



VANTAGE SUBSTATION AND BURIED CABLES

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This document has 40 pages including the cover.

Document history

Document title: Landscape and Ecological Management Plan

Document reference: 5222535-ATK-XX-XX-RP-E-0004

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	For client review	MD & JS	CL	SC		09/09/2024
2.0	Minor amendments to Compensation Site proposal	MD	-	-		18/12/2024
3.0	Amendments based on Decision Notice from NCC and NRW	DO	MD	EH		04/07/2025

Client signoff

Client	Vantage Data Centers
Project	VANTAGE SUBSTATION AND BURIED CABLES
Job number	100097282.202
Client signature/date	



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1. Introduction

AtkinsRéalis UK Limited was commissioned by Vantage Data Centers to produce a Landscape and Ecological Management Plan (LEMP) in connection with a planning application for the construction of a 150 MVA substation and laying of buried cables (hereafter referred to as the Proposed Scheme).

The Proposed Scheme is near Imperial Park, Newport, as identified by the planning red line boundary provided with the planning application submission and is shown on Figure A-1 in Appendix A (hereafter referred to as the Application Site).

1.1 Planning

This LEMP is required in order to satisfy Planning Condition 5, providing the local authority with the assurance that the landscape and ecological proposals laid out within the submitted planning drawings and reports, will be managed and maintained for a minimum of 30 years for long-term amenity value and ecological biodiversity. As such, the following document includes:

- Details of habitats, landscape, and ecological features present or to be created at the Site;
- Details of the desired condition of features (present and to be created) at the Site;
- Details of scheduling and timing of activities;
- Details of short and long-term management, monitoring and maintenance of new and existing habitat, landscape, and ecological features at the Site to deliver and maintain the desired condition;
- Details of monitoring of landscape, species, and ecological features;
- Details of replacement measures should any landscape features die, be removed, or become seriously damaged or diseased;
- Details of management and maintenance responsibilities;
- Details of timescales, length of plan, the method to review and update plans (informed by monitoring) at specific intervals as agreed.

The LEMP will be implemented in strict accordance with the approved details and timetables. Any trees, shrubs or grass areas that are planted or retained as part of the development that die, become seriously damaged, destroyed or diseased within five years from completion of the development shall be replaced with a specimen of the same species and of a similar size (in which case the five-year period shall commence for that particular plant) at the earliest appropriate planting season. The particulars (including species and location) of the replacement trees, shrubs or grass areas shall be submitted to the local planning authority for written approval prior to planting.

The LEMP will also be used to demonstrate a long-term Net Benefit for Biodiversity using the DECCA framework in line with Planning Policy Wales¹.

1.2 Submitted Planning Drawings and Reports

This LEMP should be read in conjunction with the following planning drawings and reports:

- 5222535-ATK-XX-XX-DR-L-401001 Rev P07 Landscape General Arrangement (Development Site);
- 5222535-ATK-XX-XX-DR-L-401011 Rev P02 Proposed Dormouse Compensation Site Plan;

¹ Welsh Government, (2024). Planning Policy Wales, Edition 12



- 5222535-ATK-XX-XX-RP-E-0001 Ecological Impact Assessment²; and
- 5222535-ATK-XX-XX-RP-E-0001 Dormouse Conservation Strategy³.

1.3 Report Purpose

This LEMP outlines the principles which will ensure the long-term management of the proposed landscape and ecological mitigation, compensation, and enhancement measures for the Proposed Scheme. Following construction, the management prescriptions will be implemented during years one to five whilst the habitats and features are establishing, and the maintenance prescriptions will be implemented from years six to 30 once the habitats and features are established. After the 30-year period the management should continue but will need reviewing against legislation, climate and industry standards at that time. This LEMP will remain adaptive during the 30-year period to allow for adaptive management and remedial actions to be taken and agreed with NRW and the LPA, to ensure the delivery of the mitigation and compensation habitats.

The purpose of this LEMP is:

- To satisfy Planning Condition 5, necessary to facilitate Planning Policy Wales, which requires developments deliver a net gain for biodiversity which must be secured through a long-term management plan.
- To ensure that clear objectives for the associated landscape and ecological proposals are agreed and laid down.
- To describe the target conditions of the habitat and features within the Application Site to be managed.
- To set out ecological trends and constraints which may influence management.
- To set clear standards for the performance of landscape maintenance work prior to the handover at practical completion to the clients (or their successors) appointed landscape maintenance contractor.
- To develop a working programme for the which embraces good practice, specific to this site for landscape maintenance staff for 30 years after practical completion.
- To help in the allocation of site resources and funding for the landscape maintenance.
- To set out monitoring requirements and possible remedial measures.

² AtkinsRéalis, (2024). Vantage Substation and Buried Cables – Ecological Impact Assessment. 5222535-ATK-XX-XX-RP-E-0001

³ AtkinsRéalis, (2024). Vantage Substation and Buried Cables – Dormouse Conservation Strategy. 5222535-ATK-XX-XX-RP-E-0001

2. Baseline Conditions

2.1 Application Site

The Application Site comprises two areas: the Development Site and a Compensation Site.

The Development Site

The Development Site is located near Imperial Park, Newport at Ordnance Survey (OS) national grid reference ST 28435 84138, as identified by the red line boundary on Figure A-1 in Appendix A and is bounded by hardstanding roads/ tracks to the north, east, and west, and scrub and grassland to the south.

To the north of the Development Site is the Imperial Park industrial/ business park, whilst to the south is a scrub/grassland mosaic and agricultural fields. The substation section of the Development Site is within land formerly a small part of the Welsh Government Celtic Springs site, which encompasses the southern half of Imperial Park.

The Development Site is approximately 2.72 ha, comprises mixed scrub, other neutral grassland, and developed land; sealed surface habitats, and is within the LG Duffryn Site 2 Site of Importance for Nature Conservation (SINC), whilst the Gwent Levels – St Brides Site of Special Scientific Interest (SSSI) is approximately 210 m south of the Development Site.

The Compensation Site

The Compensation Site (which is off-site and not connected by habitat to the Development Site) comprises a privately owned agricultural grassland field bounded by bracken, hedgerows, grassland and woodland. The Compensation Site is approximately 3.65 ha and is centred at OSNGR ST 27061 85162 and is approximately 765 m north-west of the Development Site, as shown on Figure A-1 in Appendix A.

No invasive non-native plant or animal species were recorded within the Application Site during site surveys. However, cotoneaster sp. and variegated yellow archangel, both INNPS, were recorded and mapped within the Development Site Survey Area

2.2 The Scheme

The Proposed Scheme includes the construction of a 132kv/33kv/11kv Substation within a rectangular 67m x 36.5m compound enclosed within 4m high weld mesh security fencing, drainage, access road, external lighting and landscaping.

The Proposed Scheme includes the installation of direct buried electricity circuits beneath the existing road network in Imperial Park, connecting the proposed substation site to the CWL12 Plot 7 development and to existing cable duct joint bays. The circuits will be installed into made ground, trenches will typically be 1.5m and 1.7m wide and will be laid on crushed granite or limestone and surrounded by cement bound sand.

2.3 Ecological constraints

Table 2-1 below summaries the potential ecological constraints to the implementation of this LEMP and provides recommendations on how to limit the risk of these constraints.



Table 2-1 - Potential ecological constraints and recommendations

Potential ecological constraint	Notes	Recommendations
Gwent Levels SSSI	Approximately 210 m south of the Development Site. Potential degradation through pollution events, dust, and sediment release.	Management and maintenance works will adhere to the Guidance for Pollution Prevention (GPPs) ⁴ and Construction Industry Research and Information Association (CIRIA) C811D Environmental good practice on site guide ⁵ .
LG Duffryn Site 2 SINC	Within Development Site. Potential degradation through pollution events, dust, and sediment release.	
LG Duffryn Site 1 SINC	Adjacent to the east of the Development Site. Potential degradation through pollution events, dust, and sediment release.	
Protected species such as hazel dormouse, bats, reptiles, breeding birds	All have been recorded as present within the Development Site. Potential to cause an offence during management and maintenance prescriptions.	Vegetation management such as tree pruning, should not be undertaken during the bird nesting season (March 1 st to August 31 st). The mowing of grass should be undertaken on warm sunny days. If this cannot be avoided, the maintenance of vegetation should be undertaken under the supervision and recommendations of an Ecological Clerk of Works (ECoW).
Invasive non-native plant species (INNPS)	Cotoneaster sp. and variegated yellow archangel have been recorded within the Development Site Survey Area. Potential for these and other INNPS to establish within the Development Site and Compensation Site.	The management of the Application Site must not result in the spread of INNPS. If identified within the Application Site, the advice of a specialist contractor should be sought.

⁴ The GPPs provide environmental good practice guidance for the whole UK, and environmental regulatory guidance directly to Northern Ireland, Scotland and Wales only.

⁵ CIRIA C811D Environmental good practice on site guide (fifth edition) provides advice on the management of a range of environmental issues that may be encountered on site and presents good practice to reduce the environmental impacts due to construction.

