

Relating to Areas A & B

Drawing Sheets 1 to 5 provides additional information requested by the Welsh Government’s Soils Unit Department for Climate Change. The information requested being:

- i. Clarification as to whether the extension area will be restored to the pre-working condition – ALC Grade 2 Agricultural **(Sheet 1 of 5)**
- ii. The provision of a Soil Physical Characteristics Report, which is to include:

• Soils present
 • Soil Units
 • Soil stripping proposals by units
 • Soil nutrient status

(Sheet 2 of 5)
- iii. The provision of a restoration and aftercare scheme for the extension area **(Sheet 3 to 5 of 5)**

For clarification and as agreed with North Wales Minerals and Waste Services, the application details specifically relate to the minor Extension Areas A and B (see Figure 1 opposite). A subsequent Consolidation planning Application is being produced to both address outstanding ROMP conditions, together with two main extension areas to Ballswood Quarry.

These additional sheets should be read in conjunction with survey and assessment works produced by Reading Agricultural Consultants within their attached report. Figure 2, opposite, relating to the proposed extension Area A.

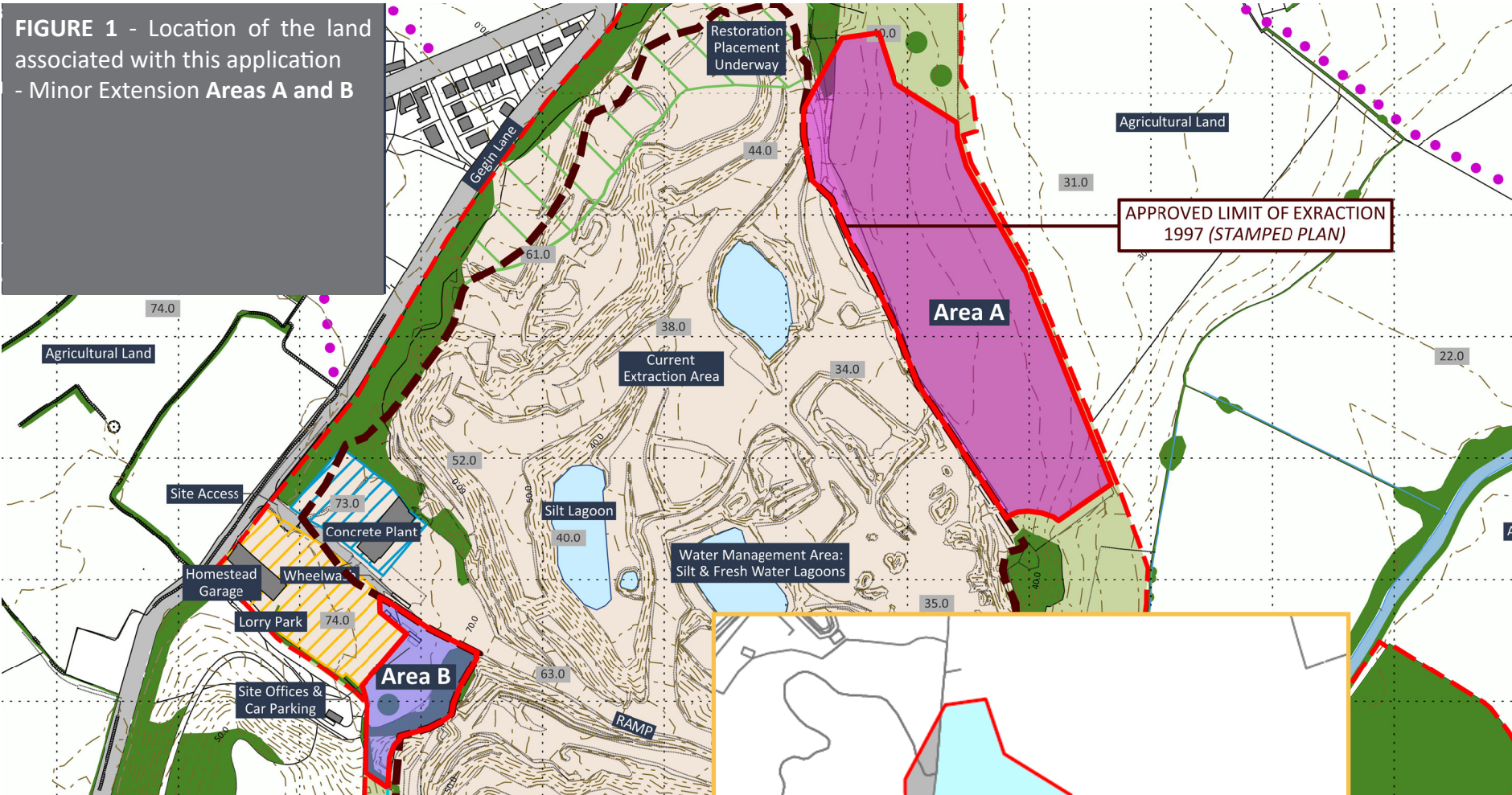
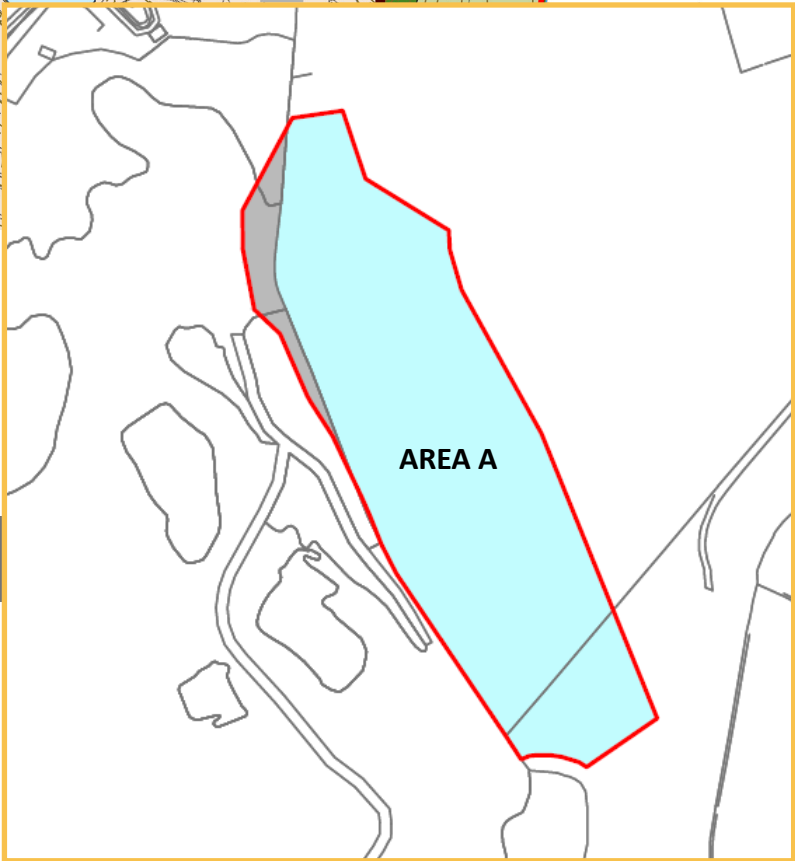


FIGURE 2 - Reading Agricultural Consultants Agricultural Land Classification of Areas A

KEY

Grade 1		Grade 4	
Grade 2		Grade 5	
Subgrade 3a		Non-agricultural	
Subgrade 3b		Not present	



Ballswood Quarry: Changes to the Limit of Extraction within the Existing Planning Permission Boundary

Relating to Areas A & B

Area A Soils



Current Situation In-situ Soil Resource

Topsoil - Average Thickness of 350mm x 4.1Ha = 14,350m³

The topsoil is a dark brown, slightly stony, medium sandy loam with a fine, medium subangular blocky structure and a friable consistency.

