

Maelor Creamery, Cross Lanes
Wrexham

**Landscape Specification
and
Management Schedule**

C3065
April 2012

Cassidy⁺
Ashton

V4-C

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SPECIFICATION

Landscape Architects Drawing No. C3065 LS01

Landscape scheme to be implemented within the first planting season following construction of the development.

D20 EXCAVATING AND FILLING

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

- 150 EXISTING SERVICES: To be confirmed with the CA
- 160 SITE FEATURES TO BE RETAINED: The Contractor to ensure that all features to be retained are protected from damage. Damage by the Contractor during the works to be rectified at the Contractor's expense.
- 191 WORK NEAR EXISTING TREES AND HEDGEROWS/SHRUBS WHICH ARE TO BE RETAINED: Do not carry out ploughing, ripping or tipping of soil within 3m of the branch spread of trees or 1m of hedgerow/shrubs.
- 192 EXISTING TREES AND HEDGEROWS/SHRUBS TO BE RETAINED: The Contractor shall take all due care to safeguard existing vegetation to be retained. Every precaution is to be taken to avoid damage to the roots, stems or crowns of existing vegetation. Unless absolutely necessary, no tree roots over 40mm to be severed.
- The Contractor is to replace any vegetation which in the opinion of the CA has been killed, removed without approval or severely damaged. Any replacement must be carried out using plants of the same species and appropriate size as agreed with the CA.
- 193 TREE SURGERY: All surgery to trees being retained is to be carried out by a qualified arboriculturalist as approved by the CA.
- 194 PROTECTION OF VEGETATION: Protect existing vegetation with 1.0m orange polyethylene warning barrier. Support fence with steel posts at 2.5m centres. No materials are to be stored within the fenced off zones and no fires are to be lit within or adjacent to it.

EXCAVATING

- 260 FORMATIONS GENERALLY: To be inspected before new work is laid on them. Give CA not less than 24 hours notice of when formations will be ready for inspection.
- 270 HARDSTANDINGS: In situ hardstandings retained below planting beds are to be broken up to allow free drainage. Rip subsoil to break up compaction in advance of loose tipping topsoil.
- 271 FOUNDATIONS GENERALLY: Obtain instructions if:
1. A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawing.
 2. The formation contains soft or hard spots or highly variable material.
- 330 UNRECORDED FEATURES: Where old foundations, beds, basements, filling tanks, pipes and drains, etc. not shown on the drawings are encountered, obtain instructions before proceeding.

DISPOSAL OF MATERIALS

- 410 TOPSOIL: Stockpile any excavated topsoil in temporary spoil heaps for re-use. Spoil heaps not to be more than 2m high. Treat with a suitable herbicide to prevent weeds. Avoid compaction and contamination.
- 430 SURPLUS SUBSOIL: Remove from site and dispose of all surplus material not to be used for levelling.

FILLING GENERALLY

- 510 HAZARDOUS MATERIALS: Do not import or use fill materials which would either in themselves, or in combination with ground water or other materials, give rise to a health hazard, damage to structures or instability in the fill.
- 530 PLACING FILL GENERALLY:
1. Ensure that excavations and areas to be filled are free from loose soil, rubbish and standing water.
 2. Do not use frozen materials or materials containing ice. Do not place on frozen surfaces.
 3. Take all necessary precautions to ensure stability of adjacent structures. Place and compact fill against structures, membranes or buried services in a sequence and manner which will avoid damage.
 4. Plant employed must be suited to the purpose
 5. Lay different materials so that only one type of material occurs in each layer.
- 840 IMPORTED SOIL: The minimum standards required for imported soil forming materials to be used in the creation of woodland areas are to comply with Forestry Commission BPG Note 5. Ensure that sufficient subsoil and topsoil are

imported to achieve the recommended 1m depth of growing medium required for healthy root growth. Imported subsoil must be reasonably free of stones, roots, builders material and foreign matter. Do not use subsoil contaminated with rubbish, oil-based products or other toxic materials. The Contractor shall be able to provide details of the source of all material brought to site.

