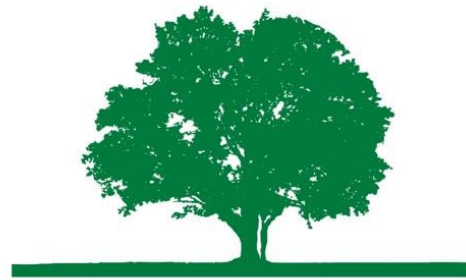


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John Morris Arboricultural Consultancy

Tree Risk Management

Trees, Planning & Development

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Arboricultural Clerk of Works

Government Support

Client: Glenveagh Living Limited
Site: Ballymastone - Phase 3
Donabate

Date: 2nd October 2025
Ref: 25-635-04
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**ARBORICULTURAL
IMPACT ASSESSMENT &
METHOD STATEMENTS –
PLANNING STAGE**



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Purpose of Document

This report provides an assessment of trees on land at Ballymastone Phase 3 in accordance with BS5837:2012 *Trees in relation to design, demolition and construction – Recommendations*.

It provides an overview of the constraints and opportunities posed by existing trees and hedgerows on or within influencing distance of the site and assesses the impacts of the proposed development on these features.

It includes:

- A **Tree Schedule** that provides information for each tree;
- A **Tree Constraints Plan** that illustrates the location and constraints posed by trees;
- An **Arboricultural Impact Assessment** that considers the impacts of the proposed development to those trees, including proposals for arboricultural mitigation and improvements;
- **Arboricultural Method Statements** that outlines how retained trees will be protected during construction, and;
- A **Planning Stage Tree Impact & Protection Plan** that illustrates the impact of the proposal upon trees and protection measures that should be adopted during construction.

The information contained within this report is intended to allow Fingal County Council to assess tree and hedgerow related issues associated with the development proposal.

Executive Summary

The proposed development will consist of the construction of a residential development, which represents Phase 3 of the wider development of the Ballymastone Lands, ranging in height from 2- to 6-storeys, to accommodate 398 no. residential dwellings (including a mix of apartments, duplexes and houses), private amenity space, a crèche (c. 646sq.m), and a community space (c. 100sq.m). The site will accommodate 316 no. car parking spaces in total (comprised of 288 no. residential spaces, 10 no. spaces for the proposed crèche/community space, 6 no. EV charging spaces including accessible spaces, and 12 no. spaces ducted for future provision), 1,619 total no. bicycle parking spaces, new pedestrian/cycle links, road improvements, storage, services (including water, wastewater, electricity and telecommunications) and plant areas. Landscaping will include communal amenity areas, SuDS features, and significant public open space (c. 15.3% of the net site) including outdoor exercise and play equipment.

The proposed works will require part removal of two hedgerows (H64 & H134), part removal one self-sown tree group comprising hawthorn and elder (G192), removal of one small tree group comprising self-sown sycamore, ash and hawthorn (G89) and removal of two wych elm trees self-sown from a woodland fringe (169 & 170). Pruning will be required to tree canopies along a woodland fringe (W191) to provide clearance over public open space.

The scheme has been designed to retain and protect as many trees and hedgerows across the site as

which provides high public visual amenity in the local streetscape and a mature woodland strip between the site and neighbouring residential dwellings at Priory Wood, which provides high public visual amenity, ecological value, green connectivity around the boundary to an adjoining woodland and mature canopy cover in the local landscape.

The aim has been to include those arboricultural features capable of providing a substantial future contribution, in terms of their amenity, landscape and ecological value, and those that contribute to the existing landscape character of the local area. In particular, the incorporation, preservation and rejuvenation of hedgerows in recognition of the importance they hold in the local landscape in terms of ecological connectivity and visual amenity has been a principal concept of the design layout.

The requirement for access points to enable connectivity and movement around the new built environment will result in the loss of some trees and areas of hedgerow. The extent and frequency of these removals is limited to that which is necessary to enable the development to function holistically. A large proportion of hedgerows across the site have been retained and incorporated into the design layout, particularly those around the boundary and those that provide direct connections to trees, woodland and hedgerows in the wider landscape in recognition of their ecological importance.

To mitigate the removal of trees and areas of hedgerows, it is proposed to a diverse mix of new trees and vegetation across the site to function in harmony with the existing natural infrastructure and new built environment. This new planting includes a diverse mix and age of predominantly native trees and vegetation, with the overall aim being to increase species diversity and improve canopy cover in the local landscape. The location of the planting has been strategically positioned to enhance and complement existing hedgerows and provide connectivity to trees, woodlands and hedgerows in the wider local landscape for visual amenity and ecological value. This approach will ensure that replacement trees and hedgerows provide an immediate positive impact, and that over the long term, the benefits provided by these features will offer an improvement and net gain in canopy cover on the pre-development baseline.

The overall aim has been to ensure the design and layout of the site has been influenced by local planning policy in relation to trees, as detailed in The Fingal Development Plan (2023-2029), Donabate Local Area Plan (2016- 2022) (Extended) and The Forest of Fingal – A Tree Strategy for Fingal’.

The following measures are required to ensure the protection of retained trees and hedgerows during construction:

- Tree Protective Fencing
- Construction Exclusion Zones
- Specialist Methods of Working
- ‘No-Dig’ Permanent Ground Protection
- Pollution Control
- Arboricultural Site Supervision & Monitoring

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ATTACHMENTS

DOCUMENT TITLE	DOCUMENT REFERENCE
TREE SCHEDULE	25-635-01
TREE CONSTRAINTS PLAN	25-635-02
TREE IMPACT & PROTECTION PLAN	25-635-03

1. INTRODUCTION

Instruction

- 1.1. Instruction was received from Glenveagh Living Limited on 18th May 2022 to prepare an arboricultural report in connection with a proposed Large-scale Residential Development (LRD) at Ballymastone Phase 3.

Scope

- 1.2. The survey has been carried out in accordance with BS5837:2012 *Trees in relation to design, demolition and construction – Recommendations*. The information collected during the survey has been used in the preparation of a report for submission with a planning application.

Site

- 1.3. The site is located at Ballymastone in Donabate, Co. Dublin (hereinafter referred to as ‘the Site’).
- 1.4. The subject lands are primarily undeveloped in nature. The site is bounded by existing residential neighbourhood of The Links and Donabate Burial Ground and the residential neighbourhood of Priory Wood to the north and north west, the R126 to the east Ballymastone Phases 1 & 2 currently under construction to the south.

2. TREE SURVEY

Site Visit

- 2.1. The original tree and hedgerow survey was undertaken on 2nd and 3rd December 2019. Further surveys were undertaken on 23rd October 2021 and 6th June 2023. The most recent survey was undertaken on 10th September 2025, the findings of which form the basis of this report.
- 2.2. Details of the survey methodology and assessment criteria can be found in Appendix 1.
- 2.3. A copy of the survey data can be found in the Tree Schedule (Ref: 25-635-01) attached to this report.
- 2.4. The extent of the tree survey has been marked on the Tree Constraints Plan (Ref: 25-635-02) attached to this report.
- 2.5. The tree survey considered all trees that have the potential to be impacted by any development proposal including those outside the application area, but within influencing distance.
- 2.6. The above ground constraints posed by canopy spread are plotted as a continuous line around the tree and shaded in the corresponding BS5837 retention category colour, whilst the below ground constraints posed by the Root Protection Area (RPA) have been plotted as a continuous magenta line with the text RPA inscribed.
- 2.7. The purpose of the tree survey was to provide guidance to the design team on the constraints and opportunities posed by trees and hedgerows, to inform the design and layout of the Site.
- 2.8. The results of the survey allow the opportunity to balance the retention of significant trees and hedgerows against the opportunity to enhance the existing tree stock through proactive management.

