the existing native hedgerow along the East-West axis of the site. In a wider context, this provides an integral pedestrian route to the 'Three Trouts Green Route' and the open space along the western boundary. This also has benefits to objective T06 of the Wicklow County Development Plan The open space along the western boundary would be considered as a transitional landscape, and its value is mostly ecological. The existing native hedgerow along the site boundary has been retained and enhanced with further native woodland planting. This improves local biodiversity and green infrastructure links and provides screening to the development. The open space links the pedestrian entrance at Priory Road and the start of the green route through the existing woodland along the northern boundary. Areas of open lawn on the eastern side of the footpath makes this area usable for passive and active recreation and copses of native tree planting provide visual interest throughout the space.

Fig. 6 Open Space along western boundary

Fig. 7 Open Space 3

2.6 Active Open Space

The active open space comprises 4.5 hectares in the north-western corner of the site and links up with the proposed 'Three Trouts Green Route'. It consists of three main spaces: the sports pitches, the neighbourhood park and the fitness trails. Pedestrian permeability and circulation have been carefully considered in this space, in order to make it easily accessible from various other open spaces and circulation routes throughout the site.

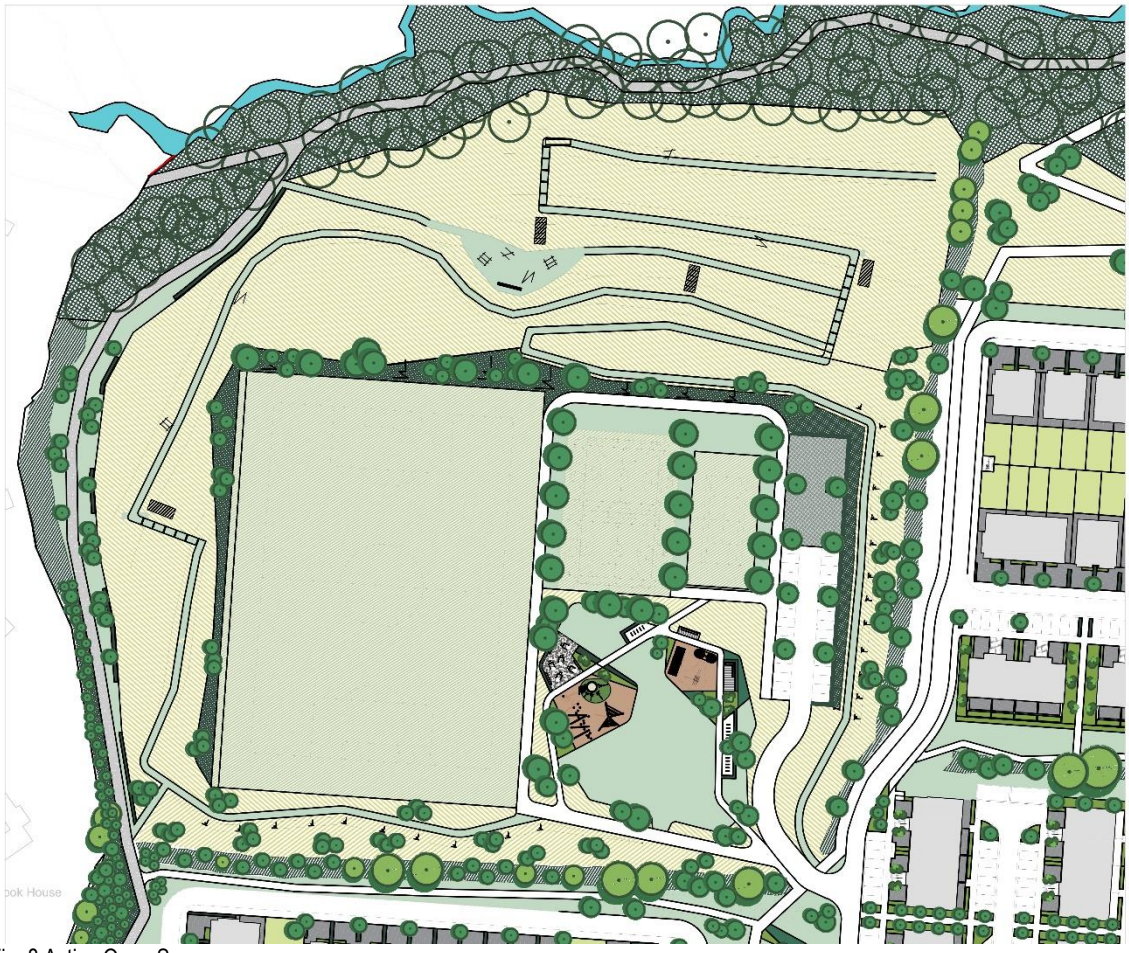

Fig. 8 Active Open Space

Various sports pitches have been provided, including a large playing field, a multi-use games pitch and a tennis court. Screening has been implemented around all of the pitches using a combination of native woodland planting, formal hedge planting and large avenue trees. A vehicular access has been provided around the pitches for both maintenance and emergency access and vehicular parking is also located at the eastern edge of the overall space.