- 841 TOPSOIL: Provide as necessary to make up any deficiency of topsoil and to complete the work. Topsoil must conform to BS 3882. It must be reasonably free of stones, weed seeds, roots, sticks, builders materials and foreign matter. Topsoil must be from an approved source and the Contractor shall be able to provide a full soil analysis of a sample of the imported topsoil upon request.
- 850 CONTAMINATION: Do not use topsoil contaminated with subsoil, rubbish, oil based products or other toxic materials. Dispose of contaminated topsoil as instructed.
- 860 SPREAD TOPSOIL: over prepared subsoil in layers not exceeding 150mm and firm each layer before spreading the next. At any time of laying, both the weather and the material must be reasonably dry. Overall minimum depths after firming and settlement to be:
Under grassed areas – 150mm
Under planted areas – 450mm
- 880 FINISHED LEVELS OF TOPSOIL: After settlement, unless otherwise stated, levels to be 30mm above adjoining paving or kerbs and married in with adjoining areas.
- 881 CONSTRUCTION OF EARTH MOUNDS: Break up existing hardstanding beneath mounds according to Clause 270 above. New earth mounds to be constructed according to Engineer's specification. Topsoil/subsoil depth over new mounds to be a minimum of 1m over broken hardstanding/inert building waste used for mound construction.

Q30 SEEDING AND TURFING

To be read with Preliminaries/General Conditions and Drawing No. C3065 LS01

GENERAL REQUIREMENTS

- 110 TOPSOIL: All topsoiling works to be carried out in accordance with Section D20.
- 120 CLIMATIC CONDITIONS: Carry out the work during appropriate seasons and while soil and weather conditions are suitable for the relevant operations.
- 130 MACHINES AND TOOLS: Use only machinery and tools suitable for the site conditions and the work to be carried out. Use hand tools around trees, plants and in confined spaces, where it is impractical to use machinery.
- 140 WATER: will be provided by the Main Contractor up to Practical Completion of the main contract works and/or thereafter by the Employer, in each case subject to the availability of supply.
- 150 DROUGHT CONDITIONS: If water supply is or is likely to be restricted by emergency legislation:
- Inform CA without delay and ascertain availability and additional cost of second-class water from sewage works or other approved source.
 - If seeding or turfing has not been carried out, do not do so until instructed.
- 160 NOTICE TO CA: make advance arrangements with CA to give him the opportunity to be present during:
- Setting out
 - Application of fertilisers
 - Seeding or turfing
 - Maintenance visits
- 170 SETTING OUT: Clearly mark boundaries of areas to be seeded or turfed and obtain approval before starting work.
- 180 CHEMICALS GENERALLY: Use only when specified and approved, and then only products on the current list of Defra approved agricultural chemicals. Where work is near water, drainage ditches or land drains, comply with Defra Code of Good Practice for the use of herbicides. Observe all precautions recommended by the manufacturer and remove containers from site immediately they have been emptied or are no longer required.

PREPARATION

- 210 HERBICIDE: Always use a type recommended for the purpose. Apply to perennial weeds and allow the time recommended by the manufacturer to elapse before cultivation.

- 220 SAND: Coarse grained, washed river sand with neutral pH.
- 250 CULTIVATION: Break up any compacted topsoil to full depth. Reduce top 100mm to a fine tilth.
Remove undesirable material brought to the surface including stones and clay balls larger than 50mm in any dimension, roots, tufts of grass and litter.
- 260 GRADING: When topsoil is reasonably dry, grade to smooth, flowing contours, with falls for adequate drainage, removing all minor hollows and ridges.
Finished levels should be 30mm above adjoining paving, kerbs, manholes, etc.
- FINISHED LEVELS OF TOPSOIL: Unless otherwise stated, topsoil after settlement should be:
- 30mm above adjoining kerbs/manholes/etc.
 - not less than 150mm below dpc of adjoining buildings
 - 30mm higher for shrub areas than adjoining grass
 - married in to existing levels.
- 270 FERTILISER: Three to five days before turfing and before final cultivation, apply a general fertiliser to amenity grass areas to be turfed, to approval of CA. Apply at rates specified by manufacturer.

