



Arboricultural Impact Assessment Report

Assessment of trees in relation to the Proposed development

Prepared for,

Nicholas de Jong Associates, 49 O'Connell Street, Limerick

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Prepared by,

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1.0 Executive Summary.

Arbor-Care Ltd (Professional Consulting Tree Service) was retained by NDJ & Associates to undertake, a tree and hedgerow survey, and arboricultural impact assessment for the trees and hedgerows contained within the outlined survey area as shown in Figure 1. The original tree survey was undertaken in 2018, the below assessment will be for the development of the section highlighted in Figure 2.

The survey area was chosen in order to inform the preparation of a layout for a proposed residential development located in Mungret, Co. Limerick. As there are existing mature trees and hedgerows within the identified area, it is essential that the proposals would result in the minimum impact to the trees and hedgerows.

The objective of this survey was to identify the areas that contained high quality trees or hedgerows, and to ensure where possible that these areas would be retained. The proposed site contains several large green fields that are naturally divided by hedgerows. Any larger trees within the hedgerows were individually assessed whilst the hedgerows were assessed as groups. The surveyed trees contained within this report are located within the parameters of the proposed surveyed area.

Following discussions with the Planning section of Limerick City & County Council it is confirmed that there are no tree preservation orders on the site.

The preservation plan in this report is based on the British standard *BS 5837:2012 Trees in relation to design, demolition and construction*, 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. The survey commenced on the 31st of May 2018.

Figure 1. Surveyed area outlined in red.



It is also intended to provide 2 no. local retail and retail service units, of 80sqm net floor area situated fronting the public square and positioned within the Independent Living for Older Persons complex.

Associated site and infrastructural works include provision for

- (i) water services, foul and surface water drainage and associated connections
- (ii) attenuation proposals including permeable paving and swales;
- (iii) all landscaping works including
 - (a) provision of playground and kick about areas;
 - (b) new pedestrian and cycle connections; and
 - (c) public square
- (iv) car and bicycle parking;
- (v) 4 no. ESB substations;
- (vi) external plant and services; and
- (vii) all associated site development works.

The development will be accessed from the proposed Mungret Link Road with 5 no units only, accessed from the existing Mungret Woods Housing Development.

2.0 Assignment.

1. To undertake a visual tree and hedgerow survey to, identify trees and hedgerows of quality that may be impacted on by the proposed masterplan.
2. To provide recommendations for their preservation and or removal.
3. Present a written report on the inspection of the trees.

2.1 Limits of the Assignment.

Unless otherwise stated tree inspections have been undertaken from ground level and using non-invasive techniques only. Comments on the condition and safety of any tree relate to the condition of that tree at the time of the survey. At the time of the survey the proposals were unknown therefore an in-depth arboricultural impact assessment could not be undertaken. Due to barbed wire fencing or overgrowth certain trees were unable to be physically tag, however they are marked on the tree survey plan.



3.0 Methodology.

An initial tree survey and visual condition assessment was carried out on the 31st of May 2018. For the purpose of this report and in accordance with BS 5837 only trees with diameters of 75mm or greater were surveyed. Also in accordance with point 4.4.2.3 of the British standard document where trees formed obvious groups these were assessed and recorded as groups.

4.4.2.3

Trees growing as groups or woodland should be identified and assessed as such where the arboriculturist determines that this is appropriate. However, an assessment of individuals within any group should still be undertaken if there is a need to differentiate between them, e.g. in order to highlight significant variation in attributes (including physiological or structural condition).

*NOTE The term "group" is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. **avenues** or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture), in respect of each of the three subcategories .*

The survey concentrated primarily on the significant trees and hedgerows located within the development (red line area, Fig 1) area. The objective of this survey was to gather information to assist in the preparation of the planning proposal regarding the trees and hedgerows location and to determine the impact the proposed development may have on the trees/hedgerows.

