Bonchester Bridge

Arboricultural Impact Assessment

Ethical Planning LLP
April 2018

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1. Introduction

1.1 Project Background

1.1.1 This Arboricultural Impact Assessment has been prepared to support a planning application for the proposed development of a dwellinghouse, associated outbuildings and a revised access to the existing farm buildings on land at, and adjacent to, Town O' Rule Farm, Bonchester Bridge, Hawick in the Scottish Borders.

1.1.2 To assess the current condition and constraints of the trees on the site a desk study was carried out in addition to a walkover of the site which was undertaken on 16th March 2018. This report details the impact that the proposed development will have upon the site's existing tree stock and sets out recommendations for the subsequent mitigation or avoidance of impact. The study has been completed in accordance with guidance contained within British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations.'

1.2 Site Description

1.2.1 The site under consideration is a sizeable area of land approximately 0.58 hectares in size. The site is located to the northwest of Town O' Rule Farm near Bonchester Bridge, Hawick at Ordnance Survey Grid Reference NT 58810 13374.

1.2.2 The study area is located within a predominantly rural area and comprises farmland, agricultural buildings with a number of residential properties also located nearby.

1.2.3 The area is dominated by semi improved grassland, agricultural land and a small stream is located approximately 35m to the west of the site. The majority of notable vegetative features are located adjacent to or beyond the boundaries of the application site. The site features include a small stream flowing north, areas of bare ground likely caused by vehicles accessing the site, scattered trees and man-made infrastructure. Two agricultural buildings which appear to be used for housing sheep are located to the west of the site, a timber framed open-sided structure which appears to be used as a cover for vehicles and agricultural equipment was located on the site and , a two-storey stone cottage with a single storey extension is also located on the site.

1.3 Development Proposal

1.3.1 The proposed development of the site is the construction of a new dwellinghouse, associated outbuildings and a revised access to the existing farm buildings, on land to the northwest of Town O' Rule Farm.

1.3.2 The proposed development has been designed so that safe and healthy existing trees are retained wherever possible and that those trees to be retained are not significantly impacted upon by the development.

2. Statutory Protection

2.1 Tree Preservation Order, Listed Building and Conservation Area Designations

2.1.1 There are no Tree Preservation Orders, listed buildings or conservation areas within or closely surrounding the study area.

2.2 Protected Species

2.2.1 **Bats**

2.2.2 Mature trees often contain cavities, hollows, peeling bark or woodpecker holes which provide potential roosting locations for bats. Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. Consequently causing damage to a bat roost constitutes an offence.

2.2.3 Generally should the presence of a bat roost be suspected whilst completing works on any trees on site then an appropriately licensed bat worker should be consulted for advice.

2.2.4 **Birds**

2.2.5 Trees and hedgerows offer potential habitat for nesting birds which are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties. This legislation makes it an offence to intentionally or recklessly damage or destroy an active bird nest or part thereof.

2.2.6 As the trees on, and adjacent, to the site provide potential habitat for nesting birds all tree work should ideally be completed outside the nesting bird season (Generally March to September).

2.2.7 If this is not possible then the vegetation should be subject to a nesting bird inspection by a suitably experienced ecologist prior to commencement of works. If any active nests are identified then the vegetation, and a defined buffer zone, will need to remain in place until the young have naturally fledged.

3. Methodologies

3.1 Desk Study

3.1.1 A desk study was undertaken to identify if any of the trees present within or in close proximity to the site are covered by section 160 of the Town and Country Planning (Scotland) Act 1997, the Town and Country Planning (Tree Preservation Order and Trees in Conservation Areas) (Scotland) Regulations 2010 (the 2010 Regulations) and Scottish Government Circular 1/2011 Tree Preservation Orders.

3.2 Condition Status

3.2.1 To determine the status of the trees within the site a full arboricultural survey has been undertaken, assessing the species and status of all trees present. This survey has been carried out in accordance with British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

3.2.2 The trees were visually assessed and a schedule prepared listing: tree number, species, trunk diameter at 1.5 m above ground level (or in accordance with Annex C of BS5837:2012), tree height, crown spread (cardinal points), height of first branch and growth direction, age class and estimated remaining life expectancy in years. Measurements for tree height, first branch height, and crown spread were taken to an accuracy of 0.5 m. Stem diameter measurements were recorded to the nearest 10 mm. Any specific observations or recommendations with regard to management were also noted. All these observations and measurements are summarised in Section 3.3.

