Arboricultural impact analysis

Trees

Adjacent to

Proposed development site
New End Square,
Hampstead,
London
NW3 1LS

for

Dominic McKenzie Architects

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1. Introduction

1.1 This report contains a detailed appraisal of 3 trees standing adjacent to the property boundary of a proposed residential development site on the south side of New End, Hampstead, London NW3 1LS, immediately to the east of its junction with a public footpath connecting Flask Walk to New End.

1.2 The report considers the health and safety of the trees under their current growing conditions and assesses the likely impact of the proposed development measured against the advice and guidance set out in *BS5837 2012: Trees in relation to design, demolition and construction – Recommendations.*

1.3 The site inspection for the tree survey on which this report is based took place on the afternoon of Thursday 17 March 2015 in dry, bright conditions.

1.4 This report was commissioned by Dominic McKenzie Architects on behalf of the client.

1.5 I have been provided with the following Dominic McKenzie Architects drawings and documents in digital (pdf and dwg) format:

160121_00_P_03 – Existing and proposed site context plans
160121_00_P_04 – OS plan
160121_00_P_09 – Existing ground floor plan
160121_00_P_15-19 Rev A – Proposed floor and roof plans
160121_00_P_36-38 & 50 – Proposed elevations
160121_00_P_40 &41 – Existing sections AA & BB
160121_00_P_50 Rev A & 51- Proposed sections AA & BB
151112 - Visuals

1.6 The **Tree survey plan** in **Appendix a** is based on Dominic McKenzie Architects' Drawing No. 160121_00_P_09 – Existing ground floor plan, with additional on-site measurements.

1.7 The **Tree constraints plan** also in **Appendix a** is based on Dominic McKenzie Architects' Drawing No. 160121_00_P_16 Rev A – Proposed ground floor plan with the footprint of the proposed basement-level accommodation (see Drawing No. 160121_00_P_15 Rev A) overlaid.

2. Background information

2.1 Site layout, boundaries and topography

2.1.1 The site is a compact, irregularly shaped parcel of land bounded by a footpath to the west, by the gable end wall and rear garden boundary of an adjacent dwelling (7 Flask Cottages) to the south, and by the rear and side gardens of 26 New End Square, a 3 storey apartment block, to the north and east.

2.1.2 The site is currently occupied by 6 garages and an associated hard-surfaced access area.

2.1.3 New close-boarded fencing runs along the full length of the eastern site boundary. A new timber frame and plywood panel hoarding runs along the northern and the greater part of the western boundary. The side and rear elevations of the garage block demarcate the southern and the rest of the western boundary.

2.1.4 The site slopes down quite steeply to the south and more gently from west to east. The maximum difference in levels, between the centre of the northern boundary and roughly the mid-point of the northern elevation of the garage block, is about 900mm.

2.1.5 The **Tree survey plan** in **Appendix a** shows the existing site layout and the locations of the 3 trees referred to in this analysis.

2.2 Geology and soils

2.2.1 According to British Geological Survey (BGS) open-source data, the site is located upon the Palaeogene Claygate Member, clays and fine sands of similar age to the underlying deep London Clay bedrock.

2.2.2 No soil sampling was carried out on site.

2.3 Planning constraints

2.3.1 The property is within the London Borough of Camden Hampstead Conservation Area.

2.3.2 At time of writing it is not known if any of the trees referred to in this report are covered by a Tree Preservation Order (TPO).

2.4 The trees

2.4.1 The **Tree survey schedule** in **Appendix a** describes in detail the 3 trees referred to in this report.

2.5 The proposed development

2.5.1 The principal elements of the proposed development are:

- Demolition of the existing garages and their replacement with a detached dwelling on 4 levels – basement, lower ground floor, upper ground floor and first floor, including an integrated garage
- Associated external works including the construction of a walled garden

3. Analysis

3.1 General

3.1.1 The **Tree constraints plan** in **Appendix a** shows the recommended Root Protection Areas (RPAs) of the 3 trees considered in this report and highlights the primary potential area of conflict between the proposed development and trees, namely conflicting demands for space at and below ground level.

