



BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

ENVIRONMENT PLANNING

Avant Homes

Moorthorpe Way

Sheffield

Ecological Management Plan

ENVIRONMENTAL PLANNING

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Ecological Management Plan

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Figure 3. Example of aeration system using perforated piping within the added fill and geoweb layers.

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Appendix 1 Landscape Drawings

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1.0 INTRODUCTION

Background

- 1.1 A planning application has been submitted for residential development on land at Moorthorpe Way in Sheffield (the Site). As part of the application, the Local Authority have requested more details on specific protection afforded to trees, as well as management actions for the retained habitats on site and the habitats that will be created across the Site, in the form of an Ecological Management Plan (EMP).

Existing Site

- 1.2 The Site is located off Moorthorpe Way and Moorthorpe Rise to the south-west of Owlthorpe in Sheffield: Central Grid Reference SK 4156 8261.
- 1.3 The Site comprised a mosaic of habitats, with rank grassland, patches of dense scrub, dense bracken, broadleaved trees (including groups G7a, G7b and G7c; see Appendix 2) and a hedgerow all of which will be retained and managed as part of the management plan.
- 1.4 The habitats to be created include wildflower grassland, native hedges, native shrubs and native trees.
- 1.5 A woodland along the Site's northern boundary is considered to be of some significance and a 15m stand-off between the woodland edge and any development has been agreed between the Avant Homes and the Local Authority.

Aims & Objectives

- 1.6 In accordance with National Planning Policy Framework (NPPF) guidelines, measures shall be implemented to enhance, monitor and manage habitats created on the site to maximise their biodiversity value. To achieve this aim, an EMP has been produced to cover the thirty years after development completion.
- 1.7 The short-term objectives of this EMP are:
- Maintain existing habitats;
 - Protect the woodland along the Site's northern boundary during construction; and
 - Create species-rich habitats during the development.
- 1.8 The longer-term objectives are to ensure appropriate management of those habitats created, such that species diversity and habitat functionality is maintained.

2.0 SITE DESCRIPTION

Main Residential Development

- 2.1 The largest distinct area of the Site comprises the proposed residential development area, located north-west of Moorthorpe Rise and Moorthorpe Gate.
- 2.2 The habitats proposed in this area comprise new tree planting, shrub planting, wildflower grassland planting, new hedgerow planting and new native woodland mix planting as shown in the drawings presented in Appendix 1.
- 2.3 This EMP will focus on the establishment and management of the hedgerows and wildflower grassland, as these areas are likely to have the highest ecological value with the correct management. The management also covers the retained habitat.
- 2.4 Details on tree planting methods are provided in the landscaping strategy, which covers the woodland tree planting as well as individual trees. Management of trees across the Site should focus on the need to retain a safe environment for members of the public and should be guided by an experienced tree hazard surveyor if the need arises in the future.
- 2.5 A 15m buffer zone from the woodland on the Site's northern boundary will be maintained as a dark corridor to provide habitat suitable for bats, as well as birds and mammals.

LEAP

- 2.6 A LEAP (Locally Equipped Area for Play) will be created south of the main residential development (see drawings presented in Appendix 1). This area will comprise new tree planting and amenity grassland areas suitable for sports and games. These habitats will not be managed for their ecological value and are not therefore included within this plan.

Detention Basin

- 2.7 A detention basin will also be created to the east of the proposed development (see drawings presented in Appendix 1). This will comprise an area of permanent standing water, with the edges of the basin planted with meadow grassland mixes. These habitats will be managed for their biodiversity and are included within the grassland establishment and management in Section 3 below.

3.0 ECOLOGICAL MANAGEMENT PLAN

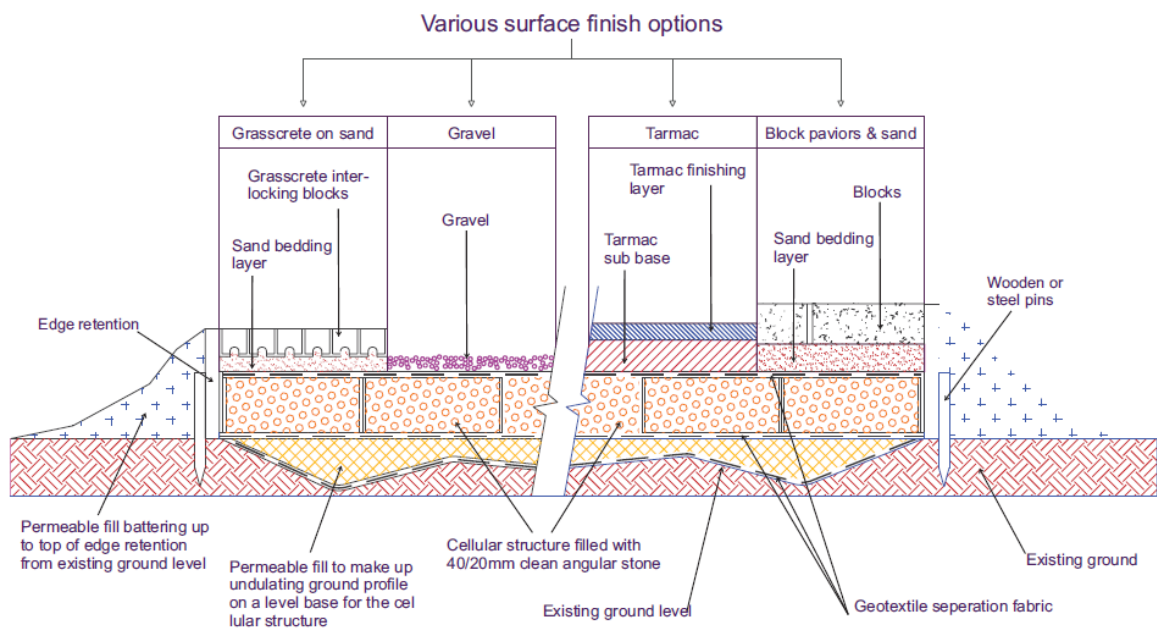
Protection of Existing Features

Permanent Hard Surface Installation

- 3.1 The construction of access roads and parking areas will be required within the RPA of retained trees in G8a and G15 (see Tree Root Protection Plan presented in Appendix 2).
- 3.2 Excavation operations for the construction of a sub-base must not occur within the RPA of retained trees and therefore specialist engineering methods must be employed for the construction of hard surfaces within the RPA.
- 3.3 No Dig construction methods for the sub-base will be required for the footpath and road sub-base utilising 3D cellular confinement systems to prevent the need for compaction of the ground beneath (see **Figure 1**).
- 3.4 Surface vegetation should be removed prior to installation of the required sub-base structure. This can be achieved through removal of the top 50mm of vegetation by hand or by use of approved herbicide treatment.
- 3.5 Any hollows within the exposed ground should be filled with sharp sand. Where a 3D geoweb cellular confinement system is to be used a geotextile membrane should be installed onto the exposed surface first to prevent aggregate material pressing down into the soil surface below.
- 3.6 The geoweb should be pinned in place and edge supports installed and pinned in place to prevent lateral spread of the aggregate material. Edge supports should be pinned through the load spreader so that as pressure is applied to the surface and the edge supports are forced outwards the load spreader is forced under better tension.
- 3.7 Conventional edging with concrete kerbs in excavated trenches should not occur within the RPA of retained trees. Suitable edge supports can be wooden boards pinned in place with wooden or steel pegs. Where a more robust edging is required, railway sleepers can be pinned in place to provide suitable edging. Where space is limited, metal edging can be used. Where the new surface requires battering down to surrounding levels, a permeable soil fill can be used, though this must not be compacted down as this will reduce water and air movement through the fill.
- 3.8 The geogrid or geoweb should then be filled with a minimum of 100mm of 20-40mm no fines aggregate. The aggregate will lock into the geogrid/geoweb but not be allowed to pass through into the surface below. This will allow for compaction of the aggregate subbase to prevent rutting without leading to compaction of the soil below. The aggregate should be installed by wheelbarrow applying from the outside of the RPA in towards the stem. The aggregate should be tipped and spread out across the geogrid with the movement of staff and equipment over the installed subbase and not over exposed ground.

