

**Extended Phase 1 Habitat Survey
& Baseline Ecological Impact Assessment**

Devil's Elbow, Read

**Report prepared on behalf of
Ribble Valley Leisure Ltd.**

Cameron S Crook & Associates
Bio-Ecological Consultancy
8 Woodstock Close, Lostock Hall,
Preston, Lancashire PR5 5YY
Telephone: (01772) 316717
Fax: 08707 626071
e-mail: info@CSC-Associates.co.uk

June 2012



Executive Summary

- A series of ecological surveys and site assessment were carried out during the 2011 and 2012 field seasons including an initial Extended Phase 1 Habitat Survey followed by specific surveys for bats, badgers, water voles, great crested newts, birds, plants (NVC) and habitats. This was supplemented by a desktop survey.
- The proposed outdoor activities will occur within part of an existing Biological Heritage Site (BHS) although not all parts of the BHS are of high ecological value and currently, not all parts of the site strictly qualify under the BHS Selection Criteria.
- The respective parts of the site are shown on the Phase 1 Habitat Map and proposed site layout within the ecological report and architectural drawings submitted in support of the planning application. The area indicated as being of lower ecological value has been chosen as the best location for the proposed development to ensure that any likely ecological impact is kept to a minimum.
- The only known ecological constraints within the area proposed for development are breeding bird issues and the presence of a number of badger setts. Any impact upon these species will be avoided or minimized by the implementation of a number of precautionary measures including: repeat surveys for badgers nearer to the time of development; the avoidance of any badger setts; any site works that might potentially affect breeding birds avoiding the bird breeding season; and the provision of alternative bird breeding sites through the use of bird boxes and retention of suitable habitat.
- Whilst the site is used extensively for foraging and commuting by bats, no confirmed roosting sites were found within the area proposed for development. Commuting and foraging habitat will be retained wherever possible and repeat nighttime surveys of any trees proposed for removal will be carried out in advance of any works taking place to check for any newly established bat roosts.
- In addition to the precautionary/avoidance measures, proposals will include an element of ecological/planning gain through the implementation of a positive management regime and habitat/landscape improvement scheme. The aim will be to improve both the structural and species diversity of the lower quality areas of the woodland, wherever this is compatible and will not conflict with the outdoor activities as proposed.
- Any existing links with adjacent wildlife corridors will be maintained or enhanced where necessary through the planting of native trees and shrubs or the promotion of natural regeneration.
- The existing high quality habitat (semi-natural ancient woodland and wetland) will be managed and enhanced where necessary, under a limited intervention regime, with only restricted and/or controlled access allowed.
- A nature trail will be established within the upper part of this woodland but this will utilize existing footpaths and tracks wherever possible and low impact materials will be used to consolidate these paths to reduce any chances of erosion. This will only be used under controlled conditions and access to the woodland restricted. The valley side and lower, wetter parts of this woodland will not be accessible other than for research or educational purposes, with the number of visitors strictly controlled.
- Within the area proposed for outdoor activities there are no known ecological constraints other than those outlined above, and the notional one of the site being designated a BHS.
- There will be no residual negative ecological impact and overall, the proposals will be beneficial to the Biological Heritage Site since the area of high ecological value will be brought into positive management and its continued sympathetic use secured for the foreseeable future. In addition, the remaining areas of woodland will be improved through the removal of conifers and other non-native species, and the promotion of an increased structural and species diversity, thereby contributing to biodiversity conservation.

Contents

1.0	Introduction	4
2.0	Methodology	5
3.0	Existing Situation	6
4.0	Potential Impacts & Mitigation	12
4.1	Likely Impact	12
5.0	Conclusion	19
6.0	References	20
7.0	Photographs	21
8.0	Appendix	23
8.1	Vascular Plants Recorded	23
8.2	Invertebrates recorded	27
8.3	Phase 1 Habitat Map and Target Notes	28
8.4	Outline Woodland Management Proposals	29

2.0 Methodology

Desktop Survey

- 2.1 Prior to undertaking any site survey works, a data search was carried out to check for any protected or other important species or habitats occurring within or closely adjacent to the site boundaries. Data sources include the following:

- ◆ LERN
- ◆ NBN Gateway
- ◆ MAGIC

Any *significant* results are provided within the relevant sections below.

General Ecological and Botanical Survey

- 2.2 This comprised primarily an Extended Phase 1 Habitat Survey carried out in May 2011 with any evidence of birds, amphibians, reptiles and mammals being noted during the survey. The survey methodology for the Extended Phase 1 Habitat Survey comprised a modified version of that described in NCC (1990) and IEA (1995) and where appropriate, with particular respect to the Phase 2 Habitat Survey, incorporating the methodology outlined in Rodwell (1991, 1992, 1995 & 2000) for determination of National Vegetation Classification plant communities.
- 2.3 The Phase 1 Habitat Survey was supplemented by a full vascular plant species survey using the 'walkabout method' as described in Kirkby (1988) and a generalized assessment of the site for suitability of habitat for animals, in particular protected species such as badger, bats, breeding birds, water voles and great crested newts. The results from the initial Phase 1 Habitat survey were used to guide the requirements and level of detail of the more specific surveys outlined below.

Badgers

- 2.4 This part of the survey was carried out in May and June 2011 and March 2012 using standard badger survey methodology as described in Harris et al (1989). In practice, this comprised a generalized search of the whole site where suitable habitat was found, to a distance of 30m from the development site boundary (where accessible) to check for feeding signs, habitual runs and footprints, hairs, droppings and latrines, scratching posts and actual setts.

Bats

- 2.5 The bat survey comprised two night-time visits including one emergence survey and one dawn survey, undertaken in May and June 2011 respectively, following a daytime inspection of any suitable habitat such as mature trees to check for signs of roosting bats
- 2.6 For the night-time surveys, ultrasonic bat detectors, both heterodyne and frequency division, were used to record bat activity around the site using a combination of transects and static survey stations. The dawn survey commenced at 1.5 hours prior to sunrise and continued until sunrise. Dusk survey commenced at fifteen minutes prior to sunset and continued until 1.5 hours after sunset. All surveys were undertaken during suitable weather conditions where there was little or no wind, no rain, and minimum temperatures above 8 degrees Centigrade
- 2.7 For the daytime inspection, all suitable habitat (mature trees) was closely inspected, using close-focusing binoculars or fiberscope where necessary, to check for signs of bat usage such as droppings, feeding remains or staining around potential roost entrances

Water Voles

- 2.8 This was carried out in June 2011 and comprised a detailed inspection of the stream that follows the northwestern boundary (Sabden Brook) following the methodology

described in Strachan (1998). No other *suitable* watercourses will be affected by development proposals so the survey was confined to this stream alone. Specifically, the watercourse was examined for evidence of water vole usage including field signs such as latrines (piles of droppings used to mark territories), feeding remains, footprints, burrows, 'vole lawns' and actual sightings or the sound of animals diving into the water.

Otters

- 2.9 The survey for otters was carried out concurrently with the water vole survey whereby the stream and bank was inspected to a distance of 10m into the site boundary from the water's edge for any signs of otter activity such as footprints, spraints, feeding remains, resting 'couches', holts and slipways. Particular attention was given to any large tree buttresses and retaining walls where holts or other resting places may have been located.

Birds

- 2.10 This part of the survey followed a modified, scaled-down version of the methodology described in Bibby *et al* (1992) and was carried out over three visits between the 25th May 2011 and the 30th June 2011. All potential bird nesting habitat such as trees, shrubs, wetland and any other rough vegetation, was checked for suitability for use by breeding birds or signs of bird breeding activity such as territorial behaviour. The results of the survey have been tabulated within the relevant section below according to the likely breeding potential of each species recorded.

Amphibian & Reptiles

- 2.11 An initial inspection revealed only two ponds within 250m of the site boundaries where there was direct habitat linkage. On closer inspection, these were found to be unsuitable for use by great crested newts so no specific amphibian survey was carried out or considered necessary.
- 2.12 With respect to reptiles, any potential refugia such as metal, wooden or plastic sheeting or any potential egg-laying sites such as piles of sawdust were inspected for signs of sloughed skins and observations made on warm days to check for any basking reptiles.

Invertebrates

- 2.13 Due to the limited scope of the woodland and terrestrial habitat surveys (considering that no significant habitat will be affected in that respect) only incidental records of terrestrial invertebrates were made. There will be no direct impact upon the watercourse so no specific survey of macro-invertebrates was carried out.

3.0 Existing Situation

General Site Description

- 3.1 The site comprises an extensive area of land, the dominant habitats including semi-natural ancient woodland, broadleaved plantation woodland, mixed plantation woodland, and improved grassland. The woodland that extends from Whalley Road northwards following Sadben Brook is diverse in both structure and plant species.
- 3.2 The southern section of woodland that bounds Whalley Road, comprises mainly plantation woodland including both native and non-native broadleaved trees, as well as introduced conifers. The native tree species include oak, ash, birch and beech. The non-native and coniferous species include horse chestnut, sycamore, larch, spruce and pine. The ground flora is variable but mostly species-poor due to the level of overhead shade from the conifers and some non-native broadleaved species that leave a heavy leaf-litter and suppress ground flora, and relative recency of the woodland. The dominant species within the ground flora are bramble, broad-buckler

fern and bracken with little else other than the occasional patch of grass or tall-ruderal vegetation.

- 3.3 Part way along the site (as indicated on the site plan) the woodland becomes more diverse, the northern section comprising mainly native species of trees in the canopy and a well-developed, diverse ground flora typical of semi-natural ancient woodland. The woodland at this point becomes steep-sided and difficult to access where it leads to the stream at the base of the valley. In the hollows and lower plateaus of this section of woodland, two relatively uncommon habitats, wet woodland and swamp occur, some of this habitat being fairly extensive and well developed. Overall, this section of the site is of significant ecological value and as such, has been designated as a Biological Heritage Site (BHS). Further details of the component species are provided within the Target Notes of the Phase 1 Habitat Map and the vascular plant species to the rear of this report.
- 3.4 Beyond the woodland, the site is of limited ecological value in botanical and habitat terms comprising mainly species-poor improved grassland. There are occasional patches of tall-ruderal vegetation and rank grassland adjacent to the woodland where mowing has been less effective, as well as in any gaps within the woodland canopy where dense, low growing bramble and dog rose scrub is also evident.
- 3.5 The existing layout is shown in the Phase 1 Habitat Map with further details of site features described within the associated Target Notes and illustrated within the photographs section to the rear of this report.

Habitats and Flora

- 3.6 The habitats recorded during the Phase 1 Habitat Survey as described in general terms above are summarized in Table 1 below. These habitats are shown graphically on the Phase 1 Habitat Map to the rear of this report with any important features indicated by and described within the associated target notes. A full list of vascular plant species that occur within the vegetation communities and habitats listed below, is also provided within the appendix

Table 1

NCC/RSNC ¹ Habitat	NVC ² Communities
Woodland: Broadleaved, semi-natural	W6 <i>Alnus glutinosa-Urtica dioica</i> woodland W9 <i>Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis</i> Woodland W10 <i>Quercus robur-Pteridium aquilinum-Rubus fruticosus</i> Woodland W16 <i>Quercus spp.-Betula.-Deschampsia flexuosa</i> Woodland
Scrub: dense continuous Scrub: scattered	W1 <i>Salix cinerea-Galium palustre</i> woodland W2 <i>Salix cinerea-Betula pubescens</i> woodland W22 <i>Prunus spinosa-Rubus fruticosus</i> scrub W24 <i>Rubus fruticosus-Holcus lanatus</i> underscrub community
Grassland: neutral, semi-improved	MG1 <i>Arrhenatherum elatius</i> grassland OV23 <i>Lolium perenne-Dactylis glomeratus</i> community
Improved Grassland	MG7 <i>Lolium perenne</i> leys and related grasslands
Marsh/Marshy Grassland	MG10 <i>Holcus lanatus-Juncus effusus</i> rush pasture

Tall herb and fern: tall ruderal	OV24 <i>Urtica dioica</i> - <i>Galium aparine</i> community OV25 <i>Urtica dioica</i> - <i>Cirsium arvense</i> community
Cultivated/disturbed land: ephemeral/short perennial	OV21 <i>Poa annua</i> - <i>Plantago major</i> community OV22 <i>Poa annua</i> - <i>Taraxacum officinale</i> community OV28 <i>Agrostis stolonifera</i> - <i>Ranunculus repens</i> community
Swamp, marginal and inundation	S12 <i>Typha latifolia</i> swamp S22 <i>Glyceria fluitans</i> water-margin vegetation S23 Other water-margin vegetation S28 <i>Phalaris arundinacea</i> tall-herb fen M27 <i>Filipendula ulmaria</i> - <i>Angelica sylvestris</i> mire M28 <i>Iris pseudacorus</i> - <i>Filipendula ulmaria</i> mire
Open Water	A2 <i>Lemna minor</i> community A16 <i>Callitriche stagnalis</i> community A18 <i>Ranunculus fluitans</i> community
¹ Nature Conservancy Council and Royal Society for Nature Conservation habitat classification (NCC, 1990)	
² National Vegetation Classification communities (Rodwell, 1991)	

Significance of Habitats and Flora

- 3 7 The whole woodland site has been designated as a Biological Heritage Site (see the BHS Schedule within the Appendix for further details). However, the habitats and vegetation communities recorded **within the development footprint*** are of limited ecological value, being relatively common and widespread throughout Lancashire and Great Britain. The habitats beyond the development footprint (but within the red line boundary) are of local to regional importance (i.e. Fe1 Swamp & Fen and Wd2 Woodland & Scrub, see BHS Schedule) but these *will not be adversely affected* by development proposals providing adequate precautions are taken.

* in the context of this report, this is taken to mean the area proposed for outdoor adventure games, as described in the planning statement and indicated on the proposed site layout drawings

Mammals (General)

- 3 8 **Habitat Suitability:** The site provides habitat for a number of common mammal species, particularly those associated within mature woodland and extensive areas of grassland
- 3 9 **Presence/Absence:** The site is well used by rabbits, fox and small mammals such as bank vole, wood mouse and both common species of shrew. There was also evidence of deer (most likely fallow and/or sika, and roe) within the woodland with a number of footprints and a well-established network of tracks noted. There was no evidence of brown hare within the grassland areas though the habitat is suitable and this species is known to occur in the wider area

Mammals (Badgers)

- 3 10 **Habitat Suitability:** The site provides an extensive area of habitat suitable for badger foraging and for the establishment of setts.

- 3.11 *Presence/Absence:* An inspection of all suitable habitat to a distance of at least 30m from the proposed development site boundaries (where accessible) revealed a large numbers of signs including several extensive setts, each having several entrance holes. These represent a well-established and extensive clan. The location of the main setts and immediate outlier and annex setts are shown on the Phase 1 Habitat Map.

Mammals (Bats)

- 3.12 *Habitat Suitability:* There are no buildings on site but a number of large mature trees occur across the site, many of which are suitable for bat roosting due to the presence of cavities and/or deeply fissured bark. The site also provides extensive areas of habitat suitable for commuting and foraging by a number of bat species.
- 3.13 *Roosting:* The various survey elements revealed **no conclusive signs of roosting** within any of the mature trees. No bats were seen to emerge from any suitable habitat during the dusk survey and no roost return activity was noted during the dawn survey. There are no historic records of roosting taking place anywhere on site.
- 3.14 *Activity:* The site is well used by bats, especially the margins of the woodland which are used by pipistrelles, brown long-eared bats, whiskered bats and noctule, all of which were recorded during the various surveys. Feeding was also recorded alongside the watercourse (pipistrelles and whiskered) and above the northern and western blocks of woodland (noctule). The activity is shown indicatively on the Phase 1 Habitat Map.

Mammals (Water Voles)

- 3.15 *Habitat Suitability:* The stream which follows the northwestern boundary is of limited suitability for use by water voles due to the lack of marginal vegetation, general lack of depth in parts, the speed of flow, the level of overhead shade, and the limited availability of soft banking within which to burrow. There are other smaller watercourses (drainage channels and ditches) at various points but these were found to be mostly vegetated over or dry and therefore of limited use to water voles.
- 3.16 *Presence/Absence:* No conclusive signs of water voles were found within the stream or ditches so it is reasonable to assume that this species does not currently occur on site. There are no historic records of water vole occurring within or close to the site boundaries.

Mammals (Otter)

- 3.17 *Habitat Suitability:* The stream provides optimal habitat for otters with numerous tree buttresses for use as holts, fast flowing water, numerous rocks on which to leave spraints (to mark territory), and little or no disturbance.
- 3.18 *Presence/Absence:* Otter is not widely known in this area although there are records of the range having expanded in recent years. A potential holt beneath a large beech tree along the northern bank of Sabden Brook was found to have an area of smoothed mud similar to an otter slipway, but no other signs such as spraints or feeding remains were found to confirm presence of otters. Nevertheless, despite this and the suitability of habitat, the lack of signs would suggest that this species is probably not currently present at this site.

Birds

- 3.19 *Habitat Suitability:* The site overall provides a high diversity of habitat for bird breeding, mainly the mature trees and shrubs within the woodland and the wetland habitat (swamp, wet woodland and riparian habitat). The least important part of the site is the extensive area of improved grassland and the latter area was found to have the lowest diversity of habitat and lowest number of bird species recorded.

- 3.20 Overall, a number of bird species were recorded on site or close to the site boundaries (as listed below) though many of these were assumed to be only transient, having been only recorded flying over. Those considered to be breeding on the wider site are highlighted in bold type with a qualifier in the third column as to certainty.

Table 2

Species Name	Common Name	Breeding Status
<i>Anas platyrhynchos</i>	Mallard	PoBr
<i>Apus apus</i>	Swift	NoBr
<i>Ardea cinerea</i>	Heron	NoBr
<i>Buteo buteo</i>	Buzzard	PoBr
<i>Carduelis carduelis</i>	Goldfinch	PoBr
<i>Carduelis chloris</i>	Greenfinch	PoBr
<i>Certhis familiaris</i>	Treecreeper	PoBr
<i>Cinclus cinclus</i>	Dipper	PoBr
<i>Columba palumbus</i>	Wood Pigeon	CoBr
<i>Corvus corone</i>	Carrion Crow	CoBr
<i>Corvus monedula</i>	Jackdaw	PoBr
<i>Delichon urbica</i>	House Martin	NoBr
<i>Dendrocopus major</i>	Great-spotted Woodpecker	PrBr
<i>Erithacus rubecula</i>	Robin	CoBr
<i>Fringilla coelebs</i>	Chaffinch	CoBr
<i>Garrulus glandarius</i>	Jay	PoBr
<i>Hirundo rustica</i>	Swallow	NoBr
<i>Larus argentus</i>	Herring Gull	NoBr
<i>Larus canus</i>	Common Gull	NoBr
<i>Motacilla alba</i>	Pied Wagtail	PoBr
<i>Motacilla cinerea</i>	Grey Wagtail	PrBr
<i>Parus caeruleus</i>	Blue Tit	CoBr
<i>Parus major</i>	Great Tit	CoBr
<i>Phasianus perdix</i>	Pheasant	PrBr
<i>Phylloscopus collybita</i>	Chiffchaff	PrBr
<i>Phylloscopus trochilus</i>	Willow Warbler	PrBr
<i>Pica pica</i>	Magpie	CoBr
<i>Turdus merula</i>	Blackbird	CoBr
<i>Turdus viscivorus</i>	Mistle Thrush	PrBr
Key to Breeding Qualifiers:		
CoBr – Confirmed Breeding; NoBr – Not Breeding; PrNB – Probably Not Breeding; PrBr – Probably Breeding; PoBr – Possibly Breeding		

- 3.21 Most of the species recorded breeding on or close to the development footprint are species that are relatively common and widespread. No Schedule 1 species such as kingfisher or barn owl were recorded, although the presence of the former cannot be totally ruled out given the suitability of habitat. There are no historic records of any protected or otherwise important species occurring *within the development site boundaries*, though it is possible that species in addition to those recorded may occur on site or close to the site boundaries at other times of year. Beyond the development site boundaries to the north and west, there are historic records of curlew, skylark and

starling, all of which are Biodiversity Action Plan species. However, none of these species were recorded within the vicinity of the proposed development footprint and, whilst the habitat due north of the development footprint is marginally suitable, as this will not be affected by the proposals, there is unlikely to be any impact or disturbance.