GRASS AREAS GENERALLY

320 GENERAL

The Contractor will carry out all work in this specification in accordance with BS 4428 General Landscape Operations, using materials and specified grass seed mixtures/turf approved by the CA all of which to be purchased by the Contractor.

330 GROUND PREPARATION

(i) The topsoil will be cultivated to a depth of 100 mm avoiding the disturbance of the subsoil, by mechanical means approved by the CA or by hand cultivation on banks or confined areas. All stones, weeds, roots and other deleterious material, which is brought to the surface, shall be removed from site and disposed of.

(ii) Soil must be cultivated to a friable tilth by treading, firming and raking or by methods to be approved by the CA.

(iii) Operations must not be carried out during periods of inclement weather, i.e. when the ground is wet, frosty or waterlogged. Timing of operations will generally be confined to the spring and autumn periods or as instructed by the CA in accordance with specifications.

(iv) Any areas to be turfed will have a base dressing of an approved granular pre-seeding fertiliser applied at the rate of 40g per sq.m. The dressing will be applied by means of approved fertiliser distributor machinery or by hand in small or confined areas, and then lightly worked into the surface with a harrow

or rake.

(v) Before seeding/turfing, the areas will be brought to a fine tilth by approved mechanical means or by hand raking, and if necessary regrading of the surface will be carried out to conform to the prescribed finished levels. The Contractor will remove all stones over 50 mm in diameter. The final level will be 10 mm above any adjacent hard surface area.

340 SEEDING/ACCEPTANCE OF SEEDED AREAS

(i) After cultivation operations have been carried out, the area will be sown with an approved grass mix as specified for each area at by either hand or mechanical means, ensuring an even distribution.

(ii) Grass seed will be stored off the ground in a clean, dry place free from vermin. The Contractor may be required to submit certificates for all grass seed stating the seed source, mixture and percentage germination.

(iii) Following an even distribution of seed, the Contractor will carry out a light raking or light harrowing of the area and ensure consolidation of seed with soil by use of a light roller.

(iv) All reasonable precautions shall be taken to ensure that pedestrian and other traffic does not cross areas during cultivation, nor until the grass is established.

(v) Grass areas will only be 'accepted' by the CA as reaching practical completion when germination has proved satisfactory, all noxious and invasive weeds have been removed and the Contractor has carried out the first cut. The height of the first cut should not be lower than 50mm.

(vi) Where in the opinion of the CA excessive subsidence of seeded areas arises, such subsidence must be made good, raising all depressions with good quality topsoil, carrying out the necessary cultivations, fertilising and seeding as previously specified and as required by the CA. The Contractor will allow for reseeding any bare patches with previously specified mixture. In instances where reseeding will not be successful, the CA will require the area to be turfed.

400 TURFING

410 TURF: To BS 3969:1998 and from an approved source. Turf to be free from undesirable grasses and weeds. The CA reserves the right to inspect and reject any turves.

420 STORAGE: Turves to be arranged to avoid stacking for more than three days. Do not stack more than three turves deep. Use turves that show any signs of deterioration immediately and keep moist.

430 TURFING GENERALLY: Do not lay turf when persistent cold or drying winds occur or when the soil is frost bound, waterlogged or excessively dry. Area to be turfed to be graded with a fine layer of sifted topsoil and sand. Lay turves with

broken joints, well butted up, working from planks laid over previously laid turf. Use whole turves at the edges. Trim to a true line. Adjust levels by raking out or infilling with fine soil under turves. Consolidate lightly using wooden beaters as laying proceeds. Do not use heavy rollers. Dress turf with finely sifted topsoil/sand and brush in well to fill joints. Thoroughly water the completed turf within 24 hours of laying.