- 3.9 The final surface may be either permeable Tarmac which can be applied directly on top of the aggregate or permeable paving slabs/block paving which should be dry bedded on the subbase and the joints left unsealed.
- 3.10 Any new surfacing should be set back from the stem and surface buttresses of the trees by a minimum of 500mm to allow for future growth.

Figure 1: Example specification of cellular confinement system for no dig construction of surfaces (Source – Site Guidance Note 9, Barrell Tree Consultancy 2018)



Avoiding Crown and Stem Damage

- 3.11 Great care must be exercised when working close to retained trees. Plant and machinery with booms, jibs and counterweights and the passage of tall or wide loads should be controlled by a banksman to maintain adequate clearance.
- 3.12 Under no circumstance shall construction personnel undertake any tree pruning operations.

Grade Changes for Final Finished Levels

- 3.13 Retained trees in G15 will be subject to grade changes within the RPA. Grading of the levels to create a slope are proposed to bring the levels here in line with the remainder of the site and provide a gentle slope. The proposed slope is where grade changes within the RPA are concentrated in the most part.

- 3.14 Significant grade changes can restrict water and air movement through soils to the roots below leading to suffocation and water deficit. This can have detrimental effect on tree health, leading to potential death.
- 3.15 Specialist engineering solutions will be required to ensure added fill to create raised ground does not impede water and air movement through to the existing soil volume and also that weight of added fill does not cause compaction of the existing soils. The following guidelines will outline methods to achieve raising of ground levels, whilst ensuring continued movement of air and water.
- 3.16 In order to prevent compaction of the existing soils within the RPA under the weight of added fill, the installation of a load spreader will be required such as 3-dimensional geoweb cells. Due to the depth of the required fill, layers of 3D geoweb cells will be required up to the required depth (see **Figure 2**). Each geoweb cell layer will require in-filling with loose washed angular stone and levelling out before applying the next geoweb cell layer. Each layer will act as a load spreader for the next, reducing the impact of compaction upon the existing soils due to the weight of the overall added fill. The loose stone infill cannot be compacted down and will maintain continued water and air movement through the added volume.
- 3.17 The installation of the geoweb cells will ideally occur directly to the existing surface. It is advisable to add up to 150mm of sand or loose soil with high sand content over the existing surface to act as a binding layer in which to install the cells. Geo textile membranes should not be installed as they can impede water movement until full saturation of the added fill, potentially resulting in a perched water table. These membranes will also impede root growth into the added fill which should be encouraged where possible.
- 3.18 To provide increased aeration and water movement, the installation of an aeration system will be required within the added fill with vents located within the embankment to allow water and gaseous exchanges to exit and enter the soil volume freely.
- 3.19 Perforated piping laid throughout the added fill with connected links to venting positions will be required. Ideally this will be installed at the base of the added fill near to the existing ground level to ensure air and water can access the existing soil volume (see **Figure 3**). Piping will require installation between cell layers with a binding layer of gravel surrounding the pipes to ensure the weight and load are spread and do not damage the aeration pipes.
- 3.20 Loose soils with a high sand content can then be added over the final geoweb cell layer to provide the final finished levels.
- 3.21 The installation of the geoweb cell layers must be carried out from outside the RPA working inwards to ensure construction activities and machinery remain on protective structures. Under no circumstance can construction machinery or activities move over unprotected soils within the RPA of retained trees.

Figure 2. Example Longitudinal cross section of stacked geoweb cells to raise ground levels in RPAs

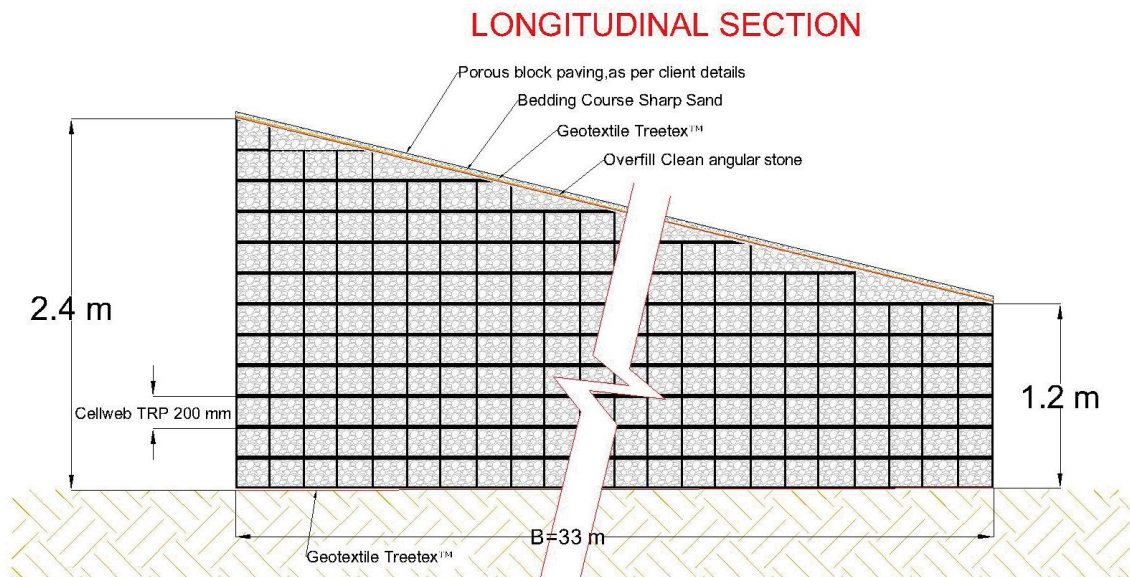


Figure 3. Example of aeration system using perforated piping within the added fill and geoweb layers.



Pruning Works to Minimise Damage

- 3.22 In order to accurately assess the pruning requirements needed to protect retained trees a Site visit will be required to mark out the limits of construction to correctly assess the which trees will firstly require removal.
- 3.23 As part of the Site visit, trees requiring removal will be marked and either a count or estimation of the number of trees will be taken and provided to the local authority.

- 3.24 Once tree removal has been marked and the limit of retained trees identified, required pruning works will be assessed and a work schedule will be provided and supplied to the Local Authority for approval.

Local Wildlife Site

- 3.25 A number of measures will be implemented to alleviate the impact on the increased foot fall including:

- The provision of additional litter bins and dog waste bins;
- Placement of signs on the approach to the Local Wildlife Site (LWS) and within the LWS, explaining its importance and stating that litter and dog waste should be disposed of in the bins provided;
- Placement of signs stating that footpaths must be kept to;
- Placement of signs requesting that dogs are be kept on a lead; and
- Fencing off part of the Local Wildlife site to provide a sanctuary for breeding birds and wildlife.

Habitat Creation

Establishment of New Hedgerow

- 3.26 Any new hedgerow plants should be planted between November and March, although they should not be planted into waterlogged or frozen ground.
- 3.27 If bare rooted plants are to be used, care must be taken to ensure the roots are not exposed for long during planting.
- 3.28 The base of hedgerows should be kept free from weeds until the hedgerow is established. This can be achieved with the use of a thick mulch, or matting.

Grassland Establishment

- 3.29 Appropriate machinery such as 360 excavators and dumper trucks will be used to strip the soil from the proposed areas in which grasslands are to be established. Topsoil will be stripped to a depth of approximately 30 cm and either removed from the site or used in other areas on-site.
- 3.30 Grassland creation should be undertaken in Spring (March/April), as warm and damp conditions will maximise germination. The seed must be surface sown and can be applied by machine or broadcast by hand. The seed should then be firmed in with a roll, or by treading, to give good soil/seed contact.
- 3.31 The following seed mixes will be utilised:
- ESF2 Wild Pollen and Nectar Flowers by Emorsgate Seeds
 - EM1 Basic General Purpose Meadow Mix by Emorsgate Seeds
 - EG8 Meadow Grass Mixture for Wet Soils by Emorsgate Seeds

Woodland

- 3.32 A native-species mix of trees and understorey shrubs will be introduced through a mixture of pit-planting and transplanting, full details of which are within the landscaping plan.