3.1.2 The RPAs of two of the trees (001 and 002) have been re-configured to take partial barriers to the lateral spread of roots into account. It has been assumed that lateral root spread into the footprints of existing dwellings and below the carriageway of New End will not exceed 1000mm.

3.1.3 Possible secondary constraints, for example physical limits to upward development imposed by existing tree branches and light shading have also been taken into consideration where appropriate.

3.2 Trees to be removed

3.2.1 No trees are to be removed for the purpose of carrying out the development.

3.3 Trees to be retained

3.3.1 It is proposed that all three of the trees referred to in this report and described in detail in **Appendix a,** will be retained.

3.3.2 All 3 trees stand in the rear or side gardens of 26 New End Square, an adjacent 3 storey apartment block.

3.3.3 The likely impact of the proposals on each of the 3 trees is considered, tree-by-tree, below.

001 (Oak): Likely impact below ground

3.3.4 This tree stands on the New End boundary of the site and makes a significant contribution to public visual amenity. It has been reduced in height and spread in the recent past (2012?) but still has a well-proportioned branch system.

3.3.5 The scheme has been designed to minimise disruption to this important tree

3.3.6 The footprint of the proposed basement overlaps 4.3m^2 of its RPA, 3% of the total.

3.3.7 On its own, I do not consider that an encroachment of this magnitude will have a significant adverse impact upon T001, particularly as the recent reduction in height and spread will have changed the tree's root/shoot balance and must have created some temporary surplus rooting capacity.

3.3.8 At lower ground floor level there is a further overlap of 9.5m^2 on the northern edge of the site, but because of the steep downward slope, the lower ground

floor slab will be completely above ground over roughly half of this overlap area.

3.3.9 McKenzie Architects Drawing No. 160121_00_P_50 – Proposed Section BB shows the overlap area at lower ground floor level in section. It can be seen that the upper surface of the proposed, approximately 425mm deep lower ground floor slab extends as far as the pavement edge of New End and that its upper surface will be at the same level as that of the pavement.

3.3.10 The area where the proposed slab and the existing ground come into contact, an area of about 5.5m^2, is already hard surfaced. On the assumption that this existing surface and its associated sub-base is at least 350mm deep the maximum disruption within this area would be a 75mm deep excavation to reduced levels in order to accommodate the depth of the lower ground floor slab.

3.3.11 As long as *unnecessary* disruption is avoided, the adverse impact of the excavation referred to immediately above is likely therefore to be very small.

3.3.12 The proposed northern boundary wall to the walled garden runs very close to the main stem of T001 as does a sloping path abutting it.

3.3.13 It will be essential to build the wall on carefully located pad foundations with bridging lintels to avoid damaging the tree's roots. With regard to the path it has a downwards slope of 1:16 over a distance of 4500mm from west to east, a drop of 280mm.

3.3.14 At its western end, I anticipate that the new path and its associated sub-base will be no deeper than that of the existing hard surfacing.

3.3.15 At its eastern end it is possible therefore, that excavation to reduced levels might extend below the sub-base of the existing hard surfacing. Because of the site's steep north-to-south downwards slope however, there is a roughly 350mm drop in level between the northern edge and the southern edge of the proposed path at that point.

3.3.16 The area where there is a risk of root damage in the course of excavation to reduced levels is very small therefore and I am confident that this risk can be eliminated by special engineering measures, to reduce the path build up depth in the risk-damage area or by moving its alignment a small distance to the south.

001 (Oak): Likely impacts above ground

3.3.17 Above ground, there will be a risk of damage to the branch system throughout the construction programme. Such damage is entirely avoidable but continuous supervision, careful planning and choice of excavation And piling equipment will be essential.

3.3.18 The tree will overshadow the northern elevation of the proposed dwelling, but this will be amply compensated for by unobstructed light to the south and west.