Description of Trees and Hedgerows

- 2.9. Mixed species hedgerows extend around the boundary and within the Site. The most common hedgerows are those growing either side of field ditches, typical in nature of agricultural hedgerows to provide stock proof boundaries, compartmentalise land for growing crops and offer shelter and drainage to help reduce soil erosion. These hedgerows are common features in the local area and provide visual amenity in the local landscape, enclosure and privacy to the Site and offer ecological value in terms of green corridors and connectivity to surrounding trees and hedgerows in the wider local landscape.
- 2.10. The hedgerows comprise native species such as hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*), elm (*Ulmus minor*), goat willow (*Salix caprea*), dog rose (*Rosa canina*) and spindle (*Euonymus europaeus*). Their condition varies across the Site from moderate quality with high density and species diversity to low quality with gaps, sparse understoreys/ground cover that are overcome with bramble and ivy, with little in terms of species diversity.
- 2.11. Ash trees are growing from hedgerows, which vary in health and condition, with a large proportion infected with Ash Dieback (*Hymenoscyphus fraxineus*). This fungal disease is spread by airborne spores that infect trees via leaves and smaller shoots, causing disruption to the vascular system and preventing the distribution of water and nutrients. As the disease becomes established, it results in leaf dieback, bark lesions, crown dieback and at advance stages, stem and whole tree failure. These trees will require ongoing monitoring to determine the appropriate course of management going forward. It is likely that after each season, the disease will progress and felling of trees will be required to prevent injury to site personnel or damage to property. Any future interventions relating to Ash Dieback should be taken in accordance with industry best practice in relation to management of Ash Dieback, including the Tree Council 'Ash Dieback Disease - A Guide for Tree Owners' and Arboricultural Association 'Ash Dieback – Practice Guidance'.
- 2.12. A narrow corridor of mature woodland extends along the most north westerly boundary of the site and the existing residential neighbourhood of Priory Wood. This woodland acts as a buffer between Priory Wood and the site. It features a notable assemblage of late-mature specimen trees, including several beech (*Fagus sylvatica*), ash (*Fraxinus excelsior*), and Turkey oak (*Quercus cerris*). Many of these trees display veteran characteristics, such as torn limbs, basal hollowing, and the presence of decay fungi, highlighting their cultural and ecological significance. Additional species within the woodland include younger specimens of sycamore (*Acer pseudoplatanus*) and Wych elm (*Ulmus glabra*), with an understory primarily composed of hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*). In the more open central section, a scattered group of dead elms *Ulmus* sp. is prominent, while evidence of Ash Dieback remains at an early stage for the time being.
- 2.13. Many of the mature specimens exhibit age-related features and of particular note is a mature, prominent Turkey oak in the southeast corner, a veteran ash with numerous fungal brackets, and several mature beech trees. Decay appropriate to their life stage is evident in a number of individuals, and some will require interventions to reduce risk of limb or whole-tree failure. Significant ivy cover is present on the lower stems and primary limbs of many mature trees and

removal is recommended to facilitate thorough visual inspections and to identify any potential structural defects, especially as the site becomes more accessible in the future.

- 2.14. A mature densely planted group of mature Monterey cypress extend along the boundary with Donabate Burial Ground. These trees offer high visual amenity and mature canopy cover in the local streetscape but will require minor interventions including crown reduction and removal of deadwood over the application site.

3. ARBORICULTURAL PRINCIPLES

Trees and Development

- 3.1. Trees provide a multitude of economic, environmental and social benefits to individuals and communities including (but not limited) to visual amenity and landscape value, ecosystem services and habitats for local wildlife. Trees can also hold historic and cultural importance by providing links to the past that create a sense of place and belonging.
- 3.2. They are living, self-optimising, mechanical organisms that grow in and react to the environment in which they are located and are capable of being wounded or infected by objects or other organisms that can cause a decline in health or result in death.
- 3.3. Development proposals that will impact trees should consider the value and contribution made by those trees, the impacts of development activity upon their health and an assessment of future conflicts that may arise between trees and the development proposal.

Below Ground Constraints

- 3.4. Soils contain organic and mineral material, air and water that provides a medium essential for root growth.
- 3.5. The physical properties of soils including texture, porosity and bulk density can greatly impact the availability of water, nutrients and oxygen in the soil available to support the function and growth of tree roots.
- 3.6. Protection of the soil environment in which trees grow is therefore essential to ensure tree vitality.
- 3.7. Tree roots provide support and anchorage and allow the uptake and transport of water, nutrients and oxygen for tree function and growth. Roots are commonly found in the upper 600-1000mm of soil, however depth can vary significantly depending on soil and local site conditions. Typically, tree root systems comprise a network of lateral roots that provide structural support and smaller fibrous roots that function in the uptake of water, nutrients and oxygen.

Impacts of Construction & Development

- 3.8. The processes of construction including the movement of machinery and equipment near trees can cause soil compaction that can starve roots of oxygen and water, resulting in tree decline or death. Increasing ground levels near trees can cause similar impacts, whilst belowground soil excavations can damage root bark or lead to root severance and impair structural stability. Further impacts include (but are not limited to) contamination of soils by toxic substances such

as cement or chemicals and root desiccation due to inadequate protection during exposure.

Root Protection Areas

- 3.9. In accordance with BS5837, the Root Protection Area (RPA) indicates the notional minimum area of ground around a tree deemed to contain sufficient roots and rooting volume to avoid adverse physiological or structural impairment and to support future tree function, growth and health.
- 3.10. The RPA is calculated in accordance with Section 4.6 of BS5837 and is summarised in Appendix 2.
- 3.11. The RPA is plotted as a continuous circle centred on the base of the stem, however where pre-existing site conditions such as the presence of built structures, changes in topography, soil type and structure or past management are likely to act as barriers, or alter normal distribution, BS5837 allows modifications to the shape of the RPA can be made based upon sound arboricultural assessment.
- 3.12. The default position should be that no development works occur inside RPAs, however in accordance with BS5837 when there is an overriding justification, it may be appropriate to implement specialist methods of construction or technical solutions that will reduce or eliminate the impact to roots and soil environments.
- 3.13. Additionally, where an area of RPA is lost, it should be demonstrated that the tree can remain viable with the area lost from encroachment compensated elsewhere contiguous with its RPA, based on the species, age, condition and past management of the tree, pre-existing site conditions and nature of operations proposed is undertaken.

Above Ground Constraints

- 3.14. Tree stems and crowns can restrict the availability of space on a development site that may result in conflicts between trees and the new built environment. The design and layout of a site should take into consideration the presence of tree canopies, as well as individual species characteristics and future growth requirements in order to create a harmonious relationship between trees and the new built environment.

4. PLANNING POLICY, STATUTORY & NON-STATUTORY CONSIDERATIONS

Planning Policy

- 4.1. The National Planning Framework 'Project Ireland 2040' and National Development Plan (2021-2030) underpin planning policy across Ireland. These documents recognise the need to manage future growth in a planned, productive and sustainable way.
- 4.2. At the heart of Green Infrastructure Planning is to protect, preserve and enhance national capital by:

“protecting and valuing important and vulnerable habitats, landscapes, natural heritage and green spaces”.
- 4.3. The Site falls within the jurisdiction of Fingal County Council (FCC), which has a statutory

obligation to ensure that provision is made for the protection of trees, woodlands and hedgerows under the Local Government Planning and Development Act (2000), through implementation of a Development Plan. The current plan for Fingal is the **Fingal Development Plan (2023-2029)**, however the Donabate Local Area Plan (2016-2022) (as Extended) is also understood to be a key consideration in relation to the Site.

- 4.4. The Fingal Development Plan (2023-2029) provides guidance for trees in relation to proposals of development as follows:

Fingal Development Plan 2023-2029

Self-Sustaining Towns Objectives

Objective GI 9 *Protect existing trees, hedgerows, townland boundaries and watercourses which are of amenity, historic or biodiversity value and ensure that proper provision is made for their protection and management in future development proposals in accordance with a Green Infrastructure and Landscape Strategy.*

Objective GI 18 *Ensure trees, hedgerows and other features which demarcate townland boundaries are preserved and incorporated into the design of developments.*

Objective GI 19 *Protect, preserve and ensure the effective management of trees and groups of trees.*

Objective GI 20 *Implement a scheme of tree and hedgerow protection measures, in compliance with British Standard 5837 (2012), Trees in Relation to Design, Demolition and Construction to Construction – Recommendations’ and in agreement with Fingal County Council, prior to commencement of development. The scheme of protection measures to be maintained in place until effective completion of all construction works.*

Community Infrastructure and Open Space

Objective CIO52 - Trees *Protect, preserve and ensure the effective management of trees and groups of trees.*

Policy GINHP21 Protection of Trees and Hedgerows *Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/ or contribute to landscape character and ensure that proper provision is made for their protection and management in line with the adopted Forest of Fingal-A Tree Strategy for Fingal.*

Policy GINHP22 Tree Planting *Provide for appropriate protection of trees and hedgerows, recognising their value to our natural heritage, biodiversity and climate action and encourage tree planting in appropriate locations.*

Objective GINHO46 Tree Removal *Ensure adequate justification for tree removal in new developments and open space management and require documentation and*

recording of the reasons where tree felling is proposed and avoid removal of trees without justification.

