

HALE CONSTRUCTION LIMITED

FFORDD Y MILLENIWM, BARRY

ECOLOGY AND HABITAT PROTECTION MANAGEMENT PLAN

JUNE 2024



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Issue	Revision	Stage	Date	Prepared by	Approved by	Signed
1	-	Draft for client review	26 January 2024	Daniel Jones (Associate Ecologist)	Dr M Watts (Director)	M. WATTS
2	Updated Ecology & Enhancement Plan	For submission	05 April 2024	Daniel Jones (Associate Ecologist)		
3	Updates following LPA consultation comments	For submission	18 June 2024	Daniel Jones (Associate Ecologist)		
4	Updated Soft Landscape Plan included in appendices	For submission	21 June 2024	Daniel Jones (Associate Ecologist)		
5	Inclusion of post-construction management (section 4.11)	For submission	28 June 2024	Daniel Jones (Associate Ecologist)		

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1.0 INTRODUCTION

1.1 Soltys Brewster Ecology (SBE) were commissioned by Hale Construction Limited to prepare an Ecology and Habitat Protection Management Plan for the consented development at Ffordd y Milleniwm, Barry. The site has received outlined planning consent for the development of 56no. residential units, subject to a number of pre-commencement planning conditions (Planning Reference: 2020/00775/OUT). Condition 10 of the outline consent states:

Condition 10 – *‘Notwithstanding the submitted details, no development shall take place, including site clearance, until an ecology and habitat protection and management plan has been submitted to and approved in writing by the Local Planning Authority. The ecology & habitat protection plan shall include:*

- i) A mitigation plan for reptiles and Section 7 invertebrates based on survey information;*
- ii) Details of wildlife friendly road drainage and/or kerbs;*
- iii) A plan showing the ecological enhancement area, including habitat creation measures, landscaping, timing of its delivery and future management;*
- iv) Details of sensitive site clearance with respect to reptiles and breeding birds;*
- v) Details of the management of SuDS features to maximise biodiversity;*
- vi) Measures to be undertaken to enhance biodiversity (including bird nesting opportunities) on site;*
- vii) A lighting scheme for the site in order to ensure minimal light spillage onto adjoining vegetation;*
- viii) A minimum of 100mm gap at the bottom of all fencing used on site; and*
- ix) a plan for the eradication of cotoneaster from the site.*

The protection and management plan shall then be completed in accordance with the timings approved by the Local Planning Authority.

1.2 The current document is intended to be the central document for all management objectives and activities associated with the protection of ecology and habitat features at the site, and has been informed by previous ecological survey work undertaken at the site by Soltys Brewster Ecology (SBE, 2020a & SBE, 2020b).

1.3 The site is located at the former railway sidings along Ffordd Y Milleniwm in Barry, Vale of Glamorgan (central grid reference: ST 13005 68575). The site currently supports a mosaic of bare ground, short perennial, tall ruderal and dense scrub vegetation.

1.4 The current plan sets out the mitigation measures to protect reptiles during preparation works at the site, including details on the timings, vegetation clearance methodology, reptile translocation process and

enhancement measures. The plan also includes appropriate avoidance and enhancement measures other protected and priority species at the site including the location of bird and bat boxes and hedgehog corridors.

- 1.5 The current document also includes details on the habitat creation measures at the site, the design of SuDS features for biodiversity, lighting and control measures for invasive species.

2.0 EXISTING ECOLOGICAL CONDITIONS

- 2.1 The baseline ecological conditions at the site were initially established in August 2019 through a combination of desk study and Extended Phase 1 Habitat survey undertaken by Soltys Brewster Ecology (SBE, 2020a). The survey identified a range of habitats present at the site including early successional vegetation, bare ground, tall ruderal, scattered scrub and trees and introduced shrub. The mosaic of bare ground, disused railway, early successional vegetation, tall ruderal and scrub habitats were considered likely to support a diverse range of terrestrial invertebrate species as well as a population of common reptiles.
- 2.2 Targeted survey work to determine the likely population size-class of common reptiles was undertaken at the site by SBE between May – July 2020 (SBE, 2020b). The surveys identified the presence of an ‘exceptional’ population of Slow-Worm *Anguis fragilis* and ‘good’ population of Common Lizard *Zootoca vivipara* at the site, as per Froglife (1999) guidelines. A maximum count of 9 adult Common Lizard and 28 adult Slow-Worm were recorded at the site during a single visit. Based on the survey findings, a reptile mitigation strategy was prepared to accompany the outline planning application which set out measures to minimise the risk of potential injury/death to individual reptiles during site clearance and building operations and details of a capture and exclusion (translocation) process, sensitive approach to vegetation clearance and management/enhancement of retained habitats.
- 2.3 During the targeted reptile survey work, priority invertebrate species were also recorded at the site including Dingy Skipper *Erynnis tages* and Small Blue *Cupido minimus* butterfly. Both species are listed as priority species under Section 7 of the Environment Act (Wales) 2016.
- 2.4 Additional site visits undertaken in April and May 2023 identified that the existing site conditions remain consistent with the findings of the previous survey work (2019 and 2020 survey work). The site currently supports a mosaic of bare ground, early successional vegetation, tall ruderal and scrub habitats.

3.0 REPTILE MITIGATION STRATEGY

3.1 As discussed in section 2.2, the targeted reptile surveys in 2020 confirmed that the site supports an 'exceptional' population of Slow-Worm and a 'good' population of Common Lizard. Under Section 9(5) of the Wildlife and Countryside Act (1981) (as amended) all UK reptiles are protected against intentional killing or injuring. A reptile mitigation strategy will be implemented during site preparation and construction works to minimise the risk of the potential injury/killing of individual reptiles, and is summarised below:

- i. Sensitive clearance of tall herb and woody vegetation across the site to enable the installation of exclusion fencing;
- ii. Cutting of vegetation to be undertaken via a two-stage directional process and to be preceded by check for presence of nesting birds (breeding bird season typically March – August);
- iii. Management of reptile receptor area to be undertaken, including selective scrub removal as per direction from the ecologist;
- iv. Following vegetation clearance, temporary reptile exclusion fencing to be installed around the perimeter of the construction footprint;
- v. Artificial refugia to be deployed at a high density within the exclusion zone;
- vi. Reptile translocation to be undertaken, with refugia checked on a daily basis under suitable environmental conditions. Any reptiles or other wildlife found to be captured by hand and transferred to the receptor site;
- vii. Translocation to continue until 10 nil returns have been achieved or a 'reasonable capture effort' is agreed with the local authority;
- viii. Following the translocation process, a post-translocation report is to be submitted in writing to the local authority;
- ix. Reptile exclusion fencing to remain in place for the entire construction period with any damage repaired within 24-48hrs.

3.2 Suitable habitat conditions for reptiles exist across the majority of the site as well as along the railway line to the northern boundary, providing a long linear habitat corridor for reptiles in the surrounding area. As such, it's likely the population of reptiles present at the site is mobile along the railway corridor. The proposed site layout also indicates that the north eastern extent of the site is to be managed as an ecology area with sections of the southern boundary proposed for public open space and attenuation basin alongside retained trees/scrub, which would allow for movement of individual reptiles through the development. Based on this, it is considered appropriate that captured reptiles could be retained on site and transferred from the construction footprint (donor site) to the ecology area in the north east or allowed to disperse towards the railway corridor (during

phased vegetation clearance), without the need for the transport of individual reptiles to a separate (off-site) location.

Vegetation management

- 3.3 Vegetation clearance across the construction (donor) site will be undertaken from June 2024, during the breeding bird season (typically March - August). Scrub and tall ruderal vegetation will be initially cut to a height of approx. 100-150mm with the use of hand-tools (e.g. strimmers or brush-cutters) with all arisings removed. A second cut to ground level (with all arisings removed) will be undertaken within 48 hours. The cutting will be undertaken in a directional manner, starting from the south-west working towards the north to encourage any reptiles present to move towards the adjacent woodland and scrub or railway corridor. All vegetation management works will be subject to a prior check for nesting birds by an ecologist or vegetation clearance contractors. If an active bird nest is found it will be left in situ and an appropriate buffer maintained around the nest ($\pm 3\text{m}$). No vegetation works will take place within the buffer to the nest until it is no longer active and all chicks have fledged. Any denser areas of vegetation where a thorough check for the presence of nesting birds is not considered possible will be cut to ground level from September 2024 (or on completion of the translocation process).
- 3.4 No ground-breaking activities or removal of root systems will be undertaken during the reptile hibernation period (typically mid-October – March).

Management of the receptor site

- 3.5 Enhancements measures such as selective scrub clearance, to open up new areas for basking reptiles, and the creation of hibernacula and log/brush piles should be undertaken within the retained ecology area in order to support an increase in carrying capacity. Currently, the proposed ecology area is inaccessible due to dense Bramble *Rubus fruticosus agg.* and Willow *Salix sp.* scrub. Selective scrub removal would be required in order to replicate suitable habitat conditions elsewhere on site i.e., mosaic of bare ground, ephemeral/short perennial and rough grassland vegetation. These measures will be implemented before the reptile capture and exclusion process and are also intended to address the loss of habitats for priority invertebrates at the site such as Dingy Skipper and Small Blue butterfly.
- 3.6 Works to the ecology area will be undertaken at the same time as vegetation clearance across the donor site where possible (see section 3.3 above). The works will also include the selective removal of willow scrub (full removal of root systems) to open up new areas of bare ground, as per direction from the project ecologist. Denser areas of scrub will be cleared later in 2024 outside of the breeding bird period (from September 2024). Clearance during the winter period would be to ground level only (see 3.4). Felled material would be removed

from site, with some used to create 2no. log/brush piles. Log/brush piles will have a minimum dimension of 1.5m (L) x 1.5m (W) x 1.0m (H). The location of the log piles will be advised by the project ecologist.