002 Cherry: Likely impacts above and below ground

3.3.19 The footprint of the proposed basement overlaps the RPA of this tree and its construction will result in the loss of roughly 13% of the total root protection area (6.2 m^2).

3.3.20 The ample area of undisturbed, contiguous open space to the south and east of the tree's RPA as-drawn (the communal garden to the rear of 26 New End Square) and the change in relative levels within the overlap area relative to the ground on which this Cherry stands (the site slopes downwards and is hard surfaced while the tree stands in a level open lawn) will mitigate any adverse impacts and it is true to say that this tree makes a very limited contribution to the visual amenities of the general public.

3.3.21 The proposed garden wall runs close to the tree's main stem and the same special construction measures referred to in 3.3.13 above will be required here too

3.3.22 Taking these factors into account, it is not likely in my opinion that the proposed development will have a significant adverse impact upon this Cherry below ground. It would however, be prudent to plant a long-term successor tree nearby as an additional mitigation measure.

3.3.23 Above ground the outer edge of tree's crown overhangs the eastern end of the proposed dwelling and minor crown spread reduction will be needed in order to accommodate the new structure (to first floor height). This pruning can, in my opinion, be achieved without adverse impact upon the tree's visual quality and without prejudicing its future safe life.

003 Sycamore: Likely impact above and below ground

3.3.23 The proposed basement excavation just overlaps the western edge of the RPA of this Sycamore. I do not think that the very small degree of disruption involved will have any measureable adverse impact upon its health or future safe life.

3.3.24 The height and lateral spread of this Sycamore has been quite severely reduced in the recent past. As a result there is no overlap between the proposed development and its branch system.

4. Conclusions

4.1 In my opinion the proposed development referred to in this report has been carefully configured to minimise disruption to existing trees and priority has been given to protecting public visual amenity.

4.2 Provided that *unnecessary* disturbance is avoided, I consider that the project can be achieved without significant adverse impact upon existing trees.

4.3 There is space for the planting of an additional tree either on site or, subject to the agreement of the adjacent landowner, within the gardens of 26 New End Square and this would make an additional contribution to the visual amenities of the locality in the medium-to-long term.

4.4 The draft **Arboricultural Method Statement (AMS)** that accompanies this impact analysis is intended to illustrate the principles of tree retention measures only. The small size of the site, its location and topography will necessitate a more detailed method statement that can only be successfully prepared when the main contractor has been appointed. I have assumed that a condition will be attached to any consent for the scheme requiring fully detailed tree protection measures to be agreed, prior to the start of works.

Appendix a

Tree survey schedule
Tree survey plan
Tree constraints plan

Explanatory notes

For general information on any entry in the detailed survey text, refer to the notes below which are organised on a column by column basis.

Tree number
All trees have been numbered in the survey text to correspond to the location numbers shown on the accompanying Tree Survey Plan. No trees have been marked on site.

Species
Common English names have been used wherever possible and Latin names are listed (in brackets in *italics*) in all cases.

Dimensions

Height - are recorded in m.

Stem diameter – recorded in mm at breast height (1.5m) wherever possible. Where measurement at 1.5m is not possible, one of the alternative methods set out in *Annex C of BS5837:2012* has been used.
If the diameter has been measured at a different height, this has been recorded, e.g. 60 @ 1m = 60mm diameter at 1m height.
Other abbreviations used:

av - average	est/e - estimated	
ms - multi-stemmed	max – maximum	gl - ground level

Crown spread - radial crown spreads in metres have been recorded at four points on the circumference of the crown (north, east, south and west). The accompanying Tree survey plan shows approximate crown shapes based on these measurements

Crown height - the height of the first major branch and the height of the lowest point of the crown are recorded in metres eg 3/3

Explanatory notes

Age

Y	Young	SM	Semi-mature
EM	Early mature	M	Mature
OM	Over-mature		

Where the precise age of a tree is known, it has been recorded in brackets adjacent to the general classification i.e. M(7).

Condition

Physiological condition

Gives a measure of biological vigour and of the presence or absence of disease, insect attack or other debilitating factors.

