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Project: Carrow Works
Report: Arboricultural Impact Assessment

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1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd was commissioned by Entran Ltd to undertake a Tree Survey and prepare an Arboricultural Impact Assessment at a site located at Carrow Works in Norfolk, to the BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations¹ methodology.

This document presents the findings of the tree survey and has been produced to support a hybrid planning submission for a residential and mixed-use scheme which seeks to demolish warehouses and conversion of listed factory buildings and Carrow Abbey, to residential use. The application also includes construction of internal roads and open public spaces.

The purpose of this survey is to provide an assessment of the arboricultural value of the trees based on their current quality and to provide recommendations, to help inform any initial design and site layout considerations.

A visit was made to the site on 1st April 2022 to survey trees, hedges and vegetation following guidance in BS5837. The crowns and stems were inspected from the ground using the ‘Visual Tree Assessment’ (VTA) method; no invasive techniques were used at this stage.

During the site survey, 111 trees and tree groups were identified within the scope of this report. The Category mix includes 10 Category A, 52 Category B, 43 Category C and 6 Category U specimens. See Table 1.1.

Table 1.1 Category mix

Category	Individual Trees	Tree Group/Hedge	Total
A	7	3	10
B	41	11	52
C	25	18	43
U	6	0	6
Total	79	32	111

Through this assessment it has been confirmed that of the 111 trees included within the survey, the proposed development requires the removal of 1 Category B group, 7 Category C trees, 1 Category C group and 2 Category U trees. All other surveyed trees are proposed for retention within the context and layout of this development.

Further to these removals, an assessment of the potential below and above ground impacts of the proposed development and recommendations to help avoid, minimise or compensate for these impacts on retained trees is outlined within this report.

2.0 INTRODUCTION

2.1 OVERVIEW

Greengage was commissioned by Entran Ltd. to undertake a BS5837 tree survey and prepare an Arboricultural Impact Assessment (AIA) for a site located in Carrow Works, Norwich.

This document has been produced to support a planning application for a hybrid planning submission for a residential and mixed-use scheme which seeks to demolish warehouses and conversion of listed factory buildings and Carrow Abbey, to residential use. The application also includes construction of internal roads and open public spaces.

A site visit was made by Greengage on 1st April 2022 to survey all trees within and adjacent to the site following the approach set out in BS5837.

As required by the British Standard, an Arboricultural Impact Assessment has been undertaken to evaluate the constraints to the development from the existing trees both on and adjacent to the site using information gained from the BS5837 Tree Survey.

The methodology followed to complete the survey and prepare this report is provided in Appendix A. Full details of the surveyed trees can be found in the Tree Schedule (Appendix B). The Tree Constraints Plan (Appendix C) presents the locations, crown spreads, root protection areas (RPAs) and BS5837 Categories of the surveyed trees against proposed layout.

2.2 SITE DESCRIPTION

The survey area extends to approximately 16.9 hectares and is centred on National Grid Reference TG 24246 07434, OS Co-ordinates 624246, 307434.

The site comprises developed/land sealed surface, built linear features, modified grassland, introduced shrub, ruderal/ephemeral, other woodland; broadleaved, and scattered trees.

The site is located on the south-west peripheries of the city of Norwich. The northern boundary is bound by the River Wensum, on the eastern boundary lies a railway track and the southern and western boundaries lies the A147 road. The city extends to the north, south and west. To the east, on the opposite side of the railway line, lies Carrow Abbey Marsh County Wildlife Site (CWS) which adjoins Whitlingham Local Nature Reserve (LNR) and Trowse Meadows CWS, these sites comprise a mix of habitats including grassland, tall fen and tall herb vegetation, woodland, willow carr, broads and reedbeds.

There exists significant tree cover within the site boundary, with a wide variety of species, both broadleaf and coniferous, with many now at the mature life stage which show as high value landscape features.

3.0 TREE SURVEY METHODOLOGY

3.1 DESK REVIEW

Tree Legal Protection

Trees within Norwich City Council may be protected under the Town & Country Planning Act² by a Tree Preservation Order (TPO) or by virtue of being within a Conservation Area.

A TPO makes it an offence to wilfully damage or destroy a protected tree and written permission from the Council must be obtained prior to undertaking any works to the tree. Similarly, if any stem on any tree in a Conservation Area is larger than 75mm diameter when measured at 1.5 metres above ground level it is automatically protected and required by law to notify the Council of any proposed works.

To determine whether any of the trees are protected by TPOs a search of the readily available data on Norwich City Council's website was undertaken.

Additionally, the interactive map was reviewed to identify any local Conservation Areas that would add additional protection to the trees.

Geological Conditions

A review of the readily available Geology of Britain interactive map by the British Geological Society³ was undertaken to identify the bedrock geology and superficial deposits at the site.

Site Visit

A site survey was undertaken on 1st April 2022 to survey trees, hedges and vegetation following guidance in the British Standard.

The crowns and stems were inspected from the ground using the 'Visual Tree Assessment (VTA)' method; no invasive techniques were used at this stage.

The survey followed the methodology outlined in BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations.

The site visit was undertaken in mixed sunny and rainy weather conditions with trees in the early leaf stage. Full details on the methodology can be found at Appendix A.

Limitations

This report includes information on only the trees that were inspected and the condition they were observed in at the time of survey. The condition of trees can change, and as such any findings from this report should be held valid to inform for purposes of development for no longer than 12 months from the survey date. No guarantee can be given for the structural integrity of any trees on site as a full hazard assessment has not been made.

There were no significant constraints to the assessment; all areas of the site were fully accessible to survey. The survey was completed at a suitable time of year for species identification and condition assessment. Any constraints over winter identification techniques are not applicable in this instance.

4.0 RESULTS OF SURVEY

4.1 DESK REVIEW

Tree Legal Protection

A review of Norwich City Council’s TPO data (available from <https://maps.norwich.gov.uk/mynorwich/index.html>) has confirmed there are several protected trees within the site boundary. These are all covered by TPO.542 as indicated at Figure 4.1 and for the purpose of the designation have been split into 14 individual trees and 13 tree groups.