3. Landscape proposals

The Proposed Scheme has been designed to ensure existing perimeter vegetation is retained as much as possible. Sustainable drainage is proposed around the compound and includes an attenuation basin with integral wildlife pond. Surrounding earthworks will be sown with a marshy grassland seed mix from a local nature with some of the grassland managed as a meadow and some of the grassland managed to form a tussocky sward. Mixed scrub planting will be undertaken to in fill gaps to the boundary vegetation and provide ecological benefits, such as scrub connectivity, as advised by the project ecologist.

The Proposed Scheme includes an off-site Compensation Site comprising of compensation habitat and features for hazel dormice.

The ecological landscape proposals within the Development Site are shown in Figure A-2 in Appendix A and comprise of:

- restoration of 0.026 ha of mixed scrub;
- creation of 134 m species-rich hedgerow;
- creation of 0.478 ha of species-rich grassland (comprising 0.144 ha of tussocky grassland and 0.334 ha of marshy grassland);
- retention of approximately 0.336 ha of mixed scrub;
- creation of 61 m² wildlife pond;
- installation of seven hazel dormouse nest boxes within retained mixed scrub vegetation;
- installation of a 2 m x 2 m reptile hibernacula;
- installation of a 2 m x 2m grass snake egg-laying heap; and
- installation of eight corrugated reptile refugia sheets.

The ecological landscape proposals within the Compensation Site are shown in Figure A-3 in Appendix A and comprise of:

- creation of 1.437 ha of mixed scrub;
- creation of a 220 m and 50 m native species-rich hedgerow, and gap planting along 90 m of the existing species-rich hedgerow;
- installation of 20 hazel dormouse nest boxes in existing woodland and hedgerows;
- enhancement of 1.317 ha of neutral grassland through the sowing of yellow rattle seed and meadow management; and
- existing woodland and hedgerow habitats will be adaptively managed in the long-term for the benefit of hazel dormice.



4. Management and Monitoring Responsibilities

Soft landscape treatments proposed for this project are diverse. It is essential all operations used to implement the long-term management and maintenance of these different habitats are carried out with care and expertise by suitably qualified personnel, and in accordance with good industry practice.

The soft landscape habitats for this scheme consist of:

- existing vegetation to be retained;
- proposed scrub planting;
- proposed species-rich hedgerow planting;
- proposed species-rich grasslands; and
- a proposed wildlife pond.

Following the completion of the construction of the Proposed Scheme, this LEMP will be used as a basis to carry out recommended prescriptions to ensure the landscape and ecology objectives and targets are met. A suitably qualified ecologist should be appointed by the client (or their successor) and / or their contractor to undertake the ecological monitoring detailed in this LEMP.

At this stage Vantage Data Centers cannot confirm who will be responsible for undertaken the management and monitoring prescriptions set out in this LEMP. This can be confirmed at a later stage by planning condition.



5. Landscape and Ecology Management

5.1 Objectives and Targets

As detailed in the Ecological Impact Assessment², the Proposed Scheme will include measures to compensate for the permanent loss of mixed scrub and bramble scrub as well as the temporary loss SINC neutral grassland within the Development Site. Compensation and enhancement measures will be delivered across the Development Site and Compensation Site. Table 5-1 below states the landscape and ecology objectives and targets of this LEMP.

Table 5-1 - Landscape and ecology management objectives and targets

Objective	Target
Compensate for the loss of SINC neutral grassland	Create 0.478 ha of species-rich grassland within Development Site suitable for shrill carder bee and brown-banded carder bee. Comprising: 0.144 ha of tussocky grassland; and 0.334 ha of marshy grassland
Compensate for the loss of scrub habitat with confirmed hazel dormouse present	Restore 0.026 ha of mixed scrub in Development Site Create 1.437 ha of mixed scrub in Compensation Site Provide short-term nesting opportunities by installing seven hazel dormouse nest boxes in the Development Site and 20 in the Compensation Site
Enhance Development Site for biodiversity	Create a 61 m ² wildlife pond Create a 134 m species-rich hedgerow
Enhance Development Site for reptiles	Create a 2 m x 2 m reptile hibernacula using arisings from cleared vegetation Create a 2 m x 2 m grass snake egg-laying heap Install eight permanent 50 cm x 50 cm corrugated reptile refugia
Enhance Compensation Site for hazel dormice	Create a 220 m species-rich hedgerow Create a 50 m species-rich hedgerow Gap planting along 90 m of an existing species-rich hedgerow
Compensate for loss of neutral grassland within Compensation Site due to scrub planting	Enhance 1.317 ha of neutral grassland through the sowing of yellow rattle seeds and meadow management
Maintain existing suitable hazel dormouse habitat within Development Site and Compensation Site	Existing scrub in the Development Site, and woodland and hedgerows within the Compensation Site, will be managed in order to continue to be of optimal suitability for hazel dormice

5.2 Target Conditions of Habitats

Following the completion of the Proposed Scheme, target retained, modified and created habitat within the Development Site and Application Site will be subject to ongoing management, with the aim of improving and maintaining the ecological value of the Development Site and the Compensation Site. In the absence of standardised guidance in relation to habitat condition assessment in Wales, target conditions for these habitats are defined utilising criteria from the Statutory Biodiversity Metric Condition Assessment⁶, as well as the Hazel Dormouse Conservation Handbook⁷, and presented in Table 5-2 below.

Table 5-2 – Target conditions of retained and created habitats

Habitat	Area/ Length	Type	Location	Condition ⁸	Criteria (Criteria in bold are essential to achieve target condition ⁸)
Species-rich grassland	0.478 ha	Created	Development Site	Good (at least five out of the following six criteria must be met to achieve this condition)	The parcel represents a good example of other neutral grassland / wet grassland (refer to Table 5-1), with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed. Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens. Cover of bracken (<i>Pteridium aquilinum</i>) is less than 20% and cover of scrub is less than 5%. Combined cover of species indicative of suboptimal condition and physical damage accounts for less than 5% of total area.

⁶ Natural England (2024). The Statutory Biodiversity Metric – Technical Annex 1: Condition Assessment Sheets and Methodology.

⁷ Bullion, S., Wolton, R. & White, I. (2025) Hazel Dormouse Conservation Handbook – Third edition. The Mammal Society. ISBN: 978-1-0687982-3-8

⁸ As defined by The Statutory Biodiversity Metric – Technical Annex 1: Condition Assessment Sheets and Methodology. Refer to Footnote 6.



Habitat	Area/ Length	Type	Location	Condition ⁸	Criteria (Criteria in bold are essential to achieve target condition ⁸)
					There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of other neutral grassland / wet grassland (refer to Table 5-1).
Neutral grassland	1.317 ha	Modified	Compensation Site	Moderate (between three and five of the following criteria must be met to achieve this condition)	The parcel represents a good example of other neutral grassland, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed. Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens. Cover of bracken (<i>Pteridium aquilinum</i>) is less than 20% and cover of scrub is less than 5%. Combined cover of species indicative of suboptimal condition and physical damage accounts for less than 5% of total area. There are 10 or more vascular plant species per m² present, including forbs that are characteristic of other neutral grassland / wet grassland (refer to Table 5-1).
Mixed scrub	0.336 ha	Retained	Development Site	Good	The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches the h3h mixed scrub UKHab description. • At least 80% of scrub is native. • There are at least three native woody species



Habitat	Area/ Length	Type	Location	Condition ⁸	Criteria (Criteria in bold are essential to achieve target condition ⁸)
					- No single species comprises more than 75% of the cover (except hazel <i>Corylus avellana</i>) High species diversity. Thorny or prickly species, such as bramble or hawthorn, are present; providing excellent opportunities to support woven nests⁷. Seedlings, saplings, young shrubs and mature (or ancient or veteran) shrubs are all present. Medium structural complexity with a diverse age structure of woody species are present, providing a rich food source⁷. There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA5) and species indicative of suboptimal condition make up less than 5% of ground cover.
	0.026 h	Modified	Development Site		The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat. Is directly connected to, or close to, other patches of favourable dormouse habitat⁷.
	1.437 ha	Created	Compensation Site		There are clearings, glades or rides present within the scrub, providing sheltered edges. Is dense and unshaded, in large habitat blocks or providing a mosaic of well-connected smaller blocks⁷.
Standing water / pond	61 m ²	Created	Development Site	Moderate (between six and eight of the following nine criteria must be met to achieve this condition)	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.



