

**MKR DEVELOPMENT
PANT INDUSTRIAL ESTATE
MERTHYR**

**PLANTING METHODOLOGY AND AFTERCARE
LANDSCAPE ECOLOGY MANAGEMENT PLAN
LEMP**

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Rev 21 July 2020
Rev 5 August 2020

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1.0 INTRODUCTION

The site area is approximately 0.5ha and is located with the Pant Industrial Estate to the north of the A465. OS reference ST18659604 and post code CF48 2SR

The site is a brownfield site that was previously used by the ICI as a chemical plant, leaving numerous ground contaminants. There are a number of remnants of the former buildings below ground level, namely footings, concrete slabs and potentially basement voids.

The area of land consists of poor semi-improved grassland and bare ground which is a mosaic of concrete and soil. There are isolated areas of scattered scrub in the corners of the site with bramble, hawthorn, grey willow and occasional birch. There are a number of brash piles on the site created in 2018 when scrub was cleared from the site. There is a very small area of marshy grassland in the north eastern corner,

The north boundary is the an estate road and is high to the general site level and there is a ramped access into the site. There are industrial units along all the west and southern boundaries. The east boundary is partly an industrial unit, an area of undeveloped scrub land and then a gas and electricity substation. The southern boundary has a dry ditch.

The existing features are shown on the following drawings:

- CA 2020-41 MKR Aerial and Overlay
- CA 2020-42 MKR Existing Features
- CA 2020-43 MKR Existing Features and Overlay

The Ecological Assessment Issue 1VB by BE Ecological in January 2020 found the site is overall of a low to moderate ecological value at a local level due to the habitats present, and its isolated nature.

Breeding birds and reptiles should be assumed to be present on the site. Site clearance will be required to be undertaken to the ecologist's recommendations to allow for nesting birds and reptiles which may be present. A translocation site will be required for reptiles if found in a off site location to be confirmed. Mitigation for these groups is therefore required and enhancements recommended for invertebrates in the landscape design.

- Ecological Assessment Issue 1VB by BEEcological January 2020

The landscape proposals include landscaping to SUDS features and are indicated on the following drawings:

- CA 2020-44 Rev B MKR Landscape Proposals Overall
- CA 2020-45 Rev A MKR Landscape Tree Section
- CA 2020-46 Rev A MKR Landscape Planting Details
- CA MKR Pant Ind Estate Planting Schedule rev 21July2020

The site development has provides the opportunity to improve the amenity of this area of the estate with a landscaped frontage with the road consisting of grass verge, planting bed and tree planting. Within the site area all opportunities for tree and planting beds by parking areas have been used. Elements to provide potential for reptiles have been made with gabion fence panels and a green cycle shelter.

1.1 SCOPE OF WORKS

The site is to be developed as light industrial units

The external areas to the proposed buildings are

- Ramped entrance
- Car parking and access road
- Cycle stands and shelters- one on the east boundary to be a green cycle shelter.
- Planting beds, Tree Planting, Rain Gardens and Grass verge area.
- Security Fence and 2No panels of gabion fence

1.2 GENERAL CONDITIONS

EXISTING STRUCTURES ON OR ADJACENT TO SITE:

- Industrial Units west, south and part of east.
- Public estate road and site access to the north.
- Service boxes, lampposts, road signs, and underground services.
- Gas and Electricity Substations to the east.
- Undeveloped site with scrub on part of east boundary

1.3 SERVICE DRAWINGS: Any service information on landscape drawings is notional only. The Contractor

MUST obtain confirmation of all services from the Principal Contractor and relevant authorities.

NOTIFY: All service authorities including the Employer/Principal Contractor of any proposed works which could affect services not less than one week before commencing site operations and observe service authorities' recommendations for work adjacent to existing services.

ACCESS TO THE SITE. Permission must be gained from the Site Agent for access to visit the site. . The Contractor's vehicles should not cause obstruction to the Highway and all necessary regulations relating to Highway working must be followed.

Other users who will require access through the landscape contract area are:-

- Principal contractor and other sub contractors.
- Access will be required by sub contractors
- Statutory Authorities.

WORKING AREA, WORKING HOURS, PARKING, ADVERTISING , HEALTH AND SAFETY Refer to the Principal Contractor's site requirements and attend site inductions and carry out all health and safety instructions required by the Principal Contractor.

Provide all Health and Safety information and Method Statements required by Principal Contractor.

1.4 RISKS TO HEALTH AND SAFETY

The nature and condition of the site cannot be fully and certainly ascertained before it is all opened up. However the

- Work close to service covers, street lights, service boxes and markers, hazardous materials gas and electricity.
- Work close to live services and working with live services.
- Site must be left safe at the completion of each day's work due to the use of the site by the public both day and night eg open trenches made safe.
- During the day all working areas kept safe from the public and all notices and safety procedures followed including temporary fencing where necessary.
- Works on access roads eg drop kerbs, footpaths and road cushions will require traffic and pedestrian management.
- The safety of the public during construction important. During the maintenance period take into account that the site will be in use by public at the same time.
- Work close to live services.
- Other site users on site.
- Use of solvents, inflammable substances, and chemicals.
- Use of machinery with moving parts, cranes, drilling rigs, electrical equipment and general use of machines.
- Likelihood of chemical drift.
- Making noise or dust during Works.
- Excavations danger of underground services.
- Hazards due to cold/wet windy weather.
- Manual handling and lifting operations.
- Other contractors working on site.

- 1.5 PROPRIETARY NAMES: The phrase 'or equivalent approved' is to be deemed included whenever products are specified by proprietary name. Where the specification permits the substitution of a product of a different manufacture or type to that specified such a substitution requires approval from the CA and where necessary documentary verification that the alternative product is equivalent in respect of material, safety, reliability, function and where necessary of appearance to the specified product.

BRITISH STANDARDS: All materials, workmanship and plant material must comply with the relevant British Standard unless otherwise indicated.

SIZES: Unless otherwise stated the size indicated is size required

1.6 NOTIFICATION OF RECORDS:

The Contractor shall notify the CA of the date of commencement and completion of the operations outlined below and provide CA with all necessary documentation required within 7 days to record and verify the Works as follows:

- a daily distribution return showing the number and description of men employed on the works including those employed by Contractors.
- a daily distribution return showing the number, type and capacity of all plant excluding hand tools currently employed on works.
- record of actions taken to protect biodiversity and monitor their effectiveness.
- record of weather conditions and other factors having material effect on progress of Works.
- record sheets of pesticide applications as required under Control of Pesticides Regulations 1986.
- notification of dates of commencement and completion of operations, including all records of rates of application or use of materials, etc of application of fertilisers, pruning, mowing, litter picking and other maintenance visits etc.

Provide all necessary technical submissions, method statements and risk assessments at least one week in advance of relevant operation. A Method Statement will be required to address health and safety issues on site current for the Covid-19 Pandemic.

1.7 SUPERVISION/INSPECTION/DEFECTIVE WORK

SUPERVISION: In addition to the constant management and supervision of the Works provided by the Principal Contractor's person in charge, all significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress.

1.8 SAFETY/PROTECTION

Commonplace hazards which should be controlled by good management and site practice are not listed.

GENERAL CONDITIONS

- Site rules from Principal Contractor's Health and Safety Plan – use of PPE etc.
- Address any Health and Safety requirements current for the pandemic regulations and guidance.
- Continuing liaison.

OPERATIONS AND MATERIALS

- Hazard – Working on Highways.
- Hazard - Use of Chemicals, paints, solvents, timber stain etc.
- Hazard - machines or workers slipping down slopes.
- Hazard – services.
- Hazard - mechanical and manual handling.
- Hazard – contaminated soil.
- Hazard – Tree felling and tree works- working at height
- Hazard – protection of public and site users.

MAINTENANCE

- Hazard – Working on Highways.
- Hazard - Use of Chemicals.
- Hazard - machines or workers slipping down slopes.
- Hazard - mechanical and manual handling.
- Hazard – Protection of public and staff and public.

HSE APPROVED CODES OF PRACTICE : Comply with the following:

- Management of Health and Safety at Work.
- Managing Construction for Health and Safety.

1.9 PROTECT AGAINST THE FOLLOWING

1.10 POLLUTION:

The contractor / landscape operatives must be conversant with the requirements of the Environmental Protection Act 1990, Pollution, Prevention and Control Regulations 2000, Hazardous Waste Regulations 2005 and the Control of Pollution (Amendment) Act 1989 for the Carriage of Controlled or Special Wastes. landscape contractors must be registered with a relevant Regulation Authority (Environment Agency) and be in possession of a valid Certificate of Registration or Certificate of Registration as a Broker of Controlled Waste under the Act.

1.11 USE OF CHEMICALS

The contractor/ landscape operatives must comply with 'The Control of Pesticides Regulations 1986', 'The Control of Substances Hazardous to Health Regulations 1988' and any other current legislation and subsequent revisions.

All chemicals must be products on the current list of Agricultural Chemicals Approval Scheme and used strictly in accordance with the conditions of approval. The landscape contractor must comply with all relevant Codes of Practice issued by MAFF.

All pesticides/herbicides transported or stored in the landscape contractor's vehicles or on site (regardless of quantity) shall be locked in a separate storage compartment or within lockable containers which is secured to the floor of the vehicle. All storage lockers must be sealed and clearly marked as containing pesticides and bear a standard black and yellow hazard sign.

Apply pesticides/herbicides strictly in accordance with the manufacturer's instructions in calm, dry weather conditions. Chemicals should not be applied in wet, frosty or windy conditions.

The contractor/ landscape operatives must hold a BASIS Certificate of Competence, or work DIRECTLY under the supervision of a certified holder.

Notify the site operator at least 24 hours in advance of the location, type of pesticide/herbicide, active ingredient and timing of application prior to commencing work. The contractor/ landscape operatives shall erect warning

signs at all entrances to the areas to be treated. When restricted to planting beds, warning signs shall be placed within close proximity in clearly visible locations. Details of application and contact person to be shown.

In accordance with COSHH Regulations the contractor shall protect employees and other persons, including the general public and adjacent land owners who may be exposed to substances hazardous to health.

Dispose of waste chemicals and containers in accordance with the 'Control of Pesticides Regulations 1986', 'Control of Pollution Act 1974' and the 'Water Act 2014' and any subsequent revisions.

The contractor / landscape operatives shall be responsible for making good and or compensation for any damage how so ever caused resulting from negligence in application, handling and/or storage of pesticides and herbicides. He shall also be responsible for keeping up to date with all legislation and regulations governing there use and inform the site operator of any changes that may affect the contract in any way.

The contractor / landscape operatives shall ensure that all property and utilities are protected against accidental or negligent damage that may occur. Any damage incurred by the contractor in carrying out their duties is to be made safe immediately and repaired to the satisfaction of the client or Utilities Company at the earliest convenient time, or as agreed, at the cost of the contractor.

It shall be the contractor / landscape operatives responsibility and liability for any damage to person or property, however caused. All operatives shall be trained according to the task to be undertaken.

1.12 EXISTING MAINS/SERVICES: GENERAL: The Contractor shall:

Ascertain the exact location of all existing services and the like in, under or over the site or adjacent thereto. The Contractor will be held responsible for any damage or disruption to such services crossing the site or those used during the performance of the Contract. Any such damage as may occur must be made good to the satisfaction of the CA, Employer, Service Authorities and adjoining owners or occupiers, at the Principal Contractor's own expense.

Check the positions of all services before starting work.

Adequately protect and prevent damage to all existing services. Do not interfere with their operation without the consent of the Service Authorities or private owners.

If any damage to services result from the execution of the Works, notify the CA and the appropriate Service Authority without delay. Make arrangements for the work to be made good without delay to the satisfaction of the Service Authority or private owner as appropriate.

