**Northstowe**
Phase 1 Planning Application

# Tree Survey and Arboricultural Implications Assessment

February 2012

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Northstowe

LOCKHART GARRATT
TREES • WOODLAND • FORESTRY

# ARBORICULTURAL IMPLICATIONS ASSESSMENT

**Northstowe Phase 1, Cambridgeshire**

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# 1. INTRODUCTION

1.1.1 This Arboricultural Implications Assessment (AIA) in line with BS5837:2005 *Trees in Relation to Construction - Recommendations*, has been prepared in relation to the proposed development at the Northstowe phase 1 site, near Longstanton, Cambridgeshire, see the aerial photographs at **Appendix 1**.

1.1.2 The scope of this project is to provide supporting information with regards to the outline application for the first phase of Northstowe, and is threefold:

- to undertake a survey of trees on the site and within influencing distance of the site;
- provide a Tree Constraints Plan for the site including root protection areas and canopy spreads to establish the full constraints that the trees pose on the site; and
- prepare an Arboricultural Implications Assessment (AIA) in relation to the proposed site layout. The AIA will assess the trees in relation to the illustrative masterplan proposals and the probable impact of the proposed development on the existing tree resource.

1.1.3 This instruction was confirmed by Terence O'Rourke Ltd who are acting on behalf of Gallagher.

# 2. DOCUMENTS PROVIDED

2.1.1 As background information the following documentation has been provided to prepare this report:

- 'Survey of land at phase 1 area Northstowe' - Topographical Survey. Drawing No: JJG/TS/112011/1. Date: 27/07/11. Produced by: Total Surveys Ltd, Land & Engineering Surveyors, Westall Centre, Holberrow Green Redditch, Worcestershire, B96 6JY.
- 'Survey of land at Sivewright land Northstowe' - Topographical Survey. Drawing No: JJG/TS/112011/2. Date: 14/10/11. Produced by: Total Surveys Ltd, Land & Engineering Surveyors, Westall Centre, Holberrow Green Redditch, Worcestershire, B96 6JY.
- 'Northstowe. Plan 1a. Parameters plan: Core area. Land use, open space & landscape'. Date: Febuary 2012. Produced by: Terence O'Rourke Ltd, Everdene House, Deansleigh Road, Bournemouth, BH7 7DU.
- 'Northstowe. Plan 1b. Parameters plan: Attenuation ponds: Land use, open space & landscape'. Date: February 2012. Produced by: Terence O'Rourke Ltd, Everdene House, Deansleigh Road, Bournemouth, BH7 7DU.

# 3. RELEVANT BACKGROUND INFORMATION

## 3.1 Site Description

3.1.1 The 122 hectare (ha) application site is divided into two separate areas: the primary development site 97ha to the northeast of Longstanton and the area of excavation and infrastructure works 25ha to the southwest of Longstanton (see the two aerial

photographs at **Appendix 1**). It is approximately 10km to the north west of Cambridge.

3.1.2 The 97ha primary development site is flanked to the north and east by the Cambridgeshire Guided Busway (CGB), residential housing to the west and agricultural fields on its remaining boundaries. The sites main land uses comprise of the 18-hole Cambridge Golf Course and agricultural fields.

3.1.3 The area of excavation and infrastructure works is 25ha in size. The site lies adjacent to the B1050 Hattons Road, to the southwest of Longstanton and north of New Close Farm. It is in arable agricultural use. Longstanton Brook runs through the west of the area.

## 3.2 Development Proposal

3.2.1 Phase 1 of the Northstowe new town primary development site mixed use proposal comprises of:

- up to 1,500 dwellings (including up to 35% affordable housing subject to viability assessment during the application process)
- a mixed use local centre
- a three form entry primary school
- approximately 5 ha of employment land including a household recycling centre and foul water pumping station
- formal and informal public open space, including a sports hub
- additional infrastructure works

3.2.2 To the southwest of Longstanton the area of excavation and infrastructure works will comprise of attenuation ponds and complementary landscaping.

3.2.3 The proposed land uses and layout are illustrated on the Parameters Plans produced by Terence O'Rourke at **Appendix 2**.

## 3.3 Tree Protection: Legal Status

3.3.1 The Local Planning Authority (LPA) has been contacted to establish whether any trees contained within the proposed development boundary are protected by either a Tree Preservation Order (TPO) or are within a Conservation Area.

3.3.2 It has been confirmed by email (9th December 2011) by Edward Durrant Senior Planning Officer at South Cambridgeshire District Council that **there are no TPOs or Conservation Areas within the site boundary**.

3.3.3 Although the trees are not protected it should be considered that any proposed tree works detailed in the Tree Schedule at **Appendix 3**.

3.3.4 This report does not consider the general requirements of the Forestry Act 1967 as full planning permission is exempt from the need for a felling licence (although it is recommended that the Forestry Commission is consulted prior to felling).