A neighbourhood park acts as a transitional space between the main entrance and the pitches and creates a family orientated space, providing various recreational uses. Two playgrounds cater for a range of age groups. Various south-facing seating areas, including a picnic area and lawn provide spaces for passive recreation and overlook the play areas and central kickabout space. The open space is defined by swathes of wildflower meadow, bands of ornamental planting and copses of native trees, while seating areas are defined by lines of formal hedging, flowering multi-stemmed trees and feature paving.

Mown grass running tracks navigate through the active open space, linking up with the main internal footpath network and the greenway at various points and creating a circuitous exercise route around the pitches, while providing easy access to other parts of the site. The mown tracks provide a fitness trail, which has been designed based on the existing topography at the northern end of the site which slopes down to the existing woodland. Robust outdoor exercise equipment is dotted along the trail at various stopping points. Wildflower meadow is planted to most of the northern slopes, reducing maintenance operations, improving local biodiversity and creating a visually attractive route through the space.

The boundaries to the active open space consist of mostly existing or proposed woodland, with some steep planted embankments used to accommodate level changes along the southern and eastern boundaries. The boundary along the green route consists of a mown grass verge and broken lines of formal hedging. This spatially defines the space while creating frequent views into the space.

2.7 Semi-private Spaces and Communal Spaces

The semi-private landscape spaces in the scheme have all been carefully considered to provide residents with usable and attractive open space. Where possible both a south-facing seating space and small lawn area have been provided along with bands of ornamental shrub and groundcover planting to provide privacy and shelter. There will be planted buffers for the outdoor terraces, the facades and windows of all apartment blocks and duplexes, ensuring that residents have a certain amount of privacy within their own apartments and views are screened from the public areas into the private spaces.

2.8 Three Trouts Stream Green Route

Central to the landscape strategy is the proposed walking and cycling route along the existing 'Three Trouts Stream', which is located just inside of the northern site boundary. Both the stream itself and the dense woodland planting are prominent landscape features within the site. The green route proposed meanders through the existing woodland. Utilizing existing tracks and topographical features, it provides an alternative circulation route for users, which connects to footpaths and existing tracks located outside of the site boundary. As the protection of the existing woodland is a major priority, a no-dig construction method will be used for the footpaths throughout the route, ensuring no damage to root systems of existing trees. The proposed green route will function as a recreational route and will be defined by a change in surface material. The route will begin at the south-west corner of the site and work its way around the site boundary up to the north-east corner. A pedestrian/cycle link will join on to the green route from the main part of the site, through Open Space 1 and past the apartments to the north. Additional woodland planting will be planted at certain sections along the site boundary to create the atmosphere of a continuous woodland walk.

Fig. 9 Green Route Concept Images

2.9 Green Infrastructure and Enhancement of Existing Landscape

The enhancement and strengthening of existing landscape features throughout the site is a fundamental aspect of the overall landscape approach. The green infrastructure strategy serves to link and integrate all of the spaces within the site together using existing and enhanced landscape features, while also contributing to green infrastructure in a wider context by creating opportunities to connect to other landscape features beyond the site boundary.

The main method used to enhance green infrastructure links is the retention and strengthening of existing hedgerows and woodland areas. Existing hedgerows provide the opportunity to create green routes through the site, which serve both a recreational and ecological function. Hedgerows increase local biodiversity and create habitats, thus becoming biodiversity corridors which link to other green infrastructure features in the surrounding areas. In addition to this, retaining hedgerows and ditches also allows the prospect of implementing a SuDS network through the site which can integrate into the circulation routes and become a part of the wider green infrastructure strategy. Particular attention was given to the retention of Scots Pine trees which was identified as per the Greystones/Delgany Local Area Plan (Protection Objective T06).

The 'Three Trouts Stream' and associated woodland is also of high priority. Similar to the treatment of the existing hedgerows, this linear space will become an integral linking feature in the wider green route strategy, while the dense belt of woodland would remain as part of a greenbelt buffer zone. The existing woodland and stream are home to much local flora and fauna and thus contribute greatly to local biodiversity and ecology. The stream itself forms a basis for a potential SuDS system, with all proposed channels eventually running into the stream. In terms of amenity use, the proposed walkway through the space would become a recreational asset to the wider local community, as well as future residents.

The strategies referenced above protect and enhance the character of the natural environment in the area and contribute to the scenic quality of the surrounding landscape. They also ensure that habitats and areas of high value biodiversity are protected. (Refer to Dwg no. 104 for concept images)

2.10 Natural Play Area Design

A number of the play areas throughout the scheme are designed as a 'Natural Play Area', this is where a preference is given to natural play features, materials, and objects over the standard manufactured play equipment. There is a greater emphasis on building, creation, exploration and pretending as activities to extend the interest in the play area for users that visit regularly, as is common in a residential landscape space. Robust materials also provide more durability and longevity to the play spaces, while the appearance of the space is more harmonious with a landscape space as it is primarily made up of grass mounds, sand, gravel, timber and stone. As no large structures or moving parts are used the safety risks and requirements for appropriate safety surfaces etc. are reduced

The play area featured in Fig 10 is an example of the type to be created in this space. The surfaces will be primarily grass, gravel and sand. Level changes, grass mounds and steps will be incorporated into the scheme as a central feature of the space. Within the space created a number of activities are facilitated such as balancing, jumping, climbing and crawling. These type of play areas are located in Open Space 2 and 3.