Habitat	Area/ Length	Type	Location	Condition ⁸	Criteria (Criteria in bold are essential to achieve target condition ⁸)
					Less than 10% of the water surface is covered with duckweed Lemna spp. or filamentous algae. The pond is not artificially connected to other waterbodies, such as agricultural ditches or artificial pipework. Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams, pumps or pipework. There is an absence of listed non-native plant and animal species. The pond is not artificially stocked with fish. Emergent, submerged or floating plants (excluding duckweed) cover at least 50% of the pond area which is less than 3 m deep. Emergent, submerged or floating plants (excluding duckweed) cover at least 50% of the pond area which is less than 3 m deep. The pond surface is no more than 50% shaded by adjacent trees and scrub.
Native species-rich hedgerow	134 m	Created	Development Site	Good (no more than 2 failures in total, excluding the compulsory bold criteria)	The average height of woody growth estimated from base of stem to the top of the shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees, exceeds >1.5 m average along length. The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees, exceeds >1.5 m average along length. Gap between ground and base of canopy <0.5 m for >90% of length.
	270 m	Created	Compensation Site		It is continuous, with few gaps⁷. Gaps make up <10% of total length and no canopy gaps >5 m.
	90 m	Enhanced	Compensation Site		>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: Measures from outer edge of hedgerow; and



Habitat	Area/ Length	Type	Location	Condition ⁸	Criteria (Criteria in bold are essential to achieve target condition ⁸)
	185 m	Retained	Compensation Site		Is present on one side of the hedgerow (at least) Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground. >90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA) and recently introduced species. >90% of the hedgerow or undisturbed ground is free of damage caused by human activities. High species diversity. Has sufficient diversity to provide a continuous food source throughout the active season⁷. Created hedgerow will have medium structural complexity, retained and enhanced hedgerow will have high structure complexity⁷.
Wet woodland	0.27 ha	Retained	Compensation Site	Good (Suggested criteria grades are given, however refer to Statutory Biodiversity Metric Condition Assessments for alternate pathway to good condition ⁸)	Three age classes of tree present. There is high structural complexity⁷. There is no significant browsing damage evident in the woodland. There are no invasive species present in the woodland. There are five or more native tree or shrub species found across the woodland parcel. There is high species diversity⁷. >80% of canopy trees and >80% of understorey shrubs are native. 0 – 20% of woodland has areas of temporary open space. All three classes of woodland regeneration are present in woodland trees 4 – 7 cm diameter at breast height, saplings and seedlings or advanced coppice regrowth. Tree mortality is 10% or less, no pests or diseases and no crown dieback. Recognisable NVC plant community at ground layer present.



Habitat	Area/ Length	Type	Location	Condition ⁸	Criteria (Criteria in bold are essential to achieve target condition ⁸)
					Three or more stories across all survey plots. There is high structural complexity⁷. One veteran tree per hectare. Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as stranding and fallen deadwood, large dead branches and / or stems, stubs and stumps. Or an abundance of small cavities. No nutrient enrichment or damaged ground evident.
	0.13 ha	Lowland mixed deciduous woodland	Compensation Site	Good (Suggested criteria grades are given above for 'wet woodland', however refer to Statutory Biodiversity Metric Condition Assessments for alternate pathway to good condition ⁸)	As above, for 'wet woodland'.



6. Detailed Landscape Habitats and Features Specification

All planting operations should be carried out in accordance with the following industry standards:

- BS 3936 Nursery stock (British Standards Institution, dates various);
- BS 4428:1989 Code of practice for general landscape operations (British Standards Institution, 1989);
- BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations (British Standards Institution, 2014);
- BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (British Standards Institution, 2012);
- National Plant Specification, Handling and Establishing Landscape Plants (Horticultural Trades Association, 2002); and
- BS7370-4:1993 Ground's maintenance. Recommendations for maintenance of soft landscape (British Standards Institution, 1993).

6.1 Development Site

The following soft landscape measures have been proposed to provide compensation for the temporary loss of the SINC neutral grassland and mixed scrub during construction of the Proposed Scheme.

In addition, the proposed species-rich hedgerow, wildlife pond, reptile hibernacula, grass snake egg-laying heap, and corrugated reptile refugia sheets will ensure the Proposed Scheme provides ecological enhancements and delivers a net benefit for biodiversity.

The soft landscape proposals listed below have been co-ordinated with the project ecologist and reviewed to ensure species proposed are appropriate for the Application Site within its existing context, and suitable for the varied applications and the design intent. It will therefore be prudent to make sure that the ongoing management and maintenance of these proposals results in the longevity of these soft landscape treatments to fulfil the aspirations of the landscape and ecological aims in perpetuity.

The landscape proposals have also been proposed to provide an aesthetic, high value amenity setting to the new data centre development. Following the creation of the habitats and features within the Development Site listed below, they will be subject to the management and maintenance prescriptions detailed in Table 7-1 in Section 7.

Mixed scrub

The proposed 0.026 ha of scrub planting will comprise species beneficial to hazel dormice, all of which, apart from pedunculate oak and honeysuckle, are currently present within the Development Site. The planting will be undertaken in two locations to restore the habitat temporarily cleared for the laying of the buried cables.

Proposed Scrub Planting for the Proposed Scheme have been selected to create year-round seasonal interest with species responding to its locations within the site. The mixed scrub will be replanted in the two areas cleared to allow the installation of the buried electricity cables. Prior to planting the grassland will be cut down to ground level.

The scrub whips will be planted between November and early March in a scattered pattern to create a natural appearance with scalloped edges, avoiding straight lines. Whips shall be protected with a 600 mm high tree shelter



guard and a single stake. The construction specification will set out further details of ground preparation and planting, together with initial establishment procedures.

The scrub planting species and densities are as set out in the Table 6-1 below.

Table 6-1 - Mixed scrub in Development Site planting specification

No.	Species	Specification	Height	Density (To be planted in species groups of 2 to 3)	%
26	<i>Prunus avium</i>	1+1 :B	60-80cm	1/m ²	10%
13	<i>Lonicera periclymenum</i>	1+1 :B	60-80cm	1/m ²	5%
13	<i>Salix caprea</i>	1+1 :B	60-80cm	1/m ²	5%
26	<i>Quercus robur</i>	1+1 :B	60-80cm	1/m ²	10%
53	<i>Crataegus monogyna</i>	1+1 :B	60-80cm	1/m ²	20%
26	<i>Prunus spinosa</i>	1+1 :B	60-80cm	1/m ²	10%
79	<i>Coryllus avellana</i>	1+1 :B	60-80cm	1/m ²	30%
26	<i>Viburnum lantana</i>	1+1 :B	60-80cm	1/m ²	10%
Total: 262					

Species-rich grassland

The proposed 0.478 ha species-rich grassland will be sown using a NVC M23a *Juncus acutiflorus* - *Galium palustre* rush-pasture and MG5 *Cynosurus cristatus* - *Centaurea nigra* grassland seed mix from a marshy meadow on a local nature reserve within the Gwent Levels SSSI. The land managers have confirmed that the seed mix is readily available for purchase.

The topsoil from the 0.219 ha of grassland temporarily lost for the Proposed Scheme will be stored and used for the creation of the grasslands, this is subject to testing of the soils for suitability of reuse on site. Low nutrient topsoil is required for the creation of species-rich grassland.

The grassland area will be scarified prior to the sowing of the seed mix which will be undertaken in the autumn. The construction specification will set out further details of ground preparation and sowing, together with initial establishment procedures.

The grassland can be divided into two different grassland habitats due to the different management regimes:

- Approximately 0.144 ha of tussocky grassland between the swales and retained mixed scrub will be cut and collected bi-annually on rotation, with half cut one year in late September and the other half cut the following year in late September. This will result in approximately 0.072 ha of uncut overwintering grassland each year for overwintering shrill carder bees and brown-banded carder bees; and
- Approximately 0.334 ha of the marshy grassland within and around the attenuation basin, swales and western vehicle entrance will be subject two cut and collects a year, one in early March and another in late September.

The seed mix species and densities are as set out in the Tabel 6-2 below.



Table 6-2 - Grassland in the Development Site specification

Area	Seed Mix	Sowing Rate	Weight	Supplier
4838 m ²	Marshy grassland and tussocky grassland <i>Cynosurus cristatus</i> – <i>Centaurea nigra</i> grassland <i>Juncus acutiflorus</i> – <i>Galium palustre</i> rush-pasture	4g/m ²	19.35 kg	To be sourced from local nature reserve on Gwent Levels SSSI

Species-rich hedgerow

The proposed 134 m species-rich hedgerow planting will increase connectivity and comprise of species beneficial to hazel dormice, all of which, apart from blackthorn and honeysuckle, are currently present within the Compensation Site. The hedgerow will be located along the southern boundary of the Development Site, the eastern extent of the hedgerow will be connected to retained mixed scrub, whilst the Welsh Government NGED Substation Scheme (23/0878) includes the creation of a native species-rich hedgerow immediately adjacent to the south, running parallel. Therefore in-combination a double native species-rich hedgerow will be created. The proposed species-rich hedgerow will also provide seasonal interest along the southern boundary and will act as a commuting corridor for species such as bats, birds, and hazel dormice.

Prior to planting the hedgerow whips, the grassland will be cut down to ground level. The whips will be planted in two parallel rows in staggered formation between November and early March. Whips shall be protected with a 600 mm high tree shelter guard and a single stake. The construction specification will set out further details of ground preparation and planting, together with initial establishment procedures.

The hedgerow planting species and densities are as set out in the Table 6-3 below.

Table 6-3 - Hedgerow in the Development Site specification

No.	Species	Specification	Height	Density	%
58	<i>Lonicera periclymenum</i>	1+2 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
58	<i>Coryllus avellana</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
120	<i>Crataegus monogyna</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
58	<i>Sambucus nigra</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
121	<i>Sorbus aucuparia</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
121	<i>Quercus robur</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
58	<i>Prunus spinosa</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
Total: 594					



Wildlife pond

The 61 m² wildlife pond will be located within the attenuation basin and will be plug planted with the suitable pond margin species listed in Table 6-4 below. Other aquatic and marginal species are expected to naturally colonise and establish from nearby ponds and reens within the local area.

The pond is ideally located within the attenuation basin, meaning rainwater run-off will provide the pond with a regular supply of water via the swales and attenuation basin. The pond excavation will be 1 m deep, with the attenuation basin outfall set to maintain water depth of approximately 90 cm.