Replace any marker tapes or protective covers disturbed during the site operations to the Service Authorities' recommendations.

In the event of a service marker being disturbed for any reason it shall not be replaced other than in the exact position and to its former depth unless the repositioning is carried out at the direction and under the supervision of the Service Authority.

Check all emergency and contact details for the varied service contacts and emergency numbers are up to date.

1.13 NOISE: Ensure that all measures to control noise produced by the Principal Contractor's operations required under or by virtue of the provisions of any enactment or regulations, or the working rules of any industry are strictly complied with.

Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by the manufacturer's of the compressor, tools or vehicles.

Do not use or permit the use of radios or other audio equipment which may cause nuisance.

1.14 NUISANCE: Take all necessary precautions to prevent nuisance from dust, rubbish and other causes. Remove daily, and if it should occur on the highway carriageway immediately to avoid any hazard to road users from site rubbish and debris generated from the Works for disposal. Comply with all instructions from the CA in this respect.

1.15 FIRE: Take all precautions necessary to prevent personal injury, death and damage to the Works or other property by fire. Comply with Joint Code of Practice 'Fire Prevention on Construction Sites' published by Building Employer's Confederation and the Loss Prevention Council and National Contractors Group. Advise the CA immediately if drought, arisings or other circumstances evident give rise to a fire risk.

1.16 BURNING: Burning is not permitted on site.

1.17 WATER: Prevent damage from storm and surface water. Keep site and excavations free of water.

1.18 WASTE/ARISINGS:

- Remove debris, rubbish, surplus material and spoil regularly, daily where arisings are from a specific process or work item and keep the site and Works clean and tidy.
- Remove all rubbish, dirt and residues from excavations before infilling.
- Ensure that non-hazardous material is disposed off at a tip approved by a Waste Regulation Agency.
- Remove all surplus hazardous materials and their containers for disposal off site in a safe and competent manner as approved by a Waste Regulation Agency and in accordance with relevant regulations.
- Retain waste transfer documentation on site.

1.19 EXISTING FEATURES: Prevent damage to existing structures, fences, walls, roads and paved areas and other site features which are to remain in position during the execution of the Works. If damage occurs make good at the Contractor's own expense and to the satisfaction of the CA.**1.20 STEEP SLOPES AND BY RETAINING WALLS**

Where working on steep slopes wear appropriate PPE especially boots with a good grip. Where sloped grass areas are to be cut do not use mowing machine but use strimmers.

1.21 INVASIVE NON NATIVE SPECIES

In the event that invasive plant species become established on site they will be controlled at the nearest opportunity using approved methodology and guidance to avoid the risk of further contamination and spread. Common examples include:

- Cut Himalayan balsam (*Impatiens glandulifera*), by hand or machine below the lowest node to prevent the formation of flowers and seeds..
- Spray giant hogweed (*Heracleum mantegazzianum*) with herbicide as a spot treatment when the plants are growing actively but still less than 1m high. Control on a catchment basis, working downstream to prevent seed recolonisation.
- Spray Japanese knotweed (*Fallopia japonica*) with glyphosate during the flowering period. Monitor treated sites and apply spot herbicide treatments to any surviving plants.

No invasive weeds were found on the site at the initial inspection.

2.0. DOCUMENTS

The design information provided by the Landscape Architect has overlaps with architectural work, civil and structural engineering work and mechanical and electrical engineering. The subcontractor should be aware that information required to undertake the landscape works will require reference to the documents prepared by other consultants.

The Planting Methodology and Aftercare was produced using information from the following resources.

- CA 2020-41 MKR Aerial and Overlay
- CA 2020-42 MKR Existing Features
- CA 2020-43 MKR Existing Features and Overlay
- CA 2020-44 Rev B MKR Landscape Proposals Overall
- CA 2020-45 Rev A MKR Landscape Tree Section
- CA 2020-46 Rev A MKR Landscape Planting Details
- CA MKR Pant Ind Estate Planting Schedule rev 21July2020
- Ecological Assessment Issue 1VB by BEEcological January 2020.

2.1 ECOLOGICAL MANAGEMENT OBJECTIVES

The Ecological Assessment Issue 1VB by BE Ecological in January 2020 found the site is overall of a low to moderate ecological value at a local level due to the habitats present, and its isolated nature.

Breeding birds and reptiles should be assumed to be present on the site. Mitigation for these groups is therefore required and enhancements recommended for invertebrates in the landscape design.

The habitat management objectives are to create/restore target habitats/species, which will be in accordance with the local Biodiversity Action Plan.

The ecological management plan will include:

a description and evaluation of features to be managed;

- new tree planting
- planting beds (including rain garden beds) with native plants.
- eco rich lawn seed mix with mowing regimes to encourage wild flowers.
- Bat and Bird Boxes on Buildings
- Gabion Fence panels
- Green Cycle Shelter with green roof.

aims and objectives of the management;

- Successful establishment of the above.

- appropriate management actions for achieving the aims and objectives;
- specification for site preparation and establishment;
- aftercare and long-term management prescriptions for five years
- monitoring measures.

The management plan will be programmed to allow for management works to allow for bird breeding seasons and activity and hibernation periods of reptiles.

2.2 ECOLOGICAL TRENDS AND CONSTRAINTS CONSTRAINTS

Unless the management plan is easily understood by the Client and the managing agency and adequate funds remain in place the objectives will not be met. If the landscape deteriorates due to lack of management it will be difficult to reinstate. Management can be constrained by force majeure – flooding, unusual rainfall, excess dry periods and pandemics etc. Climate change impact over the life span of the industrial development is not known at present and the annual reviews of management will be of increasing value.

TRENDS

The existing site lies within an industrial estate and there is limited landscaping on nearby Units and none other than a strip of rough grass on adjacent units. The proposed development will provide improved amenity. The approved scheme will enhance the site for wildlife. Reptiles, nesting birds and invertebrates are most likely to benefit.

2.3 MANAGEMENT RESPONSIBILITIES

The implementation and initial management of the landscape areas will be undertaken by the Principal Contractor up until the point where the scheme will be 'handed over' to the Client and their agent. Thereafter the Client (or an appointed management company) would be responsible for ensuring that the plan was implemented as specified.

2.4 FUNDING

The funding of the implementation and management of the plan will be undertaken by Principal Contractor up until the point where the scheme will be 'handed over' to the Client and the funding is through the Contract Sum – in the long term the funding would be the responsibility of the Client as the site owners.

2.5 INITIAL WORKS

CLEARANCE

- The site has already been cleared
- The current condition of the site is grassland with some existing scrub, bare ground and concrete foundations.
- The site is formerly an ICI chemical plant and remediation of concrete foundations and contaminated issues.
- Topsoil and subsoil importation will be required.

2.6 EXISTING TOPSOIL AND SUBSOIL HANDLING

Unless existing subsoil and topsoil on site is not contaminated and has been tested and is suitable and approved for re-use. Soil deemed to be unsuitable is to be removed from site to contractor's tip. Topsoil and subsoil will be imported as necessary.

2.7 IMPORTED TOPSOIL AND SUBSOIL

2.8 IMPORTED TOPSOIL

- Quantity: All topsoil that is to be imported is to conform to this specification.
- Standard: To BS3882 2015. Plus the following:
- Source: Submit proposals.
- Classification: Multipurpose.
- Texture to BS3882: Medium loam.
- Reaction, to BS1377-3: pH 6 - 7.5.
- Crumb structure: Made up of discernible crumbs.
- Stones.
 - Size in any dimension (maximum): 20mm.
 - Stone content by dry weight (maximum): 15%.

In addition to conforming to the above BS standard the soil should also conform to the following.

Visual Examination:-

- Provide the CA a 1kg sealed sample bag of representative soil, for approval of the physical structure of the soil, before chemical analysis is progressed. Obtain approval of a sample load on site of not less than 2m³.
- Retain for comparison with subsequent loads. Provide a full analysis from an approved testing station in accordance with 'Analysis for Topsoil'.

Physical Parameters:-

Clay (less than 0.05mm) 5-27%

Silt (0.002 – 0.05mm) 5-45%

Sand (0.05 – 2.00mm) 45-85%

(At least 50% of the total soil fraction should fall within the medium to coarse sand range).
Permeability 10-5 – 10-6 m/sec.

Chemical Parameters:-

PH value (1:2.5 soil/water) 6-7.5 pH.
Electrical Connectivity (1:2.5 soil/water) <1500 µS/cm
Electrical Connectivity (1:2.5 CaSO₄) <2800 µS/cm
Organic Matter (Walkey Black) 4.0 – 10.0%
Total Nitrogen (Dumas) >0.2%
Extractable Phosphorus (RB427) >26 mg/l
Extractable Potassium (RB427) >220 mg/l
Extractable Magnesium (RB427) >50 mg/l

TOPSOIL ANALYSIS

- All imported topsoil is to be analyzed.
- Soil analyst: Submit proposals.
- Samples: Collect in accordance with BS3882.
- Submit:
 - Declaration of analysis.
 - Chemical analysis and contaminants.
 - Maximum stone content, stone size and pH value.
 - Nutrient content, pH value and textural classification.;
 - PH value and textural classification.
 - Phytotoxic and CLEA elements.
 - Textural classification and maximum stone content.
 - Report detailing soil analyst's recommendations.

The Landscape Contractor shall obtain a sample for analysis, to determine all of the requirements listed above.

The results and a brief analysis and interpretive report making comment on suitability of material in comparison to BS3882 and the specification included within this document, including recommendations for additives and/or amendments to bring sub-grade soil up to the required specification standard. Topsoil requirements and to support broadleaf native trees with particular reference to the requirement identified above and levels of metals and the likely effects of these on nutrient availability and protection of plant growth.

A certificate of Analysis should also be provided shall be submitted to the LA who may adjust the composition of any specified fertiliser of soil ameliorant and the rate of application, after examination of the Landscape Contractors cost. Where suitable amelioration is not possible the CA may reject the topsoil.

2.9 IMPORTED SUB-SOIL

- Quantity: All subsoil that is imported, if existing subsoil is unsuitable, is to conform to this specification.
- Standard BS 8601 – 2013 Subsoil.
- Source: Submit proposals.
- Crumb structure: Made up of discernible crumbs.

Visual examination:-

- The subsoil shall have a defined granular, crumb or blocky structure and shall be reasonably free from non-soil material, brick and other building materials and wastes, hydrocarbons, plant matter, roots of perennial weeds and any other foreign matter or material or substance that would render the sand unsuitable for use.
- Provide the Landscape Architect (CA) a 1kg sealed sample bag of representative soil, for approval of the physical structure of the soil, before chemical analysis is progressed.

Physical Parameters:-

Clay (less than 0.05mm) 5-27%
Silt (0.002 – 0.05mm) 5-50%
Sand (0.05 – 2.00mm) 40-85%
Max. Stone Content (2 – 50 mm) 50% by weight.
Max. Stone size in any dimension 75mm.

Chemical Parameters:-

PH value (1:2.5 soil/water) 5.0-8.2
Electrical Connectivity (1:2.5 soil/water) <2000 µS/cm
Electrical Connectivity (1:2.5 CaSO₄) <2800 µS/cm
Organic Matter (Walkey Black) % <2.0

Potential Contaminants:-

Subsoil is to be naturally occurring material, excavated from a level immediately below the vegetable topsoil down to a maximum depth of 2.0m from the original ground level with no stone or rubble material larger specified. The material shall be a friable consistency, free draining, free from extraneous material and pernicious weeds. The subsoil must contain no chemical or domestic refuse or pollutants that would be harmful to short term or permanent plant or animal life. The material will not be extreme in either alkalinity or acidity. It is not acceptable to use topsoil within subsoil layers.