# 4. ARBORICULTURAL SURVEY DATA

## 4.1 Data Collection

4.1.1 Site visits were undertaken on the 26th, 29th August, 2nd, 5th September and 18th November 2011 by Bryan Clary *BSc(Hons)Arb MArborA MICFor*, Arboricultural Consultant at Lockhart Garratt Ltd and trees were inspected from ground level.

4.1.2 The survey recorded details of the trees within the survey boundary of both the primary development site the area of excavation and infrastructure works as illustrated on the on the aerial photographs at **Appendix 1.**

4.1.3 The survey in line with paragraph 4.2 of BS5837:2005 recorded trees either as individual specimens or as groups where these trees were aerodynamically, culturally or visually important as groups. Information on hedgerows was also collected to complement the tree survey.

4.1.4 The complete method of data collection during the tree survey can be found at **Appendix 4**.

## 4.2 BS5837:2005 Tree Categorisation

4.2.1 BS5837:2005 sets out the methodology for surveying trees on potential development sites in order to identify them within a prioritised system of retention categories, as summarised below and given in full at within the BS5837:2005 Cascade Chart for Tree Retention at **Appendix 3**:

**A Category** Trees of high quality and value in such a condition as to be able to make a substantial contribution for a minimum of 40 years

**B Category** Trees of moderate quality and value in such a condition as to make a significant contribution for a minimum 20 years

**C Category** Trees of low quality and value currently in adequate condition to remain until new planting could be established and expected to remain for a minimum of 10 years, or young trees with a stem diameter less than 150mm measured at 1.5 metres above ground level.

**R Category** 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 or forestry management.

4.2.2 Additionally, BS5837:2005 provides subcategories 1-3 within the category system outlined above which indicate the area(s) in which a tree or group retention value lies. An explanation of these values is given within the BS5837:2005 Cascade Chart for Tree Retention at **Appendix 3**:

**1** Retention values that are mainly arboricultural.

**2** Retention values that are mainly landscape.

**3** Retention values that are mainly cultural, including conservation.

4.2.3 It should be noted that the BS5837:2005 Cascade Chart for Tree Retention only gives recommendations in relation to remaining years. A tree may be considered to have a longer remaining life, but still be considered to be of a lower category given its maturity, condition or overall impact.

4.2.4 In line with BS5837:2005 the A and B category trees should be considered as a constraint on site and provide a substantial contribution to the site. As a result, A and B category trees should be retained and incorporated into the scheme where possible.

4.2.5 Generally C and R category trees are considered to be of low quality or are young specimens, which can be readily replaced and therefore should not be a constraint in terms of future development.

4.2.6 However, it is generally considered desirable to retain trees wherever reasonably possible to ensure continuity of tree cover and to provide a mature landscape to the development.

## 4.3 Summary of Data

4.3.1 The survey of both the primary development site and the area of excavation and infrastructure works contain 59 individual trees, 139 groups of trees (see Table 1 below) and 25 additional hedgerows. The comments including species, age, condition and the BS5837:2005 retention category for each individual tree and group of trees are given in detail in the Tree Schedule at **Appendix 3**.

Table 1: *Distribution of trees over the whole site by BS5837:2005 tree categorisation*

| Retention Category | Individual Trees | Groups of Trees | Total |
|---|---|---|---|
| **A** | 4 | 1 | **5** |
| **B** | 29 | 41 | **70** |
| **C** | 22 | 94 | **116** |
| **R** | 4 | 3 | **7** |
| **Total** | **59** | **139** | **198** |

4.3.2 The location of each individual tree, the groups of trees and their associated constraints are shown on the Tree Constraints Plans at **Appendix 2**.

4.3.3 In line with the BS5837:2005 retention categories, there are four individual trees and one group of trees which merit an A category and are of high quality, with the opportunity to provide a significant future contribution (40+ years) to the site. 29 individual trees and 41 groups of trees merit a B category and are considered to be of moderate quality with a minimum of 20 years useful life expectancy remaining.

4.3.4 In addition there are 22 individual trees and 94 groups of C category trees, which are either of low quality or are young specimens.

4.3.5 The remaining four individual trees and three groups of trees are R category and have less than 10 years life expectancy remaining and are either dead, dying or close to structural failure.

## 4.4 Description of the Tree Resource: Primary Development Site

4.4.1 Those trees within the primary development site include 45 individual trees, 123 groups of trees (see Table 1 below) and 20 additional hedgerows. These trees are identified from G1 to H188 within the Tree Schedule at **Appendix 2** and collated within Table 2 below.

Table 2: *Distribution of trees over the primary development site by BS5837:2005 tree categorisation*

| Retention Category | Individual Trees | Groups of Trees | Total |
|---|---|---|---|
| **A** | 4 | 1 | **5** |
| **B** | 22 | 35 | **57** |
| **C** | 18 | 85 | **103** |
| **R** | 1 | 2 | **3** |
| **Total** | **45** | **123** | **168** |

4.4.2 The composition and density of the tree resource varies over the primary development site. The majority of the mature trees are either located within hedgerow boundary features or are located within Cambridge Golf Club either on its northern boundary with Station Road or within its south western corner.