Figure 4.1 Carrow Works TPO.542

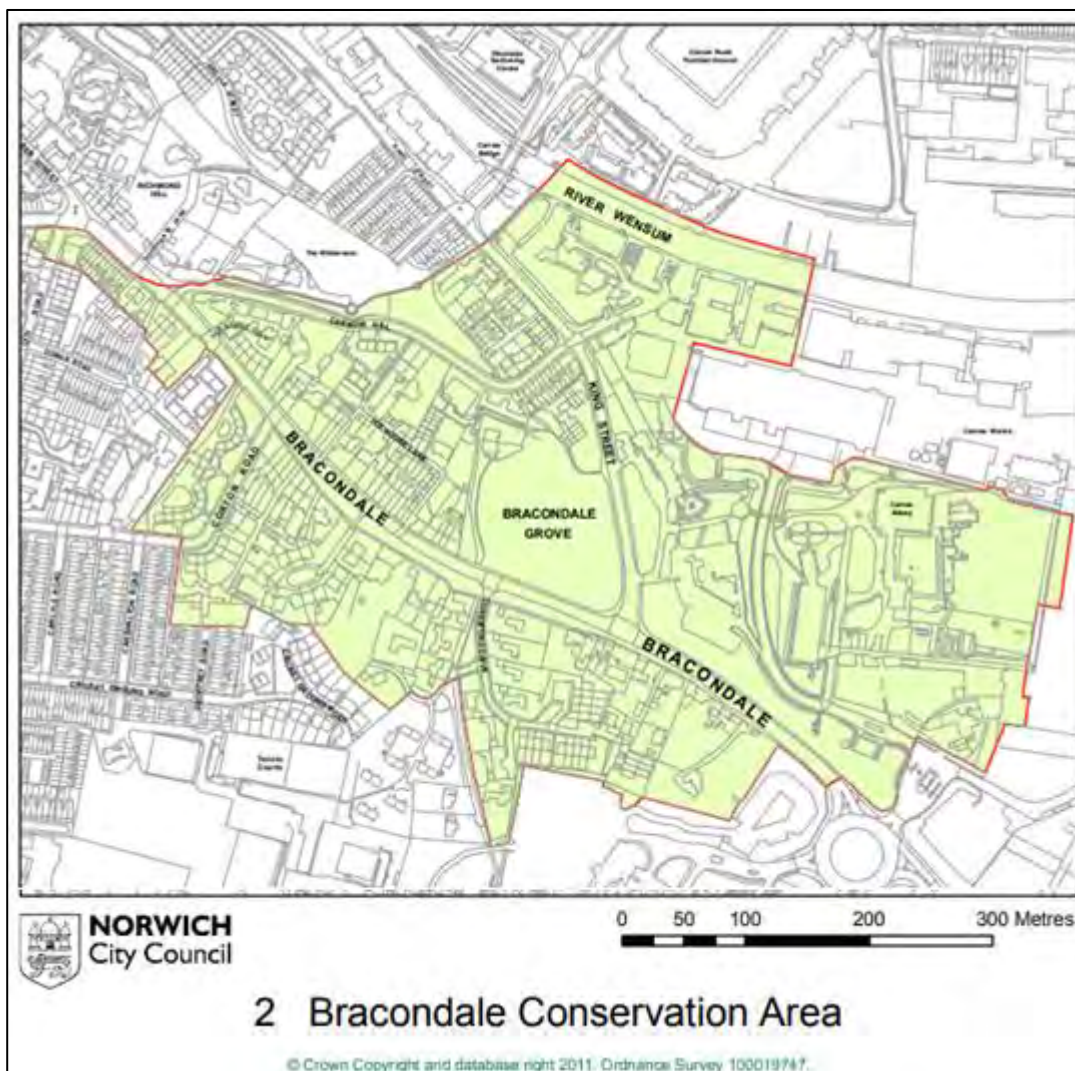


To specifically identify these TPO trees and groups from the Greengage tree survey, reference can be made to the data set as shown in both the Tree Data Tables at Appendix B, and as geographically presented within the Tree Constraints Plan at Appendix C.

It is however key to note that whilst all trees covered by TPO.542 have been identified within this report, the approach to grouping and showing trees as individuals differs for the Norwich City Council data set.

Furthermore, despite not all the site trees being covered by TPO.542, the full area under assessment sits within the Bracondale Conservation Area (Figure 4.2), that in essence then affords the same protection to the trees as a TPO.

Figure 4.2 Bracondale Conservation Area (with the Carrow Works site to the east)



Geological Conditions

The BGS interactive map indicates the underlying geology to be Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (undifferentiated), which is generally considered not to contain shrinkable clay.

It is recommended that a geotechnical specialist / structural engineer undertake a detailed soil investigation to determine the actual underlying geology and Plasticity Index which may then inform foundation design. The design of any new planting and landscape proposals should be based upon a soil analysis which considers the pH and nutrient composition of localised conditions.

Site Visit

During the site survey, 111 individual trees and tree groups were identified within the scope of this report. The Category mix includes 10 Category A, 52 Category B, 43 Category C and 6 Category U specimens. The Tree Schedule (Appendix B) provides all relevant details of trees within the scope of the survey.

As shown on the Tree Constraints Plans (TCP's) many of the trees included in the survey are located towards the outer areas of the site as well as within the central areas adjacent to existing buildings, hard and soft landscaping areas and large grassed areas.

Overall, the site has clearly been historically landscaped with a view to creating a lasting and strong visually impacting tree scape across the whole area. In doing so, the planting has been selectively located throughout the grounds both with consideration to the visual presentation of individual species as well as to allow for areas of desired site screening sections to become established, both within and adjacent to the site boundary.

Along with the 10 Category A trees/groups, the general success of this tree establishment has resulted in a large number of Category B trees and high value Category C trees both within the individual and group/woodland context. Further to this, the species selection and variety along with routine arboricultural maintenance, has also added to the high number of Category B classifications.

Most notable individual trees then include those Category A trees of T1, T30, T31, T52, T54 and T72 with well-structured and high arboricultural and landscape value groups including those Category A groups G20, G21 and G48. The survey also noted five of the onsite trees to be considered as veterans, these then including T1, T16, T18, T65 and T94. A definition of veteran trees can be taken as follows:

"Has features associated with advanced age (for its species), having the connotation of a 'battle-scarred survivor'. As such a veteran tree has features which increase its value as habitat for wildlife (dead wood, cavities etc.) irrespective of its chronological age".

That said, there are a number of lower quality trees throughout the site that are either in decline as result of their age or are struggling to establish themselves into the mature form as a result of either poor growing areas (such as soil compaction or heavy over shading and smothering from adjacent trees), or as a result of smothering from larger adjacent specimens.

The Tree Constraints Plan found at Appendix C shows the full layout of the existing tree stock with reference to BS5837 Category and survey data.

5.0 ARBORICULTURAL IMPACT ASSESSMENT

5.1 INTRODUCTION

The purpose of this Arboricultural Impact Assessment (AIA) is to assess the potential below and above ground impacts to existing trees from the proposed development, and to highlight the need for the pruning, removal or retention and protection of specific trees during construction.

Works associated with development of this type can damage trees, threatening the survival of those that are to be retained. The following actions can have negative impacts upon tree health:

- Soil compaction;
- Root damage (e.g. severance);
- Soil coverage with impermeable material;
- Alterations in ground level;
- Leaks and spillages from stored materials; and
- Vehicle and heavy plant collision.

As such, where possible, the RPAs and canopies that are defined in Appendix C should be protected and considered throughout works to prevent risks to the health of the trees.

5.2 SITE LAYOUT

Proposals and existing drawings provided for the assessment of the potential constraints that exist include:

- Existing layout/ topographical survey (drawing ref. 02022_Topographical Survey_Origin@E624000000-N307400000); and
- Proposed layout (drawing ref. 2962-11-01 Masterplan Base_Rev M - Bound).

The TCP can be found at Appendix C.

5.3 DIRECT TREE LOSS

In total 9 individual trees and 2 tree groups are proposed for removal to facilitate the scheme. Table 5.1 below gives a summary of the proposed reasons for removal.

Table 5.1 Proposed tree removals

Category	Quantity	Tree Ref. and Reason for Removal
A	0	N/A
B	1 tree group	G63. Direct conflict with proposed new building and road section.
C	7 individual trees and 1 group	T33 and T66. Direct conflict with proposed new woodland footpath sections. T57, T58 and T59. Direct conflict with proposed pavement. T60. Direct conflict with proposed new road section. G61. Direct conflict with proposed new building and road section. T62. Substantial partial conflict with proposed building.
U	2	T2 and T13 both proposed to be removed given their poor and deteriorating condition, along with the intention to run new footpaths close to them.
Total	9 individual trees and 2 tree groups	

5.4 FACILITATION PRUNING

With the proposed tree removals as stated in Table 5.1 and the general design intention to retain much of the existing site layout, the need for facilitation pruning for both the development and construction phases is minimal.

Subject to full Construction Method and Logistics Plans being drawn up, the only area that will require facilitation pruning are those areas of existing and retained woodland shown to include new public footpaths. With the key pruning objectives here being to firstly ensure sufficient clearance and height space within the woodland for the new pathways; and secondly, to ensure that a tree hazard assessment be undertaken to highlight any pruning requirements for trees adjacent to the new paths on the grounds of health and safety.

In line with the need for a Construction Method and Logistics Plan, further details of such pruning can be detailed within a subsequent Arboricultural Method Statement, likely secured by Planning Condition.

5.5 DEVELOPMENT WITHIN THE RPA'S OF RETAINED TREES

New Building Construction

The root protection areas for all site trees have been calculated via the methodology set out in BS5837 and are shown in the Tree Constraints Plan (Appendix C).

In terms of providing constraints information for any future development, providing accurate root zone information is of great significance, as this defines the area that cannot be generally constructed over or disturbed without bespoke foundation and site design considerations.

With the stated tree removals undertaken, the only development elements and layout constraints shown to be within the provisional RPA's of retained trees, are the proposed road section to the north of T31 and the proposed road section and buildings to the east of T65.

As shown on the Tree Constraints Plan, the RPA's for both trees have been modified to reflect the existing ground conditions, as well as the presence of surrounding obstacles. In the case of T31, the modified shape is as a result of the easting retaining wall and level changes to the north and west; and in the case of T65 as a result of the foundations of the existing industrial buildings directly to the east. In both cases it is therefore concluded that significant root spread into these new development and construction areas is unlikely.

Following this calculation, the RPA of T65 is then shown to slightly overlap with the proposed new build façade to the west. Further investigation of potential root spread within this calculated zone is though not proposed given firstly, any roots from T65 would be indistinguishable from those from G63 trees (to be removed); and secondly, as the presence of the dense roots from G63 will have likely limited the western root spread extent from T65 to a greater extent than that indicated on the Tree Constraints Plan.

New Hard Standing and Footpaths

With the proposed tree removals as stated in Table 5.1 and the general design intention to retain much of the existing site layout, there is very little in the way of new hardstanding development and construction.

The only areas then shown with substantially changed or new hard standing, are the proposed new public footpath sections through the retained woodland and existing soft landscaped areas.