Reptile capture and exclusion (translocation)

- 3.7 Following vegetation clearance temporary reptile fencing will be installed around the perimeter of the construction footprint (see example specification included in Appendix IV).
- 3.8 Within the construction footprint, artificial refugia (minimum 0.5m x 0.5m bitumen roofing felt) will be deployed at a high density.
- 3.9 The subsequent checking of artificial refugia and transfer of animals to the receptor sites will be undertaken by a suitably experienced ecologist under suitable environmental conditions as defined by Froglife (1999) from June 2024 (on completion of reptile fencing installation) when day-time air temperature is consistently above 10°C, no overnight frosts are forecast, no checks undertaken when temperature exceeds 18°C etc.
- 3.10 Translocation of reptiles is to continue until 10 nil returns have been achieved, or a 'reasonable capture effort' is agreed with the local authority. Following 10 nil returns any remaining woody vegetation/root systems within the construction footprint should then be removed (outside of the reptile hibernation period) under direct ecological supervision via a destructive search with any individual animals found during the works transferred to the receptor site. The end of the translocation period would mark when site preparation and construction activities can start within the parcel or donor site.
- 3.11 Reptile fencing is to remain in place for the duration of site preparation and construction works and be regularly checked for damage and repaired as required (within 24-48 hrs).

Post-translocation

- 3.12 Following the completion of the capture and exclusion process a short report will be prepared to document the findings to be submitted to the local planning authority. The post-translocation report will detail the species, number, age and sex of any reptiles or animals transferred.

Table 1: Reptile Mitigation Strategy Timetable

Date/Timing	Proposed Activities
From June 2024	<p>Cutting of scrub and tall ruderal vegetation across the construction (donor) site. Vegetation to be removed via a two-staged direction cut, with an initial cut to a height of approx. 100-150mm undertake with the use of hand-tools with all arisings removed. A second cut to ground level to be undertaken with all arisings removed.</p> <p>Works to the retained ecology area (receptor site) to be undertaken at the same time, such as selective scrub clearance to open up new areas for basking reptiles, and the creation of reptile log/brush piles in order to support an increase in carrying capacity.</p> <p>All vegetation management works will be subject to a check for nesting birds by a suitably experienced ecologist or vegetation clearance contractor to confirm the presence/absence of nesting birds.</p>
From June 2024	<p>Following vegetation clearance temporary reptile fencing will be installed around the perimeter of the construction footprint.</p> <p>Within the construction footprint, artificial refugia (minimum 0.5m x 0.5m bitumen roofing felt) will be deployed at a high density.</p> <p>Start of reptile capture and exclusion process. Artificial refugia to be checked daily by a suitably experienced ecologist under suitable weather conditions. Any animals found to be transferred to the receptor site.</p> <p>Translocation of reptiles to continue until 10 nil returns have been achieved, or a 'reasonable capture effort' is agreed with the local authority.</p>
Upon completion of the translocation process	<p>Following completion of the translocation process any remaining woody vegetation/root systems within the construction footprint should then be removed under direct ecological supervision via a destructive search with any individual animals found during the works transferred to the receptor site. Once complete, site preparation and construction activities can commence.</p> <p>Reptile fencing is to remain in place for the duration of site preparation and construction works and be regularly checked for damage and repaired as required (within 24-48 hrs).</p>

BIODIVERSITY ENHANCEMENTS & MITIGATION MEASURES

Bird and Bat Boxes

- 4.1 Condition 10 of the planning consent requires ‘*measures to be undertaken to enhance biodiversity (including bird nesting opportunities) on site*’. The following section details bird and bat boxes to be installed as part of the development design.
- 4.2 The Vale of Glamorgan Biodiversity and Development Supplementary Planning Guidance states that biodiversity enhancements, such as bird boxes, should be implemented on 33% of units for medium developments (11-100 new buildings). For the current scheme (56no. units) this would equate to 18no. bird boxes.. For the application site, the following bird and bat box models¹ are considered appropriate to the site:
- 8no. Vivara Pro House Sparrow Woodstone (Double-Chamber) Nest Box;
 - 6no. Vivaro Pro Build-In Swift Woodstone Nest Box; and
 - 6no. Vivara Pro Build-in Woodstone Bat Box.
- 4.3 The selection of woodstone/woodcrete models is based on their long-term durability and limited maintenance requirements. Indicative locations for the placement of bird and box boxes are illustrated on the plan included in Appendix II. The House Sparrow nest boxes should be installed at a minimum height of 2m either flush or fixed onto the external wall surface, and placed away from windows or doors. Swift bricks should be installed at a minimum height of 5m, flush on the gable end away from windows or doors. The 6no. swift bricks will be installed in close proximity to each other. Bird boxes will be positioned out of direct sunlight. The 6no. integrated bat boxes should be installed at a minimum height of 2-3m flush on the external wall surface, away from windows or doors and will be positioned south-facing.

Reptiles

- 4.4 As detailed in section 3.6, 2no. reptile log/brash piles will be created within the retained ecology area to provide new habitat features for reptiles. These will be minimum 1.5m(L) × 1.5m(W) × 1.0m (H) in size and will be created using material collected during vegetation clearance. The location of brash piles will be advised by the ecologist. See Appendix III for guidance on log/brash pile creation.

¹ Or equivalent woodstone model.

Hedgehog Movement

- 4.5 As per condition 10 of the planning consent, the layout must incorporate ‘a minimum of 100mm gap at the bottom of all fencing used on site’. Any external or boundary garden fencing will include a 130x130mm gap at the bottom to allow for the continued movement of hedgehog and other small mammals through the development, based on the Hedgehog Street principles designed by the People’s Trust for Endangered Species². The indicative location of hedgehog corridors are illustrated on the plan included in Appendix II.

Wildlife Friendly Drainage and Kerbs

- 4.6 Condition 10 also requires ‘details of wildlife friendly road drainage and/or kerbs’. Kerbs and drainage features represent a common cause of entrapment and mortality for amphibians in new developments (English Nature, 2001). Road drains at the site will incorporate the ACO-kerb design to minimise the entrapment/capture or mortality of amphibians and reptiles within gully pots (see example in Appendix V). The ACO Wildlife Kerb features a bypass recess in the front face which the amphibians follow safely. Dedicated sections of drop kerbs will not be required due to the presence of multiple residential driveways providing the same functionality within the residential layout. The installation of ACO Wildlife Kerbs will be adopted as a standard practice across the site.

Habitat Creation and SuDS Features

- 4.7 Part v) of Condition 10 require *details of the management of SuDS features to maximise biodiversity*. The Soft Landscape Plan (Appendix IV) includes areas of new native wildflower seeding as part of the development layout including areas of WFG20 Eco Species Rich Lawn wildflower seed mixture (Germinal Seeds), as well as RE3 River Floodplain/Water Meadow mixture (Germinal Seeds) to be sown within bio-retention and detention basins. Once established the areas of WFG20 and RE3 grassland will be cut biannually; once during late summer/autumn (cut in late August/early September) to a height of 75-150mm with all arisings removed to allow species to flower and set seed, and one cut in March. This would allow areas of open grassland and SuDS features at the site to provide biodiversity value as well as assist with filtering pollutants and retaining sediments.
- 4.8 In addition, the Soft Landscape Plan includes new native hedgerow and structure planting located along both the north-western and south-eastern site boundaries to provide connectivity throughout development. The native hedgerow will comprise a mixture of Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana*, Holly *Ilex aquifolium*, Blackthorn *Prunus spinosa*, Dog Rose *Rosa canina* and Elder *Sambucus nigra*. The plan also features native scrub and tree planting as well as amenity features using species with a known benefit for biodiversity, with the aim to provide both amenity value as well as resources for birds, reptiles and invertebrates.

² <https://www.hedgehogstreet.org/>

Lighting Design

4.9 As per condition 10 of the planning consent, a lighting scheme for the site in order to ensure minimal light spillage onto adjoining vegetation is required. The lighting plan included in Appendix IV illustrates that artificial light spill has been minimised as far as practicable along the site's south-eastern boundary and onto adjoining vegetation whilst also achieving safe lux levels for pedestrians and vehicles. Whilst there are some locations near the site entrance where light levels exceed 5.0 lux at the edge of the adjoining vegetation (plantation woodland), for the majority of the woodland corridor horizontal lux levels are <2.0 at the edge and lower into the woodland itself.

Invasive Species

4.10 Ecological survey work undertaken at the site identified stands of Wall Cotoneaster *Cotoneaster horizontalis* at the site. The species is listed as an invasive plant under Schedule 9 of the Wildlife and Countryside Act (1981) (as amended) meaning it is an offence to grow or otherwise cause the spread of the species in the wild. Condition 10 the consent requires 'a plan for the eradication of cotoneaster from the site'. It is recommended that stands of cotoneaster are clearly marked and left untouched during vegetation clearance for the reptile mitigation process. Hale Construction, or their appointed sub-contractor will be responsible for removal of cotoneaster:

- The process will require the removal of all the above ground material, excavation of the cotoneaster root system and soil with dispersed seeds. These works will be programmed following completion of the reptile translocation;
- Disposal of contaminated soil and plant material should be done within legislative guidelines at a licensed landfill;

Post-construction monitoring and management

4.11 Condition 10 requires details on the future management of the ecology area. An inspection in Years 1, 3 & 5 post-completion by an ecologist would be recommended in order to monitor how things are establishing with remedial action as required. From Year 3 post-completion, scrub management in the ecology area (eastern end of site) and along the railway corridor would be undertaken as needed to limit scrub regrowth (so 30% of scrub coppiced from Year 3 and in alternate years going forward e.g., year 5, year 7 etc). This cycle would be repeated for the life of the development. A record of monitoring and actions taken would be kept for inspection.