The pond will include a broad, undulating drawdown zone, this is an area of mud and vegetation which is flooded in winter and spring and progressively dries as water levels fall in summer. A broad drawdown zone will create summer marsh and mud habitats which will provide a benefit for biodiversity.

The pond will slope very gently at the edge (between 1:5 (12°) and 1:20 (3°)) to create shallow areas for plants to establish and allow animals such as amphibians to enter and exit the water. The area of shallows and length of the pond margins can be increased by creating scalloped edges. Underwater shelves will be created on the slope to benefit aquatic plants.

During the design and creation of the pond advice will be sought throughout from the project ecologist, landscape architect, drainage engineer, and an aquatic ecologist.

Table 6-4 - Wildlife pond in Development Site planting specification

No.	Species	Specification	Density	%
31	<i>Mentha aquatica</i>	Full pot	2/m ²	25%
31	<i>Caltha palustris</i>	Full pot	2/m ²	25%
38	<i>Lythrum salicaria</i>	Full pot	2/m ²	30%
12	<i>Carex acutiformis</i>	Full pot	2/m ²	10%
12	<i>Sagittaria sagittifolia</i>	Full pot	2/m ²	10%
Total: 124				

Hazel dormouse nest boxes

Seven wooden hazel dormouse nest boxes, sourced from an ecology equipment supplier, such as Wildcare or NHBS, will be installed in retained mixed scrub habitat within the Development Site. The ECoW will determine the exact locations during vegetation clearance to enable the construction of the Proposed Scheme, but they will be installed at approximately 1.5 m in height on trees within the mixed scrub which are easily accessible for future maintenance and monitoring.

Reptile hibernacula

A 2 m x 2 m wide and at least 1 m high reptile hibernacula will be created using logs from cleared young trees within the mixed scrub, following best practice guidance⁹. Other materials such as uncontaminated bricks and rocks will also be used to ensure it has a diverse structure with lots of cavities. The reptile hibernacula will essentially consist of a large rock/ log pile with loose soil to create lots of cavities for reptiles to seek refuge as well as prominent bank to

⁹ Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.

bask one. Any materials that decompose, such as logs, will not be placed beneath heavy materials such as bricks and rocks to avoid risk of collapse. Access points will be located around the edges for example by ensuring timber protrudes from the sides. Turf (or vegetated topsoil) will be used to cover the final construction.

The exact location of the hibernacula will be determined by a suitably qualified ecologist. However, the optimal location is on the edge of habitat between the grassland and scrub. It will need to be located on higher areas of ground, unlikely to flood and positioned on a south aspect in full or partial sun.

Grass snake egg-laying heap

A 2 m x 2 m wide and at least 1 m high grass snake egg-laying heap will be constructed adjacent to the reptile hibernacula in an unshaded location, following best practice guidance⁹. The exact location of the egg-laying heap will be determined by a suitably qualified ecologist. However, the optimal location is on the edge of habitat between the grassland and scrub, positioned on a south aspect in full sun.

The egg-laying heap will be created using one third of fresh horse manure, one third grass cuttings and one third of large sticks of cleared scrub branches, reusing cleared material from the Development Site where possible. The ground at the heap location will be cleared and base created from grass cuttings. The largest branches/sticks will be placed on top. Half the manure will be laid on top with another layer of branches/sticks. A mixture of the remaining manure and vegetation/compost will be added to the heap, with some branches/sticks to keep the layers ventilated. The heap must not be compacted, to allow animals to easily enter and exit the heap.

Reptile refugia

Eight permanent 50 cm x 50 cm corrugated reptile refugia will be installed in suitable locations, i.e. south-facing on the ecotones between retained scrub and create tussocky grassland and near the hibernacula and grass snake egg-laying heap.

6.2 Compensation Site

The following soft landscape measures have been proposed to provide compensation habitat for hazel dormice as during construction the Proposed Scheme will result in the permanent loss of mixed scrub where hazel dormice have been confirmed as present. Hazel dormice have been confirmed as present within suitable habitat within the Compensation Site. Therefore, the creation of additional suitable hazel dormouse habitat with the Compensation Site will benefit the hazel dormouse population by increasing the carrying capacity of the habitats and improving connectivity.

In addition, the proposed species-rich hedgerow will ensure the Proposed Scheme provides ecological enhancements and delivers a net benefit for biodiversity as well as providing an aesthetic, high value setting to the new data centre.

Following the creation of the habitats and features within the Compensation Site listed below, they will be subject to the management and maintenance prescriptions detailed in Table 7-1 in Section 7.

Mixed scrub

The proposed 1.437 ha of scrub planting will comprise species beneficial to hazel dormice, all of which apart from pedunculate oak and honeysuckle, are currently present within the Compensation Site. The proposed scrub planting will create year-round seasonal interest. Prior to planting the grassland will be cut down to ground level.

The scrub whips will be planted between November and early March in a scattered pattern to create a natural appearance with scalloped edges, avoiding straight lines. Whips shall be protected with a 600 mm high tree shelter guard and a single stake. The construction specification will set out further details of ground preparation and planting, together with initial establishment procedures.



The scrub planting species and densities are as set out in the Table 6-5 below.

Table 6-5 - Mixed scrub in the Compensation Site specification

No.	Species	Specification	Height	Density (To be planted in species groups of 2 to 3)	%
718	<i>Lonicera periclymenum</i>	1+1 :B	60-80cm	1/m ²	5%
1437	<i>Betula pendula</i>	1+1 :B	60-80cm	1/m ²	10%
718	<i>Ilex aquifolium</i>	1+1 :B	60-80cm	1/m ²	5%
718	<i>Salix caprea</i>	1+1 :B	60-80cm	1/m ²	5%
1437	<i>Quercus robur</i>	1+1 :B	60-80cm	1/m ²	10%
2155	<i>Crataegus monogyna</i>	1+1 :B	60-80cm	1/m ²	15%
1437	<i>Prunus spinosa</i>	1+1 :B	60-80cm	1/m ²	10%
4312	<i>Coryllus avellana</i>	1+1 :B	60-80cm	1/m ²	30%
1437	<i>Sambucus nigra</i>	1+1 :B	60-80cm	1/m ²	10%
Total: 14369					

Species-rich hedgerow

The proposed species-rich hedgerow planting will increase connectivity and comprise of species beneficial to hazel dormice, all of which are currently present within the Compensation Site.

Two hedgerows will be created, one approximately 220 m in length and the other approximately 50 m in length. In addition, gap planting will be undertaken along 90 m of an existing species-rich hedgerow.

Prior to planting the hedgerow whips, the grassland will be cut down to ground level. The whips will be planted in two parallel rows in staggered formation between November and early March. Whips shall be protected with a 600 mm high tree shelter guard and a single staked. The construction specification will set out further details of ground preparation and planting, together with initial establishment procedures.

The hedgerow planting species and densities are as set out in the Table 6-6 below.

Table 6-6 - Hedgerow in Compensation Site specification

No.	Species	Specification	Height	Density	%
160	<i>Lonicera periclymenum</i>	1+2 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
320	<i>Cornus avellana</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
320	<i>Crataegus monogyna</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
320	<i>Sambucus nigra</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
160	<i>Ilex aquifolium</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
320	<i>Prunus spinosa</i>	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
Total: 1600					



Enhanced neutral grassland

To compensate for the loss of neutral grassland where the scrub will be planted, approximately 1.317 ha of the existing neutral grassland will be enhanced through the sowing of yellow rattle seeds and being subject to meadow management (see Table 6-7 below).

Prior to the sowing in September, the grassland will be cut short and arisings removed. Then the ground will be scarified and the seed will be sown. The construction specification will set out further details of ground preparation and seeding, together with initial establishment procedures.

Table 6-7 - Grassland in Compensation Site specification

Area	Seed Mix Name	Sowing Rate	Weight	Supplier
13170 m ²	Yellow rattle wildflower	0.2g/m ²	2770g	Emorsgate seeds or similar

Hazel Dormouse Nest Boxes

Twenty wooden hazel dormouse nest boxes, sourced from an ecology equipment supplier, such as Wildcare or NHBS, will be installed in existing woodland and hedgerow habitat within the Compensation Site. A suitably qualified ecologist will determine the exact locations, but they will be installed at approximately 1.5 m in height on trees within the woodland and hedgerows which are easily accessible for future maintenance and monitoring.



7. Landscape and ecological management prescriptions

Table 7-1 below sets the management phase and maintenance phase prescriptions for each feature within the Development Site and Compensation Site to ensure the objectives and targets are met.

