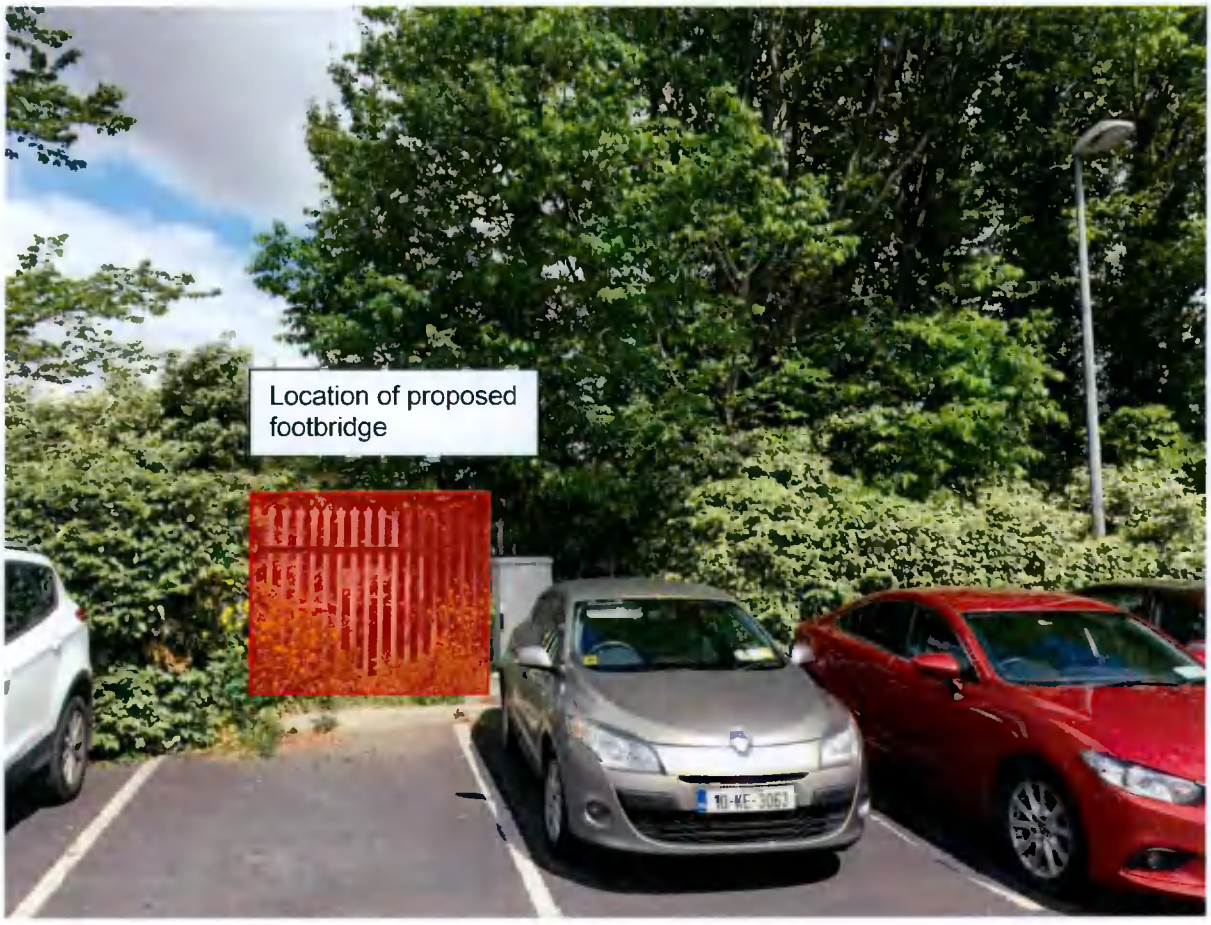
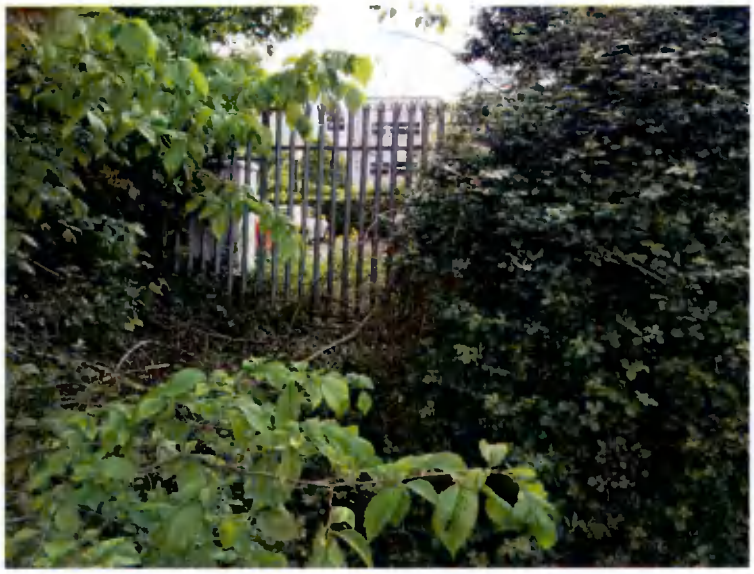
Minimal clearance of the existing hedge growth will be required as the footbridge is positioned immediately adjacent to a telecom switchbox which is already clear of dense vegetation:

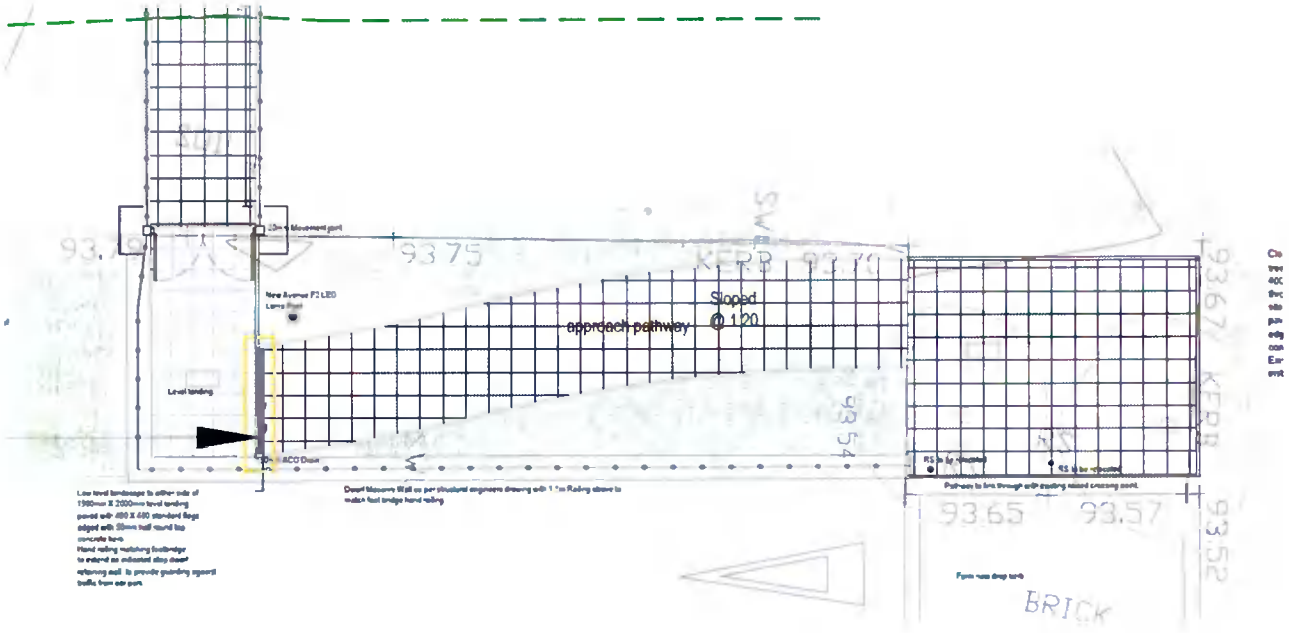

Location of proposed
footbridge

This is a repeat on the Airton Close side of the drainage channel:



2.3 Proposed Landscaping

Low-level shrub planting is proposed to the pathway from the campus car park leading to the footbridge. This will consist of local and native plant species such as hawthorn, gorse and dog rose and will supplement the existing hedgerow which is retained:



4. Bat Survey

4.1 Background

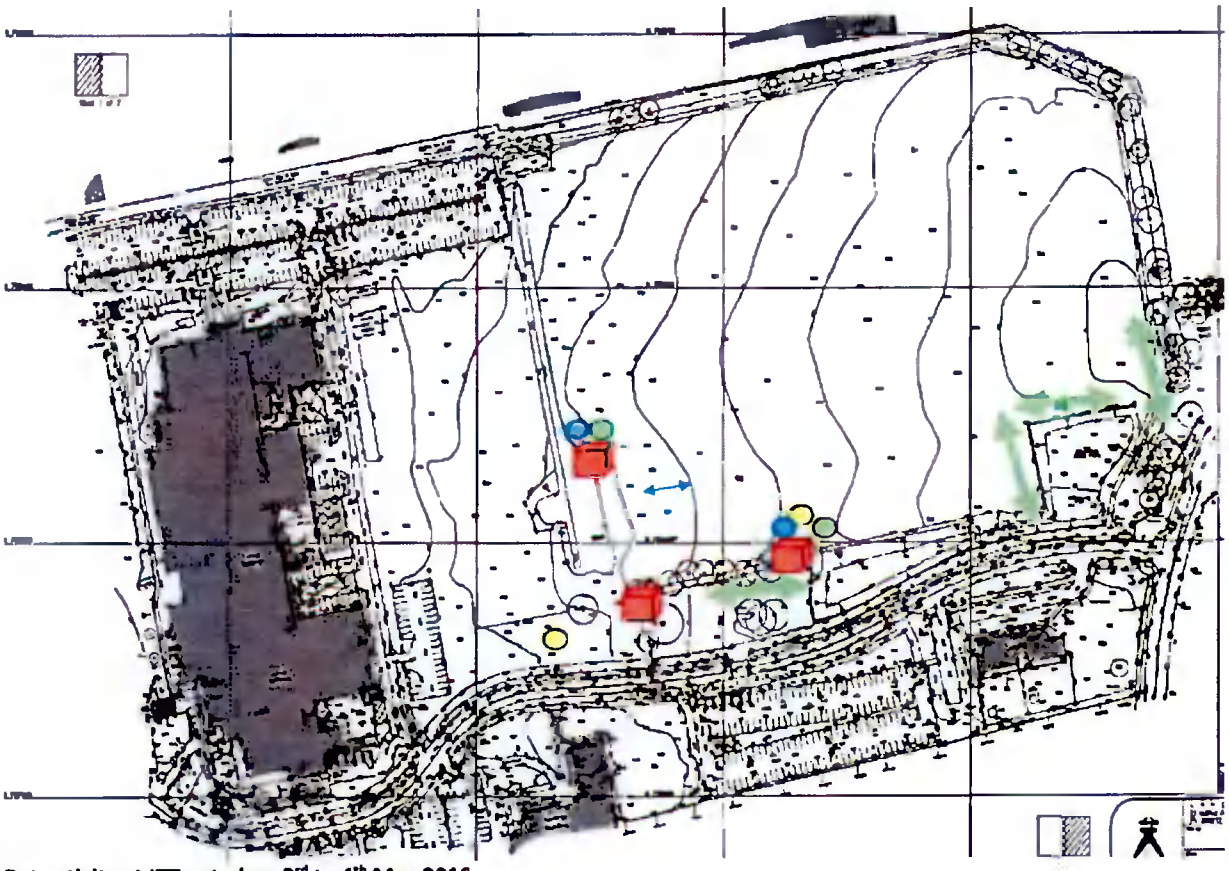
A Spring, Summer and Autumn evaluation of bat activity was undertaken within the grounds of TU Dublin, Tallaght campus in March 2016, May 2016 and September 2018. This was commissioned for a previous proposed development of a Sport Science, Health and Recreation (SSHR) Building with a flood lit GAA playing pitch and associated landscaping works (Planning ref: SD18A/0435).

4.2 Survey Findings

A number of rivers flow through Tallaght including the River Dodder and the River Poddle. Within the grounds of ITT (TU Dublin), there is only an insubstantial watercourse that can be considered a stream or drain as it features on historical maps as such. Studies on the bat fauna in the area of Dublin 24 in 2015 provide a species list including common and soprano pipistrelles. Nathusius' pipistrelle, Daubenton's bat, brown long-eared bat and Leisler's bat as well as possible Natterer's bat signals. A survey on the site at the heart of this proposal prior to the current construction of car parks and associated roadways provided a shorter list including common and soprano pipistrelle and Leisler's bat.[2]

The 2No. trees proposed for removal are young and undeveloped and unsuitable as roost sites. In May 2016 the survey found that no bats were noted to roost within the hedgerow but were potentially entering the buildings within the campus. There are no proposals under this application to carry out building works to any campus building. The majority of bat activity within the campus grounds was common pipistrelle. This species fed around the mature horse chestnut trees in addition to feeding around a pond to the east of the campus grounds which is almost 400m from the proposed footbridge.

