

LANDSCAPE SPECIFICATIONS

- GENERIC NOTES
- The contractor must ascertain for themselves the exact location of any underground services prior to excavations. Root barriers (to engineers details) shall be installed adjacent to any underground services and between tree and adjacent buildings or structures if the tree is within 10m.
 - All works undertaken and materials should be completed in line with horticultural best practice and in accordance with relevant guidance and most current set out in British Standards at time of project installation. All landscape works should be undertaken by competent and trained personnel with relevant equipment and machinery accreditation.
 - Where possible, all planting should be grown and sourced in the UK and supplied by a local nursery to the project, that has been approved by the Landscape Architect in advance of procurement and installation. Any substitutes should be agreed upon with the client and the Landscape Architect prior to procurement and installation.
 - All arisings to be removed from the site at the contractor's expense unless noted otherwise.

- RESPONSIBILITIES
- Unless otherwise agreed in writing, it will be the responsibility of the Client (or their appointed Site Agent, Manager or contractor) to ensure that all necessary health and safety arrangements and other legislation are complied with (including the identification and location of underground utilities prior to any excavation and the application of any herbicides).
 - All staff must be adequately trained in the tasks they are undertaking and all appropriate risk assessments and method statements must be completed in advance. Appropriate insurance must be maintained by any contractor or sub-contractor.
 - The main contractor and any sub-contractors are to be briefed by the Site Agent / Manager on the relevant sections of this prior to commencing any works.
 - The Client (or their appointed Site Agent / Manager) is responsible for contacting the LPA at any time issues relating to the trees on site are raised.

- GROWING MEDIUMS AND SOIL DEPTHS
- All topsoil and subsoil used in planting areas must be in accordance with BS3882:2015, BS8545:2014, and BS8601:2013. Soil Analysis should be undertaken by a soil scientist prior to works.
 - If imported soil is used, it should must be in accordance with BS3882:2015, BS8545:2014, and BS8601:2013 certified as such and analysed by an approved soil scientist prior to works. Samples should be delivered to site for CA approval.
 - Topsoil heaps location and dimensions should be agreed with site manager and stored no deeper than 2 metres to retain aeration and dry properties prior to cultivation. Should the soil show signs of being anaerobic, works are to stop, soil heap is to be tested and heap is to be spread to allow for proper aeration and sample tested prior to works recommencing. Use of tracked machine for heap and protect heap from wet weather throughout works.
 - Topsoil shall not contain stones exceeding 35mm dimensions in any direction, soil to be stone picked prior to and post cultivation
 - Subsoil is required to make up levels (600mm+) in accordance with BS8601:2013, be free draining and clean.
 - Ameliorants including all compost types, mulches and soil conditioners used in planting should be peat-free.
 - Any pesticides use (such as herbicides, insecticides, fungicides and slug pellets) should be discouraged due to their effect and harm to surrounding wildlife, as such any pesticides used should be strongly considered against potential harm and if used be non-residual.
 - Planting beds should be properly cultivated to allow for proper aeration and prevent possible waterlogging, topsoil depth should vary depending on planting type (as follows):
 - Tree Planting to receive 400mm depth of approved topsoil (after light consolidation)
 - Shrub Planting to receive 400mm depth of approved topsoil (after light consolidation)
 - Turfed lawn areas to receive 150mm depth of approved topsoil (after light consolidation).
 - Hedgerows to receive 450mm depth of approved topsoil (after light consolidation).

- PLANTING NOTES
- Plant handling at the nursery and transit up to delivery, shall be in accordance with 'Plant Handling' the booklet is published by the Committee for Plant Supply and Establishment (CPSE). The contractor shall comply with clauses 3 & 4 of the above booklet (obtained from The Horticultural Trades Association which refers to the receipt, uploading and temporary storage of plants.
 - Plants shall be first class examples of their species or variety, free from all pests and diseases with good fibrous root systems and materially undamaged. Refer to relevant sections of BS3936 1-4 Specification of Nursery Stock
 - Tree planting must be compliant with BS8545 Table 1, compliance will be assessed post delivery and before planting
 - All planting is to in general compliance with BS.4428:1989 Code of Practice for General Landscape Operations. All trees should be staked or underground guyed in accordance with tree size and soil conditions
 - Works must be carried out when soil and weather conditions are suitable. Do not plant during periods of frost or wind. Planting of bare root and rootball planting should only occur during the planting season, typically between late October to late March. All containerised planting can be planted at any time of the year, should ground and weather conditions permit.
 - Ensure that adequate watering is provided dependent on the plant type, soil type and weather conditions, with particular interest paid to the size of tree planted when determining suitable irrigation frequency and amount for up to three years post-planting.
 - Initial irrigation should occur immediately after planting with watering directly onto the rootball being the preferred method rather than around it. Consideration should be paid to the size of tree canopy to determine the amount and frequency of tree planting due to higher frequency of transpiration when the canopy is larger.
 - Ensure all planting is suitably watered during periods of draught and dry weather, as set out within Landscape Management Plan and in line with best practice guidance.
 - Adequate soil moisture levels should be maintained around all new planting. Regular watering should be undertaken to ensure that the soil remains moist particularly during periods of hot weather and/ or low rainfall particularly during growing season (March-November).