Fig 10 - Precedent image for Natural Play area ('Ringfort' play space, Lucan by Playscapes)

2.11 Creche Play Area

The play area for the creche will consist of a soft play safety surface. This surface is usually wet-pour which allows for interesting shapes and graphics to be applied to the ground. The wet-pour safety surface is also suitable for all weathers and is very low maintenance.

Fig 11 - Precedent image for Safety Surface to Creche Play Area

2.12 Planting Strategy

The plant species are chosen to respect and enhance the local environment while providing suitable vegetation that is harmonious with a residential area and will be successful through all stages of its maturity. Therefore, the planting palette has a limited number of species chosen for their appropriateness and with a preference for native planting where possible.

Large native Oaks are the other dominant tree species proposed throughout the main open space areas and will be complimented by large Horse Chestnuts, Limes, Beech and Red Oak trees. These trees will mature into large parkland specimens. When the trees mature, they will have a very strong visual impact and will define the character of the development as the existing trees go into decline. Trees have specifically located outside of proposed attenuation areas to avoid any interference with future services.

The street trees are chosen due to their more compact habit. These species are appropriate for the scale of the spaces in which they are to be used and are of a variety that will complement other native trees. Each street is to be planted using a single variety of tree and hedge giving a specific landscape character to each part of the development.

The existing trees that are retained within the scheme are to be enhanced and strengthened by additional planting of native and naturalised broadleaf tree planting. Throughout the public open spaces, a mix of broadleaf deciduous trees will be planted that will increase the woodland cover while facilitating safe use of the spaces. Formal evergreen hedges are used throughout the development to define spaces and create boundaries. These hedges will complement the estate landscape character of the site. Evergreen shrub mixes are also used as robust structural planting to define the streetscape and spatial uses. Ornamental and groundcover planting will be used to frame seating areas and cover the existing embankments in the open spaces, which will increase the aesthetic qualities of the space. Some more ornamental trees will be utilized for their visual quality and to provide interest around the seating areas.

The perimeter planting around the site will be native and naturalized broad-leaf hedgerow and tree-planting, along with dense woodland and understory planting to create visual screening and improve biodiversity. Native plants Blackthorn, Hawthorn, Hazel and Holly are all used in the hedgerow mix and tree-planting in the hedgerows consists of Common Birch, Native Oak, Horse Chestnuts and Common Alder.

Fig 12 - Sample planting images

Plant List

Large Tree Planting
To public open spaces.
To be planted as 14-16cm, 3xtr, wrb, 4-4.5m high, 2m clear stem. To be of the following species:

Ah - Aesculus hippocastanum (Horse Chestnut)
Fs - Fagus sylvatica (Beech)
Qb - Quercus rubra (Red Oak)
Qr - Quercus robur (Oak)
Tp - *Tilia platyphyllos* (Lime)

Medium Sized Street Tree Planting
To be planted as 10-12cm girth specimens with underground guying support. To be selected from following:

Ag - Alnus glutinosa 'Imperialis' (Alder)
Bp - Betula pendula (Birch)
Bc - Betula costata (Birch)
Cb - Carpinus betulus 'Franz Fontaine' (Hornbeam)
Cc - Corylus colurna (Hazel)
Pc - Pyrus chanticleer (Ornamental Pear)

Native Hedgerow Woodland Mix
To be planted as 20% 6-8cm half standards and 80% transplants. To be of the following species :

Crataegus monogyna
Prunus spinosa (Blackthorn)
Ilex aquifolium (Holly)
Fraxinus excelsior (Ash)
Corylus avellana (Hazel)
Sambucus nigra (Elder)

Formal Hedge Planting
To be selected from following:
(planted @450mm in double staggered row)

Carpinus betulus
Fagus sylvatica
Prunus lusitanica

Ornamental Planting
To be selected from following:

Shrub Planting
Abelia x grandiflora
Buxus sempervirens (Box)
Cistus x hybridus (Rock Rose)
Cornus alba 'Sibirica' (Red Barked Dogwood)
Calamagrostis 'Karl Foerster'
Hypericum 'Hidcote' (St Johns Wort)
Ilex aquifolium (Holly)
Ligustrum japonicum (Japanise Privet)
Ligustrum vulgare (Common Privet)
Mahonia x media
Prunus lusitanica (Portugese Laurel)
Prunus laurocerasus (Common Laurel)
Stipa gigantea

Groundcover + Grasses
Carex testacea
Hedera helix 'Hibernica' (Ivy)
Lavandula stoechas (Lavender)
Libertia formosa
Lonicera pileata (Honeysuckle)
Lonicera nitida 'Maigreen' (Honeysuckle)
Luzula nivea (Snowy Woodrush)
Molinia caerulea (Purple Moor Grass)
Persicaria affinis 'Superba'
Stipa calamagrostis
Stipa tenuissima
Vinca minor(Periwinkle)

