

The background is a vibrant yellow. It is decorated with several abstract geometric shapes in shades of blue, teal, and white. These include circles, teardrop shapes, and rounded rectangles, some of which are partially cut off by the edges of the page. The shapes are arranged in a way that creates a sense of movement and depth.

# Appendix A17.1

## Arboricultural Impact Assessment



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## Arboricultural Impact Assessment

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**Prepared for:**

National Transport Authority

**Proposed site:**

Bus Connects Route 16 Ringsend to the City Centre

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## Appendices

### Appendix A

Tree Survey Schedule

### Appendix B

Arboricultural Method Statement

# 1 Introduction

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## 1.1 Background

Arbor-Care Ltd (Professional Consulting Tree Service) was retained by ROD Consulting Engineers on behalf of the National Transport Authority (NTA) to undertake an Arboricultural Impact Assessment, and a Tree Protection Plan identifying the trees, groups of trees or hedgerows that may be impacted on by the Bus Connects Core Bus Corridor. The surveyed trees contained within this report are located within or adjacent to the Ringsend to City Centre Core Bus Corridor Scheme (**Error! Reference source not found.** below) (hereinafter referred to as “The Proposed Scheme”). The objective of the impact assessment was to identify the areas that contained trees, groups of trees or hedgerows, and to ensure where practicable that these areas would be retained and to identify the trees that are to be removed to facilitate the Proposed Scheme.

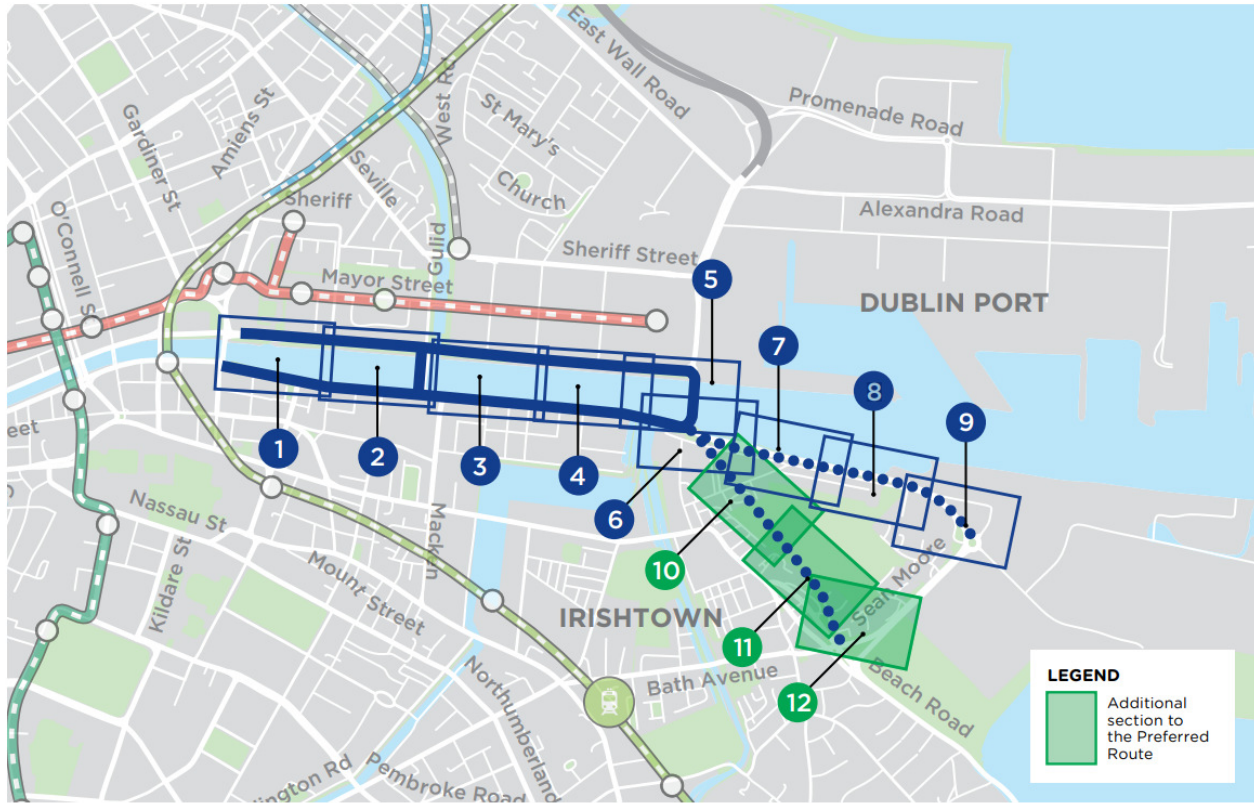
The survey was undertaken between the 20th and 26th of June 2020. The survey commenced on the 26<sup>th</sup> June 2020. The survey commenced at location 1 and finished at location 12 of figure 1 below of the Proposed Scheme.

The below impact assessment report is based on the British standard BS 5837:2012 Trees in relation to design, demolition and construction recommendations. This standard gives recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees, including shrubs, hedges and hedgerows, with structures. It sets out to assist those concerned with trees in relation to construction to form balanced judgements. This impact assessment report is accompanied by an inventory of trees and hedgerows on site and a tree protection plan. The Arboricultural Impact Assessment and a tree protection plan was prepared for the Proposed Scheme to identify trees that may be impacted on by the proposed development based on the proposed design.

## 1.2 Methodology

An initial tree survey and visual condition assessment was undertaken. As part of this report and in accordance with BS 5837: 2012 Trees in relation to design, demolition and construction - recommendations, only trees with diameters of 75mm or greater were surveyed. Also, in accordance with section 4.4.2.3 of the British standard document, where trees formed obvious groups, these were assessed and recorded as groups.

Figure 1.0 Proposed Route corridor



NOTE: The Preferred Route shown on the following drawings is indicative only and is subject to change following consultation and as part of the design development process.

(Source: [www.busconnects.ie](http://www.busconnects.ie))

## 2 Soils

On shrinkable clay soil, tree growth can lead to the differential movement of structures as moisture is removed from the soil during the growing season. Soils must be carefully assessed, and any foundations that could be influenced by trees must be installed following the recommendations of National House Building Council (NHBC) Standards Chapter 4.2: Building Near Trees (2021) to avoid potential future damage. Where trees which predate existing structures are to be removed, this can result in heave as the soils are re-wet. This should be monitored by a suitably qualified engineer during the construction works.

## **3 Trees and Risk in the Context of Development**

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This report is to inform the preliminary design, focusing on the quality and benefits of the trees and is not specifically designed to assess the safety of trees on Site. However, when obvious issues have been identified, recommendations have been included in the Tree Survey Schedule.

### **3.1 Trees and Wildlife**

Full consideration must be given to the presence of species protected under the Wildlife Act (1976 – as amended) and other relevant legislation protected wildlife and habitats, in particular the presence of bats and nesting birds. It is recommended that wherever practicable, significant tree/hedge works take place outside of the typical bird nesting season of March to September.

### **3.2 Tree Works**

Any tree surgery recommendations contained within this report are to be undertaken in accordance with BS3998: 2010 Tree work – Recommendations (BS3998), by suitably qualified and insured contractors. Significant pruning works are best undertaken when trees are dormant or outside periods of high functional activity, to reduce the overall impact on energy available to the tree for growth and processes. In general, the optimum period for works is between November to February and July to August (subject to the presence of protected species) when the tree is less active and better placed to respond to wounding and a reduction in leaf area.

## 4.0 The Trees

A total of 447 individual trees were surveyed. The surveyed trees include a mixture of semi-mature to large mature trees, planted mainly as street trees, planted in central reservations and directly within footpaths as well as vegetation within private properties.

A breakdown of the Tree Categories on site as per BS 5837 2012 is set out in the table below:

Category	Quantity	Category %
A-Tree of high quality	17	3.5%
B-trees of good quality	221	49.5%
C (Low quality or trees less than 75mm diameter)	207	46.5%
U (remove due to poor condition)	2	0.5%
Total Trees surveyed	447	100%

## 5 Statutory and Non-Statutory Designations

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The route traverses through Dublin City Council administrative areas. The relevant development plan of both local authorities have been examined.

### *National Planning Framework*

The National Planning Framework (NPF) seeks to ensure that new development is sustainable and underlines the importance of Green Infrastructure, of which trees form an integral part. This encompasses recognition of the importance of trees in relation to the management of air, soil and water quality along with other associated ecosystem services and climate change adaptation. The NPF also seeks to achieve the protection and enhancement of landscapes and a net gain in biodiversity.

### *Dublin City County Development Plan 2016 - 2022*

Section 10.5.7 of the Dublin City Development Plan 2016 recognises the benefits of trees in humanising spaces, enhancing the environment and minimising the impacts of climate change. Appendix 1: Existing Tree Preservation Orders in Dublin City 2016-2020 of the Dublin City Development Plan has been reviewed and it has been concluded that there are no TPO's identified within the study area.



## 6 Arboricultural Impact Assessment

This impact assessment sets out the likely principal direct and indirect impacts of the Proposed Scheme on the trees on or immediately adjacent to the site and suitable mitigation measures to allow for the successful retention of significant trees or to compensate for trees to be removed, where appropriate.

A brief summary of trees to be removed, tree works and incursions related to the proposed development are detailed within the table below.

Impact	Category A	Category B	Category C	Category U	Total tree removal
Trees to be removed to facilitate the Proposed Scheme	N/A	28 individual trees	105 individual trees	2 individual trees	135
Total	N/A	28 features	105 features	2 features	135
Trees to be pruned to facilitate the Proposed Scheme (Unknown at this stage)	0	0	0	0	
Total	0	0	0	0	

### 6.1 Trees to be Removed

All trees that are destined for removal will be removed prior to any construction or excavation works taking place in the vicinity of any trees to be removed, where practicable.

Any tree/hedgerow remedial works that are required will also be undertaken prior to any construction or demolition activity on the site where practicable. All the above shall be carried out by qualified and insured tree surgeons and in accordance with BS 3998:2010 Tree works Recommendations.

The latest available information on the general arrangement, landscape general arrangement, drainage, structures, earthworks, lighting and compounds have been reviewed to inform this assessment.

Tree removals assume a reasonable worst case and in practice some trees may be able to be retained subject to on site investigation, such as trial holes, to determine root spread in conjunction with the guidance of an arboriculturist.

Where part of a group of trees is to be removed, an arboriculturist will carry out a site walkover immediately following site clearance work to determine the suitability and stability of retained trees, which may have been impacted by a loss of companion shelter.

New tree planting and associated landscaping works are as detailed in the proposed Landscaping Design Drawings. All the remaining recorded trees are likely to be able to be retained and protected.

### 6.2 Tree Works

Tree removal works to facilitate the Proposed Scheme are detailed in the Tree Survey Schedule included as Appendix A. Aside from tree removals, no other tree works such as pruning have been

identified at this stage. Where new areas of access are proposed close to trees, crown lifting to ensure a clear height of 2.5m for footways, 3m for cycleways and 5.2m for highways is likely to be required.

The requirement for pruning will be addressed following a pre-commencement site walkover to review any trees which could form an obstruction, or which require pruning to facilitate construction works and to prevent inadvertent damage to tree crowns.

This level of pruning will generally not have a significant negative impact on the health or amenity of the trees in question.

No additional works to retained trees are likely to be required. All tree work is to follow the principles of BS3998: 2010 Treework.

Should the requirement for additional tree works be identified, this will be discussed with an arboriculturist on site.

### 6.3 Incursions within the Root Protection Area or Canopy Spread

A range of works are required within or close to the Root Protection Area (RPA) of retained trees which will require specialist working methods to ensure trees are not subject to a significant negative impact. The RPA is a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability and where the protection of the roots and soil structure is treated as a priority.

Tree RPAs have been calculated in accordance with BS 5837:2012. The formulas used are set out in Table 3.

Number of Stems	Calculation Method
Single Stem Tree	$RPA (m^2) = \{ \text{stem diameter (m)} @ 1.5m \times 12 \}^2 \times 3.142$
Tree with more than one stem arising below 1.5m above ground level.	$RPA (m^2) = \{ \text{Basal Dia. (m)} \times 10 \}^2 \times 3.142$
<p>Note: The Calculated RPA should be capped to 707m<sup>2</sup>, e.g. which is the equivalent to a circle with a radius of 15m or a square with approximately 26 m sides.</p>	

Given the constraints of the site, incursions into the RPA may be unavoidable therefore the mitigation measures as set out in the method statement are to be adhered to. The Arboricultural Method Statement included as Appendix B sets out the methodology for specific activities near retained trees.

The following general principles as outlined below have been applied:

- The extent of resurfacing has not been fully determined at this stage. Where resurfacing of existing hard surfacing is required, this will be applied over the existing wearing course or on the existing intact subbase following the careful removal of the wearing course.

- New surfacing on existing unsurfaced ground within a significant proportion of an RPA will be achieved using a three-dimensional cellular confinement system (e.g. Cellweb or equivalent), installed without excavation using no dig techniques.
- Where existing verges or footways are to be widened out into the existing carriageway, kerb stones and haunching will be carefully removed by hand to protect adjacent tree roots. The Proposed Scheme will likely result in improved growing conditions for trees where carriageway is replaced by less heavily engineered footway or verge.
- Where the existing road carriageway is to be widened requiring a section of cut into a tree RPA or where new drainage cannot feasibly be adjusted to fully avoid the RPA, tree retention will be feasible where trees are considered on balance to be of an age, condition and species which will tolerate the degree of disturbance required (generally not more than a maximum of 20% of the overall RPA) and that this is preferable to the loss of the tree. The area of excavation nearest the tree will be carried out by hand and roots will be carefully assessed by an arboriculturist and pruned as required. New kerb stones and any haunching will be the narrowest profile feasible and alternative methodologies such as reinforced bridged/lintel sections of kerb can be applied, should significant roots need to be retained and worked around.
- Where a new boundary wall is to be constructed within an RPA, alternative footings utilising low diameter pads or piles will be carefully located to avoid tree roots (via hand dug trial holes) and will support floating beams set at or above ground level, unless trial holes (under arboricultural supervision) determine that limited careful excavation is viable to allow beams to be set into the ground.
- The position of new lamp columns, signs and bus shelter footings can be locally adjusted to avoid significant roots and tree canopies and the lowest diameter footings feasible will be employed (such as screw piles or equivalent). Footings will be hand dug within RPAs.
- All new or diverted utilities will avoid the RPA of retained trees where practicable. Where this is not practicable, they will be installed using trenchless methods or via careful excavation in accordance with BS5837: 2012 and guidance from the National Joint Utilities Group (NJUG) Volume 4. Utilities to be removed will be cut off and left in situ where feasible to minimise disturbance or will be removed via careful excavation.

## 6.4 The Future Impact of Retained Trees

Retained trees will require periodic inspection to assess their structural condition and safety. Occasional removal of dead wood or other remedial works to address significant defects or obstructions may be required in areas of frequent access. This is unlikely to be overly onerous and will be the responsibility of the tree owner.

All tree works recommended as a result of the preliminary tree survey of the site, which considered trees in the context of the current use of the site (these works are included as preliminary management recommendations in the Tree Survey Schedule in Appendix A of this report), should be actioned within the recommended timescales.

## 6.5 Tree Protection

Retained trees are vulnerable to damage from construction activities which can include physical damage to stems and branches following impacts with plant, root severance following trenching, root death or dysfunction following damage to soil structure (caused by the movement of people or machinery on unsurfaced ground) or via the spillage of materials toxic to tree health. The default position is that the RPA and canopy spread of trees to be retained will form an effective Construction Exclusion Zone, secured with robust fencing where no access will be permitted. Where access is necessary within this area, special measures such as the use of ground protection (or retention of existing hard surfacing) and arboricultural supervision are generally required. In some cases, existing boundary walls and fences can be employed as a tree protection barrier where they are robust and sufficient to prevent access or damage.

## 6.6 Tree Planting

Existing areas of unsurfaced ground must be protected during the demolition and construction phases if they are to be re-used for new plantings. Protection can be achieved using fit for purpose ground protection measures as set out in BS5837:2012 Section 6.2.3 or by creating a fenced exclusion zone. Where protection is not practicable, soil amelioration or replacement works will be required to ensure suitable growing conditions for new trees to fully establish. Where new trees are to be planted, the minimum planting distances detailed in Annex A, Table A.1 of BS5837:2012 must be adhered to, to prevent direct damage to services and structures from future tree growth. An extract of BS5837:2012 presenting this table is shown in Figure 3. New tree planting should be implemented in accordance with the guidance set out in *BS8545: 2014 Trees: from nursery to establishment in the landscape – Recommendations*.

Table A.1 Minimum distance between young trees or new planting and structure to avoid direct damage to a structure from future tree growth

Type of structure	Minimum distance between young trees or new planting and structure, in metres (m)		
	Stem dia. <300 mm <sup>A)</sup>	Stem dia. 300 mm to 600 mm <sup>A)</sup>	Stem dia. >600 mm <sup>A)</sup>
Buildings and heavily loaded structures	—	0.5	1.2
Lightly loaded structures such as garages, porches etc.	—	0.7	1.5
Services			
<1 m deep	0.5	1.5	3.0
>1 m deep	—	1.0	2.0
Masonry boundary walls	—	1.0	2.0
In-situ concrete paths and drives	0.5	1.0	2.5
Paths and drives with flexible surfaces or paving slabs	0.7	1.5	3.0

<sup>A)</sup> Diameter of stem at 1.5 m above ground level at maturity

Figure 2 - Annex A, Table A.1 of BS5837:2012

## 7. Conclusions

The arboricultural impact of the proposed development on the site will be moderate. It is proposed to remove 123 individual trees or hedges out of 447 individual features surveyed to facilitate the Proposed Scheme.

The number of individual trees being retained also includes trees adjacent to the Proposed Scheme i.e. outside the site boundary and temporary land acquisition boundary. These trees are evident on the drawings contained in Appendix C.

A breakdown of the number of trees being removed and retained is shown in Table 4 below.