PROTECTING/WATERING/CUTTING (BEFORE PRACTICAL COMPLETION)

- 520 WATERING: During establishment of the grass area, ensure that sufficient water is applied to maintain healthy growth. The Contractor will be responsible for carrying out watering without specific instruction from the CA.
- 530 FIRST CUT OF LAWNS: When grass is approximately 75mm high remove debris, litter and all stones and clay balls. Cut to approximately 50mm high. Remove and dispose of all arisings.
- 580 MAINTENANCE CUTTING: Between the first cut and practical completion, the grass must not exceed 50mm.
- 580 CLEANLINESS: Remove soil and cuttings from all hard surfaces and leave the works in a clean and tidy condition.

MAKING GOOD DEFECTS/MAINTENANCE (AFTER PRACTICAL COMPLETION)

- 610 FAILURES OF SEED/TURF: Bare areas and areas of dead grass apparent before the end of the Defects Liability Period will be regarded as defects due to the materials or quality of workmanship and not in accordance with the Contract. They must be made good by re-cultivation and/or re-turfing at times agreed with the CA and at the Contractor's expense.
- 620 GRASS MAINTENANCE: Throughout the Defects Liability Period carry out maintenance as Clauses 520-580 above.
- 630 FERTILISER: During the Defects Liability Period, apply a general-purpose fertiliser according to the season.
- 640 EDGES TO SEEDED/TURFED AREAS: At the end of the Defects Liability Period form edges to kerbs, planting beds and around newly planted trees and at the base of walls and seating areas with a suitable edging tool to give clean lines and flowing curves. Draw back the soil from the edge to permit the use of edging shears and remove all arisings.

Q31 PLANTING

To be read with Preliminaries/General Conditions and Drawing No. C3065 LS01

GENERAL REQUIREMENTS

- 110 TOPSOIL: All topsoiling works are to be carried out in accordance with Section D20.
- 120 CLIMATIC CONDITIONS: Do not carry out planting when persistent cold or drying winds are likely to occur or soil is frost-bound or excessively dry. Protect sides of tree pits from freezing and do not use backfill material.
- 121 ADEQUATELY PROTECT the work from plant and damage by the weather, traffic and other causes.
- 122 SEASON: Carry out planting only when the soil and weather conditions are suitable for the operation. Plants should only be moved during the following periods:
- Containerised/Root-balled trees and shrubs: at any time if ground and weather conditions are favourable. Preferably September to early May.
- Herbaceous plants: September and October or March to April.
- 150 DROUGHT CONDITIONS: If water supply is likely to be restricted, the Contractor must inform the CA without delay and ascertain the availability and extra cost of second class water from an approved source. If planting has not been carried out, do not do so until instructed.
- 161 NOTICE TO CA: The Contractor shall inform the CA 48 hours before carrying out the following operations:
- Setting out plants
Planting
Mulching
Each site visit during maintenance periods.
- 180 CHEMICALS GENERALLY: Chemicals should only be used on site where no alternative is available to carry out the required task. Use only approved chemicals. Observe all precautions recommended by the manufacturer and remove containers from site immediately they have been emptied or are no longer required.
- 182 TREES/PLANTS GENERALLY: Plants must have been obtained from an approved source and grown in such a way as to be appropriate for their planting position.
Adequately and carefully pack and protect against mechanical damage, extremes of temperature and drying out during transit.

Trees should arrive on site having been carefully packed and protected during uplift and transit. Standard and EHS trees should be grown in air pots and have an established fibrous root system.

Containerised plants must not be obviously diseased, potbound, nutrient deficient and the containers must be free of weeds.

183 DISEASED PLANTS: The Contractor must ensure that his supplier's stock is free from Phytophthora and stem die-back. Should such diseases become evident within 6 months of planting, these plants will be replaced at the contractor's expense and the replacements subject to the same guarantees.