Green Infrastructure and Natural Heritage

Objective DMSO125 *Management of Trees and Hedgerows Protect, preserve and ensure the effective management of trees and groups of trees and hedgerows.*

Objective DMSO126 *Protection of Trees and Hedgerows during Development Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with BS5837 2012 Trees in relation to the Design, Demolition and Construction – Recommendations or as may be updated and are monitored by the appointed arboriculture consultant.*

Objective DMSO128 *Demarcation of Townland Boundaries Ensure trees, hedgerows and other features which demarcate townland boundaries are preserved and incorporated where appropriate into the design of developments.*

Objective DMSO140 *Protection of Existing Landscape Protect existing landscape features such as scrub, woodland, large trees, hedgerows, meadows, ponds and wetlands which are of biodiversity or amenity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management.*

Forest of Fingal

- 4.5. 'The Forest of Fingal – A Tree Strategy for Fingal' is also a key consideration where trees are impacted by proposals of development.
- 4.6. The Fingal Development Plan (2023-2029), Donabate Local Area Plan 2016-2022 (as Extended) and 'The Forest of Fingal – A Tree Strategy for Fingal' have formed the basis of the design layout by ensuring that important trees and hedgerows have been considered and incorporated in the layout where possible.

Tree Preservation Orders & Conservation Areas

- 4.7. Tree Preservation Orders (TPOs) may be made under Section 45 of the Local Government (Planning and Development) Act, 1963 and subsequent acts. Part XIII of the Planning and Development Act 2000 sets out the provisions for TPOs. A TPO can be made if it appears to the planning authority to be desirable and appropriate in the interest of amenity or the environment. A TPO can apply to a tree, trees, group of trees or woodland.
- 4.8. The principle effect of a TPO is to prohibit the cutting down, topping, lopping or wilful destruction of trees without the planning authority's consent. The order can also require the owner and occupier of the land subject to the order to enter into an agreement with the planning authority to ensure the proper management of the tree, trees or woodland.
- 4.9. A review of the FCC website did not allow a search for TPOs to be conducted, to ascertain if any TPOs exist upon the Site.

Special Amenity Area Orders

- 4.10. A National Special Amenity Area is a designation for a landscape of national importance for its aesthetic/recreational value.
- 4.11. Planning authorities are empowered (under section 202 of the Planning and Development Act 2000), to make a Special Amenity Area Order (SAAO) for reasons of outstanding natural beauty or its special recreational value and having regard to any benefits for nature conservation. The purpose is to preserve/enhance landscape character and to prevent/limit development.
- 4.12. A review of the Fingal County Council Development Plan (2023-2029) indicates that the application site is not within the Howth or Liffey Valley SAAO.

Felling Licences

- 4.13. It is an offence for any person to uproot or cut down any tree unless the owner has obtained permission in the form of a felling licence from the Forest Service, with the exception of the following scenarios (under section 19 of the Forestry Act 2014):
 - A tree in an urban area. (An urban area is an area that is comprised of a city, town or borough specified in Part 2 of Schedule 5 and in Schedule 6 of the Local Government Act 2001, before the enactment of the Local Government Reform Act 2014 (this act dissolved Town Councils, however, the old boundaries of these areas are still considered as urban for the purpose of the Forestry Act 2014).
 - A tree within 30 metres of a building (other than a wall or temporary structure) but excluding any building built after the trees were planted.
 - A tree less than 5 years of age that came about through natural regeneration and removed from a field as part of the normal maintenance of agricultural land (but not where the tree is standing in a hedgerow).
 - A tree uprooted in a nursery for the purpose of transplantation.
 - A tree of the willow or poplar species planted and maintained solely for fuel under a
 - short rotation coppice.
 - A tree outside a forest within 10 metres of a public road and which, in the opinion of the owner (being an opinion formed on reasonable grounds), is dangerous to persons using the public road on account of its age or condition.
 - A tree outside a forest, the removal of which is specified in a grant of planning permission, providing it was indicated on the lodged plans as being planned for removal as part of the application
 - A tree outside a forest of the hawthorn or blackthorn species growing in a hedge.
 - A tree outside a forest in a hedgerow and felled for the purposes of its trimming the hedge providing that the tree does not exceed 20 centimetres diameter at 1.3 metres above ground level.
 - Agricultural holdings can fell a limited small number of trees not exceeding 3 cubic metres.

- The maximum number of trees permitted to be felled under that exemption per year is 4 trees (12 cubic metres)
- Outside a forest, apple, pear, plum, or damson species are exempt from the need for a felling license.

Wildlife

- 4.14. The cutting or hedges is prohibited during the period 1st April to 31st August every year with limited exceptions under the Wildlife Acts 1976-2008.

5. ARBORICULTURAL IMPACT ASSESSMENT

Development Proposal

- 5.1. The proposed development will consist of the construction of a residential development, which represents Phase 3 of the wider development of the Ballymastone Lands, ranging in height from 2- to 6-storeys, to accommodate 398 no. residential dwellings (including a mix of apartments, duplexes and houses), private amenity space, a crèche (c. 646sq.m), and a community space (c. 100sq.m). The site will accommodate 316 no. car parking spaces in total (comprised of 288 no. residential spaces, 10 no. spaces for the proposed crèche/community space, 6 no. EV charging spaces including accessible spaces, and 12 no. spaces ducted for future provision), 1,619 total no. bicycle parking spaces, new pedestrian/cycle links, road improvements, storage, services (including water, wastewater, electricity and telecommunications) and plant areas. Landscaping will include communal amenity areas, SuDS features, and significant public open space (c. 15.3% of the net site) including outdoor exercise and play equipment.

Design Principles

- 5.2. The design layout has been directly and indirectly influenced by the existing tree cover on site. The default position has been to avoid development within the canopy or RPA of any retained tree, however where this has not been possible a hierarchy of mitigation has been applied, as illustrated in Figure 1.

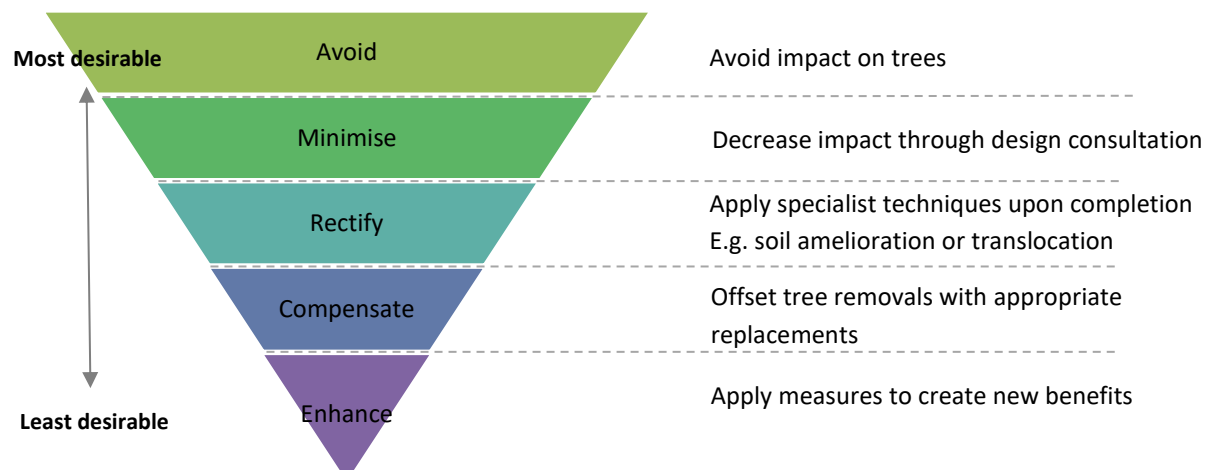


Figure 1. Trees and Development Mitigation Hierarchy (John Morris Arboricultural Consultancy, 2020).

Tree Removals & Pruning

- 5.3. Tree removals and pruning have been limited to that which is necessary and unavoidable to allow the development proposal to be implemented, with consideration given to species attributes, the tolerance of individual trees to disturbance, and to the presence of surrounding trees and features of the site which may have an influence on retained trees.
- 5.4. The pruning of trees may also be required for reasons of good arboricultural practice or management to promote tree health and longevity, to remove hazards for reasons of health and safety, or to limit the impacts of the development proposal upon trees where incursions into RPAs are unavoidable.

Design & Impacts

- 5.5. The scheme has been designed to retain and protect as many trees and hedgerows across the site as is realistically possible, including a mature treeline between the site and Donabate Burial Ground which provides high public visual amenity in the local streetscape and a mature woodland strip between the site and neighbouring residential dwellings at Priory Wood, which provides high public visual amenity, ecological value, green connectivity around the boundary to an adjoining woodland and mature canopy cover in the local landscape.
- 5.6. The aim has been to include those arboricultural features capable of providing a substantial future contribution, in terms of their amenity, landscape and ecological value, and those that contribute to the existing landscape character of the local area. In particular, the incorporation, preservation and rejuvenation of hedgerows in recognition of the importance they hold in the local landscape in terms of ecological connectivity and visual amenity has been a principal concept of the design layout.
- 5.7. The requirement for access points to enable connectivity and movement around the new built environment will result in the loss of some trees and areas of hedgerow. The extent and frequency of these removals is limited to that which is necessary to enable the development to function holistically. A large proportion of hedgerows across the site have been retained and incorporated into the design layout, particularly those around the boundary and those that provide direct connections to trees, woodland and hedgerows in the wider landscape in recognition of their ecological importance.
- 5.8. The proposed works will require part removal of two hedgerows (H64 & H134), part removal one self-sown tree group comprising hawthorn and elder (G192), removal of one small tree group comprising self-sown sycamore, ash and hawthorn (G89) and removal of two wych elm trees self-sown from a woodland fringe (169 & 170). Pruning will be required to tree canopies along a woodland fringe (W191) to provide clearance over public open space.
- 5.9. The reason for these removals is to facilitate new dwellings, roads and turning heads, footpaths, utility services, attenuation tanks and swales.
- 5.10. Those trees to be removed and retained are illustrated on the Tree Impact & Protection Plan (Ref: 25-635-03), and accompanying Tree Schedule attached to this report.

