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Landscape, Arboricultural & Ecological Solutions
for the Built Environment

Arboricultural Impact Assessment

Land off Station Avenue
Chirk
LL14 5LR

November 2015

Rev.	Date	Details
A	16 March 2017	Revised layout to accommodate tree officer comments

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Appendix 1 Tree Data Tables in accordance with Table 1 of BS5837: 2012

Appendix 2 Drawing P.585.15.01 *Tree Survey*
Drawing P.585.15.02 *Tree Protection Drawing*
Drawing P.585.15.03 *Shading Impacts*

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EXECUTIVE SUMMARY

A survey of the existing trees on and adjacent land off Station Avenue, Chirk, has been carried out by a suitably qualified and competent Arboriculturist in accordance with British Standard 5837: 2012 *Trees in relation to design, demolition and construction – Recommendations*.

The purpose of the survey and of this report is to identify the impact of the proposed development of the site on trees, both within and immediately adjacent the site, in accordance with the provisions of BS5837: 2012.

The development of the site will potentially involve the construction of twenty three residential dwellings within the triangular plot of land to the north of Station Avenue, however the basis of this report is mainly to assess the impact of providing an access to the land in question. The provision of a suitable access will require the removal of a small number of existing trees and in the absence of suitable controls, has the potential to have an indirect impact on a number of the trees proposed for retention.

Mitigation for the impact of the development can be provided in the form of the following:

- The erection of protective fencing in advance of the commencement of the development to safeguard the root systems of retained trees;
- The agreement, in advance of the commencement of the development, together with the implementation during the construction phase, of a methodology for the protection of retained trees.

Compensation for the impact of the development, together with landscape and biodiversity enhancements can be achieved by way of the following:

- The planting of trees and shrubs as part of a comprehensive landscape scheme to replace any trees lost and to integrate the development into the wider landscape;
- The planting of native hedges where possible to provide linear habitats that link to habitats located off site;
- The use of a mixture of native and ornamental species within planting schemes, where those species are suited to the site and local landscape.

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1.0 Introduction

1.1 Ascerta has been instructed by Co-operatives Estates to carry out a survey of the trees within and immediately adjacent land to the north of Station Avenue, Chirk, and to assess the potential impact of the development as proposed on trees within / adjacent the site in accordance with British Standard 5837: 2012 *Trees in relation to design, demolition and construction – Recommendations.*

1.2 The site was originally visited on 26th August 2015 by Robert Armitage BSc (Hons), a competent and qualified arboriculturist with experience of the UK and European arboricultural and landscape industries within the context of the planning system. During the site visit, a survey was carried out of the trees growing both on and immediately adjacent the site to the standards contained within BS5837: 2012. Subsequent visits have been made to assess various development proposals and their potential impact on retained vegetation and this report presents the results of the survey, provides an assessment of the impact of the development and includes recommendations for further actions, where applicable, in order to mitigate any potentially negative effects of the development on tree cover within the local landscape.

2.0 Objectives

2.1 Our client's objective is to develop the site for residential purposes, including the provision of an access to the site from Station Avenue.

2.2 Our objectives are as follows:

- Identify what arboricultural features exist presently within and adjacent the site and to record and categorise them in a manner consistent with BS5837: 2012;
- Identify what trees will need to be removed directly as a result of the proposed development of the site;
- Identify any indirect impact from the proposed development on trees proposed for retention;
- Provide an indication of what protection measures can be implemented as part of the development of the site to ensure the physical protection of retained trees;
- Provide recommendations for mitigation and compensation in terms of new planting or enhancement of existing features of arboricultural, landscape or ecological interest or importance;
- Provide any other recommendations to assist our clients in achieving their objectives whilst satisfying current legislation or policy guidance in relation to the woody vegetation on site.

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3.0 Planning Policy & Relevant Legislation

3.1 The National Planning Policy Framework (March 2012) sets out the Government's planning policies for England and how these are expected to be applied. The Framework contains a presumption in favour of sustainable development, with sustainable development in the UK being defined under the UK Sustainable Development Strategy *Securing the Future.* This sets out five 'guiding principles' of sustainable development: living within the planet's environmental limits; ensuring a strong, healthy and just society; achieving a sustainable economy; promoting good governance; and using sound science responsibly.

3.2 The Framework seeks to facilitate the approval, without delay, of developments that meet the objectives of up to date Local Plans. Where proposed developments involve net gains for nature and biodiversity, this is to be seen as a positive improvement in the quality of the natural environment and thus in compliance with the objectives of the Framework.

3.3 The site lies within the Wrexham County Borough Council administrative area and is subject to the Wrexham Unitary Development Plan (adopted February 2005). Policy EC4 *Hedgerows, Trees and Woodlands* contained within the document applies to the subject site in relation to trees and has been taken into account when writing this report.

3.4 We are advised by Wrexham Council that the linear group of Lime trees along the front of the site are protected by Tree Preservation Order 59, 2003. These trees therefore have the benefit of statutory control. The site is also located within a Conservation Area, therefore those trees of relevance are also afforded protection in respect of this legislation.

3.5 British Standard 5837: 2012 *Trees in relation to design, demolition and construction – Recommendations* provides current recommendations and guidance on the relationship between trees and design, demolition and the construction processes. It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

3.6 Notwithstanding the aforementioned policies and legislation, consideration should also be given to any impacts from the proposed development in respect of the Hedgerow Regulations 1997 and the Forestry Act 1967 (and specifically the potential need for a felling licence), as well as existing UK and European legislation relating to wildlife and nature conservation.

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4.0 Surveys & Survey Methodology

4.1 We have been supplied with a digital copy of the topographical survey for the site, which largely satisfies section 4.2 of BS5837: 2012. Any features of arboricultural or landscape interest that have been excluded from the original version of the topographical survey (for example trees located off site but within a distance from the boundary of the site equal to or less than 12 times the stem diameter of that tree) have been added to the plan manually.