REFERENCES

English Nature (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

Froglife (1999) *Reptile survey: An introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.

Soltys Brewster Ecology (SBE) (2020a) *Ffordd y Milleniwm, Barry – Preliminary Ecological Appraisal*. Document Ref: E1990601/Doc 01 Issue 3.

SBE (2020b) *Ffordd y Milleniwm, Barry – Reptile Mitigation Strategy*. Document Ref E1990601/Doc 02 Issue 2.

APPENDIX I PROPOSED LAYOUT PLAN

APPENDIX II ECOLOGICAL ENHANCEMENT PLAN



- Key**
- Site Boundary
 - Reptile Exclusion Fencing
 - Retained Ecology Area/Receptor Site
 - ★ Reptile Log/Brush Pile
 - Hedgehog Corridors
- Bird and Bat Boxes**
- 8no. Vivara Pro House Sparrow Woodstone (Double Chamber) Nest Boxes
 - 6no. Vivara Pro Build-In Swift Woodstone Nest Boxes
 - 6no. Vivara Pro Build-In Woodstone Bat Boxes



PRELIMINARY	PLANNING	DESIGN	TENDER	CONSTRUCTION
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Hale Construction Ltd		Ecology Enhancement and Mitigation Plan		
Ffordd y Milleniwm, Barry				
E23116101/DR01 Rev C	DJ	MW	17 June 2024	

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APPENDIX III REPTILE BRASH/LOG PILE SPECIFICATION

9. Creating Reptile Habitat Features

9.1. Brash and log piles

The value of brash and log piles lies in;

- creating cover,
- providing additional structure to existing habitat,
- enhancing prey availability.

On sites where vegetation structure is limited brash and log piles may be invaluable features for reptiles. In particular, the addition of brash piles to grassland habitats seems to be attractive to viviparous lizards and adders.

Brash/log piles can be created from arisings of scrub control. Piles should be placed in a sunny location and set within existing vegetation (for example, areas of long grass or long grass and scattered scrub), so that there is cover immediately surrounding, or adjacent to, the pile.

To be useful to reptiles brash does not have to be tightly compacted, as recommended for invertebrates. To provide diverse structure within a brash pile, it is recommended that the central core be compacted, while the outer layers are laid more loosely on top. Vegetation growing through the outer edges of the brash pile will provide additional cover.



Brash piles can utilise arisings from scrub and tree control to enhance habitat by increasing structural diversity (Jim Foster)

Brash piles should be maintained by adding additional material as the pile decomposes. This can be provided from ongoing tree and scrub management activity.

Log piles should contain a mixture of sizes and shapes, with some small-diameter material present.

A standard log pile comprising similarly-sized timber, as results from normal forestry operations for instance, is of limited value to reptiles because the voids tend to be too large and the structure lacks complexity.

Brash and log piles should be located away from areas of high public access, to reduce the risk of disturbance, collection or arson. On sites subject to high levels of public access, the materials can be either partially buried in the ground, or anchored with wire or secured with wire stapled to the larger logs.



A log pile sited in a sunny location, providing additional structural diversity to a grassland site (Jim Foster)

9.2. Hibernation sites and basking banks

Creating hibernation sites (hibernacula) is a useful management measure either following recent habitat restoration, where such features may be absent, or where traditional hibernation sites are degrading through subsidence or excessive shade. In many cases, however, the creation of new hibernation sites may not be critical, since it is likely that the animals already have adequate overwintering quarters. Hibernation sites are also used for refuge and basking during the active season, so to refer to them as 'hibernacula' may be slightly misleading. However the term is used here to distinguish them from simple basking banks (see below).

Creating new basking banks is often a valuable measure, though again the value of this depends on the site: if the site is already very open with a south-facing aspect, there is probably little point in spending resources on new banks.

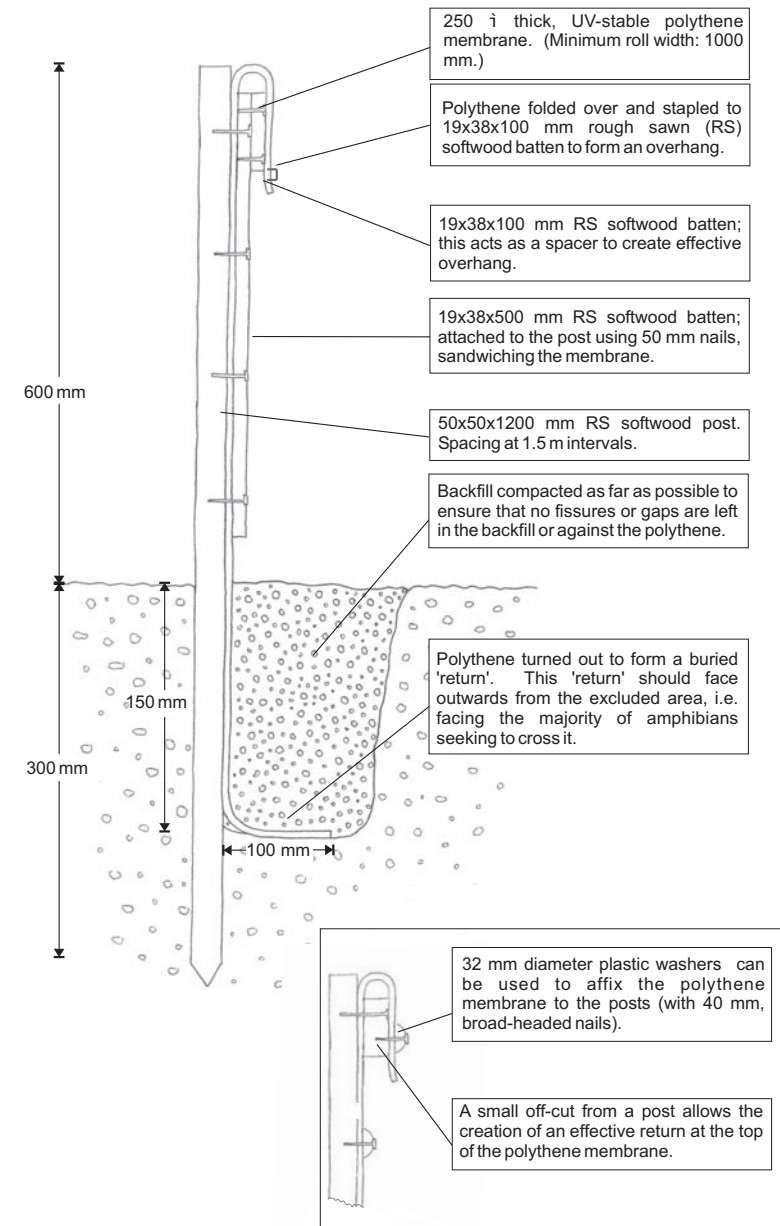
Temporary Reptile Fence

This is a standard temporary fence design which can be utilised in situations where it is necessary to create a reptile-proof barrier for periods usually not exceeding a single season. Although this design will effectively prevent the passage of reptiles in either direction, the 'returns' on the fence should face outwards, i.e. facing the direction from which the majority of any reptiles are expected to approach. It can be constructed from relatively inexpensive materials, but is easily damaged or vandalised, and will degrade over time. Fences of this type are less appropriate in windy situations where damage will be more frequent. Also if placed close to areas where plant operate regularly and/or earthworks are taking place, a membrane fence of this kind is usually best protected by a more robust fence, for example a wooden paling fence.

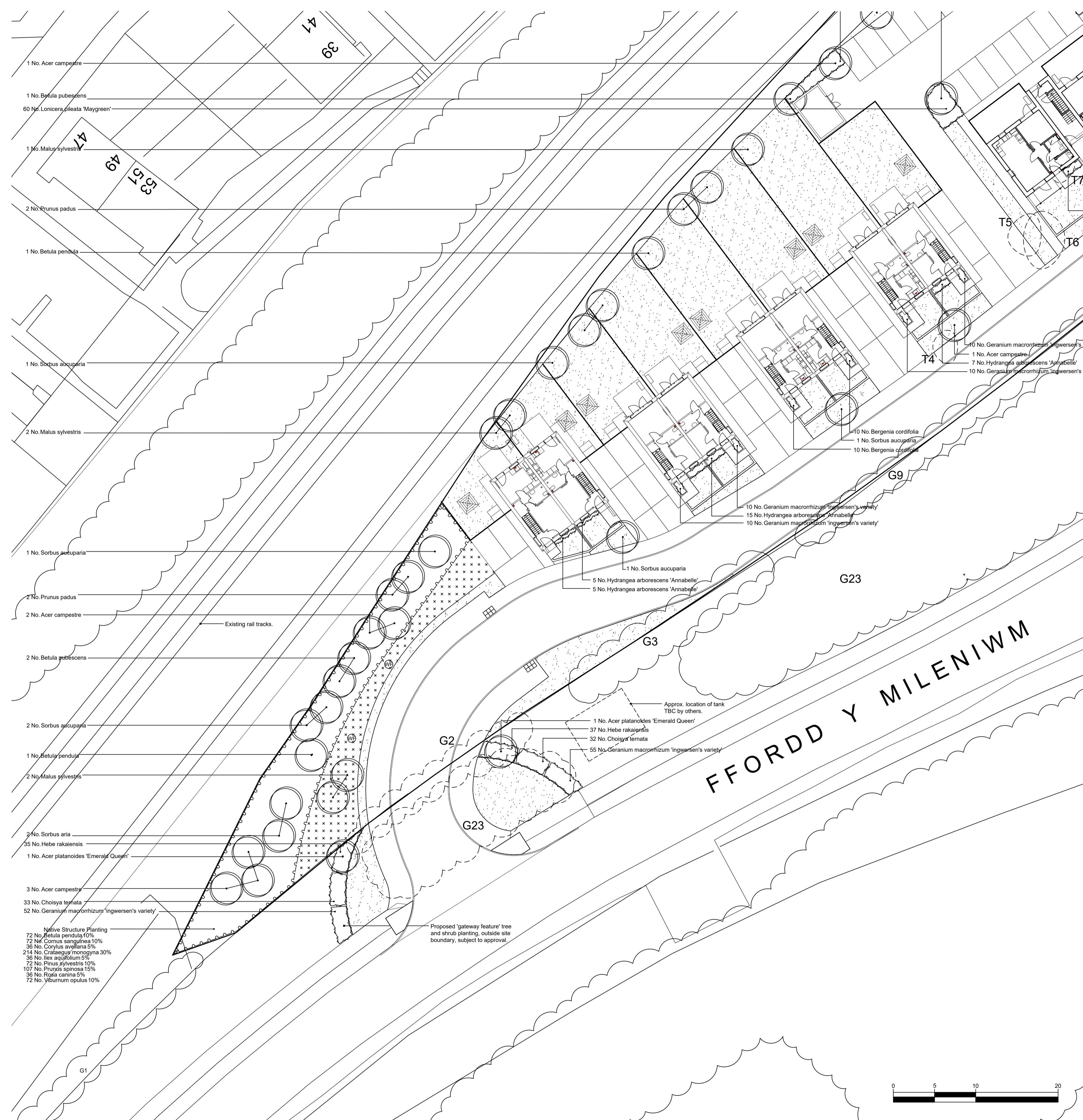
Care needs to be taken when undertaking the necessary maintenance works to ensure that vegetation does not grow over the fence. If undertaken mechanically, this can easily damage the membrane.

