

TREE SURVEY

ST. CANICES HOSPITAL LANDS, CO. KILKENNY

The following report details the current condition of the trees located on the lands of St. Canices Hospital Co. Kilkenny in accordance BS5837:2012. The report also details management options were appropriate to increase vitality and long term retainability of trees on site.

Arboriculturist

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Arboriculturist's Qualifications:

Lantra Professional Tree inspector

Diploma in Arboriculture & Forestry

Bachelor of Sciences (Honours) in Arboriculture & Urban forestry

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1) Introduction

1.1) Terms of reference

1.1.1) Treeline Ltd has been instructed by Kilkenny County Council to undertake a tree survey at St. Canice's Hospital Lands, Co. Kilkenny. The area of the site to be inspected can be seen in Figure 1. The site has been divided into two, Area 1 (Figure 2) and Area 2 (Figure 3). As Treeline Ltd has been instructed to carry out the tree survey in line with BS5837:2012 in Area 1 and in Area 2 instructed to carry out a walk by inspection with details only recorded for trees deemed a high risk or of significant high value (see attached tree schedule for details). Furthermore, in both Area 1 and Area 2 appropriate management recommendations are to be provided for the long-term vitality and retainability of trees/tree groups which are inspected.



Figure 1: Area of full site inspected located within red boundary lines, for guidance purposes only. A more accurate map can be found attached (Tree survey Site Map dwg No. 001)



Figure 2: Area 1 located within red boundary lines, for guidance purposes only. A more accurate map can be found attached (Area 1 Map dwg No. 002)



Figure 3: Area 2 located within red boundary lines, for guidance purposes only. A more accurate map can be found attached (Area 2 Map dwg No. 003)

1.2) Scope of Project

- 1.2.1) Conduct a tree survey in Area 1 which inspects the present trees and tree groups on site in accordance with BS 5837:2012 Trees in relation to design, demolition and construction. Furthermore, outline management recommendations, if appropriate to allow for long-term vitality and retainability of trees/tree groups.
- 1.2.2) Conduct a walk by tree inspection in Area 2 which identifies trees of significant high value and trees which are deemed to pose a high risk, providing management recommendations for both were appropriate. Given the nature of area 2 all remaining trees will be grouped with general comments and recommendations provided were deemed appropriate.
- 1.2.3) In both Area's 1 and 2 Geo-reference and plot all trees and tree groups inspected.
- 1.2.4) From the findings of section 1.2.1, 1.2.2 and 1.2.3 provide a detailed report which details the condition of trees on site, highlighting their value and appropriate management options for high value long term tree cover and retention. Also provide mapping and drawings identifying the locations of trees and tree groups inspected and their value.

1.3) Caveats and Limitations

- 1.3.1) The tree inspection has been carried out from ground level only and is a preliminary report. It does not include climbing inspections or below ground investigations. Should a more detailed inspection be thought necessary on any tree/s, then this will be highlighted within the recommendations.
- 1.3.2) The assessment is based on what was visible at the time of inspection and recommendations/comments made are subject to knowledge and expertise of the qualified arborist that carried out the inspections.
- 1.3.3) Trees should be inspected on a regular basis as their health and condition can change rapidly due to biotic and abiotic agents. The recommendations within this report are valid from the 14/02/2020 for an 18-month period only and this may be reduced in this case of any change in conditions to or in the proximity of the trees and or any extreme adverse weather conditions.
- 1.3.4) Area 2 was a walk by inspection as instructed by the client of this report. It is not a substitute for a more detailed site tree inspection which would inspect all trees in area 2 in detail. This is a limitation to this report and findings.
- 1.3.5) The trees on site were Plotted and geo-referenced using a Trimble TDC100 (4G) [Handheld] and are subject to the limitations of this device.
- 1.3.5) The report is for the sole use of the client and its reproduction or use by anyone else is forbidden unless written consent is given by the author.

2) Methods & Guidance

2.1) Tree/tree group identification

- 2.1.1) Trees and tree groups on site have all been identified numerically for reference and cross analysis with drawings, tree and group identification numbers can be found in the attached tree schedule.
- 2.1.2) All trees and tree groups have been named in both their common and botanical names.
- 2.1.3) Trees and tree groups inspected have all been plotted and geo-referenced using Trimble TDC100 (4G) [Handheld]For accurate location and analysis. All individual trees and tree groups inspected can identified on Drawings No. 004 (Area 1 Location map tree's and tree groups) and No. 005 (Area 2 Location map tree's and tree groups).