G	Good
F	Fair
P	Poor

Structural condition

Gives a measure of each tree's physical form and mechanical stability.

G	Good
F	Fair
P	Poor

Comments

See also **discussion** and **conclusions** in the accompanying report.

Explanatory notes

Recommendations
Preliminary management recommendations under existing conditions

Life expectancy
An approximate estimate for each tree's anticipated future safe life in the following ranges:

<10 years
10-20 years
20-40 years
40+ years

Retention category
This grading is based on the recommendations set out in BS 5837:2012 *Trees in relation todesign, demolition and construction - Recommendations.* The categories are summarised in the standard as follows:

A Trees of high quality with an estimated remaining safe life of at least 40 years
B Trees of moderate quality with an estimated remaining safe life of at least 20 years
C Trees of low quality with an estimated remaining safe life of at least 10 years, or young trees with a stem diameter below 150mm
U Trees 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

In addition the British Standard requires one or more subcategories to be applied to the main Retention Category. In summary these are as follows:

1 Mainly arboricultural qulaities (that is individual aesthetic characteristics)
2. Mainly landscape qualities
3. Mainly cultural values, including conservation

Tree survey schedule

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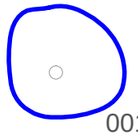
Tree No.	Species	Height (m)	Diam (mm)	Crown Spread (m)				Crown Height (m)	Age	Physiological Condition	Structural Condition	Comments	Recommendations	Life Expectancy	Retention Category	Retention Sub-category
				N	E	S	W									
001	Pedunculate Oak (*Quercus robur*)	17	540	5	3	5	6	4/4	M	G	G	Single upright stem: quite well balanced crown: height and spread reduced by about 15% within the last 2 years	No action required	40+	B	1
002	Flowering Cherry (*Prunus 'Kanzan'*)	11	330	2	4	7	4	1/3	M	F	G	Single upright stem forks at 1.2m into 6 ascending main crown branches: crown rather one sided (to S): grafted at base	No action required	20-40	C	1
003	Sycamore (*Acer pseudoplatanus*)	12	290/ 400	2	2.5	3	2.5	0/4	M	F	F	Single upright stem forks at 0.5m into 2: height and spread severely reduced (by 30 - 40%) within the last 2 years: narrow cleft between the 2 main stems appears to be stable	No action required	20-40	C	1/2

Client: Dominic McKenzie Architects
Location: New End, London, NW3 1LS
Date: 17.03.15
Job No.: 360

KEY



EXISTING TREE

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 12 T rees in relation to design, demolition and construction - Recommendations* as follows:

Category A - GREEN
Category B - BLUE
Category C - GREY
Category U - RED

ROOT PROTECTION AREA as defined in *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*

REVISION		CHCK'D	APP'D	DATE

Client:
DOMINIC McKENZIE ARCHITECTS

Job Title:
NEW END SQUARE
HAMPSTEAD
LONDON
NW3

Drawing Title:
TREE SURVEY PLAN (OS)