4.2 Our assessment of the soils within the site, based on local site conditions, geography, available soil maps and our own experience of soils across the United Kingdom, indicates that the soils on site are likely to contain a clay element, but that this will have a plasticity index in the low/medium range. Any further details or confirmation of the exact nature of soil conditions on site will require further, more rigorous sampling and analysis. It is not however anticipated that the clay content will cause specific issues relating to retention of trees given the impact of the development proposals, providing that consideration is given to this aspect in advance of and during the construction phase of the development. Provision will need to be made for the protection of soil structure in key areas during the construction phase and the repair of any damage post construction. Further details are provided throughout this report and final details can be secured via planning condition.

4.3 Our survey of the trees within and adjacent the site was carried out by a qualified and competent arboriculturist in accordance with sections 4.4 and 4.5 of BS5837: 2012 on 26 August 2015 during warm, sunny weather conditions. Subsequent assessments have been made to determine the optimum position for an access with as little impact on tree cover as possible. Those trees surveyed have been numbered sequentially; although for the purposes of this project they have not been tagged. The trees have also been categorised in accordance with section 4.5 and Table 1 of the Standard.

4.4 Where relevant and where the quality of shrub masses and hedges justifies recording, details have been recorded to the tree survey plan and tree data tables.

4.5 Where trees are surveyed that require immediate attention, for example to abate a nuisance, prevent a serious hazard to life or property, or are affected by a pathogen or pest that could cause widespread damage unless it is controlled, notification will be issued to the relevant person or organisation such that appropriate action can be taken.

4.6 Root Protection Areas for those trees surveyed have been calculated in accordance with the formulas within section 4.6 and Annex C of the Standard and can be found within the tree data tables that accompany this report. The tree data tables also contain a key to abbreviations used and the rationale for determining Root Protection Areas for groups of trees and woodlands (where applicable).

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5.0 Survey Results & Impact Assessment

5.1 Across the wider site, twenty individual trees, four groups of trees and one hedge were recorded during our survey, the details of which can be found within Appendix 1 to this report and cross referenced with drawing P.585.15.01 *Tree Survey*. Table 1 below summarises those trees to be removed for the proposed access, provides comments on the quality of vegetation across the site and suggests possible opportunities for mitigation / compensation:

Table 1: Trees proposed for removal as part of the development of the site.

Tree(s) to be removed	Comments	Mitigation / Compensation Opportunities
H1 (in part), T5 and T6	The site is fronted by a linear group of mature Lime trees that provide some good site definition and reasonable screening. However, several of the trees, including T6, are showing symptoms of decline, with main leading stems and branches beginning to die back and decay. Elsewhere on the site, the eastern boundary comprises overgrown hedging with intermittent emerging trees, some of which towards its northern end have high aesthetic value as individuals.	Those trees removed can be replaced with new planting either side of the proposed access point. In addition to this, the development proposal presents an opportunity to enhance the long term potential of the site frontage through the addition of a quality secondary canopy to ultimately replace the mature tree stock as and when it eventually declines. Over and above this, the development of the site for residential purposes will undoubtedly involve the planting of a number of trees and shrubs across the site, thereby adding to the canopy cover of the local landscape at the expense only of relatively low quality grassland.

In addition to the trees proposed for removal, the development may in some instances have the potential to have an indirect impact on those trees proposed for retention. Where potential indirect impacts exist, arrangements will need to be made to safeguard the retained trees from damage during the construction phase.

5.2 **Hedgerows:** In accordance with the Hedgerow Regulations 1997 'important' hedgerows (in the context of the Regulations) should not be removed without a Hedgerow Removal Notice issued by the relevant Local Authority, unless that removal is subject to an appropriate consent under the Town and Country Planning Act 1990. In this instance the proposal would be subject to receipt of a planning approval, within which provision can be made for replacement planting for any hedgerow removed that is considered important in accordance with the requirements of the Regulations.

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5.0 Survey Results & Impact Assessment (Continued)

5.3 **Potential for Shading:** Mature trees in urban and suburban areas add significant value and environmental benefits to properties; however, it is acknowledged that some residents are averse to living in close proximity to trees because of shading. Drawing P.585.15.03 *Shading Impacts* shows an illustrative representation of how the trees along the site frontage cast shade into the site based on current tree heights along the site frontage and other known factors, including tree location and general canopy dimensions. The current proposed layout has been added to the drawing, which clearly shows that those plots fronting towards Station Avenue will not be adversely affected by shade. It is acknowledged that due to different angles of the sun at different times of day throughout the year, shade patterns will alter, however the distance of the plots from retained trees is such that they will not be affected by shade to the point where requests for tree work are likely.

5.4 **Boundary Screening:** Trees located adjacent to the boundaries of the site make a welcome contribution to the screening of views and can be complemented by the planting of new trees and shrubs such as to filter views and integrate the development into the surrounding landscape where boundaries are weak. This will be particularly effective along the western and northern boundaries of the site as there is currently a significant lack of trees and hedges in these locations. These enhancements can be included within a planting scheme at the landscape phase of the development.

5.5 **Long Term Spatial Constraints:** Until a final layout has been agreed, it is difficult to determine whether there will be any long term spatial constraint issues. Whilst it is not possible to predict what actions future residents will seek to take in respect of trees within or adjacent their properties, the proposed layout can nevertheless be designed to minimise potential issues in the longer term.

5.6 **Future Nuisance from Trees:** Although there can often be a nuisance value attached to trees in close proximity to residential dwellings (leaf / fruit drop for example), the layout can be designed to minimise the extent to which this may be an issue.

5.7 **Existing Areas of Hard Standing:** The existing footpath adjacent Station Avenue will need to be adjusted to accommodate the proposed access between trees T4 & T7. Whilst some works will be required within the root protection areas of retained trees, the extent of these works is limited and therefore provided that an element of care is taken, the impact on retained trees will not be excessive. This has previously been discussed and agreed with the local planning authority tree officer.