2.2) Tree measurements

- 2.2.1) All trees have been measured in height via meters and the diameter of all stem have been measured in millimetres from 1.5m, in instances where more than 1 stem trunk is present at 1.5m and average measurement of stem diameters will be provided. For Groups an average measurement for height and stem diameter will be provided. The spread of the trees crown has been measured from the 4 cardinal points, North, South, East and West for trees in area 1 in accordance with BS5837:2012. All measurements are approximations generated from the Arboriculturist's knowledge and experience.

2.3) Tree condition

- 2.3.1) Each tree was inspected and comments, where appropriate, were recorded on tree's physiological and structural condition. General comments were also made on nuisances the trees may have been causing e.g. branches blocking a footpath. For Groups a general assessment was made on the condition of the group unless otherwise stated. Details on tree condition can be found in the attached tree schedule.

2.4) Tree recommendations

- 2.4.1) Recommendations were recorded, to abate defects, nuisances, hazards and to increase the vitality and long term retainability of high value trees and to allow for high-quality long-term tree cover where seen appropriate. Recommendations were based on industry best practice (see attached tree work programme for details). Details on tree recommendations can be found in the tree work programme

2.4) Retention Categories

2.4.1) Trees in area 1 have been assessed in accordance with BS 5837:2012 "Trees in relation to design, demolition and construction" in order to arrive at a Retention for each individual tree, tree group inspected. These categories inform the level in which a said tree/tree group should influence a proposed design. Details on each tree and tree groups retention category can be seen in in the tree schedule and in Drawings No. 004 (Area 1 Location map tree's and tree groups)

2.5) Root protection Area (RPA)

2.5.1) A Root Protection Area (RPA) (See Appendix B) has been assigned to each tree, tree group in area 1 as in accordance with BS 5837:2012 "Trees in relation to design, demolition and construction". The root protection area highlights the area in which a proposed development should not encroach, to ensure the said development has minimal effects on the trees. Furthermore, to ensure the Significant high value trees in area 2 are protected accordingly their root protection has also been calculated. The root protection areas for all trees and groups in area 1 can be seen in (Area 1 Location map tree's and tree groups). The root protection area for significant high value trees in Area 2 can be seen in drawing No. 005 (Area 2 Location map tree's and tree groups).

2.6) Drawings

2.6.1) **Site overview:** Drawing No. 001TL outlines the entire site in which trees and tree groups were inspected.

2.6.2) **Tree and tree group location Map:** Drawing No. 002TL and 003TL, illustrates tree number, crown spread, location and root protection area.

2.6.3) **Tree removal Map:** Drawing No. 004TL and 005TL illustrates the locations of individual trees and tree groups which require removal

Note 1: All drawings should only be interpreted with this report and relevant attached documents.

2.7) BS 58387:2012

2.7.1) Trees in Area 1 have been carried out in line with the methodology and guidance from BS 5837:2012 "Trees in relation to design, demolition and construction"

2.5) Work Priority

2.5.1) Trees which require remedial works or removal are all given a priority code to prioritize work which is deemed more urgent to be completed first, it also allows the client to utilize budgets and management requirements more affectively. The priority codes used are as follows;

Immediate: Trees within this priority are of extremely high risk and it is deemed imminent that they will cause harm if immediate action is not taken. The Arborist will immediately notify the client if a tree is in this priority and works should be completed within 28 days (06/05/2020) or the area cordoned off until works can be complete.

High: Trees within this priority represent a high risk and/or are deemed as requiring urgent management. Works to trees in this priority should be carried out within 6 months (08/09/2020) date of the inspection date. Trees will be identified on maps in orange.

Moderate: Trees within this priority represent a moderate risk and are deemed as requiring management within the next 12 months. Works to trees in this priority should be completed within 12 months (08/03/2021) date of the inspection date. Trees will be identified on maps in blue.

Low: Trees within this priority represent a low risk and are deemed as requiring management within the next 18 months. Works to trees in this priority should be completed within 18 months (08/09/2021) of the inspection date. Trees will be identified on maps in green.

2.5.2) Note that the risk a tree represents is based on the likelihood of failure, the likelihood of impacting a target and the consequences of hitting the target.

3) Findings

3.1) Number of trees/Groups

3.1.1) There was a total of 510 individual trees and 13 tree groups inspected in area 1 and in area 2 there was 133 individual trees and 27 tree groups inspected. In total between the areas 1 and 2 there was 643 individual trees inspected and 40 tree groups. The number of trees and tree groups inspected is illustrated below in table 1.