185 SUBSTITUTES: No substitutions are to be made without the approval of the CA.

186 STORAGE: Plants which are not to be planted on the day of delivery to site should be stored in a sheltered location protected from extremes of temperature.

Root-balled plants should be planted close together and root balls covered.

Water all stored plants immediately and maintain watering as necessary.

240 PROTECT existing grass during planting operations by laying boards or tarpaulins. Do not place excavated material directly onto grass.

250 SURPLUS MATERIAL: to be removed from site, including stones, debris, wrapping materials and prunings.

PLANTING TREES

310 EVERGREENS: Dip in or thoroughly spray with antidessicant before delivering to site. Do not apply in frosty weather.

350 NURSERY STOCK TREES: To BS 3936: Part 1.
Tree pits to be 900mm x 900mm x 600mm depth minimum. Where necessary increase dimensions to ensure pit is larger than rootball. Break up the bottom of the tree pit to a depth of 150mm. Remove container/packaging.
Cut back any broken or damaged roots to healthy growth. Plant trees upright in the centre of pit at their original soil depth. Backfill around the rootball in layers of 150mm, taking care not to disturb roots.

362 BACKFILL: Thoroughly mix existing topsoil with 750gms of approved fertiliser and 40L of approved Tree Planting and Mulching Compost. Place back filling material in layers and firm each layer, taking care not to damage roots. Water trees thoroughly after backfilling.

370 SUPPORT: Support trees with single stake placed on the windward side and drive vertically at least 150mm into the bottom of the pit. Cut off stake just below first crotch of the tree. Consolidate material around stake during backfilling. Secure tree to the stake firmly, but not tightly with two (2no) rubber tree ties with central spacers.

390 DAMAGED STAKES: Replace any stakes which are split. Remove snags and burrs which may cause chafing of the tree.

391 PRUNING TREES: Immediately after planting trees, carefully cut back to between 5mm and 10mm of a live branch, any dead, damaged or diseased, weak or malformed branches or suckers. Leave a clean wound with no snags. Dress all cut ends with appropriate sealant.

PREPARATION OF PLANTING BEDS

411 HERBICIDE: Perennial weeds to be treated with a glyphosate herbicide at least two days prior to cultivation.

412 GENERAL FERTILISER: Bone meal of a medium fine texture, containing not less than 20% soluble potash and 3-5% nitrogen is to be applied to areas of bulb planting.

450 COMPOST: Spread mushroom compost over all planting beds to a depth of 50mm.

460 CULTIVATION: Break up any compacted topsoil to full depth.
Within a few days before planting, cultivate top 300mm of all planting beds by rotavating and/or double digging. Leave surface regular and even.
Remove undesirable material brought to the surface, including stones and clay balls larger than 50mm in any dimension, roots, tufts of grass and foreign matter.

461 CULTIVATION: Where small beds require cultivation this shall be carried out by hand to achieve the results specified in Clause 460.

462 FINAL GRADING: When topsoil is reasonably dry and workable, grade to smooth flowing contours, with falls for adequate drainage, removing all minor hollows and ridges. Ensure that slopes are rounded off at the top and bottom.

463 FINISHED LEVELS OF TOPSOIL: After settlement, to be:

1. 30mm above adjoining paving, kerbs, etc
2. Not less than 150mm below dpc of adjoining building
3. Married in with adjacent soil areas
4. 30mm higher for shrub areas and adjoining grass areas.

PLANTING SHRUBS/HERBACEOUS PLANTS

510 EVERGREENS: Dip in or thoroughly spray with antidessicant before delivering to site. Do not apply in frosty weather.

520 PLANTING GENERALLY: Before planting remove any non-perishable containers and carefully prune any badly damaged roots.
Plant upright with best side to the front. Carefully return excavated topsoil, packing around evenly spread roots or root ball and heel well in.
Water plants thoroughly immediately after planting, using a fine rose.
After planting, cut back any dead, damaged or diseased wood to encourage healthy growth and a good shape.