Herbaceous Plants
Allium spp.
Anemone japonica 'Honorine Jobert' (Windflower)
Crocosmia 'Lucifer' (Montbretia)
Ligularia 'Przewalskii'
Rudbeckia fulgida 'Goldsturm' (Black Eyed Susan)

2.13 Materials

Fig 13 - Exposed aggregate concrete footpaths

Fig 14 - Hardwood and concrete street furniture

Fig 15 –Stone Paving, Silver Granite Slabs, Flamed finish

Fig 16 – Ballylusk Gravel

Appendix 1

Landscape Works and Maintenance Specification

1.0 EARTHWORKS SPECIFICATION

1.1 STRIPPING AND STORAGE OF TOPSOIL

1.1.1 Weather and Soil Conditions

All work involving topsoil shall not be carried out, unless the engineer permits otherwise;

a) where areas have been exposed to a cumulative rainfall exceeding 60mm over the preceding 28 days measured at a point approved by the engineer; or
b) where moisture content is wetter than the Plastic Limit (PL) of the soil less 3%. The PL of the soil can be assessed in the field as the minimum moisture content at which the soil can be rolled and moulded into a thin thread approximately 3mm in diameter without breaking or cracking and in a laboratory according to BS 1377:Part 2.
c) when heavy rain is falling.

Topsoil shall not be stripped, excavated or worked in way when frozen or waterlogged.

1.1.2 Stripping

Prior to stripping existing, all vegetation will be cut to a maximum height of 100mm and sprayed with an approved systemic herbicide.

Existing topsoil to a maximum depth of 150mm shall be stripped from all areas liable to disturbance of any kind including building works, all temporary access routes, underground services, permanent mounding areas, ponds, compounds and storage areas.

Do not run machinery over ground before stripping. Strip the full depth of the sod and topsoil, but avoid extending the stripping into the subsoil layers. Doubling handling/working of all material shall be avoided.

1.1.3 Stockpiles

Stockpiles shall be kept as low as possible, and shall not exceed 1.5m metres in height. Avoid running machinery over stockpiles, if this is compatible with the operation of the machines employed. In all cases, minimise the running of machinery over stockpiles. Do not compact them. In formation of stockpiles, soil should be loosely dumped and stockpiles should be shaped to shed water. Any temporary stockpiles, made before loading, shall not exceed 1.5 metres in height. Do not run machinery over the surface of stockpiles.

Stockpiles shall be located on dry, free draining ground, not subject to temporary standing water. If water ponds against the stockpile, temporary drains shall be cut to relieve it.

Topsoil stockpiles shall not be covered or contaminated by subsoil, rock, rubble, remains of trees, site debris, fuel or chemical pollution. Any contaminated soil stripped from the site shall not be incorporated into the stockpile. Where space is short, or where there is any risk of contamination or of topsoil and subsoil stockpiles intermingling, the topsoil stockpile shall be surrounded with a temporary fence.

Temporary yards or hardstandings, or any area where fuel or chemicals are stored shall not drain towards topsoil stockpiles.

1.1.4 Maintenance of Topsoil Stockpiles

Stockpiles of One Year's Duration or less: Treat growing weeds with 'Roundup' applied to manufacturer's recommendation and to the approval of the Engineer, diluted and applied in accordance with the manufacturers recommendations for the equipment used, when they are growing strongly. Noxious weeds (Docks, Thistle, and Ragwort) shall be treated before they flower.

Stockpiles of up to Two Year's Duration: Roughly grade top and slopes of topsoil to reasonably even slopes (no flat areas). Sow Italian Ryegrass at 50 kg. per hectare as a temporary grass cover. Control noxious weeds (Docks, Thistle, Ragwort) with a proprietary selective weedkiller such as 'Bandock', diluted and applied in accordance with the manufacturer's instructions for the equipment in use, when they are growing strongly.

1.2 SPREADING OF TOPSOIL

1.21 Decompaction

Prior to subsoiling or topsoiling all disturbed areas (excluding engineered slopes) shall be decompacted using a back-actor of a 'Hymac' to a depth of 450mm and only during dry weather conditions.

1.2.2 Subsoil Formation

Formation levels shall allow for the following depth of Class 5A topsoil, after settlement and cultivations:-

Grass Areas:	200 mm.
Shrub Planting	350 mm

Make up excessive depth with subsoil material before topsoiling. This material shall be clean subsoil (soil layer extending between the natural topsoil and the parent material), free draining, free from rubbish, building contamination, large stones/rocks greater than 250mm. Subsoiling operations shall be carried out in layers with each layer being lightly consolidated with a maximum depth of 250-300mm per layer.

Allow for topsoil to stand 30 mm proud of all kerbs, paths, edgings and manhole covers etc.

1.2.3 Topsoil - General

Topsoil for use in all landscape areas shall be subject to the inspection and approval of the landscape architect before spreading.