The use of a nail gun is recommended to attach the battens securely to the posts. Not only is this advantageous for speed, but prevents any loosening of the posts which can be associated with the repeated impacts of a hammer.

Some practitioners prefer the use of flexible plastic washers to hold the membrane in place, as an alternative to softwood battens. (An example of this is shown inset.) The result is similar in strength and durability to that of the previous design, but precludes the use of a nail gun, as the washers require a large headed nail and cannot withstand the force produced by the gun.



APPENDIX IV SOFT LANDSCAPE PLAN



Planting Schedule

Trees	Number	Species	Grth	Specification
20	Acer campestre	14-16cm	RB	Extra Heavy Standard
2	Acer platanoides 'Emerald Queen'	14-16cm	RB	Extra Heavy Standard
4	Alnus cordata	14-16cm	RB	Extra Heavy Standard
4	Alnus glutinosa	14-16cm	RB	Extra Heavy Standard
1	Alnus incana	14-16cm	RB	Extra Heavy Standard
12	Betula pendula	14-16cm	RB	Extra Heavy Standard
6	Betula pubescens	14-16cm	RB	Extra Heavy Standard
2	Carpinus betulus 'Frans Fontaine'	14-16cm	RB	Extra Heavy Standard
5	Fagus sylvatica 'Davvyck'	14-16cm	RB	Extra Heavy Standard
12	Malus sylvestris	14-16cm	RB	Extra Heavy Standard
4	Prunus avium	14-16cm	RB	Extra Heavy Standard
12	Prunus padus	14-16cm	RB	Extra Heavy Standard
7	Quercus robur	14-16cm	RB	Extra Heavy Standard
2	Salix caprea	10-12cm	RB	Feather
4	Sorbus aria	14-16cm	RB	Extra Heavy Standard
16	Sorbus aucuparia	14-16cm	RB	Extra Heavy Standard
1	Tilia europaea	14-16cm	RB	Extra Heavy Standard
Total :107				

Shrubs

Number	Species	Height	Pot Size	Specification	Density
149	Bergenia cordifolia	20-30cm	3L	C	8/m ²
279	Choisya ternata	40-60cm	3L	C	4/m ²
82	Choisya ternata 'White Dazzler'	40-60cm	3L	C	4/m ²
274	Geranium macrorrhizum 'Ingwersen's variety'	30-40cm	3L	C	8/m ²
188	Hebe buxifolia	30-40cm	3L	C	4/m ²
72	Hebe rakaiensis	30-40cm	3L	C	4/m ²
183	Hydrangea arborescens 'Annabelle'	40-60cm	3L	C	3/m ²
93	Lonicera pileata 'Maygreen'	40-60cm	3L	C	4/m ²
40	Potentilla fruticosa 'Red Ace'	30-40cm	3L	C	4/m ²
135	Viburnum davidii	40-60cm	3L	C	4/m ²
Total :1495					

Grasses

Number	Species	Pot Size	Specification	Density
32	Calamagrostis acutiflora 'Karl Foerster'	2L	C	6/m ²
114	Drosera rotundifolia	2L	C	6/m ²
132	Miscanthus sinensis 'Ferner Osten'	2L	C	6/m ²

Native Hedge

Number	Species	Specification	Height	Percentage Contribution
395	Corylus avellana	B	60-80cm	20%
788	Crataegus monogyna	B	40-60cm	40%
100	Ilex aquifolium	B	40-60cm	5%
395	Prunus spinosa	B	40-60cm	20%
199	Rosa canina	B	60-80cm	10%
100	Sambucus nigra	B	60-80cm	5%
Total :1977				

Native Structure Planting

Number	Species	Specification	Height	Percentage Contribution
72	Betula pendula	B	60-80cm	10%
72	Cornus sanguinea	B	60-80cm	10%
36	Corylus avellana	B	60-80cm	5%
214	Crataegus monogyna	B	60-80cm	30%
36	Ilex aquifolium	B	40-60cm	5%
72	Pinus sylvestris	B	60-100cm	10%
107	Prunus spinosa	B	60-80cm	15%
36	Rosa canina	B	60-80cm	5%
72	Viburnum opulus	B	60-80cm	10%
Total :717				

Notes: Hedge planting to be established in double staggered row, 300mm between rows, 6no. plants per linear metre.
Structure planting to be established at 2no. plants per m² in random single species groups of between 7 and 11

Planting Specification

All work and materials shall be in accordance with current British Standards components and to Code of Practice.

SITE CLEARANCE

- a - Remove general builders rubble, litter and any stones greater than 75mm in size from the areas to be planted. Such materials are to be collected and taken to the Contractors tip or disposed of on site as directed.

EARTHWORKS

Planting Areas

- a - Approved topsoil, both site won and imported, shall be led onto site and spread evenly on the approved formation to give a finished depth of 150mm for grassed areas, 450mm for shrub planted areas and 1000mm depth for tree pits. All topsoil to be placed on a minimum of 300mm depth of subsoil.
- b - Finished levels of topsoil in grassed areas to be 25mm above adjoining paving. Finished level of topsoil in shrub beds to be 50mm lower than adjacent edge to allow placing of bark mulch.
- c - Supply and spread approved fertiliser such as SAI Enmag or similar standard at the rate of 70g/m² to be worked into top 200mm.

CULTIVATIONS AND PLANTING

Planting Areas

- a - Shrub beds shall be cultivated prior to planting to produce a medium tilth and all weeds, stones and other debris arising from this work are to be collected and removed from site.
- b - Spread approved tree and shrub planting compost over the planting beds at a rate of 20 litres/m² and work into the top 200mm.
- c - Shrubs to be sited in locations, numbers and densities shown in the planting schedule and on the soft landscape drawings. Shrubs to be placed to achieve an even spacing and matching of shapes. All shrubs are to be planted at the depth at which they have previously been growing, allowing for soil settling after planting.
- d - Surfaces of shrub planting areas shall be left clean and neat with a raked surface between the planting during and on completion of planting.
- e - Immediately after planting all containerised plants shall be watered with 5 litres of water per plant.
- f - All grass edges to be cut vertically with an edging iron to a depth of 100mm. Resultant edges to be clean and straight or an even smooth radius. Edges to be left neat and tidy with ground on shrub side meeting cut face at an even gradient. All cuttings to be removed from site.
- g - A 50mm layer of matured conifer bark to be spread over planting areas and tops of tree pits, at least 75% of which shall exceed 60mm particle size and shall contain a minimum of wood particles, the bark to be pest, disease and weed free.

Tree Planting - Planting Pits

- a - Excavate tree pits as follows:
Standard / Feathered trees - 1500 x 1000 x 1000mm
Semi-Mature trees - 1500 x 1500 x 1000
- b - Loosen base to a further depth of 200mm and scarify sides. Dispose of unsuitable excavated material off site to approved tip.
- c - Trees to be double staked with stakes positioned parallel to the adjacent kerb line or paving. Tree stakes to be pressure treated, minimum diameter 65mm and pointed at one end. Stakes to be driven into the pit before planting to a minimum depth of 300mm below the base of the pit.

- d - Trees to be planted in pit to a depth and orientation related to the original growing position in the nursery and backfilled with the excavated topsoil mixed with approved tree and shrub planting compost in the following amounts:
Feathered trees - 60 litres/tree
Standard trees - 95 litres/tree
Heavy standard trees - 120 litres/tree
Semi-mature trees - 150 litres/tree
- e - Trees to be tied to the supporting stakes with adjustable reinforced rubber tree ties with solid rubber spacers, positioned at an approved point suitable to the habit of the tree.
- f - Proposed trees within 3m distance from buildings or services, or within 2.5m of roads/parking areas are to have root barriers installed.
- g - Water to be applied to all trees and transplants on the same day as planting:
Feathered trees - 36 litres/tree
Standard trees - 36 litres/tree
Heavy Standard trees - 42 litres/tree
Extra Heavy standard - 48 litres/tree

Grass Seeding

- a - Areas for seeding to have topsoil depths of min. 150mm apart from wildflower areas where seed should be sown directly onto subsoil.
- b - One month prior to sowing, areas shall be harrowed to a depth of 100mm followed by chain harrowing to a depth of 50mm to produce a fine tilth. Finished surfaces to be rolled with a Cambridge roller.
- c - All weeds, stones and other debris arising from this work shall be collected and removed from site to the Contractors tip.
- d - All grassed and broad-leaved plants which emerge between cultivators and seeding shall only be treated with an approved translocated herbicide before sowing.

