

KIRKLEES COUNCIL

KNOWL PARK HOUSE, MIRFIELD

ARBORICULTURAL IMPACT ASSESSMENT
TO BS 5837:2012



our ref:	20069 / EH / AIA001B
date:	8 th July 2021
prepared by:	E.C.H
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<u>Rev:</u>	<u>Date:</u>	<u>Description:</u>	<u>By:</u>
A	25/03/21	T05 retained, with amendments to reflect revised levels information.	E.H
B	08/07/21	Amendments to reflect the revised layout and extended tree survey for new pedestrian footpath	E.H

arboricultural impact assessment



1.0 INTRODUCTION:

- 1.1 This Arboricultural Impact Assessment has been prepared by Bea Landscape Design Limited on behalf of Kirklees Council for the proposed development at the Knowl Park Dementia Facility in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'
- 1.2 The assessment has been prepared to accompany a detailed planning application based on the proposed facility layout prepared by the project architects Frank Shaw Associates.

2.0 SUMMARY OF TREE SURVEY:

2.1 Tree Survey:

- 2.1.0 The tree survey for the above site was carried out by Bea Landscape Design (refer to Appendix A) on behalf of Kirklees Council on the 8th October 2020 and the 29th June 2021 in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'.
- 2.1.1 The following trees are scheduled to be felled, or removed due to their poor condition, being dead or structurally dangerous and unsuitable for retention T17 & T18.

2.2 Tree Constraints:

- 2.2.0 As part of the survey a Tree Constraints Plans 20-69-07 & 20-69-17 have been prepared to inform future development proposals identifying the root protection areas and shadow patterns in accordance with BS 5837:2012 for those A to C Category trees.
- 2.2.1 The tree survey also identifies the constraints provided by tree species with particular characteristics that may affect any proposed development and schedules the ultimate predicted tree height and canopy spread.

2.3 Regulatory Protection

- 2.3.0 It is our understanding that trees T28, T29, T30, T31, T32, T33, T34 and T19 are protected by Tree Preservation Order No. 23/92/A2. The site is not within a Conservation Area and no surveyed trees are considered to be Veteran or Ancient or listed on the Woodland Trust Ancient Tree Inventory.

3.0 IMPACTS OF THE PROPOSED DEVELOPMENT

3.1 Site Layout

- 3.1.0 A site layout has been prepared for the development area including for the demolition of the existing building, the construction of a single story Dementia care facility including ancillary buildings, car parking, gardens and new park access. In order to assess the impact of the development of the site and the existing trees the proposed site layout was superimposed into the Tree Constraints Plan.

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consultants: Dr N E Haycock Bsc, D.Phil (Oxon) Hydrology. Registered in England as Bea Landscape Design Ltd, number 04707914.

- 3.1.2 The proposed development has been designed to retain the majority of the existing trees particularly those offsite trees to the boundary. However to accommodate the proposed development it will be necessary to remove a number of trees within the site.

3.2 Tree removal

- 3.2.0 The assessment highlighted a number of trees that would need to be removed as a result of the development of the site as listed within Table 1 below and as identified within the Tree Retention & Removal Plan 20-69-08. The majority of these trees are internal to the existing site and have little overall impact on the surrounding external landscape.

Table 1: Trees to be removed:			
No.	Common Name	Cat.	Reasons for Removal
T01	Wild cherry	B2	To facilitate the proposed development.
T02	Dwarf pine	C1	To facilitate the proposed development.
T03	Deodar cedar	B2	To facilitate the proposed development.
T04	Oak	C1	To facilitate the proposed development.
T17	Laburnum	U	Unsuitable for retention.
T18	Sycamore	U	Unsuitable for retention.
T20	Rowan	C1	To facilitate the proposed development.
T21	Lawsons cypress	C2	To facilitate the proposed development.
G22	Apple	C1	To facilitate the proposed development.
T23	Goat willow	C2	To facilitate the proposed development.
T24	Wild cherry	B2	To facilitate the proposed development.
T25	Whitebeam	C2	To facilitate the proposed development.
T26	Wild cherry	C1	To facilitate the proposed development.
T27	Wild cherry	B2	To facilitate the proposed development.
T35	Hawthorn	C2	To facilitate the proposed development.

- 3.2.1 In summary the proposed development will mean the removal of 14 trees and one group of trees.
- 3.2.2 It should be noted that trees T17 and T18 were deemed unsuitable for long term retention in the Tree Survey 2069/EH/TR001A. The removal of these trees would be required due to their poor condition and their loss should not be considered as a material consideration in the planning process.
- 3.2.3 The majority of the remaining trees and groups of trees will require removal are small ornamental garden trees, considered to be of low to moderate quality and value within the tree survey. The location of these trees within the site limits the effect of their removal on the surrounding landscape and the proposed development includes for a significant tree planting within the site which will mitigate for their loss. The removal of these trees is therefore not considered to be a constraint to the proposed development of the site.

3.3 Tree retention & pruning:

- 3.3.0 The assessment identified a number of trees that should be retained as part of the development proposals as identified within Table 2. below and as identified within the Tree Retention & Removal Plan 20-69-08 & 20-69-18.
- 3.3.1 The trees identified for retention are primarily located to the site boundaries and area of low, medium and high quality and value.
- 3.3.2 As part of the proposed development it will be necessary to undertake the preliminary management surgery as identified within the tree survey including works to trees to reduce the risk of hazards i.e deadwooding and access facilitation pruning to prevent damage during construction.
- 3.3.3 The tree pruning required is likely to be of a minor extent and is not considered to have a significant impact on the long term health or visual quality of the retained trees.

Table 2: Trees to be retained:

No.	Common Name	Cat.	Pruning Works Required
T05	Common Oak	B1	Remove / reduce deadwood.
T06	Common oak	B1	Remove / reduce deadwood.
T07	Beech	B1	No works required.
T08	Sycamore	C2	No works required.
T09	Sycamore	A1	No works required.
T10	Sycamore	B1	Sever ivy. Remove / reduce deadwood.
T11	Beech	B2	No works required.
T12	Cypress	C2	No works required.
T13	Goat willow	C1	Sever ivy.
T14	Lime	B2	Sever ivy. Remove / reduce deadwood.
T15	Turkey oak	B2	Sever ivy.
T19	Whitebeam	C2	No works required.
T28	Sycamore	B2	Sever ivy.
T29	Sycamore	B2	No works required.
T30	Oak	B2	Remove lower two limbs back to main stem.
T31	Whitebeam	B2	Remove lower limb to South.
T32	Lime	B2	Remove / reduce deadwood. Reduce lower Southern limbs by 2 metres.
T33	Sycamore	B2	Sever ivy. Remove lower limb to South.
T34	Norway maple	B2	No works required
G36	Lombardy poplar	B2	No works required.
G37	Lombardy poplar	B2	No works required.
T38	Beech	B2	No works required
T39	Oak	B2	No works required.
T40	Sycamore	B2	No works required.

4.0 IMPACTS OF CONSTRUCTION - DEMOLITION OPERATIONS

- 4.0.1 The proposed development requires the demolition of the existing single and two storey buildings and the removal or replacement of the existing hard surfacing and ancillary buildings.

4.1 Demolition of Buildings

- 4.1.0 The proposed development requires the demolition of the existing buildings in close proximity to the retained trees T28, T29, T30, T31, T32, T33, T34 & T19 and the concrete staircase to the Southeast of the building within the root protection area of trees T32 & T33. Provided that tree protection and appropriate working practices are adopted the demolition works should not have a significant impact on the long term health of the retained trees.

4.2 Removal of Hard Surfaces

- 4.2.0 The proposed development requires the removal of the existing tarmac drive in close proximity to or within the root protection (RPA) of the retained Poplar trees G36 and the tarmac footpath within the RPA of trees T9, T10 & T11.
- 4.2.1 The proposed development also requires the removal of the existing PCC slab hard surfacing in close proximity to or within the root protection (RPA) of the retained trees T29 to T33 and the Poplar trees to the East of G37.

4.3 Removal of services

- 4.3.0 As part of the demolition works the existing overhead services are to be removed / diverted in close proximity to or within the RPA of the retained tree T10 and T11.

5.0 IMPACTS OF CONSTRUCTION – DIRECT

- 5.0.1 The construction of the proposed development directly impacts a number of retained trees including works within the root protection area and under the canopy as identified in Table 3 below.

5.1 Root Protection Area

- 5.1.0 The proposed development has been designed to avoid the need for major works within the root protection area (RPA) of the trees to be retained. However as listed below there are a number of trees affected by some elements of the proposed development which require work to be undertaken within their root protection areas.