Topsoil will be premium grade topsoil of high intrinsic fertility, loamy texture and good structure and shall conform to BS3882. It shall be free from pernicious weeds including dock, thistle, stinging nettle, ragwort and couch grass. It shall not have been compacted and shall not be in an inert state.

It shall be acidic, pH 5.5-6.5 and free from stones over 50mm in diameter. It shall be free from subsoil, sods, roots of trees and shrubs, plastics, metals, paper, brick, concrete or any other foreign object. Topsoil shall be from the original surface layer of grassland or cultivated land, to a maximum depth of 200 mm. Soils from woodland, heathland, bog or contaminated land will not be acceptable. Do not strip from under the canopy of any tree, nor closer than 4 metres to a hedge.

The organic content shall not be less than 5% (dry weight). Where the soil contains more than 60% sand, the organic matter shall not be less than 6% (dry weight).

1.2.4 Topsoiling

Topsoil shall not be spread over any area of the site indicated until preliminary ripping operations are complete. Once the topsoil has been spread, **no access** will be allowed for construction plant and machinery. Site preparation and soiling operations shall take place only in suitable dry site and weather conditions.

Final grading is to be carried out to ensure a true specified level and slope and to avoid dishing or other depressions where water may collect.

The use of a heavy roller to roll out humps will not be permitted and any area that becomes unduly compacted during the grading operations shall be loosened by forcing or harrowing.
The level of the topsoil is to be at least 30 mm above all paved areas to allow for shrinkage or settlement.

Finished Levels

Localised hollows and mounds are to be levelled out and areas so finished that they drain to hard standing areas or elsewhere as indicated.

1.2.5 Topsoil for Tree Pits

Planting pits for standard trees will be dug and backfilled with Class 5B topsoil. Volume of topsoil to be as follows:-

Extra Heavy Standard Trees	1.2 cubic metres
Standard Standard Trees	1.0 cubic metres

1.2.6 Reinstatement Work

Reinstate all ground driven over and otherwise disturbed to even flowing gradients. Match reinstated levels to those of surrounding ground. Finished levels shall be free of humps, depressions and vehicle tracks. Rainwater shall not lie on reinstated ground nor on adjacent areas.

2.0 PLANTING SPECIFICATION

2.1 Materials

All plant material shall be good quality nursery stock, free from fungal, bacterial or viral infection, Aphis, Red Spider or other insect pest, and physical damage. It shall comply with the requirements of Part 1: 1965 Trees and Shrubs section of B.S. 3936, Specification for Nursery Stock.

All plants shall have been nursery grown in accordance with good practice and shall be supplied through the normal channels of the wholesale nursery trade. They shall have the habit of growth that is normal for the species.

Except for any cultivated varieties or exotic species which do not set viable seed in Ireland, all plants shall have been grown from seed.

2.2 Species

All plants supplied shall be exactly true to name as shown in the plant schedules. Unless stipulated, varieties with variegated or otherwise coloured leaves will not be accepted, and any plant found to be of this type upon leafing out shall be replaced

Bundles of plants shall be marked in conformity with the relevant part of B.S. 3936. Replace any plants that are found not to conform to the labels. An inspection of plants shall be undertaken prior to planting to ensure quality control.

2.3 Trees

Selected standard trees shall have a minimum girth as specified at 1.00 mm above ground level, a clear stem to 1.8m high and a total height of 3.0 to 3.5 metres.

Selected standard trees shall have a minimum girth as specified at 1.00 mm above ground level, a clear stem to 2.0m high and a total height of 4.0 to 4.5 metres.

Trees shal have a sturdy, reasonably straight stem, a well defined and upright central leader, with branches growing out of the stem with reasonable symmetry, or a well balanced branching head according to the Schedule. The crown and root systems shall be well formed and in keeping with the nature of the species. Roots shall be in reasonable balance with the crown and shall be conducive to successful transplantation.

Trees shall be supplied rootballed unless otherwise scheduled. All trees shall have been regularly undercut or transplanted. Root balled trees shall be supplied with a rootball made from a mechanical 'Damcon' undercutter or similar approved, shall be 90cm diameter, wrapped in bio-degradable burlap and tightened with a 90cm diameter tempered steel root ball cage.

Bare root trees shall have been lifted carefully to avoid tearing of major roots and to preserve a substantial proportion of smaller and fibrous roots. Trees shall have been grown on their own roots. Budded or grafted trees will be rejected.

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2.4 Shrubs

Shrubs shall be of the minimum size specified in the schedules, with several stems originating from or near ground level and of reasonable bushiness, healthy, well grown, and with a good root system. Pots or containers shall be as scheduled. Plants shall not be pot bound, nor with roots deformed or restricted. Bare root material will only be accepted where specified.

2.5 Herbicides

All herbicides will be approved under current regulations and proof of compliance provided where requested by the Landscape Architect

2.6 Weedkiller Application

All weedkiller shall be applied with properly designed equipment, maintained in good working order and calibrated to deliver the specified volume, evenly and without local over-dosing. Measure all quantities of weedkiller with a graduated measuring vessel.