Upper Subsoil - Average Thickness of 150mm x 4.1Ha = 6,150m³

The upper subsoil is a brown or dark brown, slightly stony, loamy medium sand or medium sand, with a granular structure and a friable consistency.

Lower Subsoil - Average Thickness of 700mm x 4.1Ha = 28,700m³

The lower subsoil is a brown or reddish brown, moderately stony, sandy clay loam with a fine subangular structure and a friable consistency.

Total Soil Resource based upon 1.2m profile = 49,200m³

Please refer to Reading Agricultural Consultants submitted report Appendix 2 for details of the nature of the soil resources and ALC. The soils in Area A are consistent and are well drained in Wetness Class I. They are classified as Grade 2 due to a soil droughtiness limitation.



Initial Soils / Stripping Proposals

An initial soil strip is to take place within Area A - Phase 1 (illustrated above) in a northerly direction along its boundary with the existing quarry.

From this minor soil strip, soils from Phase 1A are to be temporarily placed within the extension Area A, before being placed within soil storage bunds to the base of the progressively extracted Phase 1 void, along with soils from Phase 1B and those subsequently stripped from the Phase 2 area (part).

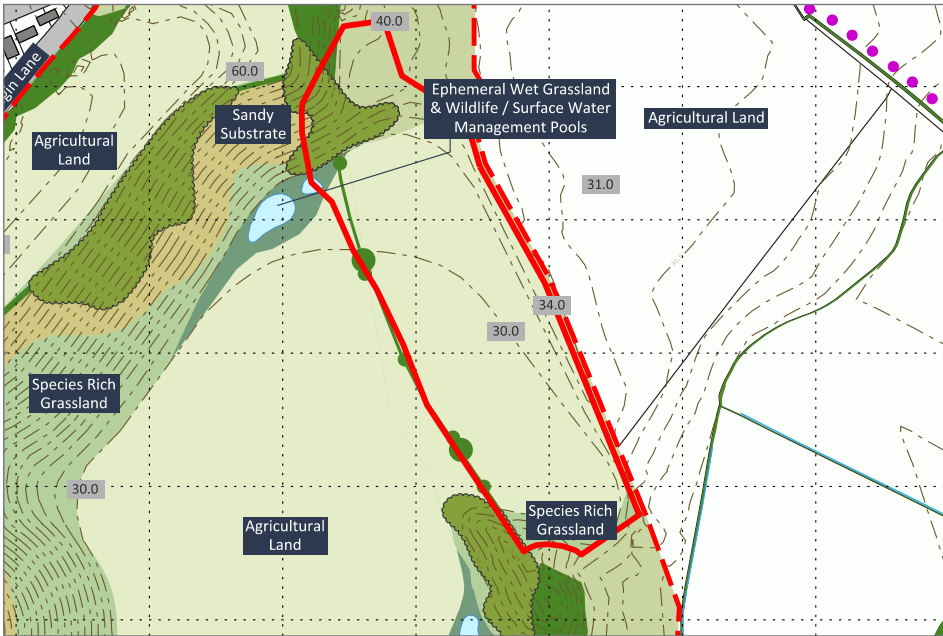
On completion of the temporary soil storage bunds, and initial placement of restoration materials (overburden) direct placement of stripped soils will then take place within Phases 2, 3 and 4 progressively, to complete the outer restoration slopes. The volume of temporary soil storage bunds being:

Topsoil Bund TS1 and TS2: 4,880m³ stored
Upper Subsoil Bund USS1 and USS2: 5,968m³ stored
Lower Subsoil Bund LSS1 and LSS2: 11,376m³ stored

Soils to be placed direct for restoration: 26,976m³

Total Soil Resource: 49,200m³ (Balance)

No upper subsoil will be stored on in-situ topsoil. No lower subsoil will be stored on either in-situ topsoil or upper subsoil. No topsoil bund to be above 3m in height. No upper or lower subsoil bund to be above 5m in height. If for operational reasons surface space for temporary bunds within the extension area is tight, the bunds will be placed on adjacent land within the quarry void.