4.4.3 The trees within the golf course are largely located between the fairways and are generally young and C Category trees. (Please note that BS 5837:2005 classifies all trees under 150mm as C Category). The majority of these groups have a proportion of individual trees with retention value.

4.4.4 Three areas have been identified in describing the tree resource. Each of the areas has a distinct set of tree related characteristics relating to their current land use:

- Mature trees within Cambridge Golf Club;
- Young trees within Cambridge Golf Club; and
- Remaining trees on the site – including trees adjacent to Station Road and the hedgerows in the surrounding arable fields.

*Mature Trees within Cambridge Golf Club*

4.4.5 Given the size of the golf course mature tree coverage is low and is generally limited to trees adjacent to Station Road to the north (G58), on the southern boundary and trees in the south west corner.

4.4.6 Those trees in the south western corner include trees of high value such as:

- An offsite prominent group of hybrid black polar (B Category).
- Offsite groups (or adjacent to the site boundary) with good future potential G2 (A Category), G6 and G16 (B Category).
- Sycamore T5, G8 and T11 (B Category) all middle aged or mature with good retention value.
- Mixed woodland group G13 with the addition of the A Category oak T14.
- Mature ash and oak trees within a hedgerow (T19 to T33).
- Group, G76 located around a lake (B Category). The group is a good landscape feature and has potential to be managed.

- Trees within hedgerow on the southern boundary (G252, G153 and G155, mainly ash).

*Young trees within Cambridge Golf Club*

4.4.7 A large proportion of the trees on Cambridge Golf Club that are young to middle aged have been planted within the last 15-20 years. There is evidence of formative pruning and crown lifting (that has resulted in many partially occluded bark wounds on main stems).

4.4.8 It appears that these trees were planted as whips (evidence of tree shelters).

4.4.9 Growth rates for the trees planted around the entire course are mixed. In some areas they are exceedingly poor and the trees have not established and have no retention value (these include many trees below the 75mm diameter threshold within BS5837:2005 and therefore were not included within the survey).

4.4.10 It is noted that on many specimens that mower damage is evident around the bases of trees from collisions. In addition it is likely that no mulches/herbicide were used to check competition from surrounding vegetation. The combination of these factors has likely contributed to the poor growth rates.

4.4.11 Around the golf course the planting mix also varies. Close to the clubhouse to the north there is a large number of species in the mix. Anecdotally trees were planted by members around 15 years ago and they had a choice of what they individually planted.

4.4.12 Elsewhere within the golf course there is a substantial amount of field maple. Many of these trees are of good quality. In relation to other species /trees that could be potentially retained there is a very high overall percentage (and probably surplus to needs).

4.4.13 In addition the species mix (even in small woodland type blocks) appears not to be conducive for long term sustainability. The mixes are not weighted towards trees with large ultimate sizes with a limited choice of trees to be potentially thinned if they are not suitable in terms of long term form.

4.4.14 Several linear groups of Lombardy poplar have also been planted (G107 and G109, B Category) these have good future potential although their popularity as a species has declined.

4.4.15 There are several groups where the mix has included part or all willow (e.g. G157 part willow or G162 all willow). It is recommended that these trees are not retained.

4.4.16 Finally there are groups largely of good quality a worthy of B Category on the western boundary of the site, including G48 and G49.

4.4.17 In conclusion there are many specimens within the young groups including oak, ash and Norway maple that have good future potential.

*Remaining trees on the site*

4.4.18 Several C and B category trees and groups of trees line Station Road.

4.4.19 The trees within the curtilage of 41 Station Road are largely low quality and should not be seen as a constraint.

4.4.20 The majority of the arable fields that make up the site have boundary hedgerows which are generally of good quality. Young trees are within many of the unmaintained hedgerows.

4.4.21 Overall tree coverage outside the golf course is mainly hedgerows.

## 4.5 Description of the Tree Resource: Area of Excavation and Infrastructure Works

4.5.1 Trees located within the area of excavation and infrastructure works include 14 individual trees, 16 groups of trees (see Table 1 below) and five additional hedgerows. These trees are identified from H189 to G223 within the Tree Schedule at **Appendix 2** and collated within Table 3 below.

Table 3: *Distribution of trees over the area of excavation and infrastructure works by BS5837:2005 tree categorisation*

| Retention Category | Individual Trees | Groups of Trees | Total |
|---|---|---|---|
| **A** | - | - | **-** |
| **B** | 7 | 6 | **13** |
| **C** | 4 | 9 | **13** |
| **R** | 3 | 1 | **4** |
| **Total** | **14** | **16** | **30** |

4.5.2 The majority of the tree resource is located adjacent to the B1050 with the remainder mainly located on field boundaries.

4.5.3 To the east, lining the B1050 are several individual ash trees, groups of ash and hedgerows (G190 to G197).

4.5.4 Group G195 has powerlines above the trees and to maintain an appropriate wayleave hard pruning has resulted in trees with little future potential. It is recommended that this group is removed and replaced with specimens of a small ultimate height.