All sources of material shall be stated and a 2m³ minimum sample shall be provided for analysis, inspection and approval prior to deliveries to site. All supplies thereafter shall conform to approved samples. The CA may reject any subsoil with high stone or rubble content.

2.10 RAIN GARDEN SOIL

To be used in Rain Garden Planting Bed1-8

SANDY LOAM TOPSOIL Textural Class

55 % Sand
30% Silt
15% Clay

SANDY LOAM SUBSOIL, Textural Class

55 % Sand
30% Silt
15% Clay

2.11 RIP SUBGRADE BEFORE LAYING SUBSOIL PLANTING BEDS 9 AND 10.

Scarify subgrade to promote free drainage. The surface on which subsoil is to be placed will be thoroughly ripped to a depth of 200mm before subsoil placement. A cross-ripping effect will be achieved by two passes at an angle of 45 degrees to the edge of the strip at 90 degrees to one another. Remove all stones with largest dimension exceeding 50mm. ***If standing water is present on ripped surface inform the CA before placing subsoil***

PROTECTIVE FENCING OF COMPLETED WORKS

Allow for protection of completed works with suitable fencing or other protective measures as necessary.

3.0 LANDSCAPE WORKS

The proposed landscape works are

- Grass Areas
- Tree Planting
- Planting Beds 9 and 10
- Rain Garden Beds 1-8
- Maintenance for 5 Years.

3.1 PRODUCTS AND MATERIALS

3.2 TOPSOIL AND SUBSOIL

Grass Areas 1 and 2

225mm existing or imported subsoil.
75mm existing or imported topsoil

Planting Beds

300mm existing or imported subsoil.
300mm existing or imported topsoil.

Trees

300mm existing or imported topsoil
600mm existing or imported subsoil
Tree pit cross-section 1500x 1500mm

PRODUCTS

3.3 AMELIORANTS

ROOTDIP: Root-balled trees and rootmass of container plants are to be root dipped into a solution of one part Seanure Root Dip to ten parts water.

ANTIDESSICANTS: All trees and evergreen plant material on arrival at site shall be sprayed with an appropriate antidessiccant approved by the CA unless the temperature is below 10degC.

GREEN COMPOST: Green recycled compost shall be used which will have an organic and fibre content and some trace elements. It shall improve soil structure and help retain moisture. Green Compost to be made under strictly controlled conditions from green, organic recycled material. PAS 100 standard. Sample to be approved before full orders made. The supplier is to provide a sample and details of the compost components and approved by the Client before use on site.

Spread 50mm depth of compost on surface of all planting beds and hedge trenches work into full topsoil depth. Green Compost to be 10% tree pit and native pit backfill. work into full topsoil depth.

To be obtained from a local supplier and sample approved before full load brought to site.

RABBIT GUARDS FOR TREES: Provide black plastic spiral rabbit guards for trees of a suitable size for girth of tree to be guarded. Provisional

MULCH:

Melcourt Ornamental Bark Mulch to be used. The product shall consist of

- Predominantly matured European Pine Bark with an even nominal particle size distribution of 5-35mm with minimal dust and fines and less than 5% wood content.
- The pH to be between 4.5 and 5.5.
- The product shall be pest, disease and weed free and not have been treated with Methyl Bromide or any additives.
- The product shall have been tested in accordance with the requirements of BS 4790:1987, for fire resistance. Or other approved product with the same specification.

3.4 ACCESSORIES

CARPINUS BETULUS FASTIGIATA : HORNBEAM : STAKED

TREE TIES: Tree ties are to be Hessian webbing 50mm wide, wrapped around tree stem and nailed to the stake or cross bar with 40mm galvanized nails according to tree type.

TREE STAKES: Tree stakes shall be larch or sweet chestnut poles celcure treated, 75mm in diameter, straight with butt end. Extra Heavy Standards and Heavy Standards Trees will have 2No stakes and a cross bar. The Stakes are to be 1200mm above ground.

CRATAEGUS MONOGYNA, MALUS SYLVESTRIS : UNDERGROUND GUYING

Trees in Rain Garden Areas to be secured with underground guying deadman blocks and Platypus Anchors and collar

3.5 ROOT BARRIERS TREES

Root barriers are to be used where the Carpinus betulus Fastigiata trees are adjacent to the proposed retaining wall and if trees are within 2.00m of service runs. The root barriers are to be either installed vertically against the retaining wall and facing the direction of service runs or laid to line service trenches where appropriate.

RAIN GARDEN

Roobarriers to be laid on the base of the RainGarden over the Engineer's drainage material infill and on the sides by the inflow and out flow drainage units

The root barrier is to be Terram Rootguard which is a permeable root barrier.

Terram

Fiberweb Geosynthetics Ltd

Blackwater Trading Estate

The Causeway, Maldon

Essex CM9 4GG

Tel: +44 (0) 1621 874200

email:info@terram.com

www.terram.com

3.6 PLANT MATERIAL SUPPLY

PLANTS GENERALLY

Trees and plants are to conform to the relevant section of BS 3936 (publication series) and the National Plant Specification.

No substitutes are to be accepted without the consent of the landscape architect and the local planning authority.

All plants shall be true to size specified on the planting plan and schedule. All plants shall be healthy, bushy, pest and disease free and not pot-bound, dry, water logged, leggy or weak. A minimum of five breaks per shrub is required. Trees shall be vigorous, of good shape and with a well-branched head.

Plants that are container grown (CG):

- Supplied in a growing medium with adequate nutrients for the plant to thrive until permanently planted.
- Centred in the container, firmed and well-watered.
- With root growth substantially filling the container, but not root bound, and in a condition conducive to successful transplanting.
- Grown in the open for at least two months before being supplied.
- Grown in containers with holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

HANDLING AND DELIVERY: The Contractor shall comply with the recommendations of the booklet 'Plant Handling' published by the Committee for Plant Supply and Establishment in July 1985.

The Contractor shall include for packing, loading and transporting plant material, trees, etc from the source of supply to the site. All plant material shall be carefully packed and protected to survive transport to site without damage in lifting from the nursery, loading, transit or unloading. Any plant material which sustains major damage shall be rejected and replaced at the Contractor's expense, but slight mechanical damage may be corrected by careful pruning and wounds exceeding 25mm diameter shall be treated with fungicidal sealant.

If plants are not planted within 24 hours of delivery they shall be heeled in by placing the roots in a prepared trench covering them with fine soil and well firming and watering to prevent air pockets.

PLANT INSPECTION: The CA reserves the right to inspect all plant material prior, during and after planting and reject any plants that fail to meet a satisfactory standard.

TREES: They shall have either a well balanced head or well defined central leader with branches growing from the stem with reasonable symmetry and shall comply with the following definitions:

- **Extra Heavy Standard Trees** All trees shall be rootballed. They shall be of a minimum height of 4-4.5m with a sturdy reasonably straight stem maximum 1.80-2.00m in height from ground level to the lowest branch with a minimum girth of 14-16cm when measured 1.00m above ground
- **Heavy Standard Trees** All trees shall be rootballed. They shall be of a minimum height of 3.50-4.25m with a sturdy reasonably straight stem maximum 1.80-2.00m in height from ground level to the lowest branch with a minimum girth of 12-14cms when measured 1.00m from ground level.
- **Whips;** These are to be strong well-rooted nursery stock evenly developed with a single well defined, straight and upright central leader. The main stem shall be furnished with lateral shoots. The plant shall be self supporting with a stem circumference at the root collar of 30-50mm. Overall heights as specified in the Plant Schedule. All whips are to be bareroot

CONTAINER STOCK TREES

Container stock trees are **not** to be used. Tree planting is to be undertaken in season.

POT GROWN SHRUBS: A shrub which is pot-grown or container-grown may, according to species, be cut back or trimmed to encourage bushiness. The size of pot shall be as stated in the Plant Schedule. The height of shrubs shall be measured from the ground level, excluding rootball or any container.

NATIVE PLANTS

These are to be strong well-rooted nursery stock evenly developed with a single well defined, straight and upright central leader. The main stem shall be furnished with lateral shoots. The plant shall be self supporting with a stem circumference at the root collar of 30-50mm. Overall heights as specified in the Plant Schedule

WILDFLOWER PLUGS

All to be minimum 65cc Jumbo plugs from an approved supplier these will arrive in 25 per tray by post or courier and should be opened immediately, watered regularly and kept in a cool and shady location and carefully treated until planted. Maximum storage period 5 days. Ensure that the plugs are delivered 'popped out' and laid flat in seed trays. If not the contractor is to do this before taking them to site.

4. GRASS

SEED

Grass seed shall be stored in sealed bags, on boards off the ground in a cool, clean, dry place, free from vermin.

The grass seed shall consist of the mixture as specified below. Certified seed shall be used and shall meet specifications for germination and purity laid down in Section 5.3 of BS 4428 : 1969 "Recommendations for General Landscape Operations".

No fertiliser to be used.

4.1 GRASS SEED MIX

WFG20 ECO SPECIES RICH LAWN

Germinal seeds

expert@germinalamenity.com

015522 868714

Agrotis capillaries	Browntop Bent	5%
Agrotis stolonifera	Creeping Bent	2.5%
Festuca rubra ssp litoralis	Slender Creeping Red Fescue	12.5%
Festuca Ovina	Sheeps Fescue	20%
Festuca rubra rubra	Strong Creeping Red Fescue	15%
Festuca rubra commutata	Chewing Fescue	10%
Poa pratensis	Smooth Stalked Meadow Grass	5%
Poa trivialis	Rough Stalked Meadow grass	5%
Lolium perenne	Perennial Rye Grass	2.5%
Pheleum bertolonii	Timothy	2.5%

Achillea millefolium	Yarrow	0.5%
Centaurea nigra	Common Knapweed	2%
Cerastium fontanum	Common Mouse Ear	0.2%
Daucus carota	Wild Carrot	1%
Galium verum	Ladys Bedstraw	1.2%
Hypochaeris radicata	Cats Ear	0.2%
Linum usitatissimum	Flax	1.2%
Leontodon autumnalis	Autumn Hawkbit	0.5%
Lotus corniculatus	Birdsfoot Trefoil	0.5%
Medicago lupulina	Black Medick	1%
Plantago lanceolata	Ribwort Plantain	1%
Pimpinella saxifrage	Burnett Saxifrage	0.2%
Primula veris	Cowslip	0.1%
Prunella vulgaris	Self Heal	0.9%
Ranunculus repens	Creeping Buttercup	2.3%
Rhinanthus minor	Yellow Rattle	0.2%
Scabiosa columbaria	Small Scabious	2.2%
Silene dioica	Red Campion	2%
Taraxacum officinalis	Dandelion	0.3%
Teucrium scorodonia	Wild Sage	0.5%
Trifolium pretense	Red Clover	2%
Trifolium repens	White Clover	<u>2%</u>
		100%

Sow at the rate of 10gms per sqm

Lindum Wildflower Turf for Green Cycle Shelter Roof

Lindum Green Roof Wildflower Turf : Roof of Cycle Shelter	
Latin name	Common name
Daucus carota	Wild Carrot
Achillea Millefolium	Yarrow
Galium mollugo]	Hedge Bedstraw
Knautia arvensis	Field Scabious
Leucanthum vulgare	Oxeye Daisy
Origanum vulgare	Wild Majoram
Plantago media	Hoary Plantain
Primula veris	Cowslip
Rhinanthus minor	Yellow Rattle
Silene flos-cuculi	Pink Ragged Robin
Echium vulgare	Vipers Bugloss
Veronica spicata	Spiked Speedwell
Thymus vulgare	Common Thyme
Silene flos-cuculi	White Ragged Robin
Centaurea scabiosa	Greater Knapweed
Filipendula ulmaria	Meadowsweet

Galium verum	Ladys Bedstraw
Leontodon hispidus	Rough Hawkbit
Lotus corniculatus	Birdsfoot trefoil
Plantago lanceolata	Ribwort Plantain
Sanguisorba minor	Salad Burnett
Prunella vulgaris	Self Heal
Silene dioica	Red Campion
Silene vulgaris	Bladder campion
Allium schoenoprasum	Chives
Linaria vulgaris	Toadflax
Dianthus carthusianorum	Carthusian Pink

5.0 WORKMANSHIP - LANDSCAPE

5.1 SITE CONDITION

The Contractor shall be held responsible for the keeping of the Works in a neat, tidy and litter free condition through the duration of the Contract.