In line with best practice, suitable ground protection should be designed by the project engineer and arboriculturalist to accommodate the likely loading. This would require the use of proprietary systems such as a “no-dig” three-dimensional cellular confinement, specifically designed for tree root protection. This follows the guidance in BS5837 Section 6.2.3.3.

Any such specification and installation would require approval for use by the arboriculturist in line with a method statement before any works commence.

In line with the required “no dig” methodology, the stated ground protection within all retained trees will not allow for any excavation or alteration in ground levels other than through the installation of the specified ground protection and road surface, which will remain non-compacting by design.

An example of a suitable construction and installation specification for footpaths is given at Appendix D.

Soft/Modified Landscaping within the RPA's of Retained Trees

Of those trees and tree groups to be retained, it is important to note that it is generally poor arboricultural practice to modify the soil levels within an RPA of trees to be retained. Lowering levels can remove the fibrous root network, expose roots, as well as damage the delicate structure of the top soil, which may include mycorrhizal fungi. Increasing levels can result in problems of soil compaction as well as a significant reduction in the ability of the tree to obtain and absorb nutrients, water and perform gaseous exchange.

Any soft landscaping works will need to avoid the use of heavy mechanical cultivation such as rotavating. Any such cultivation operations should be undertaken carefully by hand to minimize damage to tree roots. The introduction of additional new shrubs and small planting within the RPA's of retained trees will not therefore negatively impact their long-term health, if undertaken in this manner.

These aspects will therefore need to be given special consideration with respect to the proposed landscaping, levels design and planting areas as will be subsequently detailed within the site landscaping plans.

Furthermore, as the replacement of existing hard standing areas with proposed soft landscaping would not require any significant excavation beyond the existing subbase, conflict with significant tree roots is not anticipated.

New Site Utilities

Given the destructive impacts that trench excavation can have on tree roots and the subsequent physiological and structural life of trees, all subterranean utility lines and on-site drainage should be designed to avoid the RPA's of retained trees.

Should such works within the RPA's of retained trees be required, then the relevant best practice as set out in the relevant NJUG guidance⁴ for utilities works adjacent to trees, must be followed.

Landscape Proposals

In recognising the need to mitigate the identified tree removals as a result of the proposed development, the landscaping and planting plans will deliver a planting strategy that includes a mix of species, accompanied by a landscape management plan to ensure all new planting is successfully established. Full details of all tree planting are contained in the Landscaping Strategy within the Design and Access Statement.

The proposed landscaping should be subject to a 5-year management plan to ensure long-term deliverance of the proposals which may be secured through planning condition. Any trees or shrubs that die, are removed or severely damaged within the first 5-years should be replaced with a similar specimen.

5.6 LOCAL PLANNING POLICY

As detailed at Appendix F the key planning policy that relates to development and trees is DM7, which is summarised in the Landscape and Tree Supplementary Planning Document, states the following:

"Policy DM7 specifically covers trees and development. It requires trees and significant hedges and shrubs to be retained as an integral part of the design of development except where the trees are in poor condition or there are exceptional benefits in accepting their loss, and sets out the requirements for replacement planting where the loss of trees is accepted.

DM7 also requires street trees to be provided on new developments, either on site or through a section 106 or unilateral agreement as and where appropriate."

In considering DM7 in more detail, the Policy as detailed within the Norwich City Council Local Plan states the following:

"Where the loss of trees is accepted in these circumstances, developers will be required to provide at least equivalent replacement in terms of biomass. This should be provided on-site unless the developer can show exceptional circumstances which would justify replacement provision elsewhere."

In terms of the reference to street tree planting and the stated criteria for planting to be undertaken, this is not considered relevant or necessary for the proposed development, given DM7 states the following:

"Major development proposals that have a frontage onto a new or existing highway of more than ten metres will only be permitted where they provide for the planting and maintenance of street trees of appropriate species at intervals appropriate to the site....."

Whilst suitable replacement tree planting is to be drawn up in line with the requirements of DM7, the overall site development design and layout is shown to strongly fit with the design principles of the SPD, specifically when considered against the following:

- Integrating development into surroundings;
- Making good use of the site and existing features;
- Incorporating open space; and
- Environment and Green Infrastructure considerations.

5.7 ARBORICULTURAL METHOD STATEMENT

Subsequent to this AIA, an Arboricultural Method Statement (AMS) may be drawn up detailing how constraints on retained trees identified within the AIA will be addressed throughout the construction phase.

The AMS and Tree Protection Plan (TPP), likely secured through planning condition, will set out how site works should be carried out near trees to avoid accidental damage. In doing so, the statement should detail further recommendations for pre-development tree works, including facilitation pruning, ground works for vehicle and pedestrian construction access, as well as restricted access and fencing of

crowns and root protection areas (RPAs). The AMS is often drawn up in unison with the Construction Management Plan, to ensure all tree related construction constraints are fully understood.

6.0 SUMMARY AND CONCLUSIONS

In line with the BS5837 guidelines, 111 trees/tree groups were identified within or directly adjacent to the Site red line boundary. The quality of the surveyed trees varies significantly, with a mix of Category A through to Category U trees, of both individual and grouped arboricultural qualities.

Leading on from the tree survey, the Arboricultural Impact Assessment for the proposed development was drawn up based on the detailed design for the site.

Of the 111 trees and tree groups within and along the boundary of the site development area, the proposed development requires the removal of 1 Category B tree group, 7 Category C trees, 1 Category C tree group and 2 Category U trees. All other surveyed trees are proposed for retention within the context and layout of this development.

All other trees are shown as retained, with the need for specific ground protection and special construction techniques presented as required.

In recognising the need to mitigate the identified tree removals as a result of the proposed development, the landscaping and planting plans will deliver a planting strategy that includes a mix of species, accompanied by a landscape management plan to ensure all new planting is successfully established

Trees to be retained should be protected through measures described within the Arboricultural Method Statement and Tree Protection Plan, anticipated to be secured by Planning Condition.

If the recommendations within this report are adhered to, a positive contribution to local amenity will be delivered through incorporation of new tree planting and other green infrastructure elements in line with local policy.

APPENDIX A TREE SURVEY METHODOLOGY

Trees, tree groups and woodlands have been considered following evaluation into one of four categories (U, A, B, C) based on tree quality as outlined in British Standard 5837 (2012) which has been followed. Categorisation of trees, following the British Standard, gives an indication as to the trees' importance in relation to the site and the local landscape and also, the overall value and quality of the existing tree stock on site. This allows for informed decisions to be made concerning which trees should be removed or retained, should development occur.

For a tree to qualify under any given category it should fall within the scope of that category's definition. In the categories A, B, C which collectively deal with trees that should be a material consideration in the development process, there are three sub-categories which are intended to reflect arboricultural, landscape and cultural values respectively. Category U trees are those which would be lost in the short-term for reasons connected with their poor physiological or structural condition. They are, for this reason, not usually considered in the planning process.

In assigning trees to the A, B or C categories the presence of any serious disease or tree related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U, even if they are otherwise of considerable value.

Category (A) – trees whose retention is most desirable and is of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (a minimum of 40 years) and may comprise:

- Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups); and
- Trees or groups or woodlands of significant conservation, historical, commemorative or other value (e.g. Veteran or wood-pasture trees).

Category (B) – are trees whose retention is considered desirable and are of moderate quality and value. These trees are considered to be in such a condition as to make a significant contribution (a minimum of 20 years) and may comprise:

- Trees that might be included in the high category but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential

components of formal or semi-formal arboricultural features, or trees situated mainly internally to the site and have little visual impact beyond the site; and

- Trees with clearly identifiable conservation or other cultural benefits.

Category (C) – are trees that could be retained and are considered to be of low quality and value. These trees are in an adequate condition to remain until new planting could be established (a minimum of ten years) or are young trees with a stem diameter below 150mm and may comprise:

- Trees not qualifying in higher categories;
- Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit; and
- Trees with very limited conservation or other cultural benefits.

Category (U) – trees for removal are those trees in such a condition that any existing value would be lost within 10 years and which should in the current context be removed for reasons of sound arboricultural management. Trees within this category are:

- 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;
- Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; and
- Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low quality trees suppressing adjacent trees of better quality.

Species has been recorded by common name and recorded as such in the Tree Schedule. Height has been estimated in metre and stem diameters have been measured at 1.5 metres above ground level and recorded in millimetres (unless otherwise stated). Crown spreads have been measured in half metres and taken to the point of greatest spread unless the crown has presented a pronounced asymmetrical form and therefore measurements have been taken for the four cardinal points. The measurements have always been considered in the following sequence, North, East, South, and West, and therefore appear as such within the Tree Schedule.