4.5.5 G201 is outside the application boundary and is small stand of young trees including a handful of good quality oak. On the northern side of this stand is a dying ash (T198) which is likely to deteriorate further.

4.5.6 The remainder of the trees to the east of the B1050 are located on field boundaries and include reasonable quality ash, hawthorn and field maple (H203 to T212). Two groups to note are young well spaced native broadleave specimens adjacent to a bridleway to the east of the application boundary (G213 and G214).

4.5.7 Trees T216 to 223 are located to the west of the B1050 and are largely roadside ash of reasonable quality to the south with an element of roadside scrub to the north.

# 5. AIA: PRIMARY DEVELOPMENT SITE

## 5.1 Overview

5.1.1 The Tree Constraints Plans have been superimposed onto the parameters plan produced by Terence O'Rourke Ltd. The resulting Arboricultural Implications Plan (at **Appendix 2**) indicates the relationship between the trees and the primary development site and has helped inform this appraisal.

5.1.2 It should be noted that this is an outline planning application and finer detail on the tree related implications will become known as the detailed design proposals evolve.

## 5.2 Site Layout and Tree Related Conflicts

5.2.1 The design of the primary development site has utilised the majority of the higher quality mature trees onsite, an example is the retention of the majority of the mature trees identified on Cambridge Golf Course (see Section 4.4.6 and 4.4.7) largely adjacent to formal recreation and sports pitches.

5.2.2 It is proposed that to accommodate the development the majority of the young trees/low quality trees and groups of trees (largely C Category see Section 4.4.9 to 4.4.12) located centrally to Cambridge Golf Course will be removed or considered for relocation (if they have good future potential). Where appropriate partial retention of groups will be considered.

5.2.3 Within the application open space 'corridors' have been included across the site and on its boundaries permitting tree retention described above, but also provides opportunity for tree relocation (of some of the younger better quality trees 4.4.9 to 4.4.12) and will provide potential for future tree planting.

5.2.4 The alignment of the individual elements of the proposal including buildings and access infrastructure have generally been orientated to the centre of the site, thereby reducing the conflict with the bulk of the larger, higher quality trees on the site boundary.

5.2.1 Unavoidable conflicts have arisen with regard to the primary development and the trees identified within the tree survey, specifically the direct and indirect tree loss:

- to facilitate the construction of individual areas such as buildings, primary school, community centre etc.;
- through the construction and/or upgrading of access infrastructure; and
- through the creation of allotments, formal recreation areas and community gardens.

5.2.2 In addition there is potential for tree related conflict during the construction phase i.e. unnecessary damage to retained trees and their soils, therefore use of tree protection has been identified.

## 5.3 Below Ground Constraints

*General*

5.3.1 The below ground constraints are generally confined to the root protection area (RPA). The RPA is a circular area with a radius 12 or 10 times the diameter of the trees measured at 1.5m or at ground, level respectively. The RPA is the minimum

area in which no ground works should be undertaken without due care in relation to the retained tree(s) in order to avoid soil compaction, root severance, changes in levels or soil contamination which could reduce future tree health and/or stability. The shape of the RPA and its exact location will depend upon arboricultural considerations and ground conditions.

5.3.2 The RPA for the trees have been calculated as prescribed by BS 5837:2005 and are shown as circles for simplicity on the Arboricultural Implications Plans at **Appendix 2**. These plans illustrate the relationship between the RPA's associated with the trees and the proposed development.

5.3.3 In addition the Tree Schedule at **Appendix 3** displays the root protection calculations for each tree or group of trees where Radius (m) is the distance of root protection from the main stem and Area ($m^2$) is the overall root protection area.

5.3.4 The amount of high quality tree loss and associated RPA incursions to facilitate the proposed development have been minimised by sympathetic design, however, there is likely to be RPA incursion of trees and potential conflict in areas outlined in Section 5.2.1.

5.3.5 Tree retention is preferred although it is noted that misplaced retention trees may be counterproductive where insufficient above and below ground space allowance, nutrients and water availability may cause long term tree decline or death.

*'No Dig' Construction Information*

5.3.6 Where there are RPA incursions of valuable trees by development it is sometimes appropriate to consider 'no dig' construction techniques for access roads, footpaths, parking spaces or structures. As the detailed designs evolve 'no dig' construction opportunities should be taken into account.

5.3.7 The benefit of the 'no dig' system for access roads, footpaths and parking spaces is that no tree roots are cut, it spreads the load of the construction thereby reducing the compaction of the soil and finally when a permeable surface layer is applied there still remains a water and gaseous exchange essential for healthy tree roots. This method limits the potential stresses to trees compared with conventional construction methods; it is widely used for footpaths, driveways and access roads close to trees. A well-used brand name is 'CellWeb' although similar products are available (see **Appendix 5**).

5.3.8 It must be noted that the adoption by Highways Authorities of primary and secondary streets 'no dig' construction are highly problematic and unlikely. Therefore, where an RPA conflict exists with a primary or secondary street (and alternative design options have been exhausted) a tree will be identified for removal.