Litter means arisings or residues from the Works, cans, bottles, paper and other extraneous objects.

5.2 WATERING: Water is to be provided by the Principal Contractor and access without cost to the private water system. The Landscape Contractor is to supply hoses and sprinklers and ware as necessary up to Practical Completion and as necessary during the defects/maintenance period.

Quantity: Wet full depth of topsoil.

Application: Even and without displacing plants, mulch or soil.

Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing and planting.

Watering for planting of trees, shrubs and whips after planting and if dry conditions occur

DROUGHT CONDITIONS: If water supply is or is likely to be restricted by emergency legislation:

- inform the CA without delay of the additional cost of second class water supply from a sewerage works or other approved source.

- if planting has not been carried out, do not do so until instructed.
- if planting has been carried out, obtain instructions on supply of water.

PERMANENT DRAINAGE SYSTEM: This is not to be used for disposal of water from excavations without approval.

5.3 FORMATION OF GENERAL GROUND LEVELS

The levels of the site of the site will be as the Architect's or engineer's details

New ground levels need to be as required by the Engineer for paving edges and other hard surface edges and left ready for soil profiling if required to the required depth for the finish of planting bed and tree planting so that the finished topsoil levels can be 50mm below finished hard edging adjacent to the building and within the carpark areas.

The areas shall be excavated or filled to the correct depth for the soil profile.

The subbase material in the excavated Bed 9 and 10 areas, grass areas 1 and 2 are to be broken up to a depth of 200mm as required. Beds 1-8 are within rain gardens and levels to be formed in accordance with Engineer's rain garden drain base requirements.

5.4 SOIL PROFILE FORMATION

LOOSE TIP FILLING FOR LANDSCAPE AREAS

SUBSOIL FILL

Do not firm, consolidate or compact when laying.

Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

PLACING FILL GENERALLY

- Ensure that areas to be filled are free from loose soil, rubbish and standing water.
- Do not use frozen material or materials containing ice. Do not place fill on frozen ground.
- Take all necessary precautions to secure the stability of adjacent structures.
- Place fill against structures, or buried services in a sequence and manner that will ensure stability and avoid damage.

- Plant employed for transporting, laying and compacting must suit the type of material. ie light earth moving plant to be used for all subsoil areas.
- Earthmoving equipment: Vary route to avoid rutting.
- Filling: Layers not more than 300 mm thick.
- Lightly compact each layer to produce a stable soil structure when grading them to an even level.

5.5 HANDLING TOPSOIL

Standard: To BS 3882: 2015.

- Ensure topsoil is free of aggressive weeds weed species: Included in the Weeds Act, section 2 or the Wildlife and Countryside Act Schedule 9, part II.
- Give notice: Obtain instructions before moving topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.
- Areas to be topsoiled are to be laid over the finished subsoil levels.
- Topsoil areas to be graded to be 50mm below finished edging levels.
- Do not use topsoil contaminated with subsoil, rubbish, oil based products or other materials toxic to plant life.
- Dispose of contaminated topsoil to the Contractor's tip
- Apply herbicide to perennial weeds and allow period of time recommended by manufacturer to elapse before Cultivating only to Beds 9 and 10 and Grass Areas 1 and 2.
- NOTE No herbicides/weedkillers to be used in the preparation of Rain Gardens weeds to be removed by hand or other physical means.

SPREADING TOPSOIL DEPTH to the depths specified.

Once spread the topsoil shall be kept free of weeds until such a time as planting is carried out.

GREEN COMPOST

PLANTING BEDS

- Spread 50mm layer of Green Compost and cultivate into full depth of topsoil.
- Reduce top 100mm of all topsoil to a fine tilth suitable for final grading.
- Remove all undesirable material brought to the surface, including stones larger than 50mm in any dimension, roots, turf or grass and foreign matter.
- Cultivation and planting shall not be carried out when the soil is very wet or waterlogged, or during periods of frost.
- At all times during ground preparation care shall be taken not to re-compact the soil.

RAIN GARDENS

These have shrub/perennial and tree planting,

These are to the Engineer's detail for the filter material, filter membranes, headwalls, drainage and pipes with all soft landscape finishes laid on a permeable rootbarrier over this structure.

6.0 PLANTING GENERAL

6.1 CLIMATIC CONDITIONS: Carry out the work while soil and weather conditions are suitable for the relevant operations. Do not plant during periods of frost or strong winds. Plant only during the following periods:

- Deciduous trees and shrubs: Late October to late March.
- Evergreens: September/October or April/May.
- Herbaceous plants, September/October or March/April.
- Container grown plants: At any time if ground and weather conditions are favourable.
- Ensure that adequate watering and weed control is provided.

NOTICE

Give notice before:

- Setting out.
- Delivery of plants/ trees.
- Planting shrubs and perennials.
- Planting trees.

6.2 TREE, SHRUB AND PERENNIAL PLANTING

Planting shall be carried out in accordance with the Plant Schedules and the Contract Drawings.

SETTING OUT: All areas shall be set out in accordance with the Contract Drawings.

PLANT SPACING: Plant spacing shall be carried out in accordance with the Contract Drawing. The CA reserves right to adjust the exact position of all plant material after it has been set out.

The aim will be to space the plants evenly so that when established they will completely fill the areas indicated as fully as possible.

PLANTING AND CULTIVATION: All planting shall comply in all respects with BS 4428: 1968 General Landscape Operations and for Tree Planting BS 8545: 2014. All plants shall be planted in accordance with good horticultural practice, upright with the roots well spread out at same depth at which they had been previously grown in the nursery. Care being taken to avoid damage to root systems and stems. The plants shall be placed in position in accordance with the Contract Drawings showing their best side to the front. Suspended planting and cultivation when weather or soil conditions are unsuitable.

Cultivations are as previously specified. Soil to be free of weeds prior to commencing planting works, where necessary the topsoil will have weeds removed by physical means or will be treated with weedkiller where necessary to destroy weed growth prior to commencing planting.

Evergreens are to be dipped in or thoroughly sprayed with antidesiccant after planting. Do not apply in rainy or frosty weather. Ensure full coverage of underside of foliage.

6.3 EXTRA HEAVY STANDARD TREES

These are to be planted on the site frontage in front of the retaining wall.

The general tree area soil profiles will have been formed prior to planting with the dimensions 1500 x 1500mm and 900mm depth Break up the base to a depth of 200mm to ensure drainage.

Water rootball of rootballed trees with seaweed extract root dip.

All non-perishable wrappings to tree root balls to be removed prior to planting. Perishable wrappings eg hessian and narrow gauge chicken wire basket are to be retained until the tree is in position. Then peel back and remove perishable parts from top third of rootball.

Trees need to be orientated for the best crown development. It might be found that due to the nature of growing trees on nursery lines crowns develop asymmetrically.

At planting dig a localized pit in the prepared tree area 300mm larger than the rootball. Allow the tree at planting to have the root flare at finished topsoil level. (this may be the soil mark on the nursery stock. Check this is the root flare point before planting. Correct planting depth is important.)

The tree shall be set upright in the centre of the tree pit so that the soil level after settlement will be at the original soil mark on the tree stem. The three stakes shall be driven into the pit 300mm from edges and fixed before backfilling

Tree pit is backfilled with imported subsoil 600mm thick and imported topsoil 300mm thick. 10% Green Compost is to be mixed in thoroughly into top 150mm of the topsoil backfill. The returned soil shall be lightly consolidated by treading as filling proceeds layer by layer with subsoil replaced first and then topsoil in layers above the subsoil

The returned soil shall be finely broken down and placed around the roots gently shaking the tree to allow particles to work around the rootball and ensure close contact with all rootball and prevent air pockets. The returned soil shall be lightly consolidated by treading as filling proceeds layer by layer, care being taken to avoid damaging the rootball. Soil around the root flare of the tree shall be consolidated firmly with the heel.

Secure the tree to the crossbar with Hessian webbing 50mm wide wrapped around tree stem and nail the webbing to the crossbar with galvanised nails. The stakes are to be 75mm diameter, 1200mm above ground level.

Water tree thoroughly after planting.

The trees are in a mulched planting bed will be mulched.

Supply and fix netguards on roadside trees

6.4 HEAVY STANDARD IN RAIN GARDENS

The general tree area soil profiles will have been formed prior to planting.

At planting the localized tree pit dug shall be not less than minimum dimensions or 1200 x 1500mm x 900mm depth. Allow the tree at planting to have the root flare at finished topsoil level. (this may be the soil mark on the nursery stock. Check this is the root flare point before planting. Correct planting depth is important.)

Water rootball of rootballed trees with seaweed extract root dip.

All wires hessian and other rootball wrapping to be removed at planting.

Trees need to be orientated for the best crown development. It might be found that due to the nature of growing trees on nursery lines crowns develop asymmetrically.

Tree pits are backfilled with Sandy Loam Subsoil 600mm thick laid over a permeable root barrier and Sandy Loam Topsoil 300mm thick. The returned soil shall be lightly consolidated by treading as filling proceeds layer by layer with subsoil replaced first and then topsoil in layers above the subsoil. Membranes, Drains and Filter Material are to the Engineer's Details

The trees in the Rain Gardens are to be secured with underground guying, deadman blocks and Platypus Anchors

Water trees thoroughly after planting.

Fix spiral guards to the tree stems. PROVISIONAL

6.5 PLANTING BEDS 9 AND 10.

Supply and plant shrubs/perennials at spacing indicated on the Contract Drawings and of species and sizes indicated on the Plant Schedule.

Excavate planting beds to a depth of 600mm, break up ground under to a depth of 200mm and spread 300mm depth of existing or imported subsoil and 300mm depth of existing or imported topsoil over area.

Cultivate planting beds and work in Green Compost, 50mm layer spread over area to top 150mm topsoil depth. Remove any debris arising from cultivations.

All container grown shrubs shall be well-soaked in water with alginure root dip in the water prior to planting.

6.6 RAIN GARDEN BEDS 1-8

The general areas will be formed prior to planting in accordance with the Engineer's details

Spread 300mm depth of Sandy Loam Subsoil and 300mm depth of Sandy loam Topsoil over a Permeable Root Barrier laid over a bed of Filter Material, Drains and Filter Material laid in accordance with the Engineer's Details

Supply and plant shrubs at spacing indicated on the Contract Drawings and of species and sizes indicated on the Plant Schedule.

Cultivate planting beds. Remove any debris arising from cultivations.

All pot grown shrubs shall be well-soaked in water with alginure root dip in the water prior to planting.

POT GROWN IVY AND FERNS: Excavate a shrub pit to the dimensions as follows:
Container stock plants into a pit 150mm larger than pot size in all directions

Sufficient soil shall be removed from the pit to enable the root mass to be contained without distortion. The base of the pit shall be forked over to break up the ground to an additional depth of 100mm.

The root mass shall be removed intact from the container and gently loosened. The shrub shall be set upright in the centre of the pit. The returned soil shall be finely broken and firmed in around the root mass so that no residual voids remain. Surplus soil shall be distributed around the plant station and the empty container removed from site.

With Ivy plants the climber should be pegged out across the bed to encourage spread and coverage.