Table 7-1 - Landscape and ecological management prescriptions

Feature	Location	Frequency	Management Phase					Maintenance Phase	Prescriptions
			Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-30	
All areas	Development Site and Compensation Site	Every visit	X	X	X	X	X	X	- Kept clear of all litter and debris at all times to maintain an aesthetic appearance and avoid negatively impacting biodiversity. - Any arisings resulting from pruning, mowing operations and general landscape operations, should be carefully collected and removed from site to a registered recycling centre (except for some brash for pile replenishment, and grass cuttings to replenish the grass snake egg-laying heap). Recycling of green waste should be prioritised.
All planted areas	Development Site and Compensation Site	Every visit	X	X	X	X	X	X	- Ensure continued healthy growth of all planted stock – water and hand weed (no herbicide use) at base of trees/shrubs as required during the establishment period. Water every 2-3 weeks during summer months (June to September) and more frequently during periods of low rainfall or drought to maintain health. - Ensure all planted stock is securely planted in the ground, upright and well healed in. - Investigate any failed plant growth and take remedial action as necessary. - Removal of rubbish and debris across the site and remove from site.
		Annually	X	X	X	X	X	X	- Monitor and record any plant losses and replace any dead stock with species to ensure the species match the original design proposals, size and quantity as specified, unless otherwise agreed to plant alternative species. Re-planting to be undertaken in the next following planting season or as agreed with client. - Fertiliser should not be applied. - Control of vigorous plant species that are out-competing less vigorous species. - Check all landscaped areas for unwanted or invasive species i.e. bramble (excessive coverage), ground ivy and nettles. Reduce/ clear by hand and remove from site. - Check all landscaped areas for Schedule 9 Invasive species such as Japanese knotweed and Cotoneaster species. Schedule 9 Invasive plant species should be verified and eradicated by a specialist contractor.
Retained scrub and existing woodland and hedgerows	Development Site and Compensation Site	Annually	X	X	X	X	X	X	- Ensure trees are stable. - Visually inspect trees to check for signs of bark damage and general tree damage and / or disease. - Remove dead, damaged or dying branches as appropriate. - At a time appropriate to species/growth, any formative pruning required should be carried out to ensure that the tree is free from dead or diseased wood and maintains a healthy form. Pruning should



Feature	Location	Frequency	Management Phase					Maintenance Phase	Prescriptions
			Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-30	
									be carried out in accordance with; BS7370-4:1993 Ground's maintenance. Recommendations for maintenance of soft landscape (British Standards Institution, 1993). No pruning or associated works to trees should be carried out during the bird nesting season. This is between the months of March to August inclusive. Works to be carried out during this time, should only be carried out under the strict supervision and recommendations of a suitably qualified ecologist to make sure that disruption and damage to nesting birds is avoided.
		Every 3 years (or as recommended)	-	-	X	-	-	X	Check tree safety. Identify hazards and carry out necessary maintenance works. A visual tree assessment is to be undertaken by a qualified arboriculturist of all tree planting. Any resulting tree works are to be carried out in accordance with BS 3998. Keep records up to date.
		Annually	X	X	X	X	X	X	- The retained scrub will be maintained ensuring it provides hazel dormice with connectivity across the landscape, the structure is diverse with a variety of tree and shrub ages, and the species are diverse. - Existing hedgerows will be maintained for the benefit of hazel dormice by raising the cutting height and width subjecting them to a three-year trimming regime. - Only a third of each hedgerow will be cut in any one year (between November and March), rather than all. This creates a diverse hedgerow structure and ensures there is adequate food for hazel dormice. - The existing woodland is currently of optimal suitability for hazel dormice and will be managed in the long-term to ensure it remains so. The woodland will be adaptively managed to ensure it does not become a close canopy woodland and has a regenerative understorey. The advice of a suitably qualified ecologist will be sought before undertaking any woodland management activities.
Species-rich hedgerow planting	Development Site and Compensation Site	Monthly	X	X	X	X	X	-	- Check hedgerows for additional/new gaps. Record and infill during November to early March. Plant replacement tall whips of a species mix in keeping with the hedgerow or to increase native diversity. - Keep hedgerow planting, free from weeds. remove any encroaching species such as ivy, bramble (excessive coverage) or nettle, as required, by hand and remove from site. Do not use strimmers or herbicides in these areas between the months of March to October.
		Annually	X	X	X	X	X	X	- Trim-cut hedgerow planting to create a dense 'A' shape appropriate to the species with formative and seasonal pruning to create and maintain a natural 'A' shape hedgerow, pruning dead foliage and extension growth as necessary. To be undertaken between November and February. - Re-plant new stock that has suffered from wind rock, in an upright position and well healed in November to early March.



Feature	Location	Frequency	Management Phase					Maintenance Phase	Prescriptions
			Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-30	
		3-5 years after planting	-	-	X	X	X	-	Confirm root growth is well established and remove shelters, stakes and ties from hedgerow transplants – to avoid damage, cut shelters away then remove stakes.
		Annually (maintenance phase)	-	-	-	-	-	X	- Once hedgerows are established (first five years) they will be maintained for the benefit of hazel dormice by raising the cutting height and width subjecting them to a three-year trimming regime. - Only a third of each hedgerow will be cut in any one year, rather than all. This creates a diverse hedgerow structure and ensures there is adequate food for hazel dormice. The cut will be undertaken between November and March.
Mixed scrub planting	Development Site and Compensation Site	Annually	X	X	X	X	X	-	- Ensure all planting is stable. Check that new plants are firmly secured within shelters and in an upright position. Take remedial action to rectify where necessary. - Visually inspect plants to check for signs of general damage. Minor broken branches to be carefully pruned with a neat cut to prevent disease. - Monitor all new thicket planting to ensure the stock is successfully establishing. Check thicket for failing stock. Record losses and replace any dead, dying, or diseased stock during late October to March. Plant replacement transplants and whips of a species and size like for like in keeping with the shrub thicket. - Keep thicket planting free from weeds – visually inspect bark mulch around planting and top up to a depth of 75 mm as required. Remove any undesirable species such as ivy, bramble (excessive coverage) or nettle, as required, by hand and remove from site. Do not use trimmers or herbicides in these areas between the months of March to October. - Record any Schedule 9 Invasive plant species such as cotoneaster sp. and variegated yellow archangel, ensure removal by a specialist contractor.
		Annually (Year 2-5 after planting onwards)	-	X	X	X	X	-	Cut back all stems to the nearest bud to a height approximately 200 mm above ground level to encourage and promote new growth stem colour. Remove arisings and dispose at a registered recycling centre.
		Annually (Years 3-5 after planting)	-	-	X	X	X	-	- Confirm root growth is well established and remove shelters, stakes and ties from thicket whips and transplants – to avoid damage, cut shelters away then remove stakes. - Visually inspect plants to check for signs of general damage. Minor broken branches to be carefully pruned with a neat cut to good industry practice, to prevent disease. - Identify suitable plants within transplants to develop into frequent standard trees. Maintain as per tree maintenance and management. - Infill any gaps within thicket that occur over time as a result of failed establishment or damage to ensure a consistent dense thicket.

Feature	Location	Frequency	Management Phase					Maintenance Phase	Prescriptions
			Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-30	
									Replenish with species like for like and carry out infill planting during October to March to avoid the bird nesting season.
		General	-	-	-	-	-	X	- Once established the mixed scrub will be maintained ensuring it provides hazel dormice with connectivity across the landscape, the structure is diverse with a variety of tree and shrub ages, and the species are diverse. - Coppicing, trimming, crown thinning or formative pruning to encourage healthy thriving growth of new plants will be carried out for the duration of the management plan (as required depending on growth and determined by monitoring) to maintain their shape and remove any dead wood, crossing branches and suckers. - Thinning and coppicing will be undertaken on rotation (maximum 20% every 5 years to year 30, if determined appropriate through monitoring), cutting patches in a sequence that encourages new coppice adjacent to old, permitting access to hazel crops and easy recolonisation by dormice and to ensure diverse age structure of the woodland and letting light in for ground flora.
All grassland areas	Development Site and Compensation Site	General	X	X	X	X	X	X	- Always consult the seed suppliers technical recommendations for maintenance and mowing during the establishment and for long term maintenance advice. - Do not cut grass in drought conditions and cut with suitable machinery ensuring no mower or strimmer is used within 600 mm of tree trunks. - Arisings will be raked and removed from the grassland. Care to be taken when removing arisings to avoid pulling, tearing or causing other damage to the soil surface and retained vegetation, and existing seedbank. - Edge and trim junctions between grassland and hard surfaces to maintain a neat and tidy appearance. Remove all arisings and sweep arisings from all hard surfaces. Add arisings to grass snake egg laying heap, any excess material to be taken to a registered recycling centre.
Tussocky grassland	Development Site	Annually (management phase and maintenance phase)	X	X	X	X	X	X	- During the first year of establishment resist cutting the annual weeds until mid to late summer, especially if the mixture contains Yellow Rattle. Then cut, remove and compost. Ideally to be undertaken in early August. This will reveal the young meadow, which can then be kept short by mowing through to the end of March of the following year. Carefully dig out any residual perennial weeds such as docks. - Once established, bi-annual cut and collect in September on rotation, with half cut one year and the other half cut the following year. This will result in approximately 0.072 ha of uncut overwintering grassland each year for overwintering shrill carder bees and brown-banded carder bees.



