

**Arboricultural Report and Tree Condition Survey  
for the Proposed Works within the grounds of Lincoln's Inn,  
London, WC2A 3TL**

**Prepared for:**

**The Honourable Society of Lincoln's Inn**

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## **1.0 Introduction**

- 1.1 This report has been prepared to provide the arboricultural information necessary to inform the planning application for the proposed works within the grounds of Lincoln's Inn, London, WC2A 3TL.
- 1.2 The Honourable Society of Lincoln's Inn seek to refurbish and improve existing kitchen and catering facilities which are currently inadequate for the needs of the Inn. There is also a need to provide expansion space for the existing library alongside new advocacy training and educational facilities to enhance the function of the Inn. In providing these new facilities, the existing Under Treasurer's residence will need be relocated to another part of the Inn.
- 1.3 To achieve the above proposals, planning and listed building consent are being sought for five separate applications proposed at Lincoln's Inn:
- Application 1 Old Hall Kitchen Refurbishment  
(Submitted to LB Camden Ref 2015/2413/P & 2015/2517/L)
  - Application 2 Great Hall Refurbishment Works  
(Including Old Hall Temporary Kitchen Works)
  - Application 3 East Terrace Development
  - Application 4 Library Extension (including demolition of Under Treasurer's House)
  - Application 5 5 New Square (Change of use from Office B1 to Residential C3)
- 1.4 This report relates to Applications 2, 3 and 4, in summary the proposed works include the construction of 2 basement extensions, one to the eastern side of the Great Hall, and one to the northern side of the Library. The works include the demolition of the current Under Treasurers House and construction of a new library building and of a new Vice Chancellors House, along with works to the entrance to the Great Hall, East Terrace and new landscaping works. In addition there are temporary catering facilities proposed within Gatehouse Court and temporary construction accommodation proposed on Benchers' Lawn.
- 1.5 Within this report we will assess the impact of the proposed tree removals, the impact of the proposed works on the retained trees, provide information on the site investigations undertaken and to provide preliminary advice on the protection of the retained trees.
- 1.6 We first visited the site in January 2015 to give preliminary advice on the Arboricultural issues, we have subsequently revisited the site on a number of occasions to undertake a Pre-Development Tree Condition Survey (See Appendix 1), meet with the Local Authority Tree Officer, attend design team meetings and observe the air-spade investigation trenches and so forth.
- 1.7 The proposed development area for this planning application forms only part of the wider grounds of Lincoln's Inn. Only trees growing within or in close proximity to the site have been surveyed. The tree numbers used in this report refer to the tree numbers used in our Tree Condition Survey (See Appendix 1). This report relates to the Proposed Layout Drawing No. 597-19042 prepared by Rick Mather Architects.

## **2.0 Statutory Protection**

- 2.1 This site is located within the Bloomsbury Conservation Area, therefore all the trees with a stem diameter in excess of 75mm (unless exempt) are subject to protection under the Conservation Area status.
- 2.2 Due to the Conservation Area status, in the absence of any full planning consent which explicitly details the proposed works to the trees, a Section 211 notification will need to be submitted to London Borough of Camden for consent to undertake tree works.

## **3.0 Site Description**

- 3.1 The existing site and proposed works are described in detail within the planning submission including within the Design and Access Statement. The site includes the Great Hall and Library along with part of the grounds and gardens of Lincoln's Inn.
- 3.2 The most important trees growing with the proposed site are 8 London plane trees. 3 of the London planes are growing within the Bencher's Lawn, with 4 London plane trees to the northern side of the library and a single London tree within a lawn area Gatehouse Court. These London planes along with the other trees growing within the grounds of Lincoln's Inn but beyond the site boundary make an important contribution to the area.
- 3.3 The London Planes are mature trees that appear to be in good health. They have been subject to some limited past management with some historic crown lifting and light crown reduction works. They have a limited potential for significant further growth and are considered to have safe-remaining life-expectancies in excess of 40 years.
- 3.4 In addition to the London planes are 3 Mulberry trees growing within an area of lawn to the eastern end of the library.

## **4.0 Arboricultural Background Information**

- 4.1 For all trees but particularly those growing in urban areas, root growth is not predictable. Tree roots are opportunistic they grow most prolifically in areas where conditions are favourable and will be deflected by natural features and man-made structures, when hostile conditions are encountered root growth will be limited.
- 4.2 It is generally agreed that the majority of tree roots, even for a mature tree are found in the top 90cm of the soil and these roots are vulnerable to sudden changes in the rooting environment. These roots absorb the moisture and nutrients needed for growth and contrary to popular belief mature trees in the UK do not have a deep taproot that obtains moisture from great depth.
- 4.3 An ideal soil for tree root growth is about 50% pore space (in urban areas this is often significantly reduced), these pores, the spaces between soil particles, are filled with water and air.