5.3.9 Where RPA incursions are under building footprints trench fill foundations are not recommended due to potential root severance. Where high value trees are to be retained alternative options to trench fill foundations include pile and beam foundations, cantilever foundations or innovative designs such as 'Housedeck'.

*Additional Information*

5.3.10 Hard standing areas such as concrete and tarmac within RPAs can generally be removed during the demolition and construction phases of development, so long as investigation into root activity under the surface is undertaken in the first instance by

an Arboricultural Clerk of Works (ACoW)[1] in advance of any ground works to avoid unnecessary root severance.

5.3.11 With regards to further below ground infrastructure, there is insufficient information available at present to comment as to whether or not there would be adequate space for these to be installed outside of RPAs. If services do enter RPAs the use of hand digging as detailed in the National Joint Utilities Group publication *'Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees'* (NJUG 10, Volume 4, 2007) will be undertaken to minimise the impact on the tree roots.

## 5.4 Trees and Groups of Trees Affected by the Proposal

5.4.1 An appraisal of the Arboricultural Implications Plan has indicated the individual trees and groups of trees that are likely to be affected by the Northstowe phase 1 proposal at this the masterplan phase, see Table 4 below.

5.4.2 Please note that appraisal below is a preliminary exercise and a worst case scenario. At this stage it is unknown whether the individual trees and groups of trees outlined in Table 4 will ultimately be directly lost to development, have their RPAs affected to some degree or be retained, although it is assumed that R category trees will be removed.

5.4.3 Two groups of trees are in a condition (R category) where it is recommended that they are removed as part of good arboricultural management.

5.4.4 A further seven individual trees and 56 groups (of which the majority are young trees on adjacent to the fairways of Cambridge Golf Course) are C category and therefore should not be considered a significant constraint to development. However, there may be opportunity with careful design to retain some of these trees where it is appropriate. In addition there is the opportunity to relocate many of the younger higher quality trees with a tree spade thereby reducing the net loss of onsite trees.

5.4.5 Three individual trees and 12 groups of trees are B category. The majority of these trees are higher quality young to middle aged trees on Cambridge Golf Course although two (G172 and G174) are adjacent to Station Road. Where possible attempts should be made to incorporate these trees into the final design.

5.4.6 No A category trees have been identified.

5.4.7 At this outline planning application stage it is possible for some of these higher quality existing trees and their associated RPAs to be incorporated into the final design either through moving structures within the detailed design or through 'no dig' engineering solutions (see 5.3.6).

[1] The Arboricultural Clerk of Works (ACoW) is engaged by the developer to monitor the implementation of tree related conditions of planning and to give advice in detail as the project proceeds.

Table 4: *Distribution of trees and groups of trees affected by proposed land use*

| | **Retention Category** | | | | |
|---|---|---|---|---|---|
| **Proposed:** | **A** | **B** | **C** | **R** | **H** |
| Residential | - | G61, G64, T73, G102, G107, G125, G143, G145, G156 **(1 + 8 groups)** | G60, G62, G63, T65, G66, G67, G68, G69, G72, G77, G78, G83, G85, G86, G94, G97, G98, G100, G101, G105, G106, G118, G119, G120, G122, G123, G126, G127, G128, G136, G137, G138, G139, G140, G142, G144, G146, G149, G150, G157, G158, G159, G160, G186 **(1 + 43 groups)** | G95, G185 **(2 groups)** | H129, H130, H169, H188 **(4 hedges)** |
| Mixed use/local centre | - | G174 **(1 group)** | G168 **(1 group)** | - | - |
| Employment and recycling centre | - | G172 **(1 group)** | T170, G171 **(1 + 1 group)** | - | H169 **(1 hedge)** |
| Primary school/ community centre | - | - | G111, G113, G114 **(3 groups)** | - | - |
| Formal recreation/ sports pitches | - | T44, G89, T90 **(1 + 2 groups)** | T36, G37, G39, T43, T88, G87, T88, G93 **(4 + 4 groups)** | - | H34 **(1 hedge)** |
| Primary / Secondary Streets | - | T124 **(1)** | G96, G99, T103, G117, G141 **(1 + 4 groups)** | - | H104, H165 **(2 hedges)** |
| Total | - | 3 + 12 groups | 7 + 56 groups | 2 groups | 8 hedges |

5.4.8 As outlined in Section 5.3.8, 'no dig' construction of primary and secondary streets is not appropriate within RPAs, therefore without detailed designs it is assumed that the trees outlined below will be unavoidably removed. Trees include one B category tree, one C Category tree and four groups in addition to two hedgerows.

5.4.9 Significant trees (including B category trees and groups) along with significant hedgerows for removal or retention are illustrated on the Tree retention & removal plan at **Appendix 2**.

5.4.10 It is important to consider that the detailed design will evolve and many tree related conflicts can be overcome.

## 5.5 Above Ground Constraints

5.5.1 Careful design over the site will eliminate the requirement for unnecessary tree removal and significant facilitation pruning, the same is true for any issues relating from future growth.