Restoration of Extension Area A

On the completion of mineral extraction from within Area A, restoration formation levels will be created 1.2m below the finals restoration profile.

The overburden / fill required to do this will be approximately 181,693m³. This material will be obtained from both any interburden / non processable mineral from within Area A and available overburden / fill material from the existing quarry. Onto the restoration fill formation levels, all of the original soils which have been temporarily stored, will be placed. Once these restoration formation levels have been created progressively, all original soils will be placed.

All restored agricultural land will then be seeded and placed into a 5 Year Aftercare and Management period, in accordance with Minerals Technical Advice Note MTAN 97.

All stripped soils will be replaced to restore Extension Area A - restoration soil profile. By re-using the original soils and replacing the full depth of the soil profile to 1.2m using good practice techniques, the restored soil will be returned to Grade 2 agricultural land.

All soils will be stripped, stored and replaced in accordance with good practice as set out in the Institute of Quarrying (2022) Good Practice Guide for Handling Soils in Mineral Workings.

The above information clarifies that the Extension Area A will be restored to pre-working conditions. No soils will be lost. Soils will be stripped and temporarily stored separately, and replaced to original soil profiles using well established, good practice for handling soils. No importation of material is required to achieve the restoration scheme. An appropriate Aftercare and Management Scheme is provided on Sheets 3 to 5. Any variations to this can be agreed as part of discharge of conditions within 3 months of a successful permission.