Significant trees can be equated as those trees whose visual importance to the surrounding area are sufficient to justify special efforts to protect/preserve and whose loss would have an irremediable adverse impact on the local environment. Significance can also be placed depending on the trees age, another variable to imply significance can be the aesthetic merit of the tree based on its unusual size, intrinsic physical features or outstanding appearance or occurring in a unique location or context, and thus provides a special contribution as a landmark or landscape feature. Where access was limited to the trees as a result of high briars and or trees on private lands these trees were given a virtual tag number which is denoted using the letter T for example T1 or T4. All other trees were tagged using a metal numerical disc.

All above parts of the trees were visually examined. Tree diameters (DBH) were estimated at 1.5 meter above grade as per standard arboricultural practice. Tree height was measured with the use of a clinometer (Where practical). A generalised system was employed to describe the overall health of the trees. The system uses a five tier rating scale with the following descriptors,

Note:

Specimen condition is based on a 5-tier rating system:

- Very poor-1-20%
- Poor- 21-40%
- Fair- 41-60%
- Good- 61-80%
- Very good 81-100%

Where 100% would be a perfect species phenotype.

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

Category	Quantity
A-Tree of high quality	0
B-trees of good quality	43
C (Low quality or trees less than 75mm diameter)	0
U (remove due to poor condition)	0
Total individual Trees surveyed	43
Hedgerows B2 – good quality	4

4.0 Arboricultural Impact of the Proposed Development.

4.1 Trees to be removed to facilitate the works

The arboricultural impact of the development is low, only 3 trees out of 43 trees will require removal. It will also require the complete removal of hedgerow 17 and the complete removal of two un-surveyed areas and some areas of scrub, and partial removal of hedgerows 6, 16 and 19 and one further un-surveyed area (Please refer to Appendix 1 (Page 17), Appendix 2 (page 18) and the Vegetation Removal Plan (Dwg. MP-L-006 Vegetation Removal Plan - Figure 6 on page 20) for further information). There is an extensive landscape plan that will plant site appropriate trees which will enhance the arboreal footprint of the site.

5.0 Tree Removal/tree works

All trees that are destined for removal or require pruning works shall be undertaken prior to any construction or demolition works on this site. Any tree remedial works that are required shall also be undertaken prior to any construction or demolition activity on the site. All the above shall be carried out by qualified and insured tree surgeons and in accordance with *BS 3998: 2010 Tree Work. Recommendations*

6.0 Tree Protection

Prior to any construction or demolition works on this site all trees destined for retention need to be protected by the use of protective barriers and or ground protection, fit for the purpose of ensuring the successful long-term preservation of the trees. In order for the retained trees to be adequately protected on the site a construction exclusion zone needs to be identified. This zone is calculated based on the root protection area (RPA), which is the minimum area in m² which should be left undisturbed around each retained tree. The RPA should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter for a single stem tree and 10 times basal diameter measured immediately above the root flare for trees with more than one stem arising below 1.5m above ground level.

Number of Stems	Calculation
Single Stem Tree	$\text{RPA (m}^2\text{)} = \left\{ \frac{\text{stem diameter (mm) @ 1.5m x 12}}{1000} \right\}^2 \times 3.142$
Tree with more than one Stem arising below 1.5m above Ground level	$\text{RPA (m}^2\text{)} = \left\{ \frac{\text{Basal Dia. (mm) x 10}}{1000} \right\}^2 \times 3.142$