Table 3: Work within the Root Protection Area:

No.	Common Name	Cat.	Works Required
T05	Common oak	B1	Non porous tarmac, Retaining wall, Porous hard surface car parking.
T06	Common oak	B1	Porous hard surface car parking.
T07	Beech	B1	Porous hard surface car parking.
T08	Sycamore	C2	No works proposed.
T09	Sycamore	A1	Removal of tarmac footpath. No dig, porous hard surface car park and footpath. Porous hard surface car parking.

No.	Common Name	Cat.	Works Required
T10	Sycamore	B1	Removal of tarmac footpath. No dig, porous hard surface footpath.
T11	Beech	B2	Removal of tarmac footpath. No dig, porous hard surface footpath.
T12	Cypress	C2	No works proposed.
T13	Goat willow	C1	No works proposed.
T14	Lime	B2	No works proposed.
T15	Turkey oak	B2	No dig, porous hard surface car park.
T19	Whitebeam	C2	Removal of slab footpath. Soft Landscaping.
T28	Sycamore	B2	Concrete panel retaining wall to edge of RPA. Soft Landscaping.
T29	Sycamore	B2	Concrete panel retaining wall at edge of RPA. Soft Landscaping.
T30	Oak	B2	Concrete panel retaining wall at edge of RPA. Soft Landscaping.
T31	Whitebeam	B2	Soft Landscaping.
T32	Lime	B2	Concrete panel retaining wall at edge of RPA. Soft Landscaping.
T33	Sycamore	B2	Concrete panel retaining wall at edge of RPA. Soft Landscaping.
T34	Norway maple	B2	No works proposed.
G36	Lombardy poplar	B2	Removal of tarmac drive at edge of RPA Retaining wall within RPA.
G37	Lombardy poplar	B2	Removal of paving. Changes in ground level and concrete panel retaining wall and loose gravel within / at edge of RPA. Soft Landscaping. Timber fence.
T38	Beech	B2	No works proposed.
T39	Oak	B2	Infill of gap to existing stone wall.
T40	Sycamore	B2	No works proposed.

No dig, porous hard surfacing.

- 5.1.1 Trees T09, T10, T11, T15, T16 and G37 have new hard surfacing proposed within their root protection areas (RPA). The maximum affected area of the RPA equates to 9.5% or less which is lower than the 20% maximum new permanent hard surfacing area as stipulated within BS 5837:2012 guidance.

Porous hard surfacing:

- 5.1.2 Trees T05 & T09 will have porous hard surfacing within the RPA which due to the level constraints of the site will require excavation; resulting in the partial loss of less than 2% of the RPA of the trees.

Non porous hard surfacing:

- 5.1.3 In addition 1.7% (4.5m²) of the RPA of T05 will be lost when the modified site access is constructed with a non porous hard surface.

Retaining walls.

- 5.1.4 The proposed development necessitates the construction of 300 to 1000mm high retaining walls at the edge of the root protection areas of trees T28, T29, T30, T32, T33, G36 & G37.
- 5.1.5 Similarly, the existing retaining wall to the site entrance adjacent to T05 is to be extended within the outer edge the trees root protection area and at the edge of the proposed hard surfacing noted within 5.1.3 above.

Level changes

- 5.1.6 The proposed development also necessitates the regrading of the Northwest corner of the site to create a level area to accommodate the proposed turning head, parking and Sprinkler Tank, this will result in the loss of between 3.5% and 4% of the root protection areas of the trees in the vicinity of the area.

Fencing

- 5.1.7 A timber screen fence to the corner of the proposed building crosses the root protection areas of G37.

Soft Landscaping:

- 5.1.9 Areas of soft landscaping are proposed within the RPA of trees T19, T28, T29, T30, T32, T33 and G37.

5.2 Canopy Spreads

- 5.2.0 The construction of the proposed single story buildings and hard surfacing to the Eastern boundary are located within the canopy spread of trees T28, T29, T30, T33. To minimise potential damage access facilitation pruning is recommended to trees T30, T31, T32 & T33 as detailed within Table 2.
- 5.2.1 The construction of the proposed footpath to Crowlees Road will require works to be undertaken beneath the canopies of trees T10 & T11, however the canopies of the trees are 5 metres above ground level and as such no facilitation pruning is required.

6.0 IMPACTS OF CONSTRUCTION – INDIRECT

6.1 Site Construction Access

- 6.1.0 Access to the site for all visitors and construction traffic for the proposed development at the Knowl Park Dementia Facility is to be from the existing site entrance off Crowlees Road.
- 6.1.1 Access to the recreation ground Knowl Park for the new pedestrian footpath is to be from the existing park maintenance access off Knowl Road, utilising the existing tarmac path.

6.2 Site Compound

- 6.2.0 The site compound, including porta cabins and portable toilet facilities is to be located to the front of the proposed building within the proposed car park area (excluding the No dig, porous paved area) and outside of the Construction Exclusion Zones.
- 6.2.1 A localised compound area is to be set up within Knowl Park in the vicinity of the proposed pedestrian footpath works and outside of the root protection areas of the existing trees.

6.3 Delivery & Storage of materials

- 6.3.0 The delivery and storage of materials will be undertaken using the existing entrances as described above. All materials are to be stored outside of the Construction Exclusion Zones as identified on the Tree Protection Plans.

6.4 Contractors Parking

- 6.4.0 A contractors and visitors parking area is to be located within the site and outside of the construction exclusion zones of the retained trees.

7.0 IMPACTS POST DEVELOPMENT

7.1 Shading of buildings / open space

- 7.1.0 The mature Poplar trees to the Eastern and Northern boundaries and the mature trees to the South will cast shade on the proposed development including the edge of the courtyard garden to the North eastern corner, the Western building elevation and the frontage car park.

7.2 Privacy & Screening

- 7.2.0 The retention of the majority of mature trees to the boundary of the site maintains the existing screening effect enhanced by the reduction in building height from the existing two storey buildings to a single storey.

7.3 Direct damage

- 7.3.0 There is potential for direct damage to the proposed building from the existing trees T30, T32 and T33 to the Eastern boundary. In the short term the risk of damage will be reduced due to the proposed access facilitation pruning and in the long term the risk is reduced through the replacement of the existing two storey building with a single storey replacement.

7.4 Seasonal nuisance

- 7.4.0 Sycamore and Lime trees are medium to large leaved deciduous tree species that are attractive to aphids that produce honeydew. When the tree is in leaf the honeydew will be a potential nuisance to the proposed building surfaces to the Eastern elevation.

7.5 Species characteristics

- 7.5.0 Trees are living organisms and exhibit structural and seasonal characteristics that may give rise to conflicts in proximity to buildings, footpaths and hard standing areas.
- 7.5.1 Sycamore and Norway maple are large leaved trees deciduous species that drop their leaves in the autumn. This will result in increased maintenance requirements to structures and surfaces located in the vicinity to the Eastern and Southern boundaries.

7.6 Future pressure for removal

- 7.6.0 The proposed development will increase the pressure for removal of the trees to the Eastern boundary due to the honeydew and leaf litter, however the trees are protected by a Tree Preservation Order which will prevent any works being carried out to the trees without local authority approval.

8.0 MITIGATION OF DEVELOPMENT:

- 8.0.1 As detailed above the proposed development will entail the loss of a number of the existing trees internal to the site with the retention of the trees to the site perimeter. The loss of the trees is to be mitigated with replacement tree planting with special construction techniques and tree protection measures to provide mitigation where the proposed construction works are in close proximity to the retained trees.

8.1 Replacement Tree Planting

- 8.1 Mitigation for trees required to be removed to facilitate the development are to be provided in the form of replacement tree planting to plot frontages, within public open space and within or adjacent to the retained hedges. Tree species are to in keeping with the character of the surrounding landscape including species such as Oak, Norway maple, Lime, Beech, Wild Cherry and Whitebeam.

8.2 Special construction techniques

Removal of existing hard surfaces

- 8.2.0 The existing slab paving within or in close proximity to the root protection areas of retained trees is to be removed by hand or using pedestrian operate machinery to limit the potential for damage. The tarmac surface courses are to be removed by machine operating from the existing tarmac surface using a toothless ditching bucket.