Amphibians (in particular Great Crested Newts)

- 3.22 *Habitat Suitability:* There are no ponds on site but there are two within 250m of the site boundaries where there is direct habitat linkage. However, these ponds (as indicated on the site plan) were found to be unsuitable for use by great crested newts due to the relative lack of water, level of overhead shade, and lack of aquatic vegetation.
- 3.23 *Presence/Absence:* No signs of great crested newt were found and none are expected to occur on site. There are no historic records of great crested newts in the area

Reptiles

- 3.24 *Habitat Suitability:* The habitat on site is only of marginal suitability for reptiles.
- 3.25 *Presence/Absence:* An inspection of all suitable habitat within the site boundaries revealed no conclusive evidence of use by reptiles and the whole site was found to be generally sub-optimal for this group of species. As reptiles are relatively unknown in this part of Lancashire, it is reasonable to assume that reptiles are unlikely to be present on site

Invertebrates

- 3.26 *Habitat Suitability:* The diversity of habitat on site provides habitat for a number of species including both terrestrial and aquatic species.
- 3.27 *Species Diversity:* The semi-natural ancient woodland and wet woodland habitat supports a relatively high diversity of invertebrate species in particular ground beetles, reflecting the maturity of the habitat and both structural and species diversity of the component plants. The wetland and swamp were also found to be diverse in species comprising a number of typical species such as dragonflies and damselflies. More detail of species recorded is provided within the appendix

Significance of Fauna

- 3.28 Two specifically protected species, bats and badgers in this case, and a number of breeding birds which are protected in general terms during the breeding season, were recorded within the proposed development site boundaries.
- 3.29 No conclusive signs of bat roosting were found on site during any of the survey visits. The site is used extensively for foraging and commuting purposes but this activity was found to occur mostly beyond the proposed development footprint, along the woodland edges and within the semi-natural woodland. Site development proposals will therefore result in **no likely adverse impact upon any bat roosts** and will not directly disturb bats
- 3.30 Extensive badger activity was found across the whole site with setts situated closely adjacent to the site proposed for development, within the plantation woodland. It should be noted that since badgers and their setts are fully protected under both the Wildlife & Countryside act and Badgers act, where any badger setts occur within 30m of the site boundaries, appropriate mitigation measures must be prepared and implemented and all subsequent site works must take place under licence from Natural England

- 3.31 No great crested newts were recorded during any of the site survey. It is reasonable to assume therefore that the proposed development will result in **no likely adverse impact upon great crested newts** and other amphibians will be little affected.
- 3.32 With respect to breeding birds, whilst no Schedule 1 or BAP species were recorded within the development footprint, all birds are protected in general terms during the breeding season so any site works which may affect potential breeding sites should avoid the breeding season (February to July inclusive) and any unavoidable loss of breeding habitat should be compensated by provision of proprietary breeding boxes sited in appropriate locations on completion of site works, if not before.

4.0 Potential Impacts & Mitigation

4.1 Likely Impact

- 4.1.1 The likely impact of the proposed site works is evaluated against the criteria laid out in the table below which is based on NATA (New Approach to Appraisal) as described in Byron H (2000). This evaluation is based on the assumption that no mitigation works will be implemented.

Table 3 Impact Assessment Table

Impact Magnitude	Nature Conservation Importance				
	<i>Negligible</i>	<i>Local</i>	<i>County</i>	<i>National</i>	<i>European</i>
Beneficial Effect	Non Significant	Non Significant	Non Significant	Non Significant	Non Significant
Nil Effect	Non Significant	Non Significant	Non Significant	Non Significant	Non Significant
Minor (short term or reversible effects)	Non Significant	Non Significant	Slight	Moderate	Moderate
Moderate (deterioration of feature)	Non Significant	Slight	Moderate	Severe	Severe
High (loss of feature)	Non Significant	Slight	Moderate	Severe	Severe

- 4.1.2 The evaluation criteria for nature conservation importance are as follows:

European

Habitats which are listed in Annexe 1 of the Habitats Directive and are included as candidate or proposed Special Areas of Conservation (cSAC, pSAC)

Species which are listed under Schedule 2 of the Habitats Directive and form a population which would qualify the site for consideration as a Special Protection Area (SPA) or Special Area of Conservation

National

Habitats which meet the criteria for designation of, or occur within, a Site of Special Scientific Interest (SSSI)

Species which are protected under national wildlife legislation such as the Wildlife & Countryside act, are listed in a national Red Data Book, or that are part of a population or assemblage of species that would meet the criteria for the site being designated a site of Special Scientific Interest (SSSI)

County

Habitats which are rare or uncommon in the County would meet the criteria for inclusion or are included within a second tier nature conservation site (SINC), or which form part of a local Biodiversity Action Plan (BAP) or Habitat Action Plan (HAP)

Species which are rare or uncommon within the County, form part of a population or assemblage of species which would meet the criteria for inclusion or are included as part of a Site of Importance for Nature Conservation (SINC)

Local

Habitats which are uncommon or threatened within the Read/Whalley area

Species which are uncommon or threatened within the Read/Whalley area

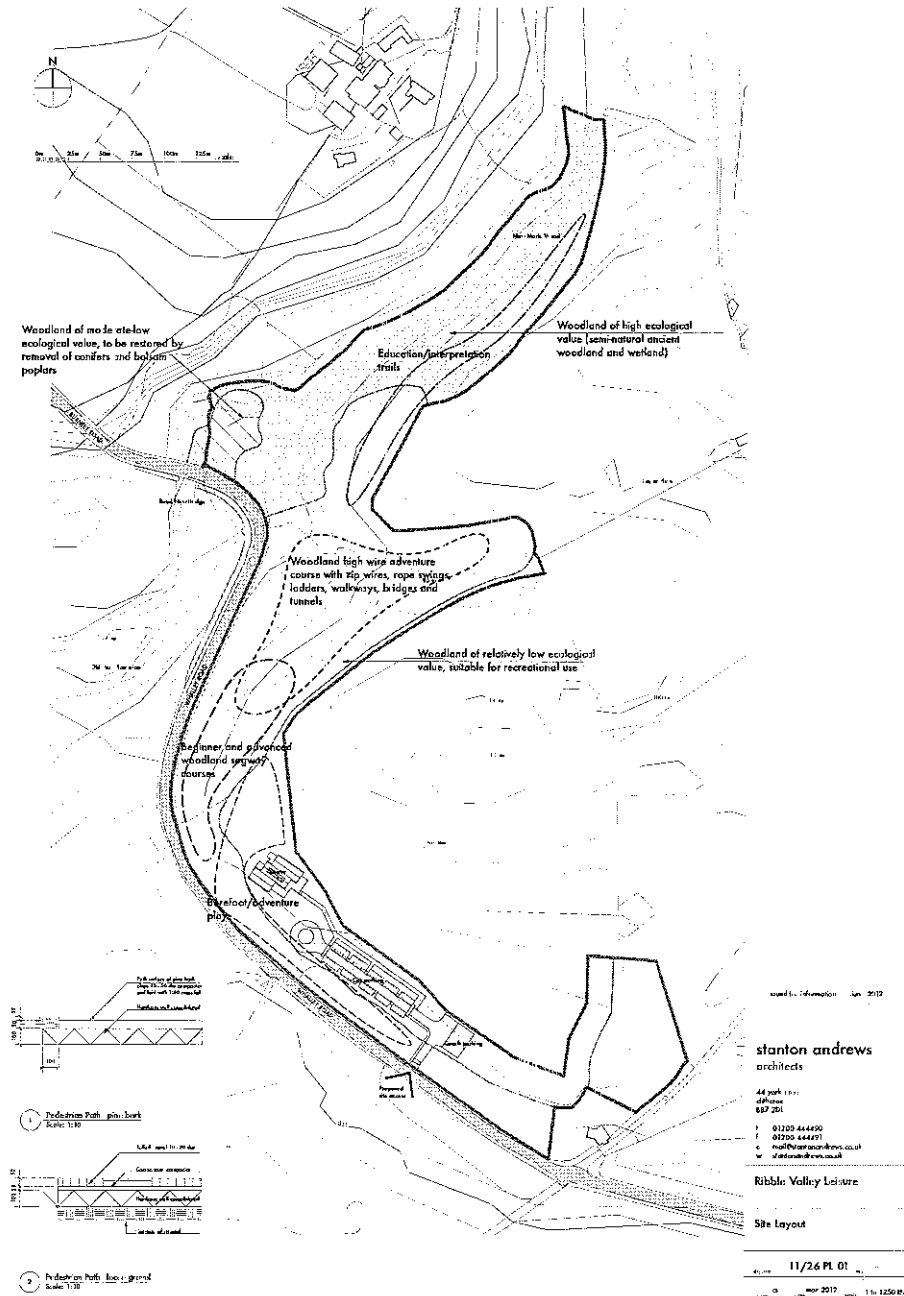
Negligible

Habitats or *Species* that fit into none of the above categories

4.2 Likely Impact of the Development and Outline Mitigation

- 4.2.1 The likely ecological impacts resulting from the proposed site development works (see proposed layout, *Figure 3* below), based on the criteria outlined above and mitigation required to negate any impacts, are summarized within the following tables.

Figure 3 Proposed Site Layout (refer to drawing no 11/26 PL 01 and associated drawings prepared by Stanton Andrews Architects for further details)



320120578P

Table 4

Ecological Issues (receptors)	Details	Likely Impacts	Required Mitigation and Residual Impact
Bats	Bats forage around trees and shrubs primarily along the boundaries of site beyond the development footprint. Commuting routes primarily follow linear features such as lines of trees and shrubs. However, no roost sites were found to occur in any of the large trees and no buildings occur on site.	Removal of any trees, mature shrubs or other mature vegetation may result in severance of commuting routes, and/or loss of foraging areas. However, based on current survey data, this will have no impact upon any roosting bats and will not be detrimental to the favourable conservation status to the wider bat population.	Maintain existing flight-lines wherever possible. As a precautionary measure, carry out specific bat survey to check any mature trees proposed for removal (or attachment of outdoor adventure equipment) for bat roosts, the evening <i>immediately prior</i> to these respective works taking place, if this is to be carried out between mid April and mid October (inclusive). Consolidate existing habitat by replacement planting of trees and shrubs to improve wildlife corridors, where required. Fit proprietary bat boxes to retained trees to increase bat roosting potential. No lighting to be established within the semi-natural woodland or areas of high bat activity.
	Nature Conservation Importance: European	Impact Magnitude: Minor Overall Impact: (Minor: European) Moderate	Residual Impact: Nil Effect

Table 5

Ecological Issues (receptors)	Details	Likely Impacts	Required Mitigation and Residual Impact
Badgers	Extensive badger activity and numerous setts found within the site boundaries	Based on current survey data, all existing badger setts are in excess of 30m from the location of any proposed site works	Check for signs of new setts being established within 30m of proposed working area 6-8 weeks prior to any site works taking place. Retain mature vegetation along periphery of site as commuting routes. If new setts found, situation to be reassessed
	Nature Conservation Importance: National	Impact Magnitude: Nil Effect Overall Impact: (Nil effect: National) Non Significant (based on current survey data)	Residual Impact: Nil Effect
Water Voles	No signs of water vole activity found in the stream to the northwest of the site boundaries	Based on current survey results, no impact likely	No mitigation currently required
	Nature Conservation Importance: National	Impact Magnitude: Nil Effect Overall Impact: (Nil effect: National) Non Significant	Residual Impact: Nil Effect
Otters	No conclusive signs of otter activity found in the stream to the northwest of the site boundaries	Based on current survey results, no impact likely	No mitigation currently required
	Nature Conservation Importance: European	Impact Magnitude: Nil Effect Overall Impact: (Nil effect: European) Non Significant	Residual Impact: Nil Effect

320120578P

Table 6

Ecological Issues (receptors)	Details	Likely Impacts	Required Mitigation and Residual Impact
Breeding Birds	Moderate to high bird breeding potential and some breeding confirmed within mature trees, shrubs and other rank vegetation within the site boundaries but primarily within the areas of semi-natural woodland beyond the development footprint	Removal of trees, shrubs, other dense vegetation during the breeding season (February-July) may result in disturbance to breeding birds and loss of breeding habitat	Retain as much existing mature vegetation as possible, especially mature trees, scrub and wetland vegetation. No vegetation to be removed during breeding season (February to July inclusive) until or unless checked for breeding birds by an ecologist. Loss of roosting and breeding sites to be compensated for by siting of proprietary nesting boxes on suitable trees within adjacent parts of the woodland
	Nature Conservation Importance: National	Impact Magnitude: High Overall Impact: (Severe: National) Severe	Residual Impact: Nil Effect
Amphibians	No suitable ponds on site or within 250m of the site boundary signs of great crested newts found in within any terrestrial habitat within the site boundaries	No impact likely	No specific mitigation required
	Nature Conservation Importance: European	Impact Magnitude: Nil Effect Overall Impact: (Nil Effect: European) Non Significant	Residual Impact: Nil Effect
Reptiles	No suitable habitat recorded. No signs of any reptile species on site	No likely impact	No mitigation required
	Nature Conservation Importance: National	Impact Magnitude: Nil Effect Overall Impact: (Nil effect: National) Non Significant	Residual Impact: Nil Effect

Table 7

Ecological Issues (receptors)	Details	Likely Impacts	Required Mitigation and Residual Impact
Invertebrates	High species diversity within the semi-natural woodland and wetland area	No likely impact upon the on the semi-natural ancient woodland and wetland habitat (willow carr/swamp/riparian) which will be retained, protected from damage, and subsequently managed sympathetically	Semi-natural ancient woodland and wetland areas to be excluded from the development and protected during development works by erection of protective fencing if required
	Nature Conservation Importance: County	Impact Magnitude: Nil Effect Overall Impact: (Nil effect: County) Non Significant	Residual Impact: Nil Effect
Botanical & Habitats	Whilst the site is currently designated as a Biological Heritage Site Importance virtually all the habitat within the proposed development footprint comprises species-poor plantation woodland of low ecological value. The remainder of the site comprising semi-natural ancient woodland and wetland, is of high ecological value	The semi-natural ancient woodland and wetland components of the site will be excluded from the main development and managed sympathetically. There will therefore be no negative impact upon any important vegetation or habitats	Retain important areas of habitat and vegetation (semi-natural ancient woodland and wetland component, as indicated on the site plan). Protect during site works Subsequently, this area of the site to be managed using a limited intervention regime and access for educational or research use allowed. Any likely run-off into wetland or valley bottom during development works to be prevented by installation of protective membrane and implementation of a water run-off management system, as required
	Nature Conservation Importance: County	Impact Magnitude: Minor Overall Impact: (Minor: County) Slight	Residual Impact: Beneficial Effect (due to the semi-natural woodland component being protected and brought into positive management for the benefits of nature conservation)

320120578P

5.0 Conclusion

- 5.1 With the exception of bats and badgers, there was no conclusive evidence of any specifically protected species occurring on site or closely adjacent to the site boundaries that are likely to be adversely affected by development proposals. Similarly, no important habitats were identified **that will be adversely affected** although the site is currently designated as a BHS.
- 5.2 A number of breeding birds that are protected in general terms during the breeding season do occur on site and there will be an initial but relatively minor loss of breeding habitat. However, with adequate mitigation and the implementation of a number of relatively minor precautions, as outlined above, it is considered that the proposed development will result in negligible overall ecological impact with potentially beneficial effect once mitigation and habitat compensation works have been completed and have become established.
- 5.3 With respect to bats, whilst no roosting was confirmed and no habitat suitable for roosting will be adversely affected, bats do use the site to a significant extent for foraging and commuting. Improvements to the habitat and supplementary siting of bat boxes on completion of site works may result in beneficial effects.
- 5.4 With regard to badgers, based on current evidence, all setts occur in excess of 30m from the proposed development footprint (the outdoor adventure area). There will therefore be no likely adverse impact. However, as badgers routinely extend their range and establish new outlier setts, a repeat survey is required within 6-8 weeks of site works commencing.
- 5.5 With respect to great crested newts, the lack of any evidence for presence of this species during the current and previous surveys indicates that no impact is likely and no specific mitigation is necessary.
- 5.6 Overall, providing mitigation and habitat compensation proposals are implemented as recommended, there will be no residual negative ecological impact resulting from proposals to develop the site in question.
- 5.7 Furthermore, the implementation of a positive, sympathetic management regime (as per the recommendations below) within the semi-natural ancient woodland component of the site, and securing the securing of this as a biological resource through the prevention of inappropriate management, will result in an overall beneficial effect, thereby contributing to the biodiversity conservation initiative.