- TREE PLANTING
- All trees should be provided with adequate rooting volume and spacing for future root and canopy growth. Where possible this should be done through natural soil conditions (e.g verges and planting within soft landscaping), if not possible the use of structural tree soils or root cell systems should be considered alongside species requirements.
 - All tree planting plans should be read in conjunction with tree pit details and root volume information where provided.
 - Unless otherwise shown tree pits should be a minimum of 400x400x150cm deep. The soil profile to be 400mm topsoil over 600 - 700mm subsoil. Percolation tests as per BS 8545 will be undertaken and drainage problems remedied in consultation with a soil scientist.
 - Each tree pit excavated to be inspected following excavation to assess soil conditions, topsoil conditions, and need for positive drainage pipework.
 - All rootballed trees should be planted with well-aerated and free-draining soils to the full depth of the tree pit, as such, an appropriate free-draining sandy subsoil should be used within the cells in the lower portion of the tree pits, with imported topsoil used within the upper cells.
 - Where necessary a 100mm layer of horticultural grit should be included at the base of the trench to aid in free draining, with topsoil/ subsoil depths approved based on nursery and soil scientists recommendations for positive tree establishment. If the ground conditions result in the base of tree pits drainage being poor or soil compacted, positive drainage methods may be introduced to allow for the trees to thrive.
 - Tree Supports: Unless stated otherwise the trees should be provided with suitable supports and biodegradable tree ties as set out within tree pit details. These support structures should be removed within two growth seasons. Supported trees that are failing to anchor after this season/ stage should be replaced but only following consideration of likely reasons for failure and changes to planting specification should be enacted as necessary.
 - Suitable supports for tree planting should be considered on a case by case basis, however as a rule of thumb the following tree staking/ anchoring guidance should be followed, alongside consideration of the soil conditions for supports:
 - Up to Standard Trees: Single Staked
 - Staking should be as low as possible (less than a third of the height of the clear stem height) with both anchoring and staking allowing for wind rock. Regular maintenance and snagging visits should be undertaken by a qualified arboriculturalist or landscape architect to monitor the overall tree health, assess the quality of staking and underground guying to report any circumstances of broken staking, stem strangulation, chafing or abrasions to stems, or failure and disease of trees going unrecorded.
 - Tree Guards should be used to protect planting from vandalism, stimmer damage, mammals and UV rays. Should these be required the use of biodegradable, bamboo or plastic tree guards should be considered. Appropriate maintenance schedules, adjustment and removal provisions should be made, with these elements removed after two growing seasons.
 - Fertiliser and compost should be applied to the tree immediately at time of planting, and therefore the need for feeding the tree within the first year should be reduced. However should the tree show signs of nutrient deficiency in its leaves, appropriate fertilisers in line with manufacturer's recommendations (either through granular fertiliser to the base or liquid fertiliser directly onto the canopy) can be used. Annually the tree can be fed with a slow release fertiliser as per manufacturers recommendations, as required.
 - All trees to be planted with appropriate aeration and irrigation pipework installed to manufacturers recommendations
 - Green Spaces The plans indicate a small amount of green space around the development. It is recommended that all small bushes are kept to a maximum height of 1m. Any larger trees should be undercut to 2m. This then allows at minimum a 1m line of sight and surveillance across the site.

- ROOTBALL WRAPPING
- Natural Hessian: If untreated (biodegradable), can be left in place to break down over time. It should be loosened and cut away from the top and sides of the rootball to prevent root girdling.
 - Any jute or biodegradable twine should be cut away from the top of the rootball and trunk to prevent strangulation as the tree grows.
 - If treated or synthetic hessian, it should be removed completely to avoid restricting root growth.
 - Plastic or non-biodegradable materials must be completely removed before planting.