No dig, permeable hard surfacing

- 8.2.1 The creation of the proposed car park area within the RPA of the retained trees is to be mitigated through the use of 'no dig' and permeable porous hard surfacing edged with a no dig support.
- 8.2.2 In accordance with the BS5837:2012 guidance the new hard surfacing is to be both no dig and porous and as such the new hard surfacing is not considered to be of significant detriment to the health of the trees and therefore the proposed works are not considered to adversely affect the retained trees.

- 8.2.3 Porous or permeable hard surfaces require regular maintenance to prevent surface clogging, cleaned annually to remove silt and dirt particles. Surfaces beneath trees that drop blossom or fruit will need to be cleaned more regularly.

Retaining walls & Tanked Retaining walls

- 8.2.4 The retaining walls are to be constructed outside of the root protection areas of the retained trees with no excavations or changes to level within the root protection areas. The retaining features are to be designed by the project engineers to take account of these constraints but also to allow for future pressure from trees roots using alternative retaining solutions such as soldier piling systems to limit excavations into the RPA of the retained trees.

- 8.2.5 The extended low retaining wall adjacent to T05 is to be designed by the project engineers to minimise excavations and changes in level within the RPA of the trees and allow for future pressure from trees roots.

Boundary fence

- 8.2.6 To minimise potential root damage the location of fence & gate posts within root protection areas are to be determined by site investigations with hand held tools to avoid large diameter roots considered important for the stability of the trees.

Soft landscaping

- 8.2.7 To minimise potential root damage during the implementation of soft landscaping, no cultivation of topsoil is to be carried out within the RPA with shrubs and small sized trees to be pit planted by hand.

8.3 Tree Protection:

- 8.3.0 The trees are to be protected from damage during the course of the works in accordance with the guidance of BS5837:2012.
- 8.3.1 The protection of those trees to be retained has been detailed within the draft Tree Protection Plans 20-69-09, 20-69-10 and 20-69-19 which both identifies Construction Exclusion Zones, the locations of protective barriers and ground protection as well as other restrictions outlined in the above BS 5837:2012.

8.4 ARBORICULTURAL METHOD STATEMENT:

- 8.4.0 In order to inform the carrying out of the proposed works in proximity to the retained existing trees a detailed method statement is to be prepared to specify the working practices to be followed by the contractor to comply with BS5837:2012 and mitigate for the proposed works.

- 8.4.1 An Arboricultural Method Statement is therefore to be prepared that addresses the following;

- a) tree and ground protection measures
- b) phasing of demolition & construction works;
- c) site construction access;

- d) space for site huts, temporary toilet facilities (including their drainage) and their temporary structures;
- e) space for storing (whether temporary or long-term) materials, spoil and fuel and the mixing of cement and concrete;
- f) the effects of slope on the movement of potentially harmful liquid spillages towards or into protected areas.
- g) contractors' car parking;
- h) the space needed for foundation excavations and construction works;
- i) working space for cranes, plant, scaffolding and access during works;
- j) demolition of existing buildings and surfacing
- k) bespoke foundation design
- l) all changes in ground level, including the location of retaining walls, making adequate allowance for foundations of such walls and backfilling;
- m) installation of new permanent hard surfacing construction
- n) the location and space needed for all temporary and permanent apparatus and service runs, including foul and surface water drains, land drains, soakaways, gas, oil, water, electricity, telephone, television or other communication cables;
- o) installation of fences and gates
- p) the type and extent of soft landscape works within the protected areas,
- q) arboricultural supervision

APPENDIX A

TREE SURVEY

KIRKLEES COUNCIL

KNOWL PARK HOUSE, MIRFIELD

TREE SURVEY TO BS 5837:2012



our ref:	2069 / EH / TR001A
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<u>Rev:</u>	<u>Date:</u>	<u>Description:</u>	<u>By:</u>
A	06/07/2021	Survey area extended to South to include T38-T40	E.H

KNOWL PARK HOUSE, KIRKLEES

1.0 Introduction:

- 1.1 The tree survey for the site at Knowl Park House, Crowlees Road, Mirfield was carried out by Bea Landscape Design on behalf of Kirklees Council on the 8th October 2020 and the 29th June 2021 for submission to the local planning authority Kirklees Council
- 1.2 The tree survey inspection was carried out from ground level only and no invasive diagnostic tools were used. This is a pre-development site inspection prepared in accordance with BS5837: 2012 'Trees in relation to design, demolition and construction – Recommendations' and the report is valid and relevant only as part of the planning process.
- 1.3 It should be noted that tree surveys carried out at specific times of year are subject to seasonal limitations. For example; in spring leaves are not present or are just emerging and fungi are generally not visible (depending on species) which limits the assessment of a trees physiological condition, in summer trees are in leaf which reduces the visibility of the crown and can limit the ability to assess the structural condition with fungi not generally visible (depending on species), in autumn there is a decline in leaf quality / cover affording an improved view of the crown and fungal fruiting bodies can be present, in winter the structure of the crown can be easily assessed however assessment of physiological condition is limited and fungi are generally not visible.
- 1.4 Trees are dynamic natural structures and require frequent monitoring if predictable failures are to be identified. As such the trees should be re-inspected within at least a two year period from the date of this report or when changes occur to the trees (such as appearance of fungal growths, splits in branches etc.) or changes in their immediate environment occur. Any recommendations for action should also be carried out within this period unless identified in the report as requiring immediate action.
- 1.5 Some tree failures are not predictable such as those occurring during 'freak weather' conditions and those without external symptoms, these types of failure are not covered by this report.
- 1.6 The tree survey schedules document 2069/EH/TS001A and survey drawings 20-69-06 and 20-69-16 are included within this report. The tree survey is based on the topographical survey carried out by HSP Consulting in September 2020 and June 2021. It should also be noted that a number of trees surveyed T26, G36 & G37 were not identified on the original topographical survey. The location of these trees has been estimated using triangulation or based on aerial photography and their location should not be relied on for the construction purposes.
- 1.7 In accordance with British Standard 5837: 2012 the survey records the tree common names (refer to Appendix A for a key to scientific names), height, stem diameter and branch spread and existing height above ground level of the canopy or first significant branch including life stage, general observations (such as structural, physiological condition and/or preliminary management recommendations) and the estimated remaining contribution in years.

- 1.8 Each tree is also awarded a category grading based on Table 1 'Cascade Chart for Tree Quality Assessment' of the British Standard as included within Appendix C.

The following are an explanation of the terms used to describe the life stage, physiological condition and sizes referred to within the tree survey schedule.

Life Stage

<i>Young</i>	A tree in the first third of its expected life span.
<i>Semi-mature</i>	A tree within the second third of its expected life span.
<i>Mature</i>	A tree within the final third of its expected life span.
<i>Over mature</i>	A tree in natural decline.
<i>Notable</i>	A mature tree that stands out in the local environment because it is large in comparison with other trees around it. The tree doesn't have any obvious veteran characteristics, but may be taller than ancients and fatter than some veterans. Notable trees are usually worthy of recognition and can be potential, next generation veteran trees.
<i>Veteran</i>	A tree with habitat features such as wounds, decay in the branches, root or hollowing in the trunk with cavities or rot holes where limbs have broken off or bark is damaged. Wood decay fungal fruiting bodies and often evident. The trees have significant amount of deadwood with many dead limbs or branches (larger than 200mm in diameter) in the crown or fallen. A veteran tree is a survivor that has developed some of the features found on an ancient tree but not necessarily as a consequence of time, but of its life or environment.
<i>Ancient</i>	An ancient tree has great aesthetic appeal and is defined by the following characteristics; a small canopy exhibiting stag headedness following crown retrenchment, (gradual dieback and branch loss in which the area of foliage and root system are rebalanced with each other through the aging process); with a very wide hollowing trunk relative to other trees of the same species and one or more openings to the outside exhibiting the fruiting bodies of heart rot fungi.

Physiological condition

<i>Good</i>	The tree appears to have no obvious defects.
<i>Fair</i>	The trees condition is slightly compromised and considered to be remediable.
<i>Poor</i>	The trees condition is significantly compromised and considered non-remediable. Significant defects.

Sizes:

<i>Minor</i>	A diameter of less than 25 millimetres.
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Moderate A diameter of between 25 to 50 millimetres.

Major A diameter of greater than 50 millimetres.

- 1.9 This report does not consider any potential influence that trees may have upon load bearing soils beneath existing or proposed structures through abstraction of water by their roots (i.e. soil shrinkage and expansion and subsequent building subsidence and heave). The advice of a structural engineer should be sought with regard to appropriate foundation depths for new buildings with reference to NHBC standards Chapter 4.2 (NHBC, 2011).