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5.0 Survey Results & Impact Assessment (Continued)

5.8 **Proposed Areas of Hard Standing:** With the removal of trees T5 & T6, the proposed access road will be positioned outside the root protection area of trees either side (T4 & T7). Provided that construction activities are agreed in advance and suitable tree protection measures implemented in advance of the construction phase, there should be little if any potential harm to those trees proposed for retention. Given the location of the proposed access and the relationship with adjacent trees, construction methodologies involving the use of geotextiles are not considered to be required in this instance. It will however be necessary to safeguard retained trees either side of the access from the physical construction activities by the erection of suitable protective fencing.

5.9 **Proposed Buildings Located Adjacent / Within Root Protection Areas:** There are no buildings proposed within or immediately adjacent root protection areas of those trees to be retained, therefore subject to all agreed methodologies for the physical protection of retained trees, there should be no significant impact from the development process.

5.10 **Proposed Drainage & Domestic Services:** At the planning application stage of the project, details of proposed drainage arrangements and provision of domestic services (gas, electricity, telephone, cable etc) are generally not known. During the installation process however, general guidance can be obtained from the National Joint Utilities Group publication *Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Volume 4* such as to minimise the impact of works on retained trees. It is assumed that drainage for the site will need to connect to the existing infrastructure along Station Avenue. Provided that excavations are contained and controlled, the risk of unnecessary damage to retained trees should be minimal.

5.11 **Working Space During the Construction Phase:** The removal of T5 and T6 will allow adequate working space either side of the new entrance road to limit any adverse impacts to adjacent retained trees during the construction phase. With careful site works that are sympathetic to trees, in conjunction with tree protection fencing erected in advance of any construction works, there should be very little impact on retained trees during the construction phase.

5.12 **Access Facilitation Pruning:** There should be no requirement for access facilitation pruning in order to accommodate the development.

5.13 **Protection of Planting Areas:** It is often desirable to fence off areas that are to be newly planted to protect the soil structure. Given the scale of the proposed development against the size of the actual site, it is possible that areas can be set aside for landscaping / planting, particularly around the fringes of the site. This would be a significant benefit to proposed new planting and provide an immediate quality rooting environment for new plants.

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5.0 Survey Results & Impact Assessment (Continued)

5.14 **Requirement for an Arboricultural Method Statement:** It would be beneficial to agree and implement a Method Statement for Tree Protection (an Arboricultural Method Statement) to ensure that retained trees are adequately protected from the outset and that no unnecessary harm occurs during the construction phase. Section 6 of this report contains further details of the aspects of the development that could successfully be controlled, which can in turn be subject to a suitably worded planning condition.

5.15 **Planning for New Landscaping:** If not considered carefully at the design stage, new planting and landscaping can have an adverse impact on existing trees and cause long term problems for future residents. Care should be taken in the design of new landscapes to prevent physical damage to retained trees during the planting process, and to ensure that schemes are designed to survive and thrive rather than compete for resources. Similarly new trees and shrubs should not be planted where they will cause damage to structures, either directly or indirectly in the future. Table A1 at Annex A of the Standard gives advice on minimum distances for new trees from structures to avoid direct damage from future tree growth. Further advice should be sought from the project arboriculturist and a suitably qualified and experienced engineer as to the potential indirect impact of trees on structures in the long term (from clay shrinkage subsidence).

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6.0 Tree Protection Measures

6.1 On the basis of the proposed layout and those trees proposed for retention, drawing P.585.15.02 *Tree Protection Drawing* shows our preliminary recommendations for the physical protection of retained trees throughout the construction phase. The plan, which can be finalised when the final layout is fixed, indicates the location of protective barriers, as well as the specification for construction of the protective fencing in accordance with Figures 2 & 3 of the Standard. These barriers will form a construction exclusion zone around the retained trees.

6.2 In addition to the erection of protective fencing, drawing P.585.15.02 *Tree Protection Drawing* shows areas where it would be beneficial to agree a tree protection method statement between the project arboriculturist, design & construction teams and the local planning authority tree officer. The method statement will need to address and make allowance for the following:

- All forms of access required to the site;
- Site cabins and storage areas;
- Proposed parking for site personnel;
- Phasing of works;
- Space required for excavations (including foundation excavations);
- Any required special construction techniques (for example provision of porous surfaces);
- The location and construction methodology for installation of services in close proximity to retained trees & hedges;
- Any changes in ground levels and any resulting requirement for retaining structures;
- Working space for cranes, plant and scaffolding; and
- Management of waste products within the site.

6.3 Over and above the physical tree protection measures that should form the basis for the tree protection method statement, the following details should be provided within the method statement:

- Protection of the soil structure within the proposed planted areas (where applicable);
- Planting operations within the root protection areas of retained trees;
- Any required / additional precautions outside of construction exclusion zones in relation to the treatment & landscaping of garden or open space areas;
- System of arboricultural site monitoring / schedule of site visits and resulting actions.

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7.0 Summary of Impacts & Potential Mitigation Factors

7.1 Table 2 below summarises the impacts of the development as proposed on tree cover within and immediately adjacent the site. Comments are also provided on potential mitigation, compensation or special measures required in order to minimise the impact of the development and safeguard trees proposed for retention.

Table 3: Summary of the impacts of the development on trees within / adjacent the site.