[2] Extract from Bat Survey conducted by Brian Keely BSc (Hons) in Zool. MCIEEM



Bat activity at ITT noted on 3rd to 4th May 2016

Red box - Location of SM2 monitor

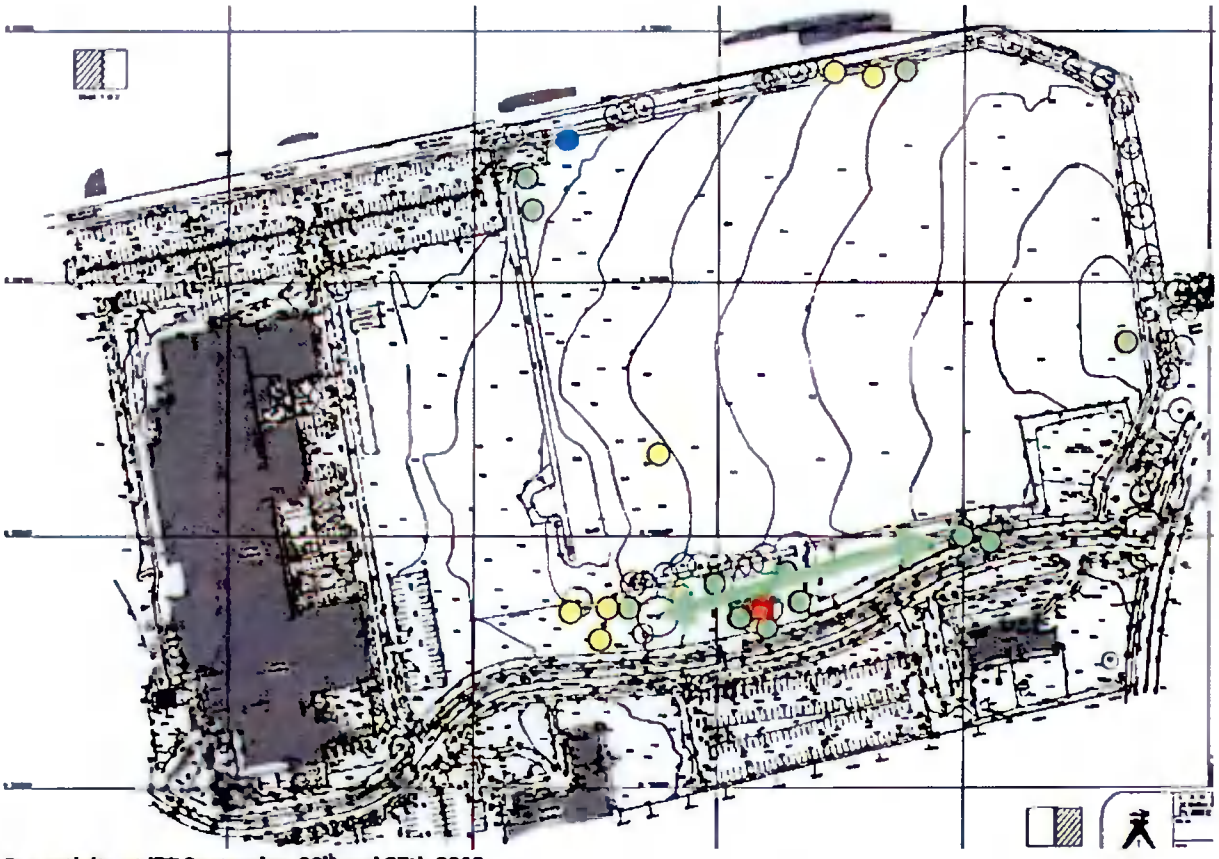
Green arrow – Feeding activity of common pipistrelle

Green dot – Common pipistrelle recorded on SM2

Yellow dot – Leisler's bat recorded on SM2

Blue arrow – single soprano pipistrelle feeding

Blue dot – soprano pipistrelle recorded on SM2



Bat activity at ITT September 20th and 27th 2018

Red box – Location of SM2 monitor at tree cavity

Green arrow – Feeding activity of common pipistrelle

Yellow dots – Leisler's bat recorded on EM3

Green dots – Common pipistrelle recorded on SM2

Blue dot – soprano pipistrelle recorded on EM3

Boxes shaded red indicate areas of highest bat activity. Proposed footbridge highlighted with yellow box.

4.3 Artificial Lighting

Artificial light can affect light-intolerant bat species in particular. However, as noted within the bat survey, *there are no known roosts on site therefore illumination would only affect commuting rather than roosting.*[3] It was recommended that hoods or cowls be fitted on the lights to reduce light spillage. The light fitting proposed is a Thorn Avenue F2 32W as per electrical consultant's specification:

[3] Extract from Bat Survey conducted by Brian Keely BSc (Hons) in Zool. MCIEEM

Artificial lighting calculations have been carried out and are included within Appendix 3. The lighting has been designed in accordance with BS 5489 Part 1: 2013.

During the hours of darkness, the lights will operate for as long as the footbridge is open. There are 2m high gates at the university campus end of the footbridge. These will be locked at the times stated in Appendix 3 to maintain security to the campus.

5. Conclusion

Based on the surveys referenced in this statement and additional data provided within the appendices, we believe we have demonstrated that there will be no adverse effect on the ecology of the site for the new footbridge and therefore recommend that planning permission be granted, subject to complying with the requirement of all other statutory bodies.

Hamilton Architects
Hamilton House
3 Joy Street
Belfast
BT2 8LE

Email: mark.priestley@hamiltonarchitects.co.uk

Appendix 1

Tree Survey Report

Independent Tree Surveys

Tree Survey Report

Institute of Technology Tallaght (ITT)
Tallaght
Co. Dublin

December 2018

Independent Tree Surveys
Our Lady's Cottage,
Drummond
Rosenallis
Co. Laois
Tel: 057 8628597
Mob: 087 1380687
www.independenttreesurveys.ie

Arboricultural Association
Professional Member

Contents

1.0 Introduction

There are plans to develop land at ITT Tallaght, Co. Dublin. There are numerous trees and hedges on and around the proposed site and this report has been commissioned to provide an Arboricultural assessment of the trees to help the design and planning process for the new development

2.0 Instruction

To carry out a Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement compliant with BS5837: *Trees in relation to design, demolition and construction (2012)* of the trees located on and adjacent to land proposed for development at ITT Tallaght, Co. Dublin.

3.0 Report Limitations

- The inspection has been carried out from ground level using visual observation methods only.
- Trees are living organisms whose health and condition can change rapidly. Trees should be checked on a regular basis, preferably once a year. The conclusions and recommendations of this report are valid for one year.
- The fruiting bodies of some important species of decay fungi only emerge at certain times of the year and may not have been visible during this inspection.
- There is no such thing as a 100% safe tree in all conditions, since even perfectly healthy trees may fall or suffer branch break.
- Climbing plants such as Ivy can obscure structural defects and some symptoms of disease, where such plants prevent a thorough examination it is recommended that the climber be cut at ground level and the tree re-inspected when it has died back.

Report Prepared by

John Morgan
BSc (Hons) Tech Cert (Arbor A) M Abor A (Membership number PR407)

December 7th 2018

4.0 Survey Methodology

The significant individual trees inside and adjacent to the site were assessed from ground level using Visual Tree Assessment (VTA) techniques and relevant observations and findings were recorded in compliance with the industry standard document BS5837: *Trees in relation to design, demolition and construction (2012)*.

4.1 Survey Key

Tree Numbers
Individual trees and hedges on the site were tagged with numbered tree tags; these numbers are used to identify the trees and hedges in the survey schedule and on the supporting survey drawings.

Tree Species
Common and botanical names of the tree species were recorded.

Tree Crown Dimensions
Tree height (Ht), crown clearance (Cl) and crown-spread (NESW cardinal points) measurements are in metres and are estimated.

Stem Diameter (Dbh)
Measurements are in millimetres and taken at 1.5m from ground level, multiple stems (St) are recorded as a function of the BS:5837 RPA formulae described below.

Tree age classes
Age classes were recorded as:

Y	Young	Recently planted (with 5 years or so)
SM	Semi-Mature	Well established young tree
EM	Early Mature	Established tree not yet fully grown
M	Mature	Full or near full grown tree
LM	Late Mature	Older specimen in full maturity
OM	Over Mature	Reached full maturity now declining through natural causes
Vet	Veteran	Notable due to large size, old age, ecological importance

Tree Physiological and Structural condition
Tree condition was graded as

Good:	No obvious defects visible, vigour and form of tree good.
Fair:	Tree in average condition for its age and the environment.
Poor:	Tree shows signs of ill health/structural defect
Bad:	Tree in seriously bad health/major structural problem

Work Recommendations
Preliminary management recommendations are made where necessary and pertain to current site conditions unless otherwise stated.

Estimated Remaining Contribution (ERC)
The approximate number of years that a tree should continue to live and contribute amenity, conservation or landscape value to the site under current site conditions.

4.2 Tree Retention Category (Cat) (BS5837: 2012 Trees in relation to design, demolition and construction – Recommendations)

The tree retention category system grades a tree's suitability for retention within a development:

A Indicates a tree of high quality and value. These are trees that are particularly good examples of their species, which also provide landscape value. These trees are in such a condition as to be able to make a substantial contribution. (A minimum of 40 years is suggested)

B Indicates a tree of moderate quality and value. Trees that might be included in the high category, but are downgraded because of impaired condition. These trees are in such a condition as to make a significant contribution. (A minimum of 20 years is suggested)

C Indicates a tree of low quality and value - trees with an estimated remaining life expectancy of at least 10 years, or younger trees with a stem diameter of below 150mm and/or <10m in height.

U Trees that are in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

Sub Categories

Tree categories may be further categorised using the following sub-categories (e.g. C1, C2 or C3) - 1 mainly Arboricultural qualities, 2 mainly landscape qualities, 3 mainly cultural values.

4.3 Root Protection Area

The Root Protection Area (RPA) is the minimum area around individual trees to be protected from disturbance during construction works; RPA is recorded as a radius in metres measured from the tree stem and is shown on the tree survey/constraints drawing as a circle with the tree stem in the centre.

For single stem trees, the root protection area (RPA) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter.

For trees with more than one stem, one of the two calculation methods below should be used. The calculated RPA for each tree should be capped to 707 m^2.

a) For trees with two to five stems, the combined stem diameter should be calculated as follows:
$\sqrt{}$ ((stem diameter 1)^2 + (stem diameter 2)^2 ... + (stem diameter 5)^2)

b) For trees with more than five stems, the combined stem diameter should be calculated as follows:
$\sqrt{}$ ((mean stem diameter)^2 × number of stems)

5.0 Findings

The trees and hedges were assessed during a site visit on 16th November 2018; the field data for the trees is contained in the accompanying Tree Survey Schedule. Approximate tree location, BS5837 category, RPA and crown shape are shown on the Tree Survey drawing 18027_TS.

5.1 Site Overview

The site occupies a large area of the overall campus; encompassing the large expanse of open rough grassland from the main college buildings across to the eastern boundary of the property. The site is bounded by the campus boundary to the north and the main east-west access road running through the campus to the south.

The site is mostly flat or very gently sloping for much of the land area, with the open spaces formerly used for agriculture but left fallow in recent years. The northern and eastern limits of the site are marked by an open drainage ditch running around the perimeter.

5.2 Tree Survey Overview

Full details of the individual trees assessed on the site are listed in the Tree Survey Schedule in the appendices of the report. The tree population of the site is dominated by the trees making up a series of old hedgerows and tree-lines around the northern, eastern and southern edges of the site and the old hedgerow that runs on a roughly north south orientation through the western part of the site; effectively separating the two main open spaces.

Additional trees make up a small woodland area between the drainage channel and old stone wall along the far eastern boundary of the campus and some younger trees alongside the internal road just east of the college buildings associated with more recent landscaping works are also included in the schedule.

Photo 1 Old hedgerow (H1) and remnants of old woodland at the southern edge of the site (tagged 3053-3080)

Trees 3053-3074 include the trees that make up the old hedgerow (H1) running east-west along the southern part of the site; the trees are mostly Ash and Sycamore, with some Elm Hawthorn and Elder. The trees making up the hedge are mostly in a poor condition, having been impacted by previous groundworks and suffering a general lack of management.

Trees 3075-80 are the remnant trees of an area of woodland that has been mostly cleared in the last decade; the trees are in variable condition with two Horse Chestnuts suffering from bleeding canker and all of the trees having been impacted by groundworks and soil compaction.

Trees 3082-3111 includes the trees that make up the small woodland inside the eastern boundary wall of the campus; many of these trees are in poor condition and several large trees require remedial works or removal.

The trees tagged 3112-3123 represent the more significant individuals within the linear group that is growing along the bank of the drainage channel running along the boundary of the north-east corner of the site. The tree-line is a dense mixture of unmanaged Elm, Ash and Hawthorn; many of which are multi-stemmed coppice stools. The Elm, Ash and Hawthorn tree-line continues along the inside bank of the drainage channel along the northern edge of the site up to the car park and include trees 3124-3139.

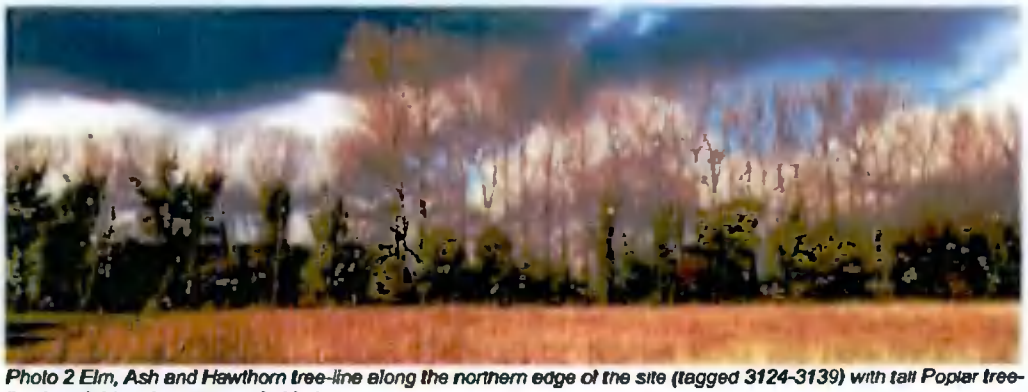


Photo 2 Elm, Ash and Hawthorn tree-line along the northern edge of the site (tagged 3124-3139) with tall Poplar tree-line in neighbouring property behind.

Trees 3140-3147 are individual Ash stems within the old agricultural field boundary hedge (H2) running north south between the two fields. The hedge itself is in poor condition having been left unmanaged for many years, and growth has expanded out into the grassland distorting the line of the hedge. A lack of trimming or hedge-laying has allowed the emergence of several Ash trees within the Hawthorn, Blackthorn and Elder mix to dominate the hedge profile. There seems to have been some ground-works adjacent to the hedge in more recent times and there is evidence of a substantial rabbit population living within the hedge.