6.0 References

- Bibby, C.J., Burgess, N.D. and Hill, D.A. (1992). *Bird Census Techniques*. Poyser, London.
- Byron H. (2000). Biodiversity and Environmental Impact Assessment: A good practice guide for road schemes. RSPB, WWF-UK, English Nature and The Wildlife Trusts, Sandy
- British Government (1992). Protection of Badgers Act 1992. HMSO.
- British Government (1994). *Conservation (Natural Habitats, &c.) Regulations 1994*. Statutory Instrument 1994 No 2716 Wildlife, Countryside. HMSO
- British Government (1981). *Wildlife and Countryside Act 1981 with Amendments* HMSO
- English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.
- Gent, T. and Gibson, S., (eds) (1998). *Herpetofauna Workers' Manual* JNCC.
- Harris, S., Cresswell, P. and Jefferies, D.J. (1989). *Surveying Badgers*. The Mammal Society.
- IEA (1995). *Guidelines for Baseline Ecological Assessment*. Institute of Environmental Assessment E & FN Spon.
- Kirkby, K.J. (1988). *A Woodland Survey Handbook*. Research and Survey in Nature Conservation No. 11. NCC, Peterborough
- Mitchell-Jones, A. J., (2004). *Bat Mitigation Guidelines*. English Nature.
- NCC (1990). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit* Nature Conservancy Council.
- Rodwell, J. (1991). *British Plant Communities: Vol 1, Woodlands and Scrub*. Cambridge University Press.
- Rodwell, J. (1992). *British Plant Communities: Vol 3, Grasslands and Montane Communities* Cambridge University Press.
- Rodwell, J. (1995). *British Plant Communities: Vol 4, Aquatic Communities and Tall-Herb Fens*. Cambridge University Press.
- Rodwell, J. (2000). *British Plant Communities: Vol 5, Maritime Communities and Vegetation of Open Habitats* Cambridge University Press

320120578P

7.0 Photographs

Photo 1 One of the two ponds situated to the north east of the site boundaries, virtually dried out with no aquatic vegetation



Photo 2 The second of the two ponds situated to the north east of the site, heavily shaded with limited water depth and totally unsuitable for great crested newt breeding



Photo 3 View of southern end of the site from across the extensive area of improved grassland to the east



Photo 4 The site as viewed from across the extensive area of improved grassland to the east, with the edge of the semi-natural ancient woodland part of the site to the rear right of view



Photo 5 The upper plateau of the drier section of semi-natural woodland



Photo 6 The steep bank leading down to Sabden Brook within the northern section of the semi-natural woodland component



8.0 Appendix

8.1 Vascular Plants Recorded

320120578P

Taxon Name	Common Name	Relative Abundance within Sub-sites*		
		1	2	3
<i>Acer pseudoplatanus</i>	Sycamore	F(LD)		F(LD)
<i>Aegopodium podagraria</i>	Ground Elder	O	O(LF)	
<i>Aesculus hippocastanum</i>	Horse Chestnut	O		O
<i>Agrostis capillaris</i>	Common Bent	O(LA)	O(LF)	O
<i>Agrostis stolonifera</i>	Creeping Bent	F	F	
<i>Alliaria petiolata</i>	Garlic Mustard	O(LF)	O(LF)	R
<i>Allium ursinum</i>	Ramsons			F(LD)
<i>Alnus glutinosa</i>	Alder	O		O(LD)
<i>Alopecurus pratensis</i>	Meadow Foxtail	O	F(LA)	
<i>Anemone nemorosa</i>	Wood Anemone			F(LA)
<i>Angelica sylvestris</i>	Wild Angelica			O(LF)
<i>Anthoxanthemum odoratum</i>	Sweet Vernal Grass	O(LF)	F	O
<i>Anthriscus sylvestris</i>	Cow Parsley	O		O(LF)
<i>Arrhenatherum elatius</i>	False Oat-Grass	O(LF)	F	O
<i>Arum maculatum</i>	Cuckoo Pint			O
<i>Athyrium filix-femina</i>	Lady Fern			O
<i>Bellis perennis</i>	Daisy	F	F	
<i>Betula pendula</i>	Silver Birch	O		O
<i>Betula pubescens</i>	Hairy Birch			F(LD)
<i>Brassica nigra</i>	Black Mustard	O	O	
<i>Bromopsis ramosa</i>	Hairy Brome	O		F
<i>Calystegia silvatica</i>	Large Bindweed	O	O	O
<i>Cardamine amara</i>	Large Bittercress			O(LF)
<i>Cardamine flexuosa</i>	Wavy Bittercress	O(LF)	O(LF)	O
<i>Cardamine pratensis</i>	Cuckoo-flower	O(LF)	O(LF)	O
<i>Carex hirta</i>	Hairy Sedge	O	O	
<i>Centaurea nigra</i>	Common Knapweed	O	O	
<i>Cerastium fontanum</i>	Common Mouse-ear	O	O(LF)	O
<i>Chamerion angustifolium</i>	Rosebay Willowherb	F(LA)	F	O
<i>Chrysplenium oppositifolium</i>	Opposite-leaved Golden Saxifrage			F(LD)
<i>Circaea lutetiana</i>	Enchanter's Nightshade			F(LD)
<i>Cirsium arvense</i>	Creeping Thistle	F	F	
<i>Cirsium palustre</i>	Marsh Thistle			O(LF)
<i>Cirsium vulgare</i>	Spear Thistle	F	F	
<i>Corylus avellana</i>	Hazel	O		O

<i>Crataegus monogyna</i>	Hawthorn	F(LD)		F(LD)
<i>Cynosurus cristatus</i>	Crested Dog's-tail	O	O	O
<i>Dactylis glomerata</i>	Cock's-foot	F(LD)	F(LD)	O
<i>Deschampsia caespitosa</i>	Tufted Hair-grass			F(LA)
<i>Deschampsia flexuosa</i>	Wavy Hair-grass	O(LF)		F(LD)
<i>Digitalis purpurea</i>	Foxglove	O	O	F
<i>Dryopteris affinis</i>	Scaly Male-fern			O
<i>Dryopteris dilatata</i>	Broad Buckler-fern	F		F
<i>Dryopteris filix-mas</i>	Male Fern	O		F
<i>Elytrigia repens</i>	Common Couch		O	
<i>Epilobium hirsutum</i>	Great Willowherb	O(LF)	O	O(LF)
<i>Epilobium montanum</i>	Broadleaved Willowherb	O		F
<i>Epilobium obscurum</i>	Short-fruited Willowherb		O	
<i>Epilobium palustre</i>	Marsh Willowherb			O
<i>Epilobium parviflorum</i>	Hoary Willowherb		F	
<i>Equisetum arvense</i>	Field Horsetail	O	O	
<i>Equisetum sylvaticum</i>	Wood Horsetail			O
<i>Equisetum telmateia</i>	Great Horsetail			O(LD)
<i>Fagus sylvatica</i>	Beech	F(LD)		O(LF)
<i>Festuca gigantea</i>	Giant Fescue			O(LF)
<i>Festuca rubra</i> agg	Red Fescue	F(LD)	F(LA)	O
<i>Filipendula ulmaria</i>	Meadowsweet			O
<i>Fraxinus excelsior</i>	Ash	F(LD)		F(LD)
<i>Galium aparine</i>	Cleavers	O(LA)		O(LF)
<i>Galium mollugo</i>	Hedge Bedstraw			F
<i>Galium palustre</i>	Common Marsh-bedstraw			O
<i>Geranium dissectum</i>	Cut-leaved Crane's-bill		O	
<i>Geranium molle</i>	Dove's-foot Cranesbill		O	
<i>Geranium robertianum</i>	Herb-robert	F		F
<i>Geum urbanum</i>	Herb Bennet	O		F
<i>Glyceria fluitans</i>	Floating Sweet-grass			O(LA)
<i>Hedera helix</i>	Ivy	F(LD)		F(LA)
<i>Heracleum sphondylium</i>	Hogweed	O		O
<i>Hieracium umbellatum</i>	Hawkweed	F		F
<i>Holcus lanatus</i>	Yorkshire-fog	F(LA)	F(LA)	F
<i>Holcus mollis</i>	Creeping Soft-grass	F(LD)		F(LD)
<i>Hycinthoides non-scripta</i>	Bluebell	O(LA)		A(LD)
<i>Hypochaeris radicata</i>	Cat's-ear		O	
<i>Ilex aquifolium</i>	Holly	F		F
<i>Iris pseudacorus</i>	Yellow Iris			O
<i>Juncus articulatus</i>	Jointed Rush			O

<i>Juncus conglomeratus</i>	Compact Rush	O		O
<i>Juncus effusus</i>	Soft Rush	F	O	F
<i>Juncus inflexus</i>	Hard Rush		O	
<i>Lamium album</i>	White Dead-nettle	O(LF)		
<i>Larix decidua</i>	European Larch			O(LF)
<i>Lathyrus pratensis</i>	Meadow Vetchling		O	
<i>Lemna minor</i>	Common Duckweed			O
<i>Leontodon autumnalis</i>	Autumnal Hawkbit	O	O	
<i>Lolium perenne</i>	Perennial Rye-grass	O	D	R
<i>Lonicera periclymenum</i>	Honeysuckle	F		F
<i>Lotus pedunculatus</i>	Large Bird's-foot-trefoil		O	O
<i>Luzula pilosa</i>	Heath Wood-rush			O(LF)
<i>Malus domestica</i>	Apple	O		
<i>Malus sylvestris</i>	Crab Apple			O
<i>Matricaria recutita</i>	Scented Mayweed		O	
<i>Myosotis arvensis</i>	Field Forget-me-not	O	O	O
<i>Oxalis acetosella</i>	Wood Sorrell			F
<i>Phalaris arundinacea</i>	Reed Canary-grass	O(LA)	O	O
<i>Pinus nigra</i>	Black Pine	O(LD)		
<i>Pinus sylvestris</i>	Scot's Pine	O(LD)		
<i>Plantago lanceolata</i>	Ribwort Plantain		O	
<i>Plantago major</i>	Greater Plantain	O	O	
<i>Poa annua</i>	Annual Meadow-grass	F	F	
<i>Poa nemoralis</i>	Wood Meadow-grass			O
<i>Poa pratensis sens. str.</i>	Smooth Meadow-grass	F	A	O
<i>Poa trivialis</i>	Rough Meadow-grass	F	A	F
<i>Populus candicans</i>	Balsam Poplar	O(LD)		O(LF)
<i>Prunella vulgaris</i>	Selfheal	O(LF)		O(LF)
<i>Prunus avium</i>	Wild Cherry	O		O
<i>Prunus cerasifera</i>	Cherry-plum	F		F
<i>Prunus spinosa</i>	Blackthorn	F		F
<i>Quercus cerris</i>	Turkey Oak	O		
<i>Quercus robur</i>	Pedunculate Oak	A(LD)		A(LD)
<i>Quercus x rosacea</i>	Hybrid Oak			F(LD)
<i>Ranunculus acris</i>	Meadow Buttercup		O(LF)	
<i>Ranunculus ficaria</i>	Lesser Celandine	F		F(LA)
<i>Ranunculus repens</i>	Creeping Buttercup	F	F	F
<i>Rhododendron ponticum</i>	Rhododendron	O(LD)		O
<i>Rosa caesia</i> agg	Northern Dog Rose	O		F
<i>Rosa canina</i> agg	Dog Rose	O		O
<i>Rubus fruticosus</i> agg	Bramble	A(LD)	O	F(LD)

<i>Rumex acetosa</i>	Common Sorrel	O	F	O
<i>Rumex crispus</i>	Curled Dock	O	O	
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	O	
<i>Rumex sanguineus</i>	Wood Dock	O		O
<i>Salix caprea</i>	Goat Willow	F(LD)		F(LD)
<i>Salix cinerea ssp. oleifolia</i>	Grey Willow	F(LD)		F(LD)
<i>Salix fragilis</i>	Crack Willow	O		O(LF)
<i>Salix viminalis</i>	Osier			O
<i>Sambucus nigra</i>	Elder	F		F
<i>Senecio jacobaea</i>	Common Ragwort		O	
<i>Silene dioica</i>	Red Campion	F		F
<i>Sisymbrium officinale</i>	Hedge Mustard	O	O	
<i>Solanum dulcamara</i>	Bittersweet			O(LF)
<i>Sonchus asper</i>	Prickly Sow-thistle	O	O	O
<i>Sonchus oleraceus</i>	Sow-thistle	O	O	O
<i>Sorbus aucuparia</i>	Rowan	O		O
<i>Stachys palustris</i>	Marsh Woundwort			O(LF)
<i>Stachys sylvatica</i>	Hedge Woundwort	O(LF)		O(LF)
<i>Stellaria holostea</i>	Greater Stitchwort	O		O(LA)
<i>Stellaria media</i>	Common Chickweed		O	
<i>Taraxacum aggregate</i>	Dandelion	F	F	O
<i>Tilia vulgaris</i>	Common Lime	F		
<i>Trifolium dubium</i>	Lesser Trefoil	F		O
<i>Trifolium pratense</i>	Red Clover		A	
<i>Trifolium repens</i>	White Clover		A	
<i>Tussilago farfara</i>	Colt's-foot	O		O
<i>Ulex europeaus</i>	Gorse	O		O
<i>Ulmus glabra</i>	Wych Elm	O		F
<i>Urtica dioica</i>	Common Nettle	A(LD)		O(LA)
<i>Veronica chamaedrys</i>	Germander Speedwell	O(LF)		O(LF)
<i>Veronica montana</i>	Wood Speedwell			F(LA)
<i>Valeriana officinalis</i>	Common Valerian			O(LF)
<i>Vicia cracca</i>	Tufted Vetch	F	F	O(LF)
<i>Vicia hirta</i>	Hairy Tare		O	
<i>Vicia sepium</i>	Bush Vetch	F	F	O(LF)

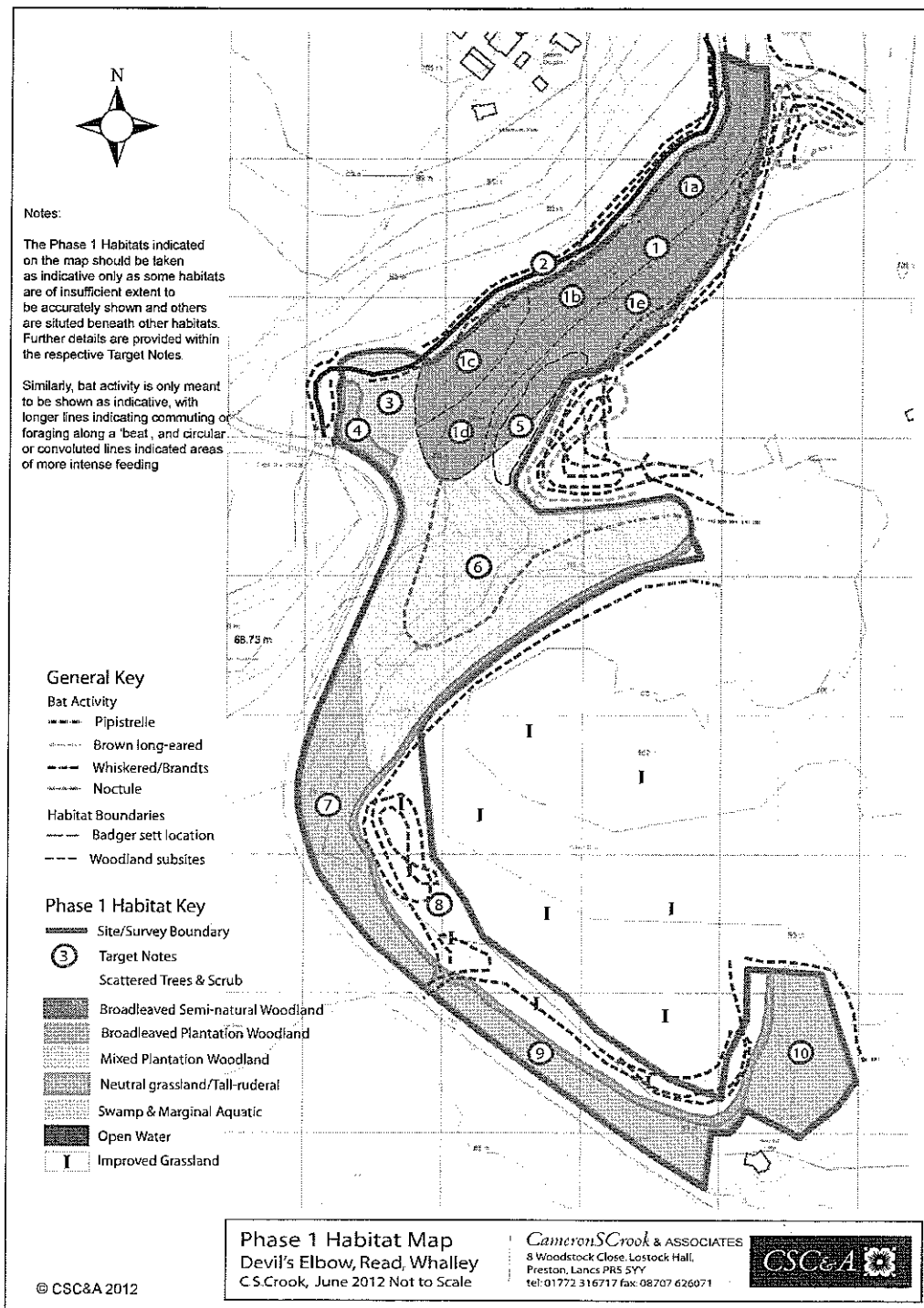
*Relative Abundance: D Dominant; A Abundant; F Frequent; O Occasional; R Rare; L Locally
 1 – Plantation Woodland; 2 – Improved Grassland; 3 – Semi-natural Woodland

8.2 Invertebrates recorded

- 8.1.1 No specific surveys of invertebrates were undertaken but during the general ecological assessment and other specific surveys, the following incidental records of terrestrial invertebrates were made. The main groups of species targeted were ground beetles, hoverflies, butterflies and day-flying moths. With respect to butterflies (and moths), the most abundant species noted were meadow brown and orange tip with other less frequent species including small white, large white, red admiral, peacock, small copper, small tortoiseshell, green-veined white, common blue, magpie moth, large yellow underwing, burnet moth and large skipper.
- 8.1.2 A number of ground beetles were recorded, mostly within the woodland including *Carabus violaceus*, *Pterostichus nigrita*, *P. madidus*, and *Leistus ferrugineus*. Other beetle species included Devil's Coach-horse, *Althous heamorrhoidalis*, *Cantharis rustica*, *C. livida*, *Coccinella 7-punctata*, *Adalia bipunctata*, *A. 10-punctata*, *Phyllodecta vitellinae*, *Leperisinsus varius*, *Lathridius minutus*, *Omalium rivulare*, *Cerlyon histeroides*, *Polydrusus mollis*, and *Magdalis ruficornis*.
- 8.1.3 Hoverflies recorded included *Eristalis tenax*, *E. horticola*, *E. pertinax*, *Helophilus pendulus*, *Episyrphus balteatus*, *Platycheirus albimanus*, *Rhingia campestris*, *Syrphus ribesii*, and *Scaeva pyrastris*.
- 8.1.4 Other invertebrate species in addition to the target groups included true flies such as the greenbottle and bluebottle, the cleg fly (*Heamatopota pluvialis*), blackfly (*Similium* sp.) and midges (*Cuculoides* sp. and *Chironomus* sp.), St. Mark's fly; crane flies such as *Tipula maxima* and *T. olearacea*; shield bugs, including *Elasmucha grisea* and *Palomena prasina*; ants, including *Formica rufa*, and *Lasius niger*; wasps, including *Vespula vulgaris* and *Chrysis* sp.; and bees including *Bombus terrestris*, *B. hortorum*, *B. agrorum* and *Andrena* sp.
- 8.1.5 This cannot be considered a full systematic invertebrate survey but gives an idea of the diversity of terrestrial invertebrates present.