5.5.2 It is anticipated that the orientation and standoff distance from of buildings will be satisfactory to reduce concerns regarding apprehension, shading, leaf fall, fruit or honeydew.

5.5.3 Overall it is unlikely that there will extensive amounts of facilitation pruning although it is possible that certain trees and groups of trees will require minor pruning such as formative pruning (to enhance their form) or crown lifting to allow uninterrupted passage under the crowns of trees.

5.5.4 All tree pruning should be undertaken to BS3998:2010 '*Tree work – Recommendations'*.

## 5.6 Landscaping and Mitigation

5.6.1 From a public viewpoint there will be a short-term loss of amenity with regard to the current proposal, but there is the opportunity to relocate existing trees and appropriately replace trees in locations complementary to the positioning of the new development.

5.6.2 With regard to the relocation of trees utilising a tree spade it is noted that the majority of the young trees on Cambridge Golf Course are at an ideal size for this approach. Trees undamaged (by strimmers and mechanical collision), of good form and complementary to the planting mix of species should be considered.

5.6.3 Therefore as part of the ongoing commitment to trees, their cultivation and management, further new trees with suitable species choice must be incorporated into the landscaping designs to augment and improve the arboricultural, ecological and aesthetic value of the site.

5.6.4 This new planting will mitigate for the loss of trees on the site and will provide long-term amenity and continuity of tree cover in spite of the unavoidable short-term tree loss. It is recommended that final proposed mitigation planting be addressed within the final landscaping scheme for the site as part of a robust planning condition.

## 5.7 Tree Protection

5.7.1 It is recommended that during the construction phase of the development the key method of protecting the retained trees is through protective tree barriers/fencing enforcing the Construction Exclusion Zone (CEZ).

5.7.2 For further information on the CEZ please see Section 7.

# 6. AIA: THE AREA OF EXCAVATION AND INFRASTRUCTURE WORKS

## 6.1 Overview

6.1.1 The Tree Constraints Plans for the area of excavation and infrastructure works has been superimposed onto the parameters plan produced by Terence O'Rourke Ltd. The resulting Arboricultural Implications Plan (at **Appendix 2**) is an illustrative overview of the proposed development in relation to the existing tree resource.

## 6.2 Site Layout and Trees Affected by the Proposal

6.2.1 The area of excavation and infrastructure works primary role is for the storing of runoff through the construction of two attenuation ponds. In addition an area has been allocated for soil storage.

6.2.2 The design provides opportunity for both tree planting following ground works to construct the ponds and the opportunity for natural regeneration.

6.2.3 Given that the current land use is arable fields and the majority of the trees are on the peripheral boundary of the application it is anticipated that there will be minimal tree conflict and the majority of the trees will be retained.

6.2.4 H203 (a small offsite group of blackthorn and hawthorn), G204 (two C category ash) and T205 (a single C category ash) have been identified close to the edge of an existing drainage ditch. It is likely that these trees will be removed due to potential ground works. These trees are low value and should not be seen as a constraint.

6.2.5 Overall the proposed area of excavation and infrastructure works will have little impact on the current tree resource.

## 6.3 Above and Below Ground Constraints

6.3.1 There is likely to be little direct tree loss. However, it is noted that there is likely to be significant ground works therefore RPA incursions should be prevented through tree protection and enforcing the CEZ (see Section 7).

6.3.2 No facilitation pruning has been identified.

# 7. CONSTRUCTION EXCLUSION ZONE

## 7.1 Overview

7.1.1 The principal protection for the retained trees (above and below ground) and associated soils within the site is through the maintenance of the Construction Exclusion Zone (CEZ). The CEZ will be sacrosanct throughout development and no access will be allowed to the area other than operations specified below or those agreed with the Local Planning Authority (LPA) at a later date.

7.1.2 The positioning of the CEZ should be on the edge of the RPA (see Section 5. The shape of the RPA and their exact location will depend upon arboricultural considerations and ground conditions. In the majority of cases they are adjusted to include tree crowns to prevent damage by construction machinery.

7.1.3 Prior to any onsite construction tree protective measures and the CEZ must be in place. These will be checked prior to the commencement of works by the

Arboricultural Clerk of Works (ACoW)[2]. The installation of tree protection will be undertaken before work commences.