3.1.2) Note as all trees within area 1 have been inspected, the 13 tree groups are made up of trees which have been inspected individually however, where deemed appropriate a number of these trees have also been assigned to a group.

Individual Trees	Number
Area 1	510
Area 2	133
Total	643
Tree Groups	Number
Area 1	13
Area 2	27
Total	40

Table 1: Breakdown of tree and tree group numbers of area 1 and area 2

3.2) Species

3.2.1) In total there was 31 tree species identified on site between areas 1 and 2. There was 27 species identified in area 1 and 22 species identified in area 2. Table 2 illustrates the species identified.

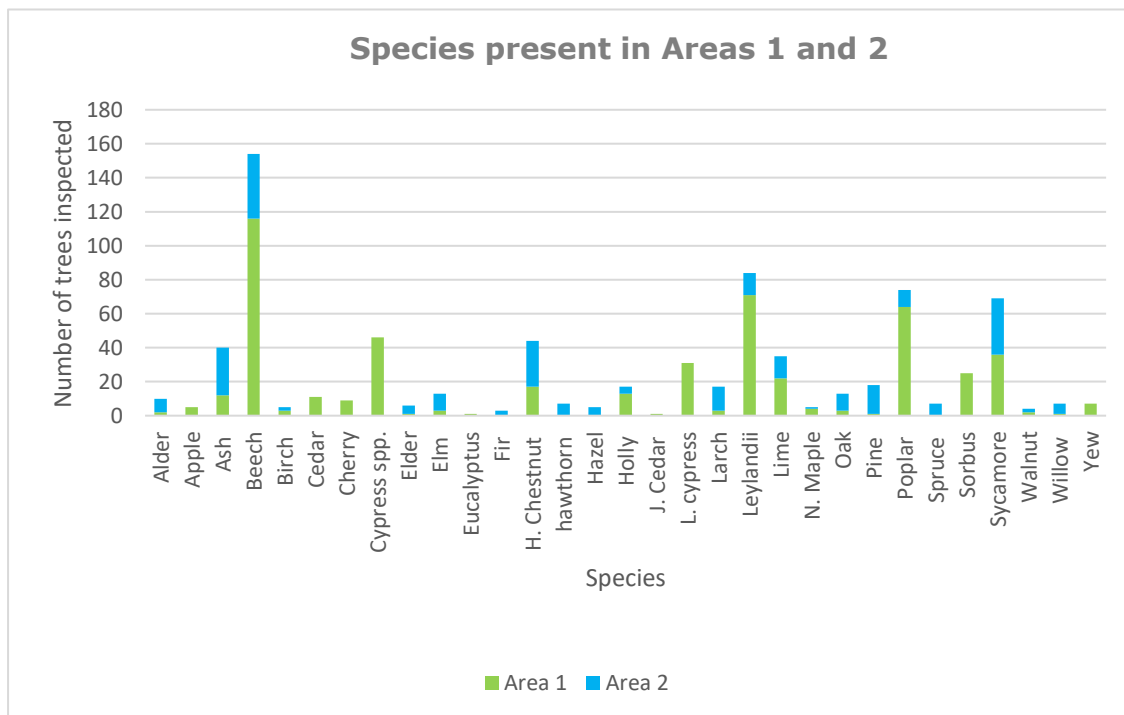


Table 2 breakdown of species presents on site

3.2.2) It is evident from Table 2 and 3 that the site is predominately made up of Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Poplar (*Populus spp.*) and Leylandii (*X Cupressocyparis leylandii*).