- 4.4 Construction activity can compact the soil and can dramatically reduce the amount of pore space. This not only inhibits root growth and penetration but also decreases oxygen levels within the soil and reduces the available soil moisture that is essential to the growth and function of the existing roots.
- 4.5 For retained trees it is essential that the structurally important roots will remain undisturbed, these important larger roots radiate outwards from the trunk, they are characterised by being relatively few in number and tapering rapidly from the base of the tree. Even for mature trees they are only 2-3m in length, at this length they are likely to be 2-5cm in diameter and they have lost their rigidity and physical strength. (See Tree Root Systems AAIS 1995).
- 4.6 The two main possibilities for injury to trees during and following the construction process are from direct and indirect damage.
- Direct Damage can be defined as injury resulting from physical contact including contact with machinery or fire, and excavation of the root area.
  - Indirect Damage can be defined as injury resulting from activities that take place near the tree such as level changes, compaction of the soil, or contamination by chemical spillage in proximity to the root plate.
- 4.7 The British Standards Institute published BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. The document was developed through consultation with engineers, architects landscape architects, central government and developers and gives clear and current best practice recommendations and guidance on the principles to be applied to achieve a satisfactory juxtaposition of trees with structures. Where development is proposed, the standard provides guidance on how to assess the value and quality of trees and to decide which trees are appropriate for retention. The survey of trees as part of the feasibility assessment of a site is important to ensure that the trees inform the design process.
- 4.8 The BS 5837 2012 calculator for Root Protection Areas aim to ensure a sufficient area of the root system is protected. It aims to protect an area around each retained tree of sufficient size to maintain the health and vigour and ensure the longevity of the trees.
- 4.9 The Root Protection Area is not related to the Canopy Spread of the tree, in simple terms it is an area calculated as a multiple of the trunk diameter. For trees with a trunk diameter in excess of 1250mm the Root Protection Area is capped at a total area of 707m<sup>2</sup>. See Attached Tree Protection / Tree Removals Plan for further details.

## 5.0 Arboricultural Impact Assessment

### 5.1 Tree Removals

- 5.2 To allow for the proposed works to the main entrance to the Great Hall, the 2 evergreen magnolias T1 and T2, and a lime tree T3 are to be removed. The magnolias are a relatively recent planting, with both trees are in close proximity to the stone retaining walls and steps. The evergreen nature of these trees makes the entrance steps shaded and dark, and this results in algae growth and pigeon guano on the stone work and steps, with some water and structural damage observed to the stonework. From the outset of my involvement with this project on an aesthetic basis, not related to the issues above, I have considered these trees to be an unsuitable planting for this location and consider that they detract from the main entrance to the Great Hall.
- 5.3 The lime tree T3 is growing to the southern end of the Benchers Border. This tree is not part of the original planting, it is estimated to be approximately 100 years of age, (the tree is not present in images from 1910). T3 is considered to be a relatively poor quality tree, historically it has had lower secondary growth removed which has resulted in a swollen unbalanced lower trunk with a number of wounds and cavities between ground level and 1.6m above ground level. The tree has been subject to past management by crown reduction works. It is my opinion that when walking from the eastern and northern side of New Square it obscures the view of the Great Hall and detracts from the setting of the main entrance to this building.
- 5.4 Following our site meeting with Nick Bell, London Borough of Camden Council Tree Officer we appointed John Harraway of Harraway Trees to undertake an assessment of the extent of any decay using a Picus Sonic Tomography unit; and a Resistograph decay detecting drill in selected locations of the lower stem. This technology allows areas of internal decay to be determined.
- 5.5 This report described T3 as *'the lower stem is irregular in outline, due to the removal years ago of two ascending stems on the west side, towards the Great Hall. Deterioration is evident within both wounds and one has formed a cavity, which could be probed with a thin steel rod to a depth of some 40cm'*. The inspection further assessed the cavities associated with the removal of the lower stems, and assessed the structural integrity of the lower stem. These inspections did not find any significant cavities or decays and recommended that the tree was re-assessed in 3 years.
- 5.6 It is my opinion that the proposed removal of T3 significantly improves the setting of the main entrance to the Great Hall and allows the proposed new footpath to the eastern side of the Benchers Border to link with the existing footpath running to the northern side of New Square.
- 5.7 The removal of the Lime tree T3 can be mitigated by the planting of a new tree within the gardens of Lincoln's Inn. This planting will serve to improve the age and species diversity of the tree resource.

- 5.8 In addition a low quality 4m high Cytisus shrub growing to the northern side of the Captain's Gate needs to be removed to allow for access during the proposed works. This insignificant shrub is not worthy of consideration during the planning process.
- 5.9 The principal of removing trees to allow for an appropriate design is supported in all relevant planning policies, planning guidance and in BS5837 (2012) which states that:
- 5.1.1 The constraints imposed by trees, both above and below ground (see Note to 5.2.1) should inform the site layout design, although it is recognized that the competing needs of development mean that trees are only one factor requiring consideration. Certain trees are of such importance and sensitivity as to be major constraints on development or to justify its substantial modification.*
- 5.10 It is my opinion that trees to be removed are not of '*such importance or sensitivity to be major constraints on development or justify its substantial modification*'. It should be noted that the condition of the trees was assessed early in the design process, and this information informed the proposed works.
- 5.11 With regard to the quality and amenity of the retained London Plane trees, and the low quality of the trees to be removed it is my opinion that the proposed tree removals will not have a significant negative impact on the character and appearance of the area, or the setting of the buildings or wider area.
- 5.12 **Tree Pruning**
- 5.13 The retained trees are subject to regular management and the majority of the trees do not pose a physical constraint to the proposed works.
- 5.14 To allow for the proposed works only very limited tree pruning works are required. To allow the installation of the temporary catering facilities it is possible that the London Plane T16 growing within Gatehouse Court will require a very light crown lifting. These works would involve pruning of very small branches which have been previously reduced and will not be detrimental to the health or appearance of this tree.
- 5.15 The London Plane T12 has a canopy that extends over the proposed library basement, the clearance height from ground level to the lowest overhanging branch is currently approximately 6m. T12 has been subject to past pruning and if this limb conflicts with the piling works, it is our opinion that it can be reduced without detriment to the overall health or appearance of the tree.
- 5.16 The Mulberry T7 has a canopy that extends to the south with a clearance height of approximately 2m over the existing hardstanding. We understand that there is a current Conservation Area Section 211 Notification for the pruning of this tree. These works are not associated with the proposed works but will serve to improve the clearance beneath the canopy. To prevent damage from passing vehicles we recommend that the Tree Protection Fencing is located to protect the overhanging canopy of this tree.