Habitat Management

Hedgerow Management

- 3.33 The newly planted hedgerows should be maintained as thick and bushy as reasonably practical to give the best benefits for wildlife. Cutting should be conducted every 3-4 years in early February allowing some trees to develop as standards within the hedgerow (every 10m).
- 3.34 A wide undisturbed margin adjacent to the hedge should be left (ideally at least 2m wide). Previously cultivated margins can be left to regenerate naturally or can be sown with a mixture of native grass and wildflower seeds to encourage invertebrates and create habitat for mammals. The margins should be subject to the same cutting regime as the grassland areas described below.

Grassland Management – Year 1

- 3.35 Most sown meadow wildflower and grass species are perennial; they will be slow to germinate and grow and will not usually flower in their first growing season.
- 3.36 There will often be a flush of annual weeds from the soil in the first growing season which may grow up and obscure the meadow seedlings beneath. This annual weed should be controlled by topping or mowing.
- 3.37 The newly sown meadows should be regularly mown throughout the first year of establishment to a height of 40-60mm, removing cuttings. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wildflowers.
- 3.38 Residual perennial weeds such as docks should be carefully dug out.

Grassland Management - Years 2-5

- 3.39 After flowering in July or August the grassland should be mown once to 50mm with the arisings left for c.1week in situ then removed from site.
- 3.40 Pernicious weed species such as nettles, thistles, ragwort and docks are a sign of high nutrient levels and these species can out-compete desirable wildflower species. However, the need for ongoing weed control is considered unlikely to be required as the topsoil stripping will significantly deplete soil nutrient levels; this was assessed during the monitoring check described below.

Management Responsibilities

- 3.41 The habitat, grassland management and general landscape management will be undertaken by Sheffield Council in accordance with the detail provided in this Environmental Management Plan.

4.0 MONITORING, REPORTING AND REMEDIAL ACTIONS

Grassland

Monitoring

- 4.1 After the first five years a Monitoring Survey will be undertaken by a Suitably Qualified Ecologist and the findings presented in a Monitoring Report. The Monitoring Report will be provided to the Local Authority. Further monitoring surveys (including reporting) will be undertaken after each successive five year period for a total period of 30 years.

Reporting

- 4.2 The Monitoring Report shall include details of the following:
- Details of survey undertaken by a suitably experienced ecologist between 1st June and 31st August before the grass is mown.
 - Species Present: Overview of plant species present with notes on abundance/distribution, noting any rare/notable species of flora or fauna.
 - A minimum of 5 quadrants (each 2m x 2m) should be subject to detailed botanical survey.
 - Structural Condition: Description of the grassland sward structure including details of any scrub encroachment, weed issues or adverse management issues.
 - Review of the Indicators of Success listed in Section 4.3 (below).
 - Photographic record.
 - Evaluation and details of any proposed changes to management regime or objectives for the next successive five years.
 - Details of any remedial actions required.

Indicators of Success

- 4.3 The following are considered to be indicators of success in terms of this Plan and should be used to inform the monitoring report. However, due to the unpredictable nature of wildflower grassland establishment, it is not considered appropriate to specify a minimum number of indicators which must be met for the Plan to be considered a success.
- High plant species diversity.
 - Absence or low abundance of ruderal species or pernicious weeds (thistles, nettles, docks and ragwort).

- Presence of fine grass species.
- Absence of woody species.

Remedial Actions

- 4.4 The requirement or otherwise for remedial actions will be detailed in the Monitoring Report. This may include re-seeding areas and removal of weed/scrub encroachment.

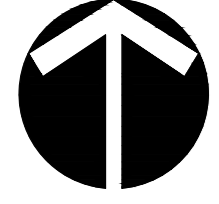
5.0 TIMETABLE FOR IMPLEMENTATION

5.1 **Table 1** lists the timetable for implementation which will be conducted over a thirty-year period.

Table 1: Timetable for Implementation

Item	Date	Notes
Hedgerows		
Hedgerow cut	Feb	Every 3-4 years
Grasslands		
Grassland Establishment	Mar-Apr (Year 1)	Preparation and sowing technique described above.
Mowing	Frequent (Year 1)	
Mowing	Annual (Year 2-30)	After plants including grasses have flowered
Weed Control	As required	If considered necessary by the Suitably Qualified Ecologist (SQE). To be undertaken under the direction of a SQE. Weeds can be treated by spot-spraying with herbicide, or by topping (cutting weeds when they are in flower).
Monitoring of Grassland	June	Monitoring Survey to be completed after Year 5 and include consideration of ecological trends and constraints on-site such as habitat trends and damage to biodiversity areas by, for example, littering.
Remedial Action	As required	To be informed by the Monitoring Survey. This management will be reviewed every five years for up to 30 years and updated based on the results of monitoring.

APPENDIX 1
Landscape Drawings



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This drawing has been prepared for the purpose of planning approval.

LEGEND

	Existing vegetation to be retained		Proposed hedge
	Existing vegetation to be removed		Proposed native hedge mix
	Proposed tree Standard (Heavy)		Proposed Native Woodland Mix
	Proposed tree Standard (Selected)		Proposed Native Shrub Mix
	Proposed shrub bed		Proposed 1.8m high brick wall to match house
	Proposed grass		Proposed 1.8m high timber fence
	Proposed Emorsgate Wildflower Mix. ESF2 - Wild Pollen and Nectar Flowers www.wildseed.com		Proposed timber knee rail

Planting Schedule

No.	Code	Tree Name	Specification	Grth	Height
3	Ac	Acer campestre	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
9	Ag	Alex glandulosa	Heavy Standard Clear Stem 175-200 RB	12-14cm	350-400cm
2	Apse	Acer pseudoplatanus	Heavy Standard Clear Stem 175-200 RB	10-12cm	300-350cm
17	lp	Betula pendula	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
8	Msa	Morus nigra	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
6	Pp	Prunus padus	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
10	Qr	Quercus robur	Heavy Standard Clear Stem 175-200 RB	12-14cm	300-400cm
10	Sa	Sorbus aria	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
18	Sau	Sorbus aucuparia	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
3	Ss	Sorbus intermedia	Selected Standard Clear Stem 175-200 RB	10-12cm	300-350cm
Total: 78 No.					

Hedges

No.	Code	Tree Name	Specification	Grth	Height
70	Bsu	Brachyglottis 'Sunshine'			30-40cm
32	Fs	Fagus sylvatica			60-80cm
323	La	Ligustrum ovalatum 'Kumari'			60-80cm
169	Pr	Prunus laurocerasus 'Rotundifolia'			60-80cm
Total: 774 No.					

Proposed Shrubs

No.	Code	Plant Name	Height	Grth	Wth
115	CBM	Ceanothus 'Blue Mound'	20-40cm SL	4cm*	
61	Cl	Chionodoxa 'Lily Whispers'	20-40cm SL	4cm*	
184	ESQ	Emorsgate Wildflower Mix 'Silver Queen'	20-30cm SL	4cm*	
77	HRE	Hebe 'Alice's Red Edge'	20-30cm SL	4cm*	
134	LaH	Lavandula angustifolia 'Hidcote'	20-30cm SL	4cm*	
220	PRR	Phoraea 'Red Robin'	40-60cm SL	4cm*	
194	PCL	Prunus laurocerasus 'Oxyloba'	40-60cm SL	4cm*	
38	PRR	Prunus laurocerasus 'Red'	40-60cm SL	4cm*	
78	Vd	Viburnum davidii	30-40cm SL	4cm*	
113	Vm	Viburnum minor	20-30cm SL	4cm*	
25	Vt	Viburnum tinus	40-60cm SL	3cm*	
Total: 1189 No.					

Native Hedge Mix (5m)

No.	Code	Plant Name	Height	Root %
116	Ac	Acer campestre	60-80cm BR	10%
116	Ca	Corylus avellana	60-80cm BR	10%
338	Cm	Crataegus monogyna	60-80cm BR	30%
116	Is	Ilex aquifolium	60-80cm C	10%
226	Pp	Prunus spinosa	60-80cm BR	20%
116	Ra	Rosa canina	60-80cm BR	10%
116	Vo	Viburnum opulus	60-80cm BR	10%
Total: 1147 No.				