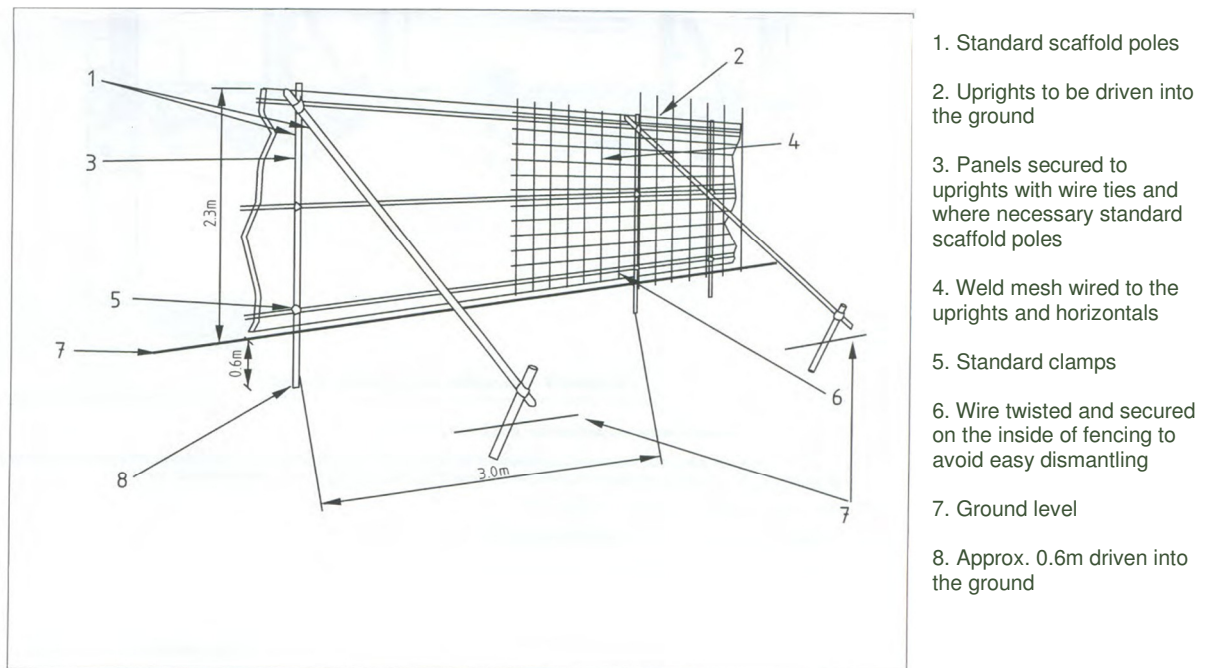
Note: The Calculated RPA should be capped to 707m². e.g. which is the equivalent to a circle with a radius of 15m or a square with approximately 26 m sides.

6.1 Protective Barriers

Trees that are destined to be retained must be protected by protective fencing, signage and/or ground protection prior to any materials or machinery being brought on site and prior to any development, demolition or soil stripping takes place. Areas that are designated for new plantings should be similarly protected. Barriers should be fit for the purpose of excluding construction activity. In most cases barriers should consist of a scaffold framework (Refer to fig. 3 below) comprising a vertical and horizontal framework, well braced to resist impacts. To ensure the protective barriers are respected, clear concise signage must be affixed to the barrier in an unrestricted easily viewed location.

The protective barriers shall remain in an undisturbed condition and only removed on completion of all construction activity finished grading and sodding. Any breach of the protective fence shall be reported to the consulting arborist.

Figure 3. Protective Barrier



The above displays an example of a suitable protective barrier as recommended by *BS. 5837 2012 Trees in Relation to Construction. Recommendations.*

Figure 4. Signage to be placed on all protective fencing



The signage must state the following;

- No construction activity is to take place within the R.P.A. (unless pre-agreed with the arborist)
- No materials of any kind are to be stored within the R.P.A.
- No “Spilling out” of materials shall take place within the R.P.A.
- No fires are to be lit within the R.P.A.

6.2 Ground Protection

Although works within the RPA are not recommended should essentials works be required within the RPA. The installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile may be acceptable.

6.3 Tree Protection Plan

A site specific Tree Constraints Plan has been included. See Appendix 2.

7.0 Arboricultural Method Statement/Tree Protection Strategy

The objective of this arboricultural method statement and tree protection plan is to provide information for the building contractor/site manager on how the trees on the site need to be protected pre, during and post development works so that they can prepare their own site specific detailed method statement for their works

It is necessary for the protective fencing to be erected and all other mitigation measures required to be put in place prior to any development works commencing on site to ensure all retained trees and their critical rooting zone are protected for the duration of the works. Refer to tree constraints plan (Appendix 2) for the position of protective fencing and additional mitigation measures. Please refer to the vegetation removal plan (MPL-005) for information on the vegetation removal.