Table 1: Retained and Removed Tree Quantities

Retained and Removed Tree Quantities		
Retained trees	Total retained in development (no)	312
Removed trees	Total identified trees lost (no.)	135

Trees are to be removed due to a direct conflict with the Proposed Scheme and where specialist methodologies or design tweaks are not considered practical to facilitate their retention. Trees are also proposed to be retained where careful construction methodologies will allow their retention. Tree loss will be mitigated with a robust and high-quality scheme of new tree planting as detailed in the proposed Landscaping General Arrangement drawings which represents an opportunity to increase the quality, impact, diversity, and resilience of the local tree stock. Soil structure for areas of new tree planting where the ground is currently unsurfaced will either be protected using ground protection or fenced exclusion zones; or the soil structure will be ameliorated or replaced following the completion of construction works on site.

# A1 Key to Abbreviations Used in the Survey

Ref No	Specific identification number given to each tree or group. T=Tree/H=Hedge/G=Group/W=Woodland/S=Shrub.	
Tag No.	Tree marked with individual tree tag of this reference number on site.	
Species	Common name followed by botanical name shown in <i>italics</i>	
RPA	Root Protection Area (As defined by BS5837)	
Stem diameter	Diameter of main stem measured in millimetres at 1.5 m above ground level. (MS = Multi-stem tree measured in accordance with BS5837 Annex C)	Av / Average:  indicates an average representative measured dimension for the group or feature
Spread	The width and breadth of the crown. Estimated on the four compass points in metres.	
Crown clearance	The estimated height (in metres) above ground level of the lowest significant branch attachments.	
#	Estimated dimensions	
*	Indicates estimated position of tree (not indicated on topographical survey).	
P	Privately owned tree (e.g., tree not located in the public highway or adjacent public land).	
Category	Categorisation of the quality and benefits of trees on Site as per Table 1 and 2 of BS5837:2012. 1=Arboricultural quality/value 2=Landscape quality/value 3=Cultural quality/value (including conservation) A=High quality/value 40yrs+ (light green). B=Moderate quality/value 20yrs+ (mid blue) C=Low quality/value min 10yrs/stem diameter less than 150mm (grey). U=Unsuitable for retention (dark red).	
Life stage	<p><b>Young (Y):</b> Newly planted tree 0-10 years.</p> <p><b>Semi-Mature (SM):</b> Tree in the first third of its normal life expectancy for the species (significant potential for future growth in size).</p> <p><b>Early Mature (EM):</b> Tree in the second third of its normal life expectancy for the species (some potential for future growth in size)</p> <p><b>Mature (M):</b> Tree in the final third of its normal life expectancy for the species (having typically reached its approximate ultimate size).</p> <p><b>Over Mature (OM):</b> Tree beyond the normal life expectancy for the species.</p> <p><b>Veteran (V):</b> Tree, which is of interest biologically, aesthetically or culturally because of its condition, size or age.</p>	
Structural condition	<p><b>Good:</b> No significant structural defects</p> <p><b>Fair:</b> Structural defects which can be resolved via remedial works.</p> <p><b>Poor:</b> Structural defects which cannot be resolved via remedial works.</p> <p><b>Dead:</b> Dead.</p>	
Physiological condition	<p><b>Good:</b> Normal vitality including leaf size, bud growth, density of crown and wound wood development.</p> <p><b>Fair:</b> Lower than normal vitality, reduced bud development, reduced crown density, reduced response to wounds.</p> <p><b>Poor:</b> Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species.</p> <p><b>Dead:</b> Dead</p> <p><b>Fair/Good</b> = Indicates an intermediate condition</p> <p><b>Fair - Good</b> = Indicates a range of conditions (e.g., within a group)</p>	
Preliminary management recommendations	Works identified during the tree survey as part of sound arboricultural management, based on the current context of the Site (where relevant reference has been made to tree management based on the potential future context of the site).	

## Appendix 2.

## Ringsend route 16

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	Cr. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of works	Cat.	RPA Radius m	Est. Remaining yrs
16	T001	5238 – 5239 x9	<i>Tilia</i> Lime	6	200	1.5	1.5	1.5	1.5	2.5m North	Good	Representing a group of 9 early mature Lime displaying over all good condition	EM	No works required	No impact	C2	3.0m	20+
16	T002	5240 – 5241 x 8	Lime	6	200	1.5	1.5	1.5	1.5	2.5m North	Good	Representing a group of 8 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	3.0m	20+
16	T003	5242 – 5243 x 6	Lime	6	200	1.5	1.5	1.5	1.5	2.5m North	Good	Represents a group of 6 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	3.0m	20+
16	T004	5244 x 2	Lime	5		1	1	1	1	2m North	Good	Represents 2 early mature Lime displaying over all good condition	EM	No works required	No impact	C2		20+
16	T005	5245 - 5246	Lime	6	200	1.5	1.5	1.5	1.5	2.5m North	Good	Represents a group of early mature Lime displaying over all good condition	EM	No works required	No impact	B2	3.0m	20+
16	T006	5247 – 5248 x19	Lime	6	200	1.5	1.5	1.5	1.5	2.5m North	Good	Represents a row of 19 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	3.0m	20+
16	T007	5249 – 5250	Lime	5	200	1.5	1.5	1.5	1.5	3m North	Good	Represents a group of Lime displaying over all good condition	EM	No works required	No impact	B2	3.0m	20+
16	T008	5251	<i>Platanus x hispanica</i> London Plane	22	450	4	4	4	4	4m North	Good	A large mature London Plane displaying over all good condition	M	No works required	No impact	A2	5.5m	40+
16	T009	5252	London Plane	22	570	4	4	4	4	4m North	Good	A large mature London Plane displaying over all good condition	M	No works required	No impact	A2	6.7m	40+
16	T010	5253 – 5254 x 20	Lime	6	200	1.5	1.5	1.5	1.5	3m North	Good	Represents a group of 20 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	3.0m	20
16	T011	5257	London Plane	18	470	4	3	4	4	5m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion	M	Tarmac be removed to allow for root expansion	No impact	A2	5.7m	40+



R	Tree id	Tag #	Species	HT (m)	DBH (mm)	Cr. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T012	5258	London Plane	20	440	4	4	4	4	8m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion	M	Tarmac be removed to allow for root expansion	No impact	A2	5.4m	40
16	T013	5259	London Plane	16	450	3	3	3	3	5m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion.	M	Tarmac be removed to allow for root expansion	No impact	A2	5.5m	40+
16	T014	5260	London Plane	22	480	4	3	3	3	6m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion.	M	Tarmac be removed to allow for root expansion	No impact	A2	5.8m	40
16	T015	5261	London Plane	22	470	4	3	3	3	6m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion.	M	Tarmac be removed to allow for root expansion	No impact	A2	5.7m	40
16	T016	5262	London Plane	22	510	4	3	3	3	6m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion.	M	Tarmac be removed to allow for root expansion	No impact	A2	6.1m	40

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works.	Cat.	RPA Radius m	Est. Remaining yrs
16	T017	5263	London Plane	22	540	4	3	3	3	6m North	Good	A large mature London Plane displaying over all good condition. There is some minor damage to the surrounding footpath. Recommend the recent tarmac is removed around the tree to allow for root expansion	M	Tarmac be removed to allow for root expansion	No impact	A2	6.4m	40
16	T018	5264 x 2	<i>Robinia Pseudoacacia</i> Black Locust	8	80	1	1	1	1	3m East	Fair	Represents 2 young Black Locust displaying over all fair condition. They are showing evidence of decline.	EM	No works required	No impact	C2	1.8m	10
16	T019	5265 – 5266 x 12	Lime	5	80	1	1	1	1	2m North	Good	Represents a group of 12 early mature Lime displaying over all good condition	EM	No works required	No impact	C2	1.8m	20+
16	T020	5267 x 2	Black Locust	8	80	1	1	1	1	3m East	Fair	Represents 2 young Black Locust displaying over all fair condition. They are showing evidence of decline.	EM	No works required	No impact	C2	1.8m	10+
16	T021	5268 – 5269 x 4	Lime	5	140	1	1	1	1	3m North	Good	Represents a row of 4 semi-mature Lime displaying over all good condition	SM	No works required	No impact	C2	2.4m	20+
16	T022	5270	Lime	6	160	1.5	1.5	1.5	1.5	4m North	Good	A semi-mature Lime displaying over all good condition	SM	No works required	No impact	B2	2.6m	20+
16	T023	5271 x 4	<i>Betula Pendula</i> Silver Birch	12	130	1.5	1.5	1.5	1.5	3m North	Good	Represents 4 semi-mature Silver Birch displaying over all good condition	SM	No works required	No impact	B2	2.3m	40+
16	T024	5272	Silver Birch	8	110	1	1	1	1	3m North	Good	An early mature Silver Birch displaying over all good condition	EM	No works required	No impact	B2	2.1m	20+
<b>Survey is now commencing at the North side of the Quays just outside the IFSC House</b>																		
16	T025	5273 – 5274 x 19	Lime	6	180	1	1	1	1	3m North	Good	Represents a row of 19 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	2.8m	20
16	T026	5275 – 5276 x 15	Lime	6	180	1	1	1	1	3m North	Good	Represents a row of 15 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	2.8m	20

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	Cr. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T027	5277 - 5278 x 23	Lime	6	180	1	1	1	1	3m North	Good	Represents a row of 23 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	2.8m	20+
16	T028	5279 - 5280 x 6	Lime	6	190	1.5	1.5	1.5	1.5	3m North	Good	Represents a row of 6 early mature Lime displaying over all good condition	EM	Remove	Remove all 6	B2		20+
16	T029	5281 - 5282 x 4	Lime	6	190	1.5	1.5	1.5	1.5	3m North	Good	Represents a row of 4 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	2.9m	20+
16	T030	5283 - 5284 x 4	Lime	6	190	1.5	1.5	1.5	1.5	3m North	Good	Represents a row of 4 early mature Lime displaying over all good condition	EM	No works required	No impact	B2	2.9m	20+
16	T031	5285 - 5286 x 8	Lime	7	210	2	2	2	2	3m North	Good	Represents a row of 8 early mature Lime displaying over all good condition	EM	Remove	Remove all 8	B2		20+
16	T032	5287 - 5288 x 10	Lime	6	110	1	1	1	1	2m North	Good	Represents a group of 10 semi-mature Lime displaying over all good condition	SM	No works required	10 to be removed	C2	2.1m	20+
16	T033	5289 - 5290 x 10	Lime	6	110	1	1	1	1	2m North	Good	Represents a group of 10 semi-mature Lime displaying over all good condition	SM	Remove	Remove all 10	C2	2.1m	20+
16	T034	5291 - 5292 x 9	Lime	6	110	1	1	1	1	2m North	Good	Represents a group of 9 semi-mature Lime displaying over all good condition	SM	Remove 9	9 trees to be removed	C2	2.1m	20+
16	T035	5293 - 5294 x 12	Lime	6	110	1	1	1	1	2m North	Good	Represents a row of 12 semi-mature Lime displaying over all good condition	SM	Remove 12	Remove 12 trees	C2	2.1m	20+
16	T036	5295 - 5296 x 9	Lime	6	110	1	1	1	1	2m North	Good	Represents a row of 9 semi-mature Lime displaying over all good condition	SM	Remove 9	Remove 9 trees	C2	2.1m	20+
16	T037	5297 - 5298 x 10	Lime	6	110	1	1	1	1	2m North	Good	Represents a row of 10 semi-mature Lime displaying over all good condition	SM	No works required	No impact	C2	2.1m	20+

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T038	5299 – 5300 x 20	Lime	6	110	1	1	1	1	3m North	Good	Represents a row of 20 semi-mature Lime displaying over all good condition	SM	Remove	Remove all 20	C2		20+
16	T039	5301 – 5302 x 24	Lime	6	110	1	1	1	1	3m North	Good	Represents a row of 24 semi-mature Lime displaying over all good condition	SM	Remove all 24	Remove 24	C2		20+
16	T040	5303 – 5304 x 22	Lime	6	110	1	1	1	1	3m North	Good	Represents a row of 22 semi-mature Lime displaying over all good condition	SM	No works required	No impact	C2	2.1m	20+
16	T041	5305 – 5306 x 8	Lime	7	180	2	2	2	2	2.5m North	Good	Represents a group of 8 semi-mature Lime displaying over all good condition	SM	Remove all 8	Remove 8	B2		20+
16	T042	5307 x 4	Lime	5	140	1.5	1.5	1.5	1.5	2m North	Good	Represents a row of 4 semi-mature Lime displaying over all good condition	SM	Remove all 1	Remove 1	C2		20+
16	T043	5308 x 7	Lime	5	140	1.5	1.5	1.5	1.5	2m North	Good	Represents a row of 7 semi-mature Lime displaying over all good condition	SM	Remove all 3	Remove 3	C2		20+
16	T044	5309	London Plane	16	260	3	3	3	3	4m North	Good	A mature London Plane displaying over all good condition	M	No works required	No impact	A2	3.6m	40+
16	T045	5310	<i>Quercus Rubra</i> Red Oak	16	310	3	3	3	3	4m South	Fair	A mature Red Oak displaying over all fair condition. This tree is in decline which is evident by the significant deadwood throughout the tree	M	Consider for removal	No impact	C2	4.1m	10+
16	T046	5311 x 3	Lime	4	100	0.5	0.5	0.5	0.5	2m East	Good	Represents a group of 3 semi-mature Lime displaying over all good condition	SM	Remove all 3	Remove 3	C2		20+
16	T047	5312 – 5313 x 11	<i>Acer Platanoides</i> Norway Maple	14	230	2	2	2	2	2m South	Good	Represents a row of 11 early mature Norway Maple. Recommend these trees be crown raised from the street lights. The very first tree in this row is dead and can be removed.	EM	Remove 5	Remove 5	B2	3.3m	20+

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	Cr. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T048	5314 – 5315 x 20	Silver Birch	5	110	1	1	1	1	2m South	Good	Represents a group of 20 semi-mature Silver Birch displaying over all good condition	SM	Remove 4	Remove 4	C2	2.1m	20+
16	T049	5316	Lime	8	220	2	2	2	2	2m East	Good	An early mature Lime displaying over all good condition	EM	No works required	No impact	C2	3.2m	20+
16	T050	5317	Lime	10	270	3	3	3	3	1m North	Good	A mature Lime displaying over all good condition. Recommend that the lowest limbs be crown raised to allow for pedestrian passing	M	Crown raise lowest limbs to allow for pedestrian passing	No impact	B2	3.7m	20+
16	T051	5318 – 5319 x 10	Norway Maple	10	270	3	3	3	3	3m East	Good	Represents a group of 10 mature Norway Maple displaying over all good condition. They are planted within a grass area	M	No works required	No impact	B2	3.7m	20+
16	T052	5320 x 5	<i>Fagus</i> Beech	24	350	3	3	3	3	2m North	Good	Represents a group of 5 mature Beech displaying over all good condition.	M	No works required	No impact	A2	4.5m	40+
16	T053	5321	<i>Quercus Ilex</i> Holm Oak	18	470	4	4	4	4	2m South	Good	A large mature Holm Oak displaying over all good condition	M	No works required	No impact	A2	5.7m	20+
16	T054	5322	Holm Oak	16	490	4	4	4	4	4m North	Good	A large mature Holm Oak displaying over all good condition	M	No works required	No impact	A2	5.9m	20+
16	T055	5323	Holm Oak		490	4	4	4	4	3m North	Fair	A large mature Holm Oak displaying over all fair condition. There is a large dead section on the Southern side and the tree is showing signs of decline.	M	Remove all the deadwood	No impact	C2	5.9m	10+
16	T056	5324	<i>Acer Pseudoplatanus</i> Sycamore	10	260	3	3	3	3	3m North	Fair	A mature Sycamore displaying over all fair condition. This tree has been suppressed by the larger surrounding trees	M	Consider for removal	No impact	C2	3.6m	10+
16	T057	5325	Sycamore	18	500	5	3	5	5	4m North	Good	A large mature Sycamore displaying over all good condition	M	No works required	No impact	B2	6.0m	20+

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	Cr. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T058	5326	Holm Oak	16	570	4	4	4	4	3m North	Good	A large mature Holm Oak displaying over all good condition	M	No works required	No impact	B2	6.7m	20+
16	T059	5327	Sycamore	16	300	4	4	4	4	4m North	Good	A mature Sycamore displaying over all good condition	M	No works required	No impact	B2	4.0m	20
16	T060	5328	Sycamore	16	300	4	4	4	4	4m North	Good	A mature Sycamore displaying over all good condition	M	No works required	No impact	B2	4.0m	20
16	T061	5329	Sycamore	16	300	4	4	4	4	4m North	Good	A mature Sycamore displaying over all good condition	M	No works required	No impact	B2	4.0m	20
16	T062	5330	Sycamore	14	280	3	4	3	3	4m North	Good	A mature Purple Leafed Sycamore displaying over all good condition	M	No works required	No impact	B2	3.8m	20+
16	T063	5331	Lime	18	530	4	4	4	4	5m North	Good	A large mature Lime displaying over all good condition	M	No works required	No impact	B2	6.3m	20+
16	T064	5332	Lime	16	430	3	3	3	3	3m South	Good	A large mature Lime displaying over all good condition	M	No works required	No impact	B2	5.3m	20+
16	T065	5333	Lime	16	380	3	3	3	3	3m East	Good	A large mature Lime displaying over all good condition	M	No works required	No impact	B2	4.8m	20+
16	T066	5334	Holm Oak	14	420	3	3	3	3	2m North	Good	A large mature Holm Oak displaying over all good condition	M	No works required	No impact	B2	5.2m	20+
16	T067	5335	Holm Oak	14	350	5	5	5	5	1m South	Good	A large mature multi-stemmed Holm Oak displaying over all good condition	M	No works required	No impact	B2	4.5m	20+
16	T068	5336	Holm Oak	14	350	5	5	5	5	1m South	Good	A large mature multi-stemmed Holm Oak displaying over all good condition	M	No works required	No impact	B2	4.5m	20+
16	T069	5337	Holm Oak	16	360	4	4	4	4	2m South	Good	A mature Holm Oak displaying over all good condition	M	No works required	No impact	B2	4.6m	20+
16	T070	5338	Holm Oak	16	360	4	4	4	4	2m South	Good	A mature Holm Oak displaying over all good condition	M	No works required	No impact	B2	4.6m	20+
16	T071	5339	Norway Maple Crimson King	16	300	2	2	2	2	3m North	Good	A mature Norway Maple Crimson King displaying over all good condition. There is some minor deadwood located in the lower canopy	M	Remove the deadwood	No impact	B2	4.0m	20