Native Woodland Mix (0.25m2)

No.	Code	Plant Name	Height	Root %
4	Acps	Acer pseudoplatanus	60-80cm BR	10%
8	Ag	Alex glandulosa	60-80cm BR	20%
8	Bp	Betula pendula	60-80cm BR	20%
6	Pr	Prunus ternaia	60-80cm BR	15%
4	Qr	Quercus robur	60-80cm BR	10%
4	Sa	Sorbus aria	60-80cm BR	15%
4	Tc	Tilia cordata	60-80cm BR	10%
Total: 40 No.				

Native Shrub Mix (0.5m2)

No.	Code	Plant Name	Height	Root %
22	Cav	Corylus avellana	40-60cm BR	20%
32	Cm	Crataegus monogyna	40-60cm Whp BR	30%
22	Pp	Prunus spinosa	40-60cm BR	20%
22	Ss	Sorbus intermedia	40-60cm Whp BR	20%
11	Vo	Viburnum opulus	40-60cm BR	10%
Total: 109 No.				

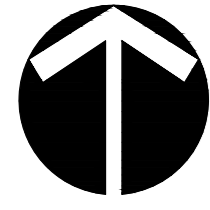
Rev C: Revised to client comments - 14Feb20 (BP)
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 TITLE: Detailed Landscape Proposals (1 of 2)
 CLIENT: Avanti Homes
 DATE: 21 Nov 19 | SCALE: 1:250 | SHEET: A0
 DRAWN: BP | DRAWING NO: 3573/2
 CHECKED: BP | REVISION: C

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Planting Notes
 Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in well waterlogged conditions.
 Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997, or otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall then be cultivated to 150mm depth.
 Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428: 1989.
 Trees: Standard trees to be planted in pits 800x800x450mm or dimensions of rootball, whichever is greater. Heavy and Extra Heavy Standard trees to be planted in pits 1000x1000x600mm or dimensions of rootball, whichever is greater. Align soil improver and 150g Ermag (or equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough sawn, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2hr stakes (1.4m by 75mm) to be driven into ground 800mm, leaving 800mm above ground. For Selected Standard Trees 2hr stakes (1.7m by 100mm) and cross bar are required. Stakes to be driven 900mm below ground leaving 800mm above ground. For Heavy/Extra Heavy trees use 2hr stakes (2.2m x 100mm) with a 40x100x15mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground.
 Semi-rigid Multi-element trees greater than 5m to be underground girdled. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that the nails do not scar tree, and 25mm wide rubber or rubber covered canvas strip of such a length to allow 50mm overlap after securing. The strip shall be flexible, slightly elastic and adjustable. Tie Fixing Nails shall be galvanneal and not less than 30mm long with 10mm diameter heads.
 Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth, and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3/5.
 Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.
 Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/garden plants to be planted with 50kg fibre fibre mulch mulch piled to soil. Native hedgerow to be planted through 80kg fibre fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.
 Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.
 Protection to planting: Native hedgerow plants to be protected by spiral shelters. Native trees and shrubs within mixes to be protected by shelter guards as supplied by Acorn Planting Products Ltd (01508 528763), or equivalent.
 Ornamental hedging: Hedges to comprise a single row of plants, 400mm wide trench excavated to take plants and topsoil cultivated to 400mm depth prior to application of fertiliser.
 Grass: All turf-laid areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.
 Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependent upon the planting season.



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This drawing has been prepared for the purpose of planning approval.

Planting Notes
 Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/waterlogged conditions.
 Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1985 (as amended 1997), or, otherwise, updated/superseded legislation and following manufacturer's instructions by qualified staff. The topsoil shall then be cultivated to 150mm depth.
 Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.
 Trees: Standard trees to be planted in pits 800x600x450mm or dimensions of rootball, whichever is greater. Heavy and Extra Heavy Standard trees to be planted in pits 1000x1000x600mm or dimensions of rootball, whichever is greater. Agriflora soil improver and 150g Eimtag (or equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough stem, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2hr stakes (1.4m by 15mm) to be driven into ground 800mm, leaving 600mm above ground. For Selected Standard Trees 2hr stakes (1.7m by 100mm) and cross bar are required; stakes to be driven 500mm below ground leaving 800mm above ground. For Heavy/Extra Heavy trees use 2hr stakes (2.2m x 100mm) with a 40x100x15mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground.
 Semi-mature/Multi-stemmed trees greater than 5m to be underground guarded. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that nails do not scar tree and 25mm wide rubber or other covered canvas strips of such a length to allow 25mm overlap after securing. The strap shall be flexible, slightly elastic and adjustable. The Fixing Nails shall be galvanised and not less than 38mm long with 10mm diameter heads.
 Container grown shrubs, transplants and whips: Shrubs and transplants shall be planted in pits 300x300x400mm depth, and the backfill shall include 3 litres of peat-free tree and shrub compost. Where two or more shrub species are indicated within a single bed each species shall be randomly mixed throughout the bed in groups of 3:5.
 Herbicide: Spot treat with herbicide throughout the maintenance period in accordance with the manufacturer's instructions.
 Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/shrub plants to be planted with 50g flex fibre mulch mat pinned to soil. Native hedgerow to be planted through 500g flex fibre mulch mat, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.
 Plant position: Final position of trees subject to confirmation of service location and approval of statutory undertakers.
 Protection to planting: Native hedgerow plants to be protected by spiral shelters. Native trees and shrubs within mixtures to be protected by shelter guards as supplied by Acorn Planting Products Ltd (01508 529763), or equivalent.
 Ornamental hedging: Hedges to comprise a single row of plants, 400mm wide trench excavated to take plants and topsoil cultivated to 400mm depth prior to application of fertiliser.
 Grass: All turf/seeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.
 Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependent upon the planting season.

LEGEND

	Existing vegetation to be retained		Proposed hedge
	Existing vegetation to be removed		Proposed native hedge mix
	Proposed tree Standard (Heavy)		Proposed Native Woodland Mix
	Proposed tree Standard (Selected)		Proposed Native Shrub Mix
	Proposed shrub bed		Proposed 1.8m high brick wall to match house
	Proposed grass		Proposed 1.8m high timber fence
	Proposed Emergatae Wildflower Mix, ESF2 - Wild Pollen and Nectar Flowers www.wildseed.com		Proposed timber knee rail

Note: See drawing 3573/2C for full planting schedule

Rev C: Revised to client comments - 14Feb20 (BP)
 Rev B: Revised to client comments - 07Feb20 (BP)
 Rev A: Revised to client comments - 02Dec19 (BP)
 Base: Nineteen 47 Planning Layout n1276-008 received 18Nov19

PROJECT Moortherpe Way, Owithorpe
 TITLE Detailed Landscape Proposals (2 of 2)
 CLIENT Avant Homes
 DATE 21 Nov 19 SCALE 1:250 SHEET A0
 DRAWN BP DRAWING NO 3573/3
 CHECKED BP REVISION C

ROSETTA
 LANDSCAPE DESIGN
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 Askeham Richard, York, YO26 5NA
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 Web www.rosettalandscape.co.uk



Planting Notes

Topsoil shall be a minimum of 400mm depth over planting beds and graded to fall. Imported topsoil must be BS3882:2007 compliant and existing topsoil must be cultivated in accordance with BS3882:2007. No cultivation should take place in wet/waterlogged conditions.

Herbicide and cultivation: Topsoil to be treated with two applications of herbicide prior to planting, where necessary, strictly in accordance with the Control of Pesticides Regulations 1986 (as amended 1997, or, otherwise, updated/superseded legislation) and following manufacturer's instructions by qualified staff. The topsoil shall then be cultivated to 150mm depth.

Planting: All planting and turfing shall conform to BS: 3936: 1992 and BS:4428:1989.