2.0 Context:

- 2.1 The site is located at Knowl Park House, Crowlees Road in the Mirfield area of the Kirklees district as identified in Figure 01. Location Plan.

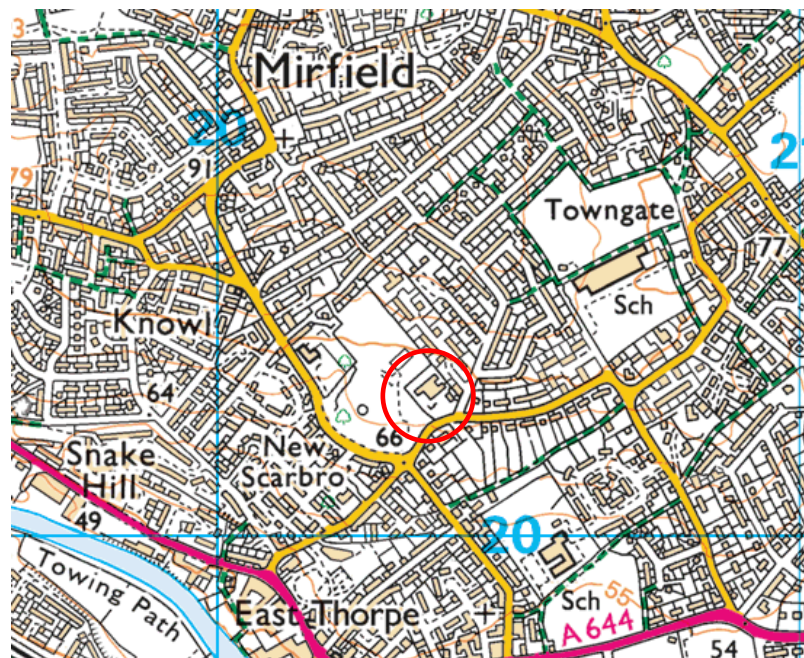


Figure 01. Location Plan

- 2.2 The area surveyed is currently occupied by Knowl Park House, Day Care Centre (refer to Figure 02. Aerial Photograph) with a Knowl Park a public park to the North and Northwest and a newly completed housing estate to the East.
- 2.3 The topography of the site is generally level with a gradual slope from North to South with localised level changes to the East and South with a retaining wall to the Southern boundary.
- 2.4 In order to inform the design of any future development taking account retained, removed and proposed trees; it is recommended that a soil assessment or geotechnical survey is undertaken to determine the soils shrinkability. This can affect the extent of the root protection area, tree protection and ultimately foundation design.



Figure 02. Aerial Photograph

3.0 Tree Survey Summary:

- 3.1 The majority of the trees surveyed are to the perimeter of the site and are generally of low to moderate quality and value with the occasional high quality and value tree. The survey can be divided into four areas including the mature trees to the Southern boundary with Crowlees Road & Westfields Road, those to the Eastern boundary with the Knowl Park Gardens housing development, the internal garden trees within the grounds of the Care Centre and the mature trees within the park to the North, West and South.
- 3.2 Trees T05 to T15 are a number of mature Common oak, Sycamore, Beech, Lime and a multi-stem Turkey oak to the Southern boundary with Crowlees Road and Westfields Road (refer to Figure 3 below) of low to moderate quality and value with T09 a large mature Sycamore considered to be of high quality and value. The root areas are restricted to the South by a 1 metre high retaining wall.



Figure 3. View looking Northwest towards T11 to T05



Figure 4. View looking Southwest towards T29 to T34



Figure 5. View looking Northeast towards G22, T23 & T24



Figure 6. View looking Southeast towards G37 & G36

- 3.3 Trees T28 to T34 are a number of mature Sycamore, Common oak, Whitebeam, Lime and Norway maple of moderate quality and value (refer to Figure 4. above) growing within the adjacent land ownership but overhanging the site.
- 3.4 Within the landscaped grounds of the Day Care Centre are a number of low to moderate quality and value Cherry, Apple & Rowan trees T01, T20, G22, T24, T25, T26, T27 (see Figure 5 above) with a small number of conifers T21, T02 & T03 to the car park area including a Lawsons Cypress, Deodar cedar and Pine.
- 3.5 Groups G36 and G37 are mature Lombardy poplar to the Northern and Western boundaries (refer to Figure 6 above) within the park attracting a higher collective rating than they would as individuals due to the number of trees within the groups and considered of moderate quality and value. Planted at circa 3 metres apart the trees vary in size with an average height of 25 metres.



Figure 7. View looking South towards T38 to T40

- 3.6 Trees T38, T39 and T40 (refer to Figure 7) are a number of mature Beech, Oak and Sycamore roadside parkland trees considered to be of moderate quality and value located at the edge of the park.

4.0 Tree Preservation Orders & Conservation Areas

- 4.1 It is our understanding that trees T28, T29, T30, T31, T32, T33, T34 and T19 are protected by Tree Preservation Order No. 23/92/A2. The site is not within a Conservation Area and no surveyed trees are considered to be Veteran or Ancient or listed on the Woodland Trust Ancient Tree Inventory.
- 4.2 The Town and Country Planning (Tree Preservation) (England) Regulations 2012 empowers local planning authorities to protect trees in the interests of amenity by making Tree Preservation Orders (TPO). Subject to certain specified exemptions, an application must be made to the local planning authority to carry out works upon or to remove trees that are subject to a TPO. However in certain situations where detailed planning permission has been granted and protected trees are directly affected by the implementation of the approved development, then it is possible to carry out the works necessary to said trees in order to implement the said development.

- 4.3 Under the Regulations any damage caused to, or the felling of those trees protected by an order will be considered an illegal act and subject to prosecution as set out in the TPO regulations.

5.0 Protected Species

- 5.1 The Wildlife & Countryside Act 1981 forms the legislative basis for protecting Britain's flora and fauna, together with its 1985 and 1991 amendments, the subsequent variations to the schedule of orders, and strengthening amendments made within the Countryside & Rights of Way Act 2000.

- 5.2 Nesting birds are afforded statutory protection by the Wildlife & countryside Act 1981. The bird nesting season is officially from February until August with the busiest time for nesting birds from the 1st March until the 31st July according to species.

- 5.3 As such, consideration should be given to the presence of nesting birds when clipping hedges, pruning or removing trees or removing ivy or other climbing plants during the bird nesting season. Trees, hedges and ivy should be inspected for nests prior to pruning or removal and any work likely to destroy or disturb active nests should be avoided until the young have fledged. Hedges provide valuable nesting sites for a wide range of birds and clipping should therefore be avoided during the months of March to July.

- 5.4 In Britain all bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and under Schedule 2 of the Conservation (Natural Habitats) Regulations 1994 (as amended). In England, under current legislation, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb in a way that would significantly affect their local distribution or abundance, or affect their ability to survive, breed or rear young;
- Damage or destroy a bat roost (note – this is an 'absolute' offence whereby intent or recklessness does not have to be proved).
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat;
- Intentionally or recklessly disturb at bat roost; and
- Intentionally or recklessly obstruct access to a roost.

- 5.5 In this respect it should be noted that bats utilise tree cavities, cracks and dense ivy as roosts. It is also possible that unidentified bat habitat features may be located high up in the tree crowns and all personnel subsequently carrying out tree works at the site should therefore be vigilant and mindful of the possibility that roosting bats may be present. If any bats roosts are identified during tree works then it is essential that the works are halted immediately and an ecologist investigate them prior to works continuing.

6.0 Tree Surgery & Removal:

- 6.1 The following trees are scheduled to be felled, or removed due to their poor condition, being dead or structurally dangerous and unsuitable for retention; T17 and T18.

- 6.2 The preliminary tree management works and tree removal are to be carried out by an Arboricultural Association accredited tree surgeon in accordance with BS 3998: 2010 'Tree Work - Recommendations' with particular care to be taken where trees are in confined spaces or adjacent to highways.