In the assessment particular consideration has been given to the following when deciding the most appropriate British Standard Category and Sub-Category allocation:

- a. the health, vigour and condition of each tree;
- b. the presence of any structural defects in each tree and its life expectancy;
- c. the size and form of each tree and its suitability within the context of the proposed scheme;
and
- d. the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.

Age class is assessed according to the age class categories referred to in BS 5837.

- Y: Young trees up to five years of age;

- SM: Semi-mature, trees less than 1/3 life expectancy;
- EM: Early mature, trees 1/3 – 2/3 life expectancy;
- M: Mature trees over 2/3 life expectancy;
- OM: Over mature – declining or moribund trees of low vigour; and
- V: Veteran - characteristics have been noted where a tree exhibits certain characteristic features of veteran trees.

The overall condition of the tree, or group of trees, has been referred to as one of the following. A more detailed description of condition has been noted in the Tree Schedule and discussed in the main text of the report.

- Good: A sound tree, trees, needing little, if any, attention;
- Fair: A tree, trees, with minor but rectifiable defects or in the early stages of stress, from which it may recover;
- Poor: A tree, trees, with major structural and physiological defects or stressed such that it would be expensive and inappropriate to retain; and
- Dead: A tree, trees, no longer alive. However, this could also apply to those trees that are dying and will be unlikely to recover, or are / have become dangerous.

Major defects or diseases and relevant observations have also been recorded under Structural Condition. The assessment for structural condition has included inspection of the following defects:

- The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay;
- Soil cracks and any heaving of the soil around the base indicating possible root plate movement;
- Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay;
- Tight or weak 'V' shaped unions and co-dominant stems;
- Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994);
- Cavities as a result of limb losses or previous pruning;
- Broken branches;
- Storm damage;
- Canker formations;
- Loose bark;
- Damage to roots;
- Basal, stem or branch / limb cavities;

- Crown die-back;
- Abnormal foliage size and colour;
- Any changes to the timing of normal leaf flush and leaf fall patterns; and
- Other pathological diseases affecting any part of the tree.
- Major defects or diseases and relevant observations have also been recorded. Dead wood has been defined as the following:
 - Twigs and small branch material up to 5cm in diameter;
 - Minor dead wood 5cm to 10cm in diameter; and
 - Major dead wood 10cm in diameter and above.

The survey was completed from ground level only, aerial inspection of trees was not undertaken. Investigations as to the internal condition of a tree have not been undertaken. Further investigations of this type can be made and have been recommended where it has been considered necessary, within the report although these investigations are beyond the scope of this report.

Evaluation of the trees condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

The individual positions of trees and groups of trees recorded in the Tree Schedule have been shown on the Tree Constraints Plan. The positions of trees are based on a topographical / land survey supplied by the client in dwg. format for the purpose of plotting the trees.

The Root Protection Areas (RPA) to be required by the individual and groups of trees are indicated by the Tree Constraints element of the above plans. The Root Protection Areas are formulated as described below.

Below ground constraints to future development is represented by the area surrounding the tree that contains sufficient rooting volume to ensure survival of the tree, which need protecting in order for the tree to be incorporated into any future scheme, without adverse harm to the tree or structural integrity of buildings. This is referred to as the RPA and is shown as a circle of a given radius.

The circle may be modified in shape to maintain a similar total area depending on the presence of surrounding obstacles. Where groups of trees have been assessed, the RPA has been shown based on the maximum sized tree in any one group and so would automatically exceed the RPA's required for many of the individual specimens within the group. The RPA is equivalent to a circle with a radius 12x the stem diameter for single stem trees and 10x the basal diameter for trees with more than one stem arising less than 1.5 meters above ground level.

APPENDIX B TREE DATA TABLE

Tree No.	Species	Height (m)	Stem Diameter (mm)	Crown Spread				Age Class	Condition		General Notes	Est. Yrs Remaining	Grade / Category
				N	E	S	W		P	S			
T1	Weeping beech	12	1300	15	15	15	15	V	G	F	TPO.542. Unique veteran specimen, with numerous splits and cavities. Shows several self-rooted limbs that have developed and formed significant regrowth as a result of overweight structures resting on the ground.	>40	A1
T2	Poplar sp.	7	510	0	6	14	6	OM	P	P	Poorly structured specimen that is now formed from phototropic regrowth from previous windthrown structure.	<10	U
T3	Beech	7	530	7	7	7	7	EM	G	G	Well structured and well-spaced specimen, with no significant defects.	>20	B1
G4	Mixed broadleaf	16	550	See TCP				EM/M	G	G	TPO.542. Well-structured mixed species woodland group that forms an important site demarcation, screening and landscape feature.	>20	B2
T5	Sycamore	17	670	7	7	5	5	EM	G	F	Dominant feature tree within the wider group of G4.	>10	C2
T6	English oak	16	570	7	7	7	7	EM	G	G	Dominant feature tree within the wider group of G4.	>20	B2
T7	English oak	16	420	7	6	6	8	EM	G	F	Dominant feature tree within the wider group of G4.	>20	B2
T8	Sycamore	17	570	8	6	8	6	EM	G	P	TPO.542. Poorly structured Multistem self-seeded cluster tree growing on the edge of the section of woodland and the embankment to the east.	>10	C2
G9	Horse chestnut	10	680	6	6	6	6	EM	G	G	TPO.542. Row of four formally planted well-structured trees, albeit with the most southerly now shown to be in decline.	>20	B2
T10	Leyland cypress	11	400	7	7	7	7	EM	G	F	TPO.542. Well structure amenity tree.	>10	C2
T11	Cypress sp.	10	370	6	6	6	6	EM	G	G	TPO.542. Large multistem specimen that shows as a visually dominant feature tree on the eastern side of this soft landscape area. Wide spaced crown area.	>20	B1
T12	Horse chestnut	9	350	4	4	4	4	EM	F	F	TPO.542. Small recently established tree struggling for space against the dominant larger adjacent trees.	>10	C1
T13	Cherry	9	520	8	8	8	8	OM	P	P	TPO.542. Tree now shown to be in heavy physiological decline.	<10	U
T14	Horse chestnut	14	1050	9	9	9	9	M	G	F	TPO.542. Dominant feature tree within the wider group of G21.	>20	B2
T15	Weeping lime	12	1000	6	6	6	6	M	G	P	Unique ornamental specimen, with upper regrowth sections now formed from previous failed and snapped upper stems.	>20	B1
T16	Beech	16	980	10	10	10	10	V	G	F	Shows significant age and veteran features, including lost and snapped sections along with major cavities in the lower stem. Has been shown as Category B tree given its ecological value and veteran status.	>20	B1
T17	Ash	6	180	4	4	4	4	SM	G	G	Well-structured and well-spaced specimen, with no significant defects.	>10	C1
T18	Mulberry	4	400	7	7	7	7	V	F	P	TPO.542. Unique veteran specimen, with numerous splits and cavities. Current structure includes a manual ground support.	>20	B
T19	Tulip tree	14	540	7	7	7	7	EM	G	G	TPO.542. Well-structured and well-spaced ornamental specimen, with no significant defects. Good example of its species.	>20	B1