3.2.3 Each tree was assessed and assigned to one of the following categories:

- Category A: Those trees of high quality and value with an estimated remaining life expectancy of at least 40 years.
- Category B: Those trees of moderate quality and value with an estimated remaining life expectancy of at least 20 years.
- Category C: Those trees of low quality and value with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150 mm.
- 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.

3.3 Root Protection Area (RPA)

3.3.1 In order to avoid damage to the roots or rooting environment of retained trees, the RPA has been calculated for each of the Category A, B and C trees. This is a minimum area around a tree which is deemed to contain sufficient roots and rooting volume to maintain the tree's viability. Protection of the roots and soil structure in this area should be treated as a priority.

3.3.2 These figures have been calculated utilising the formulas within Section 4.6 and Annex D of British Standard 5837:2012.

4. Results

4.1 Desk Study

4.1.1 Simon Wilkinson (Tree Officer at Scottish Borders Council) confirmed via email on 12th March 2018 that there are no tree preservation orders or statutory protection at Town O'Rule, Hawick.

4.2 Weather Conditions and Personal

4.2.1 Kayleigh Houlsby BSc MSc completed the survey on 16th March 2018. The weather conditions at the time of the survey are shown in Table 1.

4.2.2 **Table 1: Weather conditions on the date of the site survey**

Conditions	Result
Temperature (°C)	4
Cloud Cover (%)	100
Precipitation	Nil
Wind Speed (mph)	15

4.3 Survey Results

4.3.1 The full results of the Arboricultural Assessment are detailed in Table 2.

4.3.2 **Table 2: Results of the full arboriculture assessment for the proposed development site**

Tree No.	Tree Species	Stems	Diameter (mm)	Height (m)	Height 1st Branch (m)	Crown Spread (m)	Age Class	Condition	Category
1	Beech Fagus sylvatica	1	590	10.5	2	N 3.5 E 4.5 S 4.5 W 4.5	Y	Moss present. Good structural condition. No sign of ecological use.	B
2	Beech Fagus sylvatica	1	600	11	2	N 4.5 E 4.5 S 5.0 W 3.0	Y	Moss present. Good structural condition. Constrained crown. The tree is surrounded by a small hedge. No sign of ecological use.	B
3	Elder Sambucus Nigra	1	400	2.5	0.0	N 1.5 E 1.5 S 1.5 W 1.5	SM	Fungus/ moss present. Minor deadwood present. Forks in stem. No sign of ecological use.	C
4	Grey Willow	3	410	3.5	0.5	N 2.5 E 2.5	Y	Multi-stemmed. Good structural	C

	Salix cinerea					S 2.5 W 2.5		condition. No sign of ecological use.	
5	Sycamore Acer pseudoplatanus	2	550	7.5	1.0	N 4.0 E 4.5 S 4.5 W 3.5	Y	Isolated. Multi-stemmed. Fungus/moss present. No sign of ecological use.	C

4.3.3 Table 3 provides details of the Root Protection Area (RPA) of all trees or groups surveyed. This table also gives an approximate root protection radius for these trees.

4.3.4 **Table 3: RPA and approximate Root Protection Radius of Category A, B and C Trees**

Tree No.	Species	Life Expectancy (years)	Diameter (mm)	Approximate Root Protection Radius (m)	Root Protection Area (m2)
1	Beech	40+	590	6.90	150
2	Beech	40+	600	7.20	163
3	Elder	20+	400	4.80	72
4	Grey Willow		410	4.80	72
5	Sycamore	40+	550	6.60	137

5. Discussion

5.1 Desk Study

5.1.1 The desk study identified that no trees within the study area are subject to Tree Preservation Orders (TPO), and that the study area is not situated within a Conservation Area.

5.2 Tree Quality

5.2.1 **Retention Value**

5.2.2 The initial stage of a tree survey in accordance to BS5837:2012 looks at the trees on the site in terms of life expectancy and condition. Trees are then categorised according to their retention value.