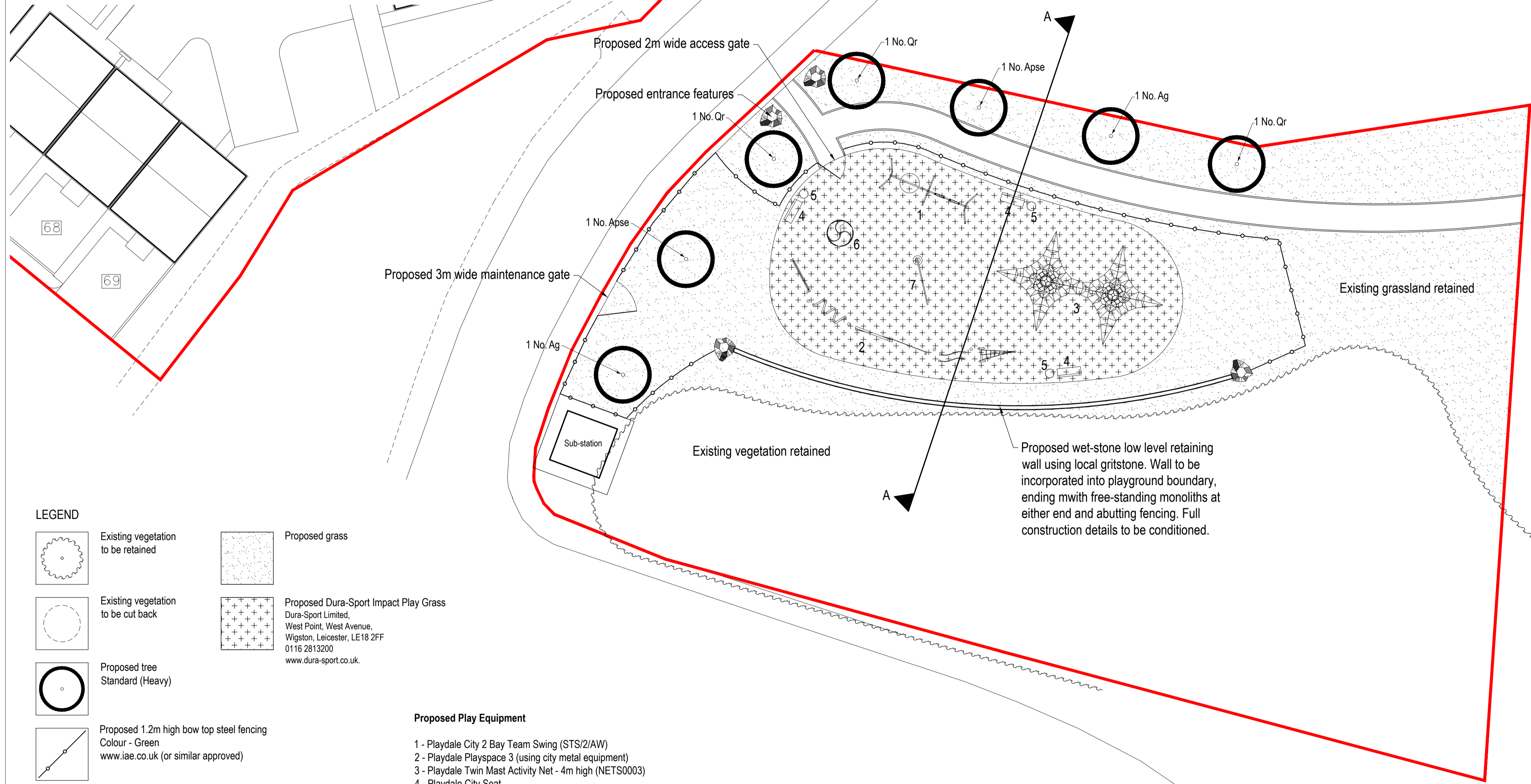
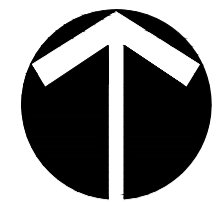
Trees: Heavy Standard trees to be planted in pits 1000x1000x600mm or dimensions of rootball, whichever is greater. AlignKey soil improver and 150g Enmag (or, equivalent) to be incorporated into the soil of all new tree pits. Trees to be planted centrally within a tree pit. Tree stakes shall be of hazel, chestnut or other approved timber. They shall be round, rough sawn, straight, free from projections, large or edge knots and other defects and be pointed at the lower end. They shall be strong enough not to split when driven into the ground and when ties are nailed to them (both initially and when adjusted). For Feathered trees use 2Nr stakes (1.4m by 75mm) to be driven into ground 800mm, leaving 600mm above ground. For Heavy/ Extra Heavy trees use 2Nr stakes (2.2m x 100mm) with a 400x100x15mm cross bar. Stakes to be driven into ground 1m leaving 1.2m above ground. Semi-mature/Multi-stemmed trees greater than 5m to be underground guyed. Tree ties shall consist of a solid rubber spacer, hollowed on both sides and twice slotted of such a width that the tree is held away from the stake and/or cross bar, and such that it does not rub against the stake and/or cross bar in any location and fixed so that nails do not scar tree; and 25mm wide rubber or rubber covered canvas strap of such a length to allow 50mm overlap after securing. The strap shall be flexible, slightly elastic and adjustable. The Fixing Nails shall be galvanised and not less than 38mm long with 10mm diameter heads.

Mulch: Planting beds to receive 75mm depth pulverized ornamental bark mulch. Native woodland/edge plants to be planted with 800g flax fibre mulch mat pinned to soil. Native hedgerow to be planted through 800g flax fibre mulch roll, edges tucked. Ensure the top of the mulch layer is a minimum of 15mm below adjacent pavements and other surfaces, to prevent spillage.

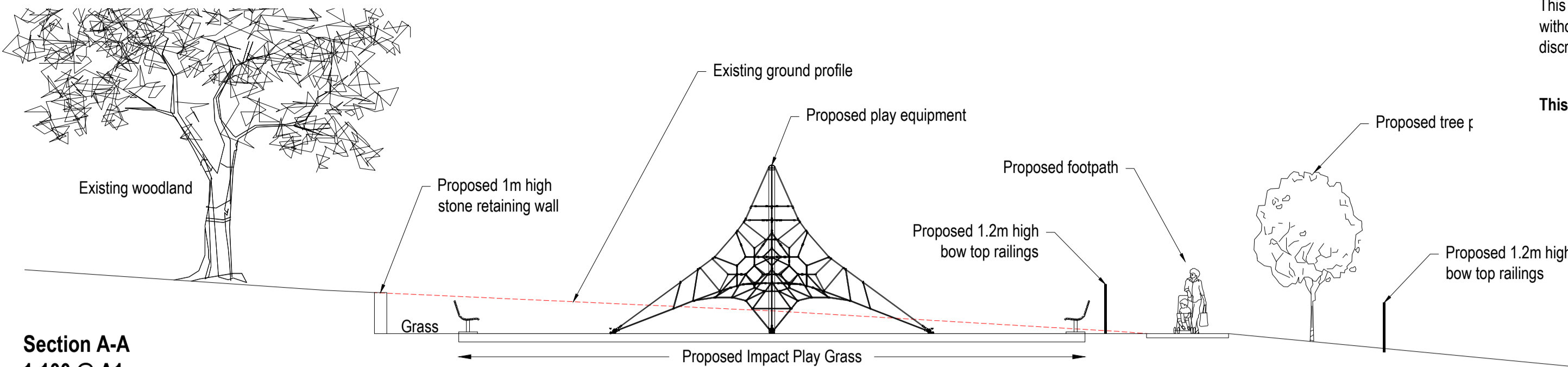
Plant position: Final position of trees and shrubs subject to confirmation of service location and approval of statutory undertakers.

Grass: All turfseeded areas to be cultivated and levelled as required removing any stones, rubble, subsoil, general construction waste.

Planting Season: Bare-root shrubs to be planted between mid-November and mid-March dependant upon the planting season.



**Section A-A
1:100 @ A1**



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This drawing has been prepared for the purpose of planning approval.