Hedgerows

- 5.11. There is a requirement for incursions within the Root Protection Areas (RPA) of hedgerows

across the site. These incursions will take place along the edge of hedgerows and have been restricted to locations that will have minimal impact. In cases where there is an incursion into the hedgerow RPA, it is proposed to carry out pruning works to the hedgerow to provide sufficient space for required works and to prevent any structural or physiological damage to hedgerows.

5.12. It is also proposed to prune hedgerows for the following reasons:

- To allow landscaping, sightlines, visual amenity, connectivity and future management in the built environment and in areas of public open space.
- For health and safety (e.g. where hedgerows are overgrown or in poor health/decline and pose a risk of injury to persons or damage to property).
- To promote rejuvenation, with new supplementary planting to enhance structure and species diversity ensuring long term longevity.

5.13. In other areas of open green space, hedgerows will be retained in their natural shape and form for enhanced value to biodiversity and wildlife, particularly those around boundaries that offer green connectivity in the wider local landscape.

5.14. All pruning works to hedgerows should be undertaken in accordance with 7.11 of BS3998:2010 *Tree work - Recommendations* as follows:

7.11 Pruning of overgrown hedges

Pruning of overgrown hedges should be carried out in such a way as to minimise disfigurement and prevent dieback, and to allow the production of new foliage. Final pruning cuts should be made in accordance with 7.2.5. The timing of the work, and its impact on habitat and wildlife, should be determined in accordance with Clause 5.

NOTE *Excessive pruning can be detrimental to certain species of hedging plants, especially conifers. BS 7370-4 gives recommendations for the routine maintenance of hedges.*

5.15. Please refer to landscape architect drawings for locations where hedgerows require pruning for landscaping or management reasons within the built environment and areas of public open space, or to promote rejuvenation for longevity.

Ground Levels & Incursions within RPAs

5.16. It is proposed to increase ground levels within the RPA of some hedgerows, to achieve required ground levels for construction. In cases where ground levels are to be increase within the RPA of hedgerows, the recommended approach is to prune hedgerows back and maintain the hedgerow as a smaller more compact hedgerow that can naturally rejuvenate over time, along with new and supplementary planting, if required.

Services

5.17. The location of all services is illustrated on the Tree Impact & Protection Plan. Services will

require the part removal of hedgerows, but there is to be no services through the RPA of any retained tree. Method Statements for the installation of services within RPAs can be found in Chapter 6, if required.

Construction Phase

- 5.18. All site compounds, facilities and routes to allow the movement of construction traffic across the must be sited outside influencing distance of RPAs for all retained trees and hedgerows.

Landscaping

- 5.19. In the event that soft landscaping is required, relevant method statements to ensure the protection of trees and hedgerows are provided in Chapter 6.

Magnitude of Impact

- 5.20. The overall magnitude of impact for proposed tree and hedgerow removals has been assessed using the criteria in Table 2.

Table 2. Magnitude of arboricultural impact (John Morris Arboricultural Consultancy 2020).

Magnitude Rating	Description of Impact	Mitigation
High	Major loss or alteration to the main arboricultural features or characteristics of the site that will result in a post-development situation that is significantly different.	Realistic and feasible mitigation measures should be implemented that will reduce the magnitude of impact within a reasonable timeframe and/or create a post-development situation that improves on the pre-development baseline.
Medium	Partial loss or alteration to the main arboricultural features or characteristics of the site that will result in post-development situation that is partially different.	
Low	Minor loss or alteration to the main arboricultural features or characteristics of the site that will result in a post-development situation that is similar to before.	
Negligible	Very minor loss or alteration to the main arboricultural features that will result in a post-development situation that is unchanged.	
None	No loss or alteration to arboricultural features.	

- 5.21. The proposed layout will require the partial loss of main arboricultural features or characteristics of the Site and as such the magnitude of impact will range within the category of **medium**.
- 5.22. To mitigate the magnitude of impact, realistic and feasible mitigation measures should be implemented that will reduce the magnitude of impact within a reasonable timeframe and/or create a post-development situation that improves on the pre-development baseline.

Mitigation & Improvements

- 5.23. The aim has been to include those arboricultural features that are capable of providing a substantial future contribution in terms of their amenity, landscape, and ecological value, including those that contribute to the landscape character of the local area. In particular, the incorporation, preservation and rejuvenation of hedgerows to create harmonious relationship with the new built environment, and in recognition of the importance they hold in the local landscape in terms of ecological connectivity and visual amenity has been a principal concept of the design layout.
- 5.24. This approach is taken in accordance with the Fingal Development Plan (2023-2029), Donabate Local Area Plan (2016- 2022) and The Forest of Fingal – A Tree Strategy for Fingal’.
- 5.25. It is proposed to retain as many trees and hedgerows as is reasonably and practically possibly, however, in some areas trees and hedgerows will require removal or pruning to allow construction of the proposal.
- 5.26. Hedgerows will also require pruning to reduce their height to enhance intervisibility of houses and open spaces, or to promote rejuvenation, with new supplementary planting to enhance structure and species diversity to ensure their long-term longevity. In other areas of public open green space and around the site boundary, hedgerows will be retained in their natural shape and form for enhanced value to biodiversity and wildlife.
- 5.27. To mitigate the removal of trees and areas of hedgerows, it is proposed to a diverse mix of new trees and vegetation across the site to function in harmony with the existing natural infrastructure and new built environment. This new planting includes a diverse mix and age of predominantly native trees and vegetation, with the overall aim being to increase species diversity and improve canopy cover in the local landscape. The location of the planting has been strategically positioned to enhance and complement existing hedgerows and provide connectivity to trees, woodlands and hedgerows in the wider local landscape for visual amenity and ecological value. This approach will ensure that replacement trees and hedgerows provide an immediate positive impact, and that over the long term, the benefits provided by these features will offer an improvement and net gain in canopy cover on the pre-development baseline.

Hedgerow Management – Laying, Supplementary Planting & Management (General Guidance)

- 5.28. New hedgerow planting should be undertaken following completion of any construction work to avoid damage to roots, which may impair physiological function and establishment.
- 5.29. Planting should be at 5 plants per metre, as a double-staggered row. Plants will establish best as 60 – 80 cm transplants, protected from browsing mammals by 75cm spiral guards, supported by a 90 cm cane.
- 5.30. The new planting should consist only of native species, to ensure aesthetic appearance and biodiversity of the existing hedge corridor is preserved, additionally providing ecological habitat for existing wildlife.

- 5.31. November to February is generally the best time to plant; however, if planting into clay soils wait until March. Planting should not be undertaken in freezing weather or waterlogged ground. If planting into a newly restored earth bank, plant the following autumn.
- 5.32. To undertake hedge planting successfully prepare the ground so the soil becomes friable (has a crumbly texture) and is free of other growth.
- 5.33. Control competitive weeds (including brambles, nettles and grasses) during the first growing season. These weeds reduce the growth rate of the new plants by competing for soil moisture, nutrients and light.
- 5.34. Plants should be fenced off to avoid trampling or damage. Fences should be kept far enough away so the hedgerow can grow at least 1.5m in width.
- 5.35. The newly planted elements of the hedge should not be cut for the first 2-3 years, to allow establishment.
- 5.36. In accordance with Section 40 the Wildlife Act (1976) as amended by Section 46 the Wildlife (Amendment) Act 2000, the hedge should not be cut during bird nesting season, between 1st March and 31st August (inclusive) each year.
- 5.37. Once the new elements of the hedge become established maintenance should usually be carried out by persons using handheld equipment or tools on an annual cycle.
- 5.38. Cutting incrementally, rather than trimming back to the same point, allows hedges to increase in height and width by several centimetres at each cut, encouraging a dense, healthy hedgerow.
- 5.39. The hedge is the responsibility of the landowner and will be maintained as such in compliance with the Section 70 of the Roads Act 1993 to ensure the following:
 - Growth does not obscure the view of road signs.
 - Visibility is maintained for road users, particularly at junctions and on the inside of bends.
 - Trim any hedge that directly abuts a road, footway, cycleway or public right of way so that growth does not prevent the passage or affect the safety of highway users, including cyclists and pedestrians.
 - Remove dead or decaying growth that may fall across the highway.
 - Remove branches and other growth that may prevent the passage of high sided vehicles or obstruct light from a streetlight.
 - Ensure the highway (including the footway and drainage features) is left clear of debris from the cutting operations.