#### **5.16 Arboricultural Impact Assessment of Construction Works**

5.17 We have been provided with the copy of the Proposed Layout Drawing (Drawing No. 597-19042) and a copy of the Site Logistics Plan (Drawing No. 597-10310 Rev P2) both prepared by Rick Mather Architects. The Site Logistics Plan has been prepared with input from various members of the team including the Structural Engineers. It is important to note that the site set-up as shown on the logistics plan is indicative at this stage and the final layout and design will be subject to further discussion before works commence.

5.18 Preliminary tree protection measures are outlined in Section 6.0 of this report. To avoid damage to retained trees it is proposed that all works within 15m of any retained tree are subject to a detailed method statement to be reviewed and agreed by the Arboricultural Clerk of Works. The follow sections of this report provide an assessment of the potential impact of the proposed works on the retained trees.

#### **5.19 Arboricultural Impact of Application 3 ; East Terrace Development**

5.20 The proposed Great Hall basement extension is located to the eastern side of the Great Hall. This propped basement is located beneath the East Terrace, with the eastern most wall of the basement located a minimum distance of 18.4 from the London planes T4-T6. The temporary grading works associated with the formation of this wall are located a minimum distance of 16.5m from the London Planes.

5.21 The proposed excavation works are located beyond the 15m radius Root Protection Area (RPA) as recommend in BS5837 (2012). With regard to its distance from the London plane trees, subject to appropriate tree protection it is my opinion that subject to appropriate tree protection measures this basement can be constructed without impacting on the rooting environment of the London planes T4-T6.

5.22 During the design process the location of the drainage runs and soak-away has been revised to reduce their potential to impact on the rooting environment of the London planes T4-T6. The proposed drainage run is located on the very extremity of the 15m RPA radius and the soakaway is now located outside the RPA within the existing hardstanding Bencher's car parking area. The excavation of a trench almost 15m from the retained trees is likely to impact on smaller feeder roots. These roots are relatively short-lived roots which will regrow once the excavation has been backfilled. The loss of this part of the root system can be mitigated by irrigation and mulching of the remaining open ground.

5.23 With regard to the distance of the drainage run from the London planes T4-T6, it is our opinion that subject to a detailed method statement to be agreed with the Arboricultural Clerk of Works, the proposed drainage excavations can be achieved without detriment to the health, stability of longevity of the London planes.



**5.24 Arboricultural Impact of Application 4; Library Extension (including demolition of Under Treasurer's House)**

5.25 The proposed Library Basement Extension is located to the northern side of the Library. This basement is located within the theoretical Root Protection Area of the London plane T12.

5.26 To help inform the proposed design and assess the arboricultural impact of the proposed basement on the London Plane T12 we undertook some air-spade investigations along the outside edge of the north-eastern corner of the proposed basement. See Plan and Photographs in Appendix 2 showing the air-spade investigations.

5.27 The air-spade works were undertaken to excavate a trench to a depth of 1000mm extending to the south and west of the corner for a distance of 4m whilst retaining any roots over 25mm diameter that were encountered in the trench.

5.28 The area of the trenches is a gravel hardstanding, they were excavated to a depth of 1000mm, the top 150mm was gravel and MOT type 1, this overlaid a compacted fill consisting of stone and brick with densely compacted dusty fill/soil. To the very north-eastern corner of the excavation a service run and concrete haunching was encountered at approximately 400mm below ground level. Within the trenches only very occasional roots were encountered with no roots over 5mm in diameter observed. The trenches were inspected by Nick Bell the London Borough of Camden Tree Officer.

5.29 With regard to the ground conditions encountered, the absence of roots in the area of excavation it is our opinion that subject to appropriate tree protection measures, (which are outlined in Section 6 of this report) the proposed basement can be constructed without detriment to the health of the retained trees.

**5.30 Arboricultural Impact of the Proposed Temporary Accommodation**

5.31 To allow the wider site to continue to function and to restrict the working area the site accommodation for the basement works is to be located within Bencher's Lawn and the temporary catering facilities are to be located within Gatehouse Court to the east of the Old Hall respectively.

5.32 Bencher's Lawn and the open ground within Gatehouse Court area are currently well maintained lawn and are subject to regular irrigation. With regard to the size and age of the trees and the surrounding hardstanding and built form, these areas are of vital importance to the root system of the London Planes T4-T6 and T16. All works within these areas has the potential to impact on the nearby trees and to avoid damage to retained trees. It is proposed that all works within 15m of any retained tree including the delivery and installation of the temporary accommodation are subject to a detailed method statement to be reviewed and agreed by the Arboricultural Clerk of Works.