7.0 Root Protection Area

- 7.1 In order to inform the future retention of existing trees the root protection area has been calculated for each tree in accordance with BS 5837:2012 Annex D, Table D.1 – Root Protection Area and using the two calculation methods as detailed within clause 4.6.1. The root protection areas are illustrated on the Tree Constraints Plan 20-069-07.
- 7.2 Where Veteran trees have been identified within the tree survey the root protection area has been based on a minimum of 15 times the diameter of the trunk in accordance with the standing advice from Natural England and the Forestry Commission.
- 7.3 Where pre-existing site conditions (i.e the presence of retaining walls) or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area had been illustrated
- 7.4 All trees that are being retained on site should be protected by barriers and/or ground protection before any materials or machinery are brought onto the site, and before any demolition, development or stripping of soil commences. These 'Construction Exclusion Zones' are to be protected by barriers and ground protection in accordance with section 6.2 of BS 5837:2012 and as specified and indicated on an approved Tree Protection Plan to be prepared by the project arboriculturalist.
- 7.5 Of particular importance on sites where there are significant level changes it should be noted that existing ground levels are to be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ and any re-grading works or the location of retaining features should take this into account. The advice of an arborist should be sought where underground structures are present within the RPA are, or will become, redundant. In general it is preferable to leave such structures in situ, as their removal could damage adjacent tree roots.
- 7.6 Where construction operations are proposed and permitted within the Root Protection Area precautions should be taken and specified within an Arboricultural Method Statement prepared by the project arboriculturalist to maintain the condition and health of the root system in accordance with Section 7 'Demolition and construction in proximity to existing trees' of BS 5837:2012.
- 7.7 Where permanent hard surfacing within the RPA is considered unavoidable, site-specific and specialist arboricultural and construction design advice should be sought to determine whether it is achievable without significant adverse impact on trees to be retained. As a general guide new permanent hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA.

8.0 Above Ground Constraints

- 8.1 In addition to the condition of the tree the probable impact on proposed buildings or development of trees considered for retention should be assessed to take into account the root protection areas, shadow patterns, species characteristics, maintenance requirements and allowances for space and future tree growth.

Shading:

- 8.2 In order to assess any unreasonable obstruction of sunlight or daylight to any proposed development tree shadow patterns are also illustrated on the Tree Constraints Plan 20-69-07 and 20-69-17.
- 8.3 The orientation of the site means that shadows from the more significant and larger trees along the Southern and Western boundaries shade areas of the site.
- 8.4 The survey includes species that have typically have dense canopies such as Beech or large foliage such as Sycamore and further consideration should be given in respect of these shading characteristics. The ultimate height and spread of the tree (as noted below) will also affect the shading of the site in the future.

Species Characteristics:

- 8.5 Trees are living organisms and exhibit structural and seasonal characteristics that may give rise to conflicts in proximity to buildings, footpaths and hard standing areas.
- 8.6 Beech are large, slow growing and long lived deciduous trees with a spreading habit and dense canopies. With a shallow root system they are naturally susceptible to root decay and suffer from leader failure in old age due to weight and decay.
- 8.7 Lime and Sycamore are trees that are susceptible to aphids that secrete honeydew which can be damaging to surfaces and vehicles.
- 8.8 Sycamore and Norway maple are large leaved deciduous species that drop their leaves in the autumn. This can result in increased maintenance requirements to structures or surfaces located in the vicinity.
- 8.9 Poplar are a tall deciduous tree species that have a propensity for branch drop or failure particularly in high winds annually losing a number of softer thinner branches. This can result in increased maintenance requirements to surfaces and possible damage to structures located in the immediate vicinity. Pollarded Poplar species will require regular tree surgery and management.
- 8.10 Oak trees are typically a large, wide spreading and long lived tree species (over 500 years) that are important for biodiversity and provide habitats for a variety of species including Bats with veteran Oak trees being important for saproxylic insects. Oak trees are resistant to decay and often exhibit fungal fruiting bodies, crown dieback and deadwood within the canopy, typically developing hollow trunks and other veteran tree features without there being a significant effect on longevity.

- 8.11 The following trees species are identified within the NHBC Standards Chapter 4.2 as of high water demand and therefore impacting significantly on foundation design on high shrinkability soils; Cypress, Elm, Eucalyptus Hawthorn, Oak, Poplar and Willow.

Ultimate Height and Spread:

- 8.12 Where surveyed trees are classified as young to semi mature their future growth in terms of predicted height and canopy spread at maturity (refer to Appendix B) should be considered to prevent direct potential damage to structures or buildings, minimise future pressure for removal and increase the effect of shading as described above.

Appendix A: Scientific Names

<i>Common names:</i>	<i>Scientific Name</i>
Common alder	<i>Alnus glutinosa</i>
Crab apple	<i>Malus sylvestris</i>
Common ash	<i>Fraxinus excelsior</i>
False acacia	<i>Robinia pseudacacia</i>
Silver birch	<i>Betula pendula</i>
Downy birch	<i>Betula pubescens</i>
Common beech	<i>Fagus sylvatica</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Cherry plum	<i>Prunus cerasifera</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Sweet chestnut	<i>Castanea sativa</i>
Cypress	<i>Chamaecyparis cultivar</i>
Leyland cypress	<i>Cupressus x leylandii</i>
Lawson cypress	<i>Chamaecyparis lawsoniana</i>
Douglas fir	<i>Pseudotsuga menziesii</i>
Common hawthorn	<i>Crataegus monogyna</i>
Common hornbeam	<i>Carpinus betulus</i>
Holly	<i>Ilex aquifolium</i>
Laburnum	<i>Laburnum anagyroides</i>
Small leaved lime	<i>Tilia cordata</i>
Common lime	<i>Tilia x europaea</i>
Large leaved lime	<i>Tilia platyphyllos</i>
European larch	<i>Larix decidua</i>
Field maple	<i>Acer campestre</i>
Norway maple	<i>Acer platanoides</i>
Sycamore	<i>Acer pseudoplatanus</i>
Common oak	<i>Quercus robur</i>
Sessile oak	<i>Quercus petraea</i>
Holm oak	<i>Quercus ilex</i>
Pear	<i>Pyrus communis</i>
Scots pine	<i>Pinus sylvestris</i>
Aspen poplar	<i>Populus tremula</i>
Lombardy poplar	<i>Populus italica</i>
Hybrid black poplar	<i>Populus x canadensis</i>
London plane	<i>Platanus x hispanica</i>
Norway spruce	<i>Picea abies</i>
Rowan	<i>Sorbus aucuparia</i>
Whitebeam	<i>Sorbus aria</i>
Wild service tree	<i>Sorbus torminalis</i>
Crack willow	<i>Salix fragilis</i>
Goat willow	<i>Salix caprea</i>
White willow	<i>Salix alba</i>
Weeping willow	<i>Salix babylonica</i>
Yew	<i>Taxus baccata</i>

Appendix B: Predicted Tree Height & Canopy Spread

<i>Common name</i>	<i>Height (m)</i>	<i>Canopy Spread (m)</i>
Common alder	25	10
Crab apple	9	7
Common ash	30	20
False acacia	25	15
Silver birch	25	10
Downy birch	20	10
Common beech	25	15
Wild cherry	20	10
Bird cherry	15	10
Cherry plum	10	10
Horse chestnut	25	20
Sweet chestnut	30	15
Cypress	15-40	2-5
Leyland cypress	35	5
Lawson cypress	15-40	2-5
Douglas fir	25-50	6-10
Common hawthorn	10	8
Common hornbeam	25	20
Holly	25	8
Laburnum	8	8
Small leaved lime	25	15
Common lime	35	15
Large leaved lime	30	20
European larch	30	4-6
Field maple	10	8
Norway maple	25	15
Sycamore	30	25
Common oak	35	25
Sessile oak	30	25
Holm oak	25	20
Pear	15	10
Scots pine	15-30	6-9
Aspen poplar	20	10
Lombardy poplar	30	5
Hybrid black poplar	35	20
London plane	30	20
Norway spruce	20-40	6
Rowan	15	7
Whitebeam	10-25	10
Wild service tree	20	12
Crack willow	15	15
Goat willow	10	8
White willow	25	10
Weeping willow	12	12
Yew	10-20	8-10

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
TREES UNSUITABLE FOR RETENTION				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	<ul style="list-style-type: none">Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other U category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline.Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. <i>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve.</i>			DARK RED
TREES TO BE CONSIDERED FOR RETENTION				
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	LIGHT GREEN
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	MID BLUE
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm.	Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value, and/or trees offering low or only temporary / transient landscape benefits.	Trees with no material conservation or other cultural value	GREY