Tree & Hedgerow Management Plan

- 5.40. Most trees on the site are ash, with many identified as having Ash Dieback. The aim has been to retain ash trees in recognition of their landscape, amenity, and ecological value, unless they pose an unacceptable risk to persons or property. The approach to managing ash trees has been taken in accordance with industry best practice in relation to management of Ash Dieback, including the Tree Council 'Ash Dieback Disease - A Guide for Tree Owners' and Arboricultural Association 'Ash Dieback – Practice Guidance'. The rate of infection and impact of the disease

varies from tree to tree – healthy looking trees can severely decline (both physiological and structurally) within a single growing season, while others showing greater resilience and can live with the disease for many years and be retained without any real risk to persons or property. The management of trees with Ash Dieback should consider the benefits provided by the trees, location in which they grow, stage of infection and risk they pose to persons or property. At Ballymastone, an annual tree inspection will be required to determine the appropriate course of management for the following year.

5.41. A plan for management of the hedgerows across the site is provided in the Landscape Strategy & Design Statement prepared by Cunnane Stratton Reynolds. In summary, hedgerows will be pruned as follows:

- To allow landscaping, sightlines, visual amenity, connectivity, and future management in the built environment and in areas of public open space.
- For health and safety (e.g. where hedgerows are overgrown or in poor health/decline and pose a risk of injury to persons or damage to property).
- To promote rejuvenation, with new supplementary planting to enhance structure and species diversity ensuring long term longevity.
- In other areas of open green space, hedgerows will be retained in their natural shape and form for enhanced value to biodiversity and wildlife, particularly those around boundaries that offer green connectivity in the wider local landscape.

5.42. In locations where hedgerows are to be pruned back (e.g. within the built environment by roads or areas of public open space), it is recommended that hedgerows are inspected bi-annually to assess response to pruning with the intention to prune on a cyclical basis thereafter, as required.

6. DRAFT ARBORICULTURAL METHOD STATEMENTS – PLANNING STAGE

Purpose

- 6.1. The purpose of this statement is to provide a system of working to ensure retained trees are protected at all times during construction.
- 6.2. A copy of this report must be made permanently available for the duration of the development. It can be:
- Included in tender documents to identify and quantify tree protection and management requirements;
 - Used to plan timing of site operations to minimise the impact upon trees, and;
 - Referenced on site for practical guidance on how to protect trees.
- 6.3. The compliance of arboricultural method statements is a recommended as a condition of planning and is necessary to ensure the protection and vitality of retained trees.

Pre Commencement Meeting

- 6.4. A pre-commencement meeting will be held prior to commencement of any demolition or construction works on site. The pre-commencement meeting may require the attendance of:
- The Main Works Contractor;
 - Landscape Architect;
 - Structural/Civil Engineer;
 - Project Arboriculturist; and
 - Any other parties as required.
- 6.5. The purpose of this meeting will be to agree the details of the tree protection measures and ensure that all aspects of tree protection are understood. The Project Arboriculturist and Main Works Contractor will agree and mark the location of the tree protective fencing and temporary ground protection and any other specific tree protection measures, as required.

Monitoring

- 6.6. Once works commence upon the site the role of the project arboriculturists role will switch to monitoring compliance with arboricultural planning conditions, provision of advice in relation to tree related matters and supervision of sensitive works that may impact upon retained trees.

Key Responsibilities

- 6.7. It is the responsibility of the main contractor to ensure that all site personnel fully understand the protection measures on the site, that tree protection measures are adhered to at all times, and that the project arboriculturist is contacted if there are any issues related to trees.

Tree Protective Fencing

- 6.8. A protective fence will be erected around retained trees, prior to the commencement of materials or machinery being brought onto site, removal of soil or any form of construction. The area within this fencing will form the construction exclusion zone (CEZ) and it will be afforded protection at all times. No works will be undertaken within this zone that causes compaction to the soil, severance of tree roots or damage to tree canopies.
- 6.9. The fence is to be sited in accordance with the TIPP attached to this report.
- 6.10. Details of the minimum distance for fencing from trees can be found in the Tree Schedule attached to this report.
- 6.11. The precise form of fencing can vary provided it is fit for purpose and prevents damaging activities within the CEZ. For a proposal of this nature, a number of fencing/protection solutions will be required including the Heras 151 system of fencing, timber boards and hessian sacking wrapped in chestnut cleft pale.
- 6.12. Details of the various types of fencing is provided in Appendix 2.
- 6.13. The fence will have signs attached to it stating that it defines a CEZ and that no works are permitted beyond it.

- 6.14. An example of a tree protection sign is provided in Appendix 3.
- 6.15. The protective fencing may only be removed following completion of all construction works.
- 6.16. The following principles will be adopted by site personnel within the CEZ during construction, to ensure protection of retained trees:
- No level changes.
 - No excavations.
 - No fires.
 - No use of herbicides.
 - No storage of materials, machinery or access for construction workers.

Site Compounds & Facilities

- 6.17. Site compounds and facilities will be located outside of all RPAs and CEZs as identified on the TIPP.

Site Cranes, Piling Rigs and Machinery

- 6.18. The location of all site cranes, piling rigs and other machinery should be sited outside of RPAs to avoid soil compaction.

Pollution Control

- 6.19. Any storage or mixing station located outside of the construction exclusion zone will be located in a place that minimises the risk of contaminated runoff entering to prevent adverse physiological impacts on trees that may result from contact with rooting environments. This may be achieved by using a non-permeable membrane on the ground, surrounded by sandbags or sawdust to contain any spillage.

Temporary Ground Protection

- 6.20. Where it is not practical to protect RPAs by use of protective fencing, BS5837 allows for the fencing to be set back and the soil shielded by ground protection. A range of methods can be used including retaining existing hard surfaces or structures that already protect the soil, installing new temporary surfaces, or a combination of both. Whatever the choice of method, the end result must be that the underlying soil remains undisturbed and retains the capacity to support existing and new roots.
- 6.21. If fences are to be set back on a temporary the following specifications are recommended for use as temporary ground protection to protect roots and soil.
- 6.22. For pedestrian traffic, a plywood board with a minimum thickness of 40mm should be laid on a minimum of 100mm deep woodchip, with geotextile membrane beneath.
- 6.23. For small plant machinery with a gross weight of up to 2 tonne, interlinking aluminium or composite tracks with sufficient load bearing capacity should be laid on a minimum of 150mm deep woodchip, with geotextile membrane beneath.
- 6.24. For heavy machinery with a gross weight of up to 3.5tonne, interlinking aluminium or composite track with sufficient load bearing capacity should be laid over a minimum layer of 200mm deep

woodchip, with a geotextile membrane beneath.

- 6.25. An example of temporary ground protection measures can be found in Appendix 4.
- 6.26. Any temporary protective surfaces must remain in place until all construction activity is finished.
- 6.27. Upon completion of construction works, the temporary ground protective measures should be removed working backwards from on top of the system. This will need to be done carefully to ensure that there is no excavation or compaction of the original surface or change in ground levels.
- 6.28. Once this material has been removed vehicular access to this part of the site will not be permitted.
- 6.29. The location of where temporary ground protection is to be located and at what stage of development is illustrated on the TIPP attached to this report.

Permanent Ground Protection

- 6.30. Where permanent hard surfaces are required within the RPA, there must be no excavation into the soil, either through the lowering of levels and/or scraping, other than the removal of turf or other surface vegetation, using hand tools only.
- 6.31. A 'No-dig' solution should be implemented in accordance with industry best practice and in particular with reference to Arboricultural Practice Note 12 (APN12) which provides details of the 'No-dig' method of construction. The area directly beneath the finished hard surface and on top of the RPA should be protected by the installation of a three-dimensional cellular confinement system, or a suitable alternative solution (e.g. pile and beam, screw piles or other root bridging technique) as specified by the project structural engineer.
- 6.32. The suitability and type of permanent ground protection required will depend on the existing properties and load bearing capacity of the soil, and the future use and load bearing capacity requirements of the site and should therefore be specified by the project structural engineer.