5.2.3 Category A trees are those that have been assessed as being of a high quality and value; significant amendments to the proposed scheme should be considered in preference to their removal.

5.2.4 Category B trees are those that have been assessed as being of a moderate quality and value; amendments to the proposed scheme should be considered in preference to their removal.

5.2.5 Category C trees are those that have been assessed as being of a low quality and value; the loss of these specimens should not necessarily be considered as a constraint to development.

5.2.6 Category U trees are those that have been assessed as having no retention value; these trees should not be a material consideration in the planning process.

5.2.7 Category A, B or C trees are those that should be a material consideration in the planning process whilst Category U trees are those which would be lost in the short term for reasons connected to their physiological or structural condition and hence they should not be a consideration in the planning process.

5.2.8 **Physiological Condition**

5.2.9 Trees considered to be in a good physiological condition are those with crown density and shoot extension growth levels within the expected ranges for their age and species. Generally, these trees, subject to being of a suitable structural condition, can be expected to make a lasting contribution to the site.

5.2.10 Trees considered to be in a fair physiological condition are those specimens exhibiting lower shoot extension growth and reduced crown density than would typically be expected. These specimens have a lower life expectancy than those within the good condition class and will not tolerate significant changes as a result of development as well as those in the good condition class.

5.2.11 Trees considered to be in a poor physiological condition are those exhibiting crown and shoot dieback and significantly reduced crown density. Trees of a poor physiological condition are not likely to make a lasting contribution to the site.

5.2.12 **Age Distribution**

5.2.13 Those trees assessed as being young (Y) in age can generally be considered to have significant growth potential. Whilst these specimens are not likely to make a substantial contribution to the landscape character of the site at present they will, if retained, provide succession for the eventual removal of mature or over mature trees as a result of declining physiological or structural condition.

5.2.14 Early mature trees (EM) will generally make a significant contribution to the landscape character and appearance of the site and their retention will provide more immediate succession. These trees will also have significant growth potential.

5.2.15 Mature trees (M) are not considered to have significant future growth potential and have generally reached their maximum expected size for the location. These trees will generally make the highest contribution to the landscape contribution of the site.

5.2.16 Over-mature trees (OM) do not have the potential to increase in size and may in fact reduce in size as their crowns begin to break up. These trees will often make a significant contribution to the landscape character of the site and are likely to have ecological value. However, the retention of these trees within new development must be carefully planned as they are approaching the end of their useful life expectancy and they will often have structural defects.

5.2.17 Veteran trees (V) are those that show features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species. These trees have negligible potential to increase in size. Veteran trees are usually of a high ecological value and they will require sensitive management where they are to be retained in new development.

5.2.18 **Visual Amenity**

5.2.19 The scattered location of the trees, making them isolated individuals, are not prominent features of the local landscape and have low visual amenity. The ages of the trees also limit the ability to make substantial contribution to the landscape character.

5.2.20 **Ecological Value**

5.2.21 Generally speaking it is known that trees are of ecological value and that they fulfil an important role in the urban landscape. In particular it should be noted that trees may provide habitat for protected species, notably for birds and bats. It is unlikely that the trees present on site provide suitable habitat for protected species as they are singular specimens and no features of importance were noted during the survey. Nearby woodland plantations likely act as a more suitable habitat for protected species. Full details of the ecological value of trees present within the study area can be found in the Preliminary Ecological Appraisal for this site.

6. Arboriculture Design Guidance

6.1 Tree Constraints Plan

6.1.1 The Tree Constraints Plan (contained within Section 9 of this report) is designed to show the influence that the trees have upon the site by virtue of their size and position.

6.1.2 The plan seeks to act as a design tool that shows both the above and below ground constraints presented by the trees.

6.2 Tree Retention/ Removal

6.2.1 The prioritisation for tree retention should be based upon the guidance contained within BS5837:2012. Category A trees should be seen as the highest priority for retention and Category C the lowest. Category U trees have no retention value and in most circumstances such specimens will not be considered for retention within new development.

6.2.2 In order to accommodate the proposed development it will be necessary to remove 2 trees within the site shown in Table 4 below.

6.2.3 **Table 4: Trees identified for removal within the proposed development site**

Tree Number	Species	Category
3	Elder	C
4	Grey Willow	C

6.2.4 The two trees identified for removal were deemed to be of low retention value and the loss of these trees will not result in a significant impact on the visual amenity of the site.