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T072	5340	Norway Maple Crimson King	16	300	2	2	2	2	3m North	Good	A mature Norway Maple Crimson King displaying over all good condition. There is some minor deadwood located in the lower canopy	M	Remove the deadwood	No impact	B2	4.0m	20+
16	T073	5341	Norway Maple Crimson King	16	300	2	2	2	2	3m South	Good	A mature Norway Maple Crimson King displaying over all good condition. There is some minor deadwood located in the lower canopy	M	Remove the deadwood	No impact	B2	4.0m	20+
16	T074	5342	Norway Maple Crimson King	16	300	2	2	2	2	3m South	Good	A mature Norway Maple Crimson King displaying over all good condition. There is some minor deadwood located in the lower canopy	M	Remove the deadwood	No impact	B2	4.0m	20+
16	T075	5343	Norway Maple Crimson King	16	300	2	2	2	2	3m South	Good	A mature Norway Maple Crimson King displaying over all good condition. There is some minor deadwood located in the lower canopy	M	Remove the deadwood	No impact	B2	4.0m	20+
16	T076	5344	Norway Maple Crimson King	16	300	2	2	2	2	3m South	Good	A mature Norway Maple Crimson King displaying over all good condition. There is some minor deadwood located in the lower canopy	M	Remove the deadwood	No impact	B2	4.0m	20+
16	T077	5345	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the lower canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+
16	T078	5346	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the lower canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+
16	T079	5347	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the lower canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+
16	T080	5348	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T081	5349	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the lower canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+
16	T082	5350	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the lower canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+
16	T083	5351	Norway Maple	14	260	2	2	2	2	3m East	Good	A mature Norway Maple displaying over all good condition. There is some deadwood in the lower canopy.	M	Remove the deadwood	No impact	B2	3.6m	20+
16	T084	5352	Norway Maple	14	240	3	3	3	3	3m East	Good	A mature Norway Maple displaying over all good condition	M	Remove	Remove	B2	3.4m	20+
16	T085	5353	<i>Sorbus</i> Mountain Ash	12	280	2	2	2	2	2m North	Poor	This tree is dead	M	Remove based on its cond.	Remove	U	3.8m	0
16	T086	5354	Mountain Ash	12	280	2	2	2	2	2m North	Good	A mature Mountain Ash displaying over all good condition	M	No works required	No impact	B2	3.8m	20+
16	T087	5355	Mountain Ash	12	280	2	2	2	2	2m North	Good	A mature Mountain Ash displaying over all good condition	M	No works required	No impact	B2	3.8m	20+
16	T088	5356	Mountain Ash	12	280	2	2	2	2	2m North	Good	A mature Mountain Ash displaying over all good condition	M	No works required	No impact	B2	3.8m	20+
16	T089	5357	Mountain Ash	12	280	2	2	2	2	2m North	Good	A mature Mountain Ash displaying over all good condition	M	No works required	No impacts	B2	3.8m	20+
16	T090	5358	Mountain Ash	12	280	2	2	2	2	2m North	Good	A mature Mountain Ash displaying over all good condition	M	No works required	No impact	B2	3.8m	20+
16	T091	5359	Lime	4	100	1	1	1	1	3m North	Good	A semi-mature Lime displaying over all good condition	SM	No works required	No impact	C2	2.0m	20
16	T092	5360	Holm Oak	14	380	5	5	5	5		Good	A large mature multi-stemmed Holm Oak displaying over all good condition	M	No works required	No impact	B2	4.8m	20+



R	Tree id	Tag #	Species	HT (m)	DBH (mm)	Cr. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works .	Cat.	RPA Radius m	Est. Remaining yrs
16	T093	5361	Norway Maple	12	120	1	1	1	1	3m East	Good	A semi-mature Norway Maple displaying over all good condition	SM	No works required	No impact	C2	2.2m	10+
16	T094	5362	Norway Maple	14	350	3	3	3	3	3m South	Good	A mature Norway Maple displaying over all good condition	M	No works required	No impact	B2	4.5m	20+
16	T095	5363	Norway Maple	12	260	4	2	3	3		Good	A mature Norway Maple displaying over all good condition	M	No works required	No impact	B2	3.6m	20+
16	T096	5364	Norway Maple	10	240	2	2	3	3		Fair	A mature Norway Maple displaying over all fair condition. There is some deadwood contained within this tree	M	Remove the deadwood	No impact	C2	3.4m	10+
16	T097	5365	Mountain Ash	10	120	2	2	2	2	2m East	Fair	A mature Mountain Ash displaying over all fair condition. There is some deadwood contained in the inner canopy	M	Remove the deadwood	No impact	C2	2.2m	10+
16	T098	5367	Holm Oak	8	280	3	1	1	1	3m East	Fair	An early mature Holm Oak displaying over all fair condition. This tree has been suppressed by the larger surrounding trees	EM	Consider for removal	No impact	C2	3.8m	10+
16	T099	5368	Norway Maple	12	280	3	2	2	2	2m North	Good	A mature Norway Maple displaying over all good condition. This tree has been suppressed by the larger surrounding trees	M	No works required	No impact	C2	3.8m	10+
16	T100	5369	Holm Oak	16	340	3	3	3	3	4m North	Good	A mature multi-stemmed Holm Oak displaying over all good condition	M	No works required	No impact	B2	4.4m	20+
16	T101	5370	Holm Oak	0	280	0	0	0	0	0	Poor	This tree is dead	M	Remove based on its cond.	Remove	U	3.8m	0
16	T102	5371	Holm Oak	10	200	2	2	2	2	3m North	Fair	An early mature Holm Oak displaying over all fair condition. It has been suppressed by the larger surrounding trees	EM	Consider for removal	No impact	C2	3.0m	10+
16	T103	5372	Holm Oak	8	150	3	3	3	3	2m North	Good	An early mature Holm Oak displaying over all good condition	EM	No works required	No impact	B2	2.5m	20+
16	T104	5373	Holm Oak	8	150	3	3	3	3	2m North	Good	An early mature Holm Oak displaying over all good condition	EM	No works required	No impact	B2	2.5m	20+

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T105	5374	Holm Oak	8	150	3	3	3	3	2m North	Good	An early mature Holm Oak displaying over all good condition	EM	No works required	No impact	B2	2.5m	20+
16	T106	5375	Holm Oak	16	280	2	2	2	2	2m East	Good	A mature Holm Oak displaying over all good condition	M	No works required	No impact	B2	3.8m	20+
16	T107	5376	Holm Oak	18	500	4	4	4	4	3m North	Good	A large mature multi-stemmed Holm Oak displaying over all good condition	M	No works required	No impact	B2	6.0m	20+
16	T108	5377	Holm Oak	12	250	2	2	2	2	3m East	Good	An early mature Holm Oak displaying over all good condition. It has been slightly suppressed as is grown within a tight group.	EM	No works required	No impact	C2	3.5m	10+
16	T109	5378	Holm Oak	12	250	2	2	2	2	3m East	Good	An early mature Holm Oak displaying over all good condition. It has been slightly suppressed as is grown within a tight group.	EM	No works required	No impact	C2	3.5m	10+
16	T110	5379	Holm Oak	12	250	2	2	2	2	3m East	Good	An early mature Holm Oak displaying over all good condition. It has been slightly suppressed as is grown within a tight group.	EM	No works required	No impact	C2	3.5m	10+
16	T111	5380	Norway Maple	16	550	4	4	4	4	4m East	Good	A large mature Norway Maple displaying over all good condition	M	No works required	No impact	B2	6.5m	20+

Mayor Street

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T112	4139	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T113	4140	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T114	4141	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T115	4142	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T116	4143	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T117	4144	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T118	4145	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T119	4146	London plane	16	270	2	2	2	2	3M north	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	3.7m	
16	T120	4147	London plane	14	160	1.5	1.5	1.5	1.5	3m North	Good	An early mature London plane displaying over all good condition	EM	No works required	No impact	B2	3.7m	20+

R	Tree id	Tag #	Species	HT (m)	DBH (mm)	CR. Sp. N	Cr. Sp. S	Cr. Sp. E	Cr. Sp. W	Cr clearance & Dir.	Physiological/ Structural condition	Condition comments	Life stage	PMR	Impact of the works	Cat.	RPA Radius m	Est. Remaining yrs
16	T121	4148 x 5	Mountain as	6	160	1.5	1.5	1.5	1.5	3m North	Good	A row of rowans displaying over all good condition	EM	No works required	No impact	B2	2.6m	20+
16	T122	4149	Lime	14	200	2	2	2	2	2m south	Good	An early mature Lime displaying over all good condition	EM	No works required	No impact	B2	3m	20+
16	T123	4150	Lawson cypress	6	120	1.5	1.5	1.5	1.5	1m south	Good	A cypress in private property	SM	No works required	No impact	C2	2.2m	20+
16	Group 1		Mixed species	14	260	3	3	3	3	2m north	Good	A row of mixed species consisting of holm oak, Norway maple and sycamore	M	No works required	No impact	B2	3.6m	20+
16	Group 2		Mixed species	14	260	3	3	3	3	2m north	Good	A row of mixed species consisting of holm oak, Norway maple and sycamore	M	No works required	No impact	B2	3.6m	20+
16	Group 3		Mixed species	8	200	2	2	2	2	3m North	Good	A group of Norway maple, lime and sycamore	EM	No works required	No impact	B2	3m	20+

## Appendix B

# Arboricultural Method Statement

## B1 Arboricultural Method Statement Overview

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This Arboricultural Method Statement details the specification for tree protection measures and how sensitive operations are to be achieved in proximity to trees to be retained. It also addresses the general management of site activities to ensure that retained trees are not inadvertently damaged.

This document may need to be amended to reflect more detailed or updated information as it becomes available. The final agreed version must be read in conjunction with the final Tree Protection Plan (to be developed) and copies of both documents must be permanently available on site for reference throughout the works. No changes may take place to the content or application of the Method Statement without the prior written approval of the Project Arboriculturist

When planning permission is in place, some details (including changes in layout, services, materials, tree protection measures and the order of works) may be subject to change. No changes should be enacted without the prior written approval of the Project Arboriculturist. The Method Statement must be reviewed in advance of the commencement.

## B2 Pre commencement site meeting

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Prior to the commencement of works on site a meeting must take place including the contractor and the Project Arboriculturist. This meeting will allow a further discussion of the programme of works, tree protection measures, the locations of the areas for storage/site organisation and the agreement of any changes to the Method Statement which will then be formally updated and approved as required.

## **B3**      **Order of operations**

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- 1      Pre commencement Site meeting;
- 2      Preliminary tree works;
- 3      Site briefing for Site personnel;
- 4      Installation of protective fencing and ground protection as required;
- 5      Demolition and enabling works including utility diversions;
- 6      Re-adjustment of protective fencing and ground protection as required;
- 7      Construction operations;
- 8      Re-adjustment of protective fencing and ground protection as required;
- 9      Installation of new hard surfaces and hard landscaping;
- 10     Site signed off on agreed completion of significant development works;
- 11     Dismantling of tree protection measures;
- 12     Soft landscaping works within the Root Protection Area (RPA) of retained trees;

## **B4**      **Preliminary tree works**

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All approved tree works are to be completed by suitably qualified and insured contractors and must take place before protective fencing is installed and any Site works begin.

All tree works must be carried out in line with the principles of BS3998: 2010 Tree work – recommendations and be conducted in such a way that no damage is caused to any tree to be retained. The tree works contractor must avoid the production of ruts on unmade ground.

A tree works specification which identifies trees to be felled or pruned is included in the schedule in Appendix A.

Due to the extensive nature of the Site and the potential for tree growth in the period between planning and construction, prior to the commencement of works on a given area of the Site a walkover must be undertaken by the Site team including the Project Arboriculturist to determine if any additional tree works are likely to be required to facilitate the development.

If further additional tree works are deemed to be required during the construction period, the advice of the Project Arboriculturist is to be obtained. No tree works are to take place without the consent of the Project Arboriculturist.

Prior to the commencement of any tree works a thorough check for protected species (including nesting birds, bats and badgers) is to be undertaken. If evidence of any protected species is discovered the advice of a suitably qualified ecologist must be obtained. Tree works are to be undertaken outside of the typical nesting bird season (March to September).

Outside of this period any individual trees will be inspected for evidence of nesting birds by a suitably qualified person prior to works being carried out.

## **B5**      **Site briefing**

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The Site Manager is responsible for ensuring that all personnel are made fully aware of the constraints posed by retained trees on site and the measures in place to ensure they are protected, including having full on-site access to the Arboricultural Method Statement and Tree Protection Plan (TPP). It is good practice for the Project Arboriculturist to be involved in the site briefing to ensure all constraints and tree protection measures are clearly understood.

## **B6**      **Site monitoring**

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Site monitoring shall be established to guide contractors on Site, ensure that tree protection measures are implemented and adhered to.

This includes site visits by the Project Arboriculturist to confirm the correct installation of protective fencing, to oversee sensitive elements of works within the RPA of retained trees and to sign off the site when works are complete before fencing can be dismantled.

The frequency of Site monitoring will be agreed in writing before works begin on Site (but is recommended to be at least every four weeks in addition to ad hoc monitoring of particularly sensitive operations near retained trees as required).

## **B7**      **Toolbox talk**

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A toolbox talk should be provided to Site workers to highlight the need for safe driving of plant and working within the defined corridor to ensure that accidents and resulting potential damage to trees not covered by tree protection measures are eliminated. A copy of the TPP should be used in the process of explaining to all personal the requirements required to ensure retained trees are not damaged and copies of both the TPP and this Method Statement must be available in the Site office at all times.

## B8 Protective fencing

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In many areas of the Site the works are contained within the existing highway boundary bordered by existing walls or fencing and surrounded by hard surfacing. In such cases no additional tree protection fencing is likely to be required.

Where retained trees are at risk of damage, the default position as set out by BS 5837:2012 is that retained trees must be protected from construction operations with the erection of robust protective fencing positioned on the outer edge of the RPA or crown spread (whichever is greatest).

All site operations will be restricted to the area outside of tree protection fencing and this area will form a Construction Exclusion Zone (CEZ) unless agreed otherwise. Protection measures will be installed as set out in the Tree Protection Plan.

The area inside the fence and any additional tree protection measures will be sacrosanct and must not be removed or altered without the prior approval of the Project Arboriculturist. Any damage to tree protection measures must be reported immediately.

### **Default Specification:**

Fencing shall be constructed with robust vertical and horizontal scaffold framework with weldmesh panels firmly attached in accordance with BS 5837:2012 Figure 2. Vertical support poles and bracing poles must be located with care to avoid underground utility services and will be sited to avoid the structural roots of retained trees. Where driven supports are not practicable due to the presence of roots or underground utilities block trays, counterweights or equivalent can be utilised.

## B9 Ground protection

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Existing hard surfacing will act as fit for purpose ground protection where it is to be retained within the RPA of retained trees. For existing areas of unsurfaced ground within RPAs where construction access is unavoidable, ground protection will be required to protect the structure of the soil from compaction. This should also apply to areas for new tree planting.

As set out in section 6.2.3.3 of BS5837:2012 the following ground protection measures will be appropriate:

- Suitable ground protection for pedestrian only access will comprise a single thickness of scaffold boards set on a compressible layer of 100mm of woodchip on a geotextile separation layer.
- Pedestrian operated plant up to two tonnes in weight will require the use of a proprietary ground protection system (such as Ground Guards, Eki mats, Eve Trakway or equivalent) set on a minimum depth of 150mm woodchip or sharp sand.
- Heavier loads will require ground protection to an engineering specification in conjunction with arboricultural advice.

As a guide, the threshold beyond which root development is significantly affected is a bulk density ranging from 1.4g per cm<sup>3</sup> for clay soils, to 1.75g per cm<sup>3</sup> for sandy soils.



## B10 Carriageway widening into footway or verge

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Where the carriageway is to be widened into the existing footway or verge within the RPA of a retained tree, this must be supervised by the Project Arboriculturist.

The outer extent of the required excavation (nearest to the tree) should be carefully excavated by hand to allow roots to be assessed and pruned as necessary. Exposed roots must be covered with hessian sacking or equivalent. The existing kerb edging and haunching can then be very carefully removed with an excavator working from the existing carriageway, reaching towards the tree and working backwards, reverting to working using hand tools in areas close to retained tree roots as required.

New edging must have the thinnest profile and extent of haunching practicable and pinned alternatives will be applied where practicable. Backfill is to utilise the excavated parent material to replicate the original soil profile.

The sub-base for replacement hard surfacing (where required) must be hand tamped only to prevent significant compaction of the underlying soil.

## B11 Footway or verge widening into existing carriageway

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Where the footway is to be widened into the existing carriageway, the existing kerb will need to be carefully removed under arboricultural supervision. Kerb stones must be removed using hand tools including pneumatic breakers. Plant positioned on the carriageway can lift out kerb sections using slings. Haunching must be carefully broken out by hand. Any exposed roots must then be covered with soil or hessian to prevent drying out. There will be no constraint on new edging or haunching as it will sit within or above the existing build-up of the carriageway where no roots are present. Backfill must utilise good quality topsoil where the verge is being widened. Where the footway is being widened the new section of the footway can be constructed using a standard methodology providing that the sub-base of the existing footway is retained intact and undisturbed.

## B12 Removal and/or replacement of an existing hard surface within an RPA

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At the time of writing, the full extent of resurfacing has not been fully determined but there is a potential for extensive areas of resurfacing across the Scheme. Where resurfacing is required within the RPA of a retained tree the following principles will apply:

### **Replacement hard surfacing on top of existing surface:**

Where practicable, the new hard surface is to be installed on top of the existing surface and the existing edging is to be retained intact.

### **Removal of existing surface (wearing course):**

Before work commences, the Project Arboriculturist will assess the potential for significant roots immediately below the wearing course and in such areas, all works must be achieved by hand. The wearing course must be removed with hand tools (including a handheld pneumatic breaker where required). The existing surface must be 'rolled back' with contractors working from the existing hard surface and with pedestrian only access on the exposed sub-base. With the prior agreement of the Project Arboriculturist, it will be acceptable to use light tracked machinery such as a mini excavator with an untoothed bucket to assist with the removal of the existing surfacing where this can be achieved without damage to any significant roots beneath.