Three-Dimensional Cellular Confinement Systems

- 6.33. This is a load bearing system which protects roots from the effects of compaction from regular vehicular, cycle or pedestrian movement. A range of products are offered by various manufacturers but whatever system is used, the end result must be that the underlying soil or rooting environment remains undisturbed and retains the capacity to support existing and new root growth.
- 6.34. Details of three-dimensional cellular confinement system and general guidance on its installation can be found in Appendix 5. It will be the responsibility of the contractor to ensure that whatever system is used, it is installed in accordance with the latest guidelines provided by the relevant manufacturer.

Installation of Lighting Columns / Railings / Fences

- 6.35. The erection of a new posts or lighting columns will require 'hand-digging' in the location where any foundations or posts are required within RPAs, to prevent damage to tree roots.

- 6.36. Any soil removal during excavations must be undertaken with care to minimise root disturbance and avoid any damage to root bark.
- 6.37. Exposed roots that are to be removed should be cut cleanly with a sharp saw or secateurs 10-20mm behind the final face of the excavation.
- 6.38. Roots greater than 25mm diameter should only be cut in exceptional circumstances and following approval by the project arboriculturist.
- 6.39. Fibrous clumps of roots must be retained where possible, with any exposed roots protected from desiccation by covering them with a damp hessian sack or damp sharp sand (**builders' sand must not be used**).
- 6.40. Prior to backfilling, roots must be surrounded with topsoil or sharp sand before the excavated earth is replaced. The soil must be free of contaminants and any foreign objects that may be potentially harmful to roots.

Installation of Services

- 6.41. All services and utilities will be installed within existing service routes and where possible outside of RPAs.
- 6.42. Where installation of utilities or services is required within RPAs, working practices will be adopted in accordance with the National Joint Utilities (NJUG) 10, Vol 4, Issue 2, 2007 'Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'.
- 6.43. In accordance with 4.1.3 of NJUG 10 2007, acceptable techniques in order of preference include:
 - a) Trenchless; b) Broken Trench; and c) Continuous Trench. Trenchless methods involve the use of thrust boring machinery, whilst broken and continuous trench methods require that excavations within RPAs are carried out using hand tools only.
- 6.44. For a proposal of this nature, broken or continuous trench methods are the most appropriate and should be employed as per NJUG 10, to prevent any damage to tree roots or disruption to soil rooting environments.

Soft Landscaping

- 6.45. To avoid damage to existing tree roots and prevent soil compact, any machinery used to remove existing surfaces and ground vegetation for purposes of soft landscaping (e.g. seeding new lawns or laying turf) should be sited outside of RPAs. If this is not possible, hand tools must be used.
- 6.46. The removal of the surface layer within RPAs must not exceed 50mm, to prevent exposure and damage of tree roots beneath.
- 6.47. Soft landscaping works must not involve raising or lowering of the existing ground level within any RPA as this can starve roots of oxygen and cause irreversible physiological damage to trees.
- 6.48. The use of rotavators within RPAs is prohibited.
- 6.49. Any level changes outside RPAs must be graded to marry existing soil levels within RPAs.

Excavations and Removal of Existing Surfaces

- 6.50. All excavation must be carried out carefully using spades, forks and trowels, taking care not to damage the bark and wood of any roots. Specialist tools for removing soil around roots using compressed air such as an Air Spade may be an appropriate alternative to hand digging, if available.
- 6.51. All soil removal must be undertaken with care to minimise the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of small roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage.
- 6.52. If digging by hand, a fork should be used to loosen the soil and help locate any substantial roots. Once the roots have been located the trowel should be used to clear the soil away from them without damaging the bark. Exposed roots that are to be removed should be cut cleanly with a sharp saw or secateurs 100-200mm behind the final face of the excavation.
- 6.53. Roots temporarily exposed must be protected from direct sunlight, drying out and extreme temperatures by appropriate covering. Roots greater than 25mm in diameter should only be cut in exceptional circumstances. Roots greater than 100mm in diameter should only be cut after consultation with the project arboriculturist.

Upgrading Existing Surfaces

- 6.54. Where upgrading of existing hard surfaces is required, the preferred option will be to leave the surface in place and install the new surface specification on top.
- 6.55. If the retained surface is impermeable, it may be appropriate to remove or puncture sections to create a more favourable environment for roots beneath, before the new surface is laid, through consultation with the project arboriculturist.
- 6.56. Where the existing surface is to be removed or upgraded, the surface layer should be excavated down the existing subbase and the new surface specification installed on top, to prevent any damage to roots beneath.
- 6.57. It is recommended that where possible, new and upgraded hard surfaces should be porous (e.g. permeable brick paving, porous resin bound aggregate or tarmac) to allow the flow of water and oxygen to roots. Wet concrete should only be poured if an impermeable geotextile fabric has first been installed to prevent soil contamination from toxic leachate.
- 6.58. New surfaces and upgraded surfaces should be set back from the base of stems by a minimum of 50mm to allow space for future growth and minimise the risk of distortion with new surface.

7. ABOUT THE AUTHOR & LIMITATIONS

Authors Qualifications & Experience

- 7.1. This report has been written by John Morris, Director and Principal Arboricultural Consultant at John Morris Arboricultural Consultancy Ltd. John has a First Class BSc (Hons) in Housing (Ulster University) and a Post Graduate Diploma (UK NQF Level 7) in Arboriculture & Urban Forestry (Myerscough College & University of Central Lancashire). John has worked in the housing,

development and arboricultural sectors combined for over 20 years and regularly undertakes continuous professional development (CPD) in all areas of arboriculture and wider business administration. John is a Professional member of the Arboricultural Association (AA) and Associate member of the Institute of Chartered Foresters (ICF).

Limitations

- 7.2. This report is for planning purposes and is not a detailed assessment of the health and condition of trees, however where defects have been identified works have been recommended to ensure site safety.
- 7.3. This report does not take responsibility for the effects of extreme weather conditions, vandalism, accidents or any works to trees that occur without the authors knowledge, or that are not recommended within this report.
- 7.4. Tools used during the assessment have been limited to a sounding mallet, probe or binoculars.
- 7.5. No invasive or diagnostic equipment has been used, nor have any aerial inspections, belowground root investigations, or soil, leaf or root samples been taken for further testing or analysis.
- 7.6. Trees were assessed on 10th September 2025 and the information gathered during the survey pertains to that moment in time.
- 7.7. The observations within this report will remain valid for two years from the date of inspection cease to be valid if site conditions change or any tree works take place which have not been specified within this report.
- 7.8. The location of trees places reliance on the accuracy of the topographical survey unless otherwise caveated within the report.
- 7.9. All works recommendation as a result of the survey should be undertaken by a suitably qualified and insured arborist in accordance with BS3998:2020 *Tree Works – Recommendations* to prevent any structural or physiological impairment to trees.

Appendices

Appendix 1: Tree Survey Criteria (BS5837:2012)

The assessment of the trees has been carried out in accordance with the guidance provided in Annexe C of BS5837, which requires that any tree on or influencing distance of the site with a stem diameter of over 75mm at 1.5m above ground level be recorded.

Stem diameter measurements were taken using a girthing tape or Biltmore stick, and in accordance with Annexe D of BS5837.

Height, crown spread, and canopy clearance measurements are recorded in accordance with the measurement convention detailed in paragraph 4.4.2.6 of BS5837.

The trees are categorised in an order defined in **Table 1** of BS5837, a copy of which can be seen below in **Figure 1**, but which can be summarised as:

- **Category A** Trees of high quality and value in such a condition as to be able to make a substantial contribution for a minimum of 40 years.
- **Category B** Trees of moderate quality and value in such a condition as to make a significant contribution for a minimum 20 years.
- **Category C** Trees of low quality and value currently in adequate condition and able to remain until new planting can be established with a minimum useful life expectancy of 10 years, and young trees with a stem diameter less than 150mm.
- **Category U** Trees in poor structural condition or physiological decline that cannot be realistically retained in the context of current land use for more than 10 years.

Further subcategories 1-3 indicate the area(s) in which a tree or group retention value lies.

- Mainly arboricultural.
- Mainly landscape.
- Mainly cultural, including conservation.



BS5837:2012 Assessment Criteria & Cascade Chart

Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention (see Note)		
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	- Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline - Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.	See Table 2 
Trees to be considered for retention		
1 Mainly arboricultural qualities		
2 Mainly landscape qualities		
3 Mainly cultural values, including conservation		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years		
Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years		
Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm		
Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix 2 – Calculation of the Root Protection Area

Circle Radius

The circle radius has been calculated by obtaining the stem diameter (measured at 1.5m above the ground) in millimetres and multiplying it by 12. Where the tree is multi-stemmed, an average stem diameter is calculated by the following formula specified in section 4.6.1 (a) & (b) of BS5837.

For trees with two to five stems, the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \dots + (\text{stem diameter } 5)^2}$$

For trees with more than five stems (not illustrated in Annex C), the combined stem diameter should be calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

This total is then divided by 1000 to provide a circle radius in metres.