Relating to Areas A & B

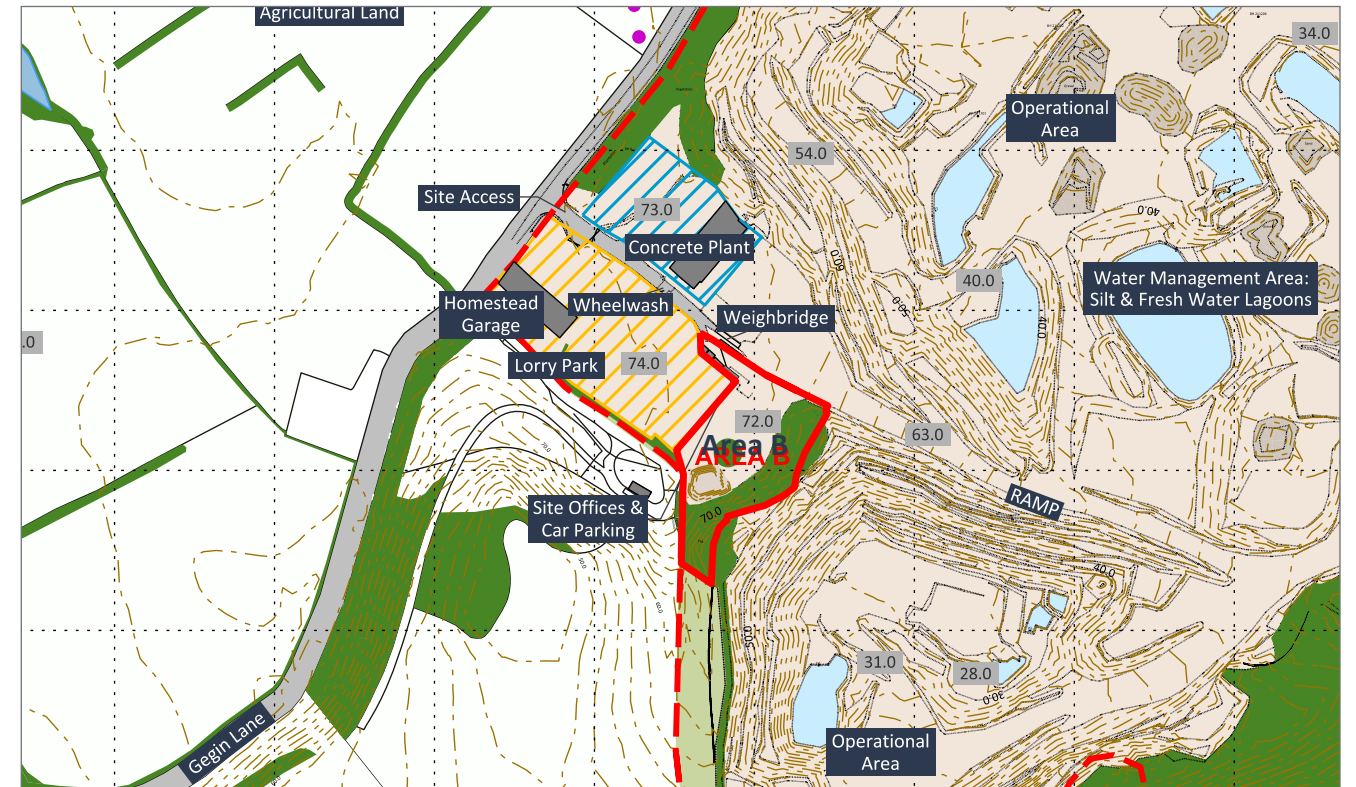
Area B Soils

Reading Archaeological Consultants have assessed Area B for soils potential / resources.

The extension area comprises a car park, concrete hard standing, exposed mineral, scrub, tree and mineral stocks. No recoverable surface soil resources have been identified.

The areas does contain large volumes of interburden material, which will be used to create the restored landform within Area B, in combination with overburden and interburden from the wider quarry operations. Required restoration materials to achieve landform being ~23,250m³

The restored land use within Area B is principally for a vehicle parking with peripheral natural regeneration as requested by Wrexham County Borough Council's Ecological Officer. The interburden and non-processable sand-based material being ideal for this purpose.



Current Situation of Extension Area B



Restoration of Extension Area B

Restoration & Aftercare - Agricultural Land

Land within Area A is principally to be reinstated as productive agricultural land, with a reinstated original soil profile. A medium term 3-year ley is proposed which is multipurpose with leafy mid-season growth. The mix is to be a combination of hybrid ryegrass and timothy suitable for both cutting and / or grazing. The hybrid grasses maximise yield for conservation; be it silage, haylage or hay. Whilst the perennial ryegrass and timothy help fill the base of the sword for more efficient grazing.

40% Rusa certified Hybrid Ryegrass (T)	15% Toddington certified later Perennial Ryegrass	Sowing: 35kg/Ha
30% Pirol certified Hybrid Ryegrass	15% Presto certified Timothy (Sowing rate 14.00kg/acre	

The ley grassland mix should be sown in spring or autumn. Soil temp must be a minimum of 5 degrees for grass growth and 8 degrees for legumes such as clover with sufficient moisture.

Preparation / Sowing:

- A short term agricultural ley (Wynnstay Short Term Stitching In Mix- Plus Cover or similar) will be created in the first two years after restoration and thereafter the land will either be used as pasture or arable land depending on the landowner / manager’s requirements
- Land is to be cultivated using discs, power harrow and rolls to create a fine, firm seedbed, it will then be seeded and rolled. Any stones lying on the surface, which would not pass through a 100mm wire screen mesh, together with other objects likely to obstruct future cultivation, will be removed from the site.
- Given the permeability of the soil profile and in-situ material it is not considered that underdrainage installation will be required. After restoration and monitoring of ground conditions for at least two years as well as consultation with the landowner / manager, if it is considered that under-drainage is required a commitment in principal is given to undertake appropriate land drainage.
- If required, drainage will be installed via a conventional trenchless drainage machine placing a perforated corrugated plastic drainpipe at 20m spacing, with a placement depth of at least 80cm.
- Following the laying of drains (if required), subsoiling at a shallow depth (~ 35cm) would be carried out to ensure a good connection between the bulk of the upper subsoil and the drains.
- Soil sampling and crop monitoring is to take place to ensure soil fertility is satisfactory to achieve and maintain the long-term site restoration after uses. As a result of this, appropriate applications of fertiliser and/or weed control treatment will be implemented, if necessary.
- If necessary, fertiliser and lime shall be applied to the restored land at a rate calculated to achieve the nutrient levels to successfully establish a short-term grass ley or cereal crop.
- Initial grass seeding work will take place between April and May or late August to mid-September dependent upon the date when restored land becomes available.
- If a cereal crop is selected it will be drilled in either spring or autumn and the type will depend upon the landowners / managers cropping requirements / rotation.
- Occasional periodic dressings with farmyard manure and lime, where determined beneficial, will be completed during the aftercare period.
- Conservation headlands will be ploughed and sown at the same time as the main field with a conservation field margin seed mix (Wynnstay Field Margin Grass Seed Mix or similar).
- Field margins to agricultural land will be lightly grazed or cut once every 3 years (outside the bird nesting season) and kept free of pesticides and fertiliser.

Management:

Year 1 (short-term grass ley)

- The sward is to be allowed to establish
- Soil samples are to be taken and analysed in March
- Fertiliser / lime (based on soil sample results)- to be applied in April
- If required, re-seeding works are to take place April
- Monitoring of soil drainage will be reported at the first year aftercare meeting.

- All restored land to be treated with an approved chemical herbicide to prevent weed establishment.
- One cut of hay or silage will be taken in early June and a second cut will be taken in July / August if there is sufficient growth.
- In the first year, the aftermath will be topped to 100mm before entering the winter period and any arisings which would smother the grass will be collected and carted off site.

Year 2 (grassland)

- A grass crop for silage / hay is there is sufficient growth.
- Nitrogen fertiliser will be applied for a second grass cut.
- Soil samples are to be taken and analysed in March and based on the results, fertiliser/lime to be applied in April.
- Monitoring of soil drainage will continue.
- All restored land is to be treated with an approved chemical herbicide to prevent weed establishment, if necessary.
- Should it be required, an under drainage scheme will be designed and submitted to the MPA for approval.

Year 3 (grassland option)

- A grass crop for silage/hay is to be taken if there is sufficient growth.
- Soil samples are to be taken and analysed in March and based on the results, fertiliser/lime is to be applied in April, if necessary.
- Cultivation of topsoil will take place comprising discing and chain harrowing as required. Also upon completion of each stage of the cultivation process, stones that will not pass through a 100mm square wire mesh screen are to be removed.
- Given appropriate ground and nutrient conditions, re-seeding works may take the place of a more permanent grass ley.
- Monitoring of soil drainage and remedial works are to take place if required.
- All restored land is to be treated with an approved chemical herbicide to prevent weed establishment, if necessary.

OR

Year 3 (cereal option)

- Undertake soil analysis for P, K, Mg and pH to assess lime and fertiliser requirements for the chosen winter cereal crop.
- After seedbed preparation, drill cereal, e.g. Winter Barley, at approximately 175kg/ha and roll to get good seed-soil contact.
- Apply seedbed fertiliser and insecticides and herbicides, as required, in a tank mix to minimise the number of passes.
- In the spring apply nitrogen top dressing and herbicides and fungicides as required.
- July/August harvest.
- Glyphosate for stubble hygiene.
- Cereal variety to be agreed at the aftercare meeting.

Year 4 (grassland option)

- A hay/silage crop is to be taken in autumn.
- Soil analysis to take place in March followed by the implementation of fertiliser application and liming in April- dependent upon hay/grazing use.
- All restored land to be treated with an approved chemical herbicide to prevent weed establishment, if necessary.
- Monitoring of soil drainage and remedial works are to take place if required.