Minor Grading

- a - Finished levels of amenity grass areas to be 25mm above adjoining paving or kerbs. Levels to be arranged to give gentle falls for drainage purposes.
- b - New areas to be married in to adjoining soiled areas.

Final Cultivations

- a - The surface for seeding should be 25mm deep and free from weeds and stones.

Sowing

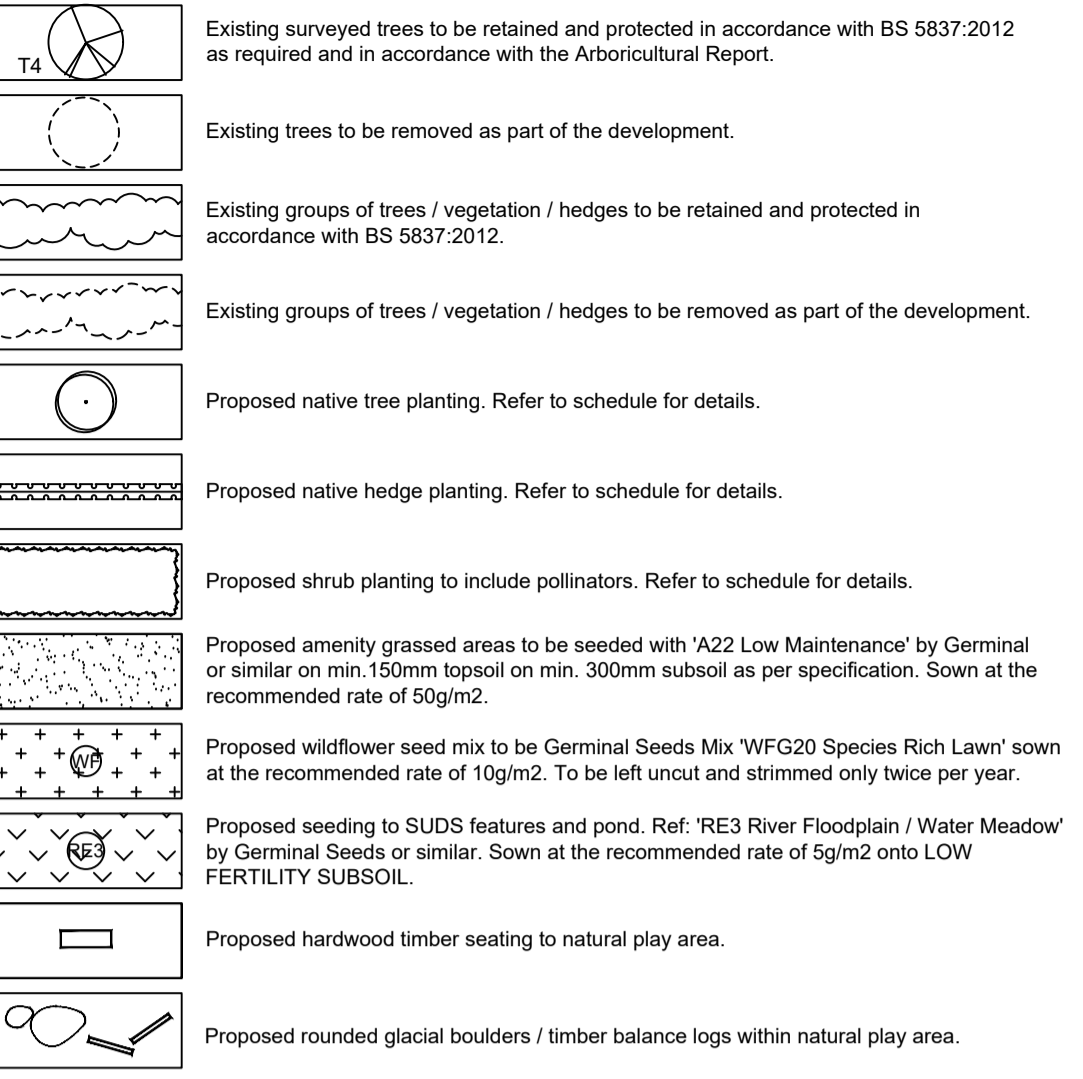
Grass Seed Mixes

- a - Germinial Seeds Ref: 'A22 Low Maintenance' sown at recommended rate of 50g/m² or similar approved.
- b - Germinial Seeds Ref: 'WFG20 Species Rich Lawn' sown at recommended rate of 10g/m² or similar approved.
- c - Germinial Seeds Ref: 'RE3 River Floodplain / Water Meadow' by Germinial Seeds or similar. Sown at the recommended rate of 5g/m² onto LOW FERTILITY SUBSOIL.

Procedure

- a - The Contractor shall purchase fresh grass seed each season throughout the contract period. The grass seed shall be made up of certified seeds under EEC regulations. The seed shall have a certified germination of not less than 10% and a certificate of purity of not less than 90%. Total weed seed and other crop seeds content shall not be more than 1%. Seeds shall be obtained at least 21 days before sowing.

LEGEND



Notes about birds breeding season and tree removal:
It is recommended that vegetation which needs to be removed is done prior to the bird breeding season, [1st March to 31st August]. If this is not possible within this period, the vegetation removal should be carried out under the supervision of an Ecologist.

If birds are found to be breeding in the vegetation which needs to be removed then vegetation removal in the area surrounding the nest must be delayed until the eggs have hatched and the young birds have left the nest.

Rabbit Protection
All hedge planting to be fitted with TUBEX STANDARD TREE GUARDS or SHRUBSHELTERS according to plant type. Tubes to be 60cm high or similar approved. Tree/Shrub shelters need to be well anchored using good quality square stakes, inserted into the ground to at least 1/3 of the stake height.

Ensure the stake is below the flared rim of the Shrubshelter. Using the shelters natural strength push it lightly into the ground to remove the gap at the base.

Defects Liability Period

- a - Any trees, shrubs and grass found to be defective or missing for any reason before practical completion shall be replaced by the Contractor entirely at his own expense.
- b - Thereafter any failures within 12 months of the date of practical completion shall also be replaced to the original specification by the Contractor entirely at his own expense.
- c - Thereafter any failures within the next 4 years shall also be replaced to the original specification in accordance with the planning conditions.

Weed Control

- a - Keep shrub beds and areas around trees free from annual and perennial weeds by hand weeding. All arisings to be removed from site. Allow 7 no. visits per year.
- b - Apply translocated herbicide to shrub beds using weed wiper. Allow 3 visits a year with dead weed growth removed after each visit.

Mulch

- a - Bark mulch to be reinstated to original depths at the end of each growing season. Allow 1 no. visit per year.

Watering

- a - All planting shall be watered with a low pressure hose during dry spells, within the first year of growth only at the following rates:-
Feathered/standard trees - 36 litres/tree/visit
Heavy standard trees - 42 litres/tree/visit
Semi-mature trees - 48 litres/tree/visit
Shrubs - 5 litres/plant/visit

Grass Subsidence/Damage

- a - Any subsidence of seeded or turfed areas below the specified levels shall be made good and re-seeded. These works shall be rectified at the Contractor's expense.
- b - The Contractor shall make good any damage caused by work personnel, plant or material whilst carrying out and maintaining the work on site.

Fertiliser

- a - At the end of the establishment period, 30gms of slow release fertiliser to be applied around each plant. Allow 1 no. visit at end of Year 2

Grass Cutting

- a - Areas sown with amenity mix: 16no. visits between April and October. Grass areas to be cut to a height of c.40mm NB. In drought conditions adjust cutting heights to c.60mm. In very wet conditions, all operations involving grass cutting shall cease until conditions allow operations to continue without damaging the surfacing, levels and contours of the ground. Allow for sweeping clean of all paths and roads of grass cuttings at each mowing.

Maintenance

- a - The Contractor shall be responsible for the maintenance of the planting and grassed areas for a 12 month period following the completion of the works and will be responsible for any defects due to faulty materials, including plant failures, or workmanship during this time.
- b - The Contractor shall carry out maintenance work at suitable intervals and in suitable weather conditions.

Firming in

- a - All plants and tree stakes loosened by planting operations, wind or frost shall be firmed in. Allow 1 no. visit per year.

Litter Collection

- a - Whole site to be kept in a clean and tidy condition throughout the establishment period. Litter to be removed from site. Allow 20 no. visits per year.

REV.	DESCRIPTION	DATE	REV.	DESCRIPTION	DATE
A	Amendments to layout and planting schedule. LH/DP	10.03.24			
B	Amendments to rain gardens and planting schedule. LH/DP	09.04.24			
C	Entrance footpaths updated as per Engineering layout. LH/DP	16.04.24			
D	Landscaping to main entrance amended to avoid easement. LH/DP	23.04.24			
E	Amended to reflect latest site plan and road layout. LH/DP	08.05.24			
F	Wildflower seed mix amended as per LPA Ecologist comments. LH/DP	20.06.24			

IMPORTANT CDM / H&S NOTE
The designers would draw the readers attention to key residual construction health and safety hazards that have not been eliminated from the designs shown on the drawings by the design process. These hazards are identified below.
Working on or adjacent to the public highway.
Working on or adjacent to steep slopes.
Any construction personnel including operatives intending to construct the designs shown on this drawing should ensure that they have been thoroughly briefed by the principle contractor on all health and safety matters and have sight of:
1. The full designers and contractors hazard risk assessments and risk registers.
2. The developed construction phase health and safety plan.
3. The contractors construction method statements.