8.3 Phase 1 Habitat Map and Target Notes

8.3.1 Phase 1 Habitat Map



8.3.2 Target Notes

320120578P

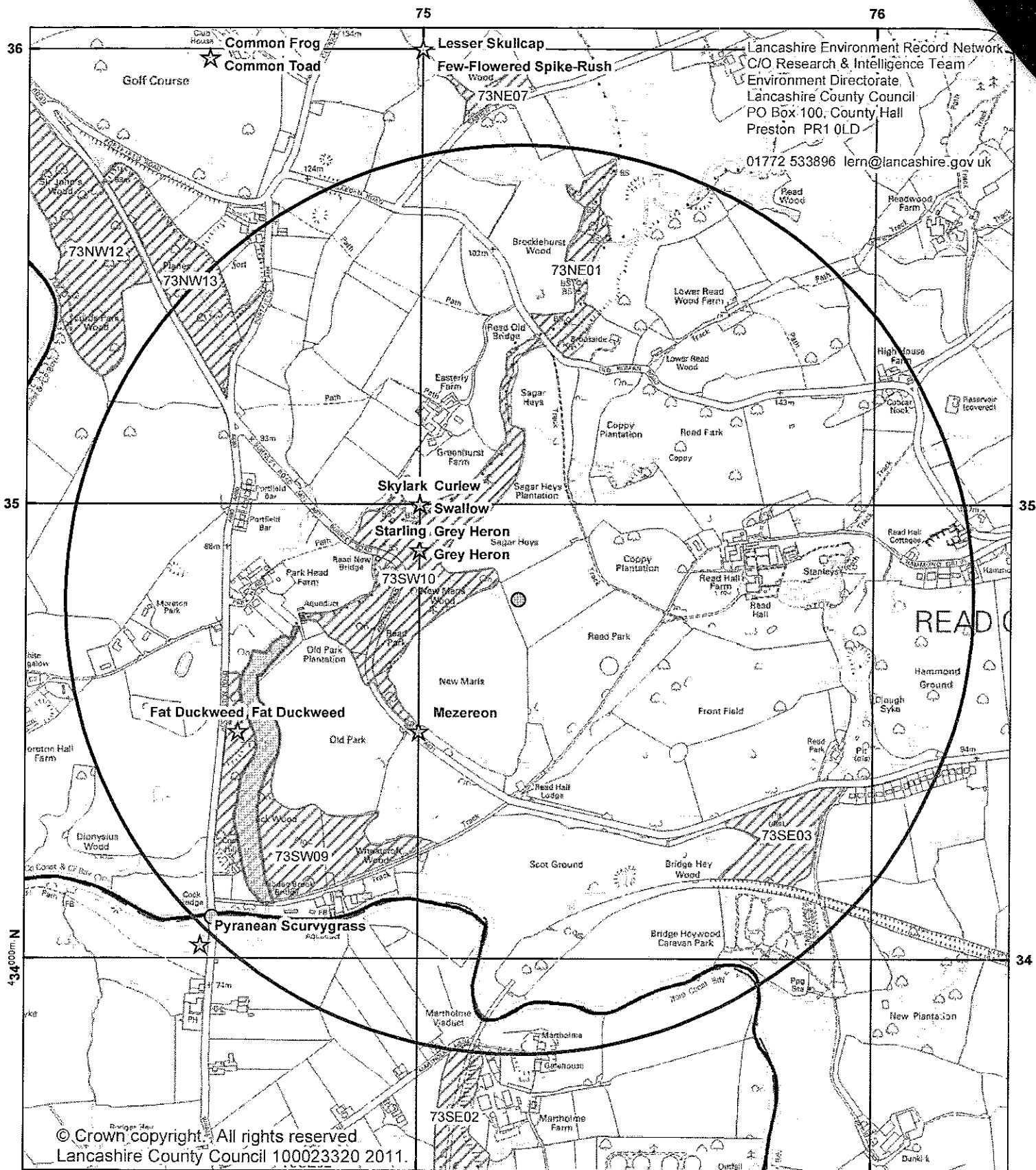
- TN1 An extensive area of semi-natural woodland with high species diversity and component species characteristic of ancient woodland. This part of the site is of high nature conservation value
- TN1a A steep sided clough-woodland dominated by ash with oak and wych elm and a diverse ancient woodland type flora (see vascular plant species-list)
- TN1b Similar to TN1a but with occasional swampy sections
- TN1c As TN1b but with a canopy dominated by hairy birch and alder, more typical of wet woodland
- TN1d The semi-natural woodland at this point grades into plantation woodland, the ground flora becoming less diverse. The canopy includes introduced species such as sycamore and conifers where there is a transition between the two adjacent habitats
- TN1e The upper plateau of the semi-natural woodland, the canopy dominated by oak and birch, the substrate drier with a less diverse ground flora comprising mainly bluebells, broad buckler fern and wavy hair grass
- TN2 The stream, Sabden Brook, that runs along the north and western boundary of the site. The margin of the river is dominated by willow and bramble scrub with an overhanging woodland canopy and little in the way of true aquatic flora
- TN3 An area of swamp dominated variously by alder, hairy birch, willow, with more open areas including extensive patches of great horsetail, large bitter-cress, common valerian and reed canary grass. Balsam poplars have also been introduced to part of this area and are dominant in some parts
- TN4 An area of drier land dominated by rank grassland species such as cock's-foot and false oat grass along with tall-ruderal vegetation
- TN5 The area of the site that includes the badger setts (one main sett with several outliers and annexes)
- TN6 An extensive area of mixed plantation woodland including both broadleaved and coniferous species. The ground flora here is relatively poor and there is a poorly developed under-storey, the most frequent species being bramble, bracken, buckler fern and wavy hair grass
- TN7 A linear area of plantation woodland, the canopy comprising mainly sycamore, beech, ash, oak and common lime. The ground flora is well developed but species-poor and of limited ecological value
- TN8 A section of a much larger area of species-poor improved grassland
- TN9 An extension of TN7 with the same species composition and structure
- TN10 A block of plantation woodland with the same species-composition and structure as TN7 and TN9

8.4 Semi-natural Woodland Outline Management Proposals

- (1) Woodland to be managed using a minimal intervention regime in order to maintain or enhance the existing ecological value of the semi-natural ancient woodland component of the site (as indicated on the proposed site layout plan)
- (2) Access to this designated to be limited to educational and research use only
- (3) For general purposes, access to be afforded via existing footpath network to reduce chances of erosion
- (4) Existing footpaths to be consolidated where necessary using appropriate, low impact materials
- (5) Only upper, flatter sections of the woodland to be accessible by footpath to prevent soil erosion and slumping of the steep valley side
- (6) Ground flora to be monitored on a regular (twice annual) basis to ensure there is no impact from erosion
- (7) Where signs of erosion are found, temporary re-routing and/or reduction in access numbers to be implemented as required
- (8) Designated nature trail to be established to follow existing footpaths with no access to the woodland allowed beyond said designated areas allowed, except by permit
- (9) Where permitted, no more than five people at any one time or per day, to be allowed access to the woodland beyond the designated footpaths
- (10) Trees to be allowed to develop to full biological maturity with standing deadwood retained wherever it will not become a public hazard
- (11) Deadwood removed from any trees to be pruned or felled, to be stacked in a convenient location as close as possible to the original location
- (12) In order to improve ecological value of habitat within non-designated woodland area, a selective/group felling regime to be implemented with the aim of reducing overall density, reducing the proportion of coniferous or non-native species (where present) in favour of native broadleaved species, and promoting natural regeneration of native trees, shrubs and ground flora within felling coupes.
- (13) An initial 20% thinning of the canopy to take place in felling coupes of 10m diameter where possible. Where regeneration is poor, supplementary planting of native trees and shrubs will be undertaken
- (14) The development of vascular plant diversity within non-designated woodland, to be monitored once every second season (May)
- (15) Breeding birds to be monitored in all woodland within site boundaries during every spring season for three consecutive years following development, then once every third year subsequently
- (16) Inorganic litter and debris will be removed as required annually

8.5 BHS Designation & Desktop Data

320120578P

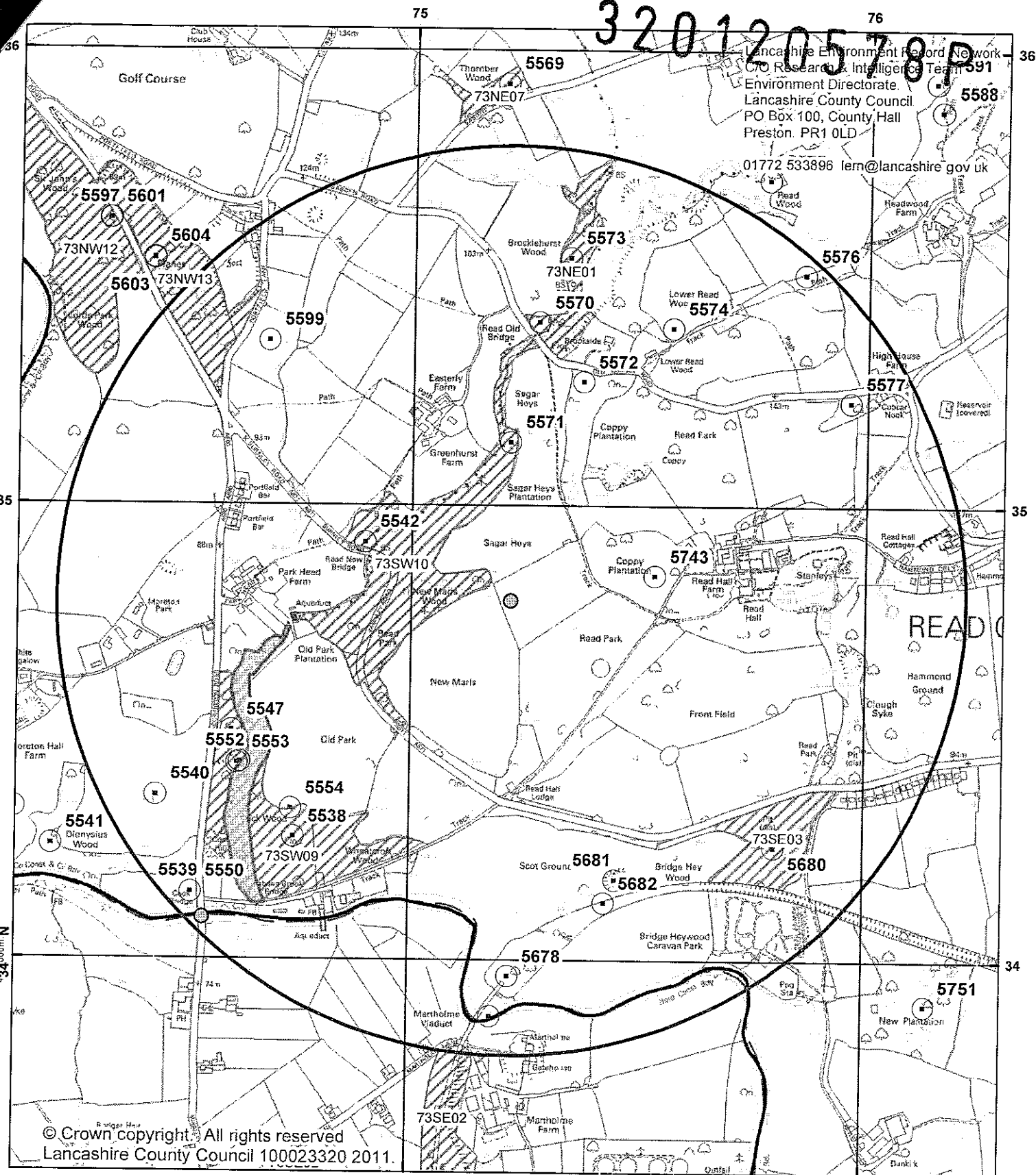


- Whalley 1km Buffer
- Whalley
- Lancashire BAP Provisional Long List
- Site of Special Scientific Interest
- Biological Heritage Sites

Whalley Provisional Lancashire BAP Species Plan

N
1:11,000 Date: 31/05/2011

LERN



- Whalley 1km Buffer
- Whalley
- Phase 1 Target Note
- Site of Special Scientific Interest
- Biological Heritage Sites

Whalley Ecology Plan



1:11,000 Date: 31/05/2011

LERN

Target Note

NB Target Note symbols are located using the grid reference listed, their position will therefore differ slightly from that on the original mapping.

Map Sheet	1km Square	Surveyor
SD73NE	SD7535	AB BA

Date	Record No.
01/06/1988	5571

Grid Ref 375200 435100 (NB 100km) 

Target Note

Semi-natural broadleaved woodland on eastern side of Sabden Brook. The dominant tree is *Acer pseudoplatanus* with *Fraxinus excelsior*, *Quercus* spp., and *Alnus glutinosa*. It is made up of *Ilex aquifolium* and *Corylus avellana*. Ground layer includes *Dryopteris dilatata*, *Dryopteris filix-mas*, *Athyrium filix-femina*, *Hyacinthoides non-scripta*, *Oxalis acetosella*, *Deschampsia cespitosa* and *Holcus mollis*. The wood is fenced and ungrazed with good regeneration.

[View Last 10 Selected](#)

320120578P



Lancashire County Heritage Sites

Biological Heritage Site

**Biological Heritage Sites
Partnership:**

© Lancashire County Council
© Wildlife Trust for Lancashire
Natural England

This form may contain privileged and confidential information. Permission must be obtained from Lancashire County Council and the Wildlife Trust for Lancashire before reproducing or divulging information contained on this form to any party not directly in receipt of the form from the copyright holders.

Site Name: Old Park Plantation, New Marls Wood and Sager Heys Plantation

Site Ref: 73SW10

Approved:

Area (ha): 9.76

Date written/last updated:

Grid Ref: SD749349

Owner/Occupier:

Districts:

Ribble Valley

Parishes:

Read

Description:

To be completed.

Guideline(s) for Site Selection:

Woodland and Scrub (Wd2)

Swamp and Fen (Fe1)

Birds (Bi2b)

Other Information/Comments:



**Old Park Plantation, New Marls Wood and Sager Heys Plantation
73SW10 Boundary Plan**



Old Park Plantation, New Marls Wood and Sager Heys Plantation



1:4,500

Date: 31/05/2011

LERN

320120578P

scottfitzgerald

T R E E C O N S U L T A N T S

Peter House Oxford Street Manchester M1 5AN
0161 637 5242 info@thetreeconsultant.co.uk

**Arboricultural Report
Impact Assessment
&
Method Statement**

for development purposes following BS 5837: 2012 Trees in relation to design,
demolition and construction - Recommendations

at

Devil's Elbow
Read

Produced by

Scott Fitzgerald BSc (Arboriculture), M Arbor A

of

Scott Fitzgerald Tree Consultants Ltd

on behalf of

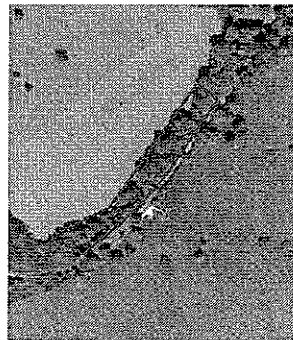
Ribble Valley Leisure Ltd

20th June 2012

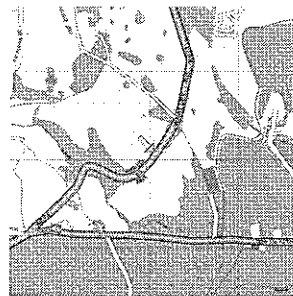
Report Summary

The pie charts to the far right present key statistics found within our survey. The bar charts to the right indicate the age distribution, species distribution and the works we have recommended. Other sections within the report summary are self explanatory.

Site Location: Devil's Elbow, Read



Extent of the survey



Site location

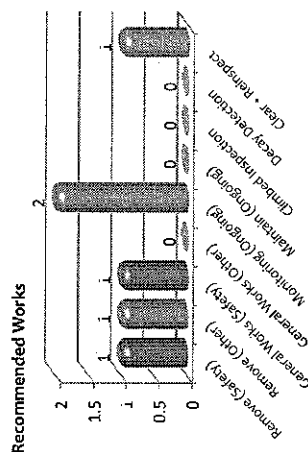
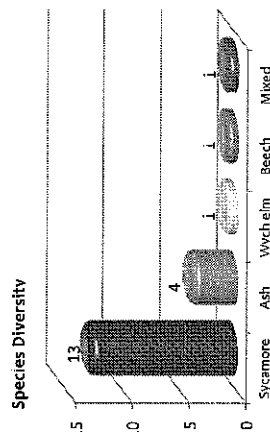
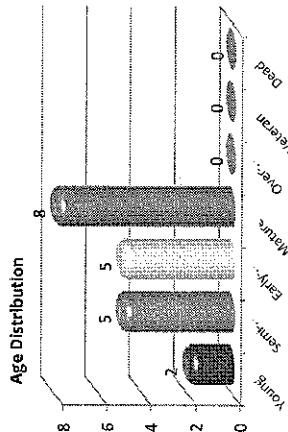
Summary

- The planning application is for an outdoor adventure centre with tree-top high wire, Segway and barefoot courses within existing woodland, with associated coach and car parking and accommodation in the adjacent meadow.
- A survey was conducted to BS5837. The condition of all trees on site was assessed and a Retention Category was allocated. Tree positions and Root Protection Areas are plotted on a Tree Constraints Plan.
- An Arboricultural Impact Assessment and Method Statement have also been included.
- So long as tree protection measures are enforced there is no reason to expect any significant arboricultural impact since the retained trees are situated away from the proposed development. These points are further discussed in sections 4 and 5.

Contact Details

Local Authority: Ribbles Valley Borough Council
 Tree Officer: David Hewitt
 Architect: Stanton Andrews Architects
 Arboricultural Consultant: Scott Fitzgerald

Tel: 01200 425111
 Tel: 01200 414505
 Tel: 01200 444490
 Tel: 0161 2083808

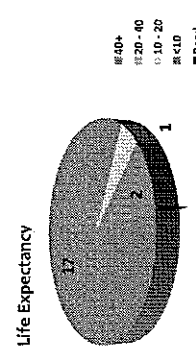
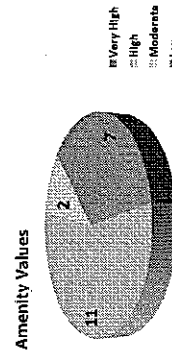
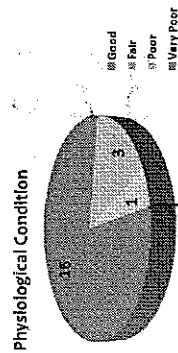
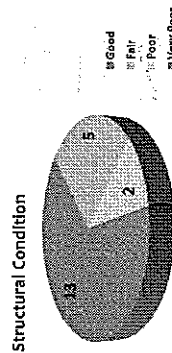
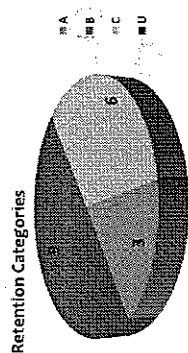


Tree Protection Status

We are informed that:

- The site is not within a conservation area.
 - There are no TPOs affecting trees within the site.
- See Section 4 for further details.

Trees surveyed as individuals: 19
 groups: 0
 hedges: 0
 woodlands: 1



Contents

1.	Introduction	3
1.1.	Instructions and references	3
1.2.	Scope and limitations of the report	3
2.	Site overview	5
2.1.	Location	5
2.2.	Site description	5
3.	Tree data schedule	6
4.	Tree condition and recommendations	7
4.1.	Summary of findings:	7
4.2.	Work priority and future management	8
4.3.	Tree protection status	9
4.4.	Tree protection – general advice	9
5.	Arboricultural Impact Assessment (AIA)	10
5.1.	Summary of the development	10
5.2.	Summary of impact on trees	10
5.3.	Impact of general construction activity	12
5.4.	Changes in ground surfaces	13
6.	Arboricultural Method Statement (AMS)	14
6.2.	Development implementation phases	14
6.3.	Phase 1 – Site preparation	14
6.4.	Tree surgery works	14
6.5.	Protective fencing and ground protection	15
6.6.	Pre-development inspection	15
6.7.	Phase 2 – Construction process	15
6.8.	New surfaces in the RPA	15
6.9.	Working in the RPA	15
6.10.	Phase 3 – Post development	16
6.11.	Removal of protective fencing	16
6.12.	Signing off	16
	Appendix 1 – Tree Data Schedule	17
	Appendix 2 - Tree Survey Schedule Explanatory Notes	18
	Appendix 3 - Site Plans	21
	Appendix 4 – Recommendations for Tree Protection during Demolition and Construction	22
	Appendix 5 - Tree Work Schedule	31
	Appendix 6 - Professional Résumé: Scott Fitzgerald	32

1. Introduction

1.1. Instructions and references

- 1.1.1. We have been instructed by Ribble Valley Leisure Ltd to carry out an Arboricultural Survey to British Standard 5837:2012 guidelines, at Devil's Elbow, Read and produce my findings in a report. We have also been instructed to provide an Arboricultural Impact Assessment to evaluate the impact on trees present and an Arboricultural Method Statement to provide detailed guidance on the protection of retained trees throughout the construction process.
- 1.1.2. It must be noted that not all trees have been individually surveyed for the purposes of this report. The survey was limited to the area of site where construction is proposed.
- 1.1.3. Due to the size and nature of the site, it was decided in consultation with the Local Authority Tree Officer that the survey methodology would include broadly grouping the majority of trees as an area of woodland to provide adequate tree protection distances. This method is in line with point 4.4.2.3 of BS 5837:2012 that states 'woodlands should be identified and assessed as such where the arboriculturist determines that this is appropriate'.
- 1.1.4. Trees have been surveyed individually in areas where further detail is required in potentially sensitive areas including the proposed site access.
- 1.1.5. Detailed Impact Assessments and Method Statements relating to the proposed outdoor activities within the main woodland to the north of site will be provided to advise on the protection of retained trees.
- 1.1.6. Plans outlining the development proposals have been used to form the basis of the Arboricultural Impact Assessment in Section 5.
- 1.1.7. A summary of Scott Fitzgerald's qualifications and experience is included in Appendix 6.