Appendix D: Root Protection Area

Single stem diameter <i>mm</i>	Radius of nominal circle <i>m</i>	Root Protection Area (RPA) <i>m²</i>
75	0.90	3
100	1.20	5
125	1.50	7
150	1.80	10
175	2.10	14
200	2.40	18
225	2.70	23
250	3.00	28
275	3.30	34
300	3.60	41
325	3.90	48
350	4.20	55
375	4.50	64
400	4.80	72
425	5.10	81
450	5.40	92
475	5.70	102
500	6.00	113
525	6.30	124
550	6.60	137
575	6.90	150
600	7.20	163
625	7.50	177
650	7.80	191
675	8.10	206
700	8.40	222
725	8.70	238
750	9.00	255
775	9.30	272
800	9.60	290
825	9.90	308
850	10.20	327
875	10.50	346
900	10.80	366
925	11.10	387
950	11.40	408
975	11.70	430
1000	12.00	452
1025	12.30	475
1050	12.60	499
1075	12.90	519
1100	13.20	547
1125	13.50	573
1150	13.80	598
1175	14.10	625
1200	14.40	652
1225	14.70	679
1250	15.00	707

Appendix E: Technical Definitions

Access Facilitation Pruning:	One off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Arboricultural Impact Assessment	An evaluation of the direct and indirect effects of the proposed design on the trees identified within the Tree Survey, where necessary recommending mitigation or amendments to the design.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Construction Exclusion Zone	An area based on the root protection area from which access is prohibited for the duration of a project
Root Protection Area (RPA)	The minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is considered a priority
Tree Protection Plan	A scale drawing informed by descriptive text where necessary, based upon finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

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Any recommendation, opinion or finding stated in this report is based on circumstances and facts as they existed at the time that Bea Landscape Design performed the work. The content of this report has been provided in accordance with the provisions of the BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

Nothing in this report constitutes legal opinion. If legal opinion is required the advice of a qualified legal professional should be secured. Observations relating to ecology and the condition of built structures have been made from an arboricultural point of view and, unless stated otherwise, do not constitute structural or ecological advice.

Tree Survey in accordance with BS5837:2012

Estimated dimensions (for offsite or otherwise inaccessible trees where accurate data cannot be recovered).

Tree / Group Number	Common Name	Height (m)	Stem(s) Diameter (mm)	Branch Spread (m)				Canopy Height (m) / First Significant Branch	Life Stage	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Remaining Contribution (years)	Category Grading	Root Protection Area (m2)
				N	E	S	W								
T01	Wild cherry	8	400	7	8.5	7	5	1.5	Mature	Good	Restricted root environment, car park to North, raised roots at base of stem, shallow surface roots in grass. Random past pruning/surgery.	No action required.	20+	B2	72
T02	Dwarf pine	5	100	2.5	3	0.5	3	/	Young	Fair	Restricted root environment, road to North.	No action required.	10+	C1	5
T03	Deodar cedar	11	240	3	3	3	3	/	Young	Good	Restricted root environment, road to North.	No action required.	20+	B2	26
T04	Oak	5	90	2	2	2	2	/	Young	Good	Restricted root environment, road to West. Supressed Crown.	No action required.	20+	C1	4
T05	Common oak	17	750	9	6	10	11	3	Mature	Good	Restricted root environment, retaining wall to South & West. Major pruning wounds. Fracture on limb in canopy. Random past pruning / surgery.	Remove/reduce by deadwood.	40+	B1	254
T06	Common oak	15	560	7.5	2.5	11.5	6.5	2	Mature	Good	Restricted root environment, retaining wall to South. Unbalanced/supressed Crown.	Remove/reduce by deadwood.	40+	B1	142
T07	Beech	18	500	8	4	8.5	8	3	Mature	Good	Restricted root environment, retaining wall to South. Unbalanced/supressed Crown.	No action required.	40+	B1	113

Tree Survey in accordance with BS5837:2012

Estimated dimensions (for offsite or otherwise inaccessible trees where accurate data cannot be recovered).

Tree / Group Number	Common Name	Height (m)	Stem(s) Diameter (mm)	Branch Spread (m)				Canopy Height (m) / First Significant Branch	Life Stage	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Remaining Contribution (years)	Category Grading	Root Protection Area (m2)
				N	E	S	W								
T08	Sycamore	12	420	1	3.5	8	2.5	5 S	Semi mature	Fair	Restricted root environment, retaining wall to South. Major branch socket cavities forming. Unbalanced / suppressed Crown.	No action required. Consider removal to benefit T09.	10+	C2	80
T09	Sycamore	18	740	8.5	6.5	8.5	7	6	Mature	Good	Restricted root environment, retaining wall to South.	No action required.	40+	A1	248
T10	Sycamore	18	720	9	4.5	8.5	7	6	Mature	Fair	Restricted root environment, retaining wall to South & East. Ivy. Major deadwood/snags. Major branch socket cavities. Unbalanced/suppressed Crown. Random past pruning / surgery.	Sever Ivy. Remove/reduce by deadwood.	20+	B1	235
T11	Beech	16	530	5	7.5	7	4	6	Mature	Good	Restricted root environment, retaining wall to South & West. Major pruning wounds. Random past pruning / surgery. Decay entry points present.	No action required.	20+	B2	127
T12	Cypress	10	220	2	2	2	2	/	Young	Good	Basal sweep.	No action required.	20+	C2	22
T13	Goat willow	12	180, 140	6.5	2	4	4	2	Young	Fair	Ivy. Major deadwood. Unbalanced/suppressed Crown. Random past pruning / surgery. Storm damage.	Sever Ivy.	10+	C1	23
T14	Lime	18	490	8	7	10	7	5 S	Mature	Good	Restricted root environment, wall and road to West. Ivy. Major deadwood/snags.	Sever Ivy. Remove/reduce deadwood.	20+	B2	109

Tree Survey in accordance with BS5837:2012

Estimated dimensions (for offsite or otherwise inaccessible trees where accurate data cannot be recovered).

Tree / Group Number	Common Name	Height (m)	Stem(s) Diameter (mm)	Branch Spread (m)				Canopy Height (m) / First Significant Branch	Life Stage	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Remaining Contribution (years)	Category Grading	Root Protection Area (m2)
				N	E	S	W								
T15	Turkey oak	18	220, 350, 350	8	7.5	5	7	3 N	Mature	Good	Restricted root environment, wall and road to West; sub station and paving to North. Ivy. Multi stem x 3. Unbalanced/supressed Crown.	Sever Ivy.	40+	B2	132
T16	Common oak	9	200	1	3	4	4.5	1.5	Young	Fair	Restricted root environment, substation to North. Unbalanced/supressed Crown.	No action required.	10+	C2	18
T17	Laburnum	3	140	4	3	3	3	2	Young	Poor	Restricted root environment, substation to North. Unbalanced/supressed Crown. Major bark wound at base to West. Major branch socket cavity.	Remove to ground level.	<10	U	9
T18	Sycamore	6	<150	3	3	3	3		Young	Poor	Restricted root environment, substation to South; house to East. Regrowth from untreated Sycamore stump. Multi stem.	Remove to ground level and treat stump.	<10	U	10
T19	Whitebeam	11	250#	2	3#	5	3.5	2	Young	Fair	Major pruning wounds. Random past pruning / surgery.	TPO: 23/92/A2. No action required.	10+	C2	28
T20	Rowan	7	75, 75, 30	2	2	2	2	/	Young	Fair	Multi stem.	No action required.	20+	C1	5
T21	Lawsons cypress	8	200#	2	2	2	2	/	Young	Good	Restricted root environment, road to South.	No action required.	20+	C2	18

Tree Survey in accordance with BS5837:2012

Estimated dimensions (for offsite or otherwise inaccessible trees where accurate data cannot be recovered).