2.7 Bulky Organic Manure/ Mushroom Compost

Bulky organic manure shall consist either of spent peat compost, mushroom compost, as described above, spent hops, or of well rotted farm manure. Farm manure shall consist of predominantly of faecal matter and shall be free of loose, dry straw and of undigested hay. Manure shall be free of surplus liquid effluent. This shall be used on mounds only. Well spent mushroom compost shall be used in all ornamental planting areas.

2.8 Fertilisers

Controlled release fertiliser N:P:K 15:9:11 plus trace elements - Osmocote plus or similar approved applied at specified rates. Fertiliser shall be supplied in sealed bags or containers bearing the manufacturer's name, the net weight and analysis.

2.9 Stakes for Extra heavy Standard Trees

Stakes shall be of peeled Larch, Pine or Douglas Fir, preserved with water-borne copper-chrome-arsenic to I.S. 131, to a net dry salt retention of 5.3 kg per cubic metre of timber. Stakes shall be turned, and painted one end. Size shall be 2700 x 75 mm diameter.

Set stakes vertically in the pit and drive before planting. Drive stake with a drive-all, wooden maul or cast-iron headed mell, not with a sledgehammer.

2.10 Tree Ties

Tree ties shall be of rubber, P.V.C. or proprietary fabric laminate composition, and shall be strong and durable enough to hold the tree securely in all weather conditions for a period of three years. They shall be flexible enough to allow proper tightening of the tie.
Ties shall be min. 40 min. wide for standard trees. Provide a simple collar, free of rough or serrated edges, to prevent chafing. Provide for subsequent adjustment of the tie either by means of a buckle (nail tie to stake immediately behind it) or by leaving heads of securing nails slightly proud, to permit easy extraction and repositioning. All nails shall be galvanised.

2.11 Protection

The interval between the lifting of stock at the nursery and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting planting on site shall be stored in a sheltered place protected from wind and frost, from drying out and from pilfering. Bare rooted plants not immediately required shall be heeled-in in a prepared trench, the bundles of plants first having being opened, the plants separated and each group separately heeled-in and clearly labelled. The roots shall be covered with moist peat or soil and shall be kept moist until planted. Pots shall not be removed until plants have been carried to their planting station. Plants packed in polythene must be stored in shade.

All forest transplants and bare root shrubs shall be wrapped in polythene from the time of lifting to conserve moisture. Except when heeled-in, they shall be protected in polythene at all times until planted into their final position on site.

Plants shall be handled with care at all times, including lifting in and despatch from the nursery. Plants or bundles of plants shall not be tossed, dropped of subjected to any stress likely to break fine roots.

2.12 Damage

Any roots damaged during lifting or transport shall be pruned to sound growth before planting. On completion of planting any broken branches shall be pruned.

2.13 Vine Weevil

Line out all container grown plants on level ground. Drench pots with 40 g of 40% Diazinon W.P. in 100 litres water. Allow to stand for at least three days before planting.

2.14 Setting Out

Setting out shall be from figured dimensions where indicated, and otherwise by scaling.

Shrubs and ground covers planted in mass shall be at the spacing indicated on the drawings. Shrubs shall not generally be planted closer to a kerb or to the edge of a planting area than a distance equal to half the spacing indicated for that species.

2.15 Site Preparation

Preliminary Weedkilling: 'Roundup' @ 5.0 litres per hectare, in water @ 200 litres per hectare, and application pressure not exceeding 2 bars.

Shrub Planting: Weedkill. Spread over all planting areas: -

Organic Manure:	50 mm deep
Osmocote plus:	75 gm/msq

Cultivate beds 225 mm deep, incorporating ameliorants evenly. Remove stones, rubbish over 50 mm dia.

2.16 Extra Heavy + Select Standard Tree Planting

Excavate tree pits to 1.2 cubic metres volume (1.2 m diameter x 1.0 m deep). The base of the pit shall be broken up to a depth of 15 cm and glazed sides roughened. Supply and drive 2nr stakes.

For planting in areas of made up ground, load and carry topsoil from stockpile on site. In undisturbed ground, backfill with excavated material. Mix the following ameliorants evenly throughout the topsoil while it is stacked beside the pit. (Quantities are calculated for a pit of the specified dimensions):-

Soil ameliorant:	0.047 cubic m (equivalent to manure 6 cm deep over 1 m dia. of tree pit).
Osmocote plus:	250 gm

Trees shall be planted at the same depth as in nursery, as indicated by the soil mark on the stem of the trees. They shall be centred in the planting pit and planting upright. The roots shall be spread to take up their normal disposition. Fit tie.

2.17 Planting of Shrubs and C.G. Transplants

Remove all plastic and non-degradable wrappings and containers before planting. Make four vertical cuts with a sharp knife on the quadrants through the edge of C.G. rootballs to sever girdling roots. Excavate hole to min. 10 cm greater diameter than the root spread, and to a depth to allow planting to same depth as in the nursery. Spread out roots of bare root species. Backfill in layers of not more than 10 cm, firming each layer and on completion.