Machinery must work from existing hard standing only. Where surface roots are obviously present (and at the junction between hard and soft ground) surfacing is to be removed by hand only.

#### **Restoring hard surfacing to soft ground:**

Following the removal of the wearing course the sub-base is to be broken up using hand tools via pedestrian access only. Materials must be removed using wheelbarrows or via hand loading of long reach machinery positioned on adjacent hard surfacing or ground protection. The sub-base is to be rolled back. Following removal, any low points or hollows are to be filled with sharp sand or gravel and topsoil be applied to the required level which can then be seeded or turfed as required. This area must then be completely fenced off for the remainder of the works or be otherwise protected with ground protection.

#### **Installing replacement pedestrian or light vehicular hard surfacing on an existing sub-base.**

The sub-base must be retained intact, ameliorated as required and utilised for the new surface. Levels are to be increased using inert granular fill by a maximum of 100mm. The sub-base must be hand tamped only to prevent significant compaction of the underlying soil.

Exposed roots must be treated in accordance with the guidelines in Section B19 of this Method Statement.

Following the removal of existing hard surfacing, the unprotected ground within RPAs must be immediately protected with protective fencing and/or ground protection (where access is required) as set out in Section B9 to ensure that the structure of the soil and tree roots are protected.

Pedestrian only access onto the exposed and retained sub-base will be acceptable to allow the installation of replacement hard surfacing. The new surface should be laid as soon as practicable.

Any exposed roots greater than 25mm in diameter must be assessed by the Project Arboriculturist.

If roots which are to be retained are exposed at ground level these should be covered with a thin layer of sharp sand and adjacent levels built up around it. This layer must not be significantly compacted, and hand tamped only.

#### **Installing replacement heavy vehicular hard surfacing on an existing sub-base:**

The sub-base must be retained intact, ameliorated as required and utilised for the new surface. Exposed roots are unlikely to be encountered due to the heavily engineered sub-base of the existing surface. Where encountered any roots must be treated in accordance with the guidelines in Section B19 of this Method Statement. The new surface must be rolled out working from the existing sub-base only.

Surfacing operations are to be conducted solely from the existing footprint of the road. Access beyond the footprint will be restricted with Tree Protection Barriers as necessary.

#### **Edging:**

Existing edging within the RPA of a retained tree will be retained intact and used as the edging for the new surface.

Where the removal of existing edging is unavoidable within an RPA, this will be removed carefully by hand under the supervision of the Project Arboriculturist.

Plant positioned outside of the RPA, or on existing hard surfacing within the RPA, may reach in to assist in lifting edging out of its position using slings but must not be used to excavate around the edging unless otherwise agreed in advance with the Project Arboriculturist.

Where practicable, new edging must be installed without excavation using pinned alternatives. Where an excavated edge is unavoidable both the edging and any footing must have the narrowest profile practicable. Where significant roots are present, which cannot be pruned, reinforced sections of kerb acting as lintels to bridge important roots will be applied where practicable.

## B13 Installation of new hard surfacing within RPAs

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Very small areas of new hard surfacing in the outer RPA of a retained tree can be constructed using hand excavation supervised by the Project Arboriculturist. Due to the very small incursion within an RPA, no specialist construction measures will be required. No roots greater than 25mm in diameter will be severed without the consent of the Project Arboriculturist. Where significant roots are encountered, the methodology set out below will be applied to avoid root severance. The approach below will apply where any significant area of new surfacing is required within the RPA of a retained tree.

### **Three-Dimensional Load Bearing Raft:**

Construction of the significant areas of new footway or cycleway hard surfacing within the RPA of retained trees shall follow 'no dig' principles. The surface shall be engineer designed to meet the highest expected loads, including those used for the construction of the route.

A proprietary 3D cellular confinement system will be used to allow the hard surface to be installed without excavation within RPAs.

Work will preferably be carried out in dry conditions within the period of May to October when the ground is less liable to compaction.

Existing ground vegetation shall be treated with an approved herbicide such as glyphosate, 2-3 weeks before construction takes place. Killed vegetation can then be subject to a maximum 50 mm vegetative scrape which must take place by hand. Any arisings shall be removed (if left in situ they could cause anaerobic conditions as they break down which could be detrimental to tree roots).

Any hollows must be filled with inert granular material such as sharp sand or washed no fines gravel.

Builder's sand must not be used as this contains salts which are toxic to tree roots.

Any rocks, stumps (if present) or other protruding objects within the footprint of the load bearing surface must be removed. Stumps must be ground out below ground level. All other objects must be removed by hand.

A robust geotextile membrane must be laid out across the proposed area for the load bearing surface within the RPA. Joints must overlap by approx. 300 mm and be stapled together. This must be capable of resisting puncture by the angular stone fill, and also able to filter pollutants to prevent or reduce contamination of the soil. The load bearing surface is only required within the RPAs.

It is essential to consider the final levels of the load bearing surface which will typically be 75mm-100 mm in thickness for footway or cycleway applications plus the final wearing course (dependent on its application).

The final surface must be resistant to future growth of tree roots and also must be positioned to give a minimum clearance of 500mm from the base of a retained tree. The resulting gap can be filled with inert granular fill, if required. A three-dimensional load bearing surface which allows the lateral and horizontal movement of air and water (e.g., Cellweb or equivalent), must be fully expanded and stapled together. This is to be laid on top of the geotextile layer. This surface must be able to support the greatest expected load the surface is likely to experience (including any construction traffic).

The load bearing surface shall be 'rolled out', with construction operations beginning from outside the RPA or from existing hard standing and progressing forwards using the new load bearing surface. The load bearing surface must be filled with 4/20, 20/20 or 20/40 washed angular stone.

Edging is not typically required to stabilise the load bearing surface and the edge of the surface. If edging is required, this must be installed without excavation within RPAs. Appropriate methods would include the use of treated wooden peg and boards.

Concrete kerb stones can be cast directly onto the web if required, however all uncured concrete must be fully contained with impermeable plastic sheeting and sandbags to prevent run off into the RPA of retained trees. The use, storage and mixing of concrete must comply with the provisions set out in section B19.

Where a road edge kerb must be installed by excavation this must be of the thinnest profile practicable with the minimum extent of haunching feasible and all excavation work must be undertaken by hand with any roots managed under the guidance of the Project Arboriculturist. Alternative kerb construction may be required where significant roots are identified (such as using lintels or equivalent to bridge important roots).

The load bearing surface must have an even transition with adjacent hard surfacing or structures. This must be achieved outside of the RPA of all retained trees. Where this is not practicable, structural soil or a mixture of topsoil and sharp sand can be employed to raise levels by up to 100mm. Where levels are to be raised in excess of this height the advice of the Project Arboriculturist must be obtained.

## **B14 Demolition**

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Existing boundary walls, noise barriers, footbridges, lamp columns and other structures are to be demolished within or close to the RPA of retained trees. All demolition must be inward into the existing footprint of the structure or away from tree positions and be achieved by working backwards away from retained trees. No arisings are to fall or be stored in unsurfaced or protected areas of tree RPAs.

All plant and machinery associated with the demolition process will be positioned outside of the RPA of retained trees or on existing hard surfacing or ground protection and must operate under the guidance of a banksman where they must operate within 5m of any part of a retained tree.

Existing footings are to be retained, in situ where practicable to minimise disturbance. Where removal is unavoidable, footings within RPAs must be broken out carefully by hand, or where feasible via the careful use of plant positioned outside of RPAs or on ground protection/existing hard surfacing under the supervision of the Project Arboriculturist.

## **B15 Construction of New Boundary Walls**

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Where a new wall cannot avoid an RPA, specialist construction methods must be employed to prevent extensive root severance. Footings must utilise carefully located pads or narrow diameter piles with floating beams (at or above ground level) unless the presence of significant roots has been otherwise discounted following trial excavations under the supervision of the Project Arboriculturist.

Footings must be carefully positioned with hand dug (potentially using compressed air/soil vacuum) trial holes or trenches to identify optimal positioning to avoid significant roots.

Ground protection must be in place where repeated access is required over unsurfaced ground within an RPA.

## **B16 Installation of Piles**

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Where new piles are to be installed within or close to the RPA or retained trees the canopy of the tree is to be pruned back before any construction work commences on Site to provide a clearance of the pile head to facilitate this work. For smaller piles, smaller plant or pedestrian installation only should be applied.

Piling rigs to be sited outside of the RPA or on ground protection within an RPA and protective fencing is to be installed to maintain an exclusion zone within as much of the RPA as practicable.

The piling rig is to be positioned as far from the canopy and RPA of the tree as practicable and reach inwards.

## **B17 Movement of Vehicles and People and the Movement and Operation of Machinery**

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Due to the spatial constraints on site, construction works and in particular the use of machinery must be carefully coordinated to avoid damage to retained trees. A banksman must be in place for any operations which occur within 5m of any part of a retained tree. Long reach machinery with jibs, booms

or counterweights will require particular care.

Where trees are at risk of impact damage from plant that cannot be controlled with fencing or a careful working methodology, consideration must be given to any requirement for access to facilitate pruning which must be agreed in advance with the Project Arboriculturist.

## **B18 Site organisation, storage and mixing of materials**

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The area of constraint associated with retained trees within, or surrounding compounds will be fenced off as an exclusion zone at the outset.

The storage and mixing of materials and any re-fuelling shall take place at least 5m from the RPA of any retained trees and also take into account any potential for run off. Where this is an issue, measures such as bunding with robust impermeable polythene sheeting and sandbags must be put in place to prevent accidental run off reaching the rooting zone of retained trees.

No changes in ground level are permitted within the RPA of a retained tree.

No fires shall take place within an RPA or within 5m of any part of a retained tree. No signs, cables or other items are to be attached to any part of a retained tree.

## **B19**    **General principles for the management of tree roots**

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Where agreed excavation by hand tools or compressed air takes place within an RPA the following principles will apply:

- Individual or small groups of roots less than 25 mm in diameter will be retained where practicable but can be severed with a sharp tool such as secateurs or pruning saws to leave a clean-cut end (ideally 100mm back from the face of the excavation to account for future regrowth) where they pose an obstruction.
- Where roots are encountered which are larger than 25 mm in diameter or where significant groups of smaller roots are found, the advice of the Project Arboriculturist must be sought to decide an appropriate course of action.
- Roots must only be exposed for the minimum period practicable. In the interim period any exposed roots (including the face of any excavation within an RPA) must be completely covered with dampened hessian sacking (which may require ongoing re wetting) to avoid drying out and exposure to light. Backfill for excavations should ideally utilise the parent material and must not be significantly compacted.

## **B20**    **Installation of new lamp columns, road signs and bus shelters**

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Where new features such as lamp columns, road signs or bus shelters are to be installed within the RPA of a retained tree, the final position of the feature must be adjusted to give the greatest clearance of adjacent tree stems practicable and to reduce any conflict with tree branches or any requirement for pruning.

Footings must be excavated by hand or compressed air (e.g., air spade/soil vacuum) for at least the upper 0.5-1m and be adjusted to avoid significant tree roots. Footings must be the smallest dimensions feasible and utilise screw piles or equivalent where necessary. Any uncured concrete required must use the driest mix feasible and excavations must be lined with an impermeable liner to prevent uncured concrete leaching into the surrounding soil. Any cabling must be installed in accordance with the principles set out in B22.

## **B21 Installation of new drainage within RPAs**

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Drainage has been designed to avoid the RPA of retained trees as much as practicable. Solutions such as surface channels, off set chambers positioned to avoid RPAs as much as practicable and hand excavated sections of piped filter drain positioned to avoid trees roots will be utilised to further reduce impacts on adjacent trees as appropriate. Where excavation for new drainage must take place within an RPA, the method of installation will be agreed in advance with the Project Arboriculturist and will typically involve the nearest area of excavation to the tree being completed by hand or equivalent to allow significant roots to be carefully exposed and pruned. Roots will be managed in accordance with the principles set out in Section B19.

## **B22 Installation or diversion of utilities within RPAs**

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Utility diversion and new utilities have not been fully defined at this stage. The default position is that all services be located outside of the RPA of retained trees. In the context of this Site, it is not feasible to fully avoid the RPA of retained trees and therefore either trenchless installation below tree root systems or hand dug/compressed air excavation through RPAs where significant roots can be retained and worked around, will be required.

### **Use of trenchless techniques:**

Where services can't avoid the RPA of retained trees, the primary consideration must be to install them using trenchless insertion techniques such as impact moling, direct drilling or equivalent.

Insertion and retrieval pits must be located outside of the RPA of retained trees. The depth of the run must be at least 2m below ground level and should be located as far from the tree as practicable.

The mole must be lubricated with water only.

Installation must follow the principles set out in the National Joint Utilities Group (NJUG) Vol 4: Guidelines for the planning, installation, and maintenance of utility apparatus in proximity to trees (issue 2) and BS5837 Section 7.7 and Table 3.

Replacement pipes must be installed via pipe bursting, relining or equivalent trenchless techniques where they are located within the RPA of a retained tree. Pipe bursting or relining equipment must be positioned outside of the RPA at all times.

### **Hand digging:**

Where trenchless installation isn't feasible, shallow utility runs can be installed via hand or compressed air/soil vacuum excavation. The excavation will be located as far from the stem of the tree as practicable and must be carried out by hand (ideally using compressed air such as an Air Spade and soil vacuum) under the supervision of the Project Arboriculturist.

Pedestrian only access will be permitted, and ground protection measures as set out in Section B10 will be employed where no hard surfacing is in place, with fencing positioned immediately adjacent to restrict any further access into RPAs.

Excavation will be supervised by the Project Arboriculturist who will be on hand to advise on the management of any roots encountered and to ensure the approved tree protection methodology is fully adhered to. Roots smaller than 25mm in diameter can be cut with a clean sharp tool where they pose an obstruction.

Should significant roots (larger than 25mm diameter or large clumps of smaller roots) be encountered, these will be retained and wrapped in dampened hessian to prevent drying out and pipes will be routed around them wherever practicable. If significant roots are encountered which cannot be feasibly worked around and retained, appropriate action will be agreed with the Project Arboriculturist.

Pipes must be constructed to resist future incursion by tree roots.

All spoil/ arisings from excavation will be placed onto ground protection boards to prevent compaction, ground level changes and to assist in removal or reinstatement. Backfill is to utilise the excavated parent material where feasible, applied to restore the soil profile to its original structure (i.e., topsoil will be installed last) and must be lightly hand tamped only.

Services shall be installed following the principles set out in the National Joint Utilities Group (NJUG) Vol 4: Guidelines for the planning, installation, and maintenance of utility apparatus in proximity to trees (issue 2).

## **B23 Redundant utilities**

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Where existing services are to be removed, these must be winched out from an access/inspection chamber located outside of an RPA or left in situ.

Redundant pipework will be sealed off and will not be removed via excavation within the RPA of a retained tree.

Redundant pipework can be filled with an inert material or if confirmed to be fully watertight, may be filled with foamed concrete applied from an access point located outside the RPA of all retained trees. Concrete must be managed in accordance with section B18 of this Method Statement.

## **B24 Dismantling of tree protection measures**

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All protective fencing and ground protection must remain in place until all significant site works for a given location have been completed and approval has been obtained from the Project Arboriculturist.





This report was prepared by:

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*Yours in Conservation,*

*Michael Garry.*

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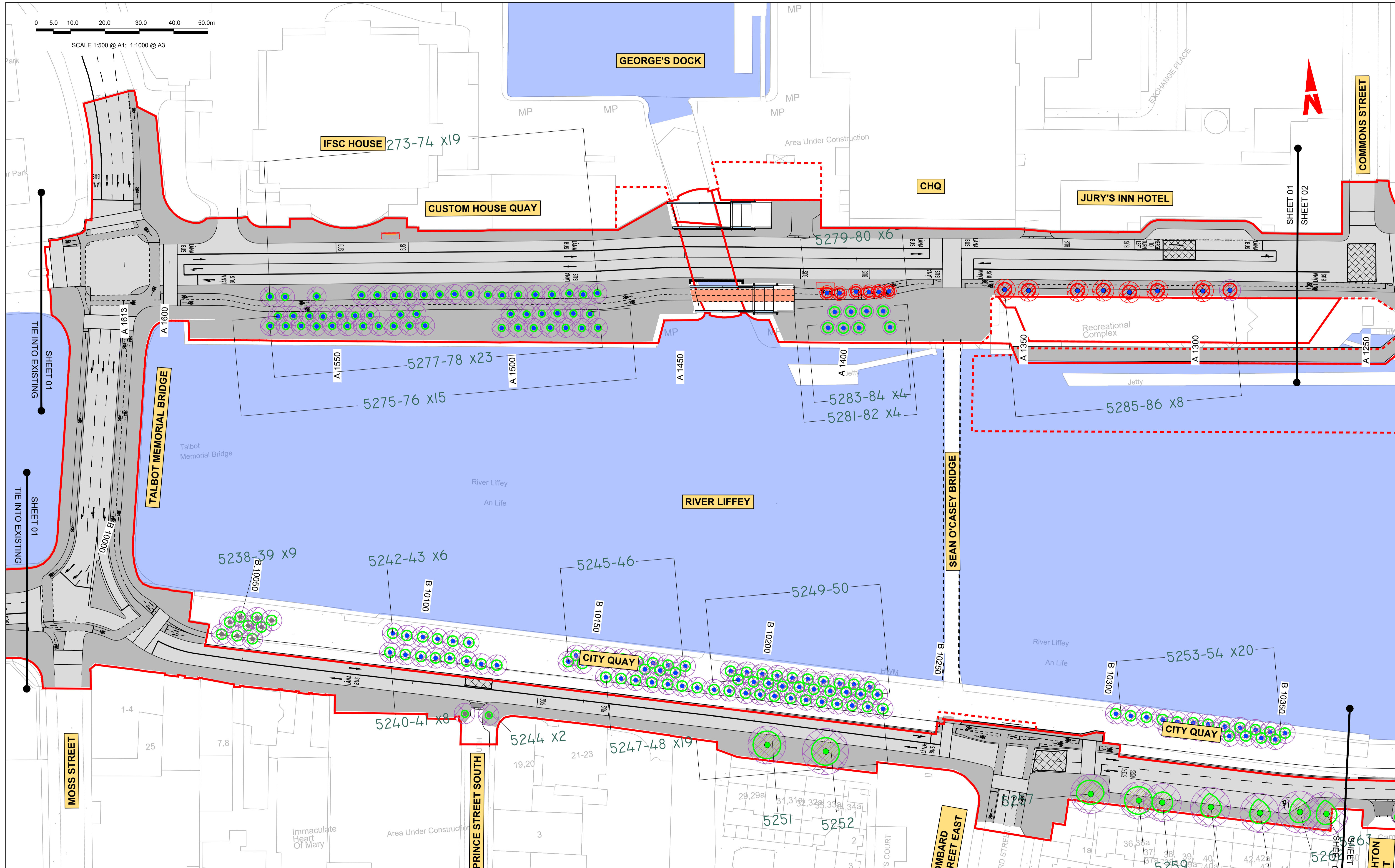
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## Appendix C