OR

Year 4 (cereal option)

As year 3. Cereal variety to be agreed at the aftercare meeting.

Years 5 (grassland option)

As year 4.

OR

Years 5 (cereal option)

As year 3 & 4.

Please note: a detailed crop rotation programme will be produced by the landowner based upon restored soil conditions and food type / land use demand.

Restoration & Aftercare - Native Woodland

Land to the north of Area A and centrally within Area B is to be restored to establish Native Woodland block planting.

Woodland Planting				
Species	Common Name	%	Height (cm)	Bareroot (BR)
Quercus robur	Oak	7	30-45	BR
Acer campestre	Field Maple	7	30-45	BR
Carpinus betulus	Hornbeam	3.5	30-45	BR
Tilia cordata	Small-leaved Lime	3.5	30-45	BR
Fagus sylvatica	Beech	3.5	30-45	BR
Nurse Species				
Betula pendula	Birch	3.5	30-45	BR
Sorbus aucuparia	Rowan	3.5	30-45	BR
Shrubs				
Prunus spinose	Blackthorn	3.5	30-45	BR
Rosa canina	Dog Rose	3.5	2 year	BR
Malus sylvestris	Crab Apple	3.5	30-45	BR
Ilex aquifolium	Holly	3.5	30-45	CG
Corylus avellana	Hazel	10.5	45-60	BR
Acer campestre	Field Maple	3.5	30-45	BR
Prunus avium	Wild Cherry	3.5	30-45	BR
Crataegus monogyma	Hawthorn	7	30-45	BR
		70		
Edge Species				
Salix caprea	Goat Willow	5	30-45	BR
Prunus domestica	Wild Plum	5	30-45	BR
Sambucus nigra	Elder	5	30-45	BR
Cytisus scoparius	Broom	3	30-45	BR
Lonicera periclymenum	Honeysuckle	3	1 litre pot	CG
Circaea lutetiana	Enchanter's Nightshade	3	1 litre pot	CG
Ribes nigrum	Black Current	3	30-45	BR
Deschampsia cespitosa	Tufted Hair Grass	3	1 litre pot	CG
		30		

Preparation / Establishment:

All stock to be planted at 2m centres in single species groups of 5-7 plants. Stock to be supplied between 300 to 600mm in height. Shrub species to be concentrated to the edges of the planting blocks. All stock to be planted in 300 x 300 x 300 pits backfilled with 50% original soil and material and 50% non-peat-based tree planting compost incorporated 20 grams of a suitable slow release fertilizer. Stock to be protected by a 600mm tree / shrub shelter secured to 750 x 20mm square softwood stake by 2No plastic tree ties.

Management:

- Trees should be watered during any dry spells in the first growing season;
- Weeding to 1m diameter around the bases of the trees will be required to help combat competing vegetation;
- Tree guards and canes should be inspected to ensure their integrity;
- Filed stock to be replaced within the next appropriate planting season;
- Once the trees have matured the tree guards must be removed;
- Formative pruning should take place throughout the first 10 years to counter poor structure and development;
- Once established (~10 years) the Hazel should be coppiced. Coppicing should be undertaken in stages with one third of the Hazel coppiced every 5 years;
- Tree thinning (25%) should also be undertaken where necessary;
- Monitoring of the management regime should be undertaken on an annual basis in order to assess the success of the scheme towards achieving the proposals of the restoration strategy and the specific habitat aims and objectives. Based on an assessment of the progress towards these aims, changes to management strategies may be necessary and should be agreed at an annual Aftercare meeting. These will be based on on-site observations and actions agreed with Norfolk Council and Tarmac.

Outline 5 Year Aftercare:

Management Activity	Y1	Y2	Y3	Y4	Y5
Pruning to counter poor structure and development (where necessary)					
Maintenance of tree / shrub guards					
Clearance of herbaceous material from tree guards					
Failed plant replacement (if required)					
Tree guards removed (if established)					

Action Within this Period

No Action Required

Restoration & Aftercare - Native Hedgerow

A native hedgerow is to be established to the western boundary of Area A.