Tree No.	Species	Height (m)	Stem Diameter (mm)	Crown Spread				Age Class	Condition		General Notes	Est. Yrs Remaining	Grade / Category
				N	E	S	W		P	S			
G20	Lime/Beech/Sycamore	17	650	See TCP				M	G	G	TPO.542. Well-structured mixed species group of predominantly mature specimens that forms an important site demarcation, screening and landscape feature towards the south of the Carrow Abby lawn area.	>40	A2
G21	Mixed broadleaf/conifer	19	1000	See TCP				M	G	G	TPO.542. Well-structured mixed species small woodland group of predominantly mature specimens that forms an important site demarcation, screening and landscape feature towards the central area of the site.	>40	A2
G22	Mixed broadleaf	13	200	See TCP				SM	G	P	Randomly spaced self-seeded specimens slowly being established within and around an area of dilapidated greenhouses in this area of the site.	>10	C2
T23	Beech	14	800	9	9	9	9	M	F	P	TPO.542.	>10	C1
T24	Magnolia	5	150	4	4	4	4	SM	G	G	Small ornamental tree of limited arboricultural value.	>10	C1
G25	Beech	16	510	6	6	6	6	SM	G	G	TPO.542. Collection of two well-structured trees, growing within the soft landscaping strip to the north of the dominant T106.	>20	B2
T26	Lime	15	720	5	5	5	5	M	F	F	TPO.542. Well structured landscaping tree with important visual amenity value within the central area of the site.	>20	B1
T27	Lime	15	850	7	7	7	7	M	F	F	TPO.542. Well structured landscaping tree with important visual amenity value within the central area of the site.	>20	B1
T28	Yew	6	360	3	6	6	7	EM	G	F	Asymmetrically structured crown area as a result of adjacent dominant T29.	>10	C1
T29	Beech	18	1000	10	10	10	10	M	G	F	TPO.542. Dominant feature tree with wide spaced crown, albeit slightly asymmetrical as a result of adjacent building.	>20	B1
T30	Beech	17	970	11	11	11	11	M	G	G	TPO.542. One of the sites most notable arboricultural and landscape feature trees, that is well structured and a good all round example of its species.	>40	A1
T31	Pine	17	600	7	7	7	7	M	G	G	TPO.542. Dominant feature tree within the wider group of G32.	>40	A1
G32	Mixed broadleaf	15	400	See TCP				EM	G	G	TPO.542. Well-structured mixed species woodland group that forms an important site demarcation, screening and landscape feature.	>10	B2
T33	Yew	7	350	4	4	4	4	SM	G	F	Small specimen sitting within and below the dominating canopy of T30.	>10	C1
T34	Oak sp.	15	550	6	6	6	6	EM	F	F	Dominant feature tree within the wider group of G32.	>10	C2
T35	Beech	15	890	7	7	7	7	M	G	G	Dominant feature tree within the wider group of G32.	>20	B1
T36	Beech	16	300	6	6	6	6	SM	G	F	TPO.542. Dominant feature tree within the wider group of G32.	>10	C2
T37	English oak	17	670	7	7	6	6	M	G	G	Dominant feature tree providing key landscaping screening of the adjacent gardens. Growing as part of a short woodland strip before the sudden embankment drop off to the west.	>20	B2
T38	Beech	12	620	7	8	6	6	M	G	G	Dominant feature tree providing key landscaping screening of the adjacent gardens. Growing as part of a short woodland strip before the sudden embankment drop off to the west.	>20	B2

Tree No.	Species	Height (m)	Stem Diameter (mm)	Crown Spread				Age Class	Condition		General Notes	Est. Yrs Remaining	Grade / Category
				N	E	S	W		P	S			
T39	Norway maple	16	550	6	6	6	6	EM	G	F	Dominant feature tree providing key landscaping screening of the adjacent gardens. Growing as part of a short woodland strip before the sudden embankment drop off to the west.	>10	C2
T40	Silver birch	12	180	2	3	3	2	M	P	P	Poorly structured specimen struggling for light and space between adjacent dominant trees and site building.	<10	U
T41	Yew	8	330	5	6	4	4	EM	G	G	Small specimen that forms the northern tree within the short woodland strip before the sudden embankment drop off to the west.	>20	B2
G42	London plane/Silver maple/Horse chestnut	8	320	6	6	6	6	SM	G	G	TPO.542. Uniformly planted line of well-structured trees running up the embankment between the road and G111.	>20	B2
G43	Lawson	14	420	6	6	6	6	M	G	G	TPO.542. Uniformly spaced group of dominant feature trees within the wider group of G111.	>20	B2
T44	Willow	11	410	5	6	7	2	M	G	F	TPO.542. Mature specimen with typical aging features of historically snapped limb and cavities, growing within the wider group of G111.	>20	B2
T45	London plane	12	500	6	6	7	7	EM	G	G	TPO.542. Dominant feature tree within the wider group of G111.	>20	B2
T46	Willow	11	570	7	4	7	8	M	G	G	TPO.542. Mature specimen with typical aging features of historically snapped limb and cavities, growing within the wider group of G111.	>20	B1
T47	Pine	18	470	6	6	6	6	EM	G	G	Typically tall fastigiate well-structured specimen growing to the west of the access road.	>20	B1
G48	Beech	18	1200	See TCP				M	G	G	Collection of two well-structured mature dominant landscape features trees. Growing on the steep embankment of the below ground bunker structure, showing a number of large exposed buttress roots as a result.	>40	A2
T49	Yew	9	430	6	2	2	5	EM	F	F	Heavily smothered specimen by adjacent mature G48.	>10	C1
T50	Pine	17	250	4	4	4	2	EM	G	F	Typically tall fastigiate well-structured specimen growing to the west of the access road.	>20	B1
T51	Blue atlas cedar	11	370	2	4	6	6	SM	G	P	Young specimen that has seen a recent snap out or one of the included bark co-dominant leaders. Second leader will likely now mature through apical dominance.	>10	C2
T52	Pine	18	960	8	8	10	9	M	G	G	TPO.542. One of the sites most notable arboricultural and landscape feature trees, that is well structured and a good all-round example of its species.	>40	A1
G53	Yew/Holly	9	350	See TCP				EM	F	F	Asymmetrically smothered group as result of adjacent larger specimens.	>10	C2
T54	Pine	17	490	6	7	7	6	EM	G	G	One of the sites most notable arboricultural and landscape feature trees, that is well structured and a good all-round example of its species.	>40	A1
T55	Ash	13	550	5	7	7	4	EM	G	F	Asymmetrically structured tree as result of adjacent larger specimens.	>20	B2
T56	English oak	13	450	7	7	6	5	SM	G	G	Well structure tree with slight asymmetrical crown shape as result of adjacent large specimens to the south and existing site building to the west.	>20	B1

Tree No.	Species	Height (m)	Stem Diameter (mm)	Crown Spread				Age Class	Condition		General Notes	Est. Yrs Remaining	Grade / Category
				N	E	S	W		P	S			
T57	Holly	7	250	2	2	2	2	SM	G	F	Small landscape amenity tree planted to provide tree and vegetation cover to the north of the existing carpark.	>10	C1
T58	Eucalyptus	6	180	3	3	3	3	SM	G	F	Small landscape amenity tree planted to provide tree and vegetation cover to the north of the existing carpark.	>10	C1
T59	Eucalyptus	5	180	3	3	3	3	SM	G	F	Small landscape amenity tree planted to provide tree and vegetation cover to the north of the existing carpark.	>10	C1
T60	Beech	7	700	8	8	8	7	EM	F	F	TPO.542. Landscape amenity tree planted to provide tree and vegetation cover to the north of the existing carpark. Showing signs of deteriorating physiological condition.	>10	C1
G61	Mixed broadleaf/conifer	14	250	See TCP				EM	G	F	TPO.542. Likely mix of planted and self-seeded specimens providing visual screening and site demarcation to the north of the central carpark.	>10	C2
T62	Spruce sp.	20	650	3	3	3	3	M	P	F	Typically tall fastigate well-structured specimen growing to the east of the central carpark. Thinning foliage does though suggest that it is in declining physiological health. Likely as a result of poor growing area and heavy soil compaction.	>10	C1
G63	Mixed broadleaf	16	450	See TCP				EM	G	F	TPO.542. Well-structured mixed species woodland group that forms an important site demarcation, screening and landscape feature.	>20	B2
T64	Yew	7	180	3	6	3	3	EM	P	P	Poorly structured specimen struggling for light and space between adjacent dominant T65.	>10	C2
T65	Oak sp.	15	1300	7	6	7	6	V	F	P	TPO.542. Shows significant age and veteran features, including lost and snapped sections long with major cavities in the lower stem. Has been shown as Category B tree given its ecological value and veteran status.	>20	B1
T66	Hawthorn	7	230	3	6	4	3	M	P	P	Poorly structured specimen struggling from root compaction.	<10	U
G67	Mixed broadleaf	8	200	3	3	3	3	SM	G	G	Small landscape amenity trees planted to provide tree and vegetation cover to the south of the existing carpark.	>10	C2
T68	Beech	10	340	5	5	5	5	SM	G	F	Small landscape amenity tree planted to provide tree and vegetation cover to the south of the existing carpark.	>20	B2
T69	Hornbeam	9	290	5	5	5	5	SM	G	G	Small landscape amenity tree planted to provide tree and vegetation cover to the south of the existing carpark.	>20	B2
T70	Blue atlas cedar	9	430	5	5	5	5	SM	F	F	TPO.542. Well structured and well-spaced specimen, with no significant defects.	>20	B1
T71	Yew	5	260	5	5	5	5	SM	G	G	TPO.542. Well structured and well-spaced specimen, with no significant defects.	>10	C1
T72	Blue atlas cedar	12	670	7	7	7	7	EM	G	G	TPO.542. One of the sites most notable arboricultural and landscape feature trees, that is well structured and a good all-round example of its species.	>40	A1