2.18 Replacements

The planting will be inspected in April and September following planting (refer to implementation programme). Any tree or shrub found to have died from any cause shall be replaced. Replacement planting shall conform in all respects with this Specification, including all specified excavation, provision and incorporation of all fertilizers and ameliorants, and weedkiller treatments.

3.0 MAINTENANCE SPECIFICATION

3.1 Performance Standards (Detailed at end of Aftercare Section)

General

Woodland Planting

Noxious weeds (Dock, Thistle, Ragwort) shall not be allowed to establish.

Stone or debris over 50 mm diameter shall be removed or buried at each visit.

Tree stakes, ties and any tree shelters shall be secure and correctly adjusted.

Weeds shall not exceed 150 mm in height and all weeds shall be killed at each aftercare visit.

Trees

Weed-free circles around trees shall be 1000 mm diameter in grass areas.

Weeds shall not cover more than 10% of each circle at any time after the first scheduled weedkilling.

All weeds in the circles shall be killed at each aftercare visit.

Weeds shall not exceed 100 mm in height at any stage.

Hedges

Weed free band 750 mm wide along hedge, with hedge in the centre of the band. Include the bottom of any adjacent fence.

Weeds shall not exceed 100 mm in height and all weeds shall be killed or removed at each visit.

Shrubs and Ground Covers

Soil surfaces shall be generally free of weeds at all times and, on the Critical Dates shall be entirely free of all weeds.

No encroaching grass in soil area.

All Plants

Shall be alive, healthy, free of minor defects and free of weedkiller or cultivation damage.

Planting areas shall be free of litter and debris from weeding, cultivation or pruning.

Mulches, where present, shall be maintained in continuous cover.

3.2 Inspections

The Landscape Architect will inspect the works on each critical date, or as soon as possible thereafter.

3.3 Weedkilling

Weedkillers and their application shall be as specified under 'Planting' above.

Protect foliage of all plants during applications of a non-selective foliar-acting herbicide with an 'Arboguard', 'Politec' guard, or equivalent to the satisfaction of the Architect. No plant, foliage or stem, shall be directed sprayed, even in winter. Take particular care when using Glyphosate.

3.4 Weed Control in Shrubs and in Hedges

Weed shall be controlled by a combination of hand weeding and herbicide application. If foliar-acting weedkillers are applied, all plants shall be protected during their application, as specified. **No residual herbicides shall be used in the first season after planting**.

3.5 Weeding

Remove weeds by surface hoeing and pulling. Dig out all roots of deeply rooted or noxious species. Remove all weeds from site each day and dispose. Make good disturbance to mulch.

3.6 Watering

All trees, hedges, shrubs, ground-cover, herbaceous and annual bedding will be watered asnecessitated by dry weather. Apply water as a fine spray, to moisten full depth of root run. Avoid washing or compaction of the soil surface.

3.7 Firming

Firm any plant loosened by frost, wind or cultivation.

3.8 Pruning

Any shoot damaged or found to be dying back on a periodic visit shall be cut back neatly to sound growth with a sharp pruning knife. Prune off wind-damaged shoots to sound growth.

3.9 Fertilizer: Trees and Shrubs

Osmocote 18:11:10, applied @ 50 g/sq.m., and lightly raked in through mulches.

3.10 Hypericum Rust

Apply 'Bayleton 5' in accordance with manufacturers instructions.

3.11 Grass Mowing

Mowing shall be carried out with machines in good repair, sharp and evenly set, avoiding laying or pulling of the grass.

Mowing shall be carried out in dry conditions.

Mow swards evenly. At each visit, mow all areas of equivalent standard at the time, to ensure an even appearance and finish. Include for completion of each cut around obstacles. Leave grass cuttings evenly spread. Sweep up mowings on hard surfaces and remove from site

3.12 Selective Weedkiller: Clover

All herbicides will be approved under current regulations and proof of compliance provided where requested by the Landscape Architect

3.13 Fertilizer: Grass

10:10:20. Apply in two equal passes in transverse directions at a combined rate of 17 g/m. sq. (0.5 oz. per square yard). Avoid any 'banding'.

3.14 Litter

Prior to mowing, remove litter. Remove all litter in all planting when weeding or spraying.

3.15 Defects Arising

Any defect noted at an aftercare visit, e.g. plants loosened by wind, tree shelters fallen or stakes broken, fence wires loose or posts rocking will be remedied before the next inspection visit.

3.16 Pests and Diseases

Any outbreak or build up of insect pest, fungus disease or disorder affecting the plants, or grass shall be notified to the LA as soon as it is noticed.. The Architect shall issue instructions for treatment of the outbreak.

3.17 Vandalism

A provisional sum has been inserted in the schedule of quantities to cover costs of prompt repair and reinstatement of vandal damage.

3.18 Access

Access to the site must be arranged in advance and clearance at security will be required for each visit.

3.19 Protection

Any overhead and underground services shall be protected during works.

Protect paving, roads, kerbs, channels, gullies, walls, fences, structures, furnishings and existing vegetation during the course of his works. Include where necessary temporary coverings, planked barrow runs, etc. Clean mud and soil of all hard surfaces and surroundings to the work.