6.2.5 Furthermore, one of the trees was a relatively immature specimen and can easily be replaced in the short-term. It is understood that provision is already included within the landscaping scheme for replacement tree planting throughout the site and as such the loss of these trees should not be considered a significant constraint to the proposed development.

6.3 Below Ground Constraints

6.3.1 **Root Protection Areas**

6.3.2 Root Protection Areas for each tree and group of trees surveyed have been determined in accordance with BS5837:2012 and a schedule of Root Protection Areas is detailed within this Report in Table 3.

6.3.3 Initial Root Protection Areas (RPA's) for the trees have been plotted onto the Tree Constraints Plan as circles, with the tree located centrally, extending to encompass the area of ground, and thus the rootable soil volume, required for protection.

6.3.4 Where possible all development, including new hard landscaping, shall be situated outside of the retained trees designated Root Protection Areas.

6.3.5 **New Hard Surfaces and Buildings within Root Protection Areas**

6.3.6 The construction of new hard surfaces and buildings around trees has the potential to cause soil compaction, to cause root damage and to reduce nutrient and moisture availability to tree roots to the detriment of tree health and vitality.

6.3.7 To minimise harm occurring as a result of such works, where installation of new hard surfacing is proposed within the Root Protection Areas of retained trees, it must be installed in accordance with no-dig principles.

6.3.8 **Building Foundations**

6.3.9 Any structures built on the site should comply with the foundation depths for buildings near or adjacent to trees and allow for the potential size of the trees at maturity. The soil types throughout the site will need investigating and appropriate measures taken.

6.3.10 **Service Runs**

6.3.11 All service runs, utilities and similar infrastructure should take note of trees and allow for working methods that will minimise damage to trees.

6.3.12 **Existing Canopy Spreads**

6.3.13 The current spread of a tree is a constraint due to its dominance, size and movement in strong winds. It will typically be unacceptable to design any built development within the current spread of a tree. Where built development is proposed in close proximity to existing trees consideration should be given to the amount of working space required to allow its construction. Additionally, where development is proposed in close proximity to the existing canopy spread of a tree the likelihood of leaf or fruit fall or an accumulation of honeydew causing nuisance must be given.

6.3.14 It should also be noted that where the Root Protection Areas for retained trees do not extend to the edge of existing canopy spreads it is possible that those parts of the trees extending beyond the RPA may sustain damage during construction.

6.3.15 **Future Tree Growth**

6.3.16 Some of the trees surveyed are not yet mature and they have the potential for future growth. Where these are to be retained consideration of their ultimate crown spread should be given as future branch growth may result in interference with the proposed development, damage to branches and the need for a tree pruning regime.

6.3.17 Within the area of maximum branch spread, construction activities should be restricted for the long-term health and vigour of the trees. It is considered that within the area of maximum branch spread single storey buildings and the installation of hard surfaces would be an appropriate form of construction, however should car parking be proposed beneath the ultimate spread of trees the likelihood of fruit fall, leaf litter or sap exudation causing a nuisance must be considered.

6.3.18 In addition, it is important to consider the likelihood of damage to trees or structures that may be caused by continuous whipping of branches in windy conditions. In such circumstances branches may have to be repeatedly cut back which will introduce wounds in the tree and may spoil its form or shape. In general terms trees should not be retained upon the basis that their ultimate branch spread can be significantly controlled by periodic pruning.

7. Arboriculture Impact Assessment

7.1 Building Demolition

7.1.1 There are no areas on site where the demolition of existing buildings is required within close proximity to retained trees. As such no impact from this aspect of the development is considered likely.

7.2 Removal of Hard Surfaces

7.2.1 There are no areas on site where the removal of existing hardstanding will be required within the RPA of any retained trees. As such impacts to retained trees from this aspect of development is not expected.

7.3 Removal of Services

7.3.1 There are no areas on site where the removal of existing underground services is likely to require works within the RPA of retained trees. As such impacts to retained trees from this aspect of development is not expected.

7.4 Ground Remediation

7.4.1 The previous usage of the site is considered unlikely to have resulted in areas of soil contamination that would require excavation and disposal, or treatment works, to be undertaken. As such impacts to retained trees from this aspect of development is not expected.