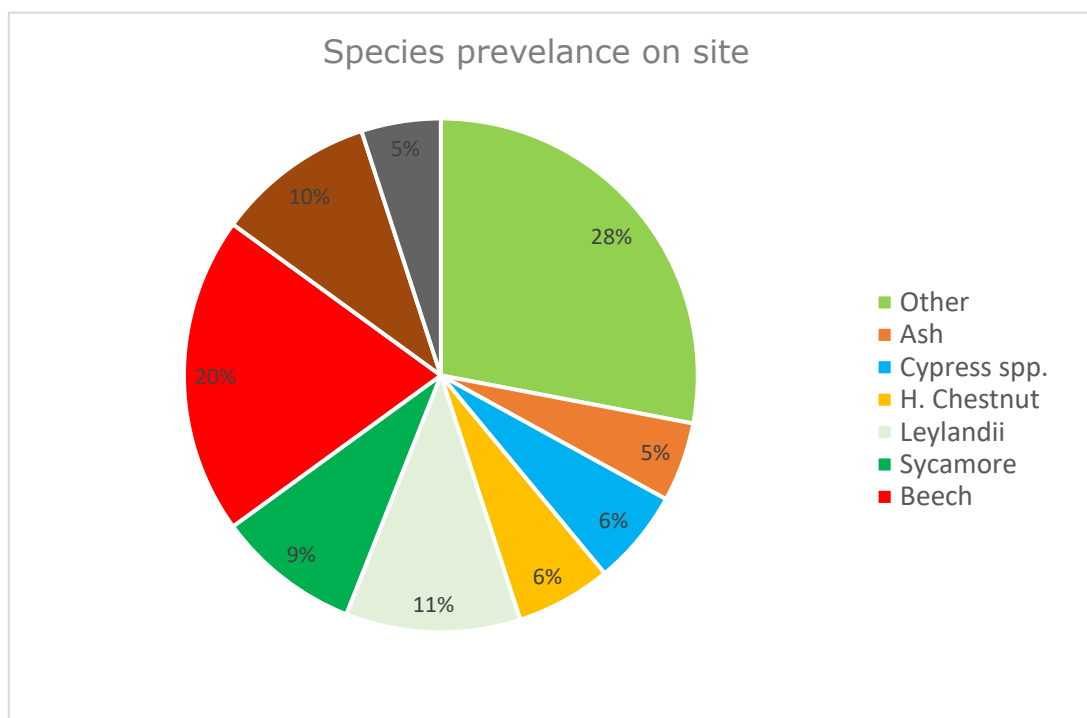


Table 3 breakdown of species prevalence on site

3.2.3) The poplar species on site are not a native variety to Ireland and neither is leylandii. Both species provide low eco-system service benefits and in general are of low value. However, both these species make up a significant portion of the site and provide aesthetic value as well as screen the site from neighbouring roads, land etc. Both species have poor structural and rooting characteristics when at maturity due to their fast growth rate and crown formation. Methods for long term retention for these species generally involve significant crown reductions which further significantly reduce their value. It would be prudent to begin planning to reduce the presence of these 2 species on site and re-plant higher value trees which provide significant eco-system service value, a combination of native species and bio-diverse species would be most appropriate. Furthermore, this will ensure long term high value tree cover for the area.

3.2.4) Beech and sycamore are of significant landscape and Arboricultural value and provide the site with excellent Aesthetic and eco-system service value. However, both their benefits for pollinators and the local eco-system are lower than that of native species. Furthermore, it would be prudent to have a more diverse range of species at this prevalence on the site for the long-term sustainability and vitality of high-quality tree cover.

3.2.5) **Diversity** :There is a good diverse range of species on the site, but many species are of low prevalence on the site which is evident from tables 2 and 3. It would be prudent to further diversify the prevalence of species on site for long-term sustainability and vitality of high-quality tree cover.

3.2.6) **Native species:** There are also a variety of 13 native tree species present on site, making up 23% of the total species inspected. This is considered above average and these species will provide a wide array of ecological and eco-system services to the site. Furthermore, continuous planting of native specimens will allow for long term establishment of native trees and further, increase their prevalence on the site. The native species inspected on the site can be seen in Figure 4.

Species	Percentage of trees on site
Alder (<i>Alnus glutinosa</i>)	1
Apple (<i>Malus sylvestris</i>)	1
Ash (<i>Fraxinus excelsior</i>)	5
Birch (<i>Betula pendula</i>)	1
Cherry (<i>Prunus avium</i>)	1
Elm (<i>Ulmus glabra</i>)	2
Hawthorn (<i>Crataegus monogyna</i>)	1
Hazel (<i>Corylus avellana</i>)	1
Holly (<i>Ilex aquifolium</i>)	2
Oak (<i>Quercus robur</i>)	2
Scots Pine (<i>Pinus sylvestris</i>)	1
Rowan (<i>Sorbus aucuparia</i>)	3
Willow (<i>Salix spp.</i>)	1
Yew (<i>Taxus bacatta</i>)	1
Total	23

Table 4: Native tree species prevalence on site

3.3) Maturity

3.3.1) As seen in table 5 and 6 most trees are either semi-mature or mature. This is good in the moderate term as the site will have good canopy cover and a large proportion of mature trees for the highest ecosystem services benefits. However, it would be prudent to increase the number of young trees on the site to further increase canopy cover and longevity of high-quality trees on the site.