BAREROOT PLANTS HAWTHORN, DOGWOOD, GUELDER ROSE

Bare root plants to be planted in pits 450 x 450 x 450mm deep

Root dip native plants/whips in seaweed extract root dip according to manufacturer's instructions before planting.

Supply and spread a layer of Bark Mulch 50mm deep over area of beds excluding wildflower plug locations.

WILDFLOWER PLUGS

The topsoil to be cultivated to a fine tilth and the plugs planted using small handtools taking care not to damage the roots planted in groups of 3 or 4 in the bed frontage. No bark mulch to be spread over the plug areas.

6.7 PROTECTIVE FENCING

If necessary protective fencing will be erected to protect completed works where necessary where other adjacent works are in progress and there is a risk of damage by others of completed landscape works. The Rain Gardens are to be temporarily fenced until the planting establishes remove after Year 1 or 2 according to establishment.

6.8 DEFECTS LIABILITY

All tree, hedge and shrub planting is to be maintained for 5 Years after Practical Completion (1 Year as part of contract and 4 years with managing agent).

All planting completed prior to Practical Completion of the whole soft Landscape works is to be maintained as per maintenance requirements until Practical Completion.

After planting remove all soil from hard surfaces and grass areas and leave all areas in a clean and tidy condition at Practical Completion.

FAILURE OF PLANTING: Post Practical Completion maintenance of the planting is to be carried out by the Contractor as specified. Any tree/shrubs/plants which are dead, dying or otherwise defective at the end of each growing season within the Defects Liability Period will be regarded as defects due to materials or workmanship not in accordance with the Contract. They must be replaced by approved equivalent tree/hedge/shrub/plant material at the next suitable planting season unless otherwise instructed.

This will not apply if defects are caused by malicious damage after Practical Completion.

7.0 GRASSING:

7.1 CLEARANCE OF NEW GRASS AREAS.

All new grass areas are to be cleared of existing grass and vegetation by the use of a herbicide –glyphosate and dead vegetation removed to provide a clean seed bed for for grass seeding.

The grass seeding is to be carried out in either Spring (March - May) or Autumn (mid August - mid October) subject to the availability of the site for seeding.

The Contractor shall apply additional cultivations or applications of weedkiller required to destroy all weed growth, if owing to the time of year or other causes, there is a period of waiting between the completion of cultivation and final grading and seeding operations. As far as is practicable, cultivation and seeding shall proceed in close succession with a minimum elapse of time between each operation.

MANUFACTURERS' RECOMMENDATIONS

The manufacturer's recommendations for storage, handling and application of fertilisers and herbicides are to be strictly followed.

7.2 GRASS SEEDING : NEW GRASS AREAS

Eco Rich Lawn Grass Mix seeded at rate of 10gms per square metre. No fertiliser to be used. This grass can be cut short or allowed to grow tall. Tall grass areas should allow wild flowers to develop. A short cut strip can be made adjacent to the footpath.

SEEDED AREA REQUIREMENT

- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds (undesirable species) and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour for grass areas

CLIMATIC CONDITIONS

- General: Carry out the work while soil and weather conditions are suitable.

NOTICE

Give notice before:

- Setting out.
- Applying herbicide.
- Preparing seed bed.
- Seeding.

SETTING OUT

- Boundaries: Mark clearly.
- Delineation: In straight lines or smoothly flowing curves as shown on drawings.

7.3 GRASS OPERATIONS

TOPSOIL/SUBSOIL CULTIVATION: spreading as previously specified.

Grass Areas 1 and 2

225mm imported subsoil.

75mm imported topsoil

GRADING

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
- Hollows and ridges: Not permitted.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.

HARROWING

The topsoil or substrate is to be free of weeds prior to commencing seeding works.

Before seeding the areas shall be cross harrowed and raked to provide a suitable tilth, all stones larger than 50mm shall be removed from the surface and removed from site to the Contractor's tip. Light harrowing only for substrate surfaces.

SOWING

The Contractor shall obtain approval of the prepared soil before seeding. Supply and cross sow with the grass mix specified. After sowing once seeds have germinated - the seeded areas are to be lightly cross raked and rolled.

INITIAL GRASS CUTTING:

After the seed has germinated a first cut is to be made when the grass has reached 65mm in height and cut to 50mm height.

A second cut shall be given to grass when it has reached 75mm reducing it to 40mm.

Arisings are to be removed from the grass areas.

GRASS AREA WATERING.

The Contractor shall water the sown grass areas as necessary and agreed with the CA as failure due to drought will be the sole responsibility of the Contractor.

7.4 DEFECTS LIABILITY

FAILURE OF SEEDING (BEFORE PRACTICAL COMPLETION)

If germination has failed within one month of original seeding the above shall be repeated until a total grass cover is achieved.

Grass Areas - Bare areas and areas of dead grass which are apparent at Practical Completion will be regarded as defects and must be made good by recultivation and seeding at times agreed with CA.

FAILURE OF SEEDING (AFTER PRACTICAL COMPLETION)

Grass Areas - Bare areas and areas of dead grass which are apparent after Practical Completion will be regarded as defects and must be made good by recultivation and seeding at times agreed with CA.

7.5 PRACTICAL COMPLETION FOR GRASS SEEDER AREAS

Grass areas will only be accepted for Practical Completion when germination is seen to be even and of correct density and all weeds removed and the first cut has been satisfactorily undertaken.

No individual areas of grass area will be accepted for Practical Completion until the entire landscape works are completed to the satisfaction of the CA.

Should Practical Completion be delayed all grass areas shall be maintained in accordance with the specification for maintenance.

7.6 GENERALLY SEEDING OF GRASS AREAS

Care will be required when programming seeding of grass areas to ensure that completed seeding is not damaged by trafficking by others or additional works being undertaken in grass areas after seeding.

Verge areas may need to be seeded separately after the main grass areas as they are the location for services, signs, verge markers etc and are likely to require works after main grass areas are seeded.

PROTECTIVE FENCING

If necessary protective fencing will be erected to protect completed works where necessary where other adjacent works are in progress and there is a risk of damage by others of completed landscape works.

7.7 GRASS AREA MAINTENANCE UNTIL PRACTICAL COMPLETION

MOWING : The Contractor shall maintain grass heights all year to a maximum height of 60mm and a minimum height of 30mm. **Arisings shall be removed after the first cut and thereafter evenly dispersed.**

When conditions are dry ensure that the grass is not cut too short.

Water as necessary.

Apply additional fertiliser if necessary.

WEEDKILLER TREATMENT IN GRASS AREAS:

While actively growing, spot weed treat grass areas with a suitable approved weedkiller to kill vigorous perennial weeds such as ragwort and rosebay willow herb etc. Do not spray wildflowers

Spray only in calm conditions and prevent spray drift onto adjacent planting. Do not spray within three days of a cut, when rain is imminent nor during drought conditions.

Allow for three days to elapse before cutting areas.

Allow for 2No applications per year. The initial application to be undertaken during mid/late Spring and **completed by 10 June**.

Retreatment as required is to be carried out during September.

7.8 HARD LANDSCAPE FEATURES

BIRD AND BAT BOXES

2No Schwegler 1FF Bat Box

2No Schwegler 1SP Sparrow Terrace/NHBS Sparrow Terrace

To be fixed at height to Architect's Detail

GABION FENCE PANELS

2No Gabion Fence Panels to be located facing the undeveloped site to the east exact location to be confirmed.

Supplier or equivalent

Fine Mesh Metals

Unit B4 Halesfield 11, Telford

01902 810 310

sales@finemeshmetals.co.uk

Architect to confirm panel size and height to match adjacent fence dimensions.

GREEN CYCLE SHELTER

Green Cycle Shelter to be located on the east.

info@greenroofshelters.co.uk

Architect to confirm the cycleshelter size and its ground fixing.

Lindum Wildflower Turf to be used on the roof with subbase make up in accordance with Green Roof Shelters specification.

8.0 LANDSCAPE MAINTENANCE

MAINTENANCE PERIOD FIVE YEARS: CONSTRUCTION MAINTENANCE PERIOD IS YEAR 1 AND THEREAFTER BY AGENT APPOINTED BY CLIENT.

8.1 MANAGEMENT RESPONSIBILITIES

The implementation and initial management of the landscape areas will be undertaken by Principal Contractor up until the point where the scheme will be 'handed over' to the Client and their Agent. Thereafter the Client (or an appointed management company) would be responsible for ensuring that the plan was implemented as specified

8.2 MONITORING

The maintenance work on the site undertaken by Principal Contractor's landscape sub-contractors will be monitored for the period from Practical Completion to Final Certificate by Principal Contractor up to handover to the Client. At this point as-built drawings and checks made of the site and a final defects list issued which are to be undertaken before the Final Certificate can be issued.

The site enters to the remainder of the 5 Year period and the documents relating to the site landscape will be provided to the Client and also to the approved managing agent. The monitoring of the site becomes the responsibility of the Client. An annual check of the site to be undertaken and the results logged and any defective planting replaced and other necessary remedial works undertaken.

This check should note how the wild flower grass area is establishing, how the trees and planting establishing and any increase of birds foraging and nesting, if bees, wasps butterflies and other invertebrates are seen and if are increasing since the previous year, if reptiles such as lizards seen on in hard landscape areas.

At the annual review any changes to the management regime required to continue to make the site suitable for birds, invertebrates and reptiles are to be undertaken including the replacement of defective plants. A revised management plan incorporating these changes will be made and used for the next year.

This annual review will occur for the 5 year period. An ecologist should be requested to make a check in Year 3 and 5 and to confirm the scheme has had a positive biodiversity status and any recommendations to be added to the annual review.

8.1 DEFINITIONS

CA: Contract Administrator shall mean the agent appointed by the Client

8.2 PROGRAMMING AND SITE ATTENDANCE

PROGRAMME OF WORKS: The Contractor shall provide a programme of maintenance works at the commencement of the Contract. The Contractor shall maintain an operation plan that demonstrates the monthly progress and the month in advance. The operational plan is to include management objectives to achieve this plan.

SITE ATTENDANCE: The aim of this item is to ensure that small matters are corrected.

The Contractor shall attend to incidental matters which are defined as follows:

- inspect the site and undertake as necessary litter picking, sweeping, leaf clearance within soft landscape areas.
- 'making-safe repairs' to such items as staked trees, fencing etc.
- 'making safe' any hazardous items on site eg damaged service covers etc (full repair to be undertaken by Employer's CA).
- reporting to CA any matters requiring more than one hours attendance or requiring specialist work.

MAINTENANCE RETURNS

The Contractor shall submit a monthly maintenance return issue this to CA and copy it to the CA.

8.3 REMOVAL OF ARISING:

The Contractor shall remove all leaves, litter, rubbish, dirt and other arisings shall be swept up, collected and disposed of on the same day as the various items of work are undertaken. These arisings shall be collected and unsuitable material disposed off at the Contractor's tip. The Contractor shall take sole responsibility for providing a tip and for all charges, fees, transport and any other expenses in connection with tipping unless otherwise specified in writing by the LA.

Where indicated arisings are to be dispersed.

Planting beds and trees within planting bed arisings are to be removed from site.

Note all green waste arisings is to be recycled via local recycling facilities as the site has not suitable locations for composting material or operations for reusing composted material.

8.4 INSPECTIONS

During maintenance operations the Contractor shall note and report without delay to the CA any of the following:

- activities by others which prevent the normal maintenance operations proceeding in the site areas eg Statutory Authorities work, new constructions, storage of materials and parking on landscape areas etc.
- damage caused to the site areas by the activity of others on site.
- missing gulley covers or damaged service covers noted during the course of the works.
- damage to boundary fences, other fences, railings and other features for which the Employer is responsible.
- persistent litter problems.
- theft or malicious damage, or clearly unauthorized use of the site areas.
- damage to building structures within site area.