The protection for trees shown for retention will occur in three stages known as pre, during and post development.

Table 2. Arboricultural Method Statement/Tree Protection Strategy – Management Stages

Arboricultural Method Statement/Tree Protection Strategy – Management Stages		
Stage 1 – Pre development works	Stage 2 - The construction works stage	Stage 3-Post Development Works
1. Consultation with Arborist and developer	1. Protective Fencing – management and maintenance	1. Site inspection by arborist to ensure plan adhered to and trees and hedgerow protected
2. Site meeting - consultation with Arborist, developer, main contractor and sub-contractor	2. Excavations – works only commence when protective fencing in place	
3. Tree works – Appointment of professional surgeon	3. Working within the RPA – All works within the RPA to be discussed and agreed with the arborist	
4. Erection of protective fencing/Mitigation measures	4. Finished ground levels/Landscaping – All works to ensure the integrity of tree/s protected.	

7.1 Stage 1 - Pre development works

Prior to works commencing on site the following needs to be agreed and implemented:

1. The developer if requested may need to appoint an arboriculturist for the duration of the project. The arborist is to make regular site visits to ensure that the protection measures are in place and are being adhered too.
2. The main contractor and sub-contractors are to be briefed on the tree protection plan and ensure all measures are kept in place for the duration of the project
3. All personnel are to adhere to the recommendations of the appointed arborist
4. Any issues in relation to trees shown for retention must be discussed with the appointed arborist and the necessary mitigation measures put in place without delay and prior to the works taking place.

7.2 Site meeting

Prior to any works on site, it may be necessary that a meeting be arranged between the project manager, site foreman, the project landscape architect, the project arborist and the local authority to identify and finalise the trees for removal and the line of protective fencing and any other mitigation measures.

7.3 Tree works

The developer or the main contractor is to appoint a professional tree surgery company to undertake any tree removal or surgery works identified. The works are to be undertaken in accordance with *BS 3998 2010*. All trees agreed to be removed are to be removed prior to works and on receipt of full planning permission

7.4 Erection of protective fencing/Mitigation measures

The erection of protective fencing is to be erected to the fence line shown in tree protection plan. The fencing must adhere with BS 5837: 2012 (Figure 3 and Figure 4 above). Signage must be placed on the fence to highlight its importance. Once the fencing is erected works can commence on-site.

8.0 Stage 2 - The construction works stage

8.1 Protective Fencing

During the course of the construction works the integrity of the fencing must be respected and remain in place at all times. No building materials or soil heaps are to be stored within this area. Should essential works need to take place within the root protection area the project arborist must be informed in advance and any mitigation measures are to be put in place. The protective fencing must remain in situ for the duration of the project and must only be removed upon completion of all works.

8.2 Excavations

Excavation works are only to commence once the protective fence line is in place. The excavations need to be viewed on site once marked out with the project manager, site foreman and the project arborist in advance of excavation to determine the extent of the impact and the works space required to allow the construction works proceed and to assess any additional mitigation measures that may be required to protect the retained trees. In certain areas it may be necessary to use alternative methods of excavation to prevent encroachment into the RPA of the trees to be retained and this may include such methods as retaining walls, no dig technique etc.

8.3 Working within the RPA

If it becomes necessary to undertake works within the RPA of tree/trees, these must be discussed and agreed with the project arborist. All works must be carried out manually root pruning is to be undertaken by an arborist using hand held equipment such as a handsaw. For pedestrian movements within the R.P.A. the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile may be acceptable.

8.4 Finished ground levels/Landscaping

The existing ground levels within the RPA of the retained trees must be retained and incorporated into the finished landscaped development. Where changes in level occurs these are to be either graded into the finished levels starting outside the RPA or alternatively, retaining wall structures are to be used differentiating between the different levels.