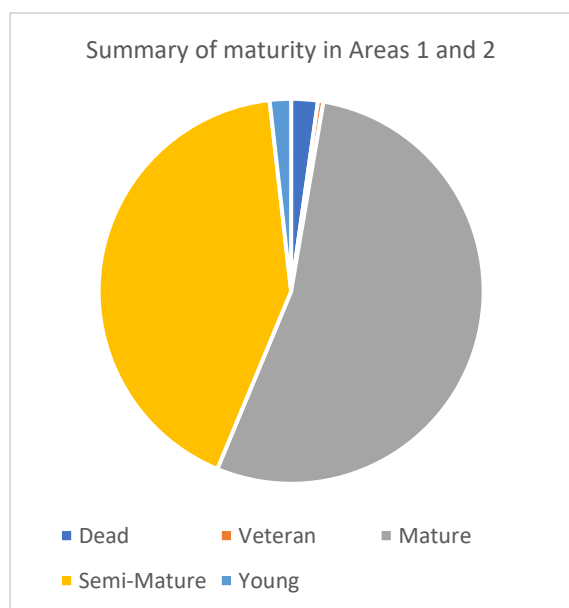


Table 6: Summary of maturity in Area 1 and 2

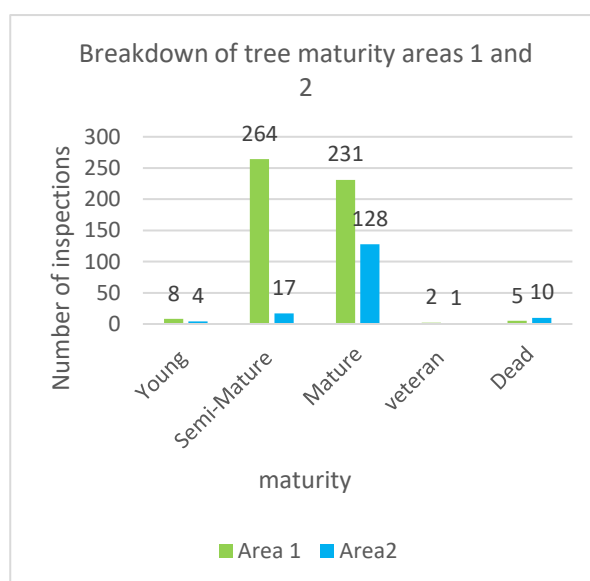


Table 5 Breakdown of maturity in areas 1 and 2

3.4) BS5837:2012 Categories

3.4.1) As only area 1 was inspected in line with BS5837:2012, the data on retention categories only relates to area 1. In total there are 523 inspections in area 1, 388 were category C, 51 were category B, 27 were category A, 37 category U and 7 to be confirmed, due to ivy and/or vegetation restricting inspection. Table below illustrates the breakdown of retention categories in Area 1. An illustration of the retention categories can be seen in table 7 below.