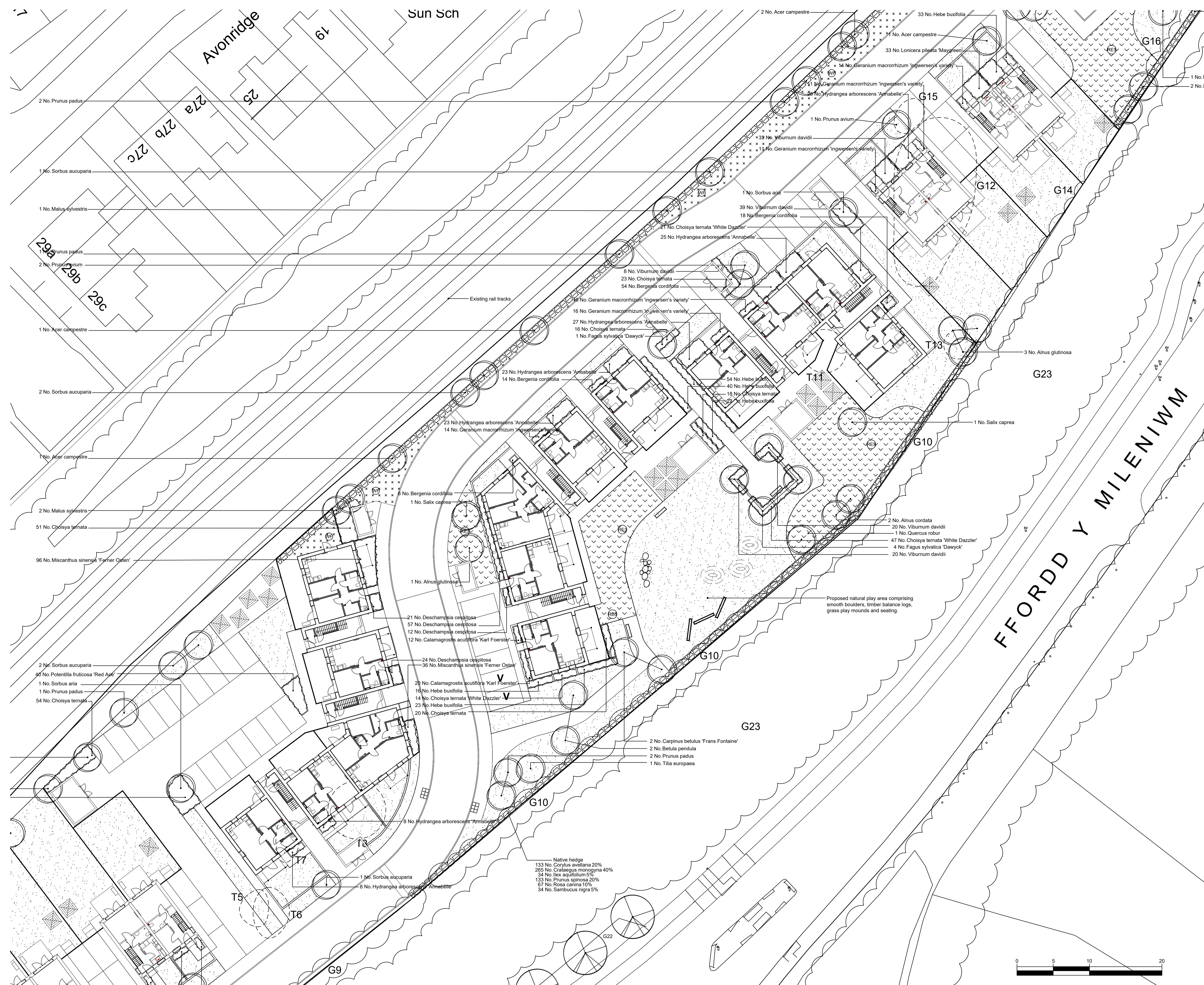
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PROJECT
Ffordd Y Mileniwm, Barry

DRAWING TITLE
Soft Landscape Proposals 1 of 3

DRAWING No. 1149.01 Rev F
SCALE (A1) 1:250
DATE May/23
DRAWN LH
CHKD DP

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LEGEND

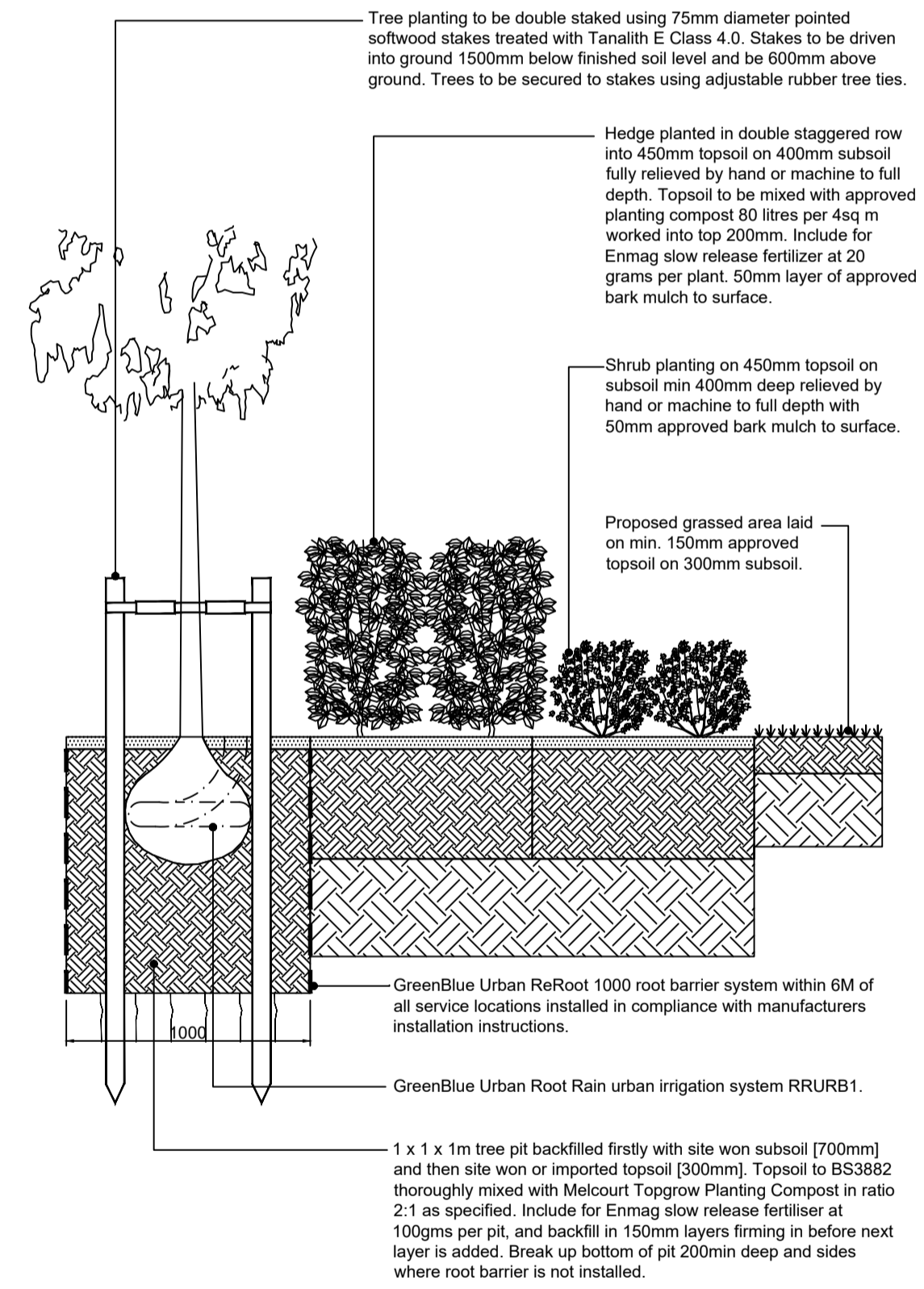
- Existing surveyed trees to be retained and protected in accordance with BS 5837:2012 as required and in accordance with the Arboricultural Report.
- Existing trees to be removed as part of the development.
- Existing groups of trees / vegetation / hedges to be retained and protected in accordance with BS 5837:2012.
- Existing groups of trees / vegetation / hedges to be removed as part of the development.
- Proposed native tree planting. Refer to schedule for details.
- Proposed native hedge planting. Refer to schedule for details.
- Proposed shrub planting to include pollinators. Refer to schedule for details.
- Proposed amenity grassed areas to be seeded with 'A22 Low Maintenance' by Germinol or similar on min. 150mm topsoil on min. 300mm subsoil as per specification. Sown at the recommended rate of 50g/m2.
- Proposed wildflower seed mix to be Germinol Seeds Mix 'WFG20 Species Rich Lawn' sown at the recommended rate of 10g/m2. To be left uncut and strimmed only twice per year.
- Proposed seeding to SUDS features and pond. Ref: 'RE3 River Floodplain / Water Meadow' by Germinol Seeds or similar. Sown at the recommended rate of 5g/m2 onto LOW FERTILITY SUBSOIL.
- Proposed hardwood timber seating to natural play area.
- Proposed rounded glacial boulders / timber balance logs within natural play area.

Notes about birds breeding season and tree removal:
 It is recommended that vegetation which needs to be removed is done prior to the bird breeding season, [1st March to 31st August]. If this is not possible within this period, the vegetation removal should be carried out under the supervision of an Ecologist.