All soft and hard landscaping within the RPAs must be carried out manually and the soil levels must not be lowered or raised resulting in root damage to the trees. All finished surfaces are to be porous to allow the free movement of water and gaseous exchange to the roots.

9.0 Stage 3-Post Development Works

The project is not to be considered complete until the arborist has inspected the site and is satisfied that all retained trees and hedgerows have been protected in accordance with the site specific Tree Protection Plan and there has been no negative impact on the retained trees on site as a result of the development.

10.0 Conclusion

The arboricultural impact of the development is low, only 3 trees out of 43 trees will require removal. It will also require the complete removal of hedgerow 17 and the complete removal of two un-surveyed areas and some areas of scrub, and partial removal of hedgerows 6, 16 and 19 and one further un-surveyed area. There is an extensive landscape plan that will plant site appropriate trees which will enhance the arboreal footprint of the site.

I consider subject to implementing the above Arboricultural Method Statement/Tree Protection Strategy and landscape plan that there is unlikely to be significant long term detrimental impact as a consequence of the development proposal.

Appendix 1 - Tree Categorization.

Tree Categorization.

Category U

This category signifies those trees that are in such a 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.

Category A.

Those trees of a high quality and value, in such a condition as to be able to make a substantial contribution. (A minimum of 40 years is suggested)

Category B

This category signifies those trees of a moderate value and in such a condition as to be able to make a substantial contribution (A minimum life expectancy of 20 yrs is suggested)

Category C

This category signifies those trees of a low quality and value that are currently in an adequate condition to remain until new planting could be established (A minimum life expectancy of 10yrs is suggested), or young trees with a stem diameter below 150mm. Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation.

The above categories have sub-categories attached to the tree categorisation.

Sub-category 1- Mainly Arboricultural Values eg-A1

Sub-category 2- Mainly Landscape Values- B2

Sub-category 3- Mainly cultural values, including conservation C2

Appendix 1 – Tree Inventory

Tree Inventory Legend

Tree Dimensions - All dimensions are in meters.

Ht - Tree Height

Crown clearance - Lowest canopy height (distance from ground level to the first live branch)

Crown spread - Tree Canopy Spread measured by radii at north, east, south and west

Dia. -Stem diameter at approx. 1.50m from ground level.

RPA - Root Protection Area, as a radius measured from the tree's stem centre.

Physiological Condition

Good - A specimen of generally good form and health

Fair - A specimen with defects or ill health that can be either rectified or managed typically allowing for retention

Poor - A specimen whom through defect, disease attack or reduced vigour has a limited longevity or may be un-safe

Dead - A dead tree

Structural Condition - Information on structural form, defects, damage, injury or disease supported by the tree

PMR (Preliminary Management Recommendations) – refers to Arboricultural actions or works considered necessary at the time of the inspection and relating to the existing site context and tree condition. *Note is also made of works considered as urgent.*

Species Common name is given; botanical name is also given upon its first entry, in Italics.

Age Class

Young: A tree, which has been planted in the last 10 years.

Semi –mature- A tree that is less than 1/3 the expected height of the species in question.

Early mature: A tree, which is approximately 2/3's the expected height of the species in question.

Mature: A tree that has reached the expected height of the species in question, but still increasing in size.

Over mature: A tree at the end of its life cycle and the crown is starting to break up and decrease in size.

Veteran/Heritage: A tree of interest biologically, aesthetically or culturally because of age.

Appendix 1- Tree and Hedgerow inventory

Tag number	Species Botanical Name	Age class	DBH	Height	Crown Sp.	Crown clearance	Condition	Structural/Physiological Observations	Category	Impact of the development	RPA
3024-3025	Austrian Pine	M	800	24	N=5 S=5 E=5 W=5	1	Good	A row of 24 mature Pines displaying a good overall condition. As a group they have a high amenity value due to their prominent location	A2	Retain	9m
3026-3027	Austrian Pine	M	800	24	N=5 S=5 E=5 W=5	1	Good	A row of 12 mature Pines displaying a good overall condition. As a group they have a high amenity value due to their prominent location	A2	One tree within the row will have to be removed, please refer to the vegetation removal drawing	9m
1779-1780	Monterey Cypress	M	800	24	N=4 S=4 E=4 W=4	1.5	Good	A row of 7 large mature Monterey Cypress displaying a good overall condition. As a group they have a high amenity value due to their prominent location.	B2	Two trees within the row will have to be removed, please refer to the vegetation removal drawing	9m