1.2. Scope and limitations of the report

- 1.2.1. The report is designed to accompany a planning application for development proposals at the site address on the title page following guidance set out in BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations.
- 1.2.2. The Arboricultural Impact Assessment (AIA) will appraise the development in relation to its effect on surveyed trees and any potential impact on local amenity by appraising the following:
- General construction operations
 - Soil compaction in Root Protection Areas (RPAs)
 - Foundation design in proximity to retained trees
 - Installation of hard services including drives and paths

- Installation of utilities
- Boundary treatments
- Potential physical damage to roots, stems and aerial parts of trees
- Removal or pruning of trees
- New tree establishment

- 1.2.3 The impact assessment will also appraise the effect that the retained trees may have on the development such as potential nuisance caused by excessive leaf/fruit litter, lighting levels within the proposed building and grounds and the potential damage to structures
- 1.2.4 The Arboricultural Method Statement (AMS) is designed to advise on tree management and protection during the planning process. It should be read in conjunction with guidance laid out in Appendix 4 – 'Recommendations for tree protection during construction'.
- 1.2.5 All processes that have the potential to impact on trees should be considered in the wider project management of the site. This can be done by instructing an arboricultural consultant as part of the management team. This will ensure that any works that can affect trees will be monitored and supervised throughout the project.
- 1.2.6 The report is based upon a visual inspection. The consultant shall not be responsible for events that happen after the date of the report due to factors that were not apparent at the time, and the acceptance of this report constitutes an agreement with the guidelines and the terms listed in this report.
- 1.2.7 Any defects seen by a contractor or the employer that were not apparent to the consultant must be brought to the consultant's attention immediately.
- 1.2.8 The consultant accepts no liability in respect of the trees unless the recommendations of this report are carried out under his supervision.
- 1.2.9 Assessing the potential influence of trees upon load bearing soils, beneath existing and proposed structures resulting from water abstraction by trees or rehydration of shrinkable soils was not included in the contract brief and is therefore not considered in the report. The consultant cannot be held responsible for damage arising from such action.
- 1.2.10 Potentially hazardous trees are highlighted and appropriate recommendations are made. However, this report should not be seen as a substitute for a full tree risk assessment or management plan which are specifically designed to minimise risk and liability associated with responsibility for trees.
- 1.2.11 Scott Fitzgerald carried out the survey and assessment of trees on 14th June 2012. Weather conditions during the site visit were fine with good visibility.

2. Site overview

2.1. Location

2.1.1. The site is situated to the north west of the village of Read and is in a rural location. The co-ordinates are 53°48'21.58"N, 2°22'49.61"W, the OS reference is SD 7504334478 and the altitude is 91m above sea level.

2.1.2. The survey was limited to the area shown in Figure 1 which is sufficient to consider the impact of the proposals.

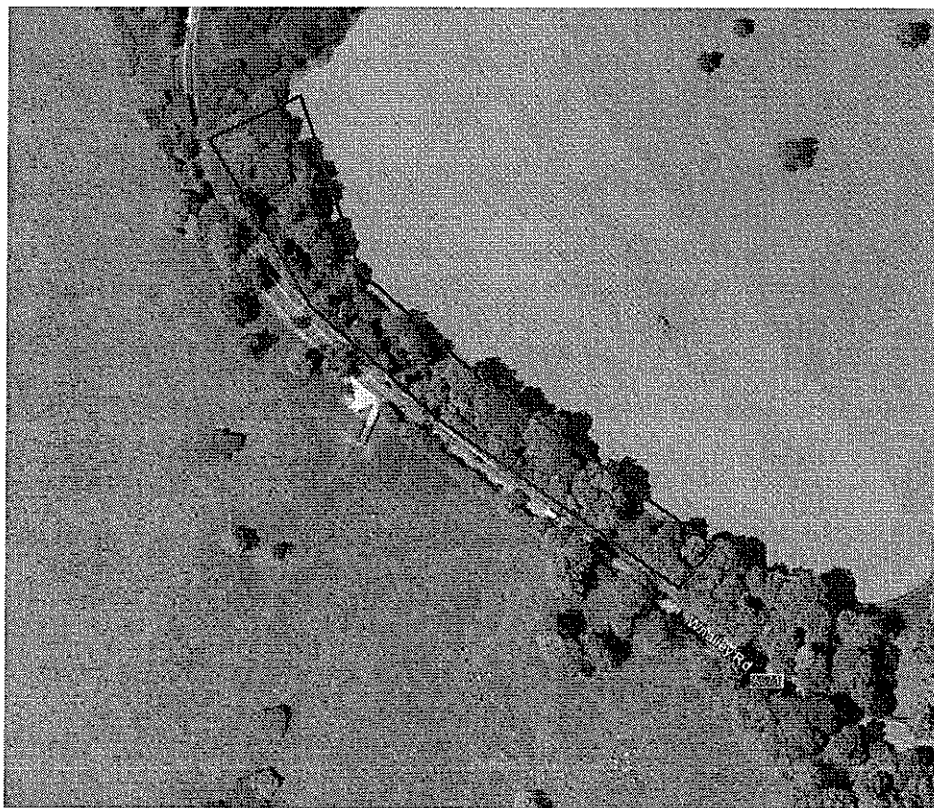


Figure 1 Extent of the survey.

2.2. Site description

2.2.1. The site is currently used as agricultural land. There is a narrow strip of woodland that separates the main A671 from meadow to the north. The area of woodland widens to join the main woodland to the north.

3. Tree data schedule

- 3.1.1 The Tree Data Schedule in Appendix 1 contains information gathered during the survey conducted on 14th June 2012.
- 3.1.2 The reader should refer to Appendix 2 in order to correctly interpret the tree data.
- 3.1.3 All images within the Tree Data Schedule are diagrammatical only. Their purpose is to indicate, at a glance, the relative dimensions of each tree. The images are computer generated based on measurements recorded for stem diameter, crown spread, crown height and overall height.

4. Tree condition and recommendations

The recommendations found in the tree data schedule in Appendix 1 are based on assessments from a health and safety perspective and are made regardless of the development proposals. Section 4 discusses in further detail our findings during the site visit in relation to the health and safety of the trees, and future users of the site

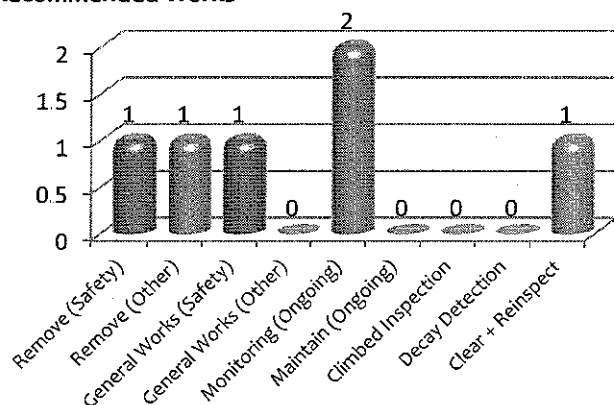
4.1. Summary of findings:

- 4.1.1 T5 is potentially hazardous and will require removal in order to prevent possible damage due to tree or limb failure. This should be prioritised as indicated on the Tree Data Schedule.
- 4.1.2 T10 is recommended for removal due to its poor condition but not considered to be immediately hazardous or likely to cause injury or damage. Its removal is of a lower priority.
- 4.1.3 T9 has significant deadwood throughout its crown that should be removed in order to make it safe due to its position over the busy highway. This should be prioritised as indicated on the Tree Data Schedule.
- 4.1.4 Trees which are considered to be in an acceptable condition at present but which have defects that require monitoring include T1 and T3. The Tree Data Schedule indicates the recommended inspection frequency.
- 4.1.5 T18 could not be fully inspected due to the presence of dense ivy. It is recommended that the ivy is removed so that the tree can be fully inspected.
- 4.1.6 It must be noted that not all individual trees were plotted on the land survey and have therefore not been surveyed fully for inclusion in this report. The majority of trees on site have been surveyed broadly numbered W20. Although the individual stems have not been plotted, the canopy extent has been indicated and is shown on the Tree Constraints Plan in Appendix 3.

4.2. Work priority and future management

4.2.1. The Tree Data Schedule in Appendix 1 details what works are required to individual trees in order to ensure that they are in an acceptable condition. The chart below summarises these works:

Recommended Works



Key:

Bars coloured red indicate hazardous trees

Bars coloured orange indicate trees which may be hazardous and require further investigation.

Bars coloured green indicate trees which are not hazardous and the work is therefore of a lower priority.

4.2.2 The following table suggests a schedule for prioritizing works required to individual specimens, as outlined in the Tree Data Schedule in Section 3, in order to ensure that the associated risks are abated:

Priority	Definition	Tree Number
Urgent	As soon as possible	None
Very High	Within 1 Month	T5
High	Within 3 Months	T3, T9
Moderate	Within 1 year	T1, T18
Low	Within 3 years	T10

4.2.3 Upon completion of any recommended works, the trees will be in an acceptable condition from a health and safety perspective. However, they should be regularly inspected according to the following suggested schedule:

Inspection (years)	Frequency	Tree Number
0.5		None
1		T1, T3, T9, T18, W20
1.5		None
3		T2, T4, T6, T7, T8, T11, T12, T13, T14, T15, T16, T17, T19

4.3. Tree protection status

- 4.3.1 We have been informed by the planning department at Ribble Valley Borough Council that the site is not in a conservation area and there are no TPOs affecting trees within the site.

4.4. Tree protection – general advice

- 4.4.1 It is recommended that the local authority is consulted before any tree works are undertaken, as new TPOs may have been created since the time of enquiry, and heavy fines exist for unauthorised works to protected trees
- 4.4.2 A TPO can be overridden by planning consent, where tree removal is necessary to enable the development to proceed.
- 4.4.3 All works to protected trees require consent from the local authority, including pruning. However, this does not include the removal of dead wood, which is exempt. Although dead, dying and dangerous trees are exempt from a TPO, it is advisable to give the local authority five days' notice of intention of their removal
- 4.4.4 In a conservation area, all trees are effectively protected. Where tree work is required in a conservation area, the local authority must be given six weeks' notice of intent, which allows them to either make a TPO or give consent for the intended work. The proposed tree work can proceed after six weeks, if the local authority has not responded.

5. Arboricultural Impact Assessment (AIA)

5.1. Summary of the development

- 5.1.1. The planning application is for an outdoor adventure centre with tree-top high wire, Segway and barefoot courses within existing woodland, with associated coach and car parking and accommodation in the adjacent meadow

5.2. Summary of impact on trees

- 5.2.1. Trees can be adversely affected on development sites if their protection is not factored into the wider project management of onsite operations. I have transposed the tree survey plan over plans detailing current proposals in order to assess the impact on surveyed trees
- 5.2.2. The table below summarises the trees that may be affected by current proposals and reasons for the impact identified

Tree number	BS 5837 category	Impact identified	Reason for impact	Recommendations/notes
T1	B	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T2	B	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T3	B-	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T4	C	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T5	U	Tree loss	Remove as a matter of good arboricultural practice regardless of proposals	N/A

T6	C	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T7	C	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T8	C	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T9	B+	Potential disturbance in RPA	Proposed access road	Protective fencing to be erected as per tree survey plan in Appendix 3
T10	U	Tree loss	Remove as a matter of good arboricultural practice regardless of proposals	N/A
T11	A	Potential disturbance in RPA	Proposed access road and footpath	Protective fencing to be erected as per tree survey plan in Appendix 3
T12	B	Potential disturbance in RPA	Proposed access road and footpath	Protective fencing to be erected as per tree survey plan in Appendix 3
T13	B+	Potential disturbance in RPA	Proposed access road and footpath	Protective fencing to be erected as per tree survey plan in Appendix 3
T14	C	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T15	C	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3

T16	B+	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T17	B	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T18	B	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
T19	A	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3
W20	A	Potential disturbance in RPA	General construction activity	Protective fencing to be erected as per tree survey plan in Appendix 3

5.3. Impact of general construction activity

- 5.3.1. Generic recommendations for tree protection during construction are specified in Appendix 4 to ensure that general construction activity will have a minimal impact.
- 5.3.2. Tree protection fencing will need to be erected before any construction activity takes place to avoid damage to trees directly by mechanical damage or indirectly due to soil compaction in the Root Protection Areas (RPAs).
- 5.3.3. It is not always practical to fence off the complete RPAs, therefore special care is required in the areas not protected by temporary protective fencing, as indicated on the Tree Protection Plan in Appendix 3, to avoid soil compaction
- 5.3.4. It is essential that all site personnel, including temporary contractors, are made aware of the recommendations in Appendix 4 and the Arboricultural Method Statement in Section 6 and the restrictions which apply.

5.4. Changes in ground surfaces

- 5 4 1 The majority of tree roots are found in the upper 600mm of the soil profile. Rooting conditions become less favourable at depth due to less oxygen availability and nutrient content where organic matter decreases.
- 5 4 2 For good soil health, there needs to be a constant supply of air and water available to roots to allow successful plant functioning. The structure of a healthy soil has sufficient air space between the soil particles; when compaction is applied, the air spaces get squeezed out, leading to anaerobic conditions and a reduction in the soils ability to hold onto vital water and nutrients.
- 5 4 3 The proposed turning head is within a small percentage of the RPA of adjacent trees. Although it is unlikely that significant rooting activity will be encountered in this area of site, at the extremity of the RPAs, it is recommended that a trial dig is undertaken by hand in order to ascertain whether roots are present.

6. Arboricultural Method Statement (AMS)

6.1.1 The following tree constraints have been identified during the AIA and will be discharged within this AMS:

- Loss of trees
- General construction activity
- Changes in ground surfaces

6.2. Development implementation phases

The arboricultural consultant may need to be involved in some or all of the following processes

Phase of Development	Arboricultural input
Phase 1 - Site preparation	• Pre-construction tree surgery works • Access facilitation pruning • Installation of protective fencing and ground protection • Pre-development inspection
Phase 2 – Construction process	• Demolition of existing structures • New surfaces in the RPA • Foundations in the RPA • Working in the RPA • Installation of services • Hard landscaping
Phase 3 – Post-construction	• Removal of protective fencing • Soft landscaping • Signing off

6.3. Phase 1 – Site preparation

6.4. Tree surgery works

6.4.1 Tree works that are recommended in the tree data schedule in Appendix 1 are of a general maintenance nature and can be carried out at any time as per recommendations

6.4.2 The tree work schedule in Appendix 5 illustrates details of the recommended tree surgery works. These works must be carried out under the supervision of the arboriculturist or Local Authority Tree Officer. Please refer to the tree removal plan in Appendix 3 for tree locations

6.5. Protective fencing and ground protection

- 6.5.1 Temporary protective fencing and ground protection will need to be installed in the positions indicated on the Tree Protection Plan in Appendix 3 prior to the commencement of any construction activities on site including the delivery of materials and site facilities.
- 6.5.2 Supplementary information is included in Appendix 4 in relation to temporary protective fencing and ground protection including illustrations and general recommendations.

6.6. Pre-development inspection

- 6.6.1 The site will be inspected by the appointed arboricultural consultant or Local Authority Tree Officer following any facilitative tree surgery works and the installation of protective fencing and ground protection measures.

6.7. Phase 2 – Construction process

6.8. New surfaces in the RPA

- 6.8.1 It is proposed to create a turning head that potentially extends into the RPA of trees in W20. The existing surface should remain in place until the last possible moment in the construction phase. Section 7 of Appendix 4 provides advice relating to the technique of surface removal whilst avoiding damage to roots below.
- 6.8.2 Only hand operated tools should be used within the RPA to lift existing surfaces and sub-base and there should be no excavation in excess of the existing sub-base. No mechanical excavators should be used.
- 6.8.3 Any exposed roots encountered should be left intact and wrapped in damp hessian sacking until being backfilled with a mix of inert granular material and sharp sand, not builder's sand.
- 6.8.4 Roots less than 25mm diameter may be pruned back, preferably to a growing point. A sharp cutting tool such as bypass secateurs or a handsaw should be used to leave the smallest wound possible. Roots greater than 25mm in diameter should be retained wherever possible.
- 6.8.5 Root pruning should be carried out under the supervision of the arboricultural consultant or the Local Authority Tree Officer to ensure that only roots necessary to facilitate the development will be removed and the long-term well-being of retained trees is maintained.

6.9. Working in the RPA

- 6.9.1 Special care will need to be undertaken when working in the RPAs that are not protected by temporary fencing. These areas are marked in red hatch on the Tree Protection Plan in Appendix 3. Supplementary guidance is provided in Appendix 4.

6.10. Phase 3 – Post development

6.11. Removal of protective fencing

6.11.1. When the construction process is complete, the site should be inspected by the appointed arboriculturist or Local Authority Tree Officer. This must be prior to the removal of temporary protective fencing.

6.11.2. Any proposed landscaping operations by heavy machinery should be carried out before the protective fencing is removed.

6.12. Signing off

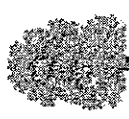
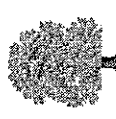
6.12.1. When the construction process is complete, the site should be inspected by the appointed arboriculturist or Local Authority Tree Officer.

Appendix 1 – Tree Data Schedule

- The following pages contain information gathered during the site survey.
- The reader should refer to Appendix 1 in order to correctly interpret the tree data.
- All images within the Tree Data Schedule are diagrammatical only. Their purpose is to indicate, at a glance, the relative dimensions of each tree. The images are computer generated based on measurements recorded for stem diameter, crown spread, crown height and overall height.