7.1.4 The tree protection fence/barrier once erected will not be moved or relocated without written approval from LPA.

7.1.5 At the end of the project the fence will be removed only after confirmation by the ACoW and the LPA.

## 7.2 Ensuring the Integrity of the Construction Exclusion Zone

7.2.1 To guarantee the protection that the CEZ provides to retained trees and soils the following must be carefully adhered to when planning site operations:

- The protective tree fencing shall be maintained throughout the development phase.
- No materials, machinery, temporary structures, chemicals or fuel shall be stored within the CEZ.
- No excavations or increases in soil level within the CEZ are permitted without prior written approval from the LPA.
- Care should be taken to ensure that wide or tall loads or plant with booms, jibs and counterweights do not come into contact with retained trees. Any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banksperson to ensure that adequate clearance from trees is maintained at all times.
- Material which will contaminate the soil such as concrete mixing, diesel oil and vehicle washing must not be discharged within 10m of the tree stems. In the event of an accident or spillage the ACoW must be notified.
- Fires must not be lit in a position where their flames can extend to within 5m of foliage, branches or trunk. This will depend on the size of the fire and the wind direction.
- Any landscaping within the CEZ must avoid soil disturbance. Therefore re-grading and rotavators are not permitted. Any agreed soil re-profiling to facilitate final agreed levels must be carried out by hand with topsoil.

## 7.3 Fencing Specification

7.3.1 Where it is deemed necessary to erect the tree protective fencing, e.g. to protect identified specimen trees and groups, it will conform to the following construction unless an alternative structure is otherwise agreed by the ACoW and the LPA.

7.3.2 The barriers will be made from scaffold in a vertical and horizontal framework, as shown at Figure 2 in BS5837:2005 (at **Appendix 6**) with vertical tubes up to 3 metres apart. The framework will be braced to resist impacts.

[2] It is recommended that the developers appoint a suitably qualified arboriculturalist to act as an ACoW. The ACoW will be engaged to monitor and oversee the implementation of the tree works and construction close to trees.

7.3.3 On to the scaffold framework, weldmesh panels (usually Heras fencing) will be secured with wire or scaffold clamps. Weldmesh panels supported on rubber feet will be used for tree protection fencing facia with supporting pins being driven into the ground from the rubber feet for stability. Four looped pins will also be placed round the lower tubes and driven into the ground to ensure further support. The rear support will be constructed by attaching a supporting strut scaffold pole to the main fencing with the other end having a pin driven through the hole into the soil for anchorage. This method will significantly reduce the risk of damaging any major roots whilst still giving the structure rigidity.

7.3.4 There will be clear and visible signs attached to the protective fencing with the following "Tree Protection Area – Keep Out" (see **Appendix 6**) and the area will be regarded as sacrosanct by everyone. This will be checked prior to the commencement of work by the ACoW and throughout the course of development.

## 8. CONCLUSIONS

8.1.1 This report has been commissioned to support an outline planning application for the application site for Northstowe phase 1. The concept for the primary development site and the area of excavation and infrastructure works is found within the Parameters Plans produced by Terence O'Rourke (at **Appendix 2**).

8.1.2 The tree survey of both the primary development site and the area of excavation and infrastructure works contains 59 individual trees, 139 groups of trees and 25 additional hedgerows.

8.1.3 It is considered desirable wherever possible that trees and groups of trees will be retained although care will be exercised over misplaced tree preservation. In terms of the current site layout plans, careful design has accommodated many of the higher quality trees reducing tree related conflict and unnecessary tree removal.

8.1.4 At this outline planning stage it has been calculated that two groups of trees that are R category, seven individual C Category trees in addition to 56 C category groups are affected by the primary development proposal. A significant proportion of young trees on Cambridge Golf Course might be removed (some in part) or relocated as a result. These trees are considered to be of low quality or are young specimens which can be readily replaced and therefore should not be a significant constraint in terms of future development.

8.1.5 No A category trees have been identified although three individual trees and 12 groups of trees are B category would be affected by the primary development proposal. Some of these trees may be of importance in terms of amenity but others may be less so. It is crucial that the final design considers these trees in detail and that there is adequate mitigation for tree loss is in a robust landscaping scheme.

8.1.6 The impact on the tree resource of the area of excavation and infrastructure works is low and includes the possible removal of one C category tree and one C category group of trees.

8.1.7 It is recommended that the trees to be retained should be adequately protected throughout the construction phase and that they should be proactively managed to ensure that they enhance the development and the wider environment. It is further

recommended that tree works are undertaken as specified in the associated Tree Schedule (at **Appendix 3**) before construction commences.

8.1.8 The overall future growth, shading and apprehension from the trees on the site has been considered as well as the impact of the trees on the proposed buildings to avoid future conflicts. It is noted that although there is likely to be a minor reduction in amenity in the short term, the proposals include a landscape and biodiversity strategy. This strategy provides substantial new tree planting in locations that will complement the existing tree resource and ensure greater longevity.

## 9. REPORT LIMITATIONS AND QUALIFICATIONS

### 9.1 Report Limitations

9.1.1 This is an arboricultural report and as such no reliance should be given to comments relating to buildings, engineering or soil.

9.1.2 This is not a full arboricultural health and safety survey.

9.1.3 The inspection was undertaken from ground level.

9.1.4 Trees are growing dynamic structures. Therefore, no tree is ever absolutely safe due to the unpredictable laws and forces of nature.

### 9.2 Qualifications

9.2.1 The principal author of this report is Bryan Clary BSc(Hons)Arb. M.Arbor.A MICFor and a Full Member of the Institute of Chartered Foresters and a Professional Member of the Arboricultural Association. As an arboriculturist at Lockhart Garratt Bryan Clary specialises in dealing with trees in relation to planning issues.