Appendix 2. Hedgerow Inventory, Mungret

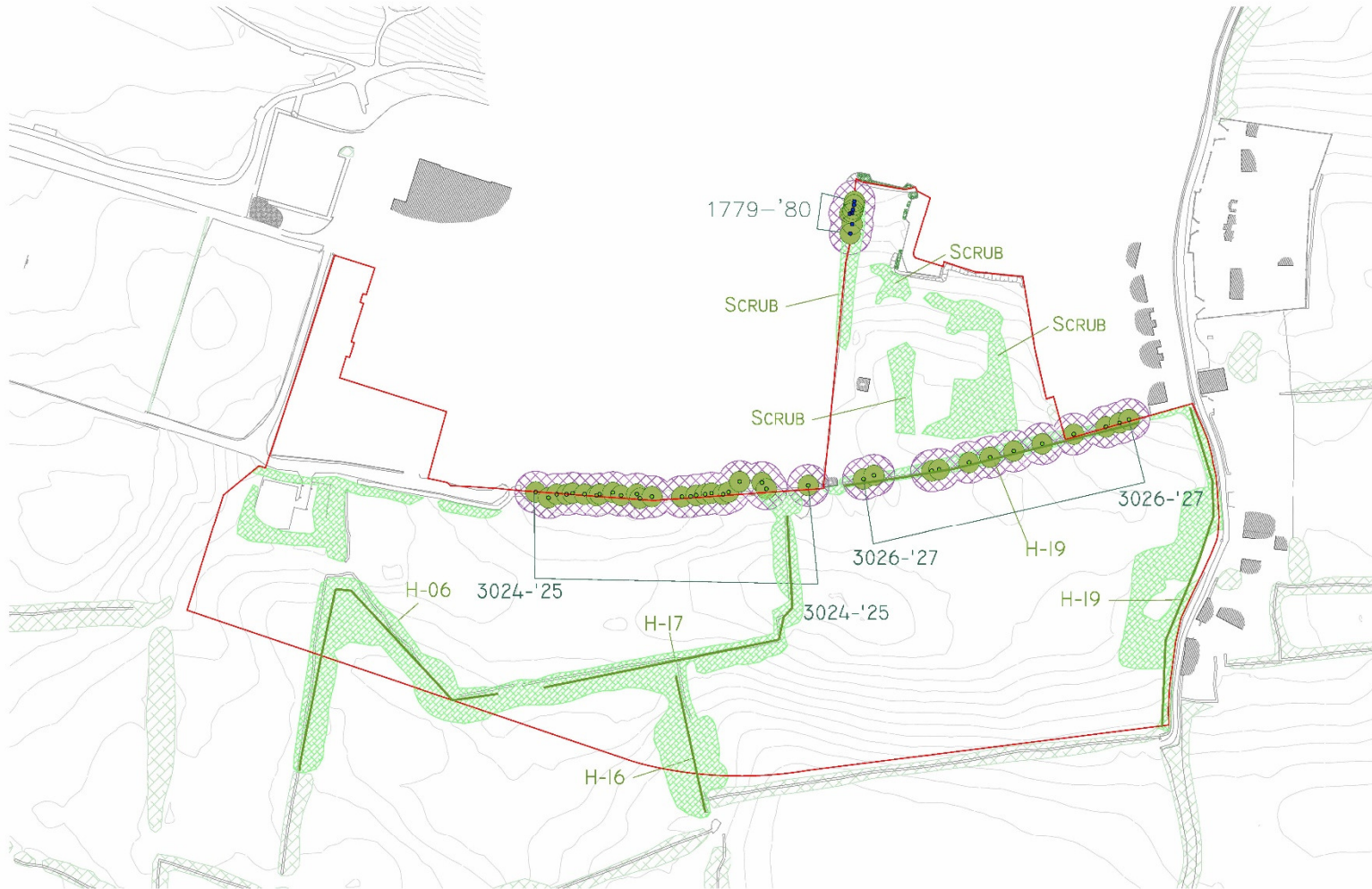
Tree	Species Botanical Name	Age class	Height (M)	Crown Cl.(M)	Condition	Structural/Physiological Observations	Category	Impact of the development
H6	Hawthorn Blackthorn elder	M	6-8	1	Good	A mature hedgerow displaying a good overall condition. Typical native hedgerow	B2	Partial removal to facilitate the development
H16	Hawthorn Blackthorn elder	M	3-6	1	Good	A mature hedgerow displaying a good overall condition. Typical native hedgerow	B2	Partial removal to facilitate the development
H17	Hawthorn Blackthorn elder	M	3-6	1	Good	A mature hedgerow displaying a good overall condition. Typical native hedgerow	B2	Remove entire hedge to facilitate the development
H19	Hawthorn Blackthorn elder	M	3-6	1	Good	A mature hedgerow displaying a good overall condition. Typical native hedgerow	B2	Partial removal to facilitate the development