- 5.33 We have been provided with The Temporary Catering Facilities Ground Floor Layout Plan (Drawing No. 597-12800-P6 dated February 21015). The facilities are located on the existing hardstanding and the lawn area within Gatehouse Court. Access into the temporary facilities will be directly from the existing hardstanding.
- 5.34 We have been informed that the Temporary Catering Facilities are to be founded on legs based on spreader plates. This set-up will help ensure that the underlying soil remain uncompacted and to maintain a favourable rooting environment it is proposed that the open ground beneath the accommodation will be subject to mulching with 100mm of well composted woodchip and controlled irrigation with a leaky pipe system. No mulch should be laid within 1000mm of the trunks and buttress roots of the London Planes.
- 5.35 The temporary construction accommodation within Bencher's Lawn consists of double stacked Portakabins to the west of and running parallel to the London planes T4-T6 with pedestrian access and steps to the western side. These works are all within the RPA of the London planes.
- 5.36 The foundations for the temporary accommodation need to be designed to minimise excavation works within the Root Protection Area of the retained trees. Currently it is proposed that the Portakabins are founded on helical screw-piles or mini-piles. If this option is pursued then the location of the piles will need to be hand excavated to a depth of 1200mm to help ensure that large roots are not damaged by these works. The location of the piles should be marked out and hand excavations undertaken for all the pile locations. If roots over 25mm diameter are encountered the excavation should only continue if the larger roots can be retained and protected. Once all locations have been excavated, an informed assessment of the cumulative impact of the proposed works can be made, depending on the number and size of roots encountered the decision will need to be made regarding to moving pile locations or severing roots. This decision will be made in conjunction with the London Borough of Camden Tree Officer.
- 5.37 We recommend the accommodation is designed to include a void beneath the cabins, which will again ensure that a favourable rooting environment is maintained by mulching with 100mm of well composted woodchip and controlled irrigation with a leaky pipe system. No mulch should be laid within 1000mm of the trunks and buttress roots of the London Planes.
- 5.38 All the temporary accommodation must be specified to avoid any excavation for service connections.
- 5.39 For all temporary accommodation the delivery and installation of the buildings need to be undertaken in a tree-friendly manner that considers the above and below ground constraints posed by the trees. All works associated with the temporary accommodation will be reviewed by the ACoW prior to final specification being agreed.

**5.40 Arboricultural Impact of the Proposed Temporary Access.**

- 5.41 During all construction works access from the public highway will be from the Captain's Gate, the proposed library basement will prevent the existing hardstanding from being utilised and a link will need to be provided across the lawn area to connect with the existing service road and hardstanding.
- 5.42 Where the proposed temporary hardstanding crosses open ground, this will be constructed using a 'No-Dig' specification which does not require excavation below the existing ground level for either make-up or for the edging. The temporary hardstanding will need to prevent compaction of the underlying soil, and provide a permeable and porous sub-base and surface to allow moisture to reach the ground and the gaseous exchange necessary to maintain live roots.
- 5.43 We recommend that a 'No-Dig' flexible cellular confinement system such as 'Infraweb' or a rigid No-Dig three-dimensional cellular system such as 'ArborRaft' is utilised. The detailed design of this temporary hardstanding will require engineering input based on the CBR of the soil to ensure it can withstand the predicted traffic loads.
- 5.44 To the north-east and east of the proposed basement works, the existing service road and hardstanding is located within the Root Protection Area of retained trees and it is essential that this surface is retained to prevent damage to any underlying roots.
- 5.45 The make-up of the existing hardstanding will be investigated to determine its loadbearing characteristics and if necessary will be upgraded by a sacrificial surface over the existing hardstanding. If this surface breaks up during construction works a suitable sacrificial loadbearing surface will be laid over the existing service road.

**6.0 Tree Protection Measures**

- 6.1 As recommended in BS5837 (2012) subject to planning the Tree Protection Measures outlined in this section of the report will be addressed in detail based on the detailed drawings, construction programme and method statements to be prepared. This matter can be addressed by use of a standard planning condition.
- 6.2 An Arboricultural Clerk of Works (ACoW) as defined in BS5837 (2012) will be appointed to assist with ensuring the protection of the retained trees.
- 6.3 The ACoW will be responsible for briefing the Site Manager of the main contractor, on the tree protection issues relating to the proposed development prior to works commencing on site. This briefing will include a review of the proposed works, discussion of the construction methodology and ensuring that the proposed works cause minimal damage to the rooting system and rooting environment of the retained trees.

- 6.4 All site operatives will be briefed on the Tree Protection Issues as part of the induction process. The tree protection measures will be explained to all contactors and sub-contractors who will read, and sign the induction forms before they undertake any works on site.
- 6.5 The Arboricultural Clerk of Works (ACoW) role shall be to:
- a. To assess the specification and methodology of the proposed works and ensure these works have the minimum impact on the retained trees.
  - b. Ensure the Tree Protection Fencing and Temporary Hardstanding is installed correctly and maintained throughout the project.
  - c. Brief the workers on the necessity to protect the retained trees.
  - d. To ensure the agreed methodology is followed by direct on-site supervision.
  - e. To provide direction on tree protection issues as they arise.
  - f. To monitor and photograph the works undertaken.
- 6.6 Site visits will also be undertaken during the proposed works at a maximum interval of 4 weeks a mix of scheduled and unannounced site visits will serve to identify any damage to the Tree Protection Fencing, poor working practices, any potential problems and points of conflict between the construction process and the health of the trees.
- 6.7 During these visits any changes to the proposed works will be discussed, their impact assessed and recommendations for best practice will be outlined. After each of these visits a copy of the report should be sent to the Site Agent, Local Authority Tree Officer and Client. The remedial action undertaken will be recorded on the next visit. These reports will include photographs.
- 6.8 The ACoW will report any non-conformance with regards to the agreed construction methodology and will also record any accidents or incidents in relation to the protection of the trees.
- 6.9 To deal with any emergencies involving damage to trees, the Arboricultural Clerk of Works will provide a contact number that will be answered during all the hours of works on site. The London Borough of Camden Arboricultural Officer will be informed of any accidents or emergencies involving trees.
- 6.10 Prior to construction works commencing the Tree Protection Fencing to be installed. The tree Protection Plan will be drawn up when all site set-up information is available.
- 6.11 Within the fenced-off Construction Exclusion Zone (CEZ) there will be
- No excavation by any means, no level changes + or -
  - No storage of plant or materials
  - No storage or handling of any chemicals including cement washings
  - No Machinery or Vehicular Access
  - Underground service routes will be located outside the Fenced off area
  - No fires within 15m of any retained trees