Tree No.	Species	Height (m)	Stem Diameter (mm)	Crown Spread				Age Class	Condition		General Notes	Est. Yrs Remaining	Grade / Category
				N	E	S	W		P	S			
T73	Beech	17	510	6	6	6	4	M	F	F	TPO.542. Forms an import visual amenity tree at the entry to the site along with T73 to G76.	>20	B2
T74	Beech	17	510	7	7	7	5	M	G	F	TPO.542. Forms an import visual amenity tree at the entry to the site along with T73 to G76.	>20	B2
T75	Beech	11	300	5	5	5	4	SM	F	F	TPO.542. Forms an import visual amenity tree at the entry to the site along with T73 to G76.	>10	C2
G76	Beech	14	600	6	6	6	6	M	G	F	TPO.542. Forms an import visual amenity tree at the entry to the site along with T73 to G76.	>20	B2
G77	Yew/sycamore	7	460	5	5	5	5	EM	P	P	Poorly structured group of heavily smothered closely growing trees.	>10	C2
G78	Beech	10	250	5	5	5	5	SM/EM	G	G	TPO.542. Group of two trees showing a shared crown area.	>20	B2
G79	Pine	16	500	6	6	6	6	EM	G	G	TPO.542. Closely growing asymmetrical group of trees that dominate the subordinate group of G80 below them.	>20	B2
G80	Silver birch/Hornbeam	7	200	4	4	4	4	SM	G	G	TPO.542. Closely growing asymmetrical group of trees dominated by the larger group of G79 above them.	>10	C2
T81	Beech	9	360	6	6	6	6	SM	G	G	Well structured and well-spaced specimen, with no significant defects.	>20	B1
T82	Sycamore	11	300	6	6	3	5	SM	G	G	Asymmetrically structured tree showing a shared crown area with T83. Growing within the raised planted landscape section to the south of the site adjacent to Bracondale (road).	>10	C2
T83	Silver maple	11	420	4	5	7	5	EM	P	F		<10	U
T84	Sycamore	8	250	4	4	5	5	EM	G	F	Dominant feature tree within the wider group of G32.	>10	C2
T85	Cherry	8	250	6	6	6	6	M	G	F	Dominant feature tree within the wider group of G32.	>10	C2
G86	Leyland cypress	9	150	3	3	3	3	SM	G	F	Linear group of formally planted trees providing site demarcation screening of the site entrance to the east.	>10	C2
G87	Pine sps.	7	250	5	5	5	5	SM	G	F	Linear group of formally planted trees providing site demarcation screening of the site to the east from Bracondale (road). Growing within the raised planted landscape section.	>10	C2
G88	Sycamore	12	500	See TCP				SM/EM	F	F	Self seeded collection of railway embankment trees to the north east of the site boundary.	>10	C2
G89	Mixed broadleaf	14	300	5	5	5	5	SM	F	F	Linear group of formally planted trees providing site demarcation screening of the site to the east.	>10	C2
G90	Mixed broadleaf	14	500	5	5	5	5	EM	F	F	Linear group of formally planted trees providing site demarcation screening of the site to the east.	>10	C2
T91	Silver birch	13	270	5	5	5	5	M	G	G	Well structured tree with adjoining crown with T92.	>20	B2
T92	Silver birch	13	270	5	5	5	5	M	G	F	Well structured tree with adjoining crown with T91.	>20	B2

Tree No.	Species	Height (m)	Stem Diameter (mm)	Crown Spread				Age Class	Condition		General Notes	Est. Yrs Remaining	Grade / Category
				N	E	S	W		P	S			
G93	Beech	13	450	6	6	6	6	EM/M	F	F	Linear group of formally planted trees providing site demarcation screening of the site to the east.	>20	B2
T94	Ash	9	740	4	7	7	3	V	P	P	Tree in heavy physiological and structural decline.	<10	U
G95	Beech	11	400	4	4	4	4	EM	G	F	Linear group of formally planted trees providing site demarcation screening of the site to the east.	>20	B2
G96	Sycamore/lime	12	250	4	4	4	4	SM/EM	G	F	Linear group of formally planted trees providing site demarcation screening of the site to the east.	>10	C2
T97	Fastigate beech	10	320	4	4	4	4	EM	G	G	Well structured and well-spaced specimen, with no significant defects.	>20	B1
T98	Horse chestnut	6	270	5	5	5	5	SM	G	G	Well structured and well-spaced specimen, with no significant defects.	>20	B2
T99	English oak	17	490	8	7	5	5	EM	G	G	Dominant feature tree on the woodland edge within the wider group of G101.	>20	B2
T100	Hornbeam	6	300	6	6	6	6	SM	G	G	Small feature tree on the woodland edge within the wider group of G101.	>20	B1
G101	Mixed broadleaf	20	1000	See TCP				M	F	F	Large area of woodland to the south west of the site area. Shows a typically mixed group of woodland feature trees from Category A well formed specimens, through to heavily declining and partially collapsed structures. Overall shows as an important woodland area both arboriculturally and ecologically.	>20	B2
G102	Cherry	6	160	5	5	5	5	SM	G	F	Small amenity landscape trees provides part screening of cycle park area.	>10	C2
T103	Lawson	16	300	3	3	3	3	M	G	G	Typically tall fastigate well-structured specimen growing to the east of G22.	>20	B2
G104	Lawson	15	200	See TCP				EM	G	F	Well-structured woodland corner group that forms an important site demarcation, screening and landscape feature.	>10	C2
G105	Sycamore	11	220	See TCP				SM	F	F	TPO.542. Group of self-seeded species of low arboricultural or landscape value.	>10	C2
T106	Lime	17	910	6	6	6	6	M	F	F	TPO.542. Mature dominant landscape feature tree within the central area of the site. Shows significant medium and some large dead wood with a history crown pruning (both typical of species and age).	>20	B!
T107	Oak sp.	14	240	3	5	5	5	S	G	G	TPO.542. Slightly asymmetrical crown form as a result or suppression from northern dominant T106.	>20	B1
T108	Lime	15	770	6	5	5	5	M	F	F	TPO.542. Dominant feature tree with the central site area. Slightly asymmetrical as a result of adjacent trees.	>20	B2
T109	Oak sp.	13	820	8	10	9	9	M	G	G	TPO.542. Dominant feature tree with the central site area. Slightly asymmetrical as a result of adjacent trees. Good example of species.	>40	A2
T110	Oak sp.	12	480	3	6	6	6	E	G	F	TPO.542. Dominant feature tree with the central site area. Slightly asymmetrical as a result of adjacent trees.	>20	B2
G111	Mixed broadleaf	20	1000	See TCP				M	G	F	Mixture of closely growing tall shrub and young tree specimens that provides dense site screening and site demarcation.	>10	C2

G: Good

F: Fair

P: Poor

SM: Semi mature

EM: Early mature

M: Mature

OM: Over mature

V: Veteran

APPENDIX C TREE CONSTRAINTS PLAN

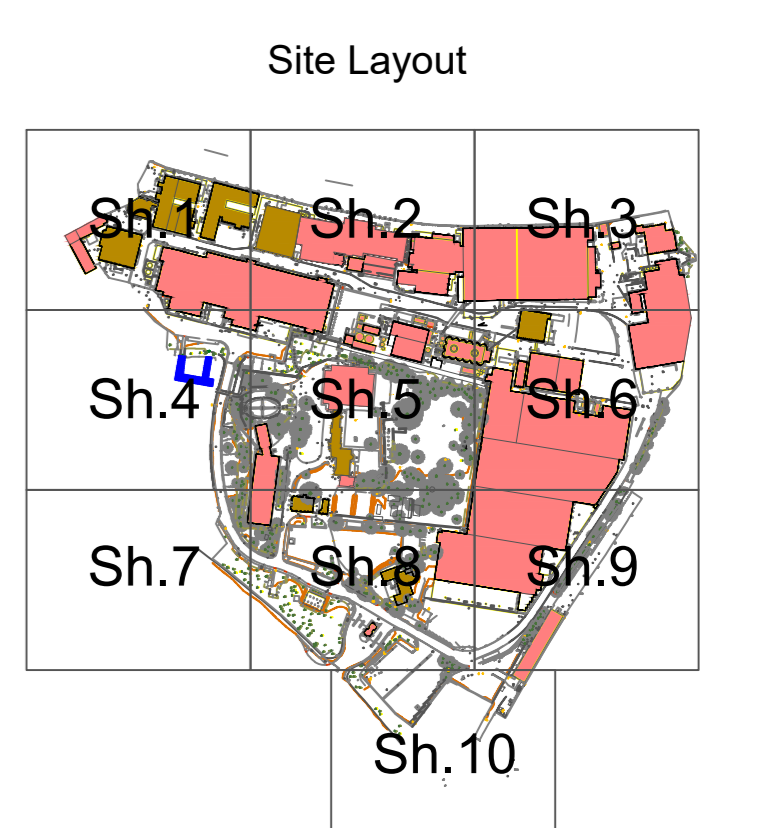
Tree Constraints Plan showing existing layout against BS5837:2012 tree categories & Root Protection Areas

BS5837 Categories
Canopy and stem colour denotes BS5837 category. Pink denotes Root Protection Area.