- ROOTBARRIERS
- Linear root barriers are to be installed in locations confirmed by the project engineers to protect services and surface treatments as required. Root barriers shall be installed adjacent to any underground services and between trees and adjacent buildings or structures if tree is within 10m (from trunk)
 - Root barriers should be a minimum of 1.2m from the trunk and as close to the surface as possible.
 - Linear root barriers should be installed to manufacturers guidance, with a recommended minimum of 600mm depth when adjacent to surface treatments. If root barriers are required to protect services or below ground attenuation, the root barrier is recommended to extend 300mm lower than services, with specific requirements being coordinated with engineer's drawings.

- MULCHING AND WEED CONTROL
- All planting areas (trees, shrubs and hedges) to be mulched with medium grade bark laid to depth of 50mm to 100mm
 - Areas around the base of new planting to be kept free from complete vegetation preferably by hand weeding and use of mulch. If herbicides are to be used to control competing vegetation then they must be carefully selected and applied in accordance with the product label and any legislative controls (including operator use) in order to avoid environmental contamination or damage to trees
 - Avoid mulching altogether where newly planted trees can be managed by hand weeding (not strimming or chemical application) and the soil is well structured and resistant to staking damage
 - Avoid applying mulch over the rootball surface (typically approximately 20cm from the stem) though a thin skim of 25mm is acceptable particularly where the soil may be protected from slaking damage or rapid stem flow damage where smooth barked trees are planted.
 - Aim for a radial application of 1.20m, increasing this as appropriate for very large trees beyond the rootball. Mulch depths may increase up to a maximum of 75mm but typically 50mm increase mulch extent in whatever direction is available if the planting site is constrained.
 - Where soils are clayey or wet/prone to waterlogging void thick mulch applications and use a coarse mulch with large particles. Avoid fine textured, deep applications of mulch where soils are clayey and wet/prone to waterlogging.
 - Finer textured mulches included well-rotted composts may be used on fine-textured sandy soils, so long as they are free draining and so long as the mulch is worked gently into the surface soil horizon (keyed in) rather than sitting on the soil surface where it may form an interface with underlying soil.
 - Ensure that aeration and irrigation inlet caps sit above the mulch and feature a filter to prevent clogging where fine textured mulch is used.
 - Never use geotextiles, weed membranes or similar when applying mulch circles
 - Maintain mulch circles for 3 years (or more if establishment is slow) but remove mulch circles if they are causing harm (e.g. impeding water and air movement) and consider alternative management.

- PLANTING SHRUBS AND HEDGES
- Planting Shrubs: To receive a minimum of 400mm depth of approved topsoil. Shrubs are to be planted in prepared beds which have been backfilled and firmed up to the nursery level.
 - Bareroot Shrub Planting is to be planted during dormant season between November and March. However planting should be avoided if the ground is frozen. Shrub planting that is herbaceous/ perennial/ container grown should be planted in Spring (March to May) or Autumn (September to October) avoiding mid-summer planting due to the soil drying too quickly.
 - Where planting is adjacent to building or walls, a minimum of 300mm buffer gravel strip should be placed to enable maintenance access and prevent planting damaging facades.
 - Planting Hedges: Formal hedges are to be planted in double or triple staggered rows (unless otherwise specified) alongside the installation of a central timber post and 3 wire fence to aid establishment, unless additional boundary treatment has been specified.
 - Rabbit proof fencing, spiral canes or tree guards may be required to aid the establishment of planting and protect from mammals.

- FLOWERING LAWN MIX:
- EL1 Flowering Lawn to be sown into a free-draining low to moderately fertile loam or sandy loam topsoil.
 - Topsoil depth not to exceed 150 mm. No fertiliser or compost enrichment shall be incorporated.
 - Ground to be free of perennial weeds and prepared to a fine firm flitt prior to sowing.

- WILDFLOWER MEADOW SLOPES:
- Provide 100-150mm depth low-fertility sandy loam topsoil, free from perennial weeds and excessive organic matter. Prepare to a firm, fine seedbed and do not fertilise.
 - Sow Emorsgate EM2 Standard General Purpose Meadow Mixture or approved equivalent at manufacturer's recommended rate. Incorporate naturalising native bulb planting within meadow areas, including Narcissus pseudonarcissus, Galanthus nivalis and Crocus tommasinianus, planted in informal drifts at approximately 3-5 bulbs/m², with higher concentrations locally to create naturalised groups.
 - Plant bulbs during autumn prior to meadow establishment where practicable.
 - Provide biodegradable erosion-control matting to slopes where required to prevent soil erosion and assist establishment.