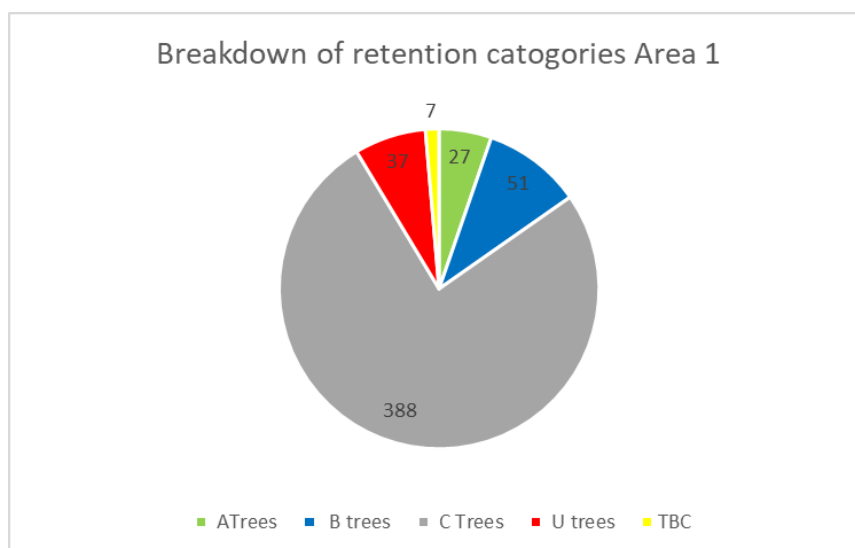


Table 7: Breakdown of retention categories

- 3.4.2) **A category:** These trees are of high quality and value and are particularly good examples of their species, provide significantly high landscape value and/or provide significantly high cultural value. These trees are in such a condition as to be able to make a substantial contribution long term to the site (A minimum contribution of 40 years). Trees within this Category should have impact on any design layout and alterations to design proposals should be made to incorporate all category A trees as in line BS5837:2012
- 3.4.3) **B category:** Category would be included in the higher category A, but are downgraded because of impaired condition or do not have possess the high quality associated with category A. These trees are in such a condition as to make a good contribution to a site in the medium to long term (Minimum of 20 years). Trees within this Category should have impact on any design layout and alterations to design proposals should be made to incorporate all category B trees
- 3.4.4) **Category C:** Category C trees are of low quality or are young specimens which can be readily replaced, therefore, should not be considered a constraint to future development. Therefore, should issues arise in relation to tree retention during a development the loss of these trees could be offset by replantation of several appropriate tree species, which would be identified by a Project Arboriculturist should it be necessary.
- 3.4.5) **Category U** trees in this category should be removed for reasons of sound Arboricultural practice and/or health & safety reasons, irrespective of any development proposals
- 3.4.6) **TBC:** It was plausible to accurately assess several trees on site due to dense ivy and/or vegetation cover. These trees will require removal of ivy and/or vegetation and re-inspection.

3.5) Area 2 Tree Categories

3.5.1) In Area 2 the inspections were not carried out in line with BS5837:2012. However, the trees were categorized as significant (s) or trees requiring work (w), the remaining trees in area 2, given their growing locations were grouped further details on these categories can be found in the Tree schedule. (S) trees should be given the same approach as a BS5837:2012 Category A tree's and (W) trees should be given the same approach as BS5837:2012 Category C were remedial work is required and BS5837:2012 Category U were removal is required. Table 8 illustrates the quantity of both (S) and (W) inspections in Area 2.

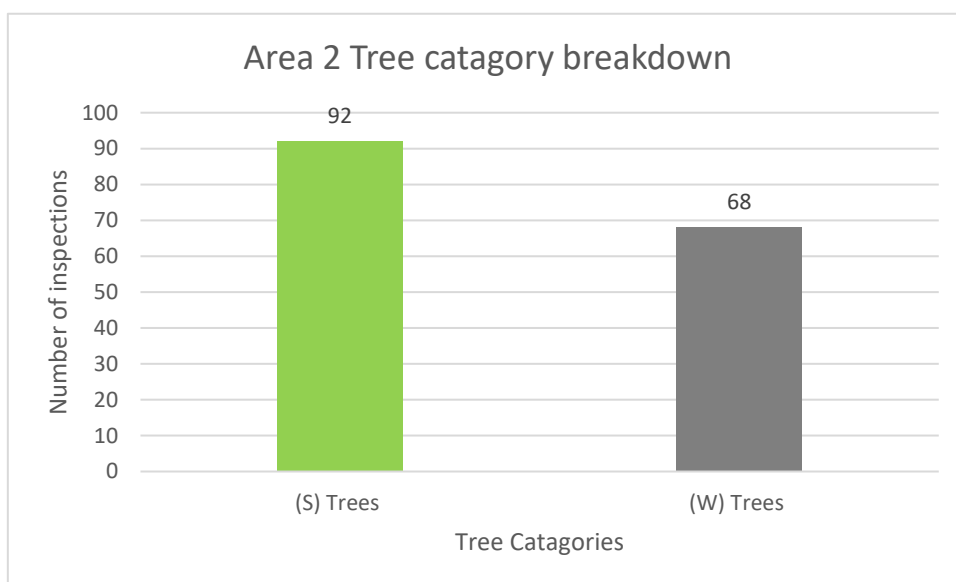


Table 8: Breakdown of categories in Area 2

3.6) Suitable Life Expectancy

3.6.1) The suitable life expectancy (SLE) refers to the duration that the trees are deemed retainable on the site. The SLE for trees on site is good which is evident from Tables 9 and 10. In order to maintain this continuous high-quality planting must continue the site. With good management in the long term this will translate into very high-quality tree cover which will provide significant eco system service benefits to the area. It is noted that having a good suitable life expectancy does not translate into high equality tree cover as many trees may be of young age and/or of mediocre quality. However, on this site the trees are predominately semi-mature and mature as identified in section 2.3 which is good when combined with the SLE.