- 6.12 Dismantling the protection barriers will be required to allow completion of final landscaping. Supervision of this exercise and control of the landscaping thereafter will be administered by the appointed ACoW.
- 6.13 The removal of the Tree Protection Fencing is not an opportunity for machinery to access the previously fenced off area. No further excavation will be carried out during this process and soils levels will not be raised above that existing by greater than 100mm and not at all within 2m of the trunk.
- 6.14 Dismantling the protection barriers around retained trees may be required to allow completion of landscaping works. The removal of the Tree Protection Fencing is not an opportunity for machinery to access the previously fenced off area.
- 6.15 During the landscaping works within the previously fenced off Construction Exclusion Zone:
- Landscaping of the existing open ground shall be by manual methods only.
  - Within the Construction Exclusion Zone no machinery is to be used for cultivation, removal of soil or additional of soil.
  - For areas of open ground original soil levels shall be unchanged, without import of topsoil or removal of existing soil.
  - For new planting use of hand tools.
  - Mulch may be applied to a maximum 100mm depth. No mulch should be piled up against the trunk of retained or newly planted trees.

## **7.0 Conclusion**

- 7.1 The British Standard BS5837:2012 contains clear and current recommendations for a best practice approach to the assessment, retention and protection of trees on development sites. This application has followed and will continue to follow this guidance by seeking arboricultural advice to inform all aspects to the proposal that may impact upon trees.
- 7.2 The trees to be removed to allow for the proposed development are of relative poor quality and their removal does not represent a significant loss to public amenity nor will the removals impact on the character and appearance of the area.
- 7.3 The proposed landscaping scheme will serve to reduce the impact of the tree removals and will help to improve the age and species diversity of the tree resource within the site. The new planting will also increase the contribution the on-site tree resource makes to the streetscape.
- 7.4 The successful protection of the retained trees during the proposed development works can be achieved by continuing to follow the guidance outlined in this report and in BS5837 (2012).
- 7.5 Based on the known tree species characteristics and the existing site conditions it is my opinion that subject to appropriate tree protection measures the proposed works will not have a negative impact on the health, stability or longevity of the retained trees.

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21<sup>st</sup> July 2015

**Appendix 1**

**Tree Condition Survey**

**Tree Survey Plan**

## **Pre-Development Tree Condition Survey at Lincoln's Inn, London, WC2A 3TL**

**Prepared  
for**

**The Honourable Society of Lincoln's Inn**

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Pre-Development Tree Condition Survey at Lincoln's Inn, London, WC2A 3TL

## 1.0 Introduction

This tree condition survey has been compiled on behalf of The Honourable Society of Lincoln's Inn following instructions received from Rick Mather Architects, the site was visited in January 2015 and an assessment of the trees' condition was made in accordance with BS5837 (2012) 'Trees in relation to design, demolition and construction – Recommendations'.

## 2.0 Survey Methodology

We have surveyed all the individual trees and groups of trees located close to The Great Hall and Library and the London Plane to the south of the Old Hall. The objective of the survey is to collect tree data relevant to the proposed works at the site and to categorise individual trees or tree groups in accordance with BS 5837 (2012) 'based on their condition, quality and future potential.

The purpose of the categories within BS5837 2012, is not to determine whether retention of trees is desirable, '*The purpose of the tree categorization method, which should be applied by an arboriculturist, is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.*' (BS5837 2012 Section 4.5.2). This survey should therefore be regarded as an initial appraisal and observations, assessments or recommendations relating to tree protection zones, remedial tree works, protective fencing, foundation design, material specification are beyond the scope of this report.

The location of the trees is shown on the attached drawing. A detailed inspection of individual trees with respect to decay, defects and hazard is not included. However, trees found to be in a structurally dangerous condition are identified. The trees have been measured using a digital clinometer and a laser measurer.