Feature	Location	Frequency	Management Phase					Maintenance Phase	Prescriptions
			Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-30	
Marshy grassland	Development Site	Annually (management phase and maintenance phase)	X	X	X	X	X	X	- During the first year of establishment resist cutting the annual weeds until mid to late summer, especially if the mixture contains Yellow Rattle. Then cut, remove and compost. Ideally to be undertaken in early August.. This will reveal the young meadow, which can then be kept short by mowing through to the end of March of the following year. Carefully dig out any residual perennial weeds such as docks. - Once established, two cut and collects each year, one in early March and another in late September. - It is important to leave the cuttings in place for a day or so to allow any seed that has formed to fall onto the soil surface. Ensure all arisings are collected and removed from site.
Enhanced neutral grassland	Compensation Site	Annually	X	X	X	X	X	X	- Two cut and collects each year, one in early March and another in late September. - It is important to leave the cuttings in place for a day or so to allow any seed that has formed to fall onto the soil surface. Ensure all arisings are collected and removed from site.
Wildlife pond	Development site	Annually	X	X	X	X	X	X	- Will be subject to annual inspection by an ECoW during management phase. Specific measures, such as removal of INNPS, vegetation control and replenishment of failed plant plugs, could be required. - Add and replace a barley bail in the water annually to help control filamentous algae cover; when removing barley bail allow to sit on waters edge before removing in an environmentally friendly manner; this allows wildlife within the barley bail to escape back into the pond. - Checks every five years post-management phase until year 30 of the management plan, during which undesirable aquatic species will be removed, such as dominant bulrush.
Hazel dormouse nest boxes	Development Site and Compensation Site	Annually	X	-	X	-	X	-	- Replacement of broken or missing nest boxes by suitably qualified ecologist during the three nest box monitoring surveys each survey year. - Nest boxes are not to be disturbed by anyone apart from a suitably licenced qualified ecologist. If a nest box needs to be disturbed or relocated due to other management and/ or maintenance reasons, then a suitably qualified ecologist should be contacted for advice or to attend site.
Reptile hibernacula	Development Site	Annually	X	X	X	X	X	-	- Will be subject to annual inspection by ECoW during management phase. Specific measures, such as vegetation control and replenishment of materials, could be required. - Hibernacula will not be disturbed or damaged.
Grass snake egg-laying heap	Development Site	Annually	X	X	X	X	X	-	- Will be subject to annual inspection by ECoW during management phase. Specific measures, such as vegetation control and replenishment of materials, could be required. - Heap to be topped up annually with grass cuttings collected following the cuts of the marshy grassland and tussocky grassland in early March and late October. - Heap will not be disturbed or damaged.



Feature	Location	Frequency	Management Phase					Maintenance Phase	Prescriptions
			Year 1	Year 2	Year 3	Year 4	Year 5	Years 6-30	
Reptile refugia	Development Site	Annually	X	X	X	X	X	-	- Will be subject to annual inspection by ECoW during management phase. Specific measures, such as replacement of destroyed or missing refugia, could be required. - Refugia will not be damaged. Contractors to identify where refugia are located before any works to ensure they are not damaged. - Should refugia be subject to critical deterioration or require moving, then refugia will be replaced in similar location under the supervision of an ECoW.

8. Monitoring the landscape and ecological objectives

To ensure that the biodiversity objectives are met, monitoring will be completed throughout operation. The monitoring will be completed by a suitably qualified ecologist as appointed by Vantage Data Centers. Monitoring reports will be completed specifying the methodology, results, remediation recommendations and ultimately achievement of objectives.

This scope, frequency and length of monitoring measures is set out in Table 8-1 below.

Table 8-1 - Monitoring the landscape and ecological objectives plan

Objective	Target	Monitoring Survey	Frequency, Timing, and Duration	Potential remedial actions
Compensate for the loss of SINC neutral grassland	Create 0.478 ha of species-rich grassland within Development Site	Common Standards Monitoring Guidance for Lowland Grassland Habitats ¹⁰	June/ July in years 1, 2, 3, 4, 5 after seed sowing and every 5 years thereafter until year 30 of the management plan.	Changes in cutting timing and frequency. Removal of undesirable species, such as bramble and common nettles.
Compensate for the loss of scrub habitat with confirmed hazel dormouse present	Restore 0.026 ha of mixed scrub in Development Site and create 1.437 ha of mixed scrub in Compensation Site	Habitat monitoring survey ⁷	September/ October in years 1, 2, 3, 4, 5 after planting and every 5 years thereafter until year 30 of the management plan.	Replacement planting of failed whips.
	Provide short-term nesting opportunities by installing seven hazel dormouse nest boxes in the Development Site and 20 in the Compensation Site	Hazel dormouse nest box survey	March, May, and September/ October in years 1, 3, and 5.	Replacement of broken or missing nest boxes.
Enhance Development Site for biodiversity	Create a 61 m ² wildlife pond and 134 m species-rich hedgerow	Habitat monitoring survey ⁷ Statutory Biodiversity Metric condition assessment (pond) ⁶	Between April and October in years 1, 2, 3, 4, 5 after planting and every 5 years thereafter until year 30 of the management plan.	Replacement planting of failed whips. Removal of aquatic undesirable species such as dominant bulrush.
Enhance Development Site for reptiles	Create a 2 m x 2 m reptile hibernacula using arisings from cleared vegetation, a 2 m x 2 m grass snake egg-laying heap, and installing eight 50 cm x 50 cm corrugated reptile refugia	Habitat monitoring survey	Between April and October in years 1, 2, 3, 4, 5 after planting and every 5 years thereafter until year 30 of the management plan.	Reconstructing reptile hibernacula or grass snake egg-laying heap if damaged.
		Reptile presence/ absence survey	At same time as other site monitoring visits, i.e. in June/July, and September/ October in years 1, 2, 3, 4 and 5, after planting and additionally in March and May in years 1, 3, and 5 after planting.	Replacement of broken or missing corrugated refugia.
Enhance Compensation Site for hazel dormice	Create a 220 m species-rich hedgerow, a 50 m species-rich hedgerow, and gap planting along 90 m of an existing species-rich hedgerow	Habitat monitoring survey ⁷	September/ October in years 1, 2, 3, 4, 5 after planting and every 5 years thereafter until year 30 of the management plan.	Replacement planting of failed whips.

¹⁰ JNCC, (2004). Common Standards Monitoring Guidance for Lowland Grassland Habitats.



Objective	Target	Monitoring Survey	Frequency, Timing, and Duration	Potential remedial actions
Compensate for loss of neutral grassland within Compensation Site due to scrub planting	Enhance 1.317 ha of neutral grassland through the sowing of yellow rattle seeds and meadow management	Common Standards Monitoring Guidance for Lowland Grassland Habitats ¹⁰ Statutory Biodiversity Metric condition assessment (grassland) ⁶	June/ July in years 1, 2, 3, 4, 5 after seed sowing and every 5 years thereafter until year 30 of the management plan.	Changes in cutting timing and frequency. Removal of undesirable species, such as bramble and common nettles.
Maintain existing suitable hazel dormouse habitat within Development Site and Compensation Site	Existing scrub in the Development Site, and woodland and hedgerows within the Compensation Site, to continue to be of optimal suitability for hazel dormice	Habitat monitoring survey ⁷	September/ October in years 1, 2, 3, 4, 5 after planting and every 5 years thereafter until year 30 of the management plan.	Thinning of woodland canopy Coppicing of trees.



9. LEMP review

This LEMP will remain adaptive during the 30-year period to allow for adaptive management and remedial actions to be taken and agreed with NRW and the LPA, to ensure the delivery of the mitigation and compensation habitats. The management prescriptions detailed within this LEMP will be reviewed, and if necessary updated accordingly, on an annual basis following the annual monitoring surveys and any remedial actions taken. This is to ensure the objectives and targets set out in this LEMP are achieved with minimal delay.

Following the end of the five-year management phase the suggested reviews in Table 9-1 below are recommended to take place to ensure the landscape and ecological proposals are maintained in a good condition for the longevity of the lifetime of the development.

After the 30-year period that this LEMP covers, a new LEMP should be produced so that the habitats and features within the Application Site continue to be maintained.

Table 9-1 - Suggested reviews following the end of the five-year management phase