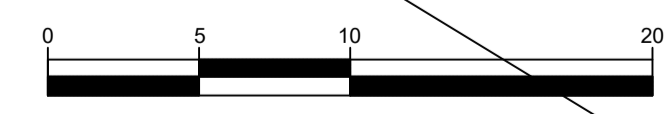
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Rabbit Protection
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Ensure the stake is below the flared rim at the top of the Shrubshelter. Using the shelters natural strength push it lightly into the ground to remove the gap at the base.



Typical section through tree pit / hedge / shrub planting / grass.
 Scale 1:25



REV.	DESCRIPTION	DATE
A	Access route to POS and surrounding planting amended. LH/DP	19.03.24
B	Additional access route to POS and rain gardens amended. LH/DP	09.04.24
C	New access route to POS amended as per LPA comments. LH/DP	25.04.24
D	Updated following SAB comments. LH/DP	07.05.24
E	Amended to reflect latest site plan and road layout. LH/DP	08.05.24
F	Wildflower seed mix amended as per LPA Ecologist comments. LH/DP	20.06.24

REV.	DESCRIPTION	DATE
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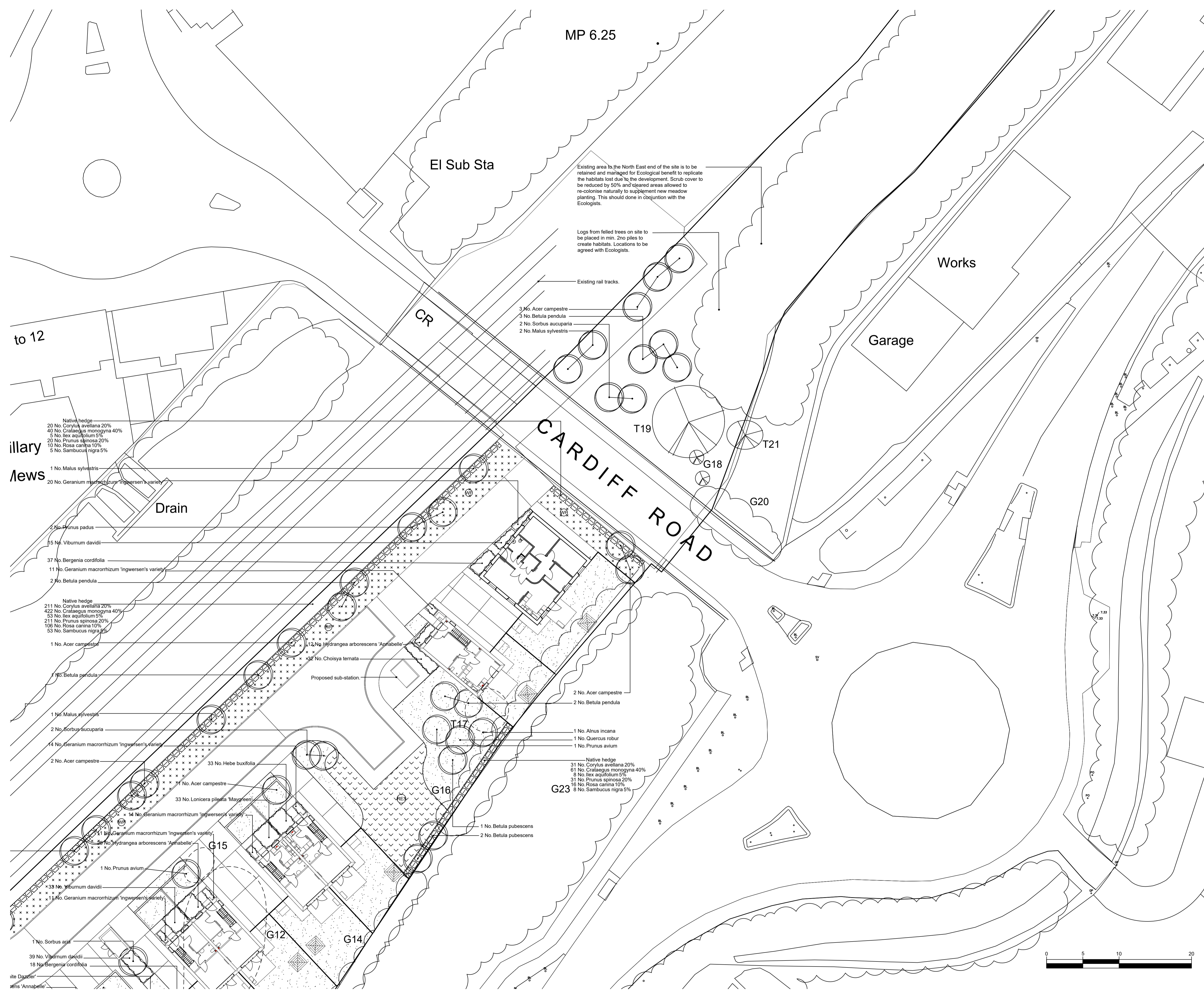
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PROJECT
 Ffordd Y Mileniwm, Barry

DRAWING TITLE
 Soft Landscape Proposals 2 of 3

DRAWING No.	SCALE (A1)	DATE	DRAWN	CHKD
1149.02 Rev F	1:250	May/23	LH	DP

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LEGEND

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Rabbit Protection
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Ensure the stake is below the flared rim at the top of the Shrubshelter. Using the shelters natural strength push it lightly into the ground to remove the gap at the base.

- Native hedge
- 20 No. *Corylus avellana* 20%
 - 40 No. *Crataegus monogyna* 40%
 - 5 No. *Ilex aquifolium* 5%
 - 20 No. *Prunus spinosa* 20%
 - 10 No. *Rosa canina* 10%
 - 5 No. *Sambucus nigra* 5%
- 1 No. *Malus sylvestris*
- 20 No. *Geranium macrorrhizum* 'Ingwersen's variety'
- 2 No. *Prunus padus*
- 15 No. *Viburnum davidii*
- 37 No. *Bergenia cordifolia*
- 11 No. *Geranium macrorrhizum* 'Ingwersen's variety'
- 2 No. *Betula pendula*
- Native hedge
- 211 No. *Corylus avellana* 20%
 - 422 No. *Crataegus monogyna* 40%
 - 53 No. *Ilex aquifolium* 5%
 - 211 No. *Prunus spinosa* 20%
 - 106 No. *Rosa canina* 10%
 - 53 No. *Sambucus nigra* 5%
- 1 No. *Acer campestre*
- 1 No. *Betula pendula*
- 1 No. *Malus sylvestris*
- 2 No. *Sorbus aucuparia*
- 14 No. *Geranium macrorrhizum* 'Ingwersen's variety'
- 2 No. *Acer campestre*
- 33 No. *Hebe buxifolia*
- 33 No. *Lonicera pileata* 'Maygreen'
- 54 No. *Geranium macrorrhizum* 'Ingwersen's variety'
- 1 No. *Prunus avium*
- 38 No. *Viburnum davidii*
- 11 No. *Geranium macrorrhizum* 'Ingwersen's variety'
- 1 No. *Sorbus aria*
- 39 No. *Viburnum davidii*
- 18 No. *Bergenia cordifolia*

- 3 No. *Acer campestre*
- 3 No. *Betula pendula*
- 2 No. *Sorbus aucuparia*
- 2 No. *Malus sylvestris*

- 2 No. *Acer campestre*
- 2 No. *Betula pendula*
- 1 No. *Alnus incana*
- 1 No. *Quercus robur*
- 1 No. *Prunus avium*
- Native hedge
- 31 No. *Corylus avellana* 20%
 - 61 No. *Crataegus monogyna* 40%
 - 8 No. *Ilex aquifolium* 5%
 - 31 No. *Prunus spinosa* 20%
 - 8 No. *Rosa canina* 10%
 - 8 No. *Sambucus nigra* 5%

Existing area to the North East end of the site is to be retained and managed for Ecological benefit to replicate the habitats lost due to the development. Scrub cover to be reduced by 50% and cleared areas allowed to re-colonise naturally to supplement new meadow planting. This should be done in conjunction with the Ecologists.

Logs from felled trees on site to be placed in min. 2m piles to create habitats. Locations to be agreed with Ecologists.

Existing rail tracks.

For Planting Schedule and Planting Specification, refer to DPLA drawing 1149.01.
 For Tree Pit and shrub planting details, refer to DPLA drawing 1149.02.

REV.	DESCRIPTION	DATE	REV.	DESCRIPTION	DATE	REV.	DESCRIPTION	DATE
A	Trees added to assist with screening near Cardiff Road. LH/DP	10.03.24						
B	Amended to reflect updated site plan. LH/DP	09.04.24						
C	Updated following SAB comments. LH/DP	07.05.24						
D	Amended to reflect latest site plan and road layout. LH/DP	08.05.24						
E	Wildflower seed mix amended as per LPA Ecologist comments. LH/DP	20.06.24						

IMPORTANT CDM / H&S NOTE
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PROJECT Fford Y Mileniwm, Barry		DRAWING TITLE Soft Landscape Proposals 3 of 3	
DRAWING No. 1149.03 Rev E	SCALE (A1) 1:250	DATE May/23	CHKD DP

APPENDIX V ACO WILDLIFE KERB DESIGN



ACO. creating

the future of drainage

ACO Wildlife Kerb

Traditional road kerbing can often prove fatal for amphibians as it causes them to fall into gully pots and become trapped.

This situation occurs because many amphibians naturally proceed along any vertical barrier eg the kerb line where it meets the road surface. When they encounter a gully pot, where there is no gap between it and the vertical kerb face, they often fall in.