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TABLE 1

Tree No.	Tree Tag No.	Species	Hgt (m)	Dia. @ 1.5m (m)	No of stems	CS N (m)	CS E (m)	CS S (m)	CS W (m)	ER CY	Vig.	Form	Age Class	Description	Proposed Work	BS Cat
T1	-	Magnolia (Magnolia grandiflora)	9	270 280	2	3	3	3	2	SM	A	A	40+	A twin-stemmed, evergreen semi-mature tree growing close to the western side of the steps to the main hall. This tree is growing in a narrow strip of open ground on the raised terrace. Its proximity to the stone steps has contributed to some damage to the stonework, and contributes to the damp slippery steps which are covered in pigeon faeces. It is my opinion that this tree detracts from the entrance to the Grand Hall.	Remove to allow for improvement works to the entrance.	C1
T2	-	Magnolia (Magnolia grandiflora)	11	600	1	9	7	8	9	SM	A	A	40+	A semi-mature evergreen tree growing within Benches Border to the eastern side of the steps to the main hall. It is my opinion that this dark evergreen tree detracts from the entrance to the Grand Hall.	Remove to allow for improvement works to the entrance.	C1
T3	976	Lime (Tilia platyphyllos)	18	920	1	5	6.5	4.7	5	M	A	A	20-39	A mature tree growing to the southern side of the steps to the Grand Hall. This tree has been subject to past pruning by crown reduction works. Historically it appears that secondary stems to the northern side have been removed leaving a swollen lower stem with some small cavities. This is a relatively poor quality tree.	Remove to allow for improvement works to the entrance.	B2
T4	975	London plane (Platanus x acerifolia)	30	1440	1	10	9	11	11	M	A	A	40+	A mature London plane growing within the lawn area to the southern side of the Great Hall. T4 has a small area of dysfunction bark on the northern side of the lower trunk	No works	A1
<p><i>Note 1: The London planes are a notable feature within this site, with these trees making a significant contribution to the character and appearance of the area. Historically this tree has been subject to past management. This tree has a limited potential for significant further growth and has a long potential remaining life-expectancy. We are aware that Massaria (Splachnonema platani) has been reported in this area. This disease was first noted in London in 2007 and can result in the failure of large limbs. Symptoms of this disease are found on the upper side of branches and consequently inspections from the ground are of limited value. Massaria is thought to be a relatively weak pathogen and its effects long-term may not be too damaging on the overall population of London planes if managed appropriately. Canker Stain of Planes (Ceratocystis platani) is a fungal disease which is spreading northwards through Europe and has the potential to impact Planes on a par with Dutch elm disease upon the elm population. Canker Stain of Planes can be spread through pruning and it is now essential that pruning tools are sterilised. We recommend that the condition of these trees is regularly assessed and that these trees are also regularly inspected for any symptoms of these diseases.</i></p>																
T5	974	London plane (Platanus x acerifolia)	30	1260	1	11	7	10	10	M	A	A	40+	As Per T4. See Note 1	No works	A1

Pre-Development Tree Condition Survey at Lincoln's Inn, London, WC2A 3TL

Tree No.	Tree Tag No.	Species	Hgt (m)	Dia. @ 1.5m (m)	No of stems	CS N (m)	CS E (m)	CS S (m)	CS W (m)	ER CY	Vig.	Form	Age Class	Description	Proposed Works	BS Cat
T6	973	London plane (Platanus x acerifolia)	30	1450	1	11.5	12.5	14	7.5	M	A	A	40+	As Per T4. See Note 1	No works	A1
T7	972	Mulberry (Morus nigra)	8	370 390	2	5.5	2.5	5	9	M	A	A	40+	A mature twin-stemmed tree growing within the lawn area to the south of the library. This tree has loss a number of limbs and has subsequently been cable braced and crown reduced. It should be noted that mature Mulberry trees have a tendency to drop limbs, lean and collapse but will continue to grow in their prone state. We understand that there is a Conservation Notification, submitted by others in relation to the cable bracing, for the reduction of the overhanging canopy	No works	B1
T8	-	Mulberry (Morus nigra)	7	120 100	M/s	1.5	2	2	2	SM	A	A	40+	A small, semi-mature, multi-stemmed, Mulberry tree. Recommend some formative pruning to improve its long-term future.	No works	C1
T9	971	Mulberry (Morus nigra)	14	570	1	5	5	7	7	M	A	A	20-39	A mature multi-stemmed tree growing within the lawn area to the south of the library. This tree has been crown reduced to clear the building line.	No works	B1
T10	970	London plane (Platanus x acerifolia)	28	1800	1	17.5	15.5	13.5	16	M	A	A	40+	A mature London plane growing within the lawn area to the south side of the Library. This tree has a small cavity on the northern side of the lower trunk. See Note 1.	No works	A1
T11	969	London plane (Platanus x acerifolia)	28	1500	1	13.5	13	15.5	13.5	M	A	A	40+	A mature London plane growing within the lawn area to the eastern side of the Library. See Note 1.	No works	A1
T12	967	London plane (Platanus x acerifolia)	28	1400	1	12	15	14.5	8.5	M	A	A	40+	A mature London plane growing within the lawn area to the eastern side of the Library. The lower limbs have been reduced to the western side. See Note 1	No works	A1
T13	966	London plane (Platanus x acerifolia)	28	1410	1	14.5	13.5	12	12.5	M	A	A	40+	A mature London plane growing within the lawn area to the eastern side of the Library. See Note 1.	No works	A1

Pre-Development Tree Condition Survey at Lincoln's Inn, London, WC2A 3TL

Tree No.	Tree Tag No.	Species	Hgt (m)	Dia. @ 1.5m (m)	No of stems	CS N (m)	CS E (m)	CS S (m)	CS W (m)	ER CY	Vig.	Form	Age Class	Description	Proposed Works	BS Cat
T14	-	Maple (Removed) (Acer sp)	5	150	m/s	4	4	2	0	SM	P	P	10-20	A poor quality, semi-mature tree growing to the eastern side of the vehicle entrance to Newman's Row. The lower tight union is failing, and the canopy is unbalanced to the western side. <b>This tree has failed and been removed since our initial survey.</b>	Missing	C1
T15	-	Californian Lilac (Ceonothus sp.)	5	200	m/s	3	2	3	3	M	A	A	10-20	A mature shrub growing to the eastern side of the vehicle entrance to Newman's Row.	No works	C1
T16	970	London plane (Platanus x acerifolia)	22	1390	1	16	16	16	14.5	M	A	A	40+	A mature tree growing within the lawn area to the southern side of the Old Hall. A service road runs to the east, south and west of this lawn area, with the tree is surrounded on all sides by buildings. This tree has developed a broad spreading canopy which has been managed by crown reduction works. See Note 1.	No works	B2