### Drawings

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0 5.0 10.0 20.0 30.0 40.0 50.0m  
 SCALE 1:500 @ A1; 1:1000 @ A3

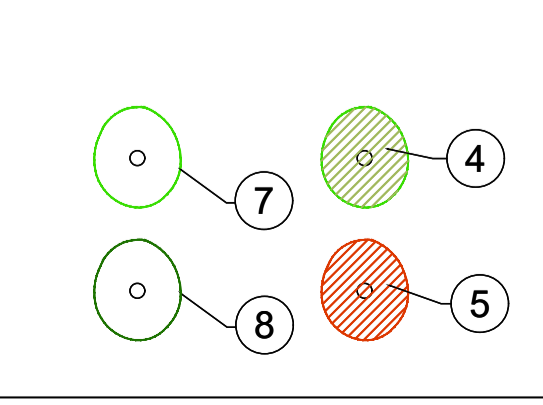


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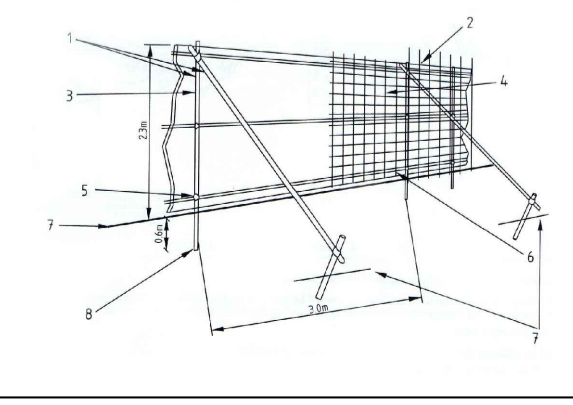
- 1 EXISTING TREE CANOPY BASED ON DIMENSIONS GATHERED ON SITE IN 4 DIRECTIONS, NORTH, SOUTH, EAST AND WEST
- 2 ROOT PROTECTION ZONE BASED ON 12 TIMES THE (DBH) AT CHEST HEIGHT
- 3 TREE TAG NUMBER
- 4 TREE TO BE RETAINED
- 5 TREE TO BE REMOVED
- 6 TREE CATEGORY BASED ON BS:5837 2012 CRITERIA
- 7 DECIDUOUS TREE CANOPY
- 8 EVERGREEN TREE CANOPY

- Category (A, A1, A2, A3)  
 Those of high quality and value: in such a condition as to be able to make a substantial contribution (a minimum of 40 years)
- Category (B, B1, B2, B3)  
 Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years)
- Category (C, C1, C2, C3)  
 Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years) or young trees with a stem diameter below 150mm
- Category (U)  
 Those in such condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reason of sound arboricultural management

- AGE GROUPINGS
- Y = YOUNG
  - MA = MIDDLE AGE
  - M = MATURE
  - OM = OVER MATURE
  - V = VETERAN



- 01 TABLES BS 5837-2012
- Key
- LOCATIONS OF FENCING TO FORM MINIMUM TREE ROOT PROTECTION AREAS
  - SITE BOUNDARY

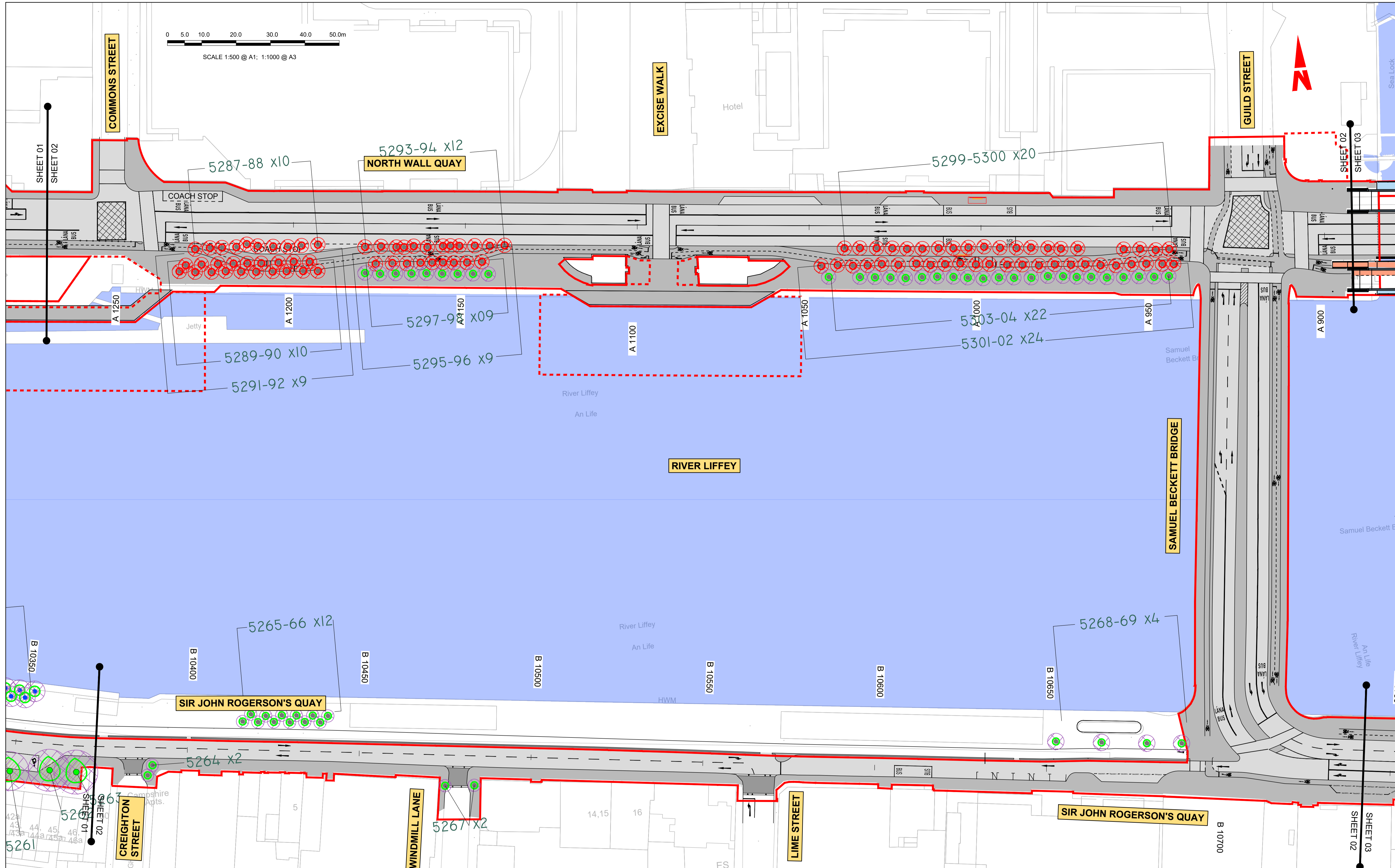
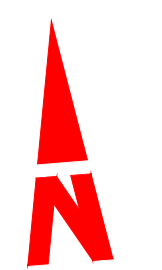
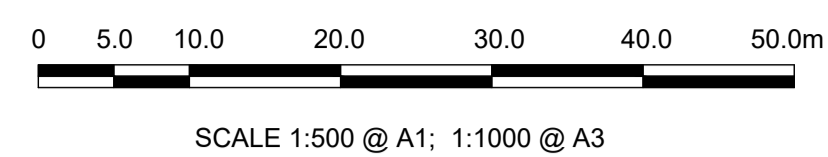


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Client: BUS CONNECTS INFRASTRUCTURE, DUBLIN				
Project: ROUTE 0016 - RINGSEND TO CITY CENTER.TREE SURVEY				
Drawing Title: Tree Protection Plan				

Arbor Care  
 Unit 1a  
 Crossgalla Enterprise Centre  
 Ballysmon Road  
 Limerick  
 Ireland

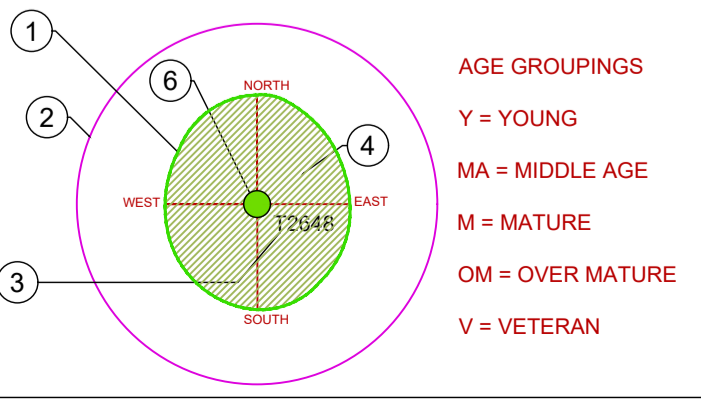
Phone: +353 (0)863082808  
 Fax: +353 (0)61400321  
 Email: info@arborcare.ie  
 Web: www.arborcare.ie

Professional Consulting Tree Service

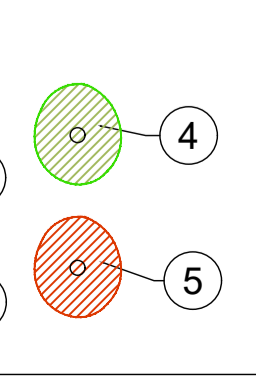


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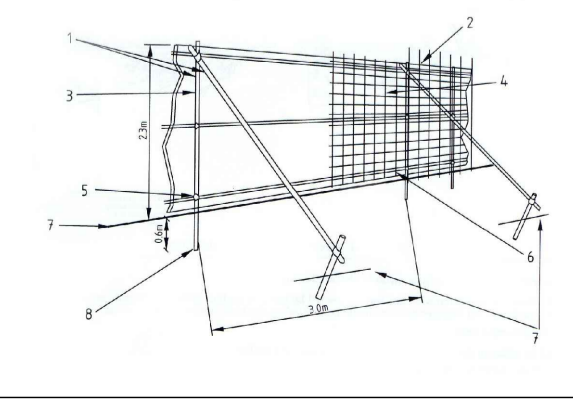
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- 2 ROOT PROTECTION ZONE BASED ON 12 TIMES THE (DBH) AT CHEST HEIGHT
- 3 TREE TAG NUMBER
- 4 TREE TO BE RETAINED
- 5 TREE TO BE REMOVED
- 6 TREE CATEGORY BASED ON BS:5837 2012 CRITERIA
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- 8 EVERGREEN TREE CANOPY
- 9 Category (A, A1, A2, A3)  
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- 10 Category (B, B1, B2, B3)  
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- 11 Category (C, C1, C2, C3)  
Those of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years) or young trees with a stem diameter below 150mm
- 12 Category (U)  
Those in such condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management



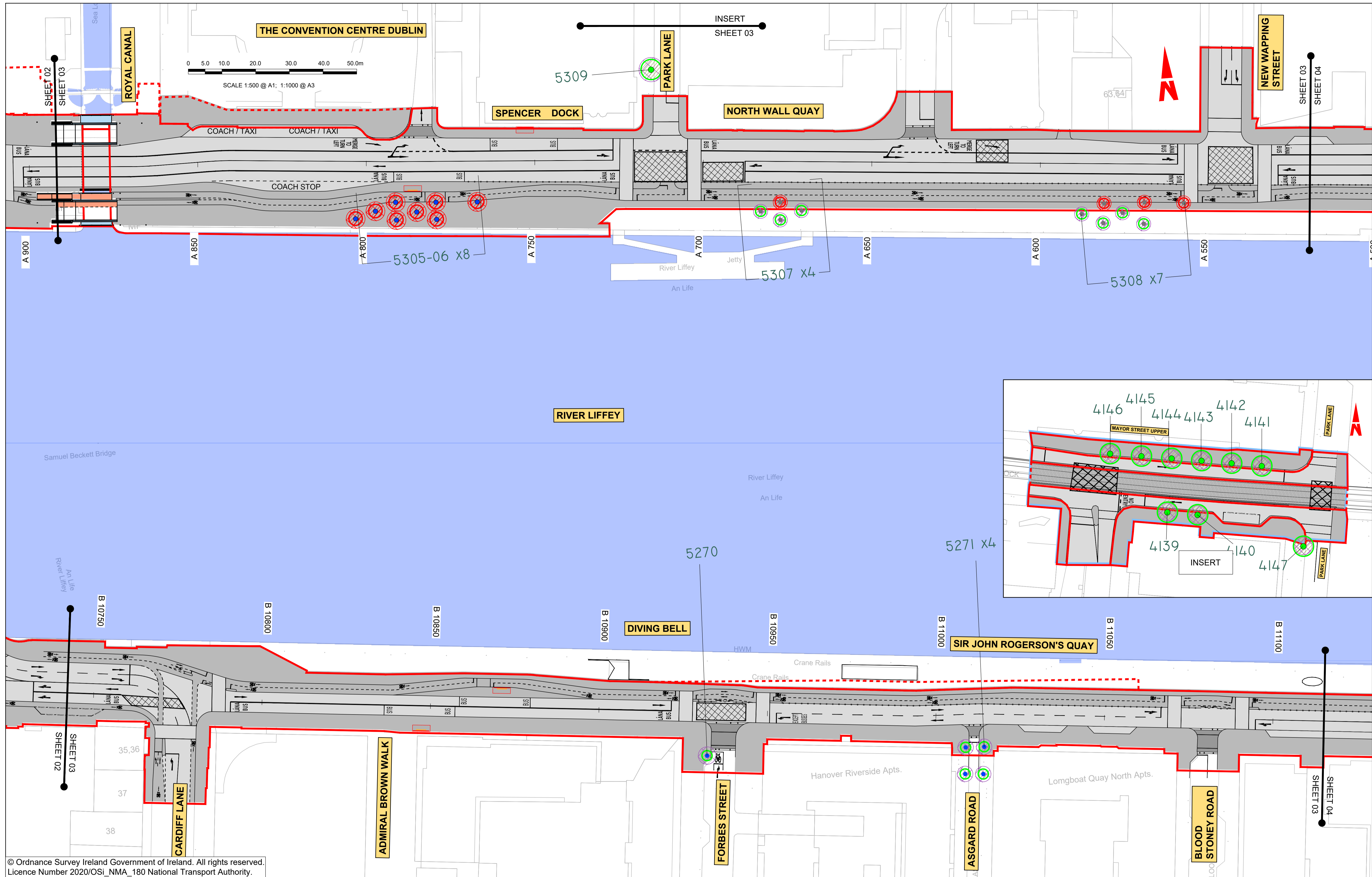
- AGE GROUPINGS**
- Y = YOUNG
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- 01 TABLES BS 5837-2012**
- Key**
- LOCATIONS OF FENCING TO FORM MINIMUM TREE ROOT PROTECTION AREAS
  - SITE BOUNDARY



JL	MG	Sheet 2 of 12	15/05/2021	Scale: 1:500@A1 1:1,000@A3	
BCIDD-ROT-PRW_PC-0016_XX_00-DR-CR-0001.tpp.dwg				Issued For: Information	<b>Arbor Care</b> Unit 1a Crossagalla Enterprise Centre Ballysinn Road Limerick Ireland Phone: +353 (0)863082808 Fax: +353 (0)61400321 Email: info@arborcare.ie Web: www.arborcare.ie
Client: BUS CONNECTS INFRASTRUCTURE, DUBLIN				Project: ROUTE 0016 - RINGSEND TO CITY CENTER.TREE SURVEY	
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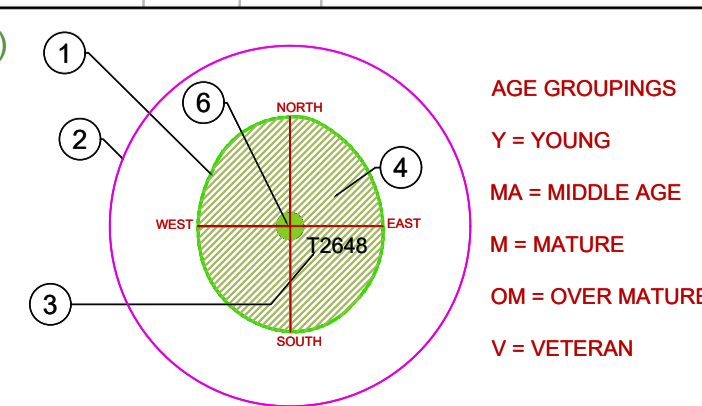