Photo 3 Hedge (H2) running between the two fields including the sample Ash trees tagged 3140-3147)

Trees tagged 3148-3162 form a linear group inside the eastern verge of the north south internal road just east of the main college buildings; this is a row of relatively young Lime trees established together as part of an older landscape scheme. The trees are in variable condition following damage during what appears to have been some excavation works for underground services in the past. Many of the trees have sustained bark injuries to the lower stem and many must also have suffered some root damage during the works.
Trees 3163-3168 are the three pairs of Silver Birch trees of mostly moderate value established in the landscape beds between the main college buildings and internal road.

The new access road that links the college to Greenhills Road at the eastern edge of the campus has been lined with an avenue of young Lime trees (*Tilia* CV) at 10m spacing along the northern side of the road, between the footpath and cycle lane. These trees are in mostly fair/good condition, however, one tree has died at the western end of the avenue.

6.0 Comments/ Preliminary Recommendations

Preliminary management recommendations for the individual trees assessed are listed in the tree survey schedule; these pertain to *current* site conditions unless otherwise stated. Some trees are recommended for felling on the basis of poor structural or physiological health, others are recommended for remedial pruning works or coppicing as part of general maintenance work. All tree work should be carried out by qualified and experienced tree surgeons; all tree work should be in accordance with *BS3998 (2010) Tree Work – Recommendations.*

Overall the trees included in this survey are of relatively low value as individuals, with the vast majority being graded category C (low value). However the majority of the trees are growing within linear tree groups or hedgerows and when assessed collectively they are more valuable than the sum of the parts. The tree lines or hedges form an attractive and effective landscape screen around the edge of the campus and are also likely to be of some conservation value for local wildlife.

The hedges have been neglected in terms of regular hedgerow management in recent years and have also been impacted by adjacent groundworks and are showing signs of dieback in places. The hedge-line H1 including trees 3053-3074 has become patchy and has continued to deteriorate since the previous survey; this decline will continue over the coming years unless some restoration works are undertaken.

The hedgerow running between the two fields has suffered less in terms of root damage, but has become very overgrown since regular management ceased. The hedges could be restored if brought back into proper management over a period of time; such restoration should include an initial phase of side pruning and clearance of the suckering and scrub encroachment into the adjacent fields, followed by reinforcement planting of new hedging plants where significant gaps occur and regular/annual trimming.

The trees have grown up together within the hedgerow environment and I would not recommend the retention of specific individuals or very short sections of hedge should the hedgerow be significantly modified; it would be better to retain substantial sections of hedge instead.

The woodland area inside the eastern boundary wall is in need of some significant works to remove or prune several trees in very poor condition; this should be seen as an opportunity to restore and revive the woodland that has suffered badly from earthworks and neglect over many years. The small woodland has the potential to contribute good amenity and conservation value to the campus if well managed.

The Elm trees around the perimeter of the main field have just started to show signs of Dutch Elm Disease; this is likely to spread to other trees and I would strongly recommend that affected trees are coppiced as soon as symptoms appear.

The established row of semi-mature Lime trees (3148-3162) have sustained significant injuries at some point in the last few years and the long term value of some of them may have been significantly reduced by these injuries. If significant new landscape planting is proposed for the area, I would suggest the removal and replacement of these trees and any of the other young and semi-mature trees planted into the landscape verges that may be within the footprint of any proposed development; I would not regard them as a significant impediment to development of the area.

7.0 Arboricultural Impact of the New Development

The layout of the proposed new development is shown overlain with the tree survey findings on the Tree Protection Plan Drawing 18027_TPP.

The proposed development at ITT includes a new building along with associated hard and soft landscaping and the creation of a new sports pitch. All of the new development is to be located to the east of the existing main ITT building and form part of the gradual expansion of the ITT infrastructure into the large campus site.

Construction of the new development will require the removal of parts of hedge H2 running north-south through the site. A short section will be removed from the northern end of the hedge, and then the central part of the hedge (including the hedgerow Ash tree tagged 3140-3145) will have to be removed to facilitate the footprint of the new building. The western side of the southern end of the hedge will also need to be removed to create space for the new development.

The work will inevitably impact both the amenity and conservation value of the hedge to some extent as a result of the reduced length and the truncation of the hedge affecting the *wildlife corridor* value of the hedge.

The retained sections of the central hedgerow (H2) and the other hedgerow (H1) between the proposed development and the main access drive through the campus will be vulnerable to root and above ground damage from construction works unless protected by adequate protective fencing; the remnants of H2 should be contained within a sturdy fence for the duration of the construction works and any further impact should be minimal.

The new pathway proposed to run from north to south will pass through the eastern part of hedge H1 and will probably require that a small number of stems are removed to facilitate the pathway. Three trees likely to require removal are those tagged 3062, 3063 and 3064; all three are low value specimens and their removal will have a very limited and localised impact.

Hedge H1 is made up of relatively low value trees in mostly poor condition; where some limited coppicing or pruning is required to facilitate the new path or underground services it will have only a limited Arboricultural impact on the site which could be readily mitigated by improved management of the hedgerow over future years.

The ITT campus site is very large and has ample space to accommodate all of the necessary site requirements (such as site offices, materials storage, staff parking etc.) without putting pressure on the space required to allow the successful retention of the trees on the property. Proper planning and supervision of the tree protection measures proposed should ensure that no significant impact is sustained by the tree population beyond the removal of those trees essential to facilitate the development.

The building project is being followed up by a major new landscape plan for the site; this scheme will provide direct replacements for the trees removed and should lead to an overall improvement of the quality and quantity of the tree population of the campus as the new trees mature and develop.

8.0 Arboricultural Method Statement

8.1 Tree Work Operations

Carry out tree felling, coppicing and pruning work required to facilitate the development prior to any construction work commencing; plan work to be carried out during the period November to March to avoid the bird nesting season. General maintenance works for the trees are detailed in the survey schedule; specific works to be carried out to facilitate the new development are as follows:

Fell the trees (T3140-T3145) and bushes within the sections of hedgerow (H2) to be removed to facilitate the new buildings, carefully remove the tree stumps using a mechanical stump grinder, especially close to the trees to be retained. Coppice Ash/Hawthorn stems at the truncated ends of the sections of hedge to be retained.

Cut back side growth and suckering/encroachment from the two sections of the central hedge (H2) to be retained to improve hedge form and health.

Fell the small hedgerow trees T3062, T3063 & T3064 to create the opening for the new footpath. Stump grind the stumps.

These works should be undertaken by professional tree surgeons working to BS 3998 (2010) *Tree Work – Recommendations*.

8.2 Tree Protection Measures

When tree and hedge removal works are completed, sturdy tree protection fencing (see figure 1 below) will be erected along the lines shown on the Tree Protection Plan Drawing 18027_TPP to prevent construction work encroaching into the root protection areas of the trees to be retained.

The fencing will then remain in place until their removal is authorised by a qualified arborist.

Where machinery has to encroach the RPAs of the trees to be retained for reasons unforeseen and unavoidable; suitable ground protection will be put in place to prevent any significant soil compaction or root damage near the trees; this should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight.

All site offices, materials storage, staff parking etc. will located outside of the RPAs of the trees; there is ample space on the site to accommodate these facilities outside the RPAs of the retained hedges.

Any new underground services such as water pipes etc. will be routed away from the root protection areas of the trees to be retained; where this is not possible for reasons unforeseen, the services will be installed using specialist methodology (such as *Airspade* excavation or Mole drilling) that ensures minimal impact on any tree roots.

The tree protection measures and specialist work methods will be overseen by a qualified arborist; the arborist should also make regular visits to the site during the construction process to ensure compliance and be available to provide advice and guidance where necessary.

The retained trees should be assessed by a qualified arborist following the completion of the construction works.

General recommendations for tree protection on-site are contained below.

9.0 Appendices

Tree Protection on Construction Sites – General Recommendations

Tree Survey Schedule

Tree Survey Drawing 18027_TS (Tree Constraints Plan)

Tree Protection Drawing 18027_TPP

Tree Protection on Construction Sites – General Recommendations

Trees being retained should be protected from unnecessary damage during the construction process by effective construction-proof barriers that will define the limits for machinery drivers and other construction staff. Ground protected by the fencing will be known as the Construction Exclusion Zone (CEZ). Sturdy protective fencing will be erected along the points identified in the Tree Protection Plan prior to any soil disturbance and excavation work starting; this is essential to prevent any root or branch damage to the retained trees. The British Standard BS5837: *Trees in relation to design, demolition and construction (2012)* specifies appropriate fencing; see figure 1 below

Figure 1. Protective fence specification

For light access works within the CEZ the installation of suitable ground protection in the form of scaffold boards, woodchip mulch or specialist ground protection mats/plates may be acceptable.

All weather notices will be erected on the fence with words such as: "Tree Protection Fence — Keep Out". When the fencing has been erected, the construction work can commence. The fencing will be inspected on a regular basis during the duration of the construction process and shall remain in place until heavy building and landscaping work has finished and its removal is authorised by a qualified arborist.

Trench digging or other excavation works for services etc. will not be permitted in the CEZ unless approved and supervised by a qualified arborist using methods outlined in BS5837: *Trees in relation to design, demolition and construction (2012).*

Care will be taken when planning site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible.

Materials, which can contaminate the soil, e.g. concrete mixings, diesel oil and vehicle washings, will not be discharged within 10 m of a tree stem.

Fires will not be lit in a position where their flames can extend to within 5 m of foliage, branches or trunk. This will depend on the size of the fire and the wind direction.

Notice boards, wires and such like will not be attached to any trees. Site offices, materials storage and contractor parking will all be outside the CEZ.

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3167	Silver Birch	*Betula pendula*	SM	160	1	5	2	3	1.5	1	1	C2	<10	Poor. Average vitality. Tree is located directly below streetlight and has been topped recentl; this will need to be repeated regularly.	Consider removal to avoid repeat maintenance pruning and poorly formed tree.	1.9
T	3168	Silver Birch	*Betula pendula*	SM	120	1	6.5	2	1.5	1.5	1	1	C2	10+	Fair. Average vitality. Upright form.	No urgent work needed.	1.4
H	1	Ash Elm Sycamore Hawthorn	*Fraxinus excelsior* *Ulmus spp.* *Acer pseudoplatanus* *Crataegus monogyna*	EM	<100 to 600		4 to 17						C2 U	10+	Fair to poor. Old agricultural boundary hedgerow running to the north of the main driveway. Short section of Ash and Hawthorn to west, longer section containing trees 3054-3074 to east. Many trees have suffered root/bark damage in the past and are now in poor physiological health. Becoming patchy and overgrown. Open ditch to north has been filled in with gravel.	Trees individually assessed above. Hedge requires new planting and selective stem removal/coppicing and side pruning. Consider coppicing and laying entire hedge.	6
H	2	Ash Elm Hawthorn Blackthorn Elder	*Fraxinus excelsior* *Ulmus spp.* *Crataegus monogyna* *Prunus spinosa* *Sambucus nigra*	EM	<100 to 601		4 to 12						C2	10+	Fair. Old agricultural boundary hedge running north-south through site Contains trees 3140 3147. Dominated by Ash and Hawthorn. Hedge now overgrown and neglected with growth extending out into surrounding pasture. Becoming patchy with some gaps. Ground riddled with rabbit burrows. Some root damage from earth moving in past.	Trees individually assessed above. Hedge requires: new planting in gaps, selective stem removal, hedgelaying and coppicing and side pruning to reduce the width and spread of the branching and natural regeneration.	4

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3053	Ash	*Fraxinus excelsior*	M	600	1	12	3	3	3	3.5	5	U	<10	Poor. Low vitality. Some recent root damage apparent. Tree growing on old hedge\bank. Ivy on stem. Fungal brackets (*Inonotus hispidus*) visible on stem. Significant decay column in main stem. Broken branches in crown. Excessive ivy growth in crown.	Coppice.	7.2
T	3054	Ash	*Fraxinus excelsior*	EM	602	7	13.5	3	6	4	3	4	U	<10	Poor. Multi-stemmed coppice stool with low vitality. Some recent root damage apparent. Tree growing on old hedge\bank. Ivy on stem. Bark wounds on lower stem. Epicormic growth and dieback indicating stress.	Consider coppicing to encourage new growth.	7.2
T	3055	Sycamore	*Acer pseudoplatanus*	EM	427	4	10	2.5	4	1	2	2	U	<10	Poor. Multi-stemmed coppice stool with low and dieback of the crown. Some recent root damage apparent. Tree growing on old hedge\bank. Ivy on stem. Bark wounds on lower stem.	Consider coppicing to encourage new growth.	5.1
T	3056	Sycamore	*Acer pseudoplatanus*	EM	594	6	13.5	1.5	5	4	3.5	3	U	<10	Poor. Low vitality. Multi-stemmed coppice stool. Some recent root damage apparent. Major bark wounding on stem. Dieback in crown. Excessive ivy growth in crown.	Consider coppicing to encourage new growth.	7.1
T	3057	Ash	*Fraxinus excelsior*	EM	477	6	13	2	5	4	5	2	C2	10	Fair. Low vitality. Multi-stemmed coppice stool. Some recent root damage apparent. Ivy on stem. Minor dieback in crown. Minor deadwood in crown.	No urgent works needed. Consider coppicing to encourage new growth.	5.7
T	3058	Ash	*Fraxinus excelsior*	EM	220	1	11.5	2.5	4	0	3	2	C2	10	Fair. Average vitality. Leaning North-East. Some recent root damage apparent.	No urgent work needed.	2.6
T	3059	Sycamore	*Acer pseudoplatanus*	EM	300	1	11.5	3	5	1	2	3	C2	10	Fair. Average vitality. Some recent root damage apparent. Tree growing on old hedge\bank. Bark wounds on lower stem.	No urgent work needed.	3.6
T	3060	Wych Elm	*Ulmus glabra*	EM	340	4	12.5	1.5	5	4	4	3	C2	10	Fair. Average vitality. Multi-stemmed coppice stool. Some recent root damage apparent. Bark wounds on lower stem.	No urgent works needed. Consider coppicing to encourage new growth.	4.1
T	3061	Wych Elm	*Ulmus glabra*	EM	358	3	13.5	3	6	3	3	3	C2	10	Fair. Average vitality. Multi-stemmed coppice stool. Some recent root damage apparent. Bark wounds on lower stem. Unbalanced crown shape.	No urgent works needed. Consider coppicing to encourage new growth.	4.3
T	3062	Sycamore	*Acer pseudoplatanus*	EM	354	2	13.5	2	3	4	3	5	U	<10	Poor. Low vitality. Multi-stemmed coppice stool. Some recent root damage apparent. Tree growing on old hedge\bank. Bark wounds on lower stem.	Consider coppicing to encourage new growth.	4.2
T	3063	Ash	*Fraxinus excelsior*	EM	208	3	13.5	1	4	1	1	2	C2	10+	Fair. Average vitality. Spindly habit. Some recent root damage apparent Broken branches in crown.	No urgent work needed.	2.5
T	3064	Ash	*Fraxinus excelsior*	EM	433	5	13.5	5	6	2	2	4	C2	10+	Poor. Multi-stemmed coppice stool. Some recent root damage apparent. decay in old wound on main stem. Historic wounds on stem. Broken branches in crown. Some extended branches.	Reduce extended limbs or coppice to encourage fresh growth.	5.2
T	3065	Sycamore	*Acer pseudoplatanus*	EM	387	4	13.5	3	5	1.5	2	1	U	1<0	Poor. Low vitality. Multi-stemmed coppice stool. Some recent root damage apparent. Bark wounds on lower stem. Dieback in crown. Unbalanced crown shape.	Consider coppicing to encourage new growth.	4.6