Issue	Affecting	Mitigation / Compensation / Special Procedures
Trees / hedges to be removed.	H1 (in part), T5 and T6.	Appropriate compensation can be provided by way of new / replacement planting at the landscape stage of the project. Given the existing site, it is likely that the development will result in an improvement to the level of tree cover in the local landscape as a significant number of new trees, shrubs and hedges can be planted as part of the residential development. Significant biodiversity enhancements can also be achieved through the landscape proposals.
Indirect physical impact on retained trees.	Retained trees.	Tree protection fencing should be erected to an agreed specification in advance of the commencement of the development. Key areas where works are proposed within or immediately adjacent root protection areas of retained trees should be subject to a method statement, agreed in advance as a condition of planning consent.
Potential shading of properties / gardens.	Not applicable given the proposed layout.	The layout had been designed taking into account consultation comments from the local planning authority and plots positioned such that shading will not adversely affect the amenity of future residents.
Provision of new driveways / road / footpaths.	T4, T7, H1 & G2.	Works can be sympathetic to retained trees, with excavations carried out carefully and any exposed roots from retained trees pruned cleanly back to the soil surface. Tree protection fencing should be erected in advance of any works and should remain in-situ throughout the entire construction phase.
Protection of proposed planting areas.	Areas of site not subject to construction works.	These areas should be fenced off at the start of the development for the protection of soil structure.
Protective Fencing.	To be erected to an agreed specification in advance of the commencement of the development and retained in-situ throughout the course of the construction phase. Periodic inspections should be made by the project arboriculturist to ensure compliance with the specification.	

7.2 On the basis of the above and the contents of this report, it is considered appropriate that a Method Statement for Tree Protection be prepared as a condition of planning consent to demonstrate how trees proposed for retention can be suitably safeguarded. Together with the erection of tree protection fencing in advance of the commencement of the development, ensuring that it is retained in-situ throughout the construction phase, there should be no adverse impact on retained trees from the proposed development. The Method Statement should be adopted as a control document by site personnel.

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8.0 Conclusions & Recommendations

8.1 The development as proposed, will directly require the removal of a small section of hedging and two existing trees (T5 and T6). The long term value of T6 is diminished slightly given its current condition and T5 is of relatively low quality. The removal of these trees and part of H1 can be compensated for by the planting of new trees, shrubs and hedges as part of the overall development of the site. Such planting can be designed to provide significant long term enhancements to the local landscape in terms of sustainability of canopy cover and diversity of species.

Suitable precautionary measures can be implemented in advance of and during the construction phase that limit any potentially adverse impacts from the development of the site and safeguard those trees retained for the long term benefit of the landscape. We therefore recommend that a tree protection (arboricultural) method statement be prepared and implemented as a condition of planning consent, to include provision for items listed at section 6 of this report, and that a landscape proposal be prepared to include provision for the planting of new trees, shrubs and hedging to replace those removed and to integrate the development into the surrounding landscape.

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9.0 References

Department for Communities and Local Government (March 2012) *National Planning Policy Framework*;

Wrexham Unitary Development Plan;

British Standard 5837: 2012 *Trees in relation to design, demolition and construction – Recommendations*;

National Joint Utilities Group publication *Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees – Volume 4*.

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Appendix 1

Site:	**Land off Station Avenue, Wrexham**	Surveyor:	**Robert Armitage**
Client:	**The Co-operative Estates**	Survey Date:	**26/08/15 (updated by A McLeod 18/09/15)**
Brief:	**Tree Survey to BS5837:2012**	Survey Conditions:	**Warm, Sunny**

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T. No	Species	Ht (m)	Stem DBH (mm)	RPA Radius (m)	Branch Spread N	S	E	W	Ht Crown Clearance (m)	Age Class	P Condition	Structural Condition & General Comments	Preliminary Recommendations	Est. (yrs)	Cat Grade
T1 (TPO T19)	Small leaved Lime	15	640	7.68	6	5	6	6	3	EM/M	F	Competing leaders from 3m rubbing and causing a bark included union. Slight lean towards adjacent park. Foliage appears in relatively poor condition. Large lost limb at 2m decaying into main stem.	No works required at this stage.	20	**B2**
T2 (TPO T18)	Lime	16	#700+	8.40	6	6	7	5	3	EM/M	F	Unable to measure stem due to dense epicormic growth. Element of dieback in canopy. Discoloured foliage.	Prune back epicormic growth.	20	**B2**
T3 (TPO T17)	Lime	10	#600	7.20	5	5	5	5	3	EM	F	Unable to measure stem due to dense epicormic growth. Dense Ivy coverage throughout. Not particularly prominent within the landscape.	Prune back epicormic growth & sever Ivy.	20+	**B2/C2**
T4 (TPO T16)	Lime	14	#500	6.00	6	6	5	5	3	EM/M	F	Unable to measure stem due to dense epicormic growth. Foliage discolouring.	Prune back epicormic growth.	20+	**B2**
T5 (NO TPO)	Sycamore	10	5 x #300	8.05	5	5	5	5	2	EM	F	Multi stemmed from the base. Dense ivy coverage. Multiple bark included unions. Low value.	Fell and replace elsewhere.	30+	**B2/C2**
T6 (TPO T14)	Lime	12	#550	6.60	4	6	4.5	4.5	3	EM	F/P	Some element of canopy dieback. Foliage discoloration in parts. Lost top in past, likely decay at this point. Not particularly prominent within the landscape. Dense Ivy on stem and scaffolds.	Fell and replace elsewhere.	20	**B2**
T7 (TPO T13)	Lime	21	#900	10.80	6	6	9	7	3	M	F	Canopy appears somewhat sparse and discoloured. Markedly taller than T3-T6 and more visually important to the streetscape.	No works required at this stage.	10+	**B2**

NOTE: The Category Grade applied to trees surveyed is consistent with the recommendations within Table 1 of BS5837: 2012, however this does not necessarily correlate with the visual importance of a tree within the wider landscape, nor does it dictate which trees should be retained at the cost of quality development. Where trees are to be lost to accommodate a development, recommendations will be made such as to provide suitable mitigation and compensation, and to integrate the development into the wider landscape.