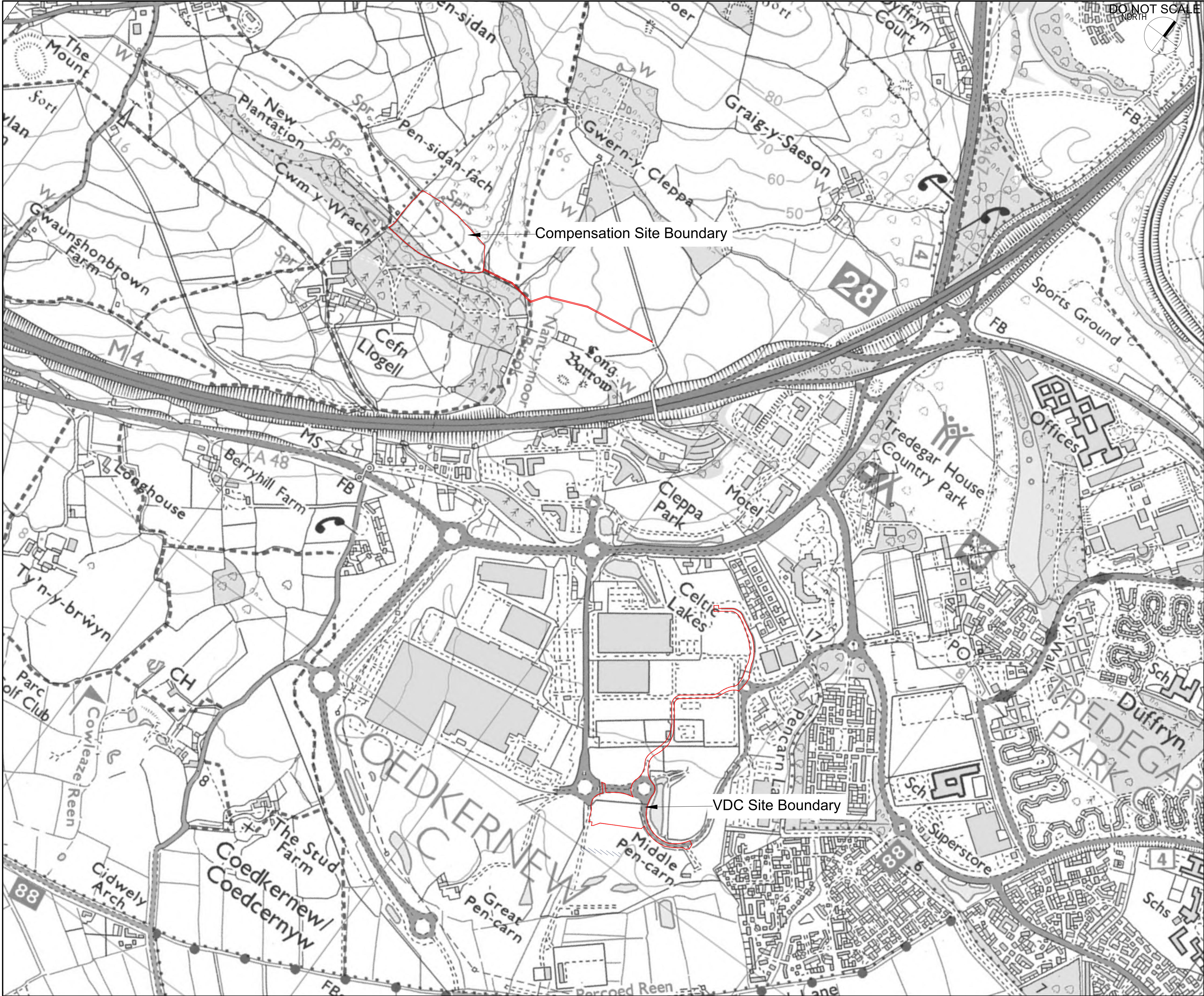
Suggestions	Personal
Site inspection report to review the planting conditions and establishment and to provide any further management recommendations to ensure the landscape and ecological proposals in perpetuity.	To be carried out by a suitably qualified landscape architect and suitably qualified ecologist.
Carry out an arboricultural survey/ tree condition report to assess the condition and structure of all trees on site, making recommendations for any required arboricultural works/ pruning prescriptions to ensure the longevity of all trees and health and safety of all users of the site.	To be carried out by a suitably qualified arboriculturist. Any remedial tree surgery works required should be carried out by a suitably qualified tree surgeon.

APPENDICES

Appendix A. Application Site location, and landscape proposals

Figure A-1 - Application Site location (5185749-ATK-XX-XX-DR-L-401008)





DO NOT SCALE
NORTH

Safety, Health and Environmental Information

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

MAINTENANCE/CLEANING

DECOMMISSIONING/DEMOLITION

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:

1. For detailed proposal for Substation Site refer to drawing no. 5185749-ATK-XX-XX-D-L-401001 Landscape General Arrangement Plan.

2. Refer to drawing no. 5185749-ATK-XX-XX-D-L-401003 for Proposed cables route and Trench section.

3. Refer to drawing no. 5185749-ATK-XX-XX-D-L-401011 for Proposed Dormhouse Compensation Site Plan

GENERAL KEY

Proposed Red line boundary

100m0m100m200m300m

Scale: 1:5000

P03	11/09/2024	ISSUED FOR PLANNING, DRAWING NO. UPDATED.	SN	PT	DB
P02	03/07/2024	ISSUED FOR PLANNING	SN	PT	DB
P01	07/06/2024	DRAFT PLANNING ISSUE	SN	PT	DB
Rev	Date	Description	By	Chk'd	Rev'd

Drawing Status

ISSUED FOR PLANNING

Suitability

\$1

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Client

Vantage Data Centres

VANTAGE DATA CENTRES

Project Title

VANTAGE DATA CENTRES SUBSTATION 150MVA SUBSTATION

Drawing Title

SITE LOCATION PLAN

Scale	Designed	Drawn	Checked	Authorised
1:5000	SN	SN	PT	DB
Original Size	Date	Date	Date	Date
A1	09.06.23	09.06.23	09.06.23	09.06.23

Drawing Number

5222535-ATK-XX-XX-DR-L-401008

Revision

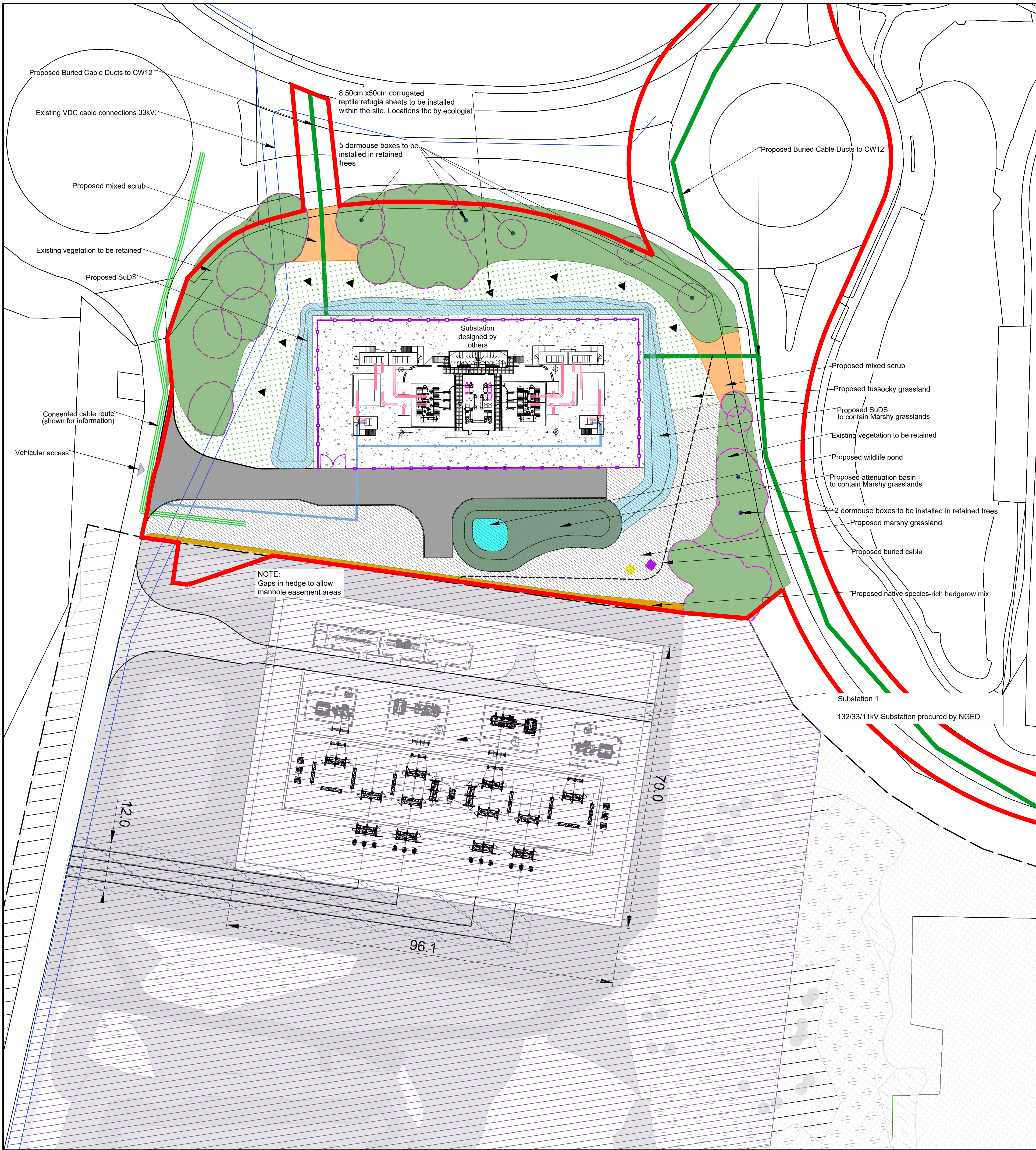
P03

Internal Project Number: 5222535

Figure A-2 - Development Site Preliminary General Arrangement (5185749-ATK-XX-XX-DR-L-401001)



0 10 100
Millimetres



Planting Schedule

Dense Scrub Planting				
No.	Species	Specification	Height	Density (To be planted in species groups of 2 to 3)
26	Prunus avium	1+1 .8	60-80cm	1/m ²
13	Lonicera periclymenum	1+1 .8	60-80cm	1/m ²
13	Salix caprea	1+1 .8	60-80cm	1/m ²
26	Quercus robur	1+1 .8	60-80cm	1/m ²
53	Crataegus monogyna	1+1 .8	60-80cm	1/m ²
26	Prunus spinosa	1+1 .8	60-80cm	1/m ²
79	Corylus avellana	1+1 .8	60-80cm	1/m ²
26	Viburnum lantana	1+1 .8	60-80cm	1/m ²
Total :262				