After planting fork and/or rake soil to a fine tilth.

- 521 MULCH: Mulch the whole surface with 50mm depth of wood bark mulch.
- 530 SHRUBS: To BS 3936: part 1. Planting holes to be 150mm wider than root spread and 400mm deep. Finished level to be at the original soil mark on shrubs and 30mm above the surrounding level to allow for settlement.
- 550 CLIMBERS: Planting holes for climbers to be 300mm wider than root spread and 500mm deep.
Plant 150mm clear of tree with roots spread outward. Lightly secure branches to supports. Retain canes where plants are too small to reach supports.
- 560 HERBACEOUS PLANTS: Well rooted, healthy, hardy plants of not less than one year's growth. Plant carefully in generously sized holes with finely broken soil returned around the roots. Lightly firm the soil.
- 573 WATER: Water all plants thoroughly immediately after planting using a fine rose.

PROTECTING/MAINTAINING/MAKING GOOD DEFECTS

- 620 WATERING (BEFORE PRACTICAL COMPLETION): During establishment of planting ensure that sufficient water is applied to maintain healthy growth.
- 630 CLEANLINESS: Remove soil from all hard surfaces and grassed areas and leave the works in a clean and tidy condition up to Practical Completion.
- 631 MAINTENANCE PRIOR TO PRACTICAL COMPLETION: The contractor will be responsible for carrying out all maintenance operations, including watering, in a Practical Completion Certificate.
- 632 PRACTICAL COMPLETION: The contractor is responsible for re-instating any defective work and replacing defective materials upon the receipt of a Practical Completion snagging list. The rectification of snagging items must not remain outstanding until Final Completion.
- 633 MAINTENANCE: A 5 year maintenance contract is to be put in place and the contractor is to allow for 12no. maintenance visits per annum. A maintenance schedule is to be completed by the contractor at the end of each visit and issued to the CA.
- 634 DEFECTS LIABILITY PERIOD: Any trees, shrubs or plants which are dead, dying or in the CA's opinion, defective, 12 months after Practical Completion, shall be replaced by approved equivalent species, unless otherwise instructed. This will not apply if the defects have arisen through malicious damage or theft.
- 635 FINAL COMPLETION DATE: Where the final completion date is between 15 March and 15 November, the contractor must allow for replacement of plants with container grown stock.

- 636 SNAGGING LIST: The contractor shall note that the issue of a snagging list by the Landscape Architect during the defects period, is a guide only and does not relieve the contractor of his full responsibility to replace all dead, dying or defective plants up to the end of the defects period.
- 653 IRRIGATION: The contractor shall allow for irrigation of all planted areas to field capacity, to ensure that they are kept moist throughout the defects liability period. The contractor shall be responsible for assessing the requirements for and carrying out watering without specific instructions from the CA. However, he shall inform the CA of his intention to water.
Failure to carry out watering may result in another contractor being brought in to carry it out and the cost of such action deducted from the contract sum.
- 654 WEEDING AND CULTIVATION: Keep all planted areas completely clear of weeds at all times by appropriate cultivation and use of suitable herbicides if necessary.
- 657 PRUNING: Prune plants at the appropriate time to remove dead or dying and diseased wood and suckers, to promote healthy growth and natural shape. Dress cut ends over 25mm dia with appropriate fungicidal sealant.
- 658 DEAD HEAD PLANT MATERIAL: Carry out dead heading at the appropriate time of year for each species. Dispose of all arisings from site.
- 659 HERBACEOUS PLANTS AND BULBS: Provide canes as required. Cut down herbaceous plants and remove dead foliage at the appropriate time of year. Retain all markers.
- 661 GROUND COVER PLANTING: Any ground cover planting overhanging the kerbs or path edges are to be cut back at 45° angle.
- 662 FERTILISERS: Apply appropriate annual general fertiliser to all areas as recommended by the manufacturer.
- 663 TREE STAKES/SHELTERS/CLIMBER SUPPORTS: Check conditions of all stakes, ties, shelters, canes and supports each visit. Replace broken or missing items. Adjust ties if necessary to avoid chafing. Remove stakes, canes and shelters when they are no longer required.
- 667 RE-FIRMING PLANTS: re-firm all wind or frost-loosened plants immediately.
- 668 HAND SWEEPING: Hand sweep all footpaths and hard surfaces using a stiff brush to remove leaf litter and other debris. Dispose of off site.
- 669 LEAF RAKING: Hand rake/vacuum grass during leaf fall. Collect and remove from site.
- 670 PESTICIDES: Apply appropriate chemical as necessary to combat insect/ pest attack or disease.