Hedgerow Planting / Species Composition:

Hedgerow Planting				
LINEAR METRES				
Species	Common Name	%	Height (cm)	Bareroot (BR)
Crataegus monogyna	Hawthorn	25	35-40	BR
Corylus avellana	Hazel	25	35-40	BR
Acer campestre	Field Maple	10	35-40	BR
Sambucus nigra	Alder Buckthorn	10	35-40	BR
Prunus spinosa	Field Rose	5	35-40	BR
Rosa canina	Dog-Rose	5	35-40	BR
Rosa arvensis	Field Rose	5	35-40	BR
Malus sylvestris	Crab Apple	5	35-40	BR
Lonicera periclymenum	Honeysuckle	2	1 litre pot	CG
Gallium mollugo	Hedge Bedstraw	2	1 litre pot	CG
Rabelera	Greater Stitchwort	2	1 litre pot	CG
Stachys sylvatica	Hedge Woundwort	2	1 litre pot	CG
Glechoma hederacea	Ground Ivy	1	1 litre pot	CG
Humulus lupulus	Hop	1	1 litre pot	CG
		100		
Hedgerow Trees				
Quercus robur	Pedunculate Oak		180-250	BR
Carpinus betulus	Hornbeam		180-250	BR

Preparation / Establishment:

- Generally, all planting will be undertaken in a double-staggered row (set 0.5m apart) with plants distributed 300mm apart along each row (6 plants per linear metre)
- Stock of 30-45cm 1+1 transplants will be used.
- Planting will take place between the end of November and the end of March
- All plants will be protected from stock and rabbit grazing, either by Green-tech biodegradable 600mm high tree stocks / tubes fixed to 900mm cane. All plants will be planted using notch-planting techniques.

Management:

- Following the 1st growing season, each winter, a failed ‘beating up’ inspection will take place to ensure an 85% overall stocking density by years 3, and 5
- This will include the replacement of dead / diseased or dying plant stock (in the next appropriate planting season), the replacement / straightening of tree guards and stakes, removal of herbaceous vegetation from tree guard as necessary to ensure successful establishment;
- To control weeds and allow proper growth and prevent unwanted succession by invasive species, each spring, one application of an approved glyphosate will be applied to margins and / or additional spot spraying of any unwanted vegetation. If necessary and depending on the severity or amount of vegetation, encroaching vegetation will be strimmed or hand weeded (March, May and September);
- During years 1 to 3, three maintenance visits will be made per annum (March, May and September);
- During years 4 to 5, two maintenance visits will be made per annum (May and September);
- During years 5 to 10, one maintenance visit will be made per annum (May);
- During May and September visits, any dead, dying or diseased species are to be taken out and removed off site and replaced during the following planting season (December to April) to ensure an 85% overall stock density by years 5 and 10;
- In years 5, 7 and 10 (if plants have grown to a suitable level) then the hedgerow will be laid to encourage longevity and maintain density;
- All protective tree / shrub guards to be removed during the winter of year 5 unless agreed otherwise;
- Existing hedgerows and new hedges are to be cut yearly, establish bulk and shape between beginning September and end February, but preferably in winter after most of the potential berries have gone.
- Please note that on average hedgerow trees will be planted 1No pro-rata every 10m of hedge, in groups of 1, 3 and 5’s.

5 Year Aftercare:

Management Activity	Y1	Y2	Y3	Y4	Y5
Light Pruning					
Maintenance of tree / shrub guards					
Clearance of herbaceous material from tree guards					
Failed plant ‘Beat Up’ to 85% stocking rate					
Encroaching vegetation strimmed / removed (July)					
Tree guards removed (if established)					
Hedge laying if there is sufficient growth					

Action Within this Period

No Action Required