Tree / Group Number	Common Name	Height (m)	Stem(s) Diameter (mm)	Branch Spread (m)				Canopy Height (m) / First Significant Branch	Life Stage	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Remaining Contribution (years)	Category Grading	Root Protection Area (m2)
				N	E	S	W								
G22	Apple	3-5	<150	2.5	2.5	2.5	2.5	0.5	Young	Good	Restricted root environment, road to West.	No action required.	20+	C1	10
T23	Goat willow	7	120, 100	3	3	3	2.5	2	Young	Good	Twin stemmed. Self set treegrowing at rear of shed.	No action required.	20+	C2	11
T24	Wild cherry	11	310	7	7	6	8	2	Semi mature	Good	Restricted root environment, paving to East. Random past pruning/surgery.	No action required.	20+	B2	43
T25	Whitebeam	8	90, 90, 70, 70	3	3	3	3	2	Young	Good	Multi stem from base. Compression fork/included bark.	No action required.	10+	C2	11
T26	Wild cherry	6	70, 80	3	3	3	3	2	Young	Good	Twin stemmed.	No action required.	20+	C1	5
T27	Wild cherry	12	280	7	6.5	6.5	6	2	Semi mature	Good		No action required.	20+	B2	35
T28	Sycamore	14	400#	8	6	6	6.5	3	Semi mature	Fair	Restricted root environment, new build houswe to North. Ivy.	TPO: 23/92/A2 Sever Ivy.	20+	B2	72
T29	Sycamore	16	450	7	9	6	7	2 N	Semi mature	Good	Restricted root environment, building to West with sloping bank; soil levels raised to South.	TPO: 23/92/A2 No action required.	20+	B2	92
T30	Oak	17	380	3	0.5	7	8	3	Young	Good	Major deadwood. Unbalanced / supressed Crown. Soil levels raised to South.	TPO: 23/92/A2 No action required.	20+	B2	65
T31	Whitebeam	15	240	4	3	3	6	2 W	Young	Fair	Unbalanced/supressed Crown. Soil levels raised to South.	TPO: 23/92/A2 No action required.	20+	B2	26

Tree Survey in accordance with BS5837:2012

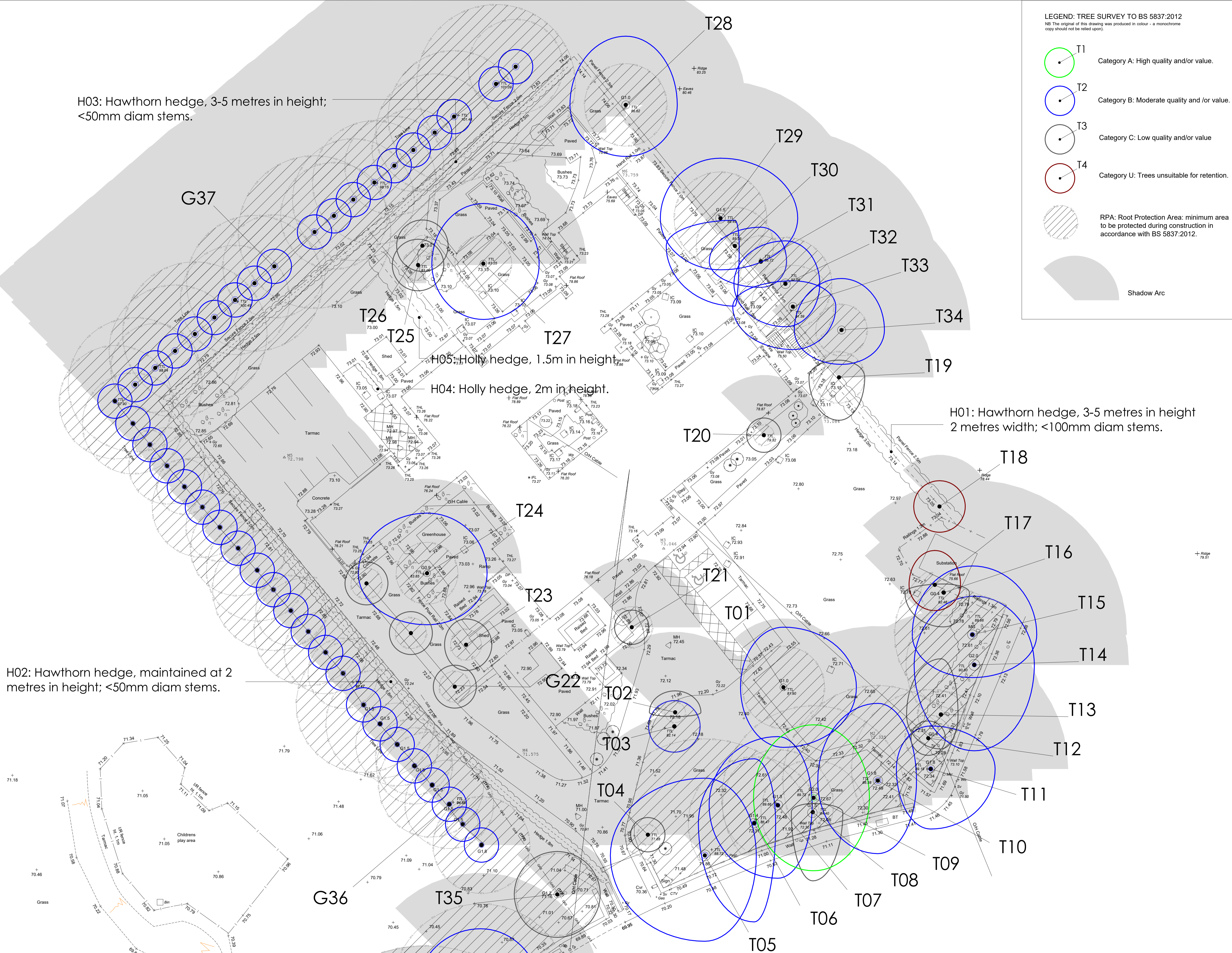
Estimated dimensions (for offsite or otherwise inaccessible trees where accurate data cannot be recovered).

Tree / Group Number	Common Name	Height (m)	Stem(s) Diameter (mm)	Branch Spread (m)				Canopy Height (m) / First Significant Branch	Life Stage	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Remaining Contribution (years)	Category Grading	Root Protection Area (m2)
				N	E	S	W								
T32	Lime	18	450	5	4	5	6	4 W	Mature	Good	Major deadwood/snags. Soil levels raised to South.	TPO: 23/92/A2 Remove/reduce by deadwood.	20+	B2	92
T33	Sycamore	16	400	3	5	5	7	4	Mature	Good	Ivy. Unbalanced/supressed Crown. Soil levels raised to South.	TPO: 23/92/A2 Sever Ivy. Prune from building.	20+	B2	72
T34	Norway maple	15	250	6	5	4#	5.5	2.5 W	Young	Good	Low hanging canopy to West. Remove low branches to West.	TPO: 23/92/A2 No action required.	20+	B2	28
T35	Hawthorn	6.5	400	5	5	5	5	1	Mature	Fair	Restricted root environment, retaining wall to South/South East. Road to East. Random past pruning/surgery.	Prune from wires.	10+	C2	72
G36	Lombardy poplar	20-25	150 - 600	2	2	2	2	/	Mature	Good	Restricted root environment, car park to South.	No action required.	20+	B2	Ref TCP
G37	Lombardy poplar	20-25	330 - 770	2	2	2	2	/	Mature	Good	Restricted root environment, road and building to East.	No action required.	20+	B2	Ref TCP
T38	Beech	14	680	7.5	7	7	7.5	4	Semi mature	Fair	Restricted root environment with low retaining wall and road to East. Randon past pruning / sugery. Major pruning wounds. Minor deadwood.	No action required.	40+	B2	209
T39	Oak	16	970	8.5	9	8	11	4 W	Semi mature	Good	Restricted root environment with low retaining wall and road to East. Randon past pruning / sugery. Major deadwood / snags.	No action required.	40+	B2	426

Tree Survey in accordance with BS5837:2012

Estimated dimensions (for offsite or otherwise inaccessible trees where accurate data cannot be recovered).

Tree / Group Number	Common Name	Height (m)	Stem(s) Diameter (mm)	Branch Spread (m)				Canopy Height (m) / First Significant Branch	Life Stage	Physiological Condition	Structural Condition	Preliminary Management Recommendations	Remaining Contribution (years)	Category Grading	Root Protection Area (m2)
				N	E	S	W								
T40	Sycamore	18	660	8.5	5.5	6.5	8	4	Semi mature	Fair	Codominant stems. Random past pruning / surgery. Major pruning wounds. Minor deadwood. Minor bark wounds.	No action required.	20+	B2	197
															0