Key to Abbreviations & Headings

T. No.: Tree number (T = Tree, G – Group, W = Woodland, H = Hedge, Cpt. = Compartment)
Stem DBH (Diameter at Breast Height): Measured at 1.5m above ground level*
Ht Crown Clearance: Canopy ground clearance
Structural Condition: Description of any observed defects
Cat. Grade: Tree quality assessment in accordance with BS5837: 2012

Species: Common name used
Root Protection Area Radius: Root Protection Area as per BS5837: 2012
Age Class: Y = Young, EM =Early Mature, M = Mature, OM = Over mature, D = Dead
Preliminary Recommendations: Made in respect of known / intended use of the site
* For groups of trees, the stem diameter of the largest tree in the group is generally used
# Denotes estimated DBH where access was not possible

Ht: Approximate height of tree from ground level in metres
Branch Spread: Extent of canopy spread in metres to each of the four cardinal points
P (Physiological) Condition: G = Good, F = Fair, P = Poor, D = Dead
Est. (yrs): Estimated remaining contribution in years

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Site:	Land off Station Avenue, Wrexham	Surveyor:	Robert Armitage	Ascerta
Client:	The Co-operative Estates	Survey Date:	26/08/15 (updated by A McLeod 18/09/15)	Landscape | Trees | Ecology
Brief:	Tree Survey to BS5837:2012	Survey Conditions:	Warm, Sunny	

T. No	Species	Ht (m)	Stem DBH (mm)	RPA Radius (m)	Branch Spread N	S	E	W	Ht Crown Clearance (m)	Age Class	P Condition	Structural Condition & General Comments	Preliminary Recommendations	Est. (yrs)	Cat Grade
T8 (TPO T12)	Lime	15	#830	9.96	6	6	6	6	3	EM/M	F	Some recent mechanical damage on main stem leaving a large open wound. Minor dead wood. Foliage appears in a reasonably good condition compared to the rest of the trees within the line.	No works required at this stage.	20+	**B2**
T9 (TPO T11)	Lime	22	#1100	13.20	7	7	8	8	3	M	F	Two large stems from near to the base of the tree with a large (3m), acutely angled bark inclusion. Significant foliage discoloration.	No works required at this stage.	20	**B2**
G1	Sycamore, Elder, Hawthorn, Lime, Ash	22	#150 - #200	2.40	6	6	6	6	0	Y/EM/ M	F	Dense group growing next to road predominantly made up of self seeded, low value young trees often covered in Ivy. Nearest Station Avenue, mature Lime trees form a linear feature emerging from a 1m Hawthorn hedge. Understorey approximately 4m with occasional 10-12m Ash.	Sever Ivy where reasonable to do so.	30+	**B2**
G2	Hawthorn, Elder, Ash, Sycamore, Cherry	14	#140 ave	1.68	2	2	2	2	0	Y/EM/ M	F	Previously maintained boundary hedge left to overgrow to approximately 6m with emerging young Sycamore, Ash and Cherry.	Cut back site side lightly.	30+	**B2**
T10	Ash	14	450	5.40	4	5	5	4	1.8	EM/M	F	Dense Ivy on stem. Vertical ribbing on stem indicates possible past internal cracking.	Prune branch tips back off site by 2m. Monitor for signs of deterioration in health or structural integrity.	20	**C2**
T11	Sycamore	14	#500 + #450 + #400	9.39	7	7	7	7	2	EM/M	F/G	Stem located just off-site. 2 stemmed from base. Good canopy vigour with a balanced canopy form.	No works required at this stage.	30	**B2**

NOTE: The Category Grade applied to trees surveyed is consistent with the recommendations within Table 1 of BS5837: 2012, however this does not necessarily correlate with the visual importance of a tree within the wider landscape, nor does it dictate which trees should be retained at the cost of quality development. Where trees are to be lost to accommodate a development, recommendations will be made such as to provide suitable mitigation and compensation, and to integrate the development into the wider landscape.

Key to Abbreviations & Headings

T. No.: Tree number (T = Tree, G – Group, W = Woodland, H = Hedge, Cpt. = Compartment)
Stem DBH (Diameter at Breast Height): Measured at 1.5m above ground level*
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Age Class: Y = Young, EM =Early Mature, M = Mature, OM = Over mature, D = Dead
Preliminary Recommendations: Made in respect of known / intended use of the site
* For groups of trees, the stem diameter of the largest tree in the group is generally used
# Denotes estimated DBH where access was not possible

Ht: Approximate height of tree from ground level in metres
Branch Spread: Extent of canopy spread in metres to each of the four cardinal points
P (Physiological) Condition: G = Good, F = Fair, P = Poor, D = Dead
Est. (yrs): Estimated remaining contribution in years

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T. No	Species	Ht (m)	Stem DBH (mm)	RPA Radius (m)	Branch Spread N	S	E	W	Ht Crown Clearance (m)	Age Class	P Condition	Structural Condition & General Comments	Preliminary Recommendations	Est. (yrs)	Cat Grade
T12	Oak	11	1100	13.20	4	10	5	9	2.5	M	F	Multiple fungal fruiting bodies of *Inonotus dryadeus* observed around the base of the stem and on buttress roots. Canopy now one sided due to large lost limb. Foliage doesn't appear to be showing signs of low vigour.	The extent of decay caused by this fungus cannot be determined with any great deal of accuracy without more thorough testing and therefore its significance for the tree's stability is currently inconclusive. However, its presence alone warrants the need for a system of monitoring for deterioration in structural integrity and health. Prune canopy overhanging site back by 3m where natural target pruning allows.	10	**B2**
T13	Oak	14	1150	13.80	9	9	9	9	2	M	G	Positioned off-site adjacent public footpath. Ivy colonised. Good canopy form and condition. Prominent in landscape.	No works required at this stage.	30+	**A1**
H1	Hawthorn	1.8	#100 ave	1.20	0.5	0.5	0.5	0.5	0	Y/EM	F	Maintained linear hedge with emerging Lime trees.	Remove section for access.	20+	**B2**
G3	Hawthorn and Elder	2.5	40#	0.48	1	1	1	1	0	Y	F	Young, self seeded trees positioned sporadically. Off site.	No works required at this stage.	40+	**C2**
T14	Hawthorn	6	3 x 120	2.49	3	1.5	4	3	1.2	M	P	Low quality. Dense Ivy.	No works required at this stage.	20	**C2**
T15	Ash	15	180 210 100 275	4.83	5	2	4	3	1.2	EM	F	Multi stem. Low landscape value. Dense Ivy	Crown lift to 3.5m over site. Sever Ivy.	20	**C2**
T16 A + B	Hawthorn	8	150+120	2.31	3	2	3	3	1	M	P	Low quality. Dense Ivy.	No works required at this stage.		
T17	Ash	15	2x320	5.43	6	2.5	6	4	1.8	EM	F	Basal growth. Ivy. Twin stem. Could not inspect base.	Remove basal growth. Crown lift to 4m.	30	**B2**
T18	Elder	6	210+150	3.10	2	1	3	3	0.5	OM	P	Low quality. Unimportant in landscape	No works required at this stage.	10	**U**