Inspect trees after high winds. Refix newly planted trees upright as necessary.

9.0 TREE MAINTENANCE: GENERAL

The Contractor is to take care not to damage tree stems, any damage or tree death resulting from damage shall be made good at the Contractor's expense.

9.1 STAKED TREES, INSPECTING TREES

Inspection of new trees should be monthly in the first year and bi-monthly thereafter and after high winds to assess remedial work needed due to storm damage, clearing of dead trees, prevention of trees overhanging roads and footpaths.

PEST AND DISEASE CONTROL: The Contractor shall report to the CA any indications that pest or disease control treatment is required. Allow for one application of a treatment approved by the CA. Report any squirrel damage noted to CA. Only non- chemical means of pest and disease control can be used.

TREE REMOVAL: Remove dead or dying or trees which are poorly located after obtaining approval from the CA. Where the tree is removed from a grass area reinstate soil levels to marry with adjacent levels and seed with an approved mix.

REFIRMING: Ensure that all trees remain firmly bedded in the ground after strong winds, frost and other disturbances. Refirm by treading around the base. Any 'collars' forming at the base of the trees shall be broken up and then backfilled with topsoil.

STAKED AND UNDERGROUND TREES:

- Check and refix and replace as necessary rabbit guards on trees if these are present.
- Check tree stakes for firmness and signs of rot or damage.
- Refirm or replace as required. Tree stakes to be supplied by the Contractor at his sole cost to be suitable for the size of tree to be staked, fully tanalised, round, peeled and pointed at one end.
- Tree stakes should be removed after three growing seasons. If the tree has failed to anchor at this time the tree is to be replaced.
- Check all tree ties. Remove, adjust, refix or replace if broken. Ties to be supplied by the Contractor at his/her own expense. The make of replacement ties must be approved by the CA before use on site. Ties to be nailed securely to the stake.
- Check underground guying for firmness or damage. Adjust the tree anchors as necessary to keep the trees upright.
- Provide aeration where compaction is considered to be one cause for poor tree condition.
- Trees are within planting beds, grass or hedges – maintain areas around trees weed free for three years.
- Top up mulch in planting beds in July to 50mm depth for first two years.
- Water as necessary during dry periods.
- Any trees which die or are otherwise defective during the 5 year Defects/Maintenance Period shall be replaced at the Contractor's cost in the next November and March planting season.

These works to staked trees are to be carried out **between September and February each year unless specified otherwise and when necessary during the remaining part of the year – work should be undertaken when trees are dormant.**

PRUNING TREES as follows:

- Remove dead or damaged branches and cut back any ragged edges of wounded bark back to healthy tissue.
- Remove side growths beneath the crowns and any suckering growth from tree base. All cuts to be pared back flush to the stem, trunk or scar tissue.
- Where tree in very poor condition tree removal may be required.
- Pruning shall be undertaken once per year during between October and February. The use of chainsaws and the like will not be permitted, unless instructed by the CA for mature tree pruning works.

10.0 MAINTENANCE OF PLANTING BEDS: GENERAL REQUIREMENTS

PEST AND DISEASE CONTROL: The Contractor shall report to the CA any indications that pest or disease control treatment is required. Allow for one application of a treatment approved by the CA. Pest and disease control includes for the control of slugs, snails or any other pest (not vermin) which adversely affects plant material. Repeat treatments are to be made as necessary. Only non- chemical means of pest and disease control can be used. Report any rabbit damage noted to CA.

REFIRMING: Ensure that all shrubs remain firmly bedded in the ground after strong winds, frost and other disturbances. Refirm by treading around the base. Any 'collars' formed at the base of the shrubs shall be broken up and then backfilled with topsoil.

AERATION : Where the bed is compacted or the soil water logging aerate the soil avoiding damage to any underground plant rhizomes etc and avoid damage to underground services where these occur.

10.1 WEEDING PLANTING BEDS: All planting beds are to be kept weed free at all times. **Beds indicated for handweeding** are either Rain Gardens or overgrown and require handweeding to clear them before routine maintenance can proceed. The Contractor is to provide a list of suitable herbicides for use in planting beds and obtain the written approval of the CA.

As indicated in the Contract Drawings weed areas using the appropriate method as follows:

W1. HANDWEEDING – RAIN GARDEN MUST BE HAND WEEDED. Handweeding means removing all weeds, including roots, by hand hoeing, digging or forking, taking care not to remove more than a minimum quantity of soil, causing minimum disturbance to mulched surfaces and bulbs and leaving the area in a neat, raked, clean condition. Areas to be handweeded are well established areas of ground cover, evergreen plant material or mulched beds.

ENSURE you do not handweed out the *Geranium pratense* (Blue Geranium) and (*Ranunculus reptans*) Creeping Cinquefoil

W2. CONTROL WEEDING – NOT SUITABLE FOR RAIN GARDENS

Control weeding means applying an appropriate weedkiller at the beginning of the growing season and thereafter the areas are to be checked once a month in season and any weeds spot treated with an appropriate weedkiller. Initial weedkiller application to be undertaken during mid/late Spring each year **and be completed by 10 June**. This treatment is for newly planted beds and block of deciduous planting and gapped sections of beds.

NOTE CHECK THAT HERBICIDE USED IS SUITABLE FOR USE ACCORDING TO THE PLANT COMPOSITION OF THE BED IF NOT HANDWEED.

W3. SPOT WEEDING – NOT SUITABLE FOR RAIN GARDENS Spot weeding means treating Nettles, Docks, Brambles, Willowherb, Thistles, Ragworts, Japanese Knotweed, Dandelions, Plantains, Maretail and Cow Parsley and any other weed indicated for removal by the CA with an appropriate contact herbicide. Bring all beds to a weed free condition and allow for the removal, where necessary, of all self sown seedling trees, shrubs and allied suckers.

10.2 BED MAINTENANCE

MAINTAINING MULCHED BEDS: During weeding and maintenance operations do not incorporate mulch into the underlying soil. Each Autumn rake over the mulch to provide a neat and tidy appearance.

Top up mulch to 50mm depth in July for Year 1 and 2. Do not top up mulch over wild flower plug locations.

PLANTING BED EDGES: On one occasion per year the soil at edges of planting beds shall be reduced to 50mm below the adjacent hard or grass surface. The resulting soil shall be evenly spread over the planting bed. Care shall be taken to ensure that the bed edges against grass areas are well defined unless otherwise directed by the CA.

SOIL LEVEL ADJUSTMENT Reduce the level of the soil/mulch at the edges of the beds to 50mm below the adjacent hard or grass surface once a year, in Winter. Spread arisings evenly over the bed.

NOTE; Where good horticultural practice for the particular shrubs/plants within a bed require a specific fertiliser treatment this shall be applied.

DISEASES: The CA shall be notified of any pest or disease outbreaks. If cutting out diseased material all implements shall be sterilized between shrubs to prevent spreading the pathogen.

CONTROL OF UNSUITABLE VEGETATION

During routine visits inspect plantings for sucker growth, and unsuitable/atypical growths and feathers on stems and remove at the point of origin.

IVY continue to peg out ivy shots to provide full cover to the beds.

10.3 PRUNING SHRUBS AND GROUND COVER: All pruning is to be carried out in accordance with the correct horticultural practice for the type of shrub. Vary the amount and nature of the pruning, trimming and shaping according to the species, stage of growth, season and required visual effect.

GENERAL

The Contractor shall allow for pruning once a year, and trimming of vigorous species as necessary through the year.

In all cases dead, diseased and damaged material shall be removed.

Where necessary remove growth encroaching onto footpaths, roads, hard areas, grassed areas, signs, lights, sightlines and other features and if directed by the CA.

Trim as necessary the species to prevent straggly growth or growth beyond the bed limits, reduce the height of shrubs to free tree stems as directed, trim to maintain tall shrubs at a defined height and round off the planting as directed to provide a neat appearance.

Any plants which die or are otherwise defective during the 5 year Defects/Maintenance Period shall be replaced at the Contractor's cost in the next October and March planting season.

ALL ARISINGS FROM PRUNING SHALL BE SHREDDED AND REMOVED FROM SITE AS GREEN WASTE.

PRUNING GENERALLY: The CA will give directions on site for all planting beds to indicate the approach to be adopted for pruning beds and the effect required.

PRUNING EQUIPMENT: The Contractor shall use only two bladed secateurs or other cutting equipment approved by the CA. All cut ends shall be left with a clean finish.

The adjacent plantings should not over run one another and judicious pruning of the shrubs should be undertaken to achieve the best visual effect.

10.4 RAINGARDEN PROTECTIVE FENCING

Raingarden beds to be temporarily fenced for Year 1 and if necessary for Year 2 after practical completing to ensure plant establishment.

11.0 GENERAL GRASS MANAGEMENT

INSPECTION OF GRASS AREAS AND LITTER PICKING : The Contractor shall inspect grass areas on each occasion before commencing grass cutting operations and shall remove and dispose of all litter, stones and other debris which may cause personal injury, or damage to buildings, machinery or equipment and installations.

COMMENCEMENT OF OPERATIONS: Once grass cutting has commenced on an area, the whole area shall be cut and completed.

GRASS CUTTING MACHINES: Grass cutting machines shall be appropriate for the size of area being maintained and the standards of finish specified. Inaccessible margins, isolated rough areas of any size, corners, bases of fencelines, bases of hedges, bases of buildings and including weed killed areas and the like shall be cut by suitable machines or by hand at the same time as the main area of grass. Cutters of all mowers shall be sharp, properly set and shall cut the sward evenly and cleanly.

REMOVAL OF ARISINGS: All arisings from grass cutting scattered over roads, paths and planting beds should be swept up, collected and removed from on the same day mowing is undertaken. Arisings from Wildflower grass areas to be removed.

OBSTRUCTIONS : All growth around obstructions in grassed areas and grass overhanging edges of planting beds, bases of trees, stone light surrounds, fence lines and the like shall be cut on each occasion that the grass is cut.

GRASS EDGES: Where grass abuts horizontal hard surfaces cut it back to the edge of the hard surface without forming a channel wherever the overgrowth of grass exceeds 100mm, using an appropriate grass edge cutter, cutting to smooth curves and straight lines as appropriate.

GRASS CUTTING MACHINES : Damage to plants or other material caused by the use of these machines, including nylon cord cutting machines, for whatever reason will require the Contractor to supply and place suitably approved replacement material all at his/her own expense.

AREAS OF GRASS TO BE STRIMMED: The areas to be strimmed are steep banks or around obstructions or in areas too small for the mowers to be used. The grass areas shall be strimmed to maintain to the height specified for adjacent grass areas and arisings removed or dispersed according to the grass type.

GRASS CUTTING – CUT TWICE A YEAR

In Year 1 the first growing season, the new wildflower and grass areas should be cut regularly (one cut per Month from March-October inclusive) to approximately 50mm to control annual weeds

Once the sward is established for the following years

Cut to a height of 50mm in April and September,

Leave arisings insitu for two days then remove from site

No fertiliser applications to be made.

Treat broadleaf weeds – bindweed, docks, thistles, ragwort, and nettles to by a spotweed treatment or weed wiping is the only acceptable chemical method and will be undertaken during mid/late spring each year. Retreatment as necessary in season.

11.1 GRASS REINSTATEMENT OF GRASS AREAS

to be undertaken using the same seed mix used for initial seeding.