ACO Wildlife Kerb is designed to counter this problem by providing a bypass recess set into the kerb. When an amphibian arrives at the bypass recess it naturally moves into the kerb and passes the gully safely.

Benefits

- Easy to retrofit in existing locations, with standard HB2 profile and 915mm length
- Contact surfaces are non-absorbent with minimal thermal conductivity, protecting amphibians
- Adaptable for double gully layouts



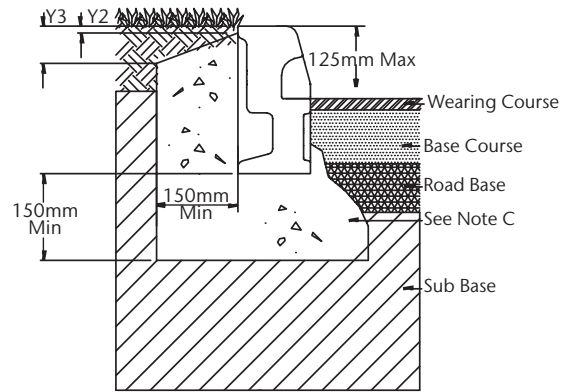
ACO Wildlife Kerb

Applications

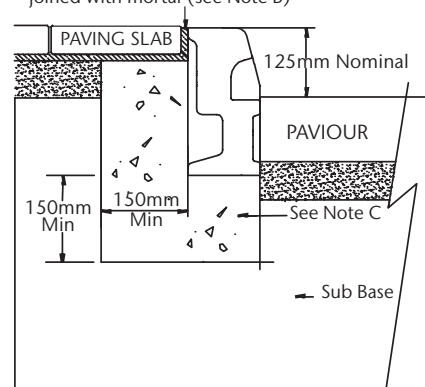
- Kerb installations with gullies
- Areas of migratory amphibians or disjointed habitats

System Overview

Product Code	Description	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
ACO Wildlife Kerb					
40090	ACO Wildlife Kerb	915	125	255	43



Note: First block bedded and joined with mortar (see Note B)



Compatibility

The kerb itself is 915mm long to match traditional BS kerb and fits into normal kerbing with minimum disruption to existing layouts. It matches the standard HB2 kerb profile. The rear face of the kerb is deeply pocketed to give a good key with backfilled concrete haunching.

ACO Wildlife Kerbs are specifically designed to guide amphibians around a single gully grate. Two Wildlife Kerbs can be shortened to provide a longer pathway when two gullies are closely installed. ACO also offers amphibian ladders, which provide a pathway for any amphibians flushed into the gully during storm events the opportunity to escape.

- Ground Conditions:** The customer should ensure that the minimum dimensions shown are suitable for the existing ground conditions. Engineering advice may be necessary.
- Block Pavements:** The kerb must be supported laterally and therefore blocks must be restrained from movement by bedding securely, e.g. by using an Epoxy or Polymer Modified Mortar for bed and perpendicular joints (for example RONAFIX Mortar Mix C or similar: from Ronacrete, Tel: 01279 638700). Engineering advice may be required.
- Concrete bed and haunch** minimum performance as mix ST1 to BS8500-1.
- Asphalt Pavement:** Top of concrete haunch
Y2 = 35mm maximum; Y3 = 60mm maximum.

Installation

STEP 1

ACO Wildlife Kerb units are installed in a run of conventional kerb at the location of the road gullies, such that the gully is central to the kerb unit and the recessed channel for the amphibians extends beyond both sides of the gully grating. ACO Wildlife Kerb units are to be installed generally in accordance with best practice methods for the installation of conventional kerbs.

STEP 2

ACO Wildlife Kerb units are to be bedded to the correct line and level on concrete (minimum 150mm depth) and then concrete backing placed behind the kerbs (minimum 150mm thickness). In order to provide resistance against side impacts, the backing is to extend up to within 35mm (maximum) of the top of the kerb as shown on the recommended installation drawings.

STEP 3

Where the back of the kerb is to be paved with slabs or blocks, the first slab or block adjacent to the ACO Wildlife Kerb unit is to be bedded onto the concrete backing with a strong mortar such as Ronafix Mortar Mix C or equivalent, to ensure that the first block cannot move and will provide the required support to the top of the ACO Wildlife Kerb unit.

STEP 4

The finished road surface is to be at the level of the base of the recessed channel for the amphibians.

ACO Water Management Contacts:

Sales: customersupport@aco.co.uk

Technical: technical@aco.co.uk

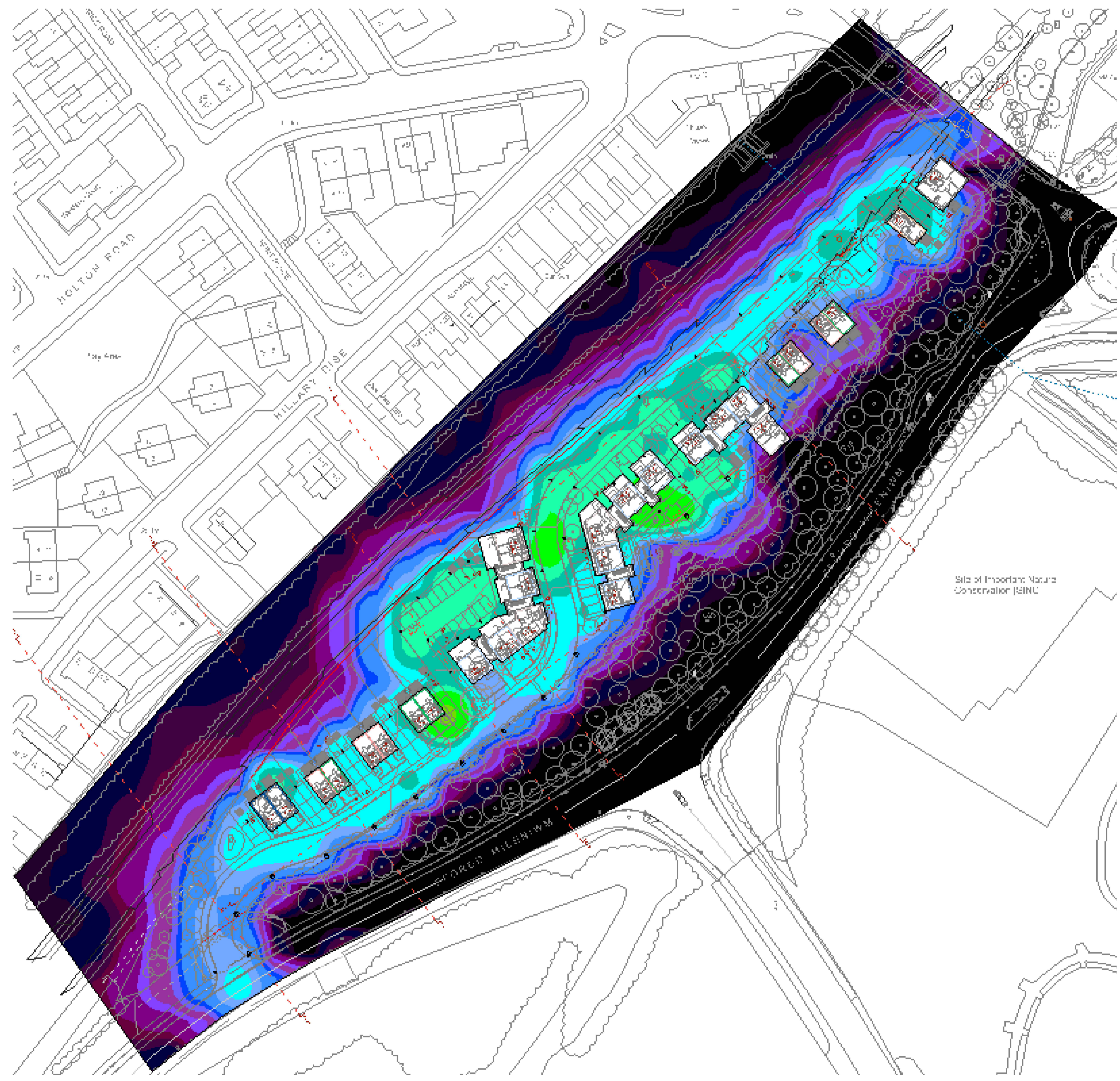
Tel: 01462 816666

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APPENDIX VI LIGHTING DESIGN



DO NOT SCALE this drawing or the computer digital data.
 Lead Consultant to be notified of any discrepancies in figured dimensions.
 Contractors must check all site dimensions.
 This drawing is copyright and is for use on this site only.

This Drawing shall be used for pricing purposes and to highlight extent of works only. This drawing shall not be used for installation purposes. Contractor shall provide their own co-ordinated working drawings prior to start on site.

- NOTES**
- All installations and components shall comply with the current requirement of:-
- The IET Regulations (Requirements for Electrical Installations) (BS7671:2008) - Latest edition.
 - The Electricity at Work Regulations 1989.
 - The Electricity Supply (Amendment) Regulations 2000.
 - Health and Safety at Work Act etc 1974.
 - All relevant parts of the Current Edition of the Building Regulations (including DDA).
 - All British Standards & Codes of Practices.
 - CLAW Standard Specification.

P02	Drawing amended to suit ecologist comments.	DE	Jan'24	WC	WC
Ref	Revision	By	Date	Checked	Auth

For Information

Purpose of issue

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Client



Project
 Proposed Residential Development at
 Ffordd Y Mileniwm, Barry

Drawn DE	Checked WC	Authorised WC	Original Scale @ A1 Not to Scale
Date Jan'24	Date Jan'24	Date Jan'24	

Title
 External Lighting Lux Plot

Drawing Number FYM-SAB-XX-00-DR-E-9000	Rev P02
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