NOTE: The Category Grade applied to trees surveyed is consistent with the recommendations within Table 1 of BS5837: 2012, however this does not necessarily correlate with the visual importance of a tree within the wider landscape, nor does it dictate which trees should be retained at the cost of quality development. Where trees are to be lost to accommodate a development, recommendations will be made such as to provide suitable mitigation and compensation, and to integrate the development into the wider landscape.

Key to Abbreviations & Headings

T. No.: Tree number (T = Tree, G – Group, W = Woodland, H = Hedge, Cpt. = Compartment)
Stem DBH (Diameter at Breast Height): Measured at 1.5m above ground level*
Ht Crown Clearance: Canopy ground clearance
Structural Condition: Description of any observed defects
Cat. Grade: Tree quality assessment in accordance with BS5837: 2012

Species: Common name used
Root Protection Area Radius: Root Protection Area as per BS5837: 2012
Age Class: Y = Young, EM =Early Mature, M = Mature, OM = Over mature, D = Dead
Preliminary Recommendations: Made in respect of known / intended use of the site
* For groups of trees, the stem diameter of the largest tree in the group is generally used
# Denotes estimated DBH where access was not possible

Ht: Approximate height of tree from ground level in metres
Branch Spread: Extent of canopy spread in metres to each of the four cardinal points
P (Physiological) Condition: G = Good, F = Fair, P = Poor, D = Dead
Est. (yrs): Estimated remaining contribution in years

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Site:	**Land off Station Avenue, Wrexham**	Surveyor:	**Robert Armitage**	Ascerta Landscape | Trees | Ecology
Client:	**The Co-operative Estates**	Survey Date:	**26/08/15 (updated by A McLeod 18/09/15)**	
Brief:	**Tree Survey to BS5837:2012**	Survey Conditions:	**Warm, Sunny**	

T. No	Species	Ht (m)	Stem DBH (mm)	RPA Radius (m)	Branch Spread N	S	E	W	Ht Crown Clearance (m)	Age Class	P Condition	Structural Condition & General Comments	Preliminary Recommendations	Est. (yrs)	Cat Grade
T19	Ash	16	280 210 230	5.03	6	3	4	4	4	EM	F	Dense Ivy on stems.	Sever Ivy and monitor for signs of deterioration in structural integrity and health.	30	**B2**
T20	Ash	16	310 280 210	5.61	8	3	5	5	2.5	EM	F	Dense Ivy on stems.	Sever Ivy and monitor for signs of deterioration in structural integrity and health.	30	**B2**
G4	Hawthorn	5	200	2.40	2.5	2.5	2.5	2.5	0.5	M	F	Dense Ivy on stems.	No works required at this stage.	30+	**B2**

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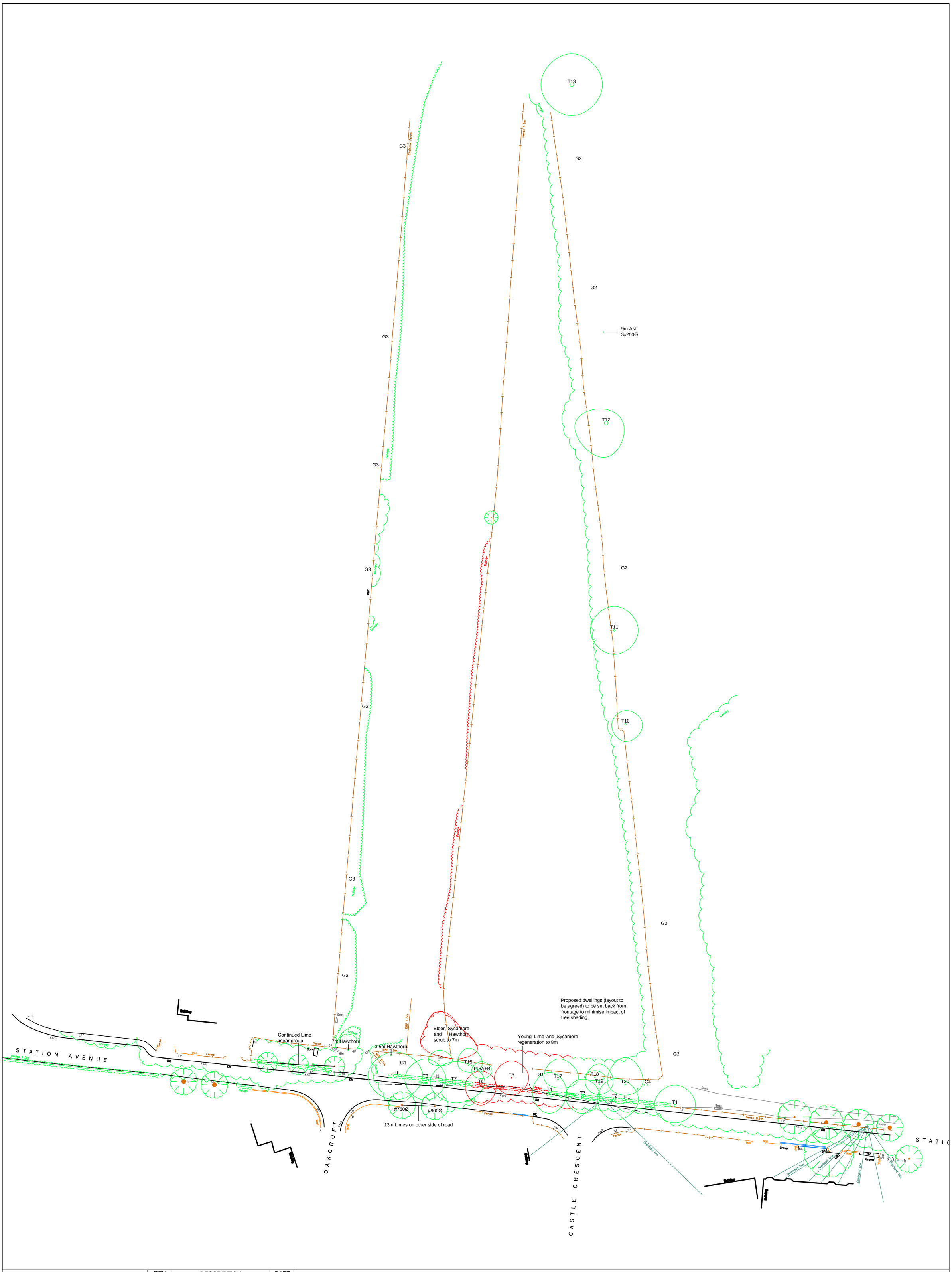
Appendix 2