Figure 5. Tree Constraints Plan

Notes

Please refer to Table 1 'Tree Inventory Mungret' when reading this plan.

Do not scale

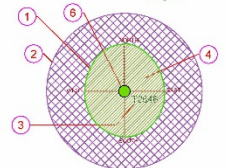


Rev.	Date	Description
01	21/01/17	Tree 1779-80 and 3026-27 added, and 1 tree changed

Legend:

- Category (A, A1, A2, A3) - Trees of high quality are those that are of high value to make a substantial contribution to amenity or ecology
- Category (C, C1, C2, C3) - Trees of low quality and value; category of trees that are of low value and are likely to be removed or replaced in the next 10 years or young trees with a circumference below 150mm

- Category (B, B1, B2, B3) - Trees of moderate quality and value; those that are of moderate value and are likely to be replaced in the next 10 years or young trees with a circumference between 150mm and 225mm
- Category (U) - Trees of low quality and value; those that are of low value and are likely to be removed or replaced in the next 10 years or young trees with a circumference below 150mm



- ACR CROWN FINCS
- Y = YOUNG
 - MA = MEDIUM AGE
 - M = MATURE
 - OM = OVER MATURE
 - V = VETERAN

- 1 EXISTING TREE CANOPY WIDTH ON BOUNDARIES EAST WEST OR SOUTH BY 4 DIRECTIONS, NORTH, SOUTH, EAST AND WEST
- 2 ROOT PROTECTON 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

01 TABLES BS 5837-2012

Key

- SITE BOUNDARY
- Foliage
- Hedge/Screen Reference

Client: Limerick City and County Council
C/o Nicholas de Jong Associates

Project: Tree survey for the proposed development at Mungret

Drawing title: Tree Constraints Plan - Mungret

Drawn By:	Checked By:	Date:	Scale:
MG	MG	02/06/18	1:1000

Dwg. No.:	CAD File:	File of Site Information:	Rev. ID:
ML 1841 - 18-02-18	Limerick-18-02-18		

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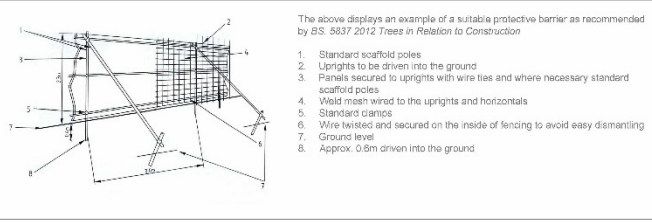