GENERAL GRASS REINSTATEMENT: In all areas subject to mowing procedures reinstate any areas within the grass which are not of an acceptable standard in comparison to the general condition of the adjacent grass areas. Reinstatement shall ensure that the grass area is brought to the standard specified. Necessary treatment for general reinstatement shall include importing suitable soil to fill low areas, levelling raised or other uneven areas, stonepicking and the removal of other debris which would impede the mowing procedure and thereafter seeding or overseeding with a seed mix to be approved by the CA. Allow for adjusting soil levels around manholes and other fixed apparatus, repair of rabbit damage and vehicle ruts or similar damage. Also allow for bringing grass down to the height to which it is thereafter to be maintained.

Any defective or grass failing to thrive in the first two years of maintenance period is to be reinstated

12.0 INVASIVE NON NATIVE SPECIES

In the event that invasive plant species become established on site they will be controlled at the nearest opportunity using approved methodology and guidance to avoid the risk of further contamination and spread.

Use non chemical methods where possible.

Common examples include:

- Cut Himalayan balsam (*Impatiens glandulifera*), by hand or machine below the lowest node to prevent the formation of flowers and seeds..

- Spray giant hogweed (*Heracleum mantegazzianum*) with herbicide as a spot treatment when the plants are growing actively but still less than 1m high. Control on a catchment basis, working downstream to prevent seed recolonisation.
- Spray Japanese knotweed (*Fallopia japonica*) with glyphosate during the flowering period. Monitor treated sites and apply spot herbicide treatments to any surviving plants.

MKR DEVELOPMENT : PANT INDUSTRIAL ESTATE : MERTHYR TYDFIL

Rev 5Aug2020

[illegible]

MKR : PANT INDUSTRIAL ESTATE : PLANTING SCHEDULE

08/07/2020 rev 21 July 2020

TREES				
Carpinus betulus Fastigiata		Fastigate Hornbeam	All trees are to be rootballed 14-16cm Extra Heavy Standard	6 No
Crataegus mongyna		Hawthorn	12-14cm Heavy Standard	4 No
Malus sylvestris		Crabapple	12-14cm Heavy Standard	2 No
TOTAL				12 No
PLANTING BEDS 1-10				
		Bark Mulch to beds		131 m2
Crataegus mongyna	Cm	Hawthorn	60-80cm 1 + 1 Bareroot	51 No
Cornus sanguinea	Cs	Dogwood	60-80cm 1 + 1 Bareroot	35 No
Hedera helix	HH	Ivy	60-90cm 2Lpot	420 No
Ilex aquifolium	Ia	Holly	30-45cm 3Lpot	102 No
Polystichum setiferum	Poly	Evergreen Fern	2Lpot	12 No
Viburnum opulus	Vo	Guelder Rose	60-80cm 1 + 1 Bareroot	15 No
TOTAL				635 No
WILDFLOWER PLUGS				
Geranium pratense	Gp	Cranesbill	65cc Jumbo Plug	119 No
Potentilla reptans	Pr	Creeping cinquefoil	65cc Jumbo plug	86 No
TOTAL				205 No

Lindum Green Roof Wildflower Turf : Roof of Cycle Shelter

Latin name	Common name
Daucus carota	Wild Carrot
Achillea Millefolium	Yarrow
Galium mollugo]	Hedge Bedstraw
Knautia arvensis	Field Scabious
Leucanthum vulgare	Oxeye Daisy
Origanum vulgare	Wild Majoram
Plantago media	Hoary Plantain
Primula veris	Cowslip
Rhinanthus minor	Yellow Rattle
Silene flos-cuculi	Pink Ragged Robin
Echium vulgare	Vipers Bugloss
Veronica spicata	Spiked Speedwell
Thymus vulgare	Common Thyme
Silene flos-cuculi	White Ragged Robin
Centaurea scabiosa	Greater Knapweed
Filipendula ulmaria	Meadowsweet
Galium verum	Ladys Bedstraw
Leontodon hispidus	Rough Hawkbit
Lotus corniculatus	Birdsfoot trefoil
Plantago lanceolata	Ribwort Plantain
Sanguisorba minor	Salad Burnett
Prunella vulgaris	Self Heal
Silene dioica	Red Campion
Silene vulgaris	Bladder campion
Allium schoenoprasum	Chives
Linaria vulgaris	Toadflax
Dianthus carthusianorum	Carthusian Pink

Germinal WFG Eco Species rich Lawn Mix

76 m2

Latin name	Common name	
Festuca rubra litoralis	Slender Creeping Red Fescue	12.5 %
Festuca longifolia	Hard Fescue	10 %
Festuca ovina	Sheep's Fescue	10 %
Pheleum bertolonii	Small leafed Timothy	2.5 %
Centaurea nigra	Common Knapweed	2 %
Plantago lanceolata	Ribwort Plantain	1 %
Prunella vulgaris	Self Heal	1 %
Ranunculus acris	Meadow buttercup	2 %
Lotus corniculatus	Birdsfoot trefoil	0.5 %
Festuca rubra rubra	Strong Creeping Red Fescue	15 %
Festuca rubra communtata	Chewings Fescue	10 %
Poa pratensis	Smooth stalked Meadow Grass	5 %
Poa trivialis	Rough Stalked Meadow Grass	5 %
Agrostis capillaris	Browntop Bent	5 %
Agrostis stolonifera	Creeping Bent	2.5 %
Lolium perenne	Lolium perenne	2.5 %
Ranunculus repens	Creeping Buttercup	2.3 %

Galium verum	Ladys Bedstraw	1.25 %
Trifolium pratense	Red Clover	2 %
Trifolium repens	White Clover	2 %
Rumex acetosa	Common Sorrel	0.5 %
Scabiosa columbaria	Small Scabious	0.2 %
Taraxacum officinale	Dandelion	0.3 %
Medicago lupulina	Black Medick	1 %
Linum usitatissimum	Flax	1 %
Cerastium fontanum	Common Mouse Ear	0.2 %
Primula veris	Cowslip	0.1 %
Hypochaeris radicata	Cats Ear	0.2 %
Leontodon hispidus	Rough Hawkbit	0.5 %
Leontodon autumnalis	Autumn Hawkbit	0.5 %
Rhinanthus minor	Yellow Rattle	0.2 %
Teucrium scordonia	Wood Sage	0.5 %
Daucus carota	Wild Carrot	0.25 %
Achillea Millefolium	Yarrow	0.5 %
		100.0 %
Sow at rate of 10 gms per sq metre		



CRANESBILL
Geranium pratense



CREEPING CINQUEFOIL
Potentilla reptans





Existing Grass

Existing Trees and Vegetation

Schwegler 1FF Bat Box at fixed high level

Proposed Grass Areas

Planting Bed

Rain Garden

NHBS Sparrow Terrace or Schwegler 1SP Sparrow Terrace Bird Box at fixed high level

Proposed Trees

Gabion Fence

Green Cycle Shelter

Gabion Fence

Green Cycle Shelter - with Wildflower Turf Roof

Lindum Green Roof Wildflower Turf : Roof of Cycle Shelter	
Latin name	Common name
Daucus carota	Wild Carrot
Achillea Millefolium	Yarrow
Galium mollugo	Hedge Bedstraw
Knautia anvensis	Field Scabious
Leucanthemum vulgare	Oxeye Daisy
Origanum vulgare	Wild Majoram
Plantago media	Hoary Plantain
Primula veris	Cowslip
Rhinanthus minor	Yellow Rattle
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Echium vulgare	Vipers Bugloss
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Thymus vulgare	Common Thyme
Silene flos-cuculi	White Ragged Robin
Centaurea scabiosa	Greater Knapweed
Filipendula ulmaria	Meadowsweet
Galium verum	Lady's Bedstraw
Leontodon hispidus	Rough Hawkbit
Lotus corniculatus	Birdsfoot trefoil
Plantago lanceolata	Ribwort Plantain
Sanguisorba minor	Salad Burnett
Prunella vulgaris	Self Heal
Silene dioica	Red Campion
Silene vulgaris	Bladder campion
Allium schoenoprasum	Chives
Linaria vulgaris	Toadflax
Dianthus carthusianorum	Carthusian Pink

Germinal WFG Eco Species rich Lawn Mix		76 m2
Latin name	Common name	
Festuca rubra litoralis	Slender Creeping Red Fescue	12.5 %
Festuca longifolia	Hard Fescue	10 %
Festuca ovina	Sheep's Fescue	10 %
Pheleum bertolonii	Small leaved Timothy	2.5 %
Centaurea nigra	Common Knapweed	2 %
Plantago lanceolata	Ribwort Plantain	1 %
Prunella vulgaris	Self Heal	1 %
Ranunculus acris	Meadow buttercup	2 %
Lotus corniculatus	Birdsfoot trefoil	0.5 %
Festuca rubra rubra	Strong Creeping Red Fescue	15 %
Festuca rubra communatata	Chewings Fescue	10 %
Poa pratensis	Smooth stalked Meadow Grass	5 %
Poa trivialis	Rough Stalked Meadow Grass	5 %
Agrostis capillaris	Browntop Bent	5 %
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Taraxacum officinale	Dandelion	0.3 %
Medicago lupulina	Black Medick	1 %
Linum usitatissimum	Flax	1 %
Cerastium fontanum	Common Mouse Ear	0.2 %
Primula veris	Cowslip	0.1 %
Hypochaeris radicata	Cats Ear	0.2 %
Leontodon hispidus	Rough Hawkbit	0.5 %
Leontodon autumnalis	Autumn Hawkbit	0.5 %
Rhinanthus minor	Yellow Rattle	0.2 %
Teucrium scordonia	Wood Sage	0.5 %
Daucus carota	Wild Carrot	0.25 %
Achillea Millefolium	Yarrow	0.5 %
Sow at rate of 10 gms per sq metre		100.0 %