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3066	Ash	*Fraxinus excelsior*	EM	245	3	12	2	3.5	2	1	1.5	C2	10+	Fair. Average vitality. Spindly habit. Some recent root damage apparent. Tree growing on old hedge\bank.	No urgent work needed.	2.9
T	3067	Wych Elm	*Ulmus glabra*	EM	200	1	12	2	1	3	2	3	C2	10	Fair. Average vitality. Slender, upright form.	No urgent work needed.	2.4
T	3068	Ash	*Fraxinus excelsior*	SM	150	1	12	3	1.5	3	1	3	C2	10	Fair. Spindly habit. Some recent root damage apparent. Tree growing on old hedge\bank. Dieback in crown. Minor dieback in crown. Minor deadwood in crown.	Consider coppicing to encourage new growth.	1.8
T	3069	Sycamore	*Acer pseudoplatanus*	M	550	1	13	2.5	7	4	4	4.5	C2	10	Fair. Low vitality. Some recent root damage apparent. Ivy on stem. Multiple stems above 1.5m. Dieback in crown. Broken branches in crown. Unbalanced crown shape. Minor dieback in crown.	Consider coppicing to encourage new growth.	6.6
T	3070	Ash	*Fraxinus excelsior*	M	600	1	17	4	4	4	2	5	C2	10	Fair. Low vitality. Some recent root damage apparent. Ivy on stem. Stem divides above 1.5m. Minor dieback in crown. Minor deadwood in crown. Epicormic growth throughout crown.	Sever ivy, monitor tree condition.	7.2
T	3071	Ash	*Fraxinus excelsior*	M	500	1	15	4	7	4.5	5	4	C2	10	Poor. Low vitality. Some recent root damage apparent. Tree growing on old hedge\bank. Unable to inspect stem due to ivy. Dieback in crown. Minor deadwood in crown.	Crown clean. Sever ivy and reduce extended limbs. Monitor tree condition.	6
T	3072	Ash	*Fraxinus excelsior*	M	512	3	16	3	7	2.5	4	2.5	C2	10	Fair. Multi-stemmed coppice stool. Some recent root damage apparent. Some bark wounds to stem base. Ivy on stem. Unbalanced crown shape.	No urgent works needed. Consider coppicing to encourage new growth.	6.1
T	3073	Ash	*Fraxinus excelsior*	EM	300	4	14.5	4	6	3	3	2	C2	10	Fair. Low vitality. Leaning North. Some recent root damage apparent. Unbalanced crown shape.	Prune to re-shape\balance crown. Consider coppicing.	3.6
T	3074	Ash	*Fraxinus excelsior*	M	600	1	17	5	8	5	7	7	C2	10	Poor. Low vitality. Larger tree with some decay of structural roots. Some recent root damage apparent. Dieback in crown. Minor deadwood in crown. Some extended limbs.	Crown reduce 20%. Consider coppicing over next few years.	7.2
T	3075	Sycamore	*Acer pseudoplatanus*	SM	250	2	11	0.5	3	4	3	2	C2	10	Poor Average vitality. Poor form. Compacted root zone. Some recent root damage apparent. Some bark wounds to stem base. Twin stem from ground level	No urgent work needed. Consider removal and replacement with fresh specimen.	3
T	3076	Horse Chestnut	*Aesculus hippocastanum*	EM	350	1	6	1.5	3	6	0.5	5	C2	10+	Poor. Average vitality. Suppressed specimen of poor shape & form with unbalanced crown shape. Compacted root zone. Some recent root damage apparent. Decay in old wound at 3m.	Monitor tree condition. Improve soil condition through mulching, decompaction etc.	4.2
T	3077	Horse Chestnut	*Aesculus hippocastanum*	M	800	1	22	1	8	8	5	8	C2	10+	Poor. Average vitality. Large specimen tree of good shape/form. Compacted root zone with some recent root damage apparent. Bleeding canker present in crown. Broken branches in crown with some fresh lesions seen on stem and branching above 5m.	Monitor tree condition. Improve soil condition through mulching, decompaction etc. Target prune damaged branches.	9.6

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3078	Horse Chestnut	*Aesculus hippocastanum*	M	700	1	22	1.5	9	7	5	6	C2	10+	Poor. Average vitality. Large specimen tree of good shape/form. Compacted root zone with some recent root damage apparent. Bleeding canker present in crown.	Monitor tree condition Improve soil condition through mulching, decompaction etc.	8.4
T	3079	Sycamore	*Acer pseudoplatanus*	M	532	2	17	1.5	0.5	7	4	4	U	<10	Tree now dead.	Fell	6.4
T	3080	Sycamore	*Acer pseudoplatanus*	M	700	1	21	3	4	6	4	5	B2	20+	Fair. Average vitality. Large specimen tree. Compacted root zone with some recent root damage apparent. Ivy on stem. Stem divides above 1.5m.	Monitor tree condition. Sever Ivy and inspect union/fork as stem divides.	8.4
T	3081	Wych Elm	*Ulmus glabra*	EM	220	1	8.5	2	5	2	5	1	C2	10	Poor. Good vitality but poor shape/form and unbalanced crown shape. Compacted root zone. Some recent root damage apparent. Historic branch loss at 3m on western side of stem. Thick Ivy on stem.	Monitor tree condition. Cut Ivy.	2.6
T	3082	Common Lime	*Tilia X europaea*	EM	495	2	13	0.5	3	3	4	3	C2	10+	Poor. Average vitality. Compacted root zone. Historic root damage. Twin stem from ground level. Bark wound on stem. Broken branches in crown. Damaged branches hanging in crown.	Crown clean.	5.9
T	3083	Common Lime	*Tilia X europaea*	EM	300	1	12	2	3	1.5	2	3	C2	10+	Fair. Average vitality. Upright form. Tree growing from old stump. Historic root damage.	No urgent work needed.	3.6
T	3084	Common Lime	*Tilia X europaea*	EM	406	3	12	0	2.5	5	5	2	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool growing from old stump. Historic root damage. Unbalanced crown shape.	No urgent work needed.	4.9
T	3085	Common Lime	*Tilia X europaea*	EM	250	1	11	4	4.5	0.5	2	3	U	<10	Poor. Average vitality. Leaning North-East. Tree growing from old stump. Historic root damage and decay in old wound to stem base.	No urgent work needed.	3
T	3086	Common Lime	*Tilia X europaea*	EM	464	3	12	0	4	2	4	1.5	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool growing from old stump. Historic root damage.	No urgent work needed.	5.6
T	3087	Sycamore	*Acer pseudoplatanus*	EM	300	1	12	0	3	4.5	5	5	C2	10+	Fair. Average vitality. Compacted root zone with some root damage apparent. Surface roots sustained bark damage. Historic wounds on stem. Secondary stem snapped off at 1m.	No urgent work needed.	3.6
T	3088	Common Oak	*Quercus robur*	OM	450	1	14	6	1	2	3	1	U	<10	Poor. Declining. Slender, upright form. Compacted root zone. Historic root damage. Thick Ivy on stem and excessive Ivy growth in crown. Significant dieback in crown with major deadwood in crown.	Sever Ivy. Crown reduce 20% if retained.	5.4
T	3089	Horse Chestnut	*Aesculus hippocastanum*	M	550	1	13	1.5	4	5	7	3	C2	10+	Fair. Low vitality. Spoil built up around tree base. Historic root damage. Unbalanced crown shape with some extended branches. Historic storm damage.	Reduce extended limbs over road. Re-assess tree in full leaf.	6.6
T	3090	Common Oak	*Quercus robur*	M	600	1	17	3	7	4	6.5	5	C2	10+	Poor. Low vitality. Spoil built up around tree base. Historic root damage. Significant dieback in crown with major deadwood in crown. Some extended branches. Old wound to lower stem; now slowly occluding.	Crown reduce 20%. Reduce extended limbs.	7.2

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3091	Common Oak	*Quercus robur*	M	550	1	16	1.5	6.5	5.5	3	9	C2	10+	Poor. Average vitality. Tree growing out of bank and leaning out over watercourse. Spoil built up around tree base with some root damage apparent. Historic root damage. Unbalanced crown shape with some extended branches.	Crown reduce 20%. Reduce extended limbs 2m or so.	6.6
T	3092	Common Oak	*Quercus robur*	M	800	1	16	3	6	5	8	6	C2	10+	Poor. Low vitality. Possible decay column in main stem. Significant dieback in crown. Some extended limbs. Thick Ivy on stem with excessive Ivy growth in crown.	Sever Ivy. Crown reduce 20% and reduce extended limb\limbs over road by 2-3m. Carry out further inspection following dieback of Ivy.	9.6
T	3093	Common Oak	*Quercus robur*	M	550	1	9	4	2	3	5	3	C2	10+	Poor. Low vitality. Poor shape & form. Minor deadwood in crown.	Cut Ivy.	6.6
T	3094	Scots Pine	*Pinus sylvestris*	M	550	1	13	4	6	2	5.5	1.5	C2	10+	Poor. Average vitality. Poor shape & form. Leaning North-East. Unbalanced crown shape. Previous major storm damage. Thick Ivy on stem.	Target prune damaged branches and crown clean. Sever Ivy and check tree base and rootplate. Monitor tree condition	6.6
T	3095	Common Oak	*Quercus robur*	M	550	1	11	2	5	5	8	5	B2	20+	Fair. Average vitality. Broken branches in crown. Unbalanced crown shape. Ivy on stem with excessive Ivy growth in crown.	Crown clean. Sever Ivy.	6.6
T	3096	Ash	*Fraxinus excelsior*	M	600	1	17	5	7	6	5	6	C2	10+	Poor. Low vitality. Poor shape & form. some vertical cracking on bark on stem and branches. Compression fork on main stem. Minor dieback in crown. Some extended branches. Ivy on stem.	Sever Ivy. Crown reduce 20%. Consider coppicing.	7.2
T	3097	Horse Chestnut	*Aesculus hippocastanum*	OM	900	1	18	2	8	7	10	6	U	<10	Bad. Low vitality. Large specimen treeof good shape/form. Significant decay column in main stem.	Crown reduce 20-25% to retain for several more years or fell and replace.	10.8
T	3098	Common Lime	*Tilia X europoea*	OM	700	1	6	1	7	1	1	5	U	<10	Poor. Low vitality. Poor shape & form with old butt of tree leaning out over watercourse. Rootplate partially lifted. Bleeding canker on fallen stem. Excessive Ivy growth in crown.	No urgent work needed. Consider coppicing to allow full regeneration of tree from stump.	8.4
T	3099	Ash	*Fraxinus excelsior*	EM	300	1	17	6	4	4	3	2	C2	10+	Fair. Average vitality. Poor shape & form. Excessive Ivy growth in crown.	Sever Ivy.	3.6
T	3100	Ash	*Fraxinus excelsior*	EM	240	1	13	8	2	3.5	3.5	2	C2	10+	Fair. Average vitality. Spindly habit. Unbalanced crown shape. Excessive Ivy growth in crown.	Sever Ivy.	2.9
T	3101	Ash	*Fraxinus excelsior*	EM	300	1	16	10	2	2	4	1	C2	10	Poor. Low vitality. Slender, leaning form. Spindly habit. Significant basal decay. Historic loss of co dominant stem. Excessive Ivy growth in crown	Cut Ivy. Consider coppicing to allow full regeneration of tree from stump.	3.6
T	3102	Ash	*Fraxinus excelsior*	M	450	1	16	4	3	5	2	5	C2	10+	Fair. Average vitality. Minor dieback in crown. Minor deadwood in crown.	Cut Ivy.	5.4