7.5 Work within RPAs

7.5.1 The proposed development has been designed to ensure that works are not required within the RPAs of retained trees.

7.6 Works within Canopy Spreads

7.6.1 There are no aspects of the proposed development expected to require works within the canopy spread of retained trees. To minimise the potential for branch damage to occur the adoption of an appropriate working methodology will ensure that harm to the retained tree is avoided.

7.7 Site Access

7.7.1 It is understood that construction access to the site will be provided from the existing vehicular access to the site. It may be necessary to undertake some access facilitation pruning works to minimise the potential for branch damage to occur due to the passage of construction plant. It may also be necessary to ensure retained trees adjacent to the access route are protected from potential impact damage by the installation of tree protection barriers prior to the commencement of development.

7.8 Delivery and Storage of Materials

7.8.1 Material deliveries to the site will utilise the existing access track. Retained trees will be protected from harm by the prior installation of tree protection barriers and the completion of access facilitation pruning works. Areas for materials storage will need to be identified, however, the nature of the site provides many opportunities for such use in a way that will not affect retained trees.

7.9 Site Compound and Parking

7.9.1 The locations for the contractors compound and parking will need to be identified, however, the nature of the site provides many opportunities for such use in a way that will not affect retained trees.

7.10 Shading

7.10.1 The nature of the proposed development is such that shading of primary living spaces from retained trees is generally considered unlikely to occur. As such, conflicts between retained trees and the proposed development resulting in further pressure from tree removal are not expected.

7.11 Privacy and Screening

7.11.1 The proposed development has been designed so that the majority of the trees adjacent to the site boundaries are retained to provide privacy and screening. Additionally, vegetation to the southern and western boundaries will be retained and supplemented with new planting.

7.12 Damage to Structures

7.12.1 There are no areas on site where retained trees will be in such close proximity to the new development that direct damage, through branch whipping or root growth, are considered likely to occur.

7.13 Seasonal Nuisance

7.13.1 It is not anticipated that any seasonal nuisance is likely to occur. Notwithstanding this, it may prove appropriate in certain areas to use gutter guards, or otherwise enclosed gutters, to minimise the potential for lead fall to cause blockage and an ongoing nuisance.