671 CLEANLINESS: Remove soil, mulch, etc from all hard surfaces, any stones which come to the surface of planted areas during the defects period and rubbish from site to the Contractor's own tip.

MANAGEMENT SCHEDULE

1.0 SITE DESCRIPTION

A large belt of existing woodland lies to the east and south of the site following the line of a disused railway and the slopes of the escarpment alongside the River Dee. Native tree and shrub planting is proposed to link existing woodland around the site. The woodland is in poor condition and lacks the natural structure associated with woodland of this type. There is little or no natural under-storey and limited ground cover. The natural regeneration which is taking place is generally from self-seeded Sycamore and Ash, and the native tree cover of predominantly Oak is rapidly declining, with only a few mature Oak trees remaining.

There is no public access to the woodland, which remains solely in private ownership.

Within the site there are several stands of young and semi-mature trees which have been planted as the creamery has developed. Areas of tree and shrub planting of mixed age are proposed along the site frontage onto Pickhill Lane. There is some existing hedgerow planting on the northern boundary along Pickhill Lane, and it is proposed that this is continued along the full length of the site boundary with the lane.

Within the site, cultivars of native trees and shrubs are proposed next to the car park and the entrances to buildings.

2.0 CONSTRAINTS

Sustainability: The main constraint to the development of the site is the long term sustainability of the proposed planting as a whole. The site is a working processing and packaging plant and is constrained by development and road corridors.

Natural regeneration: The proposed woodland requires management to achieve its full ecological and visual potential. Managing the species composition will ensure that the woodland does not become dominated by Sycamore and Ash. The woodland is susceptible to the effects of Ash dieback (*Calara fraxinea*) and a more diverse species mix would ensure that tree cover is maintained.

Squirrel/deer damage: Bark stripping of young oak can reduce the viability of the regeneration of young trees. Grey squirrels and deer would have an impact on the regeneration of oak as trees are attacked during pole stage.

Invasive exotic plants: Present in all woods and includes Rhododendron, Cherry Laurel and Snowberry.

Fire: Potential for damage in drier periods within the woods.

3.0 MANAGEMENT OBJECTIVES

The prime objectives are as follows:

- To maintain a cohesive vegetation framework along the boundaries of the site, to integrate the development within its rural location.
- To achieve a well-managed native woodland around the periphery of the site which is managed in line with UK Forestry Standard (1997 3rd Ed.) and good silviculture practice.
- To protect and enhance the existing woodland and its indigenous ecology.
- To provide new woodland with a favourable conservation status.
- To adopt the principles of 'continuous cover' management promoting an uneven age-class structure which relies on natural regeneration to provide successive generations of young trees.
- To maintain / enhance woodland biodiversity.
- To ensure a minimum of 10% and maximum of 30% open space to enable the introduction and regeneration of woodland under-storey flora, without compromising the screening function of the woodland around the site.
- To control unwanted tree species in the woodland.

The strategy relates to the sensitive enhancement of the semi-natural stand types found in this area, and their associated floristic communities. Planned thinning, felling, regeneration and protection of species will ensure the long term enhancement of the wood.

With regard to the more ornamental planting adjacent to the new buildings, the main objectives are to:

- Create an attractive entrance to the site and an outdoor space for staff.
- To provide a floriferous vegetative cover which is ecologically beneficial.