3.20 Tidiness and Clearance

All areas of work and access routes shall be kept in a tidy condition. All areas of the site will remain in use by the public and/or building users during the course of the contract. Clean all debris from beds and surrounding surfaces daily during his visits to site, and at more frequent intervals if necessary for the safety of users of the site.

3.21 Safety

All safety standards will be adhered to.

4. PLANTING PERFORMANCE STANDARDS

4.1 Shrubs - General

The borders must be kept weed free, particularly of perennial weeds, to allow planting to give early cover. However, the plants may be required to be thinned so that the shrubs that are retained are able to achieve an attractive form. This may involve removing the intermediate plants soon after shoots are touching.

4.1.1 Maintenance Objective

Maintain shrub growth to cover as much as possible of the border area and allowing the individual plants to achieve as nearly as possible their natural form. Maintain the borders free of visible weeds and shape and prune the shrubs to avoid obstructing pathways or blocking light to, or adhering to windows.

4.1.2 Maintenance Operations

a) After planting, if appropriate and in season for the species involved, prune shrubs to develop their desirable ornamental characteristics. At the same time remove intermediate plants that are restricting the natural and attractive development of their neighbours. Remove all arisings from site.

b) Lightly cultivate the surface soil, to a depth of approximately 50 mm, remove or bury all annual weed or natural litter and break any surface capping. Take special care to avoid unnecessary damage to the shrub plants and ensure that all the shrubs are firmly bedded in the soil. Leave the surface with a fine and even tilth with soil crumbs of less than 50 mm in diameter. Once a year operation in early winter.
Note: This operation is only essential where the soil is compacted or as a means of incorporating mulch. Not required where the areas are mulched.

c) Maintain the soil surface substantially free of weeds (less than 10 per cent weed cover) by hand removal and spot treating with Glyphosate, or approved equivalent. Spot treatment at approximately four-weekly intervals in the main growing season, to a total of five times per season.

Note: As an alternative the borders can be regularly hand-hoed at up to two-weekly intervals in the main growing season, to 6 times per year. This procedure is recommended for the first year after planting when the plants may be more sensitive to contact herbicide damage and residual herbicides may not be used.

d) Immediately after planting or, when and where subsequently directed, mulch the surface of the border with a 50 mm layer of pulverised bark (maximum particle size 40 mm), or other approved equivalent. Thereafter, top dress the mulch as necessary and at least once a year to maintain effective cover. Spot treat or remove any emergent weeds as specified in c) above but do not cultivate or incorporate the mulch into the soil.

4.2 Ground Cover - General

Described as dense, low-growing plants, which cover the ground and smother any weeds. Ground-cover needs careful establishment, to ensure that any perennial weeds are eliminated.

4.2.1 Maintenance Objective

Maintain a dense, weed free cover of healthy growth, clipped or pruned as necessary to give a neat and tidy finish and contained within the planted area.

4.2.2 Maintenance Operations

a) Maintain the area substantially free of weeds (less than 10 per cent of weed cover at maximum) by hand removal or spot treating any emergent weeds during the growing season with Glyphosate, or approved equivalent. Spot treatment or weed removal at approximately four-weekly intervals in the main growing season, to 5 times per year in total. Frequency of sprays to drop, as the plants establish.

b) Trim and tidy the plants once a year in the winter months, to remove dead vegetation or overgrowing branches. Remove all arisings from site. The amount of work will vary according to the species.

4.4 Care of Newly Planted Trees - General

Young trees will need regular attention to ensure establishment. Either guards or fencing have been used to protect the plant against rabbits, etc. The most important operation is to keep the soil around the base of the tree free from weeds or grass and to ensure secure and correct staking.

4.4.1 Maintenance Objective

Establish a stable and healthily growing tree with a well-shaped framework for future growth.

4.4.2 Maintenance Operations

a) Maintain a 1 m diameter circle of plant-free soil around the base of each isolated tree by hoeing *or* the use of approved herbicide other than a residual.

Allow for hoeing up of soil once every 4 weeks in the growing season (5 times per year). Allow for herbicide treatment once in the winter or spring and 3 additional treatments.

Note: In some areas this operation may be replaced by the application of bark mulch as ground cover.

b) Cut back any tall vegetation that is threatening to shade or smother the young tree (i.e. taller vegetation growing from outside the 1 m weed free area). Allow for cutting back regularly (3/4 times a year).

c) Water the newly planted trees throughout the summer months (May to August) as required after any period of 4 weeks without significant rainfall (less than 5 mm). Apply sufficient water to thoroughly wet the top 150 mm of soil around the tree roots. This will normally require approximately 10 litres for a seedling or whip and 20 litres for a standard tree.

d) Check stakes and ties for firmness and support and adjust as necessary. Allow for checking twice a year, preferably in late spring and late summer.

e) Firm the soil around the roots to ensure that the plant is securely planted in the ground and upright. Allow for firming once in the spring after planting.

f) Formative prune to remove any dead, diseased or damaged shoots and create a balanced form for future growth. Allow for pruning once in the season after planting.