LEGEND

- Existing vegetation to be retained
- Existing vegetation to be cut back
- Proposed tree Standard (Heavy)
- Proposed 1.2m high bow top steel fencing
Colour - Green
www.iae.co.uk (or similar approved)
- Proposed 2m wide tarmac footpath with pin kerb edging.
(specification should follow Sheffield City Council Highways Construction Specification's standard details for footpaths)
- Proposed Easy-Gate 2m & 3m wide access gates.
Size - 1.2m high bow top
Colour - To match fencing (Green)
<http://www.easy-gate.co.uk>
- Proposed bespoke / artist-designed stones or metalwork at LEAP entrance (detailed design to be conditioned)
- Proposed grass
- Proposed Dura-Sport Impact Play Grass
Dura-Sport Limited,
West Point, West Avenue,
Wigston, Leicester, LE18 2FF
0116 2813200
www.dura-sport.co.uk

Proposed Play Equipment

- 1 - Playdale City 2 Bay Team Swing (STS/2/AW)
- 2 - Playdale Playspace 3 (using city metal equipment)
- 3 - Playdale Twin Mast Activity Net - 4m high (NETS0003)
- 4 - Playdale City Seat
- 5 - Playdale Stainless Steel Litter Bin with Lid
- 6 - Playdale Inclusive Orbit (CIORB(A))

www.playdale.co.uk (or similar approved)

- 7 - Play and Leisure Cantilever Basket Swing (ECS5)

www.playandleisure.co.uk (or similar approved)

Planting Schedule

Proposed Trees						
Nr	Code	Tree Name	Specification	Girth	Height	
2 -	Ag	Alnus glutinosa	Heavy Standard :Clear Stem 175-200 :RB	12-14cm	350-400cm	
2 -	Apse	Acer pseudoplatanus	Heavy Standard :Clear Stem 175-200 :RB	12-14cm	350-400cm	
3 -	Qr	Quercus robur	Heavy Standard :Clear Stem 175-200 :RB	12-14cm	350-400cm	
Total :7 No.						

Rev F: Revised to Client comments - 07Feb20 (BP)

Rev E: Revised to Client comments - 23Jan20 (BP)

Rev D: Revised to Council comments - 22Jan20 (BP)

Rev C: Revised to Council comments - 13Jan20 (BP)

Rev B: Revised to Client comments - 17Oct19 (BP)

Rev A: Revised to Council comments - 30Sep19 (BP)

Base: Nineteen 47 'Planning Layout' 1276-008 received 11Sep19

PROJECT Moorthorpe Way, Owlthorpe

TITLE Proposed LEAP

CLIENT Avant Homes

DATE 12 Sep 19 SCALE 1 : 200 SHEET A1

DRAWN BP DRAWING NO 3573/1

CHECKED BP REVISION F

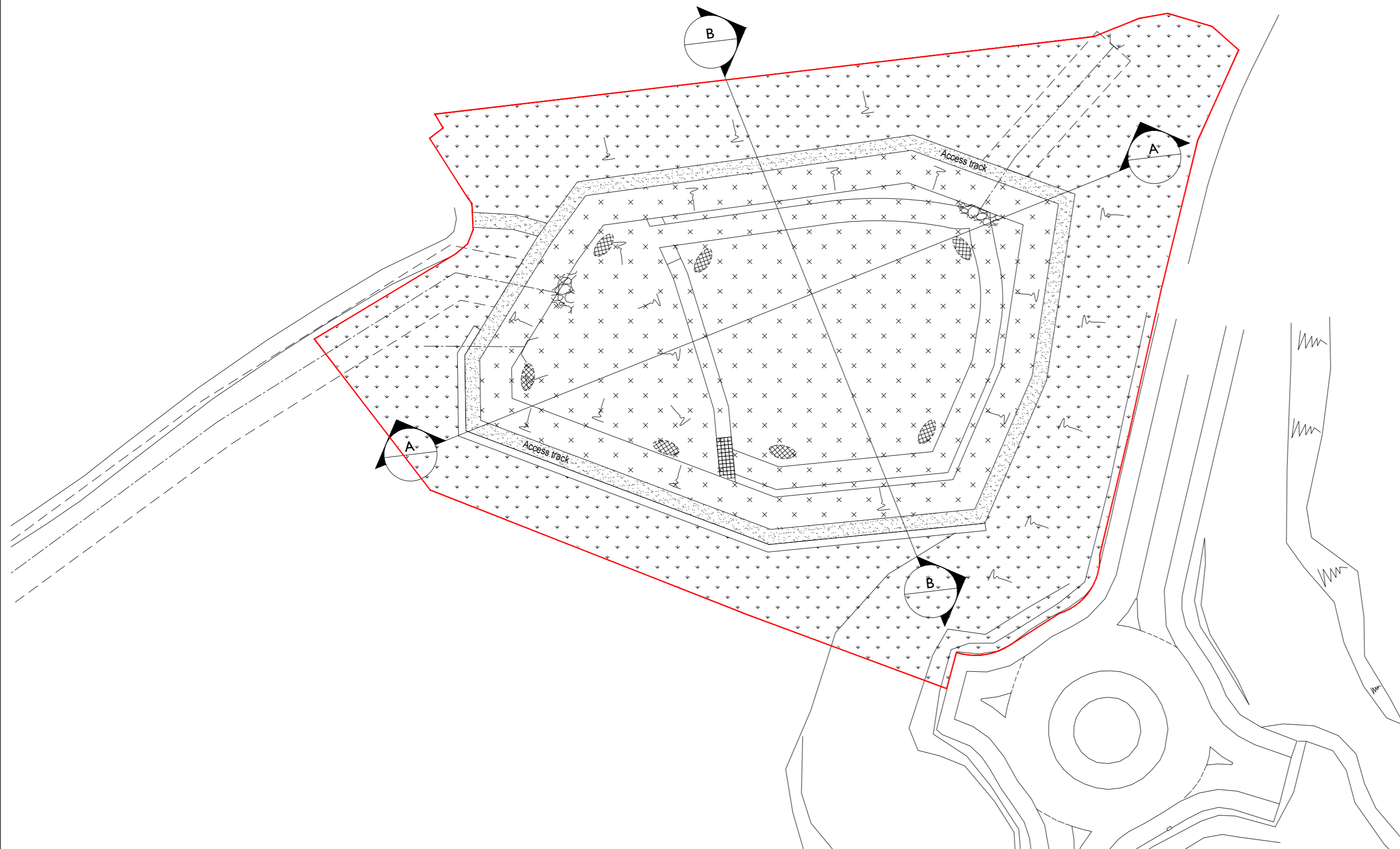
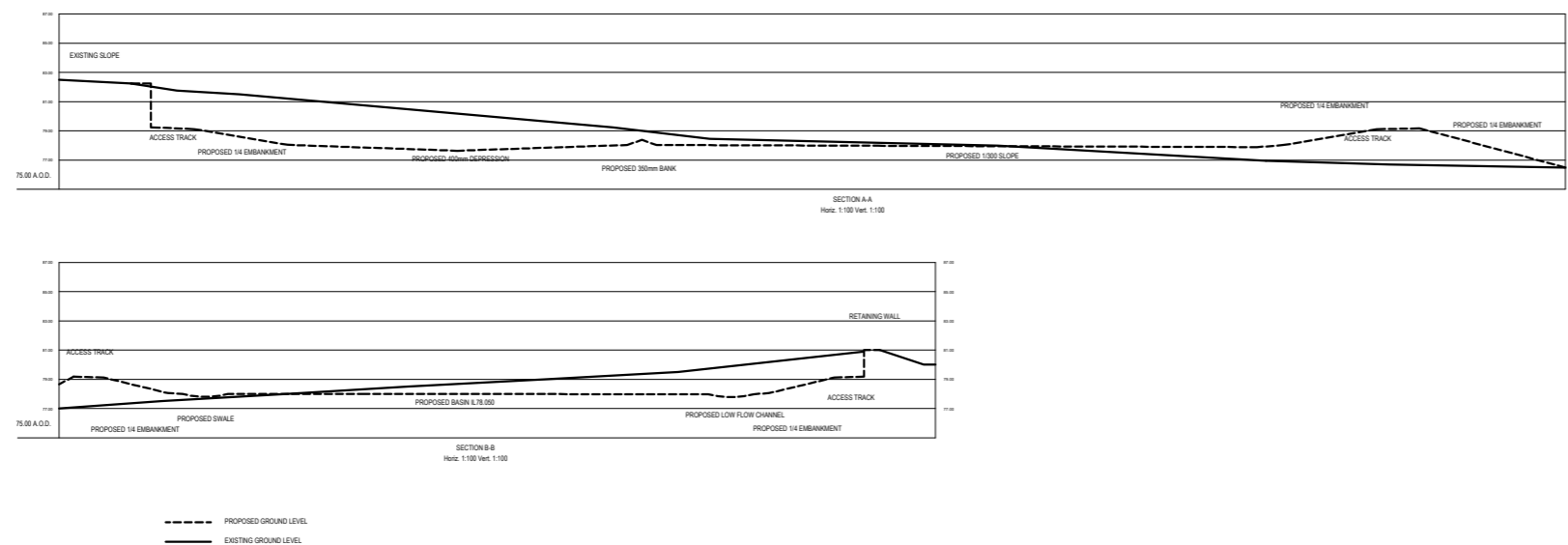