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3103	Scots Pine	*Pinus sylvestris*	M	450	1	13	8	4	1	1	3	C2	10	Poor. Low vitality. Poor shape & form. Historic root damage. Main leader dead/missing. Previous storm damage.	Monitor tree condition.	5.4
T	3104	Sycamore	*Acer pseudoplatanus*	OM	700	1	17	4	4	5	8	6	U	<10	Bad. Low vitality. Large specimen tree of good shape/form. Historic root damage. Stem weakened by decay with significant decay column in lower stem. Ivy on stem with excessive ivy growth in crown.	Sever ivy. Crown reduce 20-30% to retain for several more years or fell and replace.	8.4
T	3105	Ash	*Fraxinus excelsior*	EM	398	3	15	2.5	6	5	4	5	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool growing close to edge of drainage ditch. Ivy on stem.	No urgent work needed.	4.8
T	3106	Sycamore	*Acer pseudoplatanus*	M	400	1	12	2	4	5	6	6	C2	10+	Fair. Average vitality. Growing close to edge of drainage ditch. Squirrel damage in crown. Excessive ivy growth in crown.	Sever ivy.	4.8
T	3107	Sycamore	*Acer pseudoplatanus*	EM	300	1	15	2	4	3	3	5	C2	10+	Fair. Average vitality. Spoil built up around tree base. Ivy on stem. Unbalanced crown shape	No urgent work needed.	3.6
T	3108	Ash	*Fraxinus excelsior*	M	500	1	15	3	3.5	1	3	4.5	C2	10+	Fair. Low vitality. Growing close to edge of ditch. Spoil built up around tree base with some root damage. Bark wounds on lower stem.	No urgent work needed.	6
T	3109	Ash	*Fraxinus excelsior*	EM	525	4	17	3	3	4	6	5	C2	10+	Poor. Low vitality. Multi-stemmed coppice stool growing close to edge of drainage ditch. Ivy on stem.	No urgent work needed.	6.3
T	3110	Wych Elm	*Ulmus glabra*	EM	300	1	15	5	5	2.5	3	2	C2	10+	Fair. Good vitality. Average vitality. Slender, upright form. Growing close to edge of ditch.	No urgent work needed.	3.6
T	3111	Ash	*Fraxinus excelsior*	M	583	3	15	3	5	5	3	5	U	<10	Poor. Low vitality. Multi-stemmed coppice stool with historic root damage. Broken branches and dieback in crown. Minor deadwood in crown.	Consider coppicing to encourage new growth	7
T	3112	Wych Elm	*Ulmus glabra*	EM	350	1	15	2.5	4	5	4	5.5	C2	10+	Fair. Good vitality. Tree growing on old hedge\bank.	No work needed.	4.2
T	3113	Wych Elm	*Ulmus glabra*	EM	320	2	14	3	4	4	4	4	C2	10+	Fair. Good vitality. Tree growing on old hedge\bank. Stem divides below 1.5m.	No work needed.	3.8
T	3114	Ash	*Fraxinus excelsior*	EM	431	7	12	2.5	5	5	4	6	C2	10+	Fair. Average vitality. multi-stemmed coppice stool. Tree growing on old hedge\bank.	No work needed.	5.2
T	3115	Wych Elm	*Ulmus glabra*	EM	400	1	15	3	5	3.5	4	5.5	C2	10+	Good. Good vitality. Good shape/form. Tree growing on old hedge\bank. Ivy on stem.	No work needed.	4.8
T	3116	Wych Elm	*Ulmus glabra*	EM	300	1	15	1.5	5	2	3	5	C2	10+	Good. Good vitality. Tree growing on old hedge\bank. Unbalanced crown shape.	No work needed.	3.6
T	3117	Ash	*Fraxinus excelsior*	EM	361	2	12	0.5	3	4	3	4	C2	10+	Fair. Average vitality. Poor shape & form. Twin stem tree growing out of ditch bank. Ivy on stem.	No work needed.	4.3
T	3118	Ash	*Fraxinus excelsior*	EM	200	1	12	2	4	2	3	5	C2	10+	Fair. Average vitality. growing out of ditch bank. Ivy on stem. Twin stem from ground level.	No work needed.	2.4
T	3119	Ash	*Fraxinus excelsior*	M	478	5	16	3	7	5	4	6	C2	10+	Poor. Low vitality. Multi-stemmed coppice stool growing out of side of ditch. Historic root damage. Dieback in crown. Possible decay in stool base - poor access. Ivy on stem.	Sever ivy. Carry out further inspection.	5.7

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3120	Sycamore	*Acer pseudoplatanus*	EM	610	5	15	2	6	5	5	5	C2	10+	Fair. Average vitality. growing out of river wall. multi-stemmed coppice stool. Dense epicormic growth around stem base.	No work needed.	7.3
T	3121	Ash	*Fraxinus excelsior*	EM	335	2	13	1	6	2	4	4	C2	10+	Poor. Low vitality. Tree growing out of side of ditch. Historic root damage. Broken branches in crown. Epicormic growth on branches in crown.	Monitor tree condition.	4
T	3122	Ash	*Fraxinus excelsior*	EM	391	2	16	2	5	3	5	4	C2	10+	Poor. Low vitality. Growing out of side of ditch. Historic root damage. Minor dieback in crown. Epicormic growth throughout crown. Ivy on stem.	Sever Ivy.	4.7
T	3123	Ash	*Fraxinus excelsior*	M	375	1	14	2	6	4	5	5	C2	10+	Fair. Average vitality. Growing out of side of ditch. Historic root damage. Ivy on stem.	Sever Ivy.	4.5
T	3124	Ash	*Fraxinus excelsior*	EM	447	5	9	2	4	3.5	6	6	C2	10+	Poor. Average vitality. Multi-stemmed coppice stool growing out of side of ditch. Historic root damage. Broken branches in crown. Epicormic growth throughout crown. Excessive Ivy growth in crown.	Sever Ivy. Target prune damaged branches.	5.4
T	3125	Ash	*Fraxinus excelsior*	EM	424	9	12	0.5	3	4	7	4	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool of poor shape & form growing out of ditch. Historic root damage.	Crown clean. Sever Ivy.	5.1
T	3126	Ash	*Fraxinus excelsior*	EM	339	2	15	2	3	4	3	3	C2	10+	Fair. Average vitality. Tree growing out of side of ditch. Historic root damage. Compression fork on main stem. Ivy on stem with excessive Ivy growth in crown.	Sever Ivy.	4.1
T	3127	Ash	*Fraxinus excelsior*	EM	324	4	12	2	3	2	3	3	C2	10+	Poor. Low vitality. Multi-stemmed coppice stool growing out of ditch bank. Historic root damage. Excessive Ivy growth in crown.	Sever Ivy.	3.9
T	3128	Wych Elm	*Ulmus glabra*	M	375	1	16	2.5	4	3.5	3	5	U	<10	Dead.	Fell.	4.5
T	3129	Wych Elm	*Ulmus glabra*	EM	300	1	15	2	2	5	3	2	C2	10+	Fair. Average vitality. Historic root damage. Unbalanced crown shape.	Coppice at first sign of Dutch Elm Disease.	3.6
T	3130	Wych Elm	*Ulmus glabra*	EM	397	3	14	1.5	3	5	2	5	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool. Unbalanced crown shape. Damaged branches hanging in crown.	Coppice at first sign of Dutch Elm Disease.	4.8
T	3131	Wych Elm	*Ulmus glabra*	M	424	2	15	3	6	5	6	4	C2	10+	Fair. Average vitality. Growing out of edge of ditch. Historic root damage. Ivy on stem.	Coppice at first sign of Dutch Elm Disease.	5.1
T	3132	Wych Elm	*Ulmus glabra*	EM	474	4	14	0.5	3	3.5	3	5	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool. Historic root damage. Unbalanced crown shape. Excessive Ivy growth in crown.	Coppice at first sign of Dutch Elm Disease.	5.7
T	3133	Ash	*Fraxinus excelsior*	M	424	6	14	2	4	4	5	3	C2	10+	Poor. Low vitality. Multi-stemmed coppice stool growing out of edge of ditch. Historic root damage. Dieback in crown. Ivy on stem with excessive Ivy growth in crown.	Sever Ivy. Monitor tree condition.	5.1
T	3134	Wych Elm	*Ulmus glabra*	EM	403	2	14	1.5		6	4	2	C2	10+	Fair. Average vitality. Historic root damage. Unbalanced crown shape. Low branches over footpath.	Coppice at first sign of Dutch Elm Disease.	4.8
T	3135	Wych Elm	*Ulmus glabra*	EM	335	2	15	1.5	4	5	3	4	C2	10+	Fair. Average vitality.	Coppice at first sign of Dutch Elm Disease.	4

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3136	Wych Elm	*Ulmus glabra*	EM	532	2	15	0.5	6	5	5.5	3	C2	10+	Fair. Average vitality. multi-stemmed coppice stool. Historic root damage. Low branches over road/footpath.	Coppice at first sign of Dutch Elm Disease	6.4
T	3137	Ash	*Fraxinus excelsior*	M	450	3	16	1	7	4	4	4	C2	10+	Fair. Average vitality. growing out of river wall. Historic root damage. Low branches over footpath. Minor deadwood in crown. Excessive Ivy growth in crown.	Sever Ivy. Inspect stem/basal area. Crown lift over path.	5.4
T	3138	Wych Elm	*Ulmus glabra*	EM	374	5	14	2	2	5	3	3	C2	10+	Poor. Average vitality. Multi-stemmed coppice stool. Historic root damage. Bark wounds on lower stem.	Coppice at first sign of Dutch Elm Disease.	4.5
T	3139	Ash	*Fraxinus excelsior*	M	472	2	14	3	6	6	4	4	C2	10+	Fair. Average vitality. Tree growing out of edge of ditch. Historic root damage. Minor deadwood in crown. Excessive Ivy growth in crown.	Sever Ivy. Monitor tree condition.	5.7
T	3140	Ash	*Fraxinus excelsior*	EM	397	6	9	0.5	4	3	4	4	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool growing in old hedge-line.	No work needed.	4.8
T	3141	Ash	*Fraxinus excelsior*	EM	539	8	12	2	5	5.5	6	5	C2	10+	Fair. Good vitality. Multi-stemmed coppice stool growing in old hedge-line. Some decay in stool base.	No urgent work needed.	6.5
T	3142	Ash	*Fraxinus excelsior*	EM	403	2	8	2	6	5	5	6	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool growing in old hedge-line. Excessive Ivy growth in crown.	Sever Ivy. Inspect stem/basal area.	4.8
T	3143	Ash	*Fraxinus excelsior*	EM	500	7	6	0.5	5	4.5	5.5	4.5	C2	10+	Fair. Average vitality. Multi-stemmed coppice stool with low, spreading form. Some historic root damage.	No urgent work needed.	6
T	3144	Ash	*Fraxinus excelsior*	EM	300	1	8	0.5	5	4	4	5	C2	10+	Fair. Good vitality. Young tree adjacent to old hedge-line. Spoil built up around tree base.	No urgent work needed.	3.6
T	3145	Ash	*Fraxinus excelsior*	EM	308	2	8	1.5	3	3.5	5	5	C2	10+	Fair. Good vitality. Young tree adjacent to old hedge-line. Spoil built up around tree base.	No urgent work needed.	3.7
T	3146	Ash	*Fraxinus excelsior*	EM	394	3	8	2.5	4	5	4	3	C2	10+	Fair. Good vitality. Multi-stemmed coppice stool. Spoil built up around tree base.	Shorten lesser stem.	4.7
T	3147	Ash	*Fraxinus excelsior*	EM	375	1	9	0.5	5	4.5	5	4	C2	10+	Poor. Average vitality. Some bacterial canker on stem/branches.	Monitor tree condition.	4.5
T	3148	Small-leaved Lime	*Tilia cordata*	SM	180	1	6	2.5	2	2	2	2	C2	10+	Poor. Average vitality. Good shape/form. Some decay in old bark wound at base of main stem.	No urgent work needed.	2.2
T	3149	Small-leaved Lime	*Tilia cordata*	EM	220	1	7	2.5	2.5	2	2	2	C2	10+	Poor. Average vitality. Leaning form. Decay in old bark wound to stem base.	No urgent work needed.	2.6
T	3150	Small-leaved Lime	*Tilia cordata*	EM	200	1	6.5	2	2	2.5	2	2.5	B2	20+	Fair. Good vitality. Good shape/form.	No urgent work needed.	2.4
T	3151	Small-leaved Lime	*Tilia cordata*	EM	200	1	6.5	2	2.5	2.5	2	2	B2	20+	Fair. Average vitality. Good shape/form. Poor historic pruning.	Target prune branch stubs.	2.4
T	3152	Small-leaved Lime	*Tilia cordata*	EM	200	1	6.5	2	2.5	2.5	2.5	2.5	B2	20+	Fair. Average vitality. Poor historic pruning. Damaged branches in crown.	Target prune damaged branches and branch stubs.	2.4