8. Recommendations

8.1.1 The following site-specific recommendations are made:

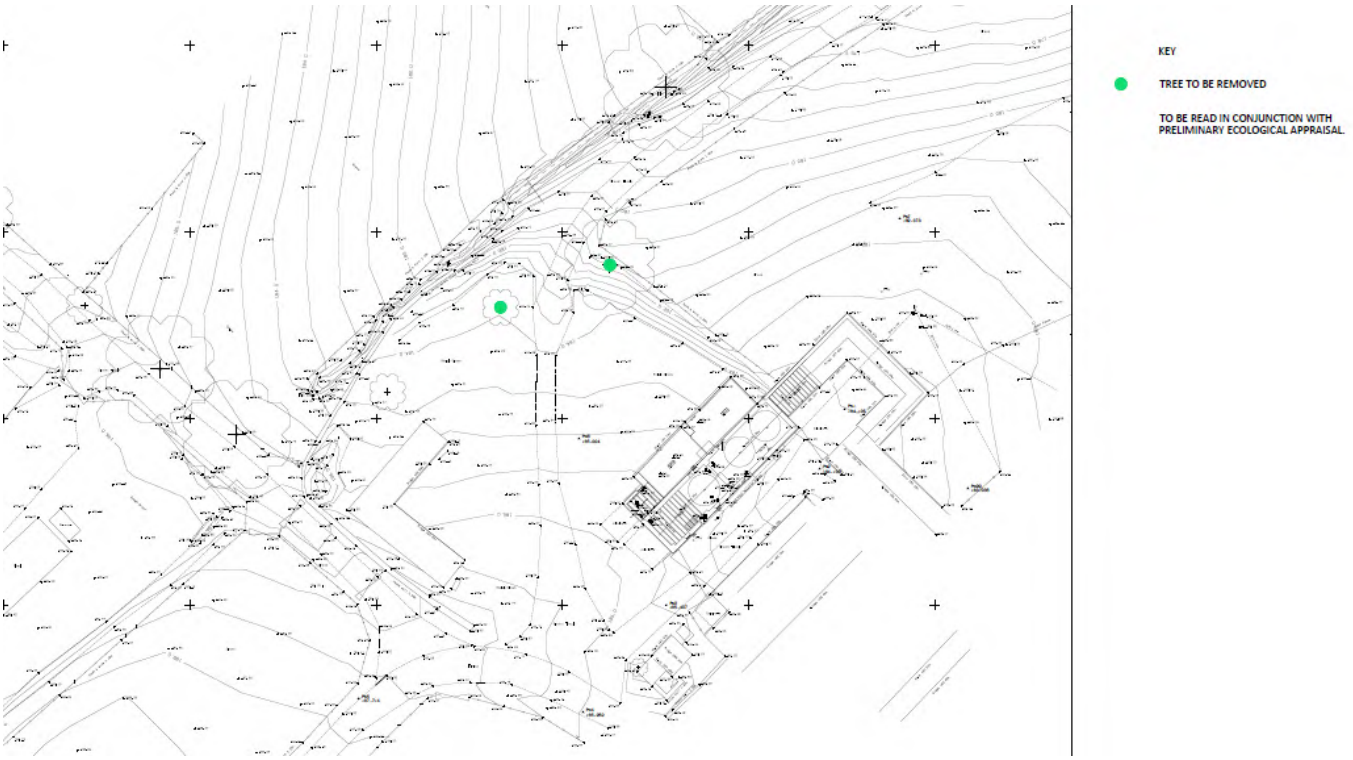
- The retention of Category B trees should be considered where possible but where this cannot be achieved compensatory planting will need to be undertaken. It is understood that two Category B trees will be retained.
- The retention of the Category C trees should be considered where possible though it must be noted that these specimens have a low retention value and are likely to only offer a temporary contribution to the landscape character of the site.
- Any proposed new planting should consist of native and wildlife attracting species with a robust five year management plan to assist with the development proposal and to offer mitigation for tree loss.
- In general all new development shall be located outside of the RPA or canopy spread of any retained tree.
- Where any new development is proposed within the RPA or canopy spread of a retained tree it must be constructed in such a way that damage of the trees root system or crown can be avoided.
- Should new development require works within the RPA of any retained tree an Arboricultural Method Statement should be prepared to set out what steps are to be taken to protect the trees during the course of development.
- Prior to development, a plan should be prepared detailing the locations in which activities related to the establishment of a site compound, contractors car parking areas, material storage areas and associated works are to occur. All of which should be located outside of the RPAs of retained trees.

8.1.2 The following generic guidance should also be taken into account during the construction phase of any development, or significant engineering:

- Any trees or groups that are to be retained should be adequately protected by Heras fencing, in line with BS5837:2012, extending at least to the Root Protection Radius, to prevent accidental damage by vehicles or contractors (see Table 3 for RPA data for each tree). Within these areas no construction works, or related activities, will be undertaken.
- All tree works are to be carried out by a competent and qualified arborist to BS3998:2010 standards.
- Tree protection should be included in the induction and/or briefing sessions by the contractors to site personnel.
- Soil compaction, from the storage of large quantities of materials and plant tracking, may result in changes to soil permeability and local drainage. This may lead to waterlogging or loss of soil crumb structure. These effects may in turn lead to root asphyxiation and root death, a cause of instability and or mortality in trees. For this reason, heavy machinery, excavation of bare ground and the storage of materials should be excluded from the crown and Root Protection Radius of all trees.

- The recommendations of BS5837:2012 and National Joint Utilities Group Volume 4 (Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees) (as appropriate to operations) should be followed when working close to trees.
- If works take place during the bird breeding season, usually from March to September inclusive, trees and hedgerows should be checked for nesting birds. If any trees are to be removed this should be done outside the breeding season or in the presence of a suitably qualified ecologist.
- Mature trees often contain cavities, hollows, peeling bark or woodpecker holes which provide potential roosting locations for bats. Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. Consequently, causing damage to a bat roost constitutes an offence. As such prior to undertaking works to trees a check to see if they are being used for bat roosting should be undertaken by a suitably qualified and experienced ecologist.

9. Tree Constraints Plan



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