- Category A (Green)
- Category B (Blue)
- Category C (Grey)
- Category U (Dark Red)

- Category A**
Trees of high quality with an estimated remaining life expectancy of at least 40 years.
- Category B**
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- Category C**
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or a stem diameter below 150mm.
- Category 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.

Tree Groups
BS5837 Category denoted by hatch colour.



1	552055JrApril22_TCPEX_FV1.dwg	07/04/22
No.	Revision/Issue	Date



9 Holyrood Street, SE1 2EL
Tel: 0203 544 4000
Project Name and Address
Carrow Works
Bracondale
Norwich
NR1 2DD

Project Carrow Works	Sheet Sheet 1
Date 07/04/2022	
Scale 1 to 200 at A0	

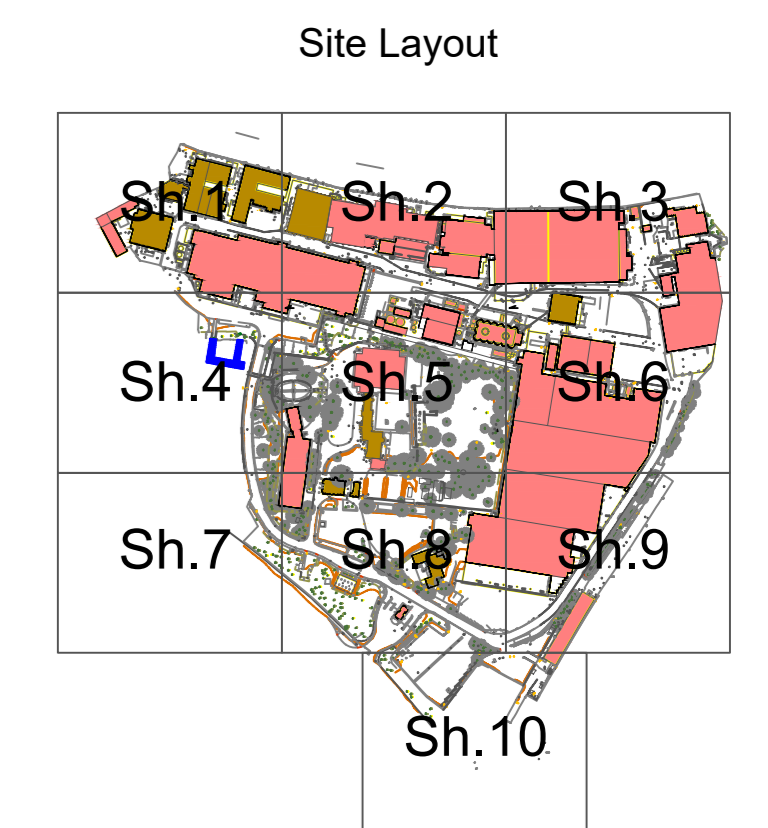
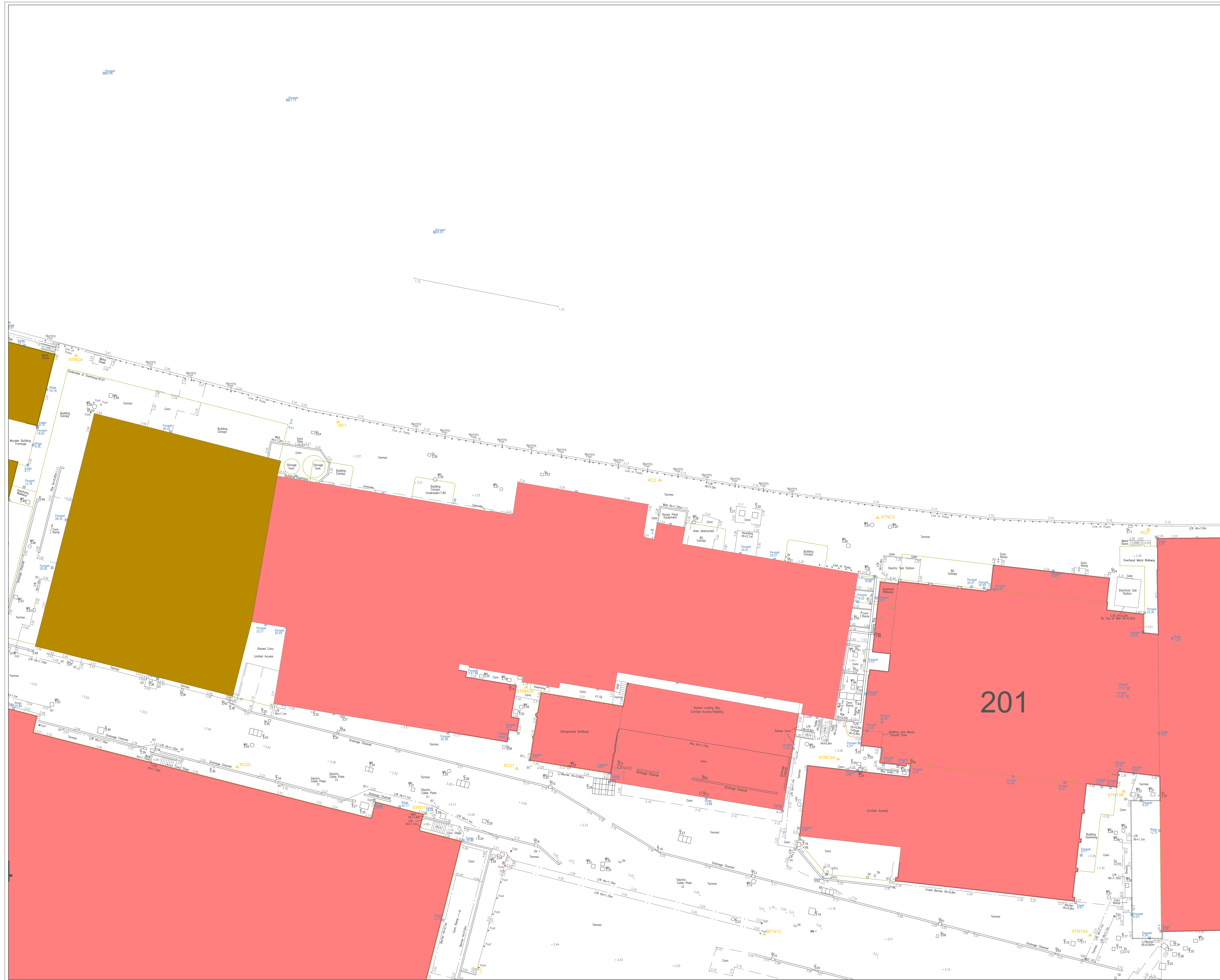
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Tree Groups
BS5837 Category denoted by hatch colour.