## Cascade chart for tree quality assessment

<b>Trees unsuitable for retention (See Note)</b>				
<b>Category and definition</b>	<b>Criteria (including subcategories where appropriate)</b>			<b>Identification on plan</b>
<b>Category U</b> 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"> <li>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 category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)</li> <li>Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline</li> <li>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</li> </ul> NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see <b>4.5.7</b> .			<b>Red</b>
<b>Trees to be considered for retention</b>	<b>1 Mainly arboricultural qualities</b>	<b>2 Mainly landscape qualities</b>	<b>3 Mainly cultural values, including conservation</b>	
<b>Category A</b> <b>Trees of high quality</b> with an estimated remaining life expectancy of at least 40 years	<b>A1</b> 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)	<b>A2</b> Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	<b>A3</b> Trees, groups or woodlands See Table 2 of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	<b>Green</b>
<b>Category B</b> <b>Trees of moderate quality</b> with an estimated remaining life expectancy of at least 20 years	<b>B1</b> 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	<b>B2</b> 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	<b>B3</b> Trees with material conservation or other cultural value	<b>Blue</b>
<b>Category C</b> <b>Trees of low quality</b> with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	<b>C1</b> Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	<b>C2</b> 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	<b>C3</b> Trees with no material conservation or other cultural value	<b>Grey</b>

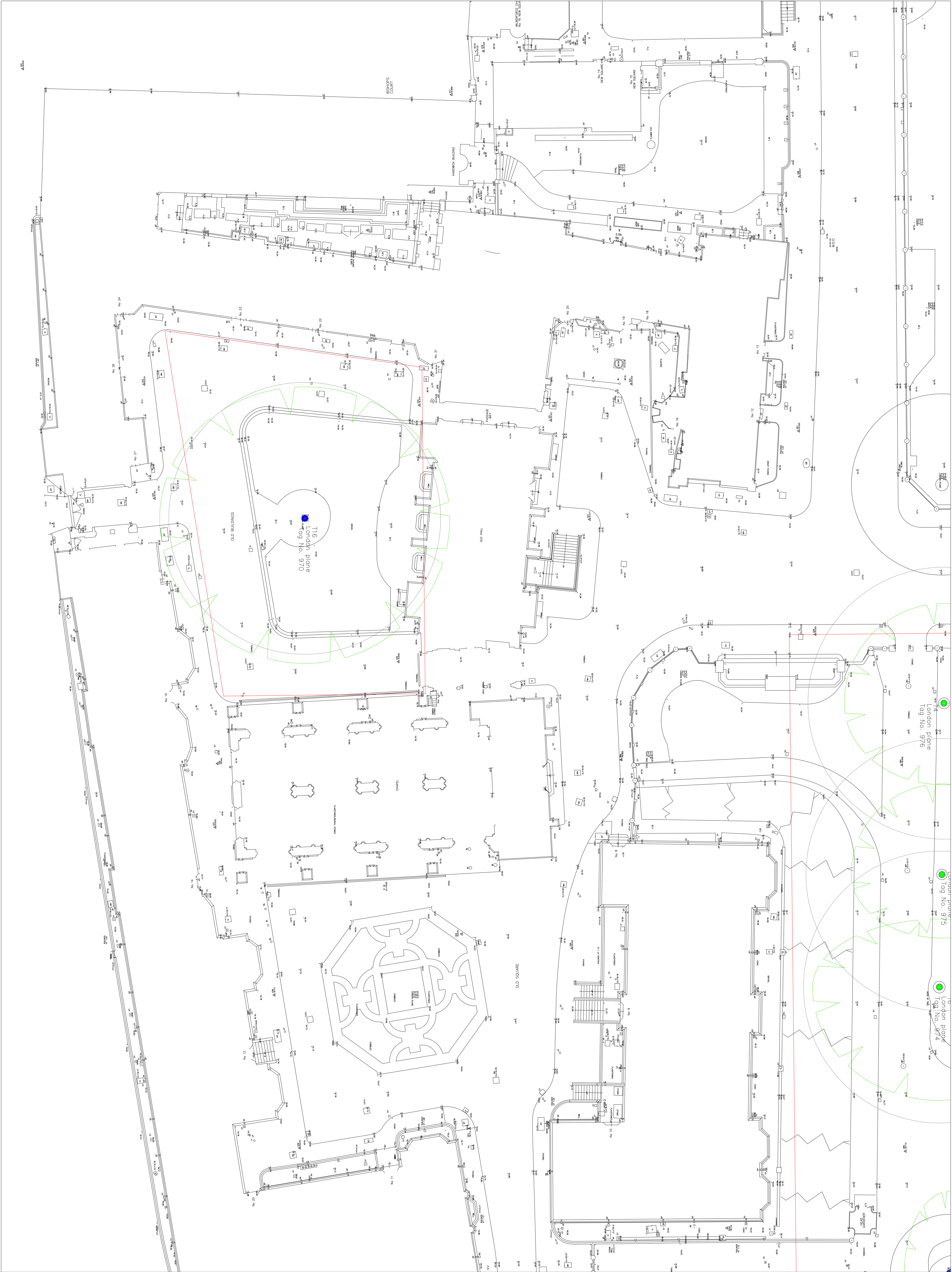
From BS 5837 (2012) Trees in relation to design, demolition and construction – Recommendations

## **Tree Survey Plan**









1

### Tree Survey Key

Extent of Tree Canopy  
Theoretical Root Protection Area (BS5837)  
BS 5837 Category (See Below)  
Tree Survey Number

The radline shows the area surveyed for this Tree Survey. The theoretical undisturbed Root Protection Area is shown as both a circle and a square. These Root Protection Areas are the same size in area.

BS 5837 Category

(See Tree Survey for further details)

Category U Red Stem Disc  
Those in such a condition that any existing value would be lost within 10 years and which should in the current context, be removed for reasons of safety or conservation management.