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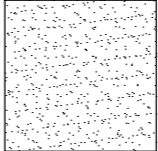

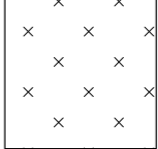

Email design@rosettalandscape.co.uk
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This drawing has been prepared for the purpose of planning approval.

LEGEND

-  Detention basin boundary
-  Proposed 2m wide close mown grass for the access track
-  Emorsgate Seeds
"EM1 – Basic General Purpose Meadow Mixture"
www.wildseed.co.uk
-  Emorsgate Seeds
"EG8 – Meadow grass mixture for wet soils"
www.wildseed.co.uk
-  Proposed marginal aquatic plants supplied as 110cc plugs
Planted in groups of 25 @ 4 plants per metre in locations sown.
Species to include *Lythrum salicaria* (Purple Loosestrife), *Iris pseudacorus* (Yellow Flag Iris), *Caltha palustris* (Marsh Marigold), *Myosotis scorpioides* (Water Forget Me Not), *Ranunculus flammula* (Lesser Spearwort) and *Mentha aquatica* (Water Mint)

Marginal aquatic plants supplied by:
Habitat Aid Ltd, Hookgate Cottage South, Brewham, Somerset,
BA10 0LQ
Phone: 01749 812355
Email: info@habitataid.co.uk

See Avie Consulting Ltd 'Proposed Basin Strategy' X-P2741 for full details of Detention Basin.

Rev A: Revised to Avie 'Proposed Basin Strategy' X-P2741 - 29Apr20 (BP)

Base: Nineteen 47 'Planning Layout' n1276-008 received 18Nov19

PROJECT	Moorthorpe Way, Owlthorpe		
TITLE	Landscape Proposals - Detention Basin		
CLIENT	Avant Homes		
DATE	12 Dec 19	SCALE 1 : 500	SHEET A2
DRAWN	BP	DRAWING NO	3573/4
CHECKED	BP	REVISION	A

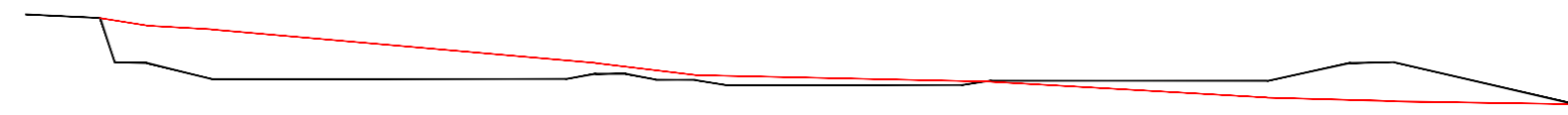
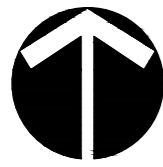


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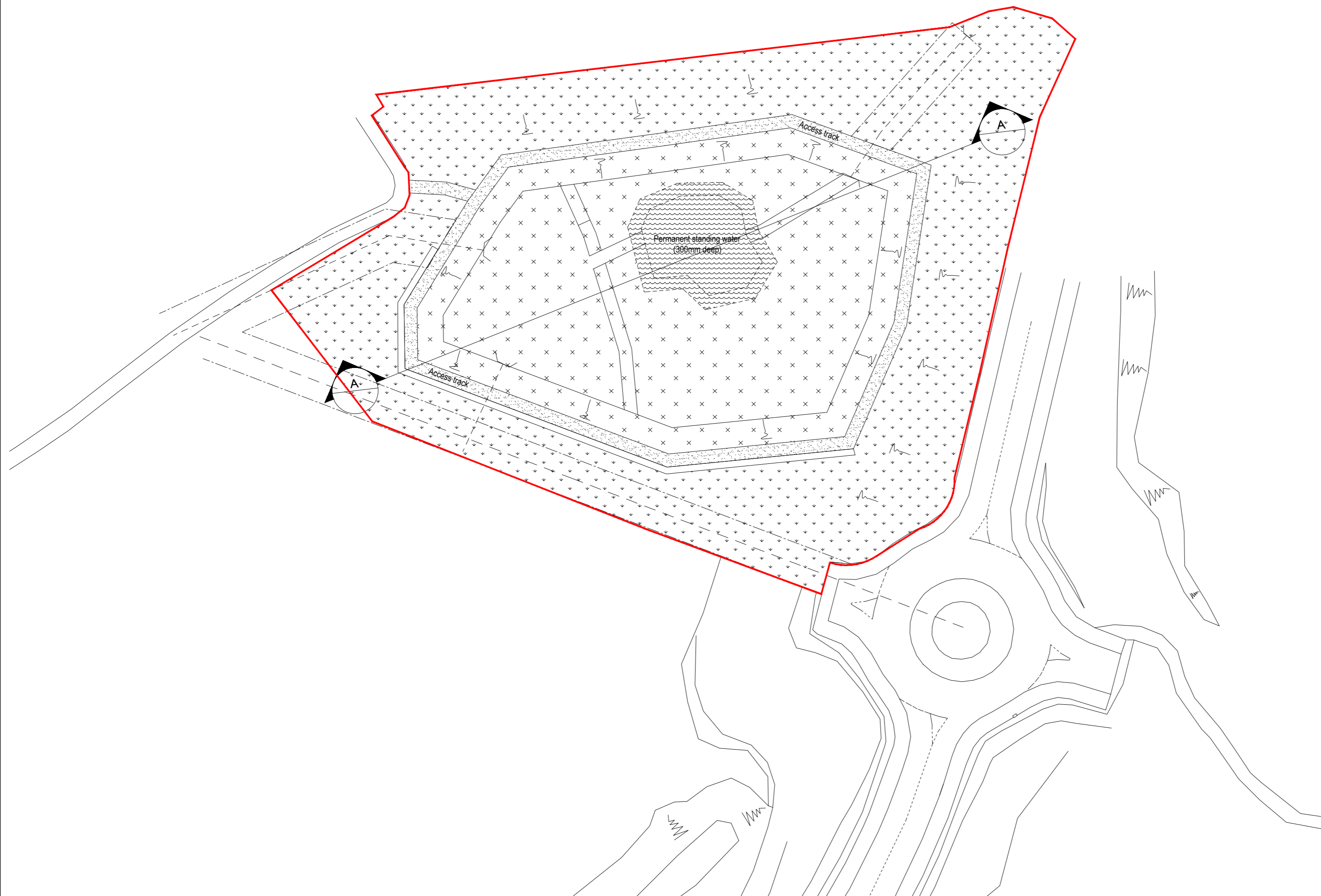
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Section A-A

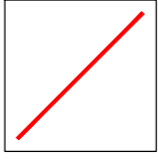
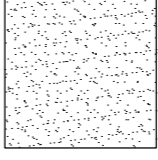
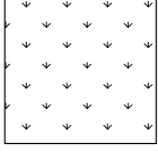
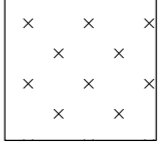
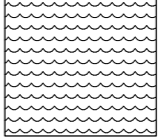
- Proposed ground levels
- Existing ground levels



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This drawing has been prepared for the purpose of planning approval.