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3153	Small-leaved Lime	*Tilia cordata*	SM	180	1	5	2	2	2.5	2	2	C2	10+	Poor. Average vitality. Some bark wounds to stem base. Some bark necrosis on main stem. Poor historic pruning. Damaged branches in crown.	Target prune damaged branches.	2.2
T	3154	Small-leaved Lime	*Tilia cordata*	EM	150	1	5	2	2	2	2	2.5	C2	10+	Poor. Average vitality. leaning form. Decay in old bark wound on main stem.	No urgent work needed.	1.8
T	3155	Small-leaved Lime	*Tilia cordata*	EM	180	1	6	2	2.5	2.5	2.5	2.5	B2	20+	Fair. Average vitality. Good shape/form. Damaged branches in crown.	Target prune damaged branches.	2.2
T	3156	Small-leaved Lime	*Tilia cordata*	EM	150	1	5	2	2	2	2	2	C2	10+	Poor. Average vitality. Some bark wounds to stem base.	No urgent work needed.	1.8
T	3157	Small-leaved Lime	*Tilia cordata*	EM	200	1	6	2	3	2	2.5	2	B2	10+	Fair. Average vitality. Good shape/form. Poor historic pruning. Damaged branches in crown.	Target prune damaged branches.	2.4
T	3158	Small-leaved Lime	*Tilia cordata*	EM	150	1	5	2	2	2	2	2.5	C2	10+	Poor. Average vitality. Good shape/form. Decay in old wound to stem base.	Monitor tree condition.	1.8
T	3159	Small-leaved Lime	*Tilia cordata*	EM	150	1	5	2	2.5	2	2	2.5	C2	10+	Fair. Average vitality. Good shape/form. Historic wounds on stem.	No urgent work needed.	1.8
T	3160	Small-leaved Lime	*Tilia cordata*	EM	170	1	6	2	2.5	2	2	2	C2	10+	Fair. Average vitality. Compression fork on main stem. Damaged branches in crown.	Prune to remove lesser stem back to compression fork. Target prune damaged branches.	2
T	3161	Small-leaved Lime	*Tilia cordata*	EM	200	1	6	2	3	3	3	3	B2	20+	Fair. Average vitality. Good shape/form. Damaged branches in crown.	Target prune damaged branches.	2.4
T	3162	Small-leaved Lime	*Tilia cordata*	EM	220	1	6	2	3	2.5	2.5	2.5	B2	20+	Fair. Average vitality. Damaged branches in crown.	Target prune damaged branches.	2.6
T	3163	Silver Birch	*Betula pendula*	SM	160	1	8	2.5	1.5	1.5	1.5	1.5	B2	20+	Good. Good vitality. Upright form.	No urgent work needed.	1.9
T	3164	Silver Birch	*Betula pendula*	SM	160	1	7.5	2.5	1.5	1	1	1	B2	20+	Fair. Good vitality. uUpright form with main stem dividing above 1.5m.	No urgent work needed.	1.9
T	3165	Silver Birch	*Betula pendula*	SM	120	1	7.5	2	1	1.5	1	1	B2	20+	Fair. Average vitality. Upright form.	No urgent work needed.	1.4
T	3166	Silver Birch	*Betula pendula*	SM	160	1	7.5	2	1.5	1.5	1	1	B2	20+	Good. Good vitality. Slender, upright form.	No urgent work needed.	1.9

Tree Survey Schedule
ITT Tallaght, Dublin

Type	Tag	Species	Botanical	Age	Dbh	St	Ht	Cl	N	S	E	W	Cat	ULE	Condition/Comments	Recommendations	RPA
T	3167	Silver Birch	*Betula pendula*	SM	160	1	5	2	3	1.5	1	1	C2	<10	Poor. Average vitality. Tree is located directly below streetlight and has been topped recentl; this will need to be repeated regularly.	Consider removal to avoid repeat maintenance pruning and poorly formed tree.	1.9
T	3168	Silver Birch	*Betula pendula*	SM	120	1	6.5	2	1.5	1.5	1	1	C2	10+	Fair. Average vitality. Upright form.	No urgent work needed.	1.4
H	1	Ash Elm Sycamore Hawthorn	*Fraxinus excelsior* *Ulmus spp.* *Acer pseudoplatanus* *Crataegus monogyna*	EM	<100 to 600		4 to 17						C2 U	10+	Fair to poor. Old agricultural boundary hedgerow running to the north of the main driveway. Short section of Ash and Hawthorn to west, longer section containing trees 3054-3074 to east. Many trees have suffered root/bark damage in the past and are now in poor physiological health. Becoming patchy and overgrown. Open ditch to north has been filled in with gravel.	Trees individually assessed above. Hedge requires new planting and selective stem removal/coppicing and side pruning. Consider coppicing and laying entire hedge.	6
H	2	Ash Elm Hawthorn Blackthorn Elder	*Fraxinus excelsior* *Ulmus spp.* *Crataegus monogyna* *Prunus spinosa* *Sambucus nigra*	EM	<100 to 601		4 to 12						C2	10+	Fair. Old agricultural boundary hedge running north-south through site. Contains trees 3140-3147. Dominated by Ash and Hawthorn. Hedge now overgrown and neglected with growth extending out into surrounding pasture. Becoming patchy with some gaps. Ground riddled with rabbit burrows. Some root damage from earth moving in past.	Trees individually assessed above. Hedge requires: new planting in gaps, selective stem removal, hedgelaying and coppicing and side pruning to reduce the width and spread of the branching and natural regeneration.	4

Appendix 2

Bat Survey Report

A Spring, Summer and Autumn Evaluation of Bat Activity Within the Lands at The Institute of Technology, Tallaght, Dublin 24

Brian Keeley B.Sc. (Hons) in Zool. MCIEEM

March 2016, May 2016 and September 2018

Introduction

Bats are a widespread element of the Irish fauna. They are known to occur from much of the rural landscape, but they are also present within the urban environment and here they occupy buildings and occasionally trees for short or long periods. Buildings are a vital element of the annual cycle of all Irish bat species and at no time more so than the period May to August, but many bats may also avail of buildings as hibernation sites during which time the presence of bats may be impossible to determine. Trees may serve as breeding sites, mating sites, hibernacula but probably feature most commonly as transitional roost sites in the Irish context given the age and dimensions of much of the tree cover in urban and suburban areas including IT Tallaght. Changes to a site may reduce the lands available to bats as a feeding site and in some cases may even destroy their dwelling place through or during the partial or total demolition, restoration and renovation of buildings, felling or major surgery of mature trees and the subsequent construction activities and modifications to the site.

Bats are protected by Irish and EU law and to prevent unlawful injury or death, it is essential that a full understanding of the site is available in advance to protect the resident bats from unintentional harm and to create a pathway by which a legal derogation and exemption may be designed in consultation with the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht.

The site at IT Tallaght, Dublin 24, County Dublin will undergo a clearance of some vegetation including hedgerow and immature trees and subsequent construction of a number of buildings as an extension of the existing college. There will be no building removal and tree loss will be restricted to immature or undeveloped trees and shrubbery and the existing mature trees within the neighbouring lands will remain undamaged.

This evaluation will address the potential for bat roosting within the adjoining buildings and within the mature trees on site and will consider bat feeding and commuting within the lands within which the new structures are proposed.

A number of rivers flow through Tallaght including the River Dodder and the River Poddle. Within the grounds of ITT, there is only an insubstantial watercourse that can be considered a stream or drain as it features on historical maps as such. Studies on the bat fauna in the area of Dublin 24 in 2015 provide a species list including common and soprano pipistrelles. Nathusius' pipistrelle, Daubenton's bat, brown long-eared bat and Leisler's bat as well as possible Natterer's bat signals. A survey on the site at the heart of this proposal prior to the current construction of car parks and associated roadways provided a shorter list including common and soprano pipistrelle and Leisler's bat.

This evaluation commenced at a time when bat activity is either very low or entirely absent due to cold nights and low insect availability. While an activity assessment was commenced at this time, the basis of this evaluation is a visual inspection of the vegetation and landscape. The survey was then re-visited in May 2016 for a summer evaluation of the site and finally an autumn survey was carried out in September 2018.

Methodology

The proposed development site at IT Tallaght County Dublin was examined on 1st March 2016 in daylight and continued as a bat detector survey from prior to sunset (18.04 hours) for one hour and again prior to dawn on 2nd March 2016 (07.10 hours). A bat detector survey re-commenced approximately one hour prior to dawn on the latter date to determine if bats were roosting in any trees on site or within the adjacent buildings. The survey involved the use of a variety of bat detectors including the following:

Pettersson D240X, EM3 and Song Meter 2 BAT+ (SM2)

The first two detectors were carried for the entirety of the survey while the SM2 was placed within a tree to the southern end of the north-south running hedgerow. All signals were analysed with Kaleidoscope Pro and Batsound software.

The buildings were visually assessed for the likelihood of the presence of roost sites for bats.

The proposed development site at IT Tallaght County Dublin was again examined on the 3rd May 2016 as a bat detector survey from prior to sunset (20.15 hours) for two and one quarter hours and again prior to dawn on the 4th May 2016 (05.45 hours) A bat detector survey re-commenced approximately one hour prior to dawn on the latter date to determine if bats were roosting in any trees on site or within the adjacent buildings.

The survey involved the use of a variety of bat detectors including the following: *Pettersson D240X, EM3 and 2 x Song Meter 2 BAT+ (SM2)*

The first two detectors were carried for the entirety of the survey while one of the SM2s was placed within a tree at the eastern end of the east-west running hedgerow. All signals were analysed with Kaleidoscope Pro and Batsound software. A second SM2 was placed in a hedge close to the junction with the north south hedge to account for movement between these two hedges and it was moved into the middle of the hedge from 22.30 hours to dawn.

The site was re-examined on September 20th and 27th, 2018 availing of a similar set of equipment (a Pettersson D240X (D240) , an EM3+ and a Song Meter 2 BAT+ (SM2). The main area of examination was the treeline of mature trees close to the public path and road. The SM2 was placed adjacent to a very obvious cavity in a mature tree and active surveying commenced at the trees to the west of this tree. This allowed all the most suitable trees to be examined at emergence time. Two emergence surveys were undertaken on September 20th and 27th as at this time of year, activity prior to dawn can be reduced by colder temperatures. Sunset was at 19.12 hours on 27th September and the starting temperature for the survey was 11° Celsius. Surveying commenced at 19.05 hours and continued up to 21.15 hours. It was raining at the start of both survey dates.

Survey constraints

The Spring survey was undertaken outside of the main bat active season at a time when bats on the east coast of Ireland are likely to be in sustained torpor or hibernation. The survey date would not give a full and accurate account of the bat activity within the site except if the weather conditions were uncharacteristically mild over a sustained period to allow for insect abundance as well as conditions warm enough to encourage bat flight.

The night of survey was cold with a strong wind blowing from the west. The eastern side of the hedgerow was sufficiently sheltered to allow feeding and commuting but given the wind in other areas and the cold. it was unlikely that bat activity was likely to be present. A driven transect using an EM3 and Pettersson D240X provided no evidence in other parts of Tallaght on the night of survey.

The summer survey (2016) was undertaken during the main bat active season (May to September) at a time when bats on the east coast of Ireland are likely to be feeding and choosing roosts for breeding (if pregnant females) or for other life cycle elements. There was a slight breeze and there was no rain on the night of survey. The breeze was strongest towards the eastern edge of the campus. This is likely to be a good representation of the summer bat fauna of the site.

Surveying was hampered in September 2018 by the commencement of rain at sunset on both dates. This was contrary to the weather forecast of the nights in question, with a prediction of a 2% risk of rain on September 27th, 2018. The rain interrupted bat activity and rendered one of the hand-held monitors (D240) increasingly less effective with passing time; the second monitor (EM3) was partially covered to prevent wetting of the transducer.

While the rain interrupted observations, there was sufficient opportunity to monitor the trees for emerging bats and to note bat activity within the site by combining activity from the two nights. Overall, there was an opportunity to evaluate the bat fauna in September 2018 in comparison to the observations of May 2016.

Existing Environment

March 2016

There was no bat activity on site on 1st March 2016. Weather conditions were poor with strong winds on site as the survey progressed. Rain was heavy prior to surveying but ceased at approximately 5.50 pm for most of the active survey. Rain began to fall towards 7.00 pm at which time there was a strong wind. Prior to dawn, conditions were wet and windy, and no bat activity was in evidence. An examination of all recordings (firstly n the EM3 and then on the SM2) revealed that there was no activity at any stage during the night.

In a previous survey within the site, there were three bat species noted (An Examination of Trees at IT Tallaght for Bat Roost Potential and Roosting Bats, Brian Keeley, September 2009). These were common and soprano pipistrelle and Leisler's bat. On this previous occasion, in September of that year, bat activity during the night at ITT was relatively low.

The three species showed varying activity levels with common pipistrelle activity mainly in the eastern corner of the site and soprano pipistrelle activity within the cover of the mature horse chestnuts at several times in the night. A number of these trees have subsequently been removed.

A Leisler's bat was social calling in flight in this area during the earlier survey but none of the bats noted on site could be attributed to tree roosts within the site.

The best feeding sites within the proposed development area include the northern end of the hedgerow especially where there is a small rectangular pool of water (on the east of the hedge). There is also a less defined pool of water on the western side of the hedge towards the southern end. On the night of survey, the eastern side of the hedge was much more sheltered from wind. Equally this side is better shielded from lighting from the buildings.

The trees within the hedgerows for removal would almost all appear to be young and undeveloped and unsuitable as roost sites. The easternmost tree of the west-east running hedgerow was some potential as a roost site, but it would be deemed Category 2 in the definitions set out by the UK based Bat Conservation Trust (see Table 1).

May 2016

No bats were noted to roost within the hedgerow within or adjacent to the proposed development site. No bats were considered to be roosting in close proximity to the site but were potentially entering from buildings off campus. The majority of bat activity within the grounds of IT Tallaght was of common pipistrelle (*Pipistrellus pipistrellus*). This species was first noted at 21.22 hours around the eastern horse chestnuts feeding here for 10 seconds and returned briefly at 21.24 hours and again at 21.26 hours for one minute.

A common pipistrelle was again noted at 21.30 hours around these trees. It arrived from the eastern edge of the ITT campus and fed between the east-west hedge and the mature trees before flying south to the campus perimeter and returning again occasionally (or other individuals of the same species). Activity was noted along the east-west hedge and in particular around the pond to the east of here as well some activity north of the pond. Signals were also noted along the north-south running hedge by the SM2 during the night up to 00.59 hours. In a previous survey within the site this was the most commonly encountered bat species.

No bat activity was present prior to dawn within the site. Temperatures had dropped to 5°C prior to dawn. A second pipistrelle species; soprano pipistrelle was present based on observations at approximately 21.44 hours of a single bat within the same area as the first common pipistrelle noted and from recordings by the SM2 monitors. This species would be expected to be present at the pond but on site it would appear to be replaced by common pipistrelles as the most common species at a water body. Signals were noted along the north-south hedge at 23.13, 01.04 and at 03.08 hours. Leisler's bat activity was brief and confined to areas away from the proposal.

Signals were noted close to the college at 21.47 hours and by the SM2 on the eastern tree at 21.46 hours on the EM3 and earlier at 21.30 hours by the SM2 attached to the tree on the east-west hedge.