ALL COORDINATES RELATED TO LOCAL GRID LOCATED TO OS NG BY BEST FIT TO DETAIL, EXTRACTED FROM OS DIGITAL DATA.

REV	DESCRIPTION	DATE
A	General updates	17/03/17

KEY

Existing tree to be retained

Existing tree to be removed

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CLIENT:
The Co-operative Estates

PROJECT:
Land off Station Avenue, Wrexham

DRAWING TITLE:
Tree Survey

SCALE:	DRAWN BY:	DRAWING No:	REV:
1:500 @A1	CP		
DATE: 26/08/2015	CHKD BY: RA/AM	P.585.15.01	A

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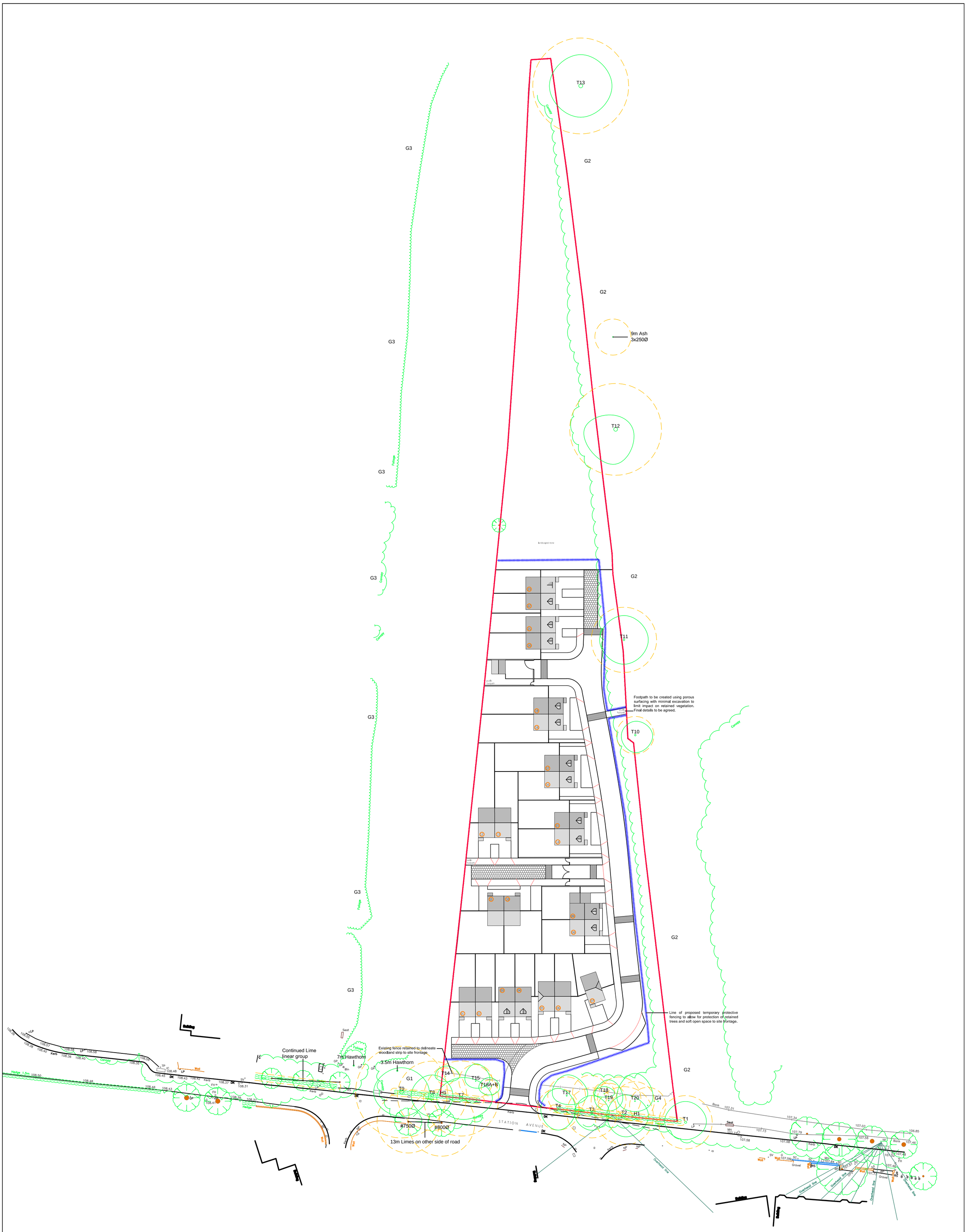