RPA Areas

The RPA has been assessed according to the recommendations set out in section 4.6 of BS5837. It is calculated by multiplying the radius squared by 3.142 (π).

Length of sides of a square

Section 5.5.3 of BS5837 recommends that the ground protection and barriers should be shown as a polygon surrounding the stem of the tree. With a circle, the distance from the edge of the circle to the centre will remain constant, but with a square, the distance from the centre of the tree to the sides of the square is less than the distance to the corner of the square. The area of the square must remain the same as the area of the circle. In order to ensure that it is the case, the length of side of the square is calculated at the square root of the RPA area.

Minimum barrier distance

This is the closest point that a side of the square can be to the centre of the tree.

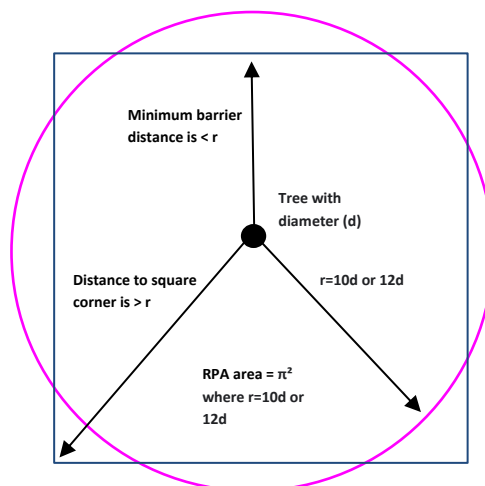


Figure 1. Illustration of area calculations and minimum barrier distances

Figure 1 illustrates the differences between a square and a circle in area. Where the distance from the centre of the tree to the corner of the square is greater than the radius of the circle (r), but the distance from the centre of the tree to the side of the square is greater than the radius of the circle (r), the total area will remain the same. The minimum barrier distance from the tree is calculated by taking the length of the side and dividing it by two.

Clarification note on the RPA radius

The RPA radius is not the automatic minimum distance of the tree protection. It is a notional figure for use as a means of calculating the actual area of the RPA. BS5837 clarifies this under *Section 3.7 Root Protection Area (RPA) – layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the trees viability, and where the protection of the roots and soil structure is treated as a priority.*

heras® 151 and 151steadfast system

round top panel with anti-climb mesh
high visibility orange blocks
steadfast strut
anti-tamper coupler
fully tested and certificated
health and safety compliant (HSG 151)

Having invented the original concept of temporary fencing back in the 80s, Heras is proud of its reputation as a true innovator.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.

Our safest, most durable and most secure system ever offers you total peace of mind, and unrivalled performance.

You can be sure that by installing the Heras® 151 Steadfast System (patent pending), you are conforming fully to the latest HSE Guidelines on "Protecting the Public" from the dangers of construction sites.

Heras has campaigned widely over recent years against failing product standards, and has consulted closely with senior figures across the industry to ensure our products meet and exceed your expectations. This latest innovative system means you should never again need to compromise on:

- Value for money
- Quality
- Performance
- Design
- Ease of installation.

All backed up with unbeatable service from our nationwide branch network – deal direct with Heras – your safety first fencing supplier.

Fully Tested and Certificated

- Extensive independent testing by Sheffield Hallam University has proved the performance of the system, resisting wind speeds well in excess of gale force.
- The HSE has confirmed that the system meets all of the guidelines in the HSG 151 Publication "Protecting the Public - 'Your next move'".
- In turn, therefore, we can offer customers a certificate of compliance when they purchase this system from Heras.
- It is your responsibility to ensure the system is correctly installed and fixed. For help and advice, contact your nearest branch.

151 system

The key components of the Heras 151 system are as listed.

Round Top Panel with Anti-Climb Mesh

- The strongest panel on the market, with 3 sides formed from a continuous length of tube, eliminating the top corner weld, often the weakest point in traditional panel design.

High Visibility Orange Block

- Permanently coloured with a durable UV stabilised "Haze" casing and filled with solid high density concrete.
- Effectively highlights any potential trip hazard.
- Resists all weather conditions – painted coatings will chip and peel.

Heraslock® Anti-Tamper Coupler

- Providing additional security, these couplers can only be removed with the use of the specialist tool.

151 steadfast system

The Heras 151 steadfast system incorporates all the benefits of the 151 system, with the addition of the patented...

Heras® Steadfast Strut

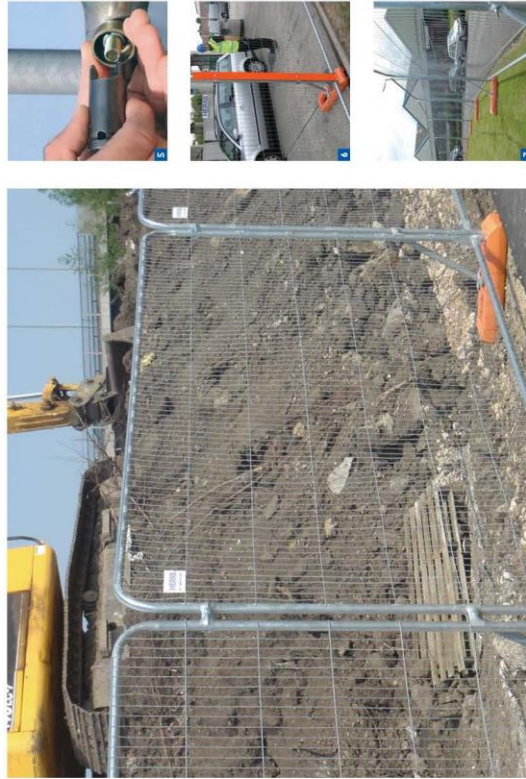
- The unique design of this clever strut dramatically increases the stability of the fence.
- The strut fits neatly within the high visibility block allowing a neat and compact solution, and acts as an integrated anti-fit device.
- 3 additional fixing holes incorporated into the design allow for soil pins and thunderbolts, dependent on ground conditions.

Optional Extras

- Heras® Steadfast Safety Strips with reflective coating can be fitted in minutes to highlight site dangers.
- Front support brackets allow vastly improved performance on softer ground conditions and fit quickly and easily into the high visibility blocks.