1	552055jrApril22_TCpex_FV1.dwg	07/04/22
No.	Revision/Issue	Date



9 Holyrood Street, SE1 2EL
Tel: 0203 544 4000

Project Name and Address
Carrow Works
Bracondale
Norwich
NR1 2DD

Project Carrow Works	Sheet Sheet 2
Date 07/04/2022	
Scale 1 to 200 at A0	

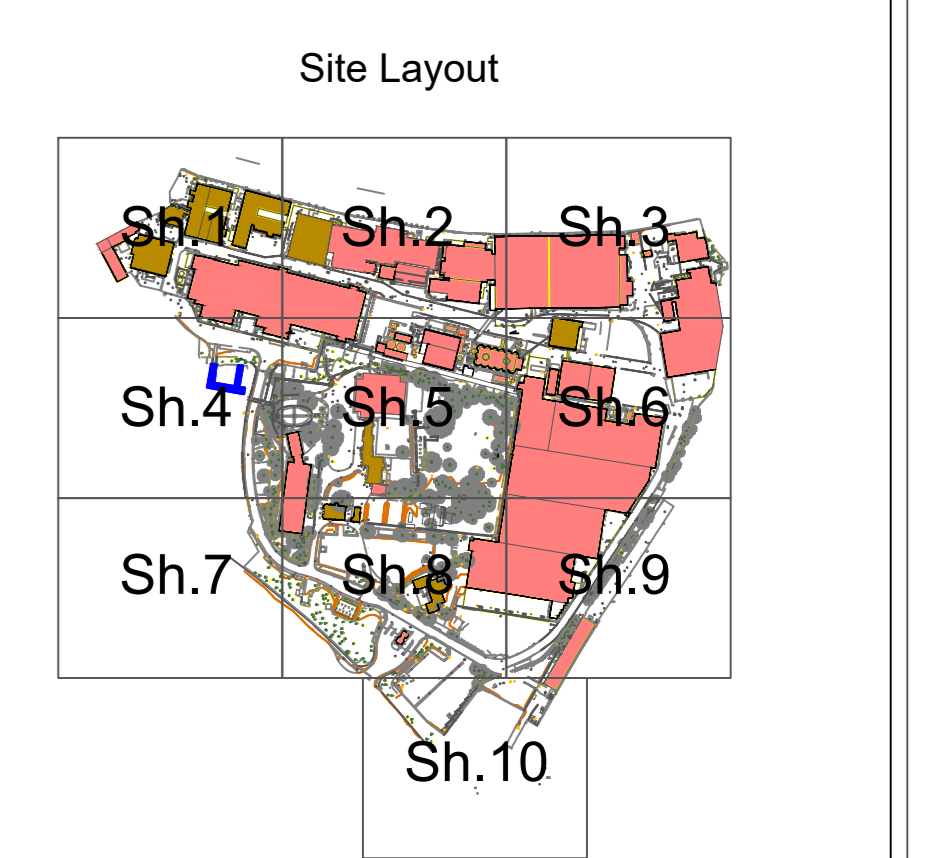
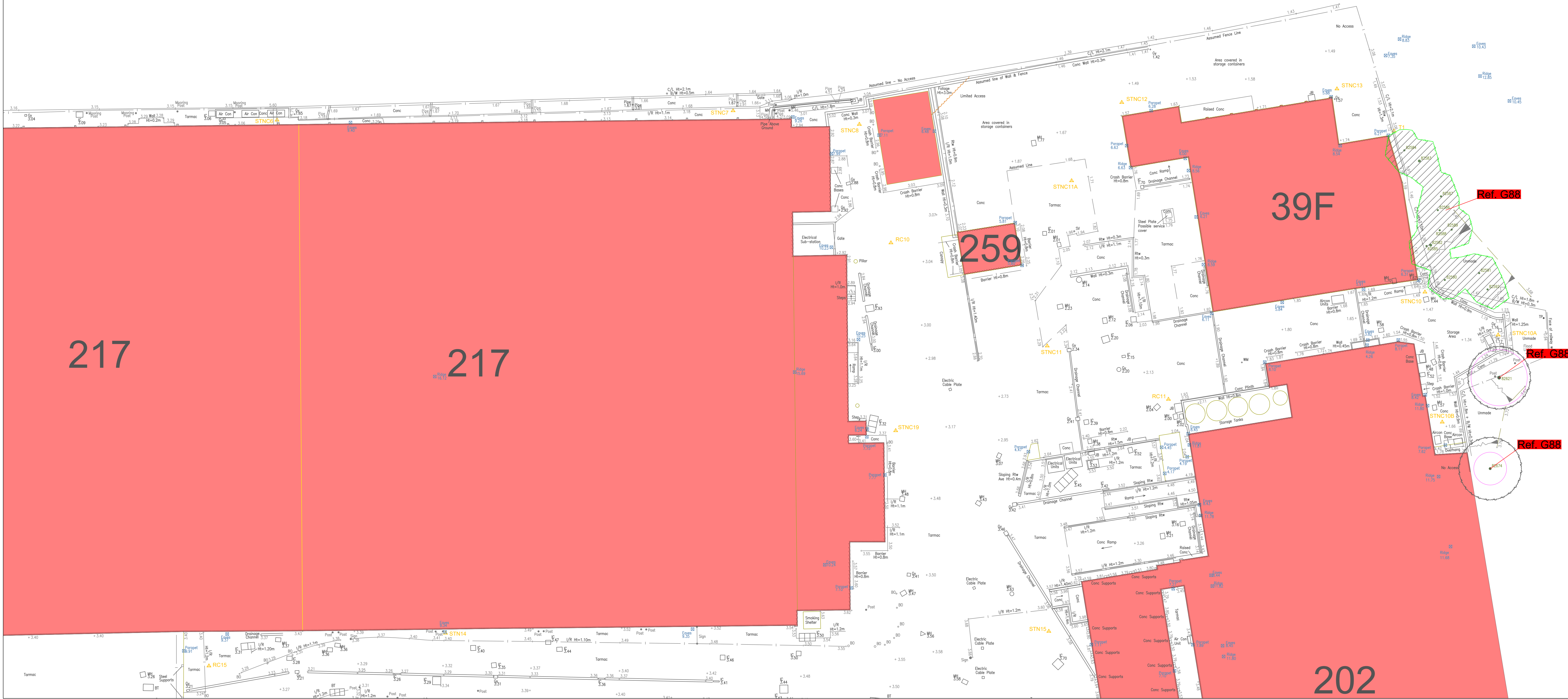
Tree Constraints Plan showing existing layout against BS5837:2012 tree categories & Root Protection Areas

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Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
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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.

Tree Groups
BS5837 Category denoted by hatch colour.



No.	Revision/Issue	Date
1	552055jrApril22_TCpex_FV1.dwg	07/04/22



9 Holyrood Street, SE1 2EL
Tel: 0203 544 4000
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Carrow Works
Bracondale
Norwich
NR1 2DD

Project Carrow Works	Sheet Sheet 3
Date 07/04/2022	
Scale 1 to 200 at A0	

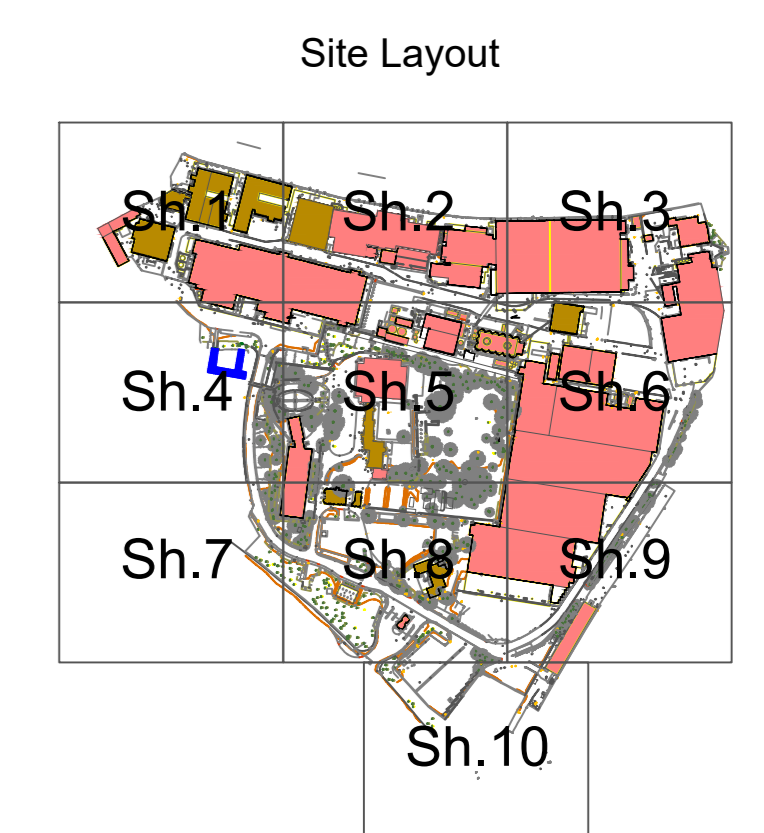
Tree Constraints Plan showing existing layout against BS5837:2012 tree categories & Root Protection Areas

BS5837 Categories
Canopy and stem colour denotes BS5837 category. Pink denotes Root Protection Area.

- Category A (Green)
- Category B (Blue)
- Category C (Grey)
- Category U (Dark Red)

- Category A**
Trees of high quality with an estimated remaining life expectancy of at least 40 years.
- Category B**
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- Category C**
Trees of low quality with an estimated remaining life expectancy of at least 10 years, or a stem diameter below 150mm.
- Category 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.

Tree Groups
BS5837 Category denoted by hatch colour.



1	552055JrApril22_TCPex_FV1.dwg	07/04/22
No.	Revision/Issue	Date



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Tel: 0203 544 4000

Project Name and Address
Carrow Works
Bracondale
Norwich
NR1 2DD

Project Carrow Works	Sheet Sheet 4
Date 07/04/2022	
Scale 1 to 200 at A0	