4.0 MAINTENANCE OPERATIONS

A twenty-five year maintenance plan is to be put in place to achieve the management objectives set out above. Maintenance operations are to be carried out in accordance with Clauses 620-671 of the Landscape Specification. In addition, the following operations are to be carried out on an annual basis between October and March.

Harvesting: Selective thinning on a rotational cycle is to be undertaken in the existing woodland areas to promote the conservation of the native Oak/Ash stand. Thinning will increase the light levels to the woodland floor, enabling the natural regeneration of under-storey species and increasing the habitat diversity of the woodland. In addition, it will ensure that the health of the woodland is monitored and that diseased or decaying specimens are swiftly removed from the site. Coppicing of elms along the southern site boundary should be undertaken on a five year rotation to encourage natural regeneration.

Establishment, re-stocking and regeneration of new native woodland: New planting is proposed to compliment the existing species mix of the adjacent woodland and rejuvenate the

diversity of the wood. All new planting should be kept weed free around the base of each plant by the use of weed suppressant mats to promote healthy and vigorous growth. Use of herbicides will not generally be accepted, except in extreme circumstances and only by approval. An annual review of plant failures should be carried out each year to assess losses and replacement planting carried out as necessary to the same specification. If losses are due to disease, seek professional advice before proceeding.

Protection and maintenance: It is proposed that no pesticides are used in proposed or existing woodland to prevent run-off into the River Dee. Herbicide will not generally be accepted, except in extreme circumstances when it is required to eradicate and control the spread of invasive exotic species, such as Rhododendron and noxious weeds like Hogweed or Japanese Knotweed. Full boundary assessments must be undertaken to discourage unauthorised access, and the site will be monitored to reduce the risks of fly-tipping and fire. Boundaries will be securely fenced to minimise such disruption.

Phased felling: Thinning will take place on 5 year cycles, aiming to remove invasive species from the wood and nurture the climax canopy of Oak, self-sown Ash, Elm, Hornbeam and Lime. Thinning will aim to maintain 60% of the canopy at any one time, but will also avoid even removal of trees in order to create open glades and an uneven age structure. Extraction of timber will be carefully planned to minimise ground damage and wherever possible, the timber is to be sold to local merchants. The creation of clearings will release dormant regeneration, allowing development of a more floristic woodland floor, whilst not compromising screening provided by vegetation in views towards the development.

Fire plan: The woodland is too small to have a specific fire plan, and fire breaks are considered to be out of context. Some woodland residues, such as lop and top, will be left in situ to provide a deadwood resource, although most will be chipped and removed from site. The burning of timber on site will be discouraged.

Game management: All new planting will be protected by rabbit guards to ensure the successful establishment of plants. Squirrels are a threat to the future sustainability of broadleaved woodlands, especially oak woods. Bark stripping can kill branches or entire trees and such damage often results in a weak point where wood decay can set in. Control of squirrels is possible from shooting, setting out live trapping or poison dispensing hoppers.

Protecting and enhancing landscape, biodiversity and special features: Measures to protect and enhance biodiversity will include:-

- encourage natural regeneration of native species
- promote an un-even age class structure to provide structural diversity
- provision of early and late successional habitats i.e. open glades, old trees and deadwood
- limiting damaging activities such as unauthorised access
- eradicating invasive exotics e.g. Rhododendron
- discouraging fly-tipping
- limiting felling operations during spring and summer during breeding times of woodland fauna
- monitoring the woodland for disease which may result in long term damage to the structure of it.

Hedgerows: Hedgerows along the site boundary are to be cut every three years in January/February using an appropriate hedge-cutting flail. Care is to be taken to avoid damage to the standard trees planted along the hedge. Dead and over-mature woody stems are to be cut out as necessary to encourage new shoots, and debris removed from site. Gaps are to be planted with new transplants to maintain a bushy hedge.

5.0 CONTACT DETAILS

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