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REV	DESCRIPTION	DATE
A	General updates	17/03/17

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PROJECT:
Land off Station Avenue, Wrexham

DRAWING TITLE:
Tree Constraints & Draft Protection Drawing

SCALE:	DRAWN BY:	DRAWING No:	REV:
1:500 @A1	CP		
DATE: 26/08/2015	CHKD BY: RA/AM	P.585.15.02	A

KEY

Existing tree to be retained

Proposed location of protective fencing - see inset for type - construction detail

Extent of root protection Area for retained trees in accordance with BS5837: 2012 *Trees in relation to design, demolition and construction - Recommendations*

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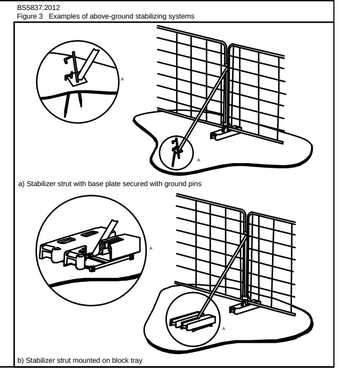
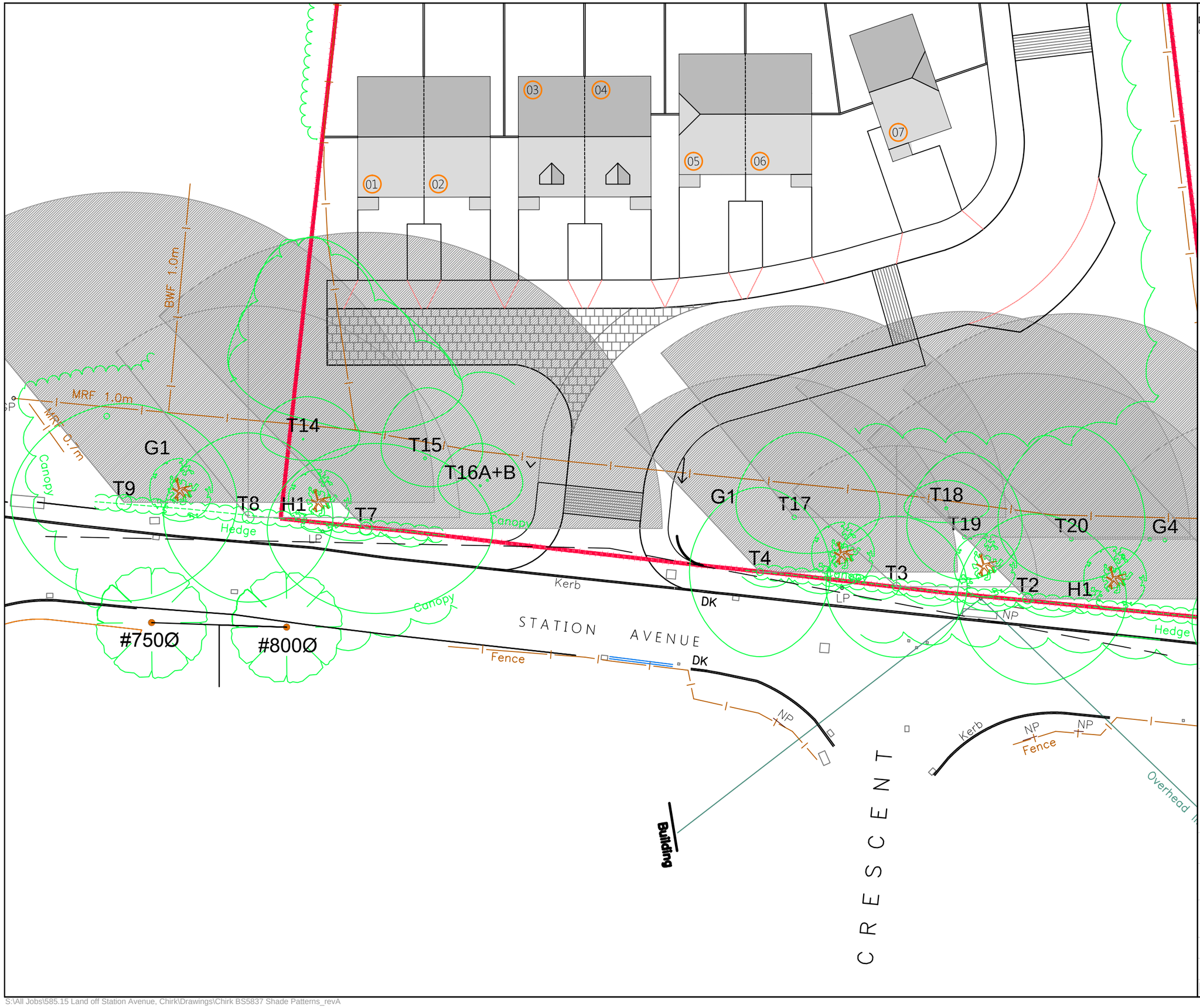
BS5837:2012
Figure 3 Examples of above-ground stabilizing systems





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KEY

Existing tree retained

Worst case scenario shading created by retained trees along the site frontage. Note: at no stage during the day will the extent hatched area be shaded. Estimation of extent of shade based on BS5837:2012 and existing tree heights, which are unlikely to significantly increase.

REV	DESCRIPTION	DATE
A	General updates	17/03/17

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PROJECT:
Land off Station Aveue, Wrexham

DRAWING TITLE:
BS5837 Shade Patterns

SCALE:	DRAWN BY:	DRAWING No:	REV:
1:250 @A3	CP		
DATE: 20/02/2017	CHKD BY: AM	P.585.15	A