In summary, the three species of bat noted in previous surveys were noted in May 2016. The most commonly encountered species was common pipistrelle. This species fed along the two hedgerows discussed in this report and around mature horse chestnuts in addition to feeding around the pond and tree cover in close proximity to it. Soprano pipistrelle activity was much less commonly encountered and was later overall than for common pipistrelle. Leisler's bat activity was low within the campus on the night of survey.

A site proposed as a good feeding site at the northern end of the north-south hedge was entirely dry on May 3rd, 2016. While this may sporadically fill up and dry out, it is therefore not a reliable feeding source. The pond offers more sustained water presence and therefore insect abundance and diversity.

No trees were occupied by bats in May 2016. The trees within the hedgerows for removal are too young and undeveloped and unsuitable as roost sites. The easternmost tree of the west-east running hedgerow was specially targeted for assessment and proved not to be a bat roost.

September 2018

Bat activity in September was similar in most respects to that noted in 2016 with the exception that Leisler's bat activity was more sustained within the site. An individual was present close to the western horse chestnut (within the southern tree line) from 19.18 hours to 19.26 hours on a relatively regular basis. This was despite varying levels of rainfall. The bat was neither seen to emerge or enter the tree during this time. Leisler's bats were present again at this site at 19.31 hours.

Common pipistrelle was the most commonly encountered bat based on its presence in several locations throughout the survey period, but Leisler's bat activity was more sustained in the area close to the east-west hedgerow and mature trees with roost potential.

A common pipistrelle was present close to the pond, near to factories or offices behind the Poddle, close to the north-western car park, along the west-east hedge and around the mature trees south of the hedge. This species arrived late in September 2018 and most likely to be entering from outside the site.

Soprano pipistrelle activity was negligible in September 2018 and only one bat was present briefly.

No roosts were noted within the site and tree cavities examined were devoid of bat signs and a monitor at the most obvious cavity on the eastern trees did not record emerging bats.

Modifications or Features introduced by the proposed development

- **Vegetation alterations**

There will be a requirement to remove mature vegetation with immature or undeveloped trees and scrub. This would affect bats in a number of ways including the loss of shelter from wind and lighting and this may affect feeding areas and commuting activity. This will not have major conservation consequences for bats overall, given the number of bats on site was likely to be low (less than 6 bats at the highest period of activity).

- **Lighting**

There will be an increased level of lighting associated with buildings, public paths and especially from the erection of sports' flood lighting. This may affect the availability of feeding areas and commuting for bats. It will not affect bat roosts based on this multi-seasonal evaluation.

None of the bat species within the site are particularly light intolerant but lighting of roost sites is unwelcome for all bat species. As outlined in the Institution of Lighting Professionals latest publication on bats and lighting, even bat species that have been shown to opportunistically forage in lit conditions are impacted by artificial lighting, for example, common pipistrelles avoid gaps that are well lit in some sites creating a barrier effect (Hale et al 2015).

Impacts of The Proposed Development

Potential roost loss

Tree felling creates a negligible risk of roost loss within this site as most trees that would appear to have roosting potential will be retained. If none of the mature trees are removed from the east-west hedges and trees behind them, there is no risk of roost loss.

Reduced Feeding

Reduced vegetation including the removal of scrub and even undeveloped and immature trees may lead to reduced insect abundance. Some of the north-south hedge will be removed but the east-west hedge will be retained and the pond will remain unaffected overall. This will be a permanent slight negative impact.

Disturbance from lighting

This would affect light-intolerant bat species in particular. However, there are no known roosts on site and therefore illumination would only affect commuting rather than roosting. If the mature trees at the southern edge of the site noted as having potential that will not be felled are occasionally availed of as roosts, then lighting would affect their viability (if it illuminates the area around the exit point). Species such as Leisler's bat and common pipistrelle are less affected than all other Irish bat species. As there is only one other species known to date from this site, the soprano pipistrelle, it is predicted that this would be a permanent moderately negative impact.

Proposed Mitigation

Mitigation concentrates on the provision of hedgerow replacement and lighting control.

Lighting should be designed with controlled directionality and timing

It is recommended that flood lighting that can be accurately controlled is employed. The lighting must be of a design that limits spill-over into the surrounding landscape. Most flood lighting is a feature of winter time and in this respect, there should be no impact upon breeding bats. Flood lighting must only be switched on when it is required (i.e. lighting must not be either switched on when there are no events or in advance of events to warm up or to fit to a schedule). A record of the power consumption of the lights would provide a guide on the period of illumination and would indicate when there is tighter control required. The main potential for conflict lies in autumn when bats are still active and forming mating roosts.

The mature trees retained to the south of the development must not be directly illuminated by the flood lights. A level of 3 lux should be the cut-off for any spill-over on these trees. In areas where there is a Building Regulation requirement for higher lighting levels for accessibility, this would not be achieved but in all areas where this conflict does not arise, lighting should be more restrained

Away from the sport's area, the following is proposed:

It is recommended that bollard lighting is employed where essential unless there is an equivalent means by which light overspill can be controlled. The source of light should be Light Emitting Diodes (LEDs) as this is a narrow beam highly directional highly energy efficient light source. The lighting should allow for a light level of 3 lux at ground level (except where higher lighting levels are required for accessibility under Building Regulations) in areas away from the sport's area where light will be intense. It is easier to control both the direction and light level of low lighting because it is closer to the target area than brighter light sources. Lighting should preferably respond to a trigger (motion sensor on approach of vehicles or pedestrians) and be capable of dimming.

- No floodlighting (away from the sports field) should be used to avoid light spillage and to keep light below the horizontal.
- Hoods, louvres, shields or cowls should be fitted on the lights to reduce light spillage.
- Lights should be of low intensity and use several if required.
- Lights should be on a timer system / daylight sensors to switch off when not required.
- Narrow spectrum lighting should be used with a low UV component.
  Glass helps reduce the UV component emitted by lights.

Planting of vegetation

The planning of new hedgerow can help considerably in the reduction of light pollution and retention of dark corridors for wildlife. It is recommended that a hedge be planted to the west of the sports area to reduce the effects of the flood lighting. Native and local plant species should be employed including typical plants such as oak (the greatest value for most wildlife), ash, hawthorn, blackthorn, elder, gorse, bramble, in addition to other species such as dog rose with an encouragement of species such as *Clematis* and other species attractive to moths.

Impacts of The Development After Mitigation

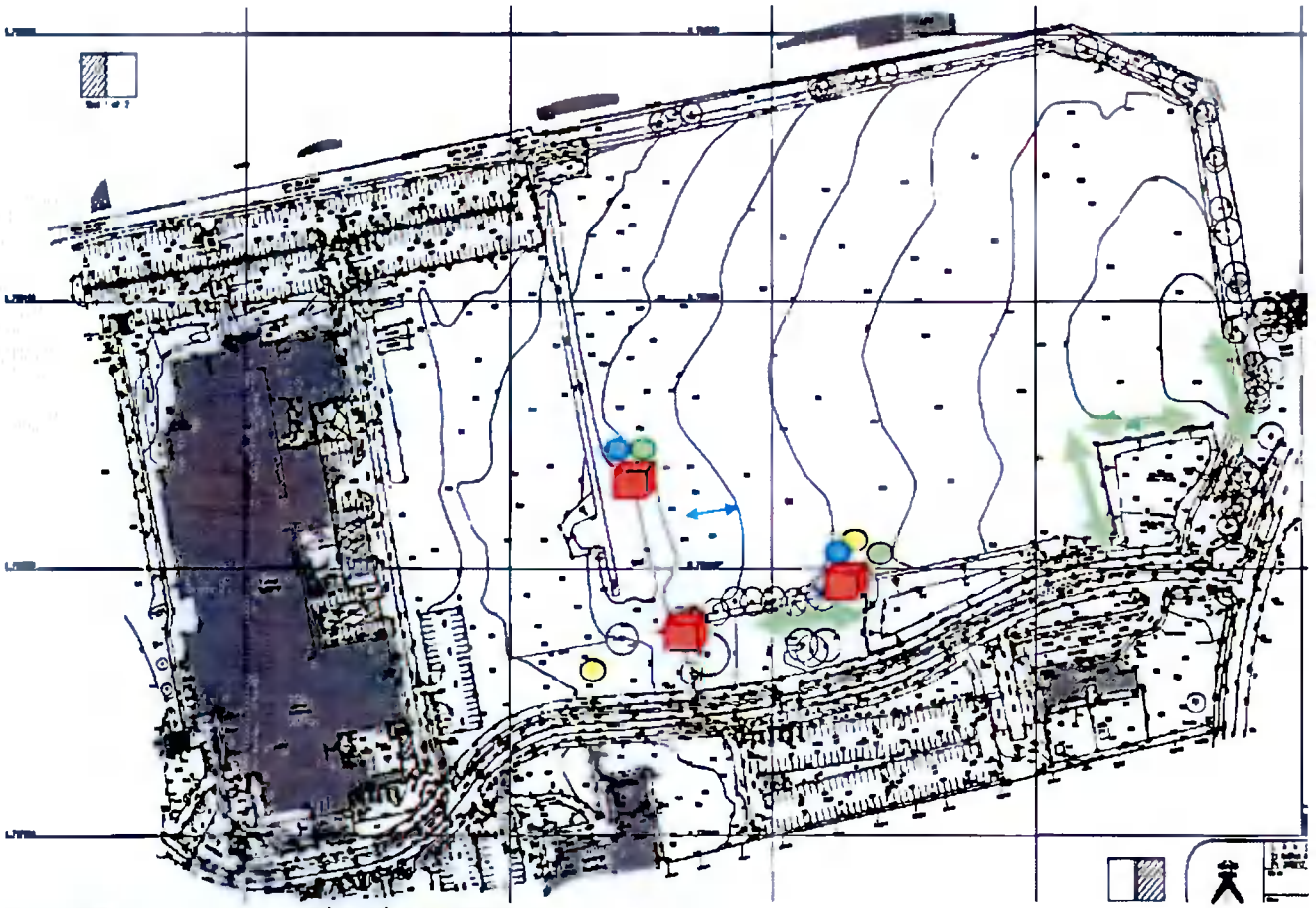
It is predicted that there will be a low negative impact of short-term duration upon the bat fauna of Tallaght from the proposed development in the long term. The loss of cover by way of the hedgerow cannot be fully mitigated until all construction on site has ceased and the hedgerow or planting will take time to develop.

Lighting will increase as a result of the proposal but given that bats are in low numbers within the grounds, the impact will be low. There are proposed measures for flood lighting with better control on spill-over light pollution and these should assist in lessening these effects.

Bat activity recorded at the mature trees running east – west to the south of the hedgerow

September 27th, 2018

DATE	TIME	AUTO ID	MANUAL ID
27/09/2018	19:18:30	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	19:19:00	NoID	LEISLER'S BAT
27/09/2018	19:20:00	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	19:20:30	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	19:25:00	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	20:22:42	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	20:30:42	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	20:36:42	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	20:37:42	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	20:40:42	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	20:41:12	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	20:55:24	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	20:55:54	LEISLER'S BAT	LEISLER'S BAT
27/09/2018	21:09:54	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	21:10:24	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	21:10:54	NoID	COMMON PIPISTRELLE
27/09/2018	21:11:24	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	21:11:54	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	21:12:54	COMMON PIPISTRELLE	COMMON PIPISTRELLE
27/09/2018	21:13:24	COMMON PIPISTRELLE	COMMON PIPISTRELLE



Bat activity at ITT noted on 3rd to 4th May 2016

Red box - Location of SM2 monitor

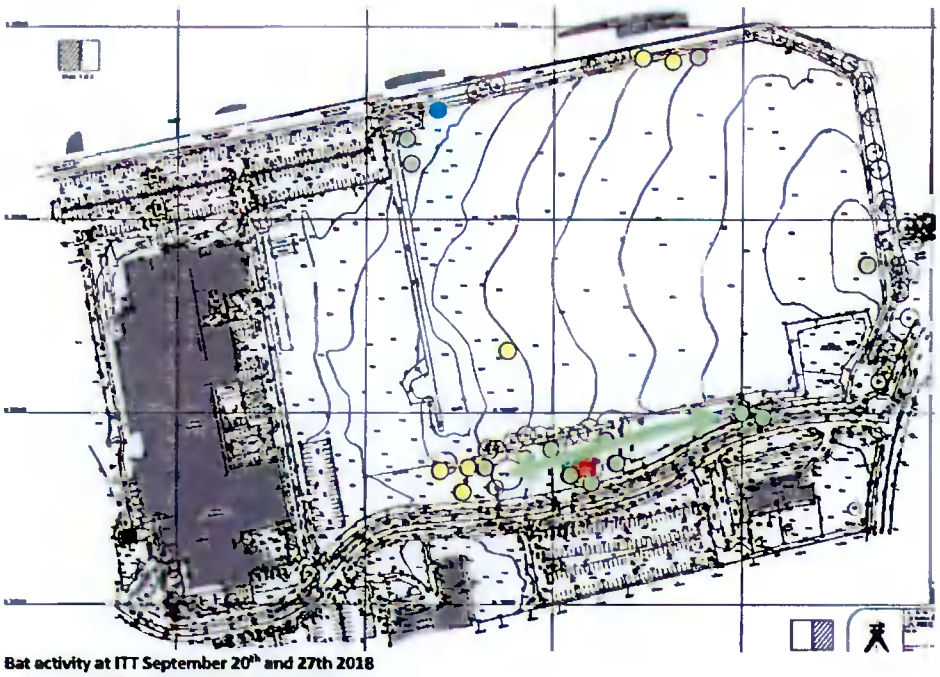
Green arrow – Feeding activity of common pipistrelle