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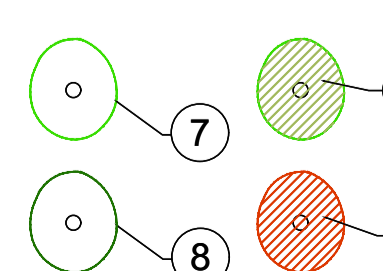
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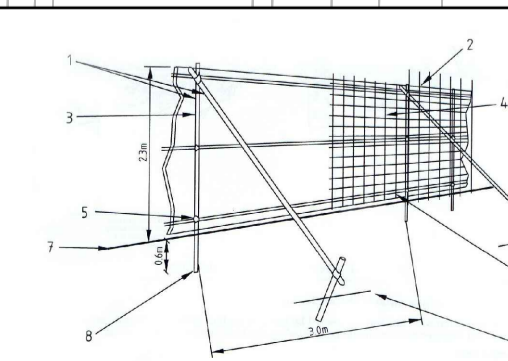
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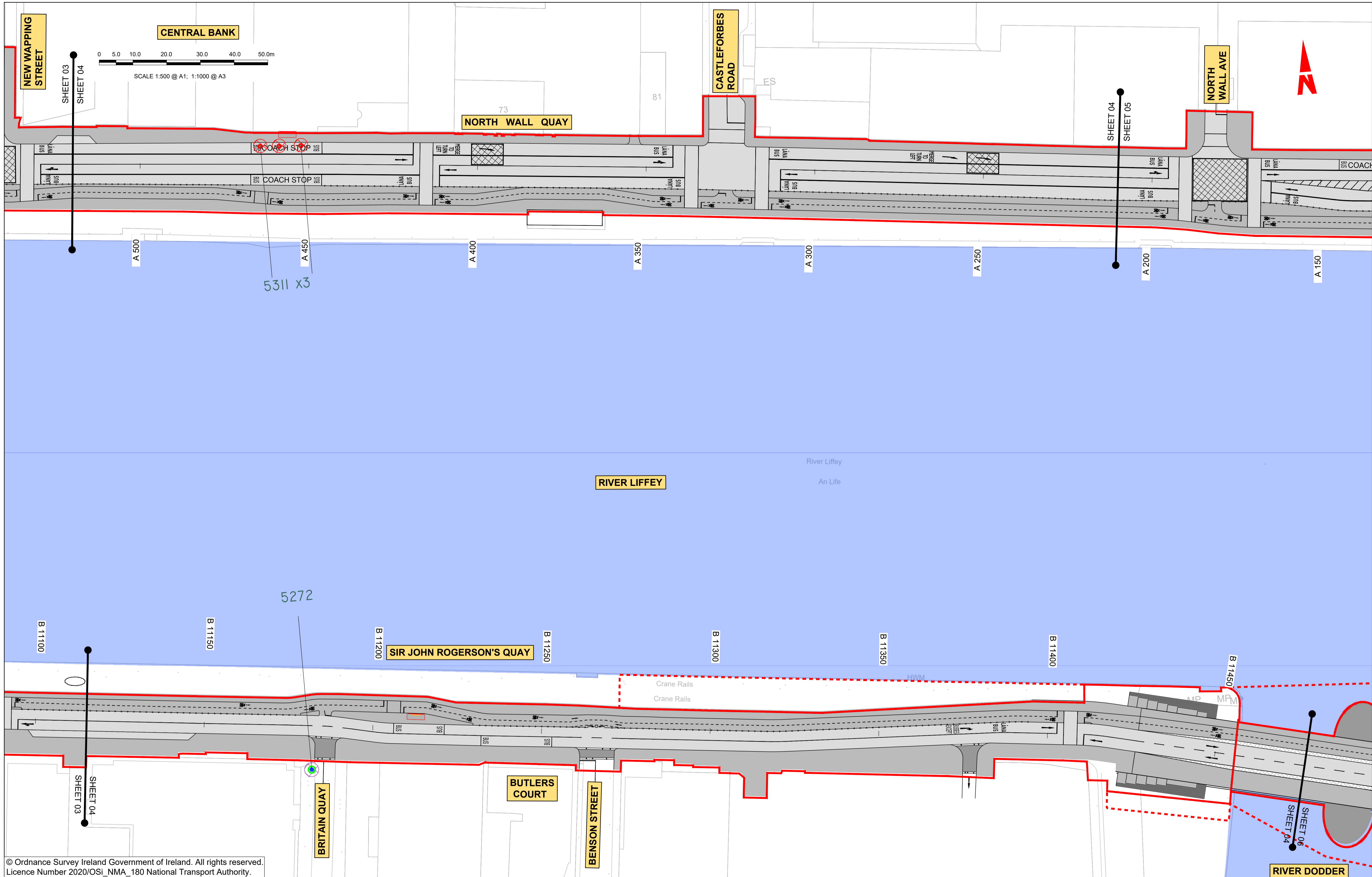


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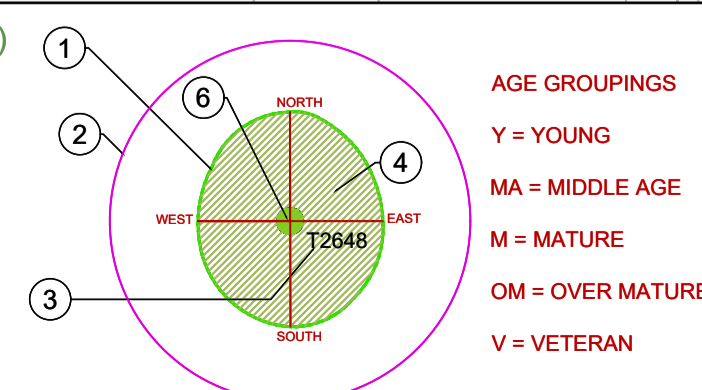


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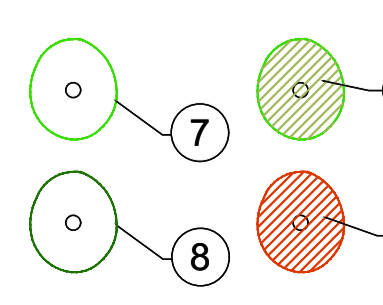
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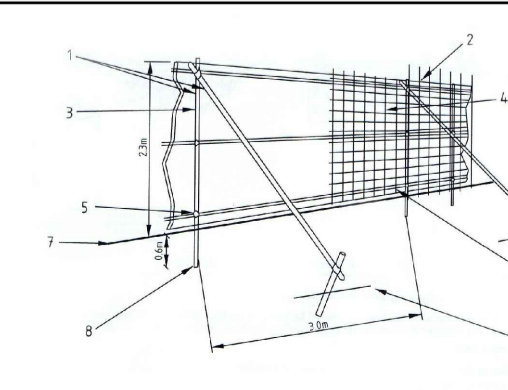
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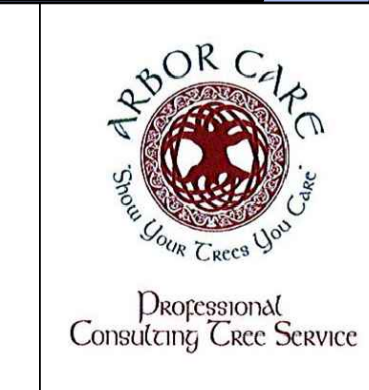


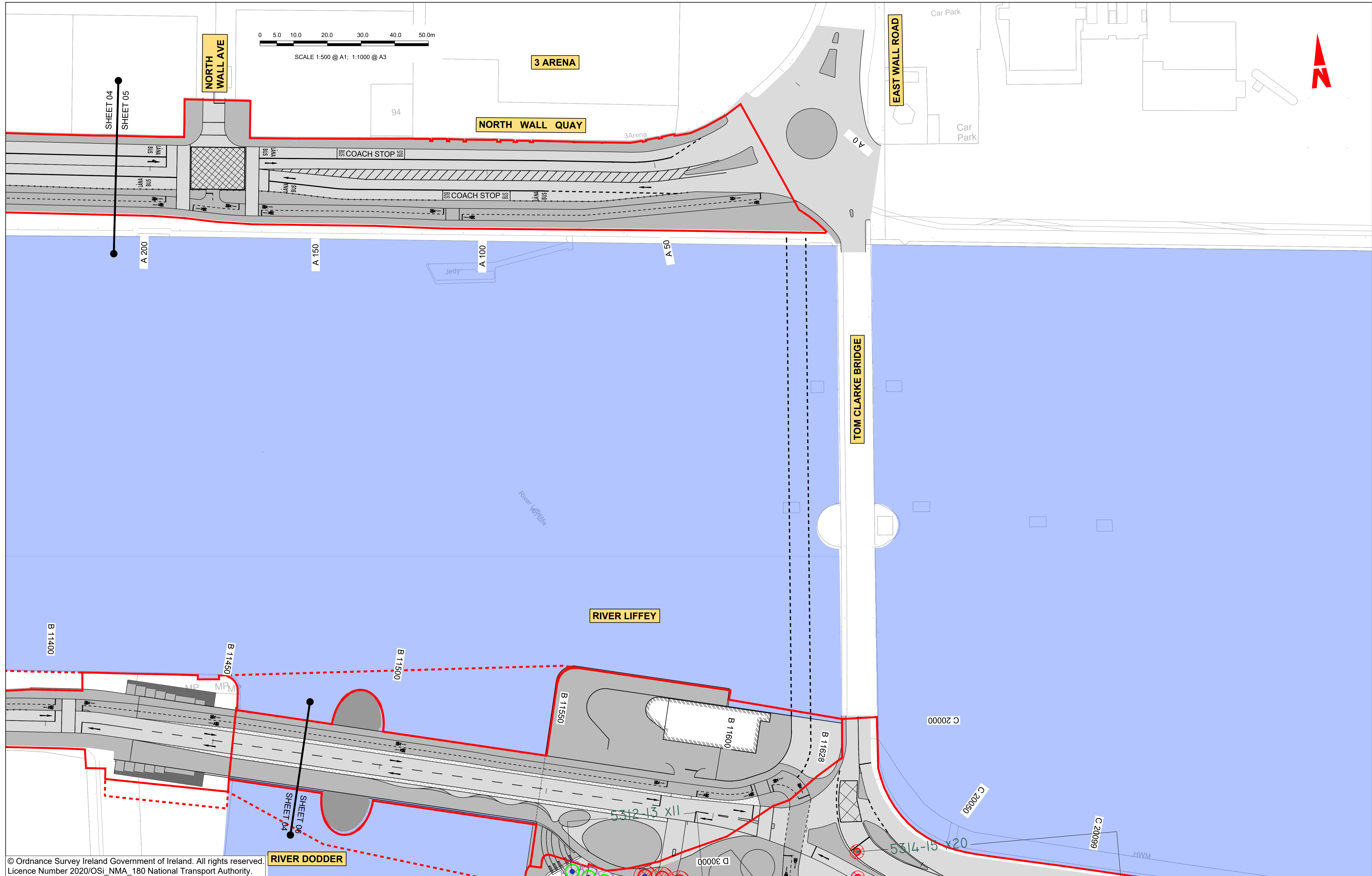
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BCIDD-ROT-PRW_PC-0016_XX_00-DR-CR-001.tpp.dwg				Issued For: Information
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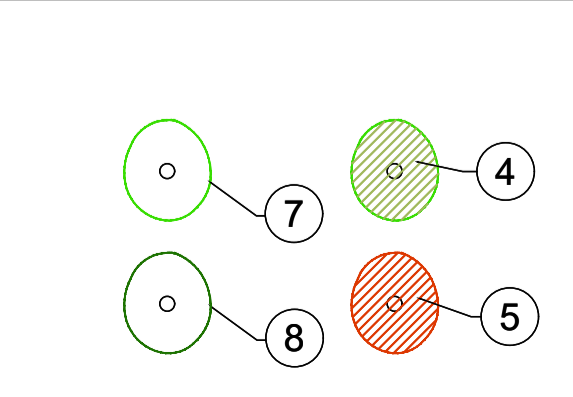


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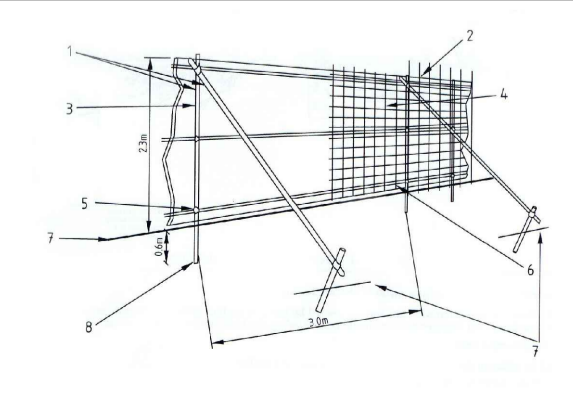
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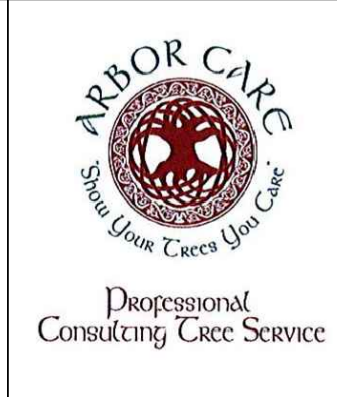


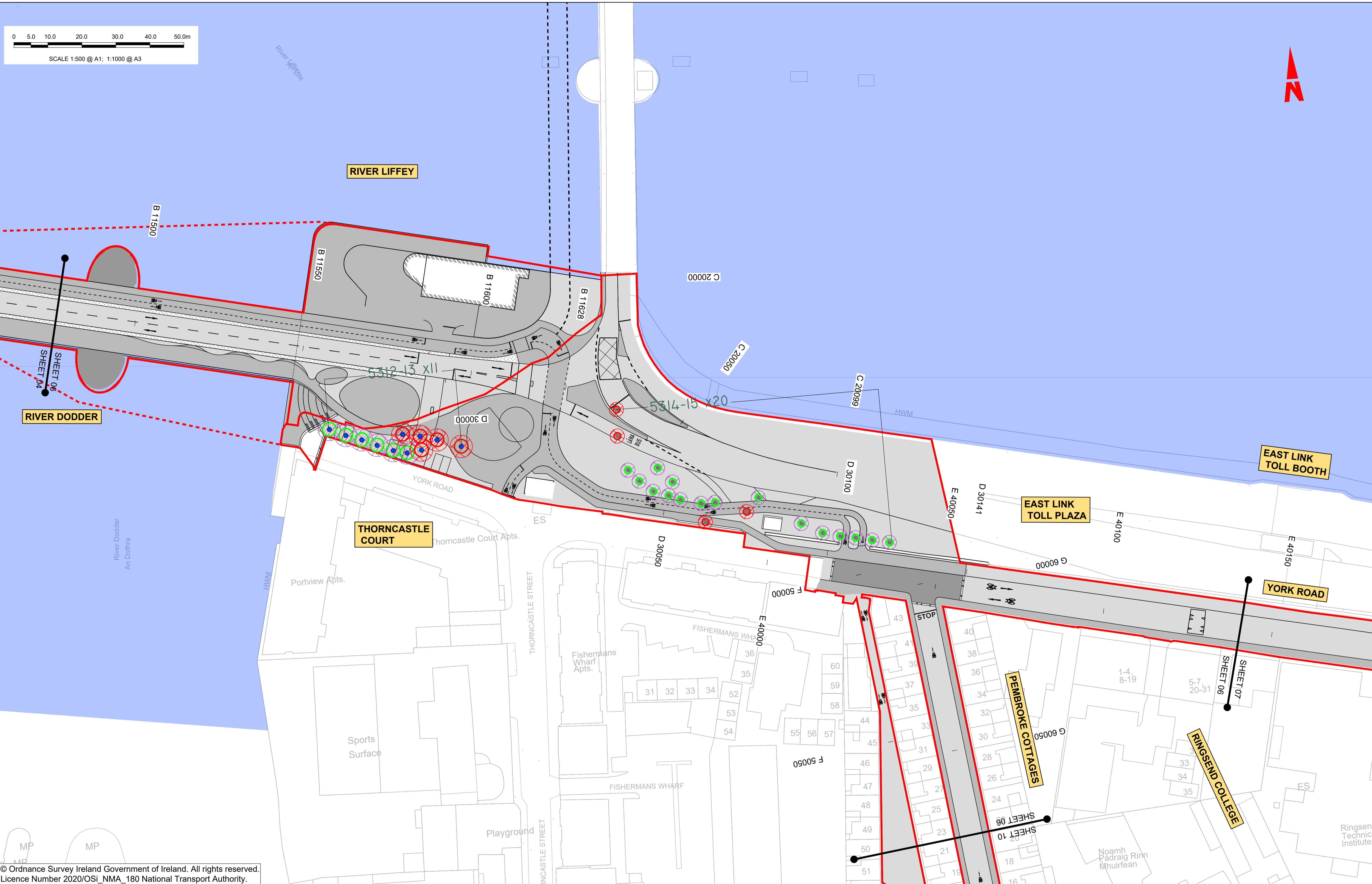
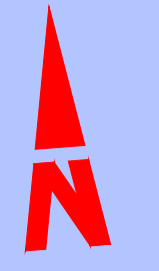
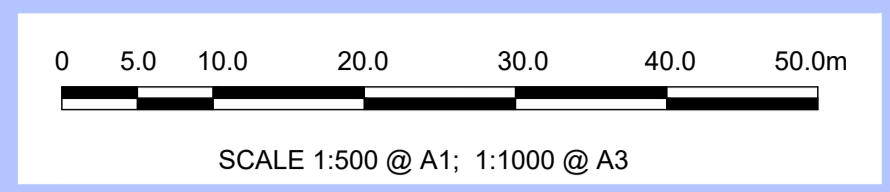
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JL	MG	Sheet 9 of 12	15/05/2021	Scale: 1:500@A1, 1:1,000@A3
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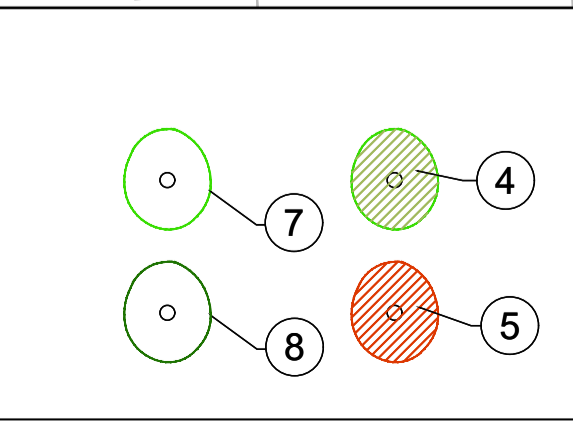