Category A Green Stem Disc  
Those of high quality and value - in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).

Category B Blue Stem Disc  
Those of moderate quality and value - those in such a condition as to make a significant contribution (a minimum of 20 years is suggested).

Category C Grey Stem Disc  
Those of low quality and value - currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150 mm.

### The Honourable Society of Lincoln's Inn

### Draft Copy Sheet 1 Tree Survey For Great Hall and Library at Lincoln's Inn

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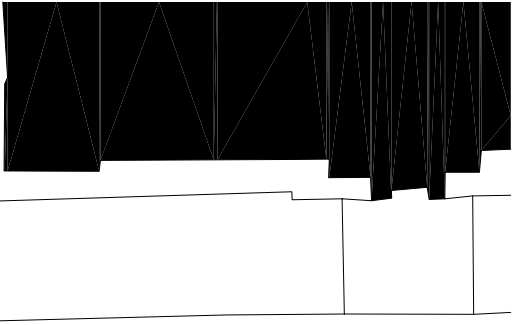
Scale 1 : 200 @ A1  
Date 22/01/2015  
Project No. 0115-1706  
Dwg. No. TSP-01

Drawn by PW  
Checked by \*



## **Air-spade Investigations Plan**

## **Air-spade Investigations Photographs**



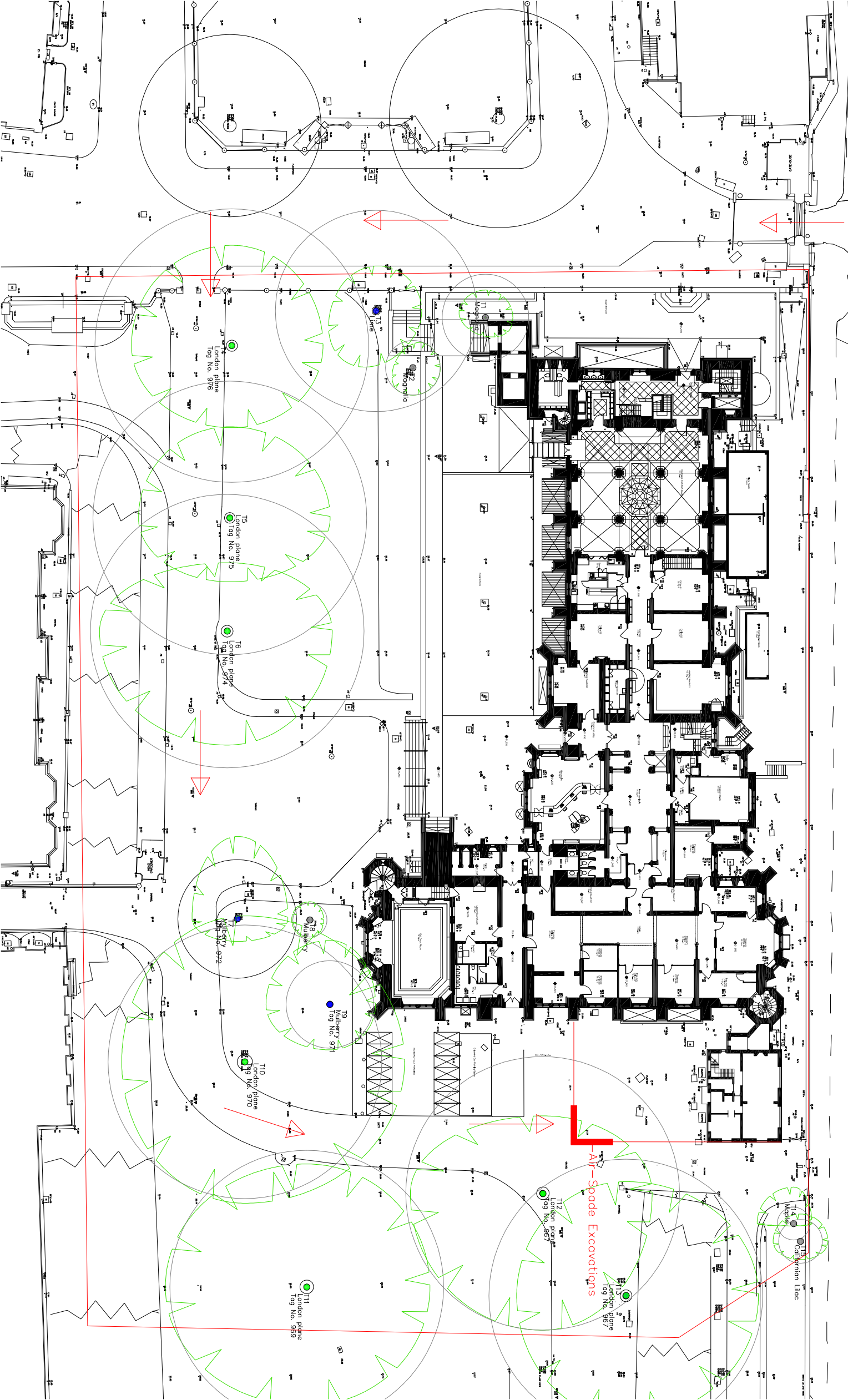
Lincoln's Inn Field

LINCOLN'S INN FIELD

Serle Street

Newmans Row

NEWMAN'S ROW





Photograph 1 (29-06-2015)  
View from the corner of the trench looking westwards along the east-west trench



Photograph 2 (29-06-2015)  
View from the corner of the trench looking southwards along the north-south trench





Photograph 3 and 4 (29-06-2015)  
2 Views into the trench showing the densely compacted inert fill material and absence of roots.