Reference	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m)	Scaled Tree Diagram (m)	Notes	Recommendations		Vigour	Physiological Condition	Structural Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
								Priority	Inspect Freq (yrs)						
T1	Mature Sycamore	21	4	77	6 5.5 0.5		Form: Single stemmed and leaning with an unbalanced crown. History: No evidence of significant pruning. Defects: Significant cavity at base. Other: Acceptable condition at present.	Monitor.	High	Good	High	High	40+	B	
	Acer pseudoplatanus							Moderate	1	Fair					
T2	Early-Mature Sycamore	19	3	48	5 3.5 2		Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: Significant deadwood throughout crown.	No action required.	High	Good	Moderate	Moderate	40+	B	
	Acer pseudoplatanus							n/a	3	Good					
T3	Mature Ash	24	14	67	2.5 3.5 6		Form: Single stemmed and vertical with an unbalanced crown. History: Occasional pruning wounds due to crown lifting. Defects: Significant deadwood throughout crown. Other: Multiple branch failures evident, longitudinal cracks to main stems.	Deadwood, monitor.	Moderate	Fair	High	High	10-20	B-	
	Fraxinus sp							High	1	Fair					
T4	Semi-Mature Sycamore	12	3	19	2.5 3.5 2		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	Low	Low	40+		
	Acer pseudoplatanus							n/a	3	Good					
T5	Mature Ash	18	7	61	4.5 4 8		Form: Multi-stemmed at 5m with an unbalanced crown. History: No evidence of significant pruning. Defects: Major dieback throughout crown. Other: Multiple branch failures evident.	Remove.	Low	Poor	Moderate	Moderate	<10		
	Fraxinus sp							Very High	N/A	Poor					
T6	Semi-Mature Sycamore	7	1.5	25 @ Base	3 3.5 5		Form: Twin-stemmed at ground level with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	Low	Low	40+		
	Acer pseudoplatanus							n/a	3	Fair					
T7	Semi-Mature Sycamore	14	3.5	14	1.5 1.5 1.5		Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	Low	Low	40+	C	
	Acer pseudoplatanus							n/a	3	Good					

Reference	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) W N E	Scaled Tree Diagram (m)	Notes	Recommendations		Vigour	Physiological Condition	Life Expectancy (yrs)	Retention Category
								Priority	Inspect Freq (yrs)				
T8	Semi-Mature						Form: Single stemmed and vertical with an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	Low	40+	C
	Sycamore	12	3.5	14	3 2 1.5			n/a	3		Good		
	Acer pseudoplatanus				0.5								
T9	Mature						Form: Twin-stemmed at 5m with a well-formed crown. History: No evidence of significant pruning. Defects: Significant deadwood throughout crown. Other: Multiple branch failures evident.	Deadwood.	Moderate	Fair	High	40+	B+
	Ash	18	3	85	6 6 7								
	Fraxinus excelsior				8				High	1	Fair		
T10	Semi-Mature						Form: Single stemmed with a slight lean and a slightly unbalanced crown. History: No evidence of significant pruning. Defects: Major cavity at base.	Remove.	High	Good	Low	<10	U
	Sycamore	10	0.5	22	3 3.5 2.5			Low	N/A	Poor			
	Acer pseudoplatanus				4								
T11	Mature						Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	High	40+	A
	Sycamore	22	4	72	6 7 5.5			n/a	3	Good			
	Acer pseudoplatanus												
T12	Early-Mature						Form: Single stemmed with a slight lean and an unbalanced crown. History: No evidence of significant pruning. Defects: Minor deadwood throughout crown.	No action required.	High	Good	High	40+	B
	Sycamore	20	8	47	2 3 5			n/a	3	Good			
	Acer pseudoplatanus												
T13	Early-Mature						Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	High	40+	B+
	Sycamore	17	2	47	4.5 3 4.5			n/a	3	Good			
	Acer pseudoplatanus				3								
T14	Young						Form: Twin-stemmed at ground level with an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	Low	40+	C
	Wych Elm	2	0.5	9 @ Base	2 2 0.5			n/a	3	Good			
	Ulmus glabra												

Reference	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m)	Scaled Tree Diagram (m)	Notes	Recommendations		Vigour	Physiological Condition	Structural Condition	Amenity Value	Life Expectancy (yrs)	Retention Category
								Priority	Inspect Freq (yrs)						
T15	Young Beech	4.5	0	7	1.5 2.5 3		Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	Low	40+	C		
	Fagus sylvatica							n/a	3		Good				
	Early-Mature Sycamore	18	1	56	3 4 5		Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	High	40+	B+		
T16	Acer pseudoplatanus							n/a	3		Good				
	Early-Mature Sycamore	15	2	40	5.5 3 2		Form: Single stemmed with a slight lean and an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	High	40+	B+		
	Acer pseudoplatanus							n/a	3		Good				
T17	Mature Ash	19	6	52	3.5 3.5 5		Form: Twin-stemmed at 6m with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: Minor deadwood throughout crown. Other: Dense ivy prevented a detailed inspection.	Remove ivy and reinspect for defects.	Moderate	Fair	High	40+	B		
	Fraxinus sp							Moderate	i		Good				
	Mature Sycamore	21	3	69	av 7 3.5		Form: Single stemmed and vertical with an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.	High	Good	High	40+	A		
T18	Acer pseudoplatanus							n/a	3		Good				
	Mature Mixed	av 17	av 3	av 60	av 5.5 5.5		Form: Narrow woodland strip. History: No evidence of significant pruning. Defects: No significant defects. Other: Sycamore, beech, ash with hawthorn and hazel understory.	No action required.	High	Good	High	40+	A		
	Deciduous							n/a	1		Good				

Appendix 2 - Tree Survey Schedule Explanatory Notes

This section explains the terms used in the **Tree Data Schedule** in Appendix 1.

A2.1 General

A2.1.1 Numbering System: Each item of vegetation has its own unique number prefixed by a letter such that:

- T1=Tree 1
- G2=Group 2
- H3=Hedge 3
- W4=Woodland 4

A2.1.2 Age Categories:

- **Young** Usually less than 10 years old.
- **Semi-Mature** Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy)
- **Early-Mature** Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy)
- **Mature** Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy)
- **Veteran** A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
- **Over Mature** As for veteran except management is not considered worthwhile.

A2.1.3 Species: Common names and Latin names are given.

A2.1.4 Height: Measured from ground level to the top of the crown

A2.1.5 Stem Diameter: Taken at 1.5m above ground level where possible. On trees with two to five stems, the combined stem diameter is calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 + \dots + (\text{stem diameter } 5)^2}$$
 For trees with more than five stems, the combined stem diameter is calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

A2.1.6 Crown Height: Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.

A2.1.7 Tree Diagram: This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.

A2.1.8 Crown Spread: Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest half metre.

A2.1.9 Observations: If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.

A2.1.10 Recommendations: Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.

A2.1.11 Priority Scale: Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:

- **Urgent** To be carried out as soon as possible
- **Very High** To be carried out within 1 month.
- **High** To be carried out within 3 months.
- **Moderate** To be carried out within 1 year
- **Low** To be carried out within 3 years.

A2.1.12 Inspection Frequency:

- An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves or in summer when leaves may obscure branches within the upper crown

A2.1.13 Vigour: An indication of growth rate and the tree's ability to cope with stresses:

- **High** Having above average vigour.
- **Moderate** Having average vigour
- **Low** Having below average vigour
- **Very Low** Tree is struggling to survive and may be dying

A2.1.14 Physiological Condition:

- **Good** Healthy and with no symptoms of significant disease.
- **Fair** Disease present or vigour is impaired.
- **Poor** Significant disease present or vigour is extremely low.
- **Very Poor** Tree is dying

A2.1.15 Structural Condition:

- **Good** Having no significant structural defects
- **Fair** Some defects observed though no high priority works are required
- **Poor** Significant defects found. Tree requires monitoring or remedial works
- **Very Poor** Major defects which will usually require significant remedial works or tree removal

A2.1.16 Amenity Value:

- **Very High** Exceptional specimen, observable by a large number of people
- **High** Attractive specimen, observable by a significant number of people.
- **Moderate** One of the above factors is not applicable
- **Low** Unattractive specimen or largely hidden from view

A2.1.17 Life Expectancy: The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).

A2.1.18 Retention Category: These are explained in detail in Table 1 on the following page

A2.2 Evaluation of Defects

A2.2.1 Cavities, wounds, deadwood etc are all evaluated as follows:

- **Major** Such that structural integrity is, or will become compromised and the tree is, or will inevitably become, hazardous
- **Significant** A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc
- **Minor** A defect that is not likely to compromise the tree's structural integrity

Tree retention categorisation

The categorisation of trees is applied to guide the site owner as to the quality and value of their existing tree stock. All trees greater than 75mm in diameter at 1.5m above ground level are surveyed and allocated a **retention category** which takes into account amenity value, condition and safe useful life expectancy. The categories are allocated independently of development proposals. BS 5837:2012 recommends using a cascade chart for categorisation purposes. **Table 1** below provides an explanation of retention categories used.

Trees to be removed		Colour on Plan
Category U includes trees of very low quality that offer little or no amenity value.	Trees that are in such a condition that they should be removed as a matter of good arboricultural practice regardless of given proposals.	RED
Trees to be considered for retention		Colour on Plan
Category A includes trees of a high quality, usually highly visible to the wider public.	Trees that are excellent examples of their species, usually mature, with a safe useful life expectancy of at least 40 years. Category A trees are likely to enhance a development and should be retained wherever possible	GREEN
Category B includes trees of moderate quality and amenity value.	Trees that are good examples of their species but may have defects or form that downgrade them from category A. Category B trees are usually mature or younger trees with the potential to reach A category in the future. Although the retention of these trees is desirable, some losses may be acceptable.	BLUE
Category C includes trees of low quality and amenity value.	Trees that are either young with a stem diameter less than 150mm or are unlikely to make a contribution for more than 10 years. The removal of these trees should be seen as acceptable in order to allow development to proceed. It may be possible to transplant younger specimens.	GREY
NOTE: Trees that are viewed as borderline and do not fit neatly into either of the categories are given a plus or minus rating (+/-) in the tree data schedule. Therefore C+ would denote a tree being borderline C/B although C is deemed to be the most appropriate category. Similarly B- would denote a tree being borderline B/C with B seen as the most appropriate category.		

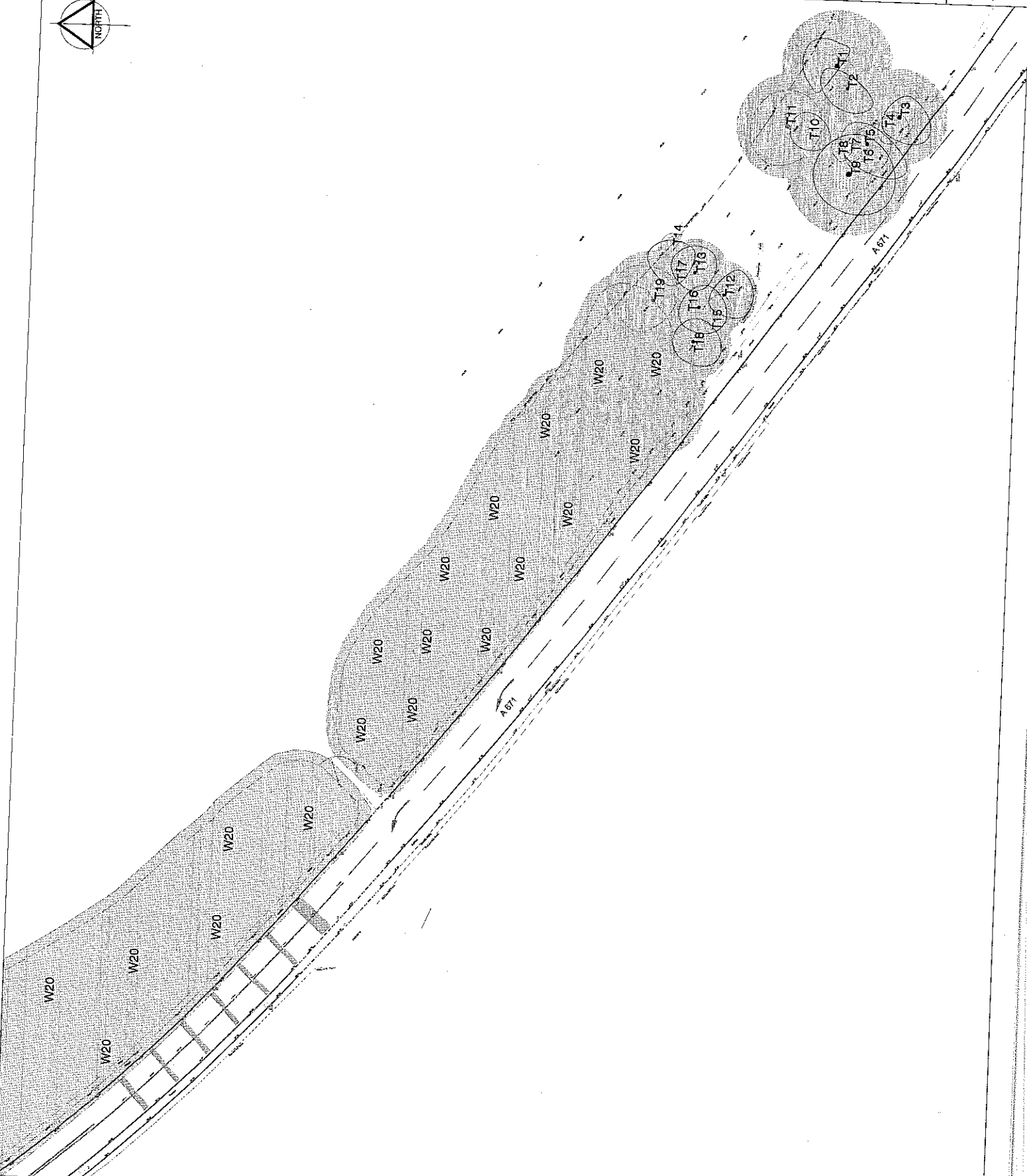
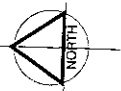
Table 1

Appendix 3 - Site Plans

The site plans referred to in the report follow this page which can include some or all of the following:

- Tree Constraints Plan
- Tree Removal Plan
- Tree Protection Plan
- Proposals

Although included plans are usually to scale, they are only intended to indicate positions of surveyed trees and dimensions should not be taken from these drawings.



Key	Tree number 1
T1	Group number 2
G2	Hedge number 3
H3	Photo location
1) ->	Panoramic photo location
○	Retention category A tree
○	Retention category B tree
○	Retention category C tree
○	Retention category U tree
○	Root Protection Area (RPA)

BS 5837 RETENTION CATEGORIES

Category A:
Trees of high quality and amenity. Usually mature trees with a significant landscape amenity which would enhance any development. Retention of these trees is strongly encouraged.

Category B:
Trees of moderate quality and amenity. Usually trees of moderate size, or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

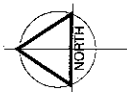
Category C:
Trees of low quality and amenity. The removal of these trees should be seen as acceptable in order to facilitate development.

Category U:
Trees which are in a poor structural condition such that they should be removed regardless of development proposals.

scottfitzgerald
TREE CONSULTANTS
Pine House, Oxford Street, Manchester, M1 6AN
T: 0161 637 8242 E: info@scottfitzgerald.co.uk

Client: Ribbles Valley Leisure Ltd
Project: Devil's Elbow Adventure Centre
Description: Tree Constraints Plan

Scale: 1:200 A0 S.F.
Job number: 10254
Drawing number: 10254



320120578P

Key	
T1	Tree number 1
G2	Group number 2
H3	Hedge number 3
●	Category A tree to be removed
●	Category B tree to be removed
●	Category C tree to be removed
●	Category U tree to be removed
○	Extent of pruning

BS 5837 RETENTION CATEGORIES

Category A:
Trees of high quality and amenity. Usually mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

Category B:
Trees of moderate quality and amenity. Usually mature trees, or younger trees with exceptional characteristics. These trees are desirable though the removal of occasional specimens may be acceptable.

Category C:
Trees of low quality and amenity. The removal of these trees should be seen as acceptable in order to facilitate development.

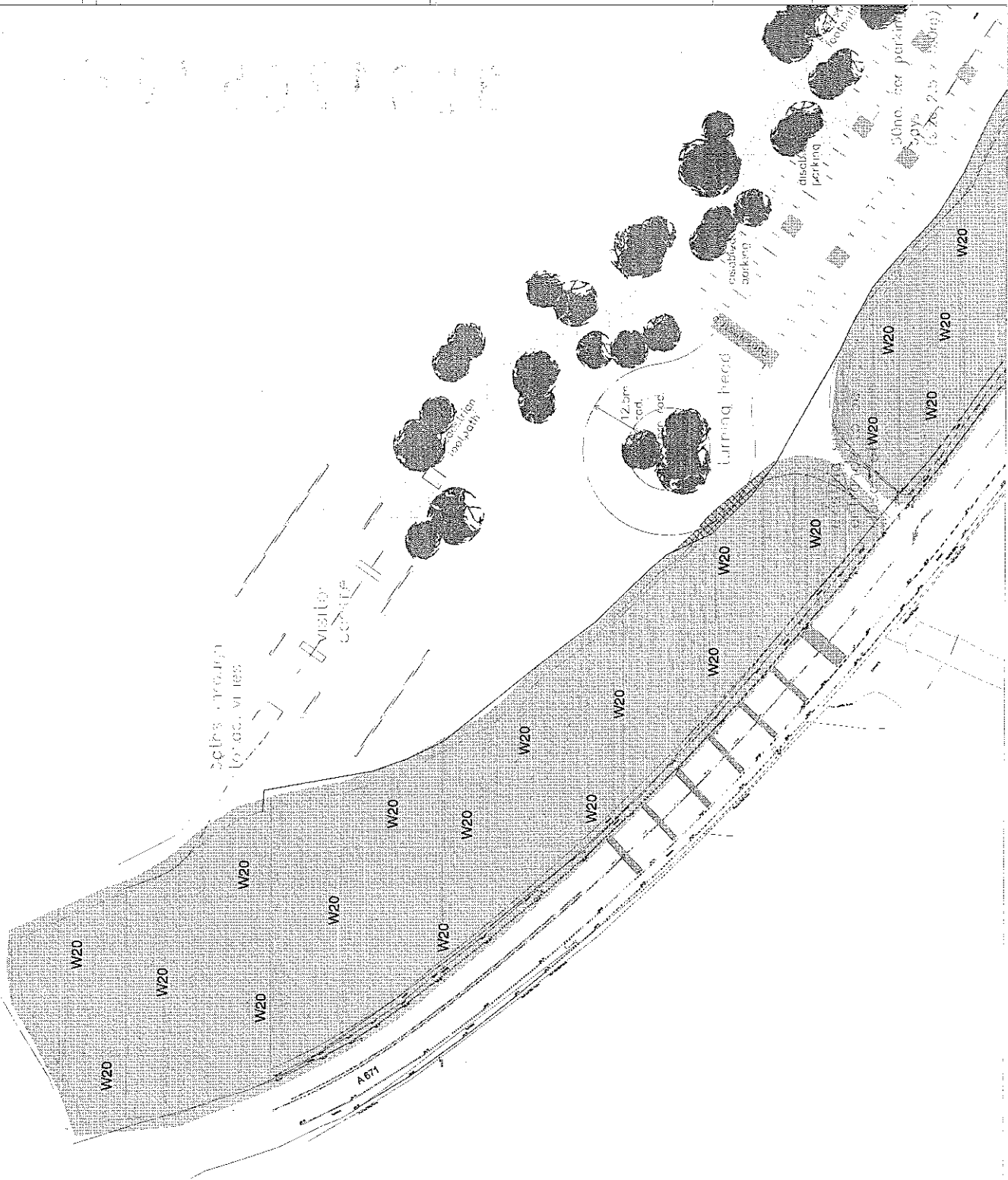
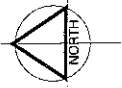
Category U:
Trees whose structural condition is such that they should be removed regardless of development proposals.

scottfitzgerald

TREE CONSULTANTS
Peter House, Oxford Street, Manchester, M1 5AN
T: 0161 537 2542 E: info@treeconsultants.co.uk

Client: Ribbles Valley Leisure
Project: Devil's Elbow Adventure Centre
Description: Tree Removal Plan

Scale: 1:200
Drawn by: A0
Job number: 10254
Date: 18/06/12
SF
Drawing number: 10254.2
Revision: N/A



Key	Tree number 1	Group number 2	Hedge number 3	Photo location	Panoramic photo location	Retention category A tree	Retention category B tree	Retention category C tree	Retention category U tree	Root Protection Area (RPA)	Protective Fencing	RPA not protected by fence, special care required
T1				①	②	○	○	○	○	⊗	—	⊞
G2												
H3												

BS 5837 RETENTION CATEGORIES

Category A:
Trees of high quality and amenity. Usually mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

Category B:
Trees of moderate quality and amenity. Usually medium aged or younger trees with exceptional form, position or other characteristics. Retention of these trees is encouraged, though the removal of occasional specimens may be acceptable.

Category C:
Trees of low quality and amenity. The removal of these trees should be seen as acceptable in order to facilitate development.