Drawing Number:	Scale:
360.01.00	1:100 (A3)
Date:	Drawn by:
17.03.15	RS

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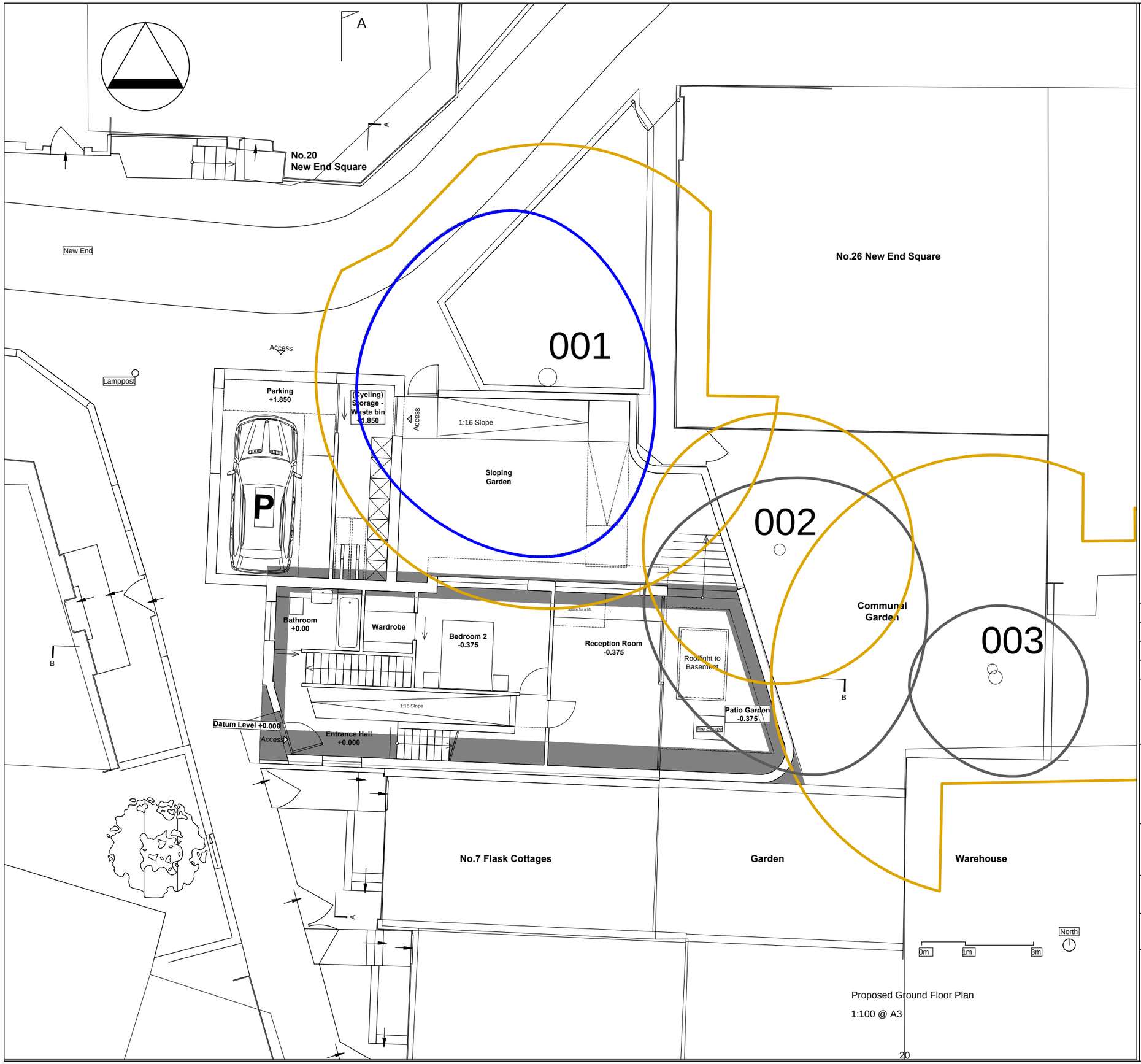

Proposed Ground Floor Plan

1:100 @ A3

KEY

EXISTING TREE

001

Trees are coloured on plan to correspond to the Retention Categories specified in: *BS5837:20 12 Trees in relation to design, demolition and construction - Recommendations* as follows:

Category A - GREEN
Category B - BLUE
Category C - GREY
Category U - RED

ROOT PROTECTION AREA as defined in *BS5837:2012 Trees in relation to design, demolition and construction - Recommendations*

003

PROPOSED BASEMENT FOOTPRINT

REVISION	CHCK'D	APP'D	DATE

Client:

DOMINIC McKENZIE ARCHITECTS

Job Title:

PROPOSED DEVELOPMENT
NEW END SQUARE
HAMPSTEAD
LONDON
NW3 1LS

Drawing Title:

TREE CONSTRAINTS PLAN

Drawing Number:	Scale:
360.02.00	1:100 (A3)
Date:	Drawn by:
12.02.16	RS

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