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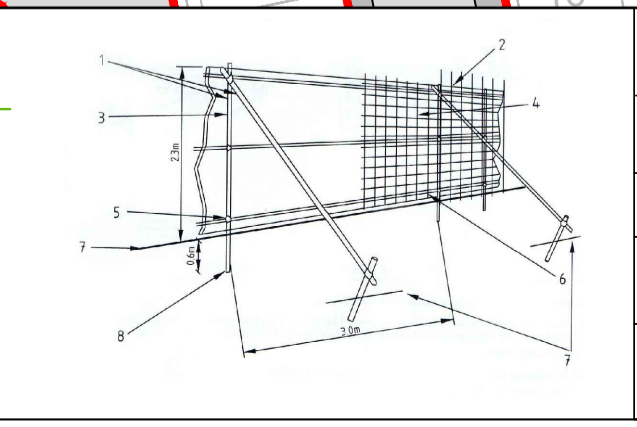
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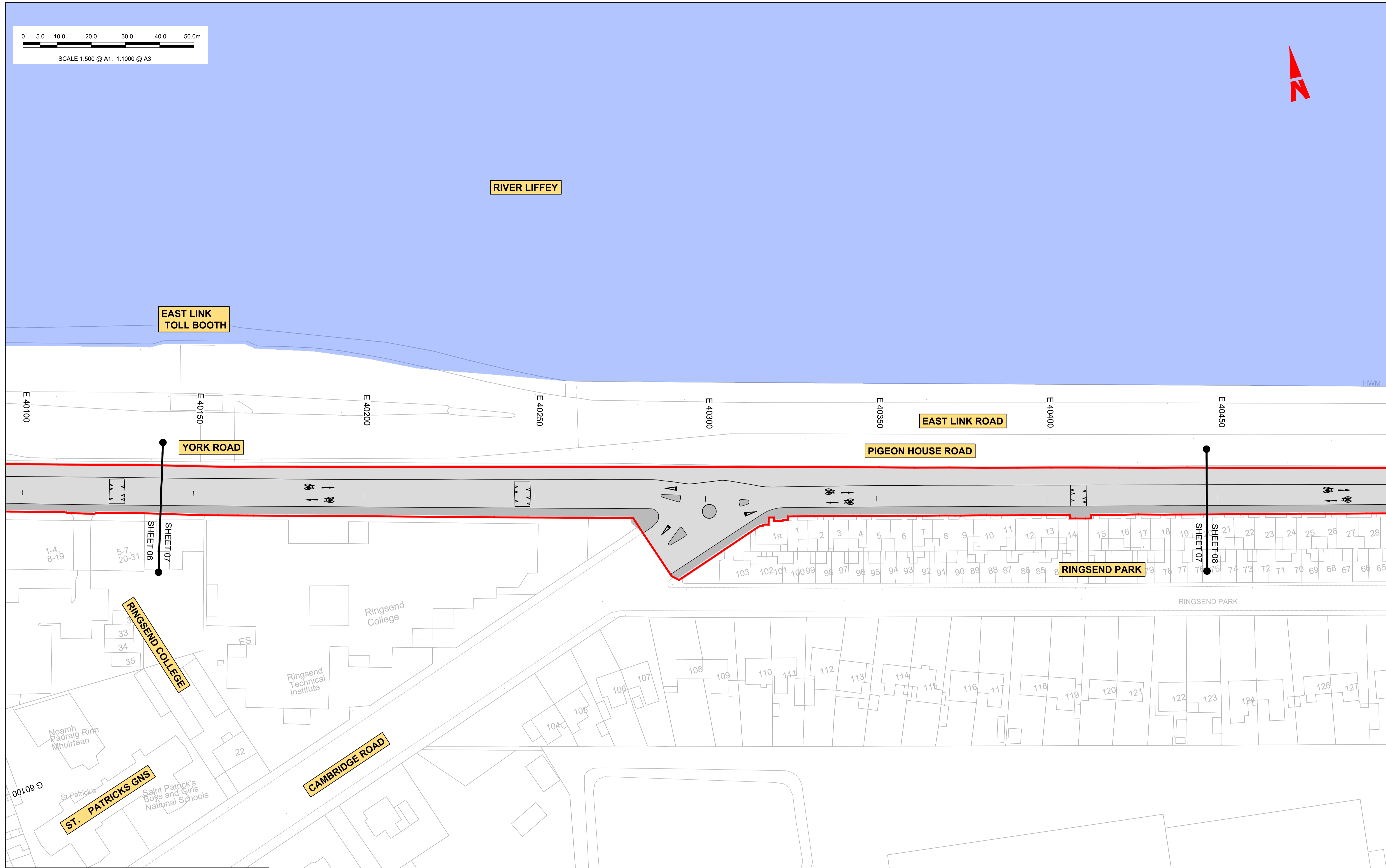
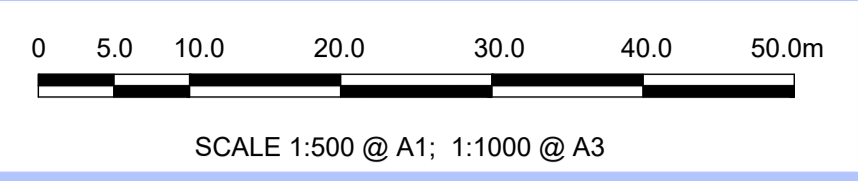


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JL	MG	Sheet 9 of 12	15/05/2021	Scale: 1:500@A1 1:1,000@A3
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Arbor Care Unit 1a Crossagalla Enterprise Centre Ballysimon Road Limerick Ireland				Phone: +353 (0)863082808 Fax: +353 (0)61400321 Email: info@arborcare.ie Web: www.arborcare.ie

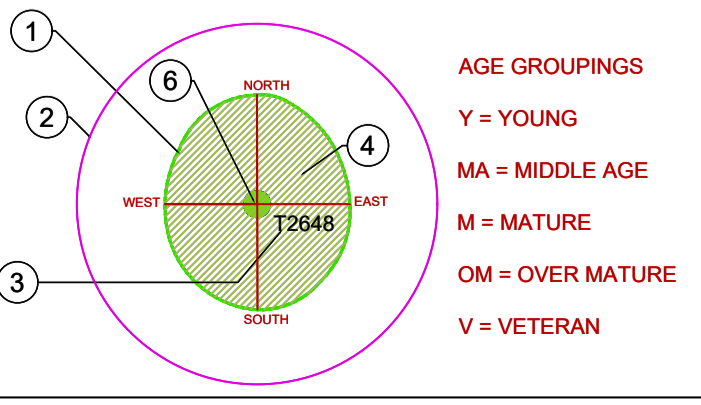




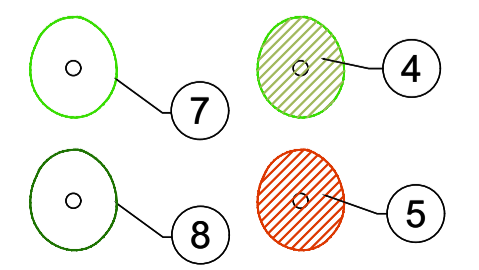
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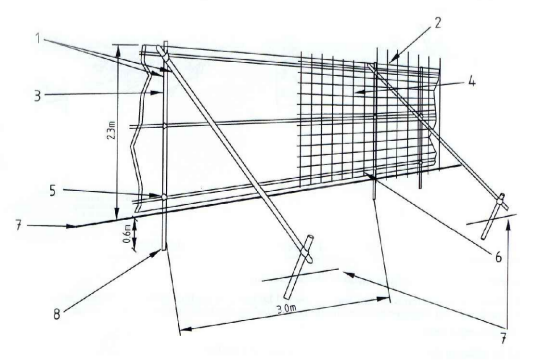
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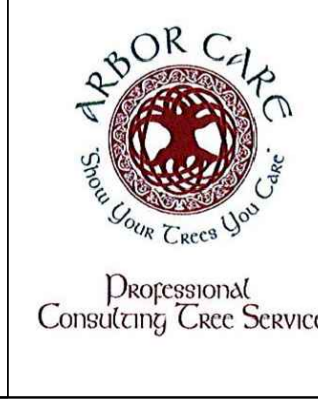
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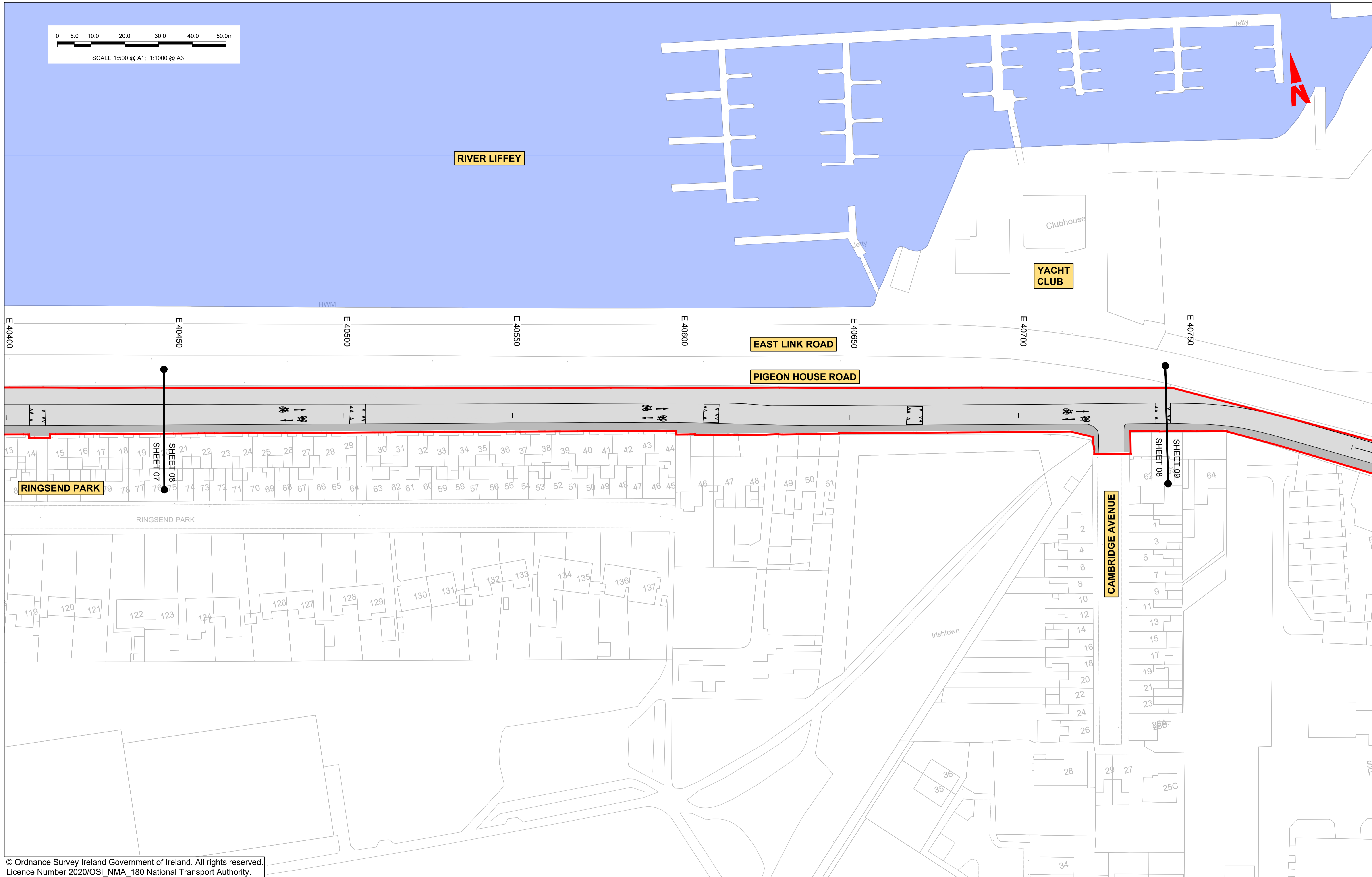
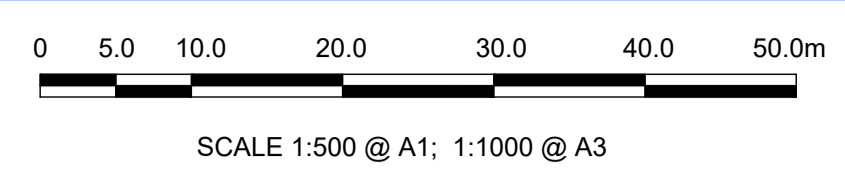
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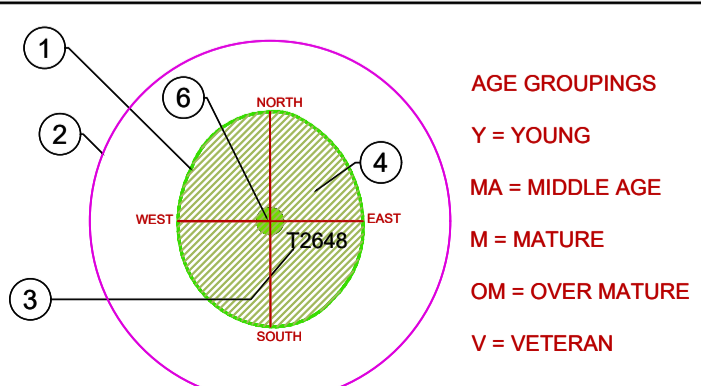




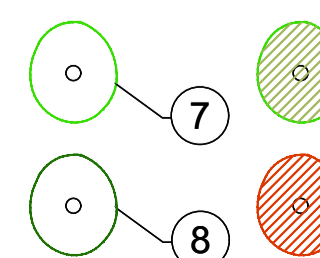
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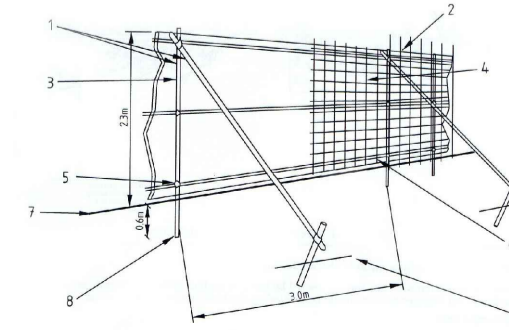


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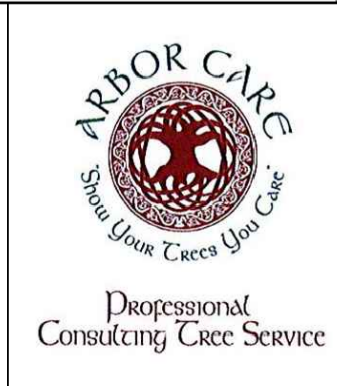


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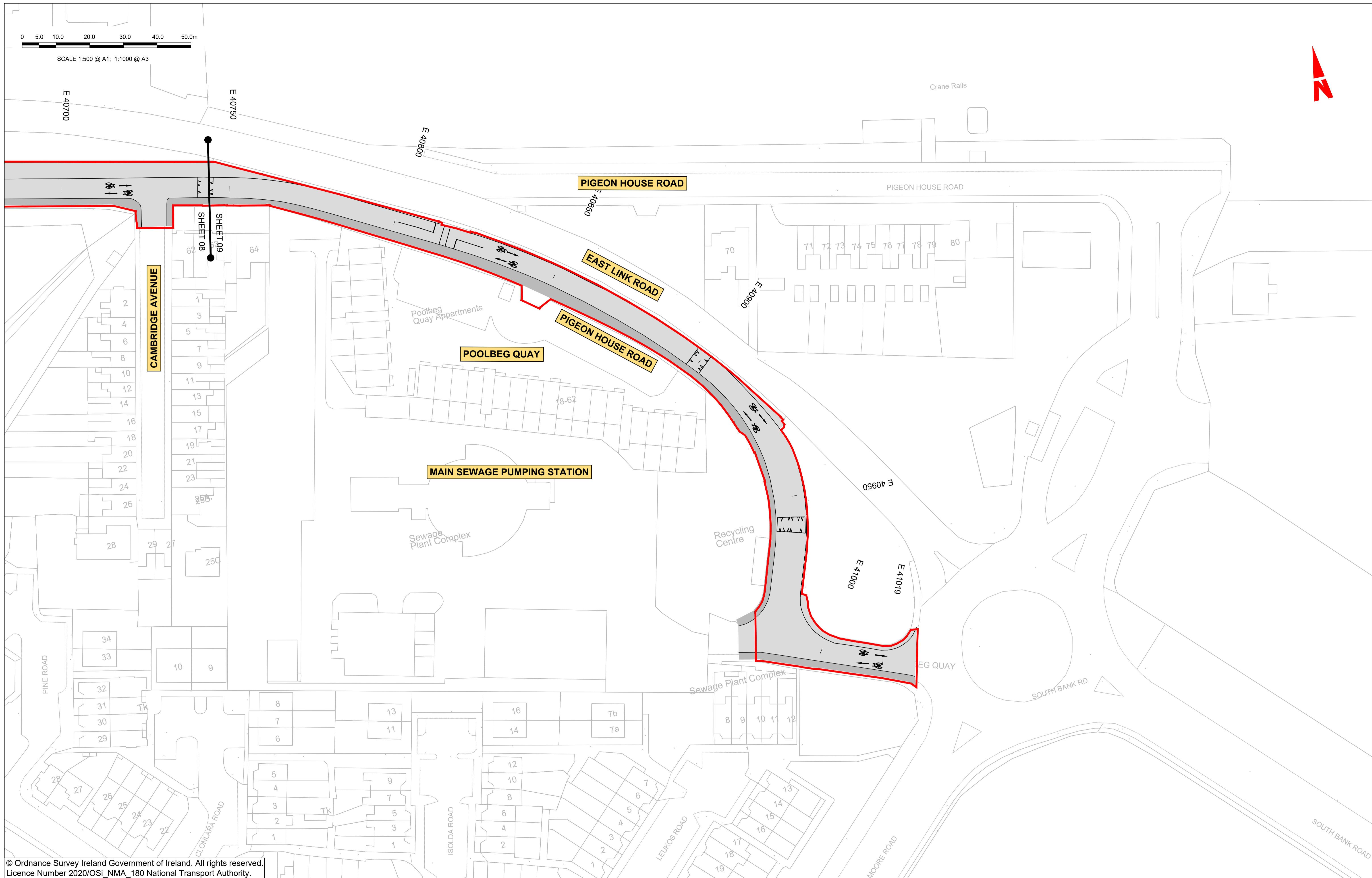
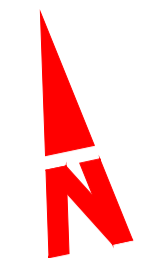