CA 2020-44 Rev B

21 July 2020

Revised planting

CA 2020-44 Rev A

8 July 2020

Rain Gardens added

Grass Details added

Corscadden Associates

77 Fairleigh Road

Pontcanna, Cardiff, CF11 9JW

Tel 02920 373053

email ca@corscaddenassociates.com

MKR PROPERTY

PANT INDUSTRIAL

ESTATE,

MERTHYR TYDFIL

Drawing Title

LANDSCAPE OVERALL

PROPOSALS

Scale

1:250 at A1

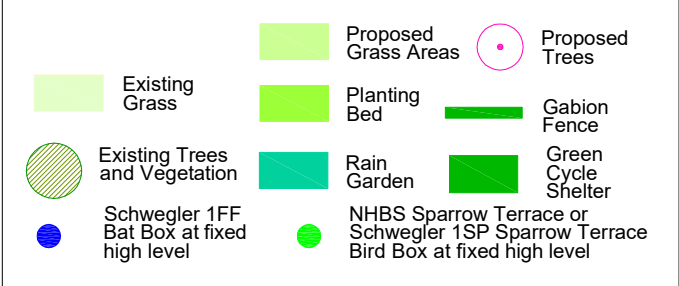
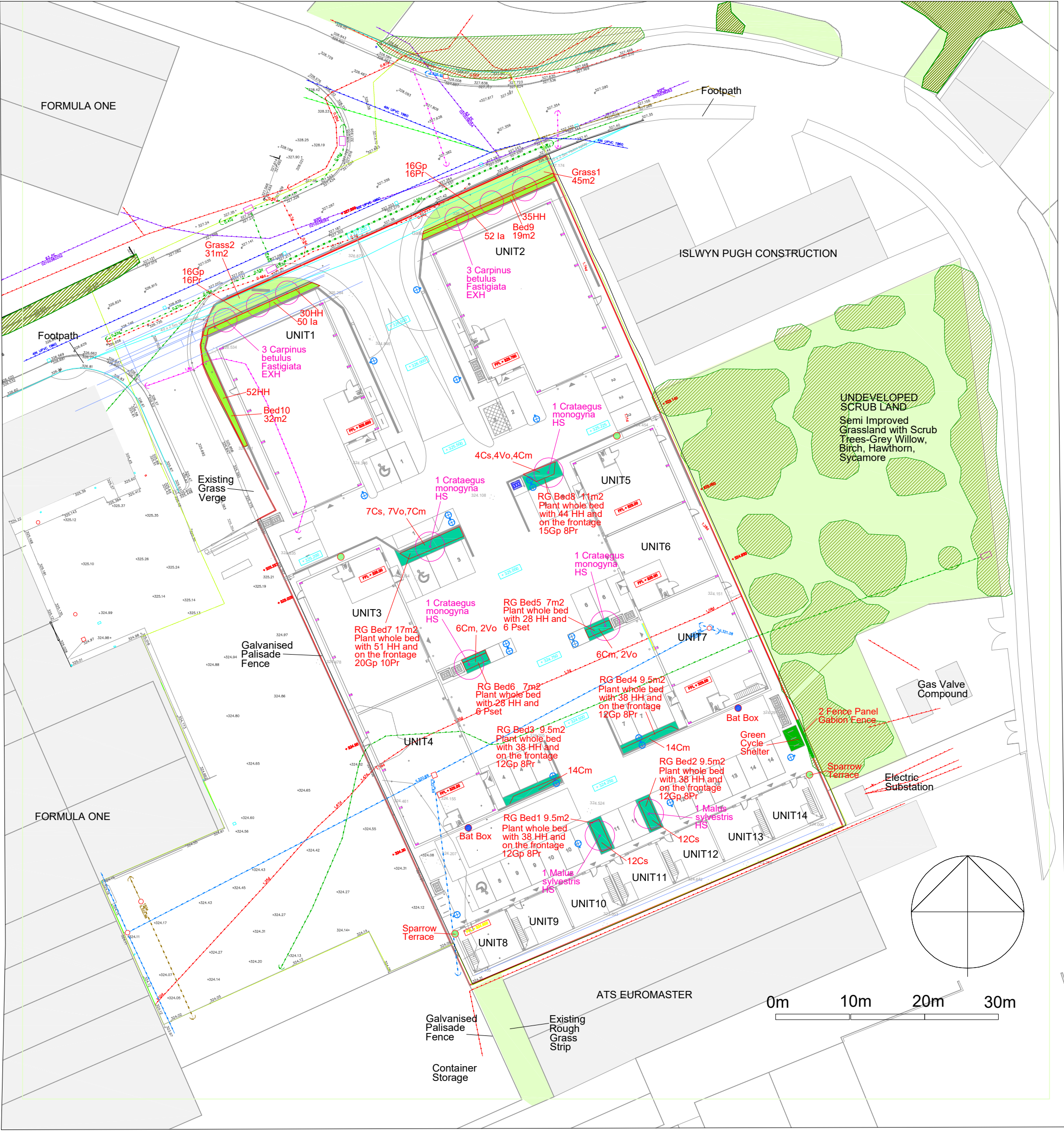
Date

19 June 2020

Drawing No

291

CA 2020-44 Rev A



MKR : PANT INDUSTRIAL ESTATE : PLANTING SCHEDULE				
08/07/2020 rev 21 July 2020				
TREES				
Carpinus betulus Fastigiata		Fastigate Hornbeam	All trees are to be rootballed 14-16cm Extra Heavy Standard	6 No
Crataegus mongyna		Hawthorn	12-14cm Heavy Standard	4 No
Malus sylvestris		Crabapple	12-14cm Heavy Standard	2 No
TOTAL				12 No
PLANTING BEDS 1-10				
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Viburnum opulus	Vo	Gelder Rose	60-80cm 1 + 1 Bareroot	15 No
TOTAL				635 No
WILDFLOWER PLUGS				
Geranium pratense	Gp	Cranesbill	65cc Jumbo Plug	119 No
Potentilla reptans	Pr	Creeping cinquefoil	65cc Jumbo plug	86 No
TOTAL				205 No

CA 2020-46 Rev A
21 July 2020
Revised Planting

Coriscadden Associates
77 Fairleigh Road
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email ca@coriscaddenassociates.com

MKR PROPERTY
PANT INDUSTRIAL
ESTATE.
MERTHYR TYDFIL

Drawing Title
LANDSCAPE PLANTING
DETAILS

Scale
1:250 at A1

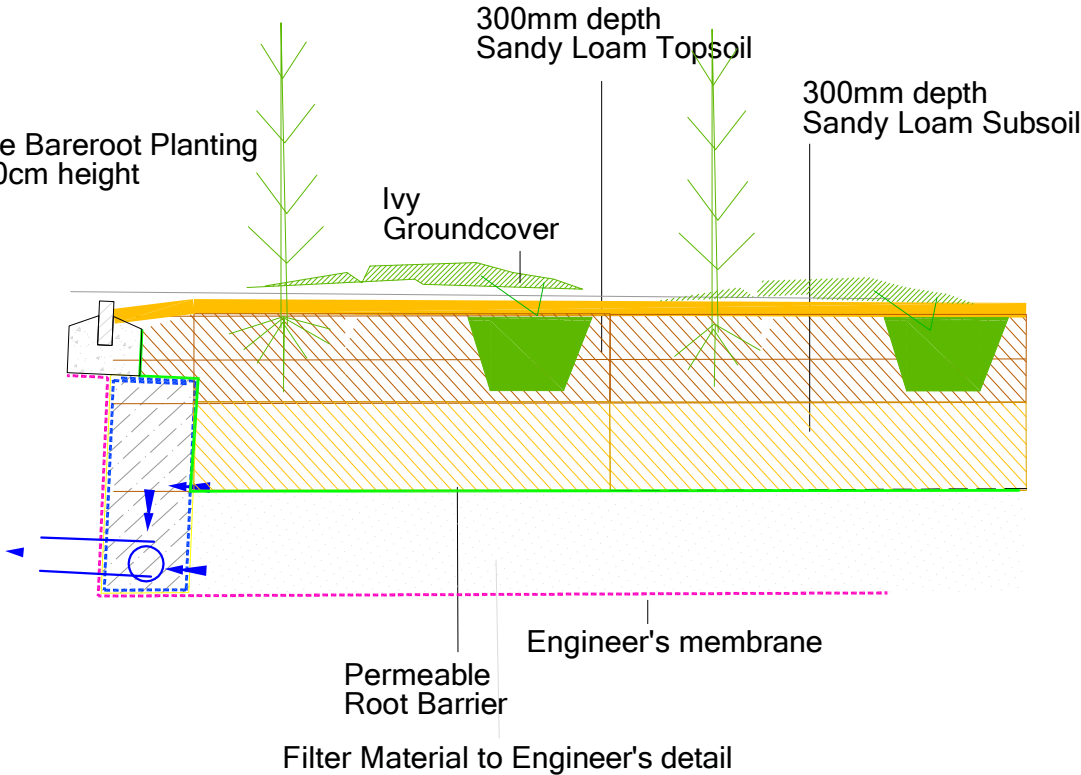
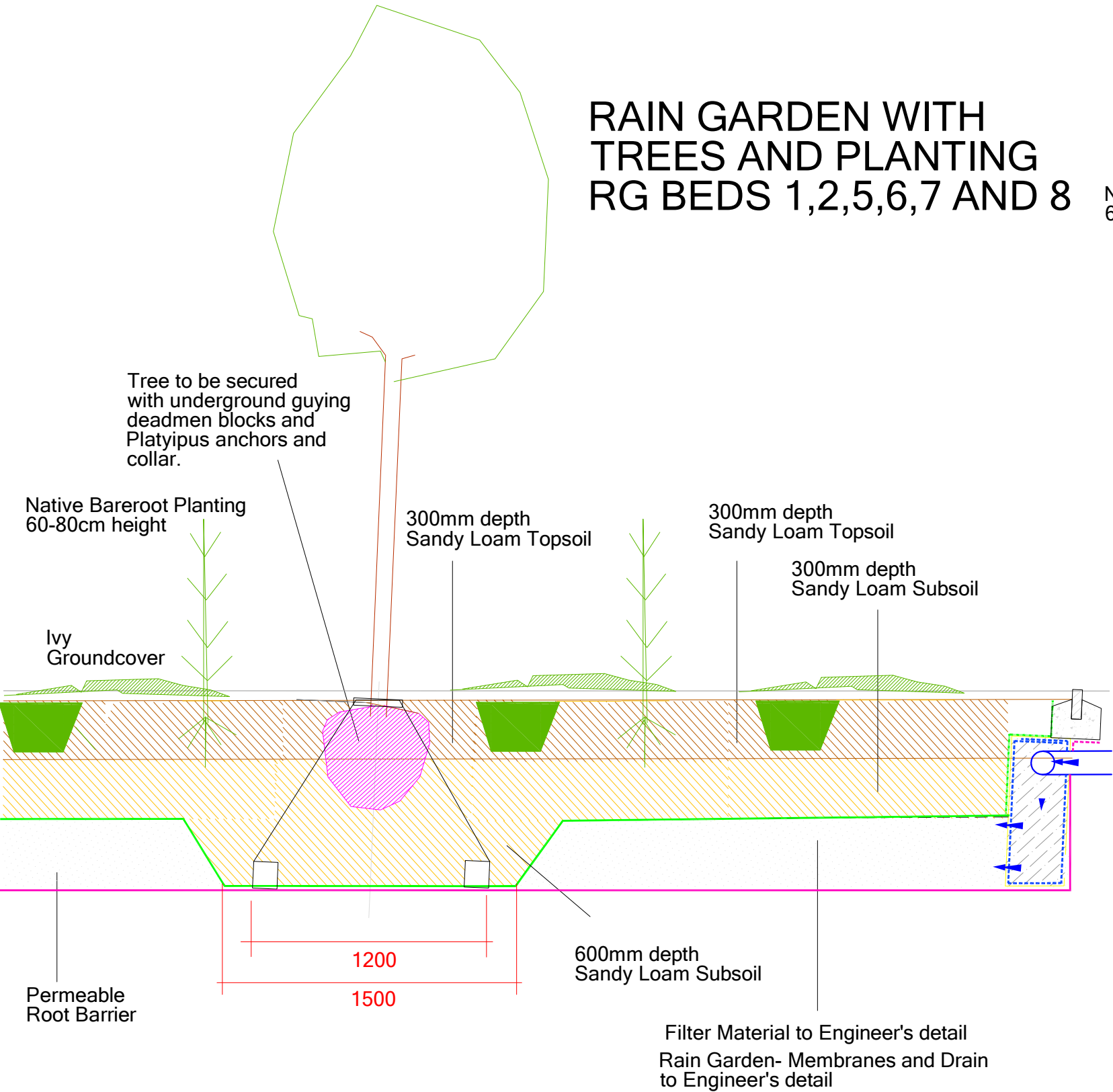
Date
8 July 2020

Drawing No
291

CA 2020-46 Rev A

RAIN GARDEN WITH TREES AND PLANTING RG BEDS 1,2,5,6,7 AND 8

RAIN GARDEN PLANTING NO TREES RG BEDS 3 AND 4



NOTE Depth of Rain Garden dependent on Engineer's requirements.
Soil requirement for planting is dependent on landscape type
Planting beds 300mm Sandy Loam Topsoil : 300mm Sandy Loam Subsoil
Trees 300mm Sandy Loam Topsoil : 600mm Sandy Loam Subsoil

A permeable rootbarrier is to be installed below the soil areas

CA 2020-57 Rev A
 21 July 2020
 Revised Planting

Corscadden Associates
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 Tel 02920 373053
 email ca@corscaddenassociates.com

**MKR PROPERTY
PANT INDUSTRIAL
ESTATE.
MERTHYR TYDFIL**

Drawing Title
**TREE SECTION
RAIN GARDEN**

Scale	Date
as given	8 July 2020

Drawing No	
291	CA 2020-57 Rev A