Figure 6. Vegetation Removal Plan

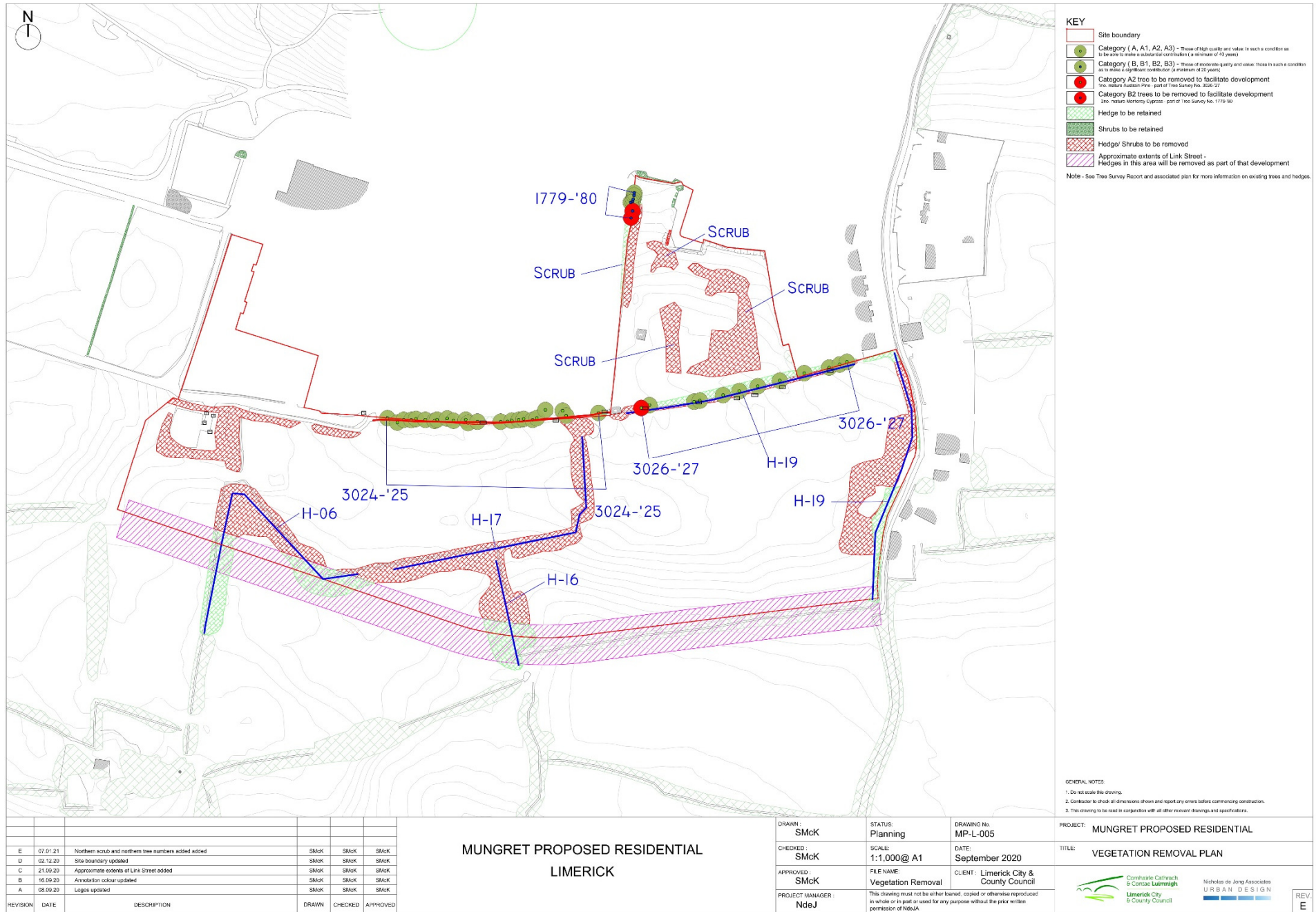


Figure 7. Displays typical image of the hedgerow on site. Containing good quality hawthorn and blackthorn. This image is H6



Figure 8. Displays a typical hedgerow.





This report was prepared by:

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Yours in Conservation,

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