Green dot – Common pipistrelle recorded on SM2

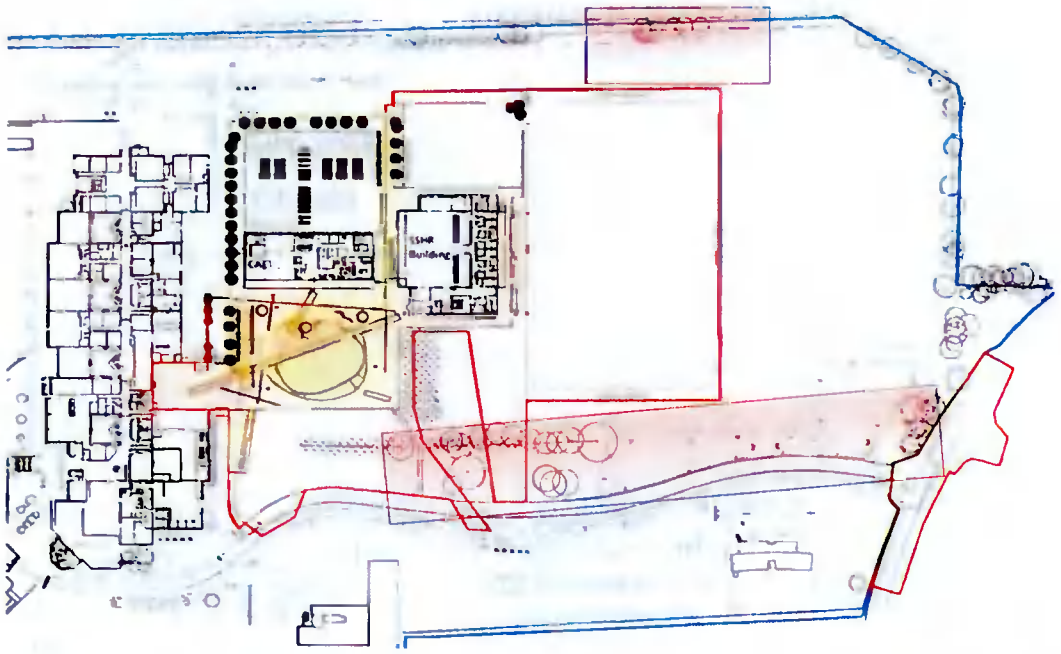
Yellow dot – Leisler's bat recorded on SM2

Blue arrow – single soprano pipistrelle feeding

Blue dot – soprano pipistrelle recorded on SM2



Bat activity at ITT September 20th and 27th 2018
Red box - Location of SM2 monitor at tree cavity
Green arrow – Feeding activity of common pipistrelle
Yellow dots – Leisler's bat recorded on EM3
Green dots – Common pipistrelle recorded on SM2
Blue dot – soprano pipistrelle recorded on EM3



Proposed development at IT Tallaght
The shaded boxes indicate areas of highest bat activity. There will be hedgerow and tree loss as well as lighting elevation that would reduce the value of the site for bats. Measures required on site will include lighting management and planting.

Hedgerow that will be removed as part of the proposal

This provides cover for feeding and commuting bats. The left photo shows a site for feeding and commuting soprano and common pipistrelles and Leisler's bats and very low roost potential.

The eastern side of the hedgerow (left) and pool along this hedger (right)

This side of the hedge is the better location for commuting bats. This is a seasonal water body and was absent in May 2016 and September 2018.

Pool of water to the east of the north-south hedge a(facing east, left) (facing south, right)

This was absent in the summer and autumn assessments

Southern edge (left photo) facing towards mature trees to the south of site

The trees to the right (right photo) with high roost potential will be retained. These trees are not within the clearance area and will be retained.

Appendix 3

Luminaire Schedule

Lighting Calculations

Outdoor Lighting Report

Footbridge – Opening Hours

Project Name: **ITT 1 AIRTON CLOSE**

Project No.: **18179**

Schedule Title: **LUMINAIRE SCHEDULE**

Schedule Ref.: **E-SCH-63-04**

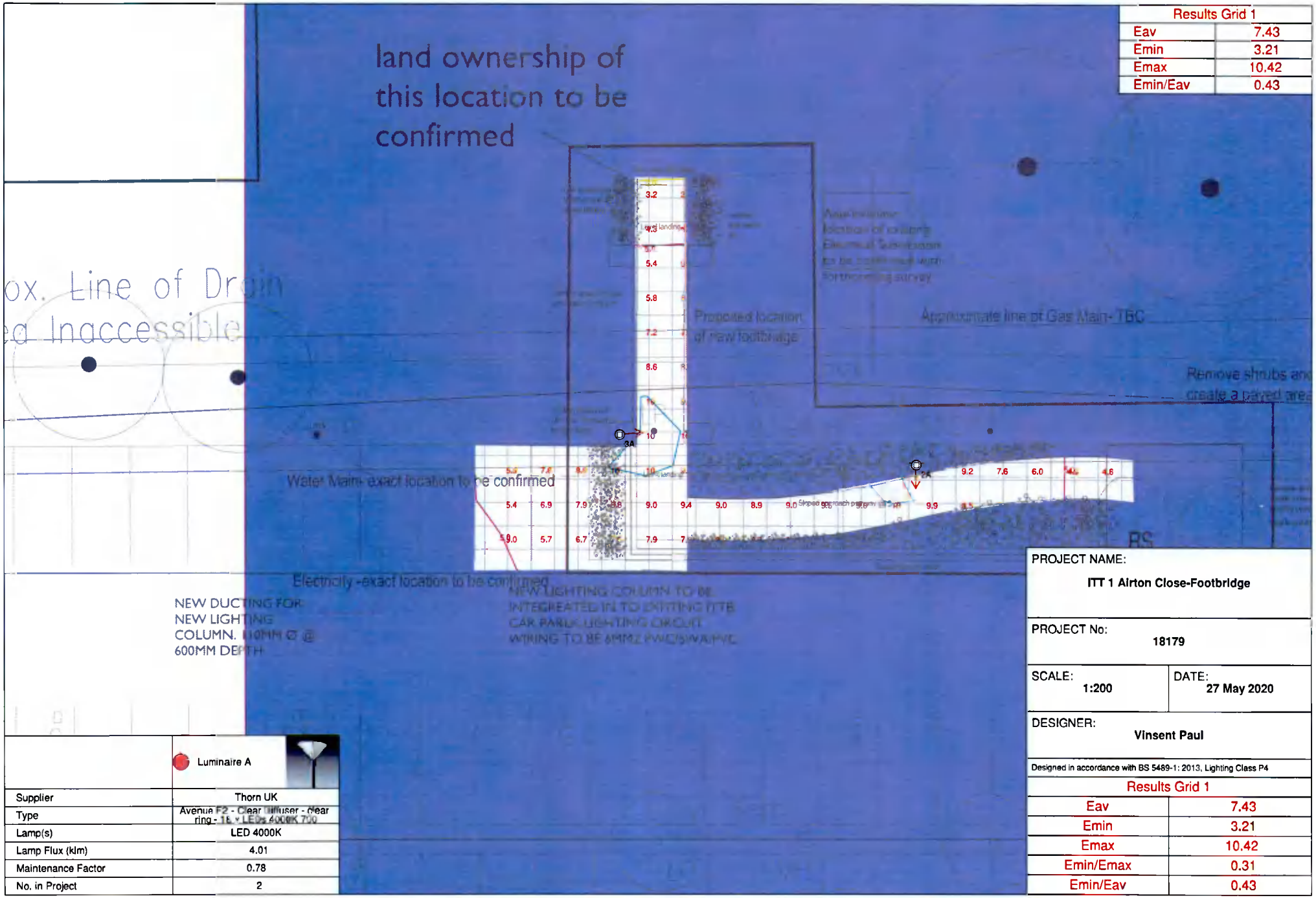
Area **FOOT BRIDGE**

Rev.:	T2
Date:	27.05.2020
By:	VP
Checked:	JB
Approved:	JB

Reference	Description	Manufacturer	Model	Lamp (Type / Wattage OR Lumen Output / Colour K)	Control Gear	Dims (mm) / Weight (kg)	Image
A	IP66 post top decorative aluminium lantern. powder coated dark grey finish, with street or symmetrical optics, dimming and Telea management and coordinated decorative columns. Avenue F2 LED / AVF 18L70-740 RS CL BPS CL2 CON ANT T60	Thorn	Avenue F2	41W	See Note 4	-	

Notes:

1. All luminaires are to supplied complete with lamps and control gear.
2. All equipment is to be supplied as specified, or equal and approved by the Engineer, Architect, Lighting Designer and Client.
3. Where a discrepancy between the model number and other luminaire details occurs, the Contractor shall allow for the most expensive option.
4. As per manufacturer's recommendations
5. Control gear to be mounted within the joinery in a location not subject to steam and moisture.
6. Length of LED strip to be calculated by Contractor using onsite measurements.



Results Grid 1	
Eav	7.43
Emin	3.21
Emax	10.42
Emin/Eav	0.43

	Luminaire A
Supplier	Thorn UK
Type	Avenue F2 - Clear Diffuser - Clear ring - 16 x LEDs 4000K 700
Lamp(s)	LED 4000K
Lamp Flux (klm)	4.01
Maintenance Factor	0.78
No. in Project	2

PROJECT NAME:
ITT 1 Airton Close-Footbridge

PROJECT No:
18179

SCALE:	DATE:
1:200	**27 May 2020**

DESIGNER:
Vinsent Paul

Designed in accordance with BS 5489-1: 2013, Lighting Class P4

Results Grid 1	
Eav	7.43
Emin	3.21
Emax	10.42
Emin/Emax	0.31
Emin/Eav	0.43

DATE:	**27 May 2020**
DESIGNER:	**Vinsent Paul**
PROJECT No:	**18179**
PROJECT NAME:	**ITT 1 Airton Close-Footbridge**

Designed in accordance with BS 5489-1: 2013, Lighting Class P4

Outdoor Lighting Report

PREPARED BY:

Delap and Waller,
Bloomfiel House,
Bloomfield Avenue,
Dublin 8

Layout Report

General Data

Dimensions in Metres Angles in Degrees
Grid Origin 4334.8m x 1562.7m
Area 55.0m x 41.2m
Sample Spacing 1.49m x 1.47m

Luminaires

Luminaire A Data

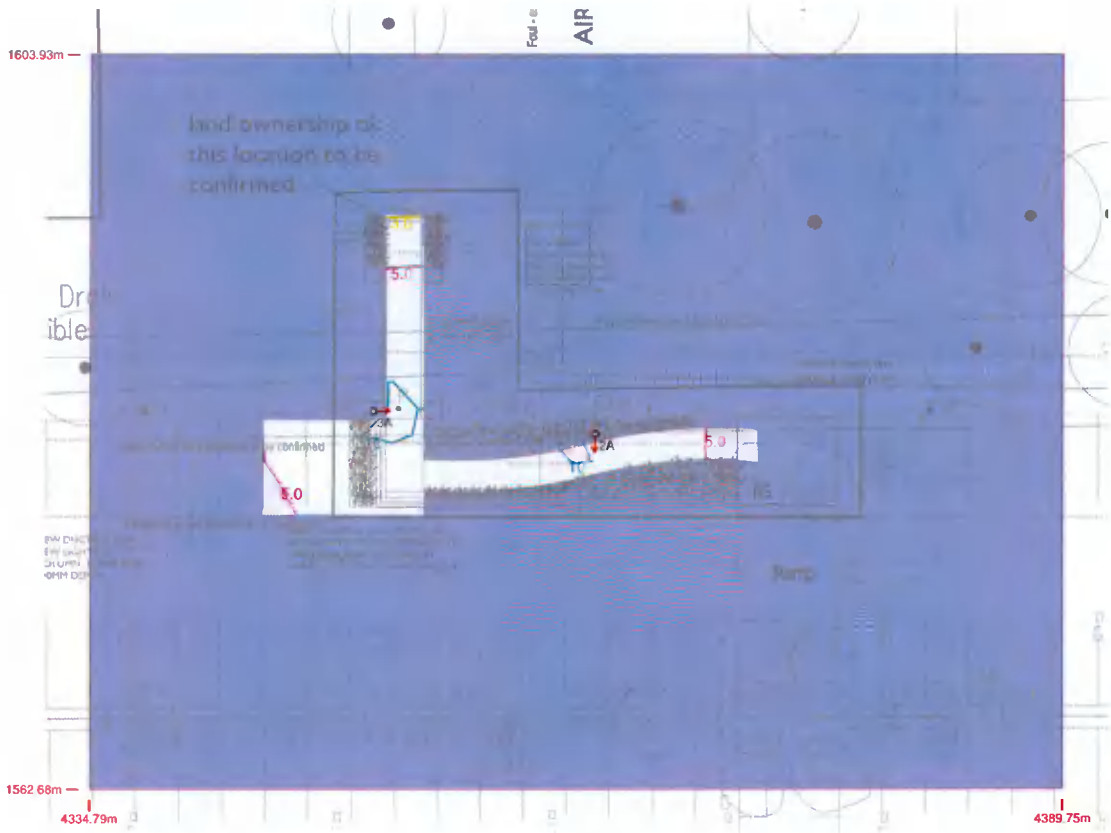
Supplier	Thorn UK
Type	Avenue F2 - Clear Diffuser - clear ring - 18 x LEDs 4000K 700
Lamp(s)	LED 4000K
LampFlux(klm)/Colour	4 01 4000/
File Name	AVF18L70RS4KG32_DC.LDT
Maintenance Factor	0.78
Imax70,80,90(cd/klm)	271.5. 199.5. 46.2
No. in Project	2

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
2	A	4363.31	1582.62	4.50	269.00	0.00	0.00	0.00			
3	A	4350.76	1583.91	4.50	4.00	0.00	0.00	0.00			

Horizontal Illuminance (lux)

Grid 1



Results

Eav	7.43
Emin	3.21
Emax	10.42
Emin/Emax	0.31
Emin/Eav	0.43

Proposed Footbridge to Airton Close - Opening Hours

It is proposed that the opening hours of the proposed footbridge to Airton Close will mirror the opening hours of the campus, which are as follows:

Academic Year - September to June inclusive

Monday to Thursday	07.00 to 22.30
Friday	07.00 to 19.00
Saturday	07.00 to 17.30
Sunday	Closed

July & August

Monday to Friday	07.00 to 18.30
Saturday	07.00 to 17.30
Sunday	Closed