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0 5.0 10.0 20.0 30.0 40.0 50.0m

SCALE 1:500 @ A1; 1:1000 @ A3



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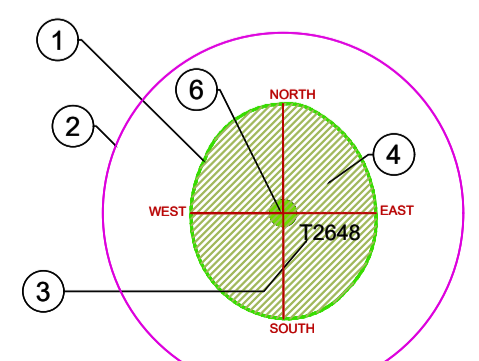
Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years)

Category ( C, C1, C2, C3)

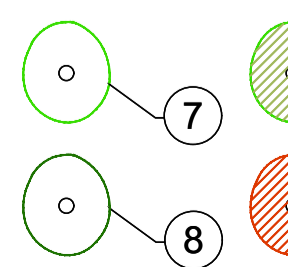
Those of low quality and value: currently in adequate condition to remain until new planting could be established ( a minimum of 10 years ) or young trees with a stem diameter below 150mm

Category ( U )

Those in such condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reason of sound arboricultural management



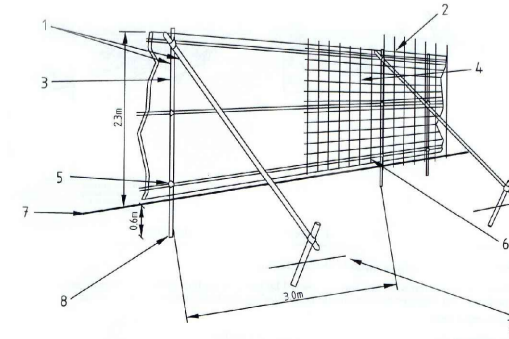
- AGE GROUPINGS
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01 TABLES BS 5837-2012

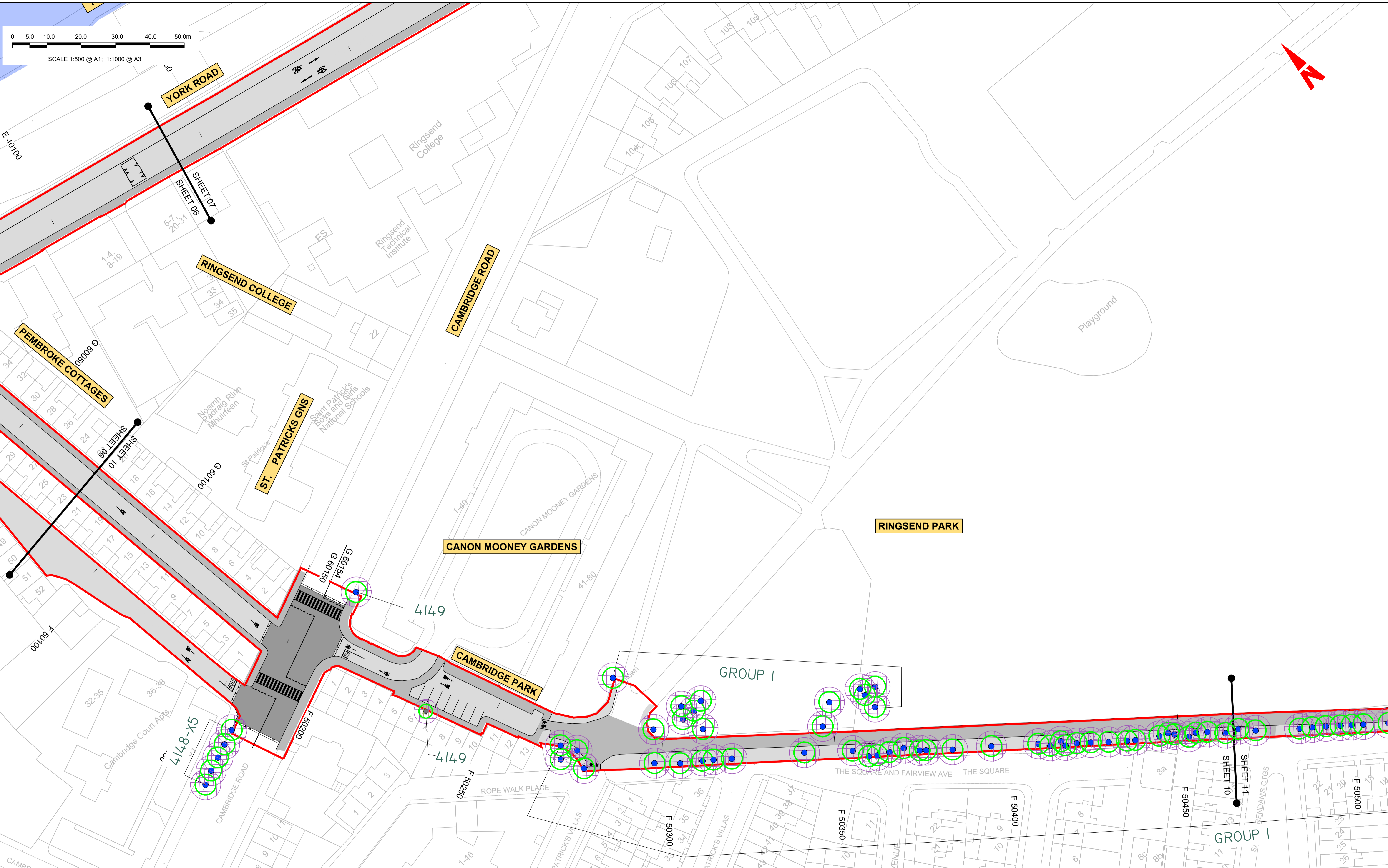
Key

- LOCATIONS OF FENCING TO FORM MINIMUM TREE ROOT PROTECTION AREAS
- SITE BOUNDARY



JL	MG	Sheet 9 of 12	15/05/2021	Scale: 1:500@A1 1:1,000@A3
BCIDD-ROT-PRW_PC-0016_XX_00-DR-CR-0001.tpp.dwg				Issued For: Information
Client: BUS CONNECTS INFRASTRUCTURE, DUBLIN				
Project: ROUTE 0016-RINGSEND TO CITY CENTER.TREE SURVEY				
Drawing Title: Tree Protection Plan				
Arbor Care Unit 1a Crossgajalla Enterprise Centre Ballysimon Road Limerick Ireland Phone: +353 (0)863082808 Fax: +353 (0)61400321 Email: info@arborcare.ie Web: www.arborcare.ie				



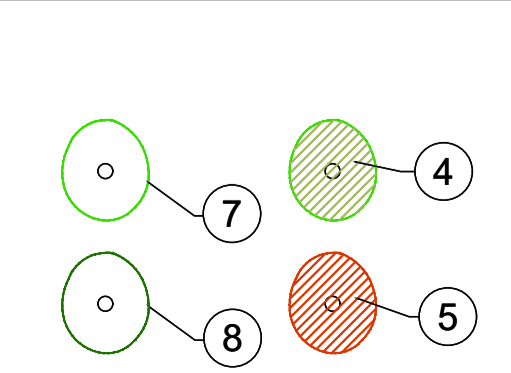


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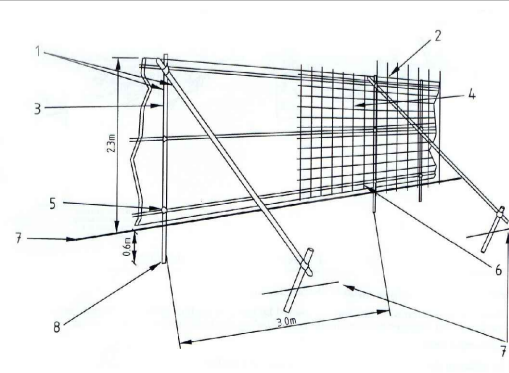
- 1 EXISTING TREE CANOPY BASED ON DIMENSIONS GATHERED ON SITE IN 4 DIRECTIONS, NORTH, SOUTH, EAST AND WEST
- 2 ROOT PROTECTION ZONE BASED ON 12 TIMES THE (DBH) AT CHEST HEIGHT
- 3 TREE TAG NUMBER
- 4 TREE TO BE RETAINED
- 5 TREE TO BE REMOVED
- 6 TREE CATEGORY BASED ON BS:5837 2012 CRITERIA
- 7 DECIDUOUS TREE CANOPY
- 8 EVERGREEN TREE CANOPY

- Category ( A, A1, A2, A3 )  
Those of high quality and value: in such a condition as to be able to make a substantial contribution ( a minimum of 40 years )
- Category ( B, B1, B2, B3 )  
Those of moderate quality and value: those in such a condition as to make a significant contribution ( a minimum of 20 years )
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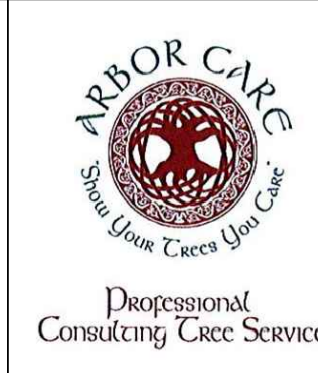
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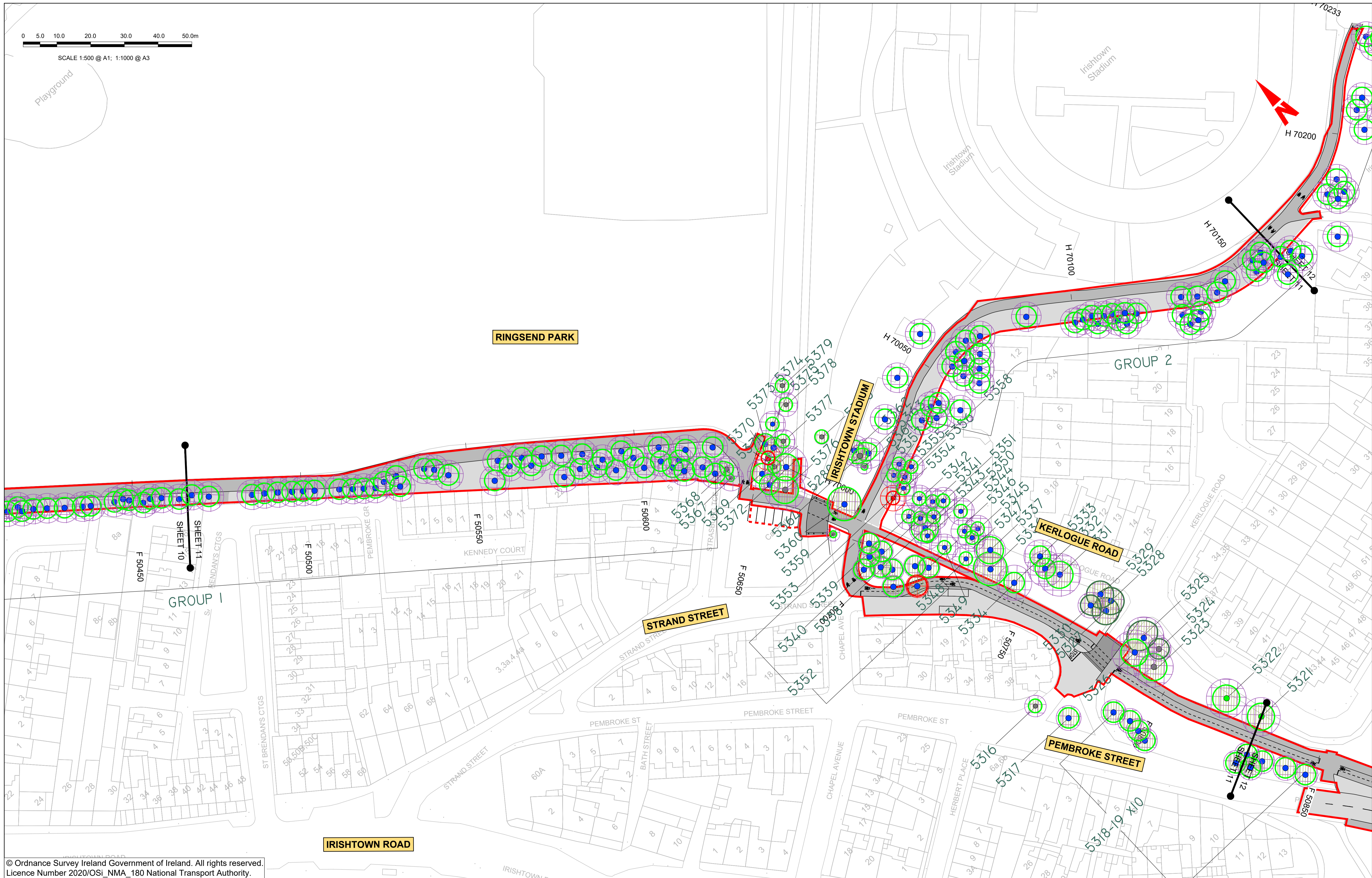


JL	MG	Sheet 10 of 12	15/05/2021	Scale: 1:500@A1 1:1,000@A3
BCIDD-ROT-PRW_PC-0016_XX_00-DR-CR-0001.tpp.dwg			Issued For:	Information
Client: BUS CONNECTS INFRASTRUCTURE, DUBLIN				
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0 5.0 10.0 20.0 30.0 40.0 50.0m

SCALE 1:500 @ A1; 1:1000 @ A3



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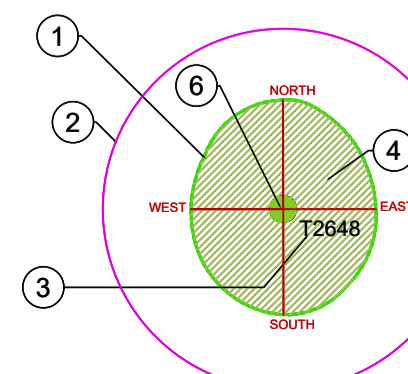
Those of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years)

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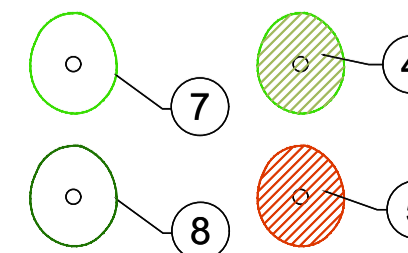
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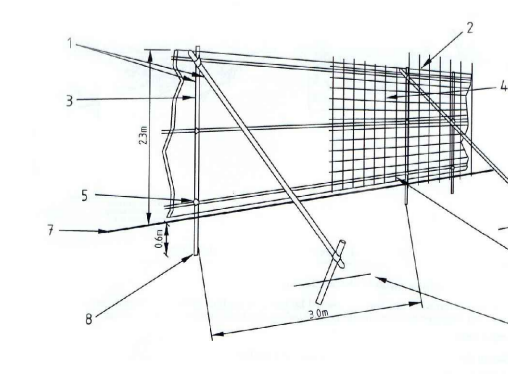
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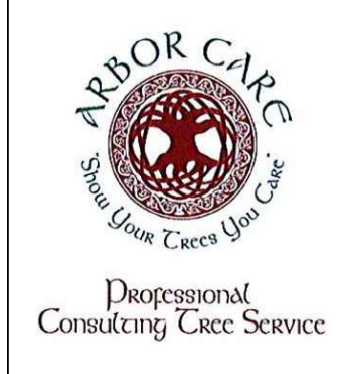
01 TABLES BS 5837-2012

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JL	MG	Sheet 11 of 12	15/05/2021	Scale: 1:500@A1 1:1,000@A3
BCIDD-ROT-PRW_PC-0016_XX_00-DR-CR-0001.tpp.dwg				Issued For: Information
Client: BUS CONNECTS INFRASTRUCTURE, DUBLIN				
Project: ROUTE 0016 - RINGSEND TO CITY CENTER.TREE SURVEY				
Drawing Title: Tree Protection Plan				
Arbor Care Unit 1a Crossagalla Enterprise Centre Ballysinnon Road Limerick Ireland Phone: +353 (0)863082808 Fax: +353 (0)61400321 Email: info@arborcare.ie Web: www.arborcare.ie				





SCALE 1:500 @ A1; 1:1000 @ A3

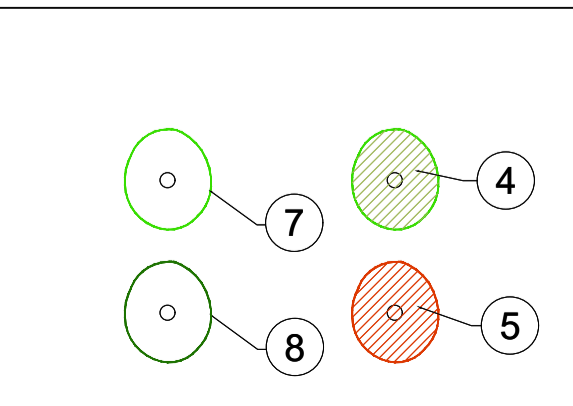


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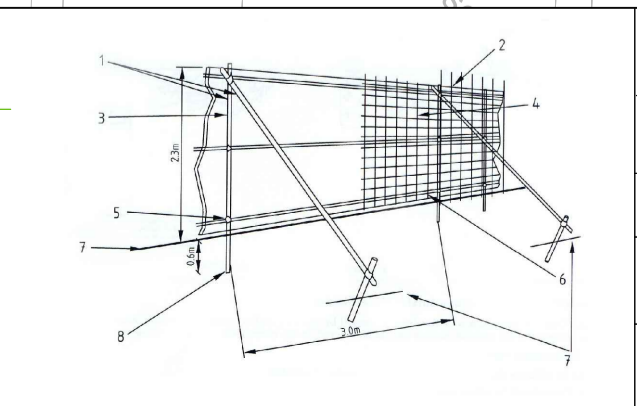
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