Category U:
Trees whose structural condition is such that they should be removed regardless of development proposals.

scottfitzgerald
TREE CONSULTANTS
Peter House, Oxford Street, Manchester, M1 5AN
T: 0161 837 5242 E: info@scottfitzgerald.co.uk

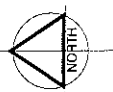
Client
Ribble Valley Leisure Ltd

Project
Devil's Elbow Adventure Centre

Tree Protection Plan

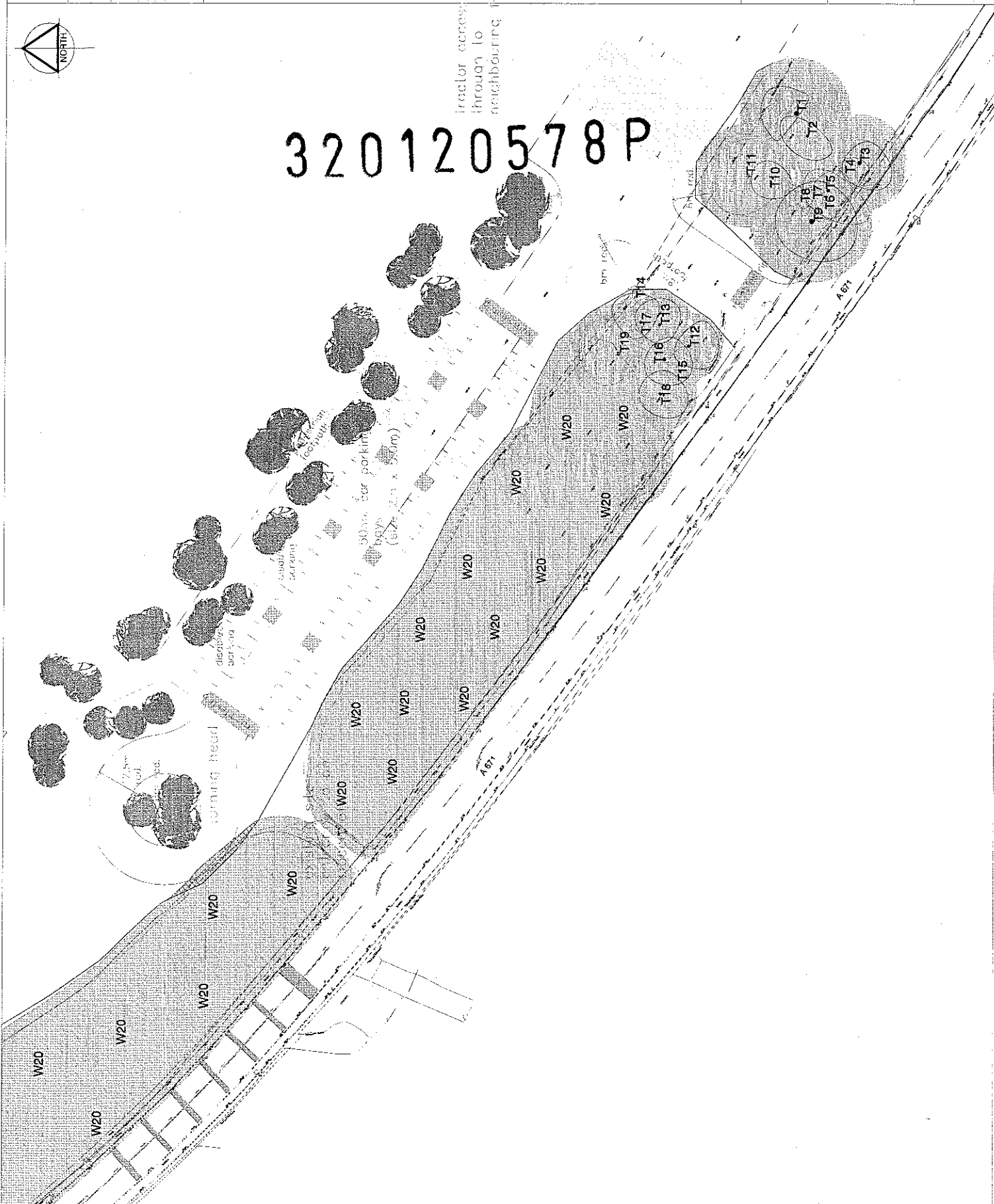
Scale
1:200 AO
10254

Drawn by
SF
10254



320120578P

tractor access
through to
neighbouring



Key	Tree number 1	Group number 2	Hedge number 3	Photo location	Permanent photo location	Retention category A tree	Retention category B tree	Retention category C tree	Retention category U tree	Road Protection Area (RPA)	Protective Fencing	RPA not protected by fence. Special care required
T1	G2	H3	→	→	→	○	○	○	○	○	—	—

BS 5837 RETENTION CATEGORIES

Category A:
Trees of high quality and amenity. Usually, mature trees with a significant life expectancy and which are in good health. Retention of these trees is strongly encouraged.

Category B:
Trees of moderate quality and amenity. Usually, mature trees, or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

Category C:
Trees of low quality and amenity. The removal of these trees should be acceptable in order to facilitate development.

Category U:
Trees whose structural condition is such that they should be removed regardless of development proposals.

scottfitzgerald

TREE CONSULTANTS
Pier House, Oxford Street, Manchester, M1 5AN
T: 0161 837 8242 E: info@scottfitzgerald.co.uk

Client: Ribble Valley Leisure Ltd
Project: Devil's Elbow Adventure Centre
Description: Tree Protection Plan

Scale: 1:200 A0
Drawn by: S F
Job number: 10254
Drawing number: 10254.4
Date: 18/06/12
Revision: N/A

Appendix 4 – Recommendations for Tree Protection during Demolition and Construction

1. General

- 1.1 All operations that could affect trees on and adjacent to the site must be considered as part of the project management of the development. It is therefore imperative that an arboricultural consultant is appointed as part of the design and management team to advise on pre-development issues and supervise on-site operations
- 1.2 The arboricultural consultant may also have an advisory role in the preparation of site including tree surgery works and the protection of trees during demolition processes
- 1.3 This document accompanies the Arboricultural Impact Assessment (AIA) and should be read in conjunction with the Tree Constraints Plan. It is essential to adhere to the recommendations within this document during on-site operations to ensure the successful retention of trees during the development. Compliance with the Arboricultural Method Statement (AMS) will be a requirement of all relevant contracts associated with the development proposals

2. The objective of this document

- 2.1 This document aims to provide general guidelines to onsite personnel that must be followed when working close to trees on construction sites. It is typically included as additional, generic guidance as an appendix to a site specific AMS. All site personnel should have access to this document and be made aware of any sections that may be relevant to their specific area of work.
- 2.2 The developer will inform the Local Planning Authority (LPA) within twenty four hours if the arboricultural consultant is replaced.

3. RPAs explained

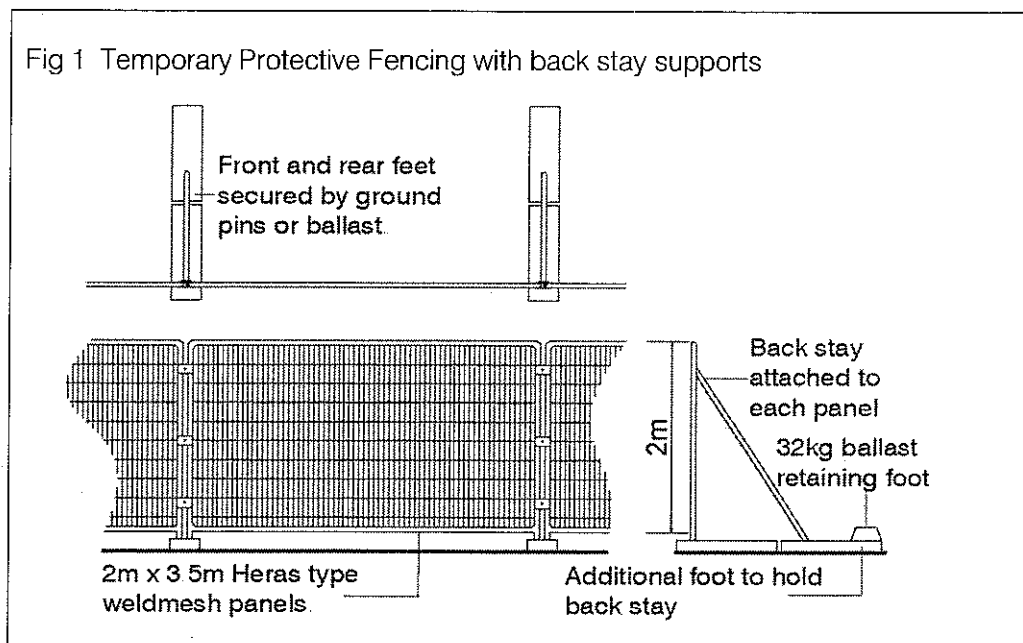
- 3.1 The RPA is an area of ground around the base of a retained tree, which is calculated in relation to the stem diameter, where disturbance should be kept to a minimum and avoided if at all possible
- 3.2 The majority of tree roots grow within the upper 100mm of the soil profile where most nutrients are available as the result of the decomposition of organic matter close to the surface. Rooting conditions become less favourable at depth as the soil density increases, creating anaerobic conditions.
- 3.3 It is essential that roots are protected from construction works including physical damage from excavation and changes in soil structure from compaction and changes in ground levels

4. Defining the RPA

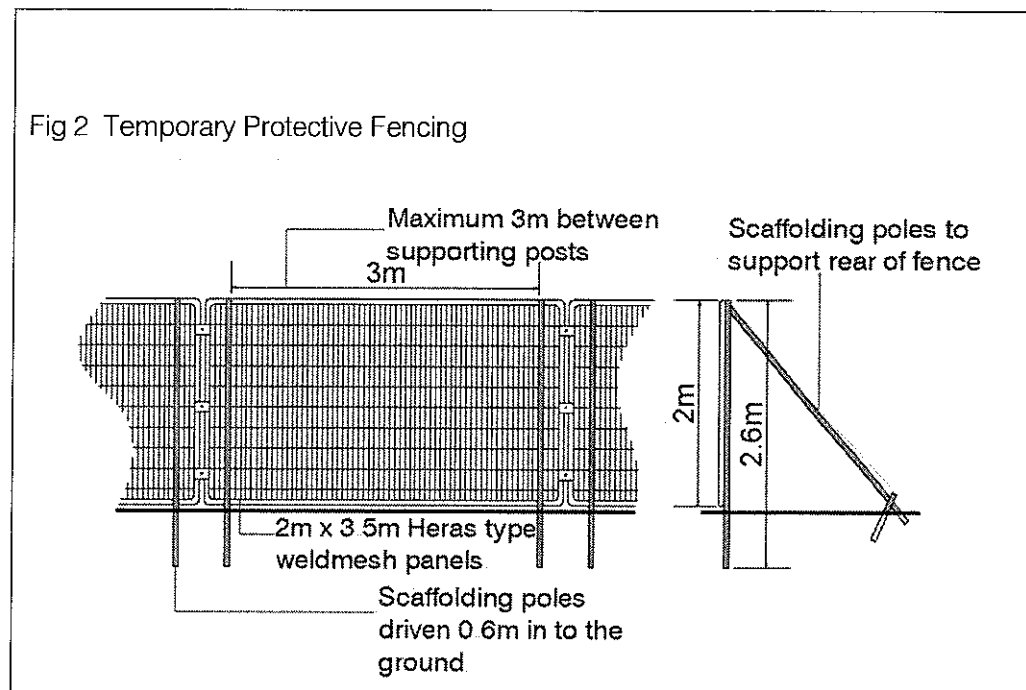
- 4.1 The RPA is defined on the Tree Protection Plan by black circles surrounding retained trees. Where necessary, temporary protective fencing will be placed in these positions, beyond which is a construction exclusion zone. This zone precludes all construction activity, with the sole exception of specified arboricultural works that have been agreed by all parties and under the supervision of an arboriculturist
- 4.2 Temporary protective fencing will need to be installed prior to any demolition or construction works and delivery of site accommodation and materials
- 4.3 There will be no storage or tipping of any materials, including fuels, oils, adhesives, cement or any other deleterious substance within 0.5m of the construction exclusion zone.
- 4.4 No fires will be lit within 20 metres of the stem of any tree that is to be retained
- 4.5 Any incursion into the construction exclusion zone must be by prior arrangement, following consultation with the LPA

5. Temporary protective fencing

- 5.1 RPAs will be protected by 'Heras' steadfast type fencing with back stay supports where construction activity is expected to be minimal (Fig 1. below)

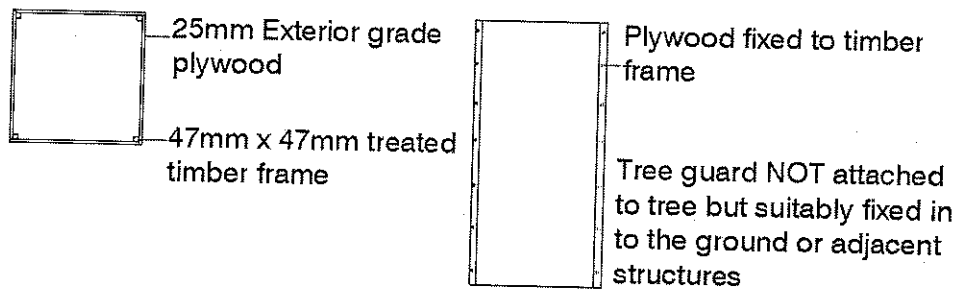


- 5.2 In areas of site where construction activity is expected in close proximity to RPAs, it will be necessary to employ the more robust 'in-ground' system following BS 5837 guidelines (Fig 2. below)



- 5.3 The 'in-ground' system involves driving vertical scaffold poles approximately 0.6m into the ground onto which are affixed horizontal scaffold poles and bracing struts. 2m high anti-climb weldmesh panels are then wired to the scaffold framework. The vertical scaffold poles should be at a maximum of 3m apart.
- 5.4 No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to the tree roots when locating uprights.
- 5.5 Where space is limited, it is sometimes necessary to construct a temporary tree guard to physically protect the main stem of the tree (Fig 3. below). This should be made by joining together 4 X 25mm Exterior Grade pieces of plywood to 47mm X 47mm treated timber posts to create a box shaped frame which is attached to the ground or adjacent structures. No fixings are to be made to the tree and suitable ground protection should be employed within the RPA of the tree (see Section 12).

Fig 3 Temporary Protective Fencing



5.6 A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" shall be fixed to every 10m of protective fencing (Fig 4 below)

Fig 4 Tree Protection Sign



6. Excavation in the RPA

- 6.1 Any necessary excavation must be carried out using hand tools to avoid direct damage to the protective bark of tree roots. It may be possible in some instances to use specialised equipment such as high air pressure machinery to excavate the soil with minimal disturbance to roots
- 6.2 Exposed roots will be wrapped in dry, clean Hessian sacking to prevent desiccation and to protect from rapid temperature changes. In warmer weather, the sacking should be kept moist by regular watering. Sacking should be removed before backfilling.
- 6.3 Roots less than 25mm diameter may be pruned back, preferably to a growing point. A sharp cutting tool such as bypass secateurs or a handsaw should be used to leave the smallest wound possible. Roots greater than 25mm in diameter should be retained wherever possible.
- 6.4 Root pruning should be carried out under the supervision of the arboricultural consultant or the Local Authority Tree Officer to ensure that only roots necessary to facilitate the development will be removed and the long-term well-being of retained trees is maintained.
- 6.5 Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.

7. Demolition and removal of surfaces in the RPA

- 7.1 During demolition, the following restrictions will apply:
- Where direct damage by falling masonry is likely, the tree should be protected by exterior grade plywood sheets constructed around the main stem.
 - The main body of any mechanical excavator will operate outside the RPA.
 - Masonry will be pulled away from trees where possible.
 - When breaking masonry, a fine water spray will be used to minimise dust particles.
 - Excessive dust particles on trees will be removed each day by spraying with water.
- 7.2 Hard surfaces should be kept in place for as long as possible during construction works in order to prevent soil compaction in the RPA.

7.3 During surface removal, the following restrictions will apply:

- Only hand operated tools will be used to lift existing surfaces and sub-base. No mechanical excavators are to be used
- No excavation below the existing sub-base will occur
- Exposed roots are to be treated as in section 6 above
- All surface removal within the RPA will be supervised by the arboricultural consultant or the Local Authority Tree Officer.

8. Changes in ground level

8.1 Changes in ground level can be harmful to trees where stripping or filling of soil is carried out in the RPA. It is therefore important that no significant changes in level occur within the RPA of retained trees.

9. Soft landscaping

9.1 No machinery used for landscaping such as rotovators are to operate within the RPAs of retained trees

9.2 All planting must be carried out carefully, by hand to avoid damage to existing roots. Mulch should be used around the base of trees, where possible, to maintain ground level and to avoid mower and strimmer damage to buttresses and surface roots.

10. Surface design

10.1 It is essential to maintain adequate supplies of water and oxygen for trees through the soil. New impermeable surfacing should not cover more than 20% of the RPA.

10.2 Design and construction specification should take account of further growth.

10.3 Paving slabs and block pavers are available with built in infiltration spaces between the slabs or blocks. They should be laid dry-jointed on a sharp sand foundation to allow air and moisture to penetrate to the rooting area.

10.4 It may be necessary to lay paving and other surfaces on a flexible base to allow movement and to facilitate relaying if distortion becomes excessive due to the activity of tree roots.

10.5 Edgings and associated foundations and haunchings can damage tree roots. This should be avoided within the RPA by either the use of alternative methods of edge support or by not using supports at all.

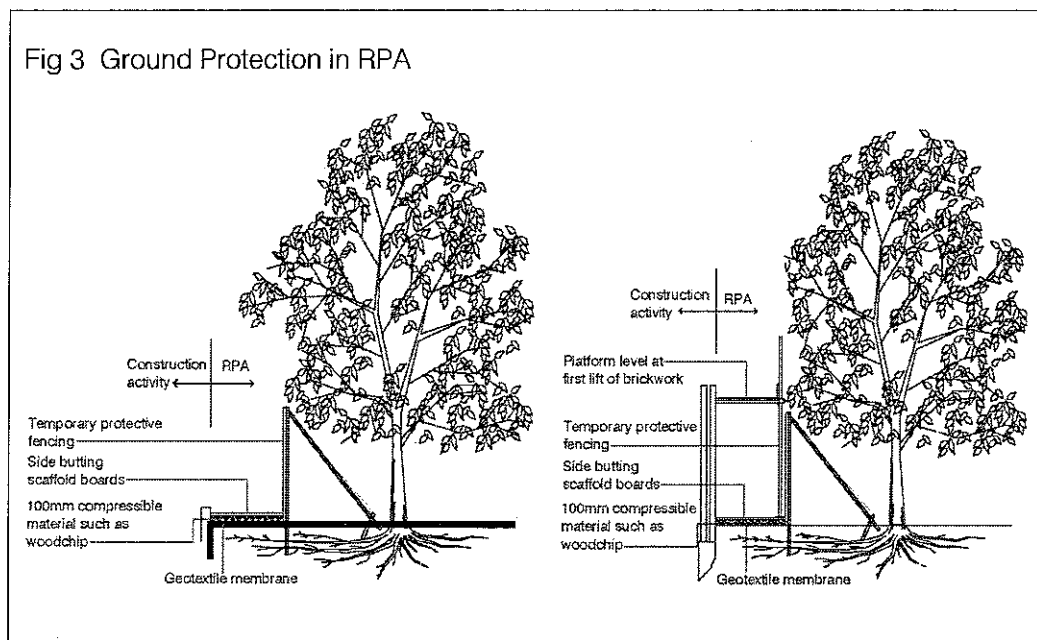
10.6 Where wheeled traffic is expected in the RPA, it will be necessary to construct the new surface using a cellular confinement system with a permeable surface as detailed in Appendix 5.

11. Ground protection for wheeled or tracked vehicles

- 11.1 Occasionally, it may be necessary to drive plant machinery in the RPA. To avoid compaction of the soil during construction, a minimum of 100mm compressible material, followed by temporary interconnected road plates or similar that is capable of sustaining the expected loads should be installed. This system will ensure that the weight is evenly distributed over the affected area.