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rev	date:	amendments:	alt:
A	07/01/2021	RPA incursions added	E.H
B	06/07/2021	Topo updated.	E.H

client:
KIRKLEES

project:
DEMENTIA CARE FACILITY
KNOWL PARK

title:
TREE CONSTRAINTS PLAN
SHEET 1/2

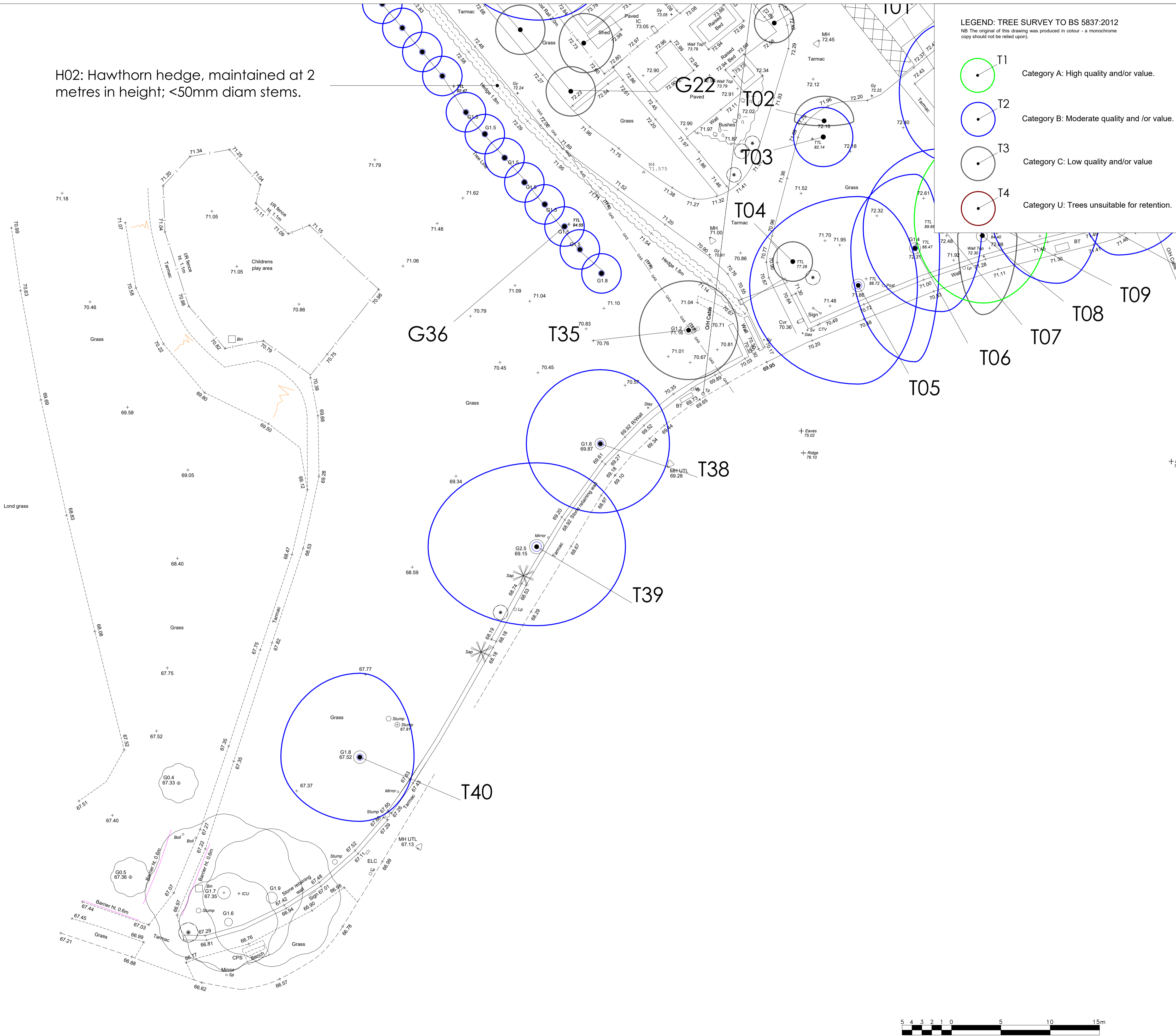
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PLANNING

date:	drawn:	number:
OCT'20	E.C.H	20-069-07
scale@A1:	checked:	revision:
1:200	T.G-W	B

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H02: Hawthorn hedge, maintained at 2 metres in height; <50mm diam stems.



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rev	date:	amendments:	alt:
(-)			

client:
KIRKLEES

project:
DEMENTIA CARE FACILITY
KNOWL PARK

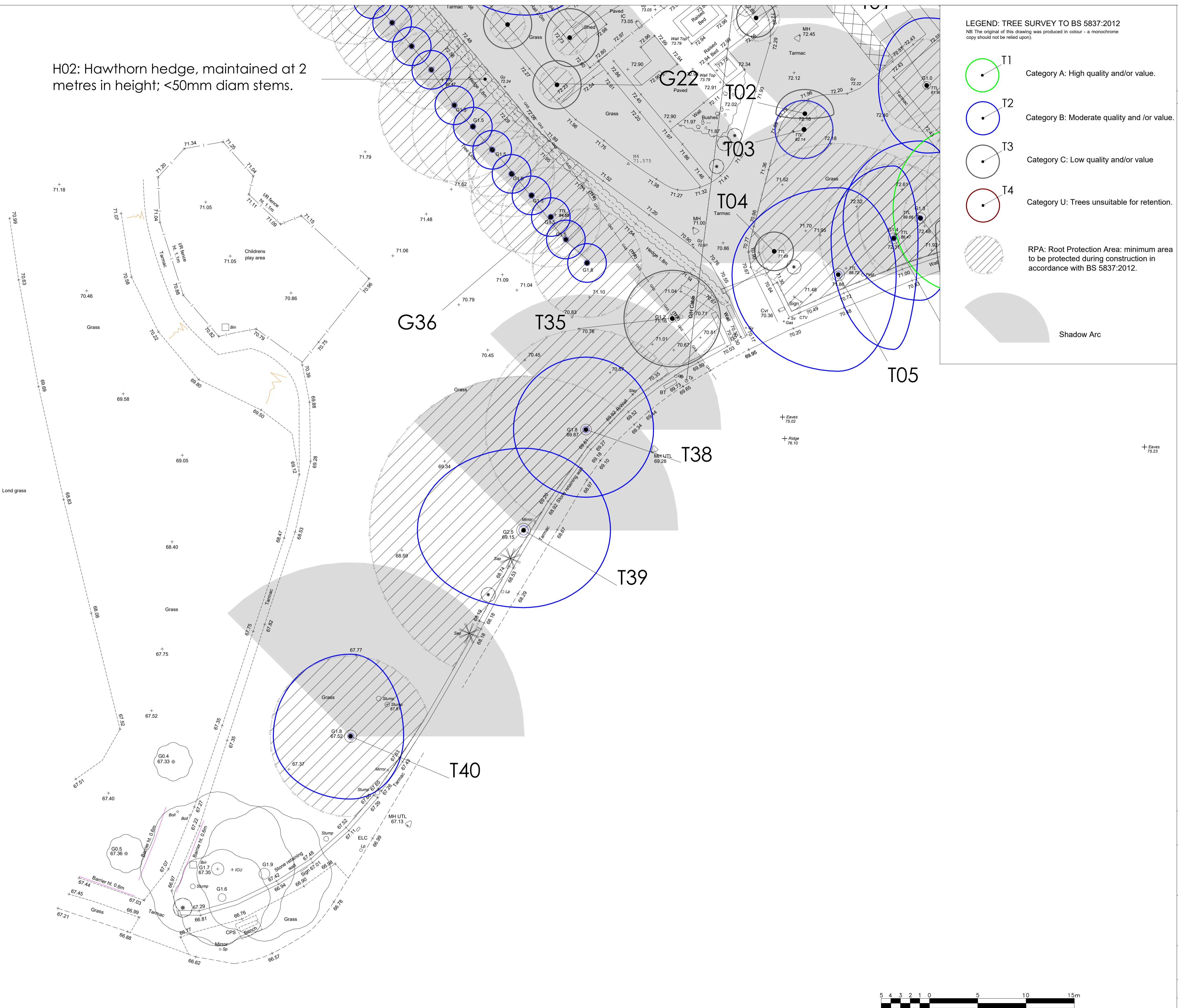
title:
TREE SURVEY PLAN
SHEET 2/2

status:
PLANNING

date:	drawn:	number:
JUL'21	E.C.H	20-069-16
scale@A1:	checked:	revision:
1:200	T.G-W	(-)

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[illegible]

NB The original of this drawing was produced in colour - a monochrome copy should not be relied upon).

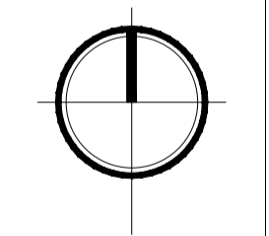
Category U: Trees unsuitable for retention.



Shadow Arc

Refer any query to office of origination.

rev	date:	amendments:	alt:
A	07/01/2021	RPA incursions added	E.H



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landscape design ltd

project:
DEMENTIA CARE FACILITY
KNOWL PARK

status:	PLANNING
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date: JUL'21	drawn: E.C.H	number: 20-069-17
scale@A1: 1:200	checked: T.G-W	revision: (-)

**Landscape
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