9.2.2 The project director is Justin Mumford FICFor.

9.2.3 The qualifications and experience of each consultant can be provided on request.

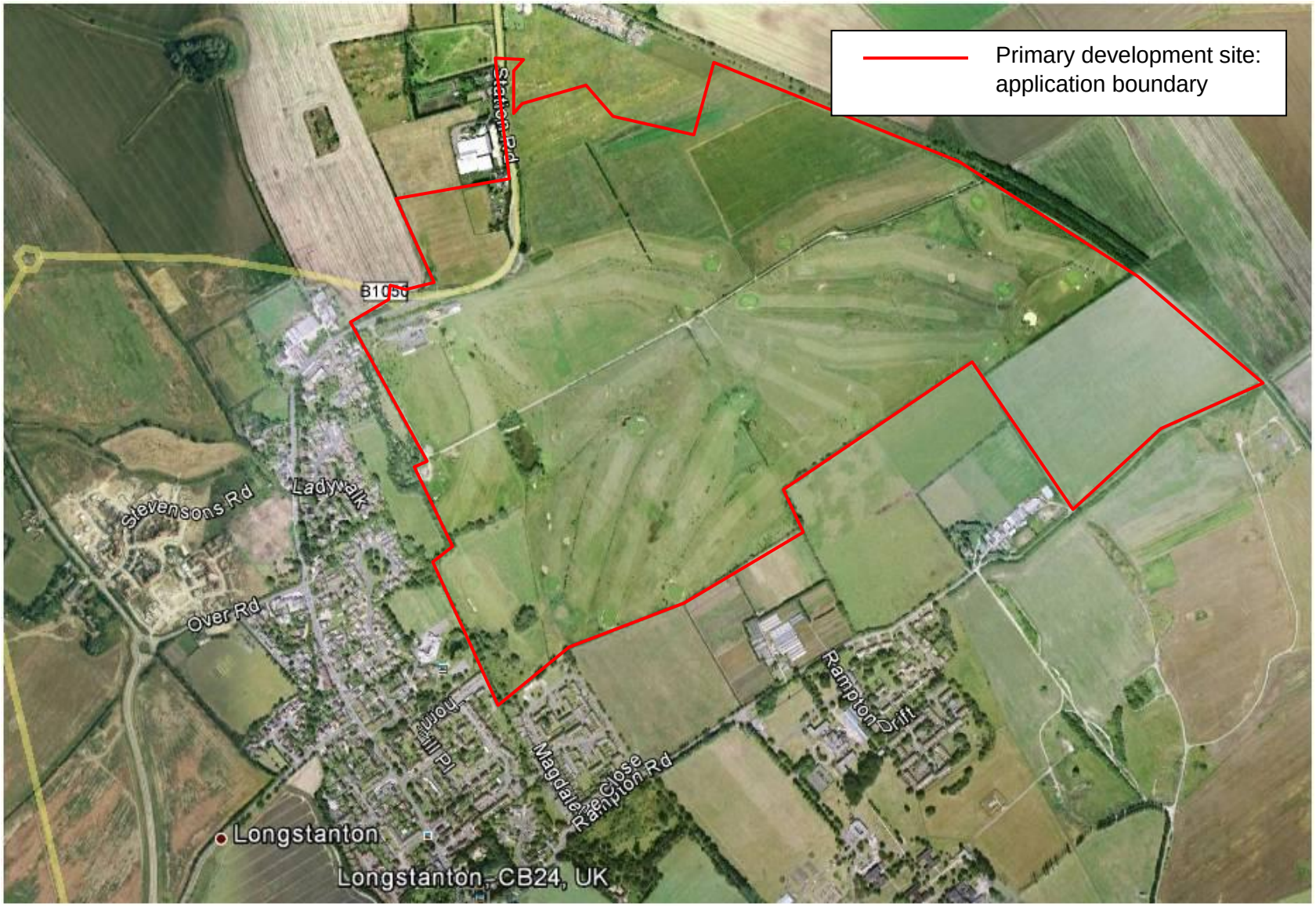
## 10. REFERENCES & RELEVANT LEGISLATION

- British Standard 5837:2005 *'Trees in Relation to Construction - Recommendations'.*
- British Standard 3998:2010 *'Tree work – Recommendations'*.
- The Forestry Act 1967.
- The Town and Country Planning Act 1990.
- The Town and Country Planning (Trees) Regulations 1999.

## APPENDIX 1: AERIAL PHOTOGRAPHY

Aerial photograph of the primary development site

Aerial photograph of the area of excavation and infrastructure works


Primary development site: application boundary
Stevensons Rd
Lady Walk
Over Rd
Longstanton
Longstanton, CB24, UK
Magdalene Close
Rampton Rd
Rampton Drift


The area of excavation and infrastructure works: application boundary
School Ln
B1050
Wilson's Rd
Long Stanton Rd
Hatton's Rd