LEGEND

-  Detention basin boundary
-  Proposed 2m wide close mown grass for the access track
-  Emorsgate Seeds
"EM1 – Basic General Purpose Meadow Mixture"
www.wildseed.co.uk
-  Emorsgate Seeds
"EG8 – Meadow grass mixture for wet soils"
www.wildseed.co.uk
-  Permanent standing water

See Avie Consulting Ltd 'Proposed Basin Strategy' for full details of Detention Basin.

Base: Nineteen 47 'Planning Layout' n1276-008 received 18Nov19

PROJECT	Moorthorpe Way, Owlthorpe		
TITLE	Landscape Proposals - Detention Basin		
CLIENT	Avant Homes		
DATE	12 Dec 19	SCALE 1 : 500	SHEET A2
DRAWN	BP	DRAWING NO	3573/4
CHECKED	BP	REVISION	-



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APPENDIX 2

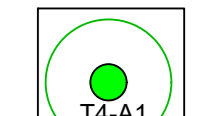
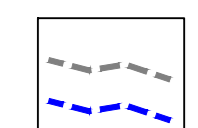
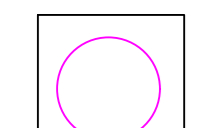
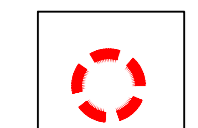
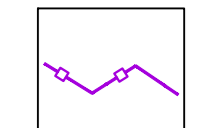
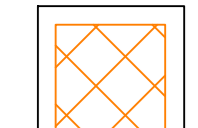
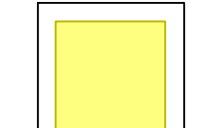
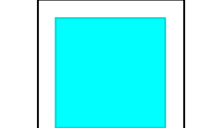
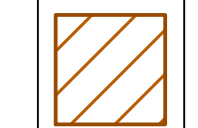
Tree Protection Plan

Tree Protection Plan
showing proposed
layout with trees and
arboricultural controls.

BWB
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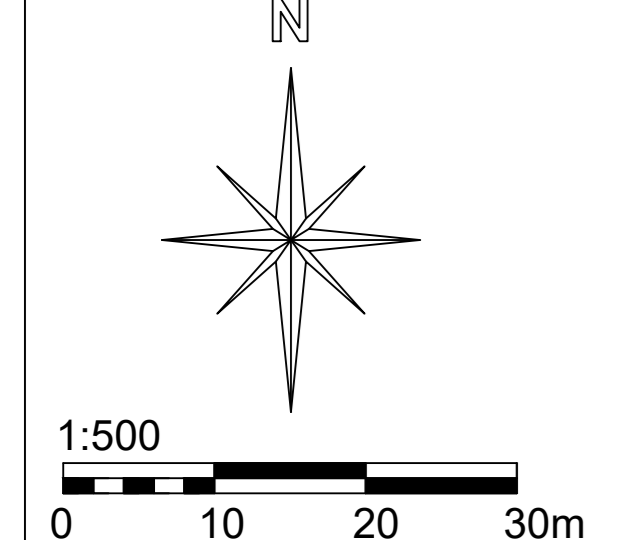
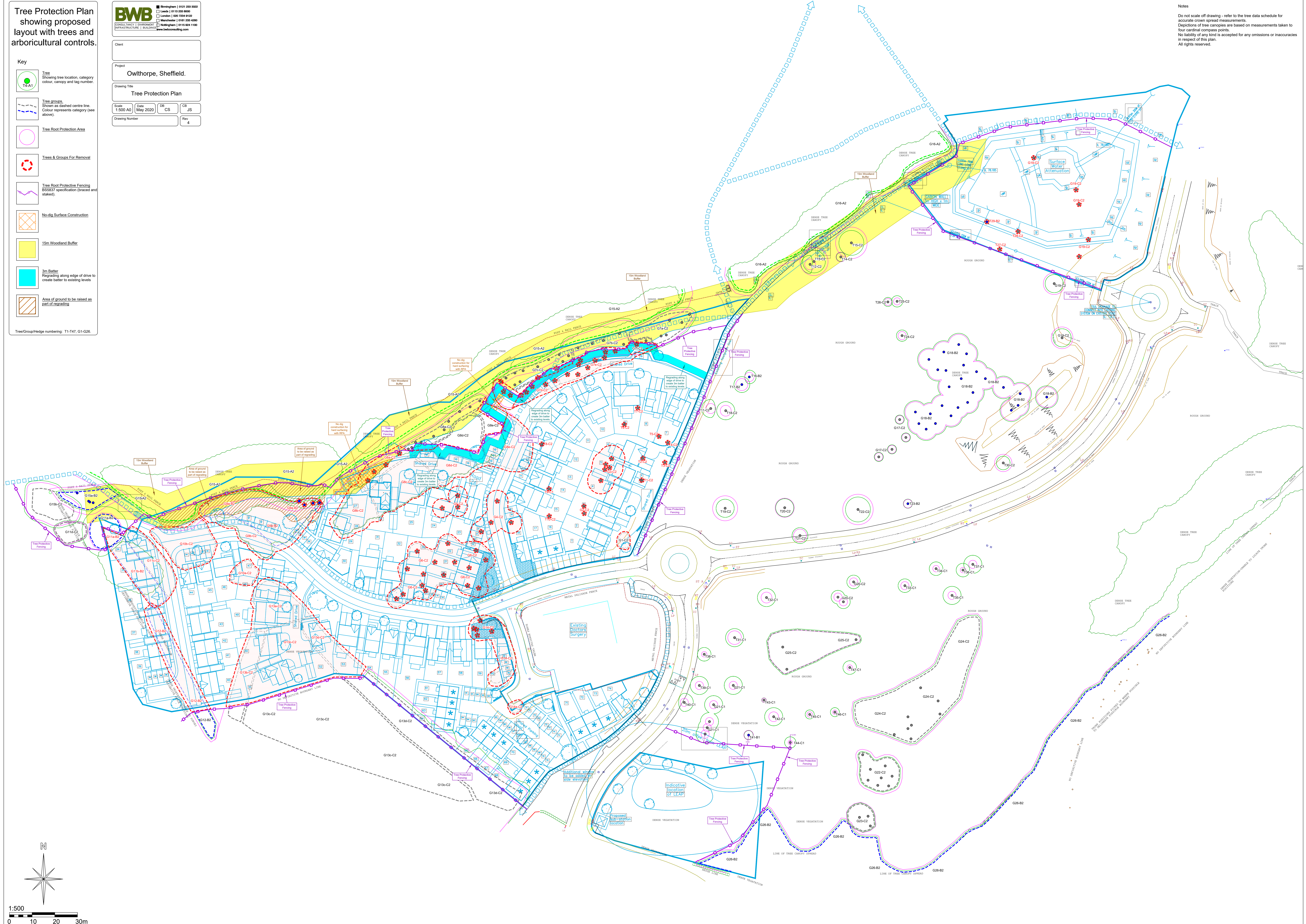
Client				
Project	Owthorpe, Sheffield.			
Drawing Title	Tree Protection Plan			
Scale	Date	DB	CS	JS
1:500 AD	May 2020			
Drawing Number	Rev 4			

Key

-  Tree
Showing tree location, category
colour, canopy and tag number.
-  Tree groups
Shown as dashed centre line.
Colour represents category (see
above).
-  Tree Root Protection Area
-  Trees & Groups For Removal
-  Tree Root Protective Fencing
BS5837 specification (braced and
staked).
-  No-dig Surface Construction
-  15m Woodland Buffer
-  3m Buffer
Regrading along edge of drive to
create buffer to existing levels.
-  Area of ground to be raised as
part of regrading.

Tree/Group/Hedge numbering: T1-T47, G1-G26.

Notes
Do not scale off drawing - refer to the tree data schedule for
accurate crown spread measurements.
Depictions of tree canopies are based on measurements taken to
four cardinal compass points.
No liability of any kind is accepted for any omissions or inaccuracies
in respect of this plan.
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BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