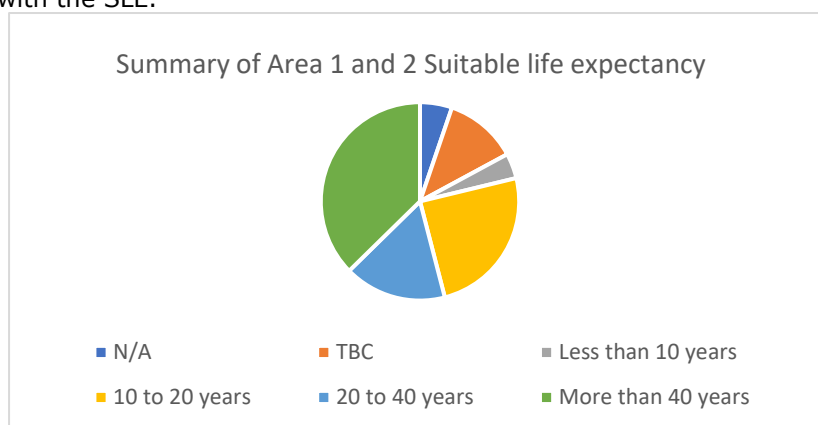


Table 9: Summary of suitable life expectancy for areas 1 and 2

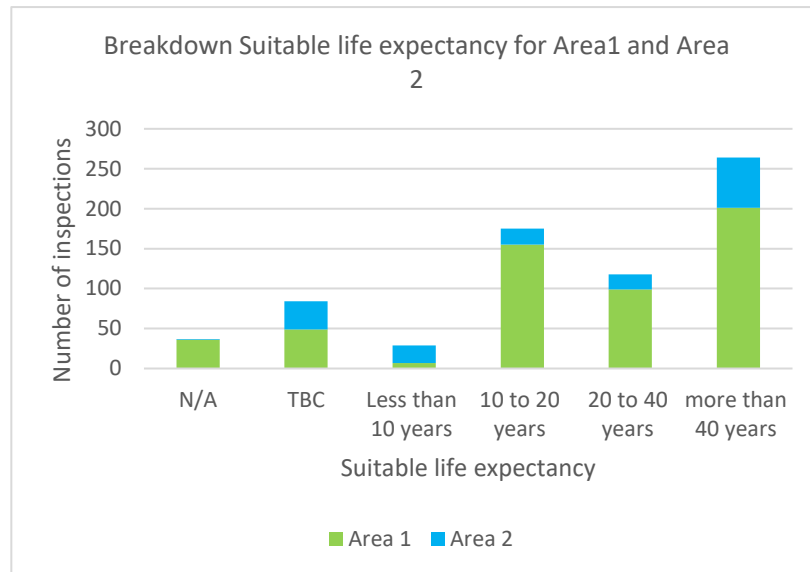


Table 10: Breakdown of Suitable life expectancy between areas 1 and 2

3.7) Management Requirement

3.7.1) Table 11, 12 and 13 provide a breakdown of the current management requirements for the site.