12. Ground protection for pedestrians or light vehicles

- 12.1 The primary method of ground protection is the installation of a compressible layer (e.g. woodchip) over a geotextile fabric with side butting scaffold boards (Fig 3 below).



- 12.2 Ground protection measures whilst working the RPA must be capable of supporting the expected loads and avoid compaction of the soil.
- 12.3 The boarding will be left in place until the construction works are finished.
- 12.4 Scaffolding may first be erected with the uprights on spreader boards and the ground protection installed around the uprights.

13. New structures in the RPA

- 13.1 No concrete strip foundations are to be installed within the RPA of any retained tree. Traditional strip foundations can cause an unacceptable amount of damage during the excavation process where roots are easily torn by mechanical excavators.
- 13.2 Small, light structures such as sheds and bin stores can be laid directly onto the soil surface without the need for significant excavation. A small amount of excavation may be permissible to provide a level surface, however, no roots over 25mm in diameter should be severed without the advice of an arboriculturist or Local Authority Tree Officer.
- 13.3 Traditional footings should not be used within the RPA for the construction of non-load bearing walls. It may be possible however, to construct walls in proximity to trees by bridging existing roots with lintels.
- 13.4 Where foundations are to be laid in the RPA of retained trees, root damage can be minimized by using small diameter piles located to avoid major tree roots. The proposed area for pile installation should be dug by hand to a depth of approximately 750mm in order to ascertain the position of roots present. Beams, slabs and suspended floors should be laid at or above ground level and cantilevered, as necessary, to avoid tree roots.
- 13.5 Where piling is to be installed in proximity to trees, the smallest practical pile diameter should be used as this reduces the possibility of striking major tree roots, and reduces the size of the rig required to sink the piles. The latter is particularly important where piling within the branch spread is proposed, as mini-rigs reduce the need for access facilitation pruning. Sheathed piles protect the soil and adjacent roots from the potential toxic effects of concrete.
- 13.6 Backfilling of any excavation should be carried out by hand to avoid direct root damage by excessive compaction and should include, where possible, the replacement of inert granular material mixed with sharp sand (not builder's sand) around retained roots.
- 13.7 Any pruning should be carried out under the supervision of the arboricultural consultant or the Local Authority Tree Officer to ensure that only branches necessary to facilitate the development will be removed and the long-term well-being of retained trees is maintained.

14. Utilities

- 14.1 The installation of underground utilities within the RPA should not be considered unless it is absolutely necessary. Trenching can cause an unacceptable amount of damage to tree roots.
- 14.2 The National Joint Utilities Group publication, NJUG10 recommends the following precautions when working in the RPA:
- No excavation should be carried out using machinery
 - When digging by hand, carefully work around roots, retaining as many as possible.
 - Do not sever roots over 25mm in diameter without the consent of the arboricultural consultant or Local Authority Tree Officer.
 - Any root pruning will be carried out using a sharp tool (eg secateurs or handsaw). Make a clean cut and leave as small a wound as possible.
 - Backfill the trench with an inert granular material and topsoil mix. Compact the backfill with care around the retained roots. On non-highway sites backfill only the excavated soil.
 - Do not repeatedly move or use heavy mechanical plant except on hard standing.
 - Do not store spoil or building material, including chemical and fuels.
 - Protect roots with dry sacking if they are to be left exposed overnight when there is a risk of frost. Sacking must be removed before backfilling.

15. Monitoring

- 15.1 The arboricultural consultant will be responsible for monitoring of all arboricultural works and issuing a certificate of practical completion. In addition, the arboricultural consultant will inspect the protective fencing and monitor any works within exclusion zones.
- 15.2 A record of site visits will be maintained for inspection on site and copies forwarded to the developer/agent and to the local planning authority.

Appendix 5 - Tree Work Schedule

Tree ID	Species	Recommendations	TPO Information	Work time Scales	Re-inspect
T5	Ash	Fell to approximately ground level	No TPO	Within 1 month	N/A
T10	Sycamore	Fell to approximately ground level	No TPO	Within 3 years	N/A

Appendix 6 - Professional Résumé: Scott Fitzgerald

Qualifications:

Scott gained a BSc in Arboriculture from the University of Central Lancashire in 2010, after being awarded a Foundation Degree in Arboriculture with merit at the same institution in 2005.

He is continuing his education further by studying for a Master's Degree in Arboriculture and Urban Forestry at the University of Central Lancashire which commences in September 2011.

Scott is a professional member of the Arboricultural Association. Scott maintains his professional development by attending several seminars and conferences throughout the year

Experience:

Scott has worked in the arboriculture industry since 1993 when he trained as a groundsman and gained NPTC certificates for use of a chainsaw on the ground. In 1994 he gained his NPTC certificate for the use of a chainsaw from a rope and harness. For the next 12 years, he worked as head climbing arborist for a tree surgery company as team leader and was responsible for the day to day management of tree work operations, sales and building client relations

In 2005, Scott began trading as an independent consultant arboriculturist. He now works solely as an arboricultural consultant, providing expert advice and reports on all matters concerning trees including hazard assessment, TPOs, planning advice and reports for mortgage purposes

320120578P
scottfitzgerald
T R E E C O N S U L T A N T S

Peter House Oxford Street Manchester M1 5AN
0161 637 5242 info@thetreeconsultant.co.uk

Landscape Supporting Notes

1.1. Existing Services

- 1.1.1 Where services have been indicated, exact positions for these will need to be determined by the contractor on site prior to work commencing

1.2. Ground Preparation

- 1.2.1 Prior to work commencing all debris, rubbish, rubble, perennial weeds and dead tree roots to be removed from site. All material to be disposed of must be transported to a licensed waste disposal facility
- 1.2.2 Break up compacted ground in areas to be planted to a depth of 250mm before topsoil is imported to planting areas

1.3. Subsoil

- 1.3.1 Subsoil to be spread 250mm below new grass and shrub areas. Tree pits to be constructed as described in 'Plant and Planting Specification'
- 1.3.2 Subsoil to be spread by hand or using a back-acting track vehicle to cause minimum compaction and loss of soil structure. No soil handling work to be undertaken when the soil is wetter than the plastic limit

1.4. Topsoil

- 1.4.1 Topsoil imported to the site shall be general purpose grade as described in BS 3882: 2007 clause 4.1a – Recommendations and classifications for topsoil. The soil should be free of weeds, roots or perennial weeds, pests, diseases, debris, tree roots, sticks, subsoil and foreign matter and shall be capable of being broken down to a fine tilth
- 1.4.2 Topsoil shall be stored in heaps not exceeding 1.5m high. Heaps should be graded to shed water and avoid ponding, these heaps shall be maintained in a weed free condition and protected from contamination or trespass by heavy machinery
- 1.4.3 Topsoil should be lightly consolidated in layers not exceeding 150mm using track laying machinery. Works should not be undertaken in wet weather, to avoid damaging soil structure

1.4.4 Topsoil should be laid to the following minimum depths:

- 150mm beneath new grass areas
- 400mm beneath new shrub areas

1.4.5 Finished levels after settlement shall be as follows:

- 25mm above adjacent paving from new grassed areas and non-mulched shrub beds
- 75mm below adjacent paving and grassed areas for mulched shrub beds
- 150mm below any damp proof course

1.5. Plant and Planting Specification

1.5.1 All plant stock, plant handling and planting to be undertaken in accordance with the following British Standard Specifications and Code of Practice:

- BS 3936: 1992 Part 1 Nursery stock Specification for Trees and Shrubs
- BS 3936: 1981 Part 10 Nursery stock Ground cover plants
- BS 5236 Recommendations for cultivation and planting of trees in the advanced nursery stock category
- BS 4428: 1989 Recommendations for general landscaping operations
- The Code of Practice for Plant Handling 1985, (Horticultural Trades Association)

1.6. Plant Stock

1.6.1 Plant stock to be supplied in accordance with the size and description specified on the plant schedule and position indicated on the drawing

1.6.2 Plant stock shall be healthy, vigorous, free from pests and diseases and suitably hardened off for the proposed situation of planting, and lifted at a time in accordance with good nursery practice. Stock shall have a well formed fibrous root system and be free from perennial weeds. The form of trees shall be in accordance with BS 3936: Part 1: 1992 Section 7 Form of Trees

1.7. Plant Handling

1.7.1 All plant materials shall be lifted, bundled, labelled, packaged, transported, temporarily stored and planted in accordance with procedures and methods illustrated in the publication 'Plant Handling' (HTA)

1.8. Planting of whips and transplants

1.8.1 The Nature of the material to be planted is variable and the contractor shall allow for planting to be properly carried out in all cases as described in BS 4428: 1989 section 7 Amenity tree planting, section 8 woodland planting and section 9 Planting of shrubs, herbaceous and bulbs. All Plants shall be planted at same depth as they

320120578P

were grown. Roots shall not be bent, broken or forced into inadequate pits or notches. Rabbits guards and stock proof fencing will be used to protect plant material during establishment.

1.9. Shrub Planting

- 1.9.1 All bare root stock shall be planted between November and April, if planting is to be carried out at any other time of the year, containerised stock shall be used. Plants shall be delivered to site in quantity's which can be planted in the same day. No plant roots shall be allowed to dry out.
- 1.9.2 Plant stock shall be watered in on the same day with the equivalent to the pot size or 5 litres per plant if bare root.

1.10. Standard Tree Planting

- 1.10.1 Tree planting pits to be double the root ball or pot size in all dimensions. Base and sides of pit to be scarified. All grass and weed competition around the base of the tree should be eliminated (an area of at least one metre around the base of each tree is recommended). Care should be taken when applying herbicides near the base of the tree as this can be absorbed by the trunk. The base of the tree which is to be kept weed free can be mulched annually to a depth of 50mm. See supporting tree detail for more information.
- 1.10.2 All works shall be carried out to the minimum standard according to:
- BS 3936: 1980 Nursery stock specification for trees and shrubs
 - BS 5236: 1975 Recommendations for the cultivation and planting of trees in the advanced nursery stock category

1.11. Mulch

- 1.11.1 All shrub beds shall be spread with a medium grade bark mulch to a settled depth of 75mm. Mulch to be free from fines, weeds, disease and contaminants.

1.12. Grass Seeding

- 1.12.1 Seed mix shall be British seed houses grade A19 mix or similar approved.
- 1.12.2 Topsoil shall be cultivated to a fine tilth; be free from weeds, stones and other debris.
- 1.12.3 Levels to be graded to form finished levels as indicated in section "Topsoil".
- 1.12.4 Roll, fertilize at 50g/sq m 10-14 days prior to seeding; sow at a rate of 25-35 g/sq m and lightly rake. First cut to be undertaken when grass reaches 50mm.

1.13. Turfed Areas

- 1.13.1 To be supplied in accordance with BS 3936: 1990 Recommendations for turf for general purposes. Turf shall be laid in accordance with BS 4428: section 6, when weather and soil conditions are suitable and, where possible this should be carried out in autumn and early winter. No turf should be laid in exceptionally dry or frosty weather or in any other unsuitable weather conditions.

1.14. Landscape Maintenance

1.14.1 Plant stock and soft landscaped areas shall be maintained for a period of 5 years via the developer's agent or appointed management company, during which time the following operations shall be carried out.

1.15. Regular Visits

1.15.1 Monthly maintenance visits to include the following operations :

- Hand weed planting beds
- Remove litter
- Sweep mulch spillage
- Re-firm plant stock as required
- Adjust stakes and ties as necessary
- Prune plant stock as required to encourage good form
- Check all plant stock and report signs of pests, diseases, death and damage.

1.16. Watering

1.16.1 Plant stock to receive the following quantities of water:

- Standard tree: 20 litres each month between April and September
- Shrubs and transplants: 5 litres per plant on 3 occasions throughout growing season
- Watering to be undertaken during the first 24 months

1.17. Grass Cutting

1.17.1 Grass shall be cut throughout the growing season to maintain a height of approximately 38mm. Grass areas shall be edged, watered as necessary and all clippings shall be removed.

1.18. Plant Replacements

1.18.1 All dead, dying and vandalised plant stock shall be replaced at the end of each growing season throughout the maintenance period.

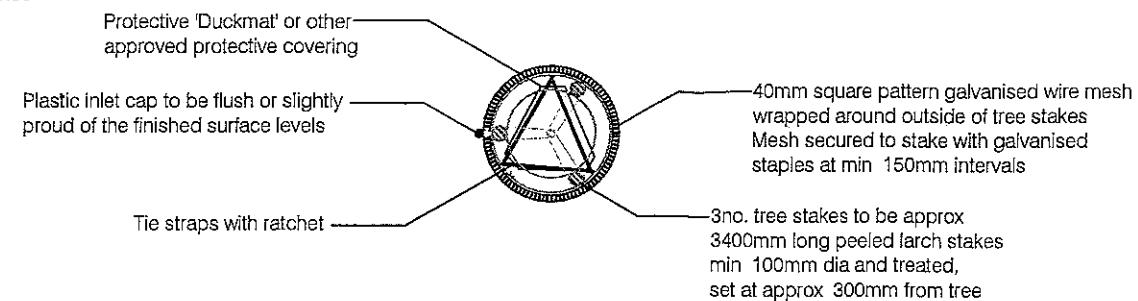
320120578P

1.19. Protection of existing trees

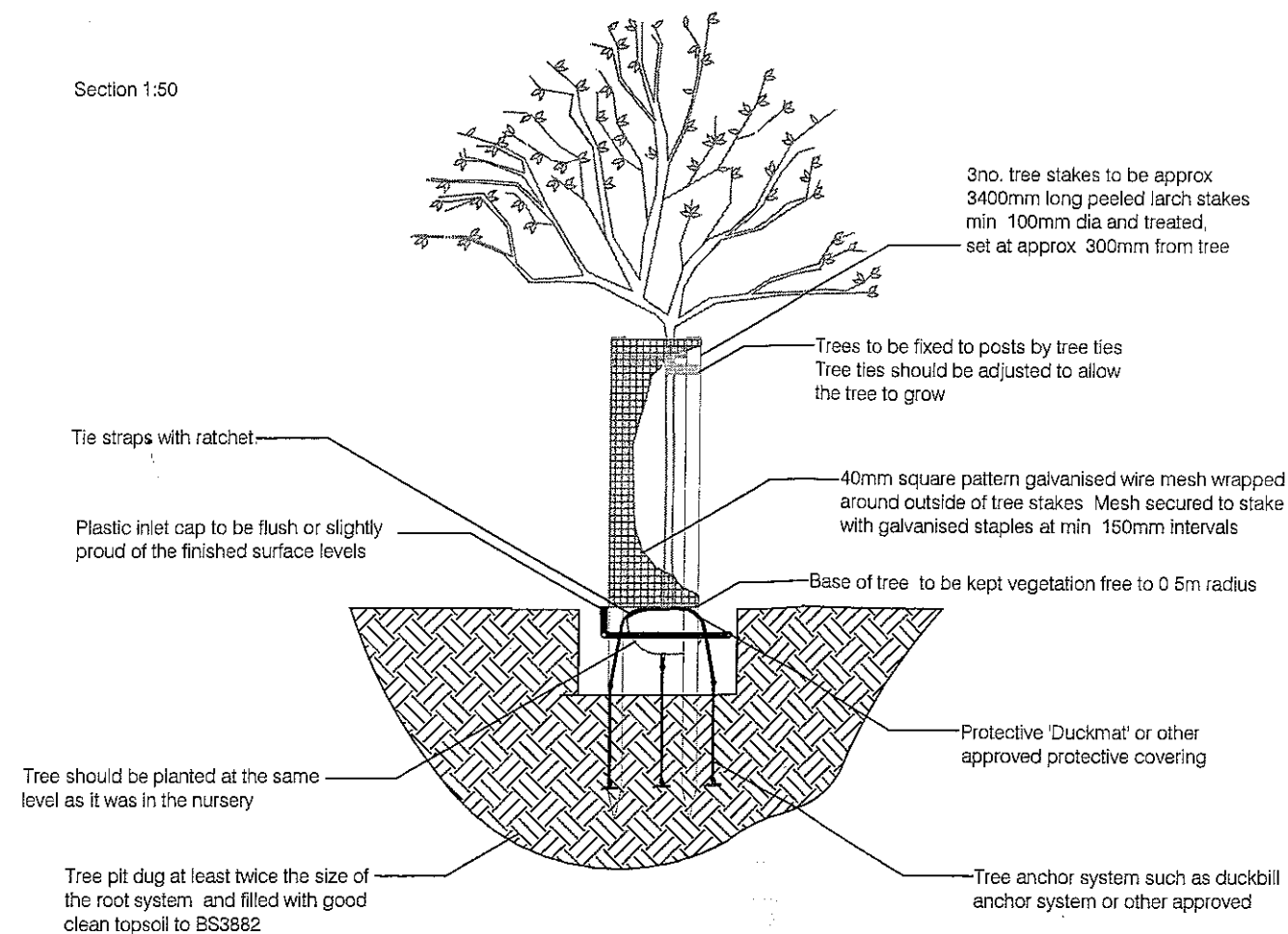
1.19 1 The recommendations in BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations must be complied with at all times

- Any work to the existing trees is to be carried out by a qualified tree surgeon
- The position and construction of any protective fencing shall be agreed with the local authority prior to any works commencing
- Under no circumstances must any materials be stored under the canopy of existing trees and no cement, oil or diesel stored near them
- No vehicles should pass under the canopy of existing trees
- No ropes, cables, services or notice boards shall be fixed to existing trees.
- All levels around existing trees need to be maintained and must not be raised or reduced Scaffolding may only be erected within protected areas if it is so in accordance to BS5837

Plan 1:50



Section 1:50



320120578P

scottfitzgerald
TREE CONSULTANTS

Peter House, Oxford Street, Manchester, M1 5AN
T: 0161 209 3808 E: info@thetreeconsultant.co.uk

Client
Ribble Valley Leisure Ltd

Project
Devil's Elbow Adventure Centre

Description
Tree Planting Detail

Scale 1:50@A3	Drawn by DAL	Date 25/06/12
Job number 10254	Drawing number 10254.L2	Revision N/A

PLANT SCHEDULE

Abbrev	Name	Girth/ Dia cm	Height cm	Root zone	Specification	No /m ²	Qty
Trees							
A ps	Acer pseudoplatanus	14-16	400-450	45-85L	EHS: clear stem min. 200cm: 5 brks	1	25
F s	Fagus sylvatica	12-14	350-425	45-85L	HS: clear stem 175-200cm: 5 brks	1	32
F e	Fraxinus excelsior	16-18	400-450	45-85L	EHS: clear stem min. 200cm	1	22
Q pe	Quercus petraea	14-16	400-450	45-85L	EHS: clear stem 175-200cm: 5 brks	1	26
Q r	Quercus robur	14-16	400-450	45-85L	EHS: clear stem 175-200cm: 5 brks	1	25
TOTALS							130



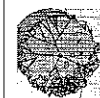
Existing woodland



Proposed timber knee rail



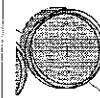
Acer pseudoplatanus



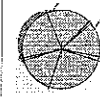
Quercus petraea



Quercus robur



Fraxinus excelsior



Fagus sylvatica

320120578P

scottfitzgerald
TREE CONSULTANTS

Peter House, Oxford Street, Manchester, M1 5AN
T: 0161 209 3808 E: info@thetreeconsultant.co.uk

Client
Ribble Valley Leisure Ltd

Project
Devil's Elbow Adventure Centre

Description
Planting plan

Scale
1:100@A0 DAL

Drawn by
DAL

Date
25/06/12

Job number
10254

Drawing number
10254.L1

Revision
N/A