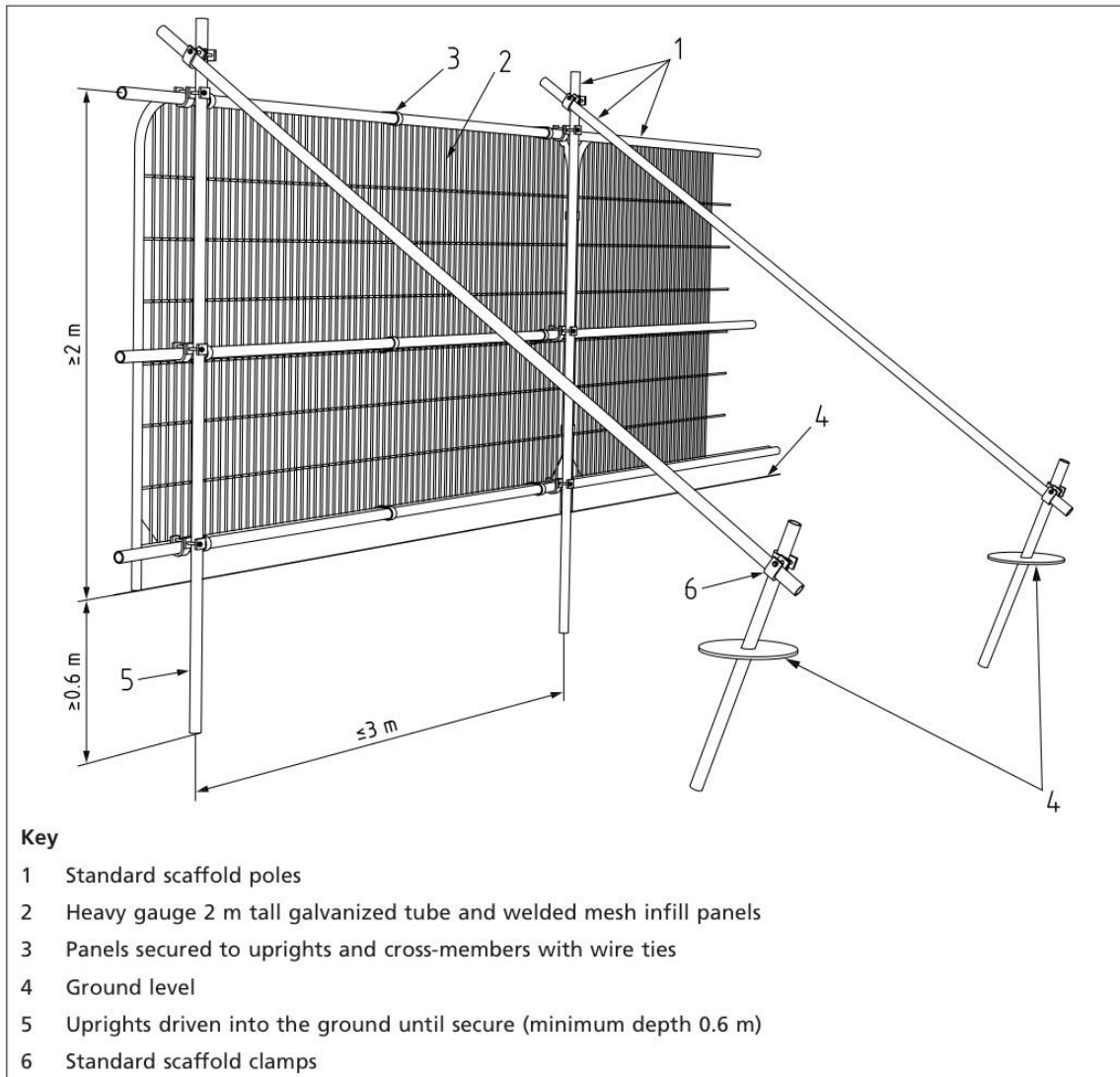
ROUND TOP PANELS WITH ANTI-CLIMB MESH



1. Front stabiliser.
2. High visibility footblocks.
3. Round top panel.
4. Steadfast strut.
5. Heraslock anti-tamper coupler.
6. Optional steadfast safety strips.
7. Anti-climb round top panel with steadfast struts to increase stability.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.

Figure 2 Default specification for protective barrier



Appendix 4 – Example of Tree Protective Signs





Appendix 5 – Example of Temporary Ground Protection

DuraDeck

-|-|-|-|-|-|-|
PRODUCT SPECIFICATIONS
DD1

Traction Surface: Double-traction tread design includes two parallel traction treads positioned at 90 degrees to adjacent double traction tread sets.

Module Size: **Length:** 8' / 2.44 m
 Width: 4' / 1.22 m
 Module Size: 32 sq/ft / 2.973 sq/meters
 Thickness: ½" thick mat + 3/8" cleat

Module Weight: 86 lbs. / 39.01 kg.
 Per Square Foot: 2.69 lbs. / 43 oz. / 1.22 kg. / 1219 grams
 Per Square Meter: 28.60 lbs. / 12.97 kg.

Colors: Black, White.
 Custom colors available (minimum order required).

Material: Black High-Density Polyethylene (HDPE) post-industrial recycled plastic, naturally UV resistant due to the carbon black used for color. White mats available.

Test Results:	ASTM	Units	Typical Values
Melt Index	D 1238	g/10min	4.9
Density	D 792	g/cm ³	.960
Tensile Strength	D 638	mpa (psi)	30 (4,350)
@ Yield 50mm/min			
Elongation @ Break	D 638	%	1 500
50mm/min			
Flexural Modulus	D 790	mpa (psi)	1 240 (180,000)
Hardness, Shore D	D 2240	--	70
Compressive Strength:		D695-02a	psi 2,843
Flammability Resistance:	UL-94 HB		Passed

Tread Pattern: **DD1:** Rugged double-traction tread on both sides

Support Structure: Matting incorporates multi-directional structural support (cleat design) allowing for distribution or dispersion of PSI weight factors. Not intended for bridging.

Weight Loading: Varies, depending on sub-surface, up to 80 tons capacity.

Ground Surface: DuraDeck mats are designed to be used with no ground preparation over grass, gravel, soil, concrete, asphalt, mud and sandy soil conditions.

Connection System: DuraDeck mats have eight holes: one in each corner and four in the center line (two on each 8ft side) to create multi-directional roadways of nearly any size or shape. Mats can be connected using metal DuraLink connectors. DuraLinks do not require tools to install.

Shipping: Pallet maximum is 50 units (4' x 8')
 20' Ocean Container: 250 – 4' x 8' unit order and/or equal to 29,240 lbs.
 40' Ocean Container: 500 – 4' x 8' unit order and/or equal to 43,000 lbs.

Warranty: 7 years against cracking and breaking under normal use.



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Appendix 6 – Guidance on Three-Dimensional Cellular Confinement Systems

When considering damage to tree roots by installation of new hard surfaces for roads, car parks, cycle lanes or pedestrian footpaths, the risk of oxygen depletion caused by compaction of subsoil's, site clearance damaging the root source and type of reinforcement are areas which need to be given due consideration.

Other risk factors are:

- Creating an impermeable surface
- Causing a rise in the water table due to construction
- Increasing ground levels
- Contamination of subsoil's

Arboricultural Practice Note 12 (APN12) provides a comprehensive review of the No-Dig method of construction with Root Protection Areas. A copy of this document has been provided as an attachment to this document for reference.

Typically, a three-dimensional cellular confinement system is a load bearing system which protects roots from the effects of compaction from regular vehicular movement. The recommended product for this solution is CellWeb (or similar). Whatever system is used, the result must be that the underlying soil (rooting environment) remains undisturbed and retains the capacity to support existing and new roots. The final product to be used must be specified by a Structural Engineer to meet the required load bearing requirements.

1. Compaction	
When looking at site conditions and use, the following information should be considered to enable a load bearing structure capable of supporting proposed use:	
Californian Bearing ratio (CBR) – Standard test method for measuring soil strength	CBR should be greater than 3% (check soils report or confirm with structural engineer)
Soil type	
Water table (if required)	
Maximum load required	E.g Pedestrian >1,000kg GVW
Acceptable rut depth (if required)	
Reinforcement type	E.g. Cellweb Cellular Confinement 75mm deep
Type and Depth of engineered infill material	Clean, angular stone. Usually 40mm to 20mm.
2. Dig (site strip)	



Site stripping will damage tree roots; however, the use of no-dig construction elevates the access road requiring edge protection.

3. Preparation and laying separation later

Remove surface vegetation	Where permanent hard surfaces are required within the Root Protection Area, there must be no excavation into the soil, either through the lowering of levels and/or scraping, other than the removal of turf or other surface vegetation. It is desirable for works to be carried out using hand tools. If machinery is used it should be sited outside of the Root Protection Area and a mechanical arm used to reach into the works area, under arboricultural supervision. A suitable herbicide suitable may be used for clearance of vegetation but this must not be harmful to the tree root system. Tree roots must be protected. Pay close attention to avoid roots close to the surface.
Place geotextile separation filtration layer	Use a Treetex T300 non woven Geotextile over the prepared sub-grade. Overlap dry joints by 300mm.

4. Application of Cellular Confinement and Backfill Material



The three-dimensional cell structure, is formed by ultrasonically welding polyethylene (perforated) strips / panels together to create a three dimensional network of interconnecting cells. A high degree of frictional interaction is developed between infill and the cell wall, increasing the stiffness of the system.

Expand the Cellweb 2.56m wide panels to the full 8.1 metre length. Pin the Cellweb panels with staking pins to anchor open the cells and staple adjacent panels together to create a continuous mattress. Infill the Cellweb with a no fines angular granular fill (typically 4-20mm) within each open cell. The use of cellular confinement reduces the bearing pressure on the subsoil by stabilising aggregate surfaces against rutting under wheel loads. Comparisons between cellular confinement and traditional aggregate and geogrid-reinforced structures demonstrate a 50% reduction in construction thickness of the granular material.



5. Examples of Surfacing Options

Block Paving:

Lay second layer of Treetex T300 Geotextile separation fabric over the infilled Cellweb sections

Lay sharp sand bedding layer compacted with a vibro compaction plate to recommended depth.

Place block pavers as per manufacturers instructions.

Tarmac:

Place 25mm surcharge of the granular material above the Cellweb system and lay the bitumen base and wearing courses.

Loose Gravel:

Ensure Cellweb is completely filled.

Place decorative aggregate to required depth

NOTE: A treated timber edge should be provided to restrict gravel movement.

Grass Blocks:

Place second layer of Treetex T300 Geotextile separation fabric over the infilled Cellweb sections

Place 50/50 rootzone bedding layer to the required depth

Lay recycled Duo Block 500 Grass Protection System infilled with 50/50 rootzone mix.

Seed as per architects instructions.

(Alternatively the Grass Blocks may be infilled with gravel.)

Concrete Slab:

Lay Cellweb as previous and place second layer of Treetex Geotextile directly over the filled panels. Pour concrete base as specified.

6. Edge Retention

Conventional kerb retention set in concrete trenches is likely to cause damage to tree roots and should be avoided. Effective edge retention within the RPA must be custom designed to avoid significant excavation into existing soil surfaces. Generally, the use of pre-formed edging or treated timber secured by metal pins or wooden pegs will be sufficient to ensure minimal impact on the trees.