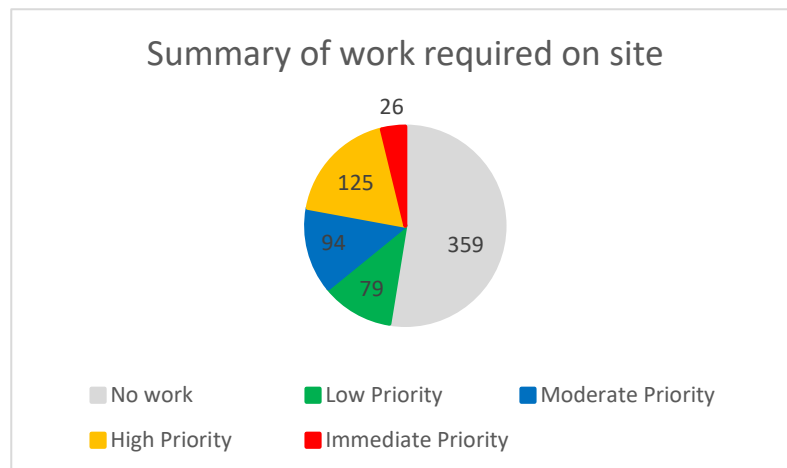


Table 11: Summary of tree work priorities

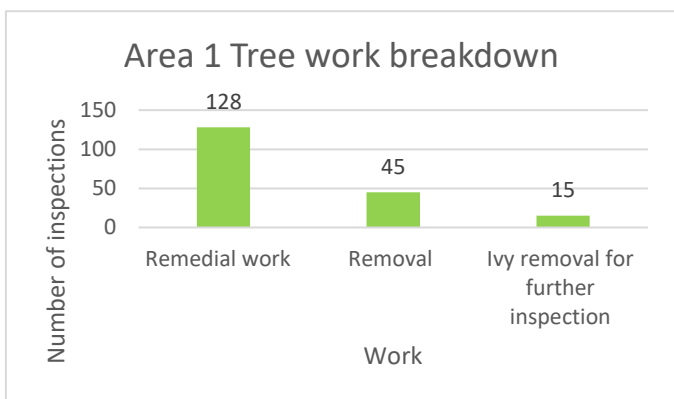


Table 12: Breakdown of works required in area 1

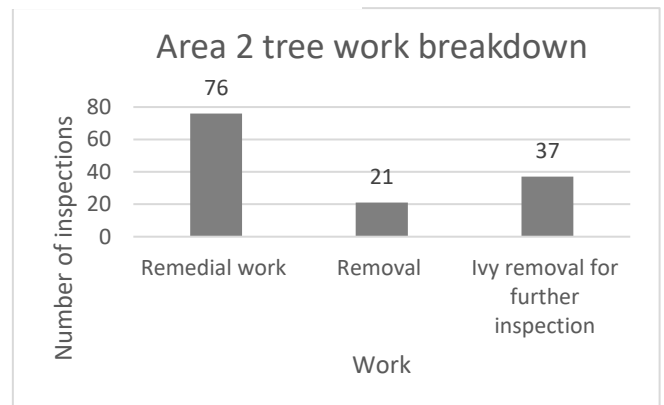


Table 13: Breakdown of works required in area 2

4) Recommendations

4.1) Current management requirements

- 4.1.1) The recommendations for the tree work on site can be found in the attached Tree Work programme. All tree works highlighted in the Tree Work programme, are to be completed in accordance with BS 3998:2010, by a trained and professional Arboricultural company.

4.2) Inspections.

- 4.2.1) All tree's and tree groups on site should be inspected on an 18 month cycle by a qualified Arboriculturist.
- 4.2.2) A walk through inspection should be carried out every 6 months and in the event of extreme adverse weather condition by an appropriate qualified member of Kilkenny County Council.

4.3) Re – planting

- 4.3.1) The site contains a large variety of species with majority in the semi mature and mature age class. It would be prudent and recommended to begin re-planting the site with new young species were appropriate to allow for continued tree cover and ensure long term arboricultural and urban forestry value in the area. A variety of native and bio-diverse species is recommended
- 4.3.2) There are 67 required removals within the site for reasons highlighted in section 3.4, 3.5 and the attached tree schedule. It is recommended where these removals are taken place that new specimens be replanted, provided it is an appropriate location for a tree in the long term.

4.4) Long term Management

- 4.4.1) There are many leylandii and poplar trees on site, their value aside from aesthetics is very limited and alternate species would provide a vast area of eco-system values in the long term. Furthermore, given both species growth characteristics they will require regular ongoing maintenance to ensure there long term retention and vitality is plausible. To remove these trees would require a phased removal and would significantly increase the value of the urban forest of Kilkenny in the long term.
- 4.4.2) There are trees on site which have significant defects and are not deemed retainable at current structure due to their condition and/or risk to the public. However some of these trees provided significant eco-system service value and are excellent for habitat. Remedial work for these trees are significant, however the value they provide for habitat and eco system services must be taken into consideration and retrenchment pruning, monolith and veteranisation are the preferred option for these trees to allow them to continue to provide

habitat in some instances at a higher capacity than at present and also to allow them to provide their vast area of eco- system services.

- 4.4.3) The maps provided highlight the root protection areas for trees on site. When designing potential development work for this site, significant consideration and care should be taken to ensure they do not encroach the root protection areas of the trees, particularly does with a A or B retention category. Furthermore , should the site be developed upon a more specific tree protection plan and method statement will be required as different development works will require alternate tree protection measures.