- SWALE PLANTING
- CIRIA C753 recommended free-draining, fertile but not nutrient-rich soil, 300 mm BS3882 sandy loam topsoil over 500 mm BS8601 subsoil, seeded with a native wet meadow mix EM8, with moisture-tolerant plug planting in the base. 6-9 plugs/m² in naturalistic drifts.
 - Mix of slope seeding and bulbs - EM2 Standard General Purpose Meadow mix with yellow rattle (Rhinanthus minor) mixed with wild daffodils and bluebells. Of local welsh provenance.

- GABION RETAINING WALL SYSTEM
- Gabion retaining wall system comprising stone-filled galvanised steel mesh baskets constructed in accordance with the engineer's details and specification.
 - Wall alignment, dimensions and basket configuration to be installed in accordance with the approved engineering drawings.
 - Selected areas adjacent to and around the gabion structure to be provided with topsoil to support establishment of associated planting.
 - Planting to include species suitable for shallow soil conditions, free-draining substrates and exposed slope environments.
 - Climbing, trailing and low-growing species may be established adjacent to the gabion wall to soften its appearance and enhance visual integration within the landscape.
 - Hydroseeding, grass seeding or vegetation establishment using suitable low-maintenance species may be applied to adjacent slopes where required for surface stabilisation and landscape integration.

- IMPLEMENTATION AND MAINTENANCE (REFER TO LMP - 61538_REP_LEMP_P3)
- Aftercare maintenance and defects liability will be required for a 12 month period. Maintenance includes weed control, litter picking and watering as required.
 - Any tree or shrub planting that dies, is diseased, damaged or poorly developed shall be replaced at the end of the 12 months maintenance and defects period during the next appropriate planting season (with same sized specimens). Any planting that is found to be missing or incorrect will be recorded and justification given for this, any substitution should be approved by CA, Project Horticulturalist or Landscape Architect prior to replacement or planting. All maintenance operations should conform with BS7030:1993 Part 4: Recommendations for Maintenance (except amenity turf).
 - All planting works should conform with BS4428:1989 Code of Practice for General Landscape Operations (excluding hard landscape operations).
 - The Landscape Architect will oversee the implementation on a weekly basis, or as required, and maintenance on a monthly basis as agreed with Caerphilly County Borough Council.
 - The Landscape Architect will inspect trees for compliance with BS8545 Table 1 p.21 and supply, planting and aftercare in accordance with BS8545
 - The Landscape Architect shall provide a design implementation certificate to show compliance once planting is completed.
 - Unless otherwise agreed all planting to be undertaken in the first available planting season following adjacent hard landscape building.

- AFTERCARE (REFER TO LMP - 61538_REP_LEMP_P3)
- Trees, shrubs and hedges should be inspected upon completion if the development and any post development works specified to be BS3998:2010
 - Inspect trees and shrubs during periods of drought (to ensure proper irrigation) and following strong winds or frozen conditions, and firm-in where necessary.
 - Mulch is to be replenished to original depth (50-100mm) at least annually keeping the stem base clear of materials
 - Once planted all areas must be kept adequately watered and weed and litter free at all times
 - Continued irrigation should be undertaken as required based upon the weather conditions, soil moisture levels and the response of the planted species to water deficits (e.g. drought) or periods of prolonged saturation.
 - Replacement planting (especially failed hedging plants) should be undertaken during the subsequent planting season if necessary.
 - Any trees or planting that dies, is diseased, damaged or poorly developed within a period of 5 years from the completion of the development, shall be replaced in the next planting season with others of similar size and species.
 - Unless stated otherwise, detailed aftercare instructions should be found within the Landscape and Ecology Management Plan provided.

NOTES:
1. DO NOT SCALE ANY ITEMS OR INFORMATION FROM THIS DRAWING.

TECHNICAL / SuDS NOTES

- All soft landscape areas to be formed using clean imported soils in accordance with site conditions
- Tree planting to be undertaken within engineered tree pits with suitable growing medium
- Trees to be located a minimum of 3m from structural edges where possible
- Rain garden areas to function as shallow attenuation systems designed to receive and temporarily store surface water runoff
- Swales to function as shallow linear conveyance features designed to direct and manage surface water flow across the Site
- Planting within SuDS areas to tolerate both wet and dry conditions
- Surface water to be managed in accordance with the approved drainage strategy