Hedgerow				
No.	Species	Specification	Height	Density
58	Lonicera periclymenum	1+2 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
58	Corylus avellana	1+1 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
120	Crataegus monogyna	1+1 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
58	Sambucus nigra	1+1 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
121	Sorbus aucuparia	1+1 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
121	Quercus robur	1+1 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
58	Prunus spinosa	1+1 .8	60-80cm	0.3Ctr Double Staggered at 0.45m offset
Total :594				

Grass Areas	Seed Mix	Density	Weight	Supplier
Area	Marshy grassland and tussocky grassland Cynosurus cristatus - Centaurea nigra grassland Juncus acutiflorus - Galium palustre rush-pasture			
4779.1m2		4g/m2	19.35kg	To be sourced from local nature reserve on Gwent Levels SSSI

Pond Planting				
No.	Species	Specification	Density	%
31	Mentha aquatica	Full pot	2/m ²	25%
31	Caltha palustris	Full pot	2/m ²	25%
38	Lythrum salicaria	Full pot	2/m ²	30%
12	Carex acutiformis	Full pot	2/m ²	10%
12	Sagittaria sagittifolia	Full pot	2/m ²	10%

Habitat Areas:

Existing habitat (mixed scrub and road verge grassland) to be retained	3485 Sqm
Proposed mixed scrub	262 Sqm
Proposed attenuation area	523 Sqm
Proposed SuDS	915 Sqm
Proposed tussocky grassland	1440 Sqm
Proposed marshy grassland	3339 Sqm
Proposed wildlife pond	61 Sqm
Proposed native species-rich hedge	134 m

DO NOT SCALE

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

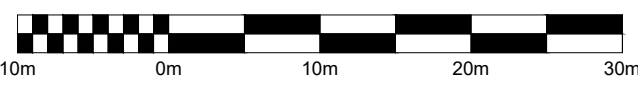
MAINTENANCE/CLEANING

DECOMMISSIONING/DEMOLITION

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

GENERAL KEY

- Proposed Red line boundary
- Proposed VDC CW12 Cable routes
- Welsh Government development shown for information only
- Proposed concrete base for substation compound
- Proposed tarmac surface
- Proposed gates 3m double leaf gates to vehicular access
- Proposed security fence 4m height
- Existing vegetation to be retained
- Tree and scrub Root Protection Areas
- Proposed mixed scrub
- Propose attenuation basin
- Proposed Swales
- Proposed tussocky grassland
- Proposed marshy grassland
- Proposed native species-rich hedge
- Proposed 2m x 2m hibernacula for reptiles, location tbc by ecologist on site
- Proposed 2m x 2m hibernacula for amphibians, location tbc by ecologist on site
- Dormouse boxes
- Proposed corrugated reptile refugia sheets



Scale 1:500

Rev.	Date	Description	By	Chk'd
P08	04/09/2024	UPDATED AS PER COMMENTS	DS	SN
P07	30/08/2024	ISSUED FOR PLANNING, DRAWING NO. UPDATED.	DS	PT
P06	03/07/2024	ISSUED FOR PLANNING	SN	PT
P05	21/05/2024	ISSUED FOR COORDINATION	AM	PT
P04	18/04/2024	ISSUED FOR INTERNAL COORDINATION	AM	PT
P03	27/07/2023	ISSUED FOR INTERNAL COORDINATION	AM	PT
P02	12/07/2023	ISSUED FOR COORDINATION	AM	PT
P01	09/06/2023	ISSUED FOR INFORMATION	AM	PT

Drawing Status	ISSUED FOR PLANNING	Suitability	S1
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Client
Vantage Data Centres

Project Title
VANTAGE DATA CENTRES SUBSTATION 150MVA SUBSTATION

Drawing Title
LANDSCAPE GENERAL ARRANGEMENT

Scale	Designed	Drawn	Checked	Authorised
1:500	AM	AM	PT	DB
Original Size	Date	Date	Date	Date
A1	05/03/24	05/03/24	13/03/24	26/03/24
Drawing Number	Revision			
5222535-ATK-XX-XX-DR-L-401001	P08			

NORTH

Internal Project Number: 5222535

Figure A-3 - Proposed Compensation Site plan (5185749-ATK-XX-XX-DR-L-401011)



100
0 10
Millimetres

Planting Schedule

Dense Scrub Planting					
No.	Species	Specification	Height	Density (To be planted in species groups of 2 to 3)	%
718	Lonicera periclymenum	1+1 :B	60-80cm	1/m ²	5%
1437	Betula Pendula	1+1 :B	60-80cm	1/m ²	10%
718	Ilex aquifolium	1+1 :B	60-80cm	1/m ²	5%
718	Salix caprea	1+1 :B	60-80cm	1/m ²	5%
1437	Quercus robur	1+1 :B	60-80cm	1/m ²	10%
2155	Crataegus monogyna	1+1 :B	60-80cm	1/m ²	15%
1437	Prunus spinosa	1+1 :B	60-80cm	1/m ²	10%
4312	Coryllus avellana	1+1 :B	60-80cm	1/m ²	30%
1437	Sambucus nigra	1+1 :B	60-80cm	1/m ²	10%
Total :14369					

Hedgerow					
No.	Species	Specification	Height	Density	%
160	Lonicera periclymenum	1+2 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
320	Cornus avellana	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
320	Crataegus monogyna	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
320	Sambucus nigra	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
160	Ilex aquifolium	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	10%
320	Prunus spinosa	1+1 :B	60-80cm	0.3Ctr Double Staggered at 0.45m offset	20%
Total :1600					

Grass Areas			
Area	Seed Mix Name	Density	Weight
13170 m2	Yellow Rattle wildflower	0.2g/m2	2770g

Legend

- Compensation Site boundary
- Proposed hazel dormouse nest boxes

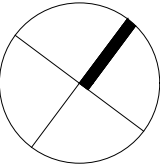
Proposed habitats

- Proposed h2a – native species rich hedgerow
- Proposed h2a – native species rich hedgerow gap planting
- g3c6 - proposed enhanced Lolium-Cynosurus neutral grassland
- h3h - proposed mixed scrub

Existing habitats

- Existing h2a_stb - Native species rich hedgerow with trees
- Existing h2a_stb - Native species rich hedgerow with trees-bank or ditch
- g1c - bracken
- g3c - other neutral grassland
- g4 - modified grassland
- w1d - wet woodland
- w1f - lowland mixed deciduous woodland
- w1g - other woodland - broadleaved
- w1h - other woodland mixed
- h3d - bramble scrub
- u1e - built linear features
- r1a - eutrophic standing waters

DO NOT SCALE



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

N/A

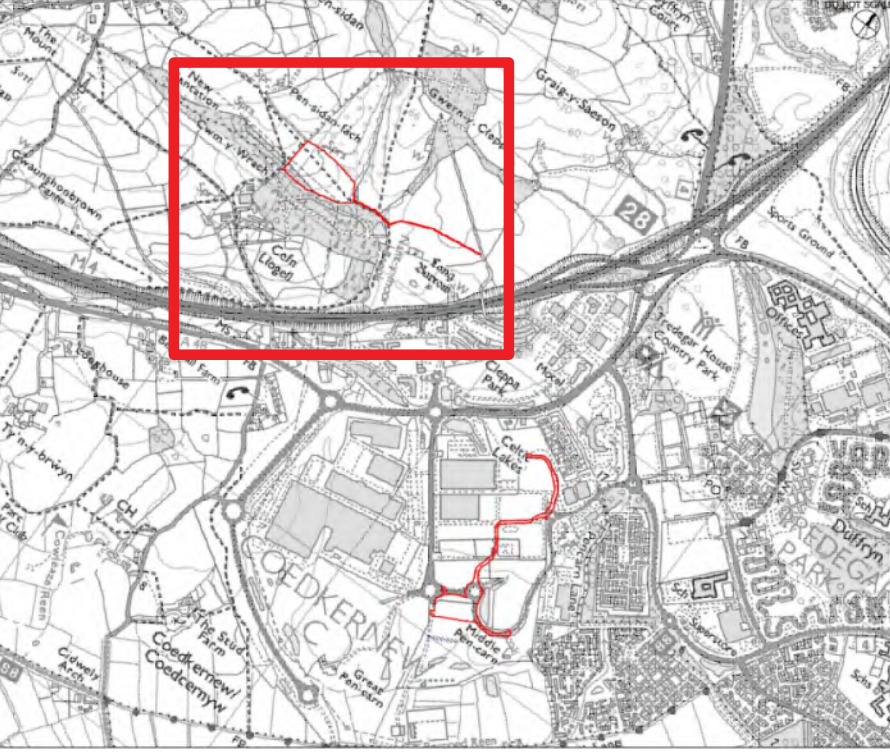
MAINTENANCE/CLEANING

N/A

DECOMMISSIONING/DEMOLITION

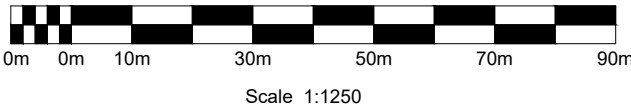
N/A

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement



LOCATION PLAN
NTS

Proposed Red line boundary



P04	18/12/2024	UPDATED AS PER COMMENTS	SN	PT	DB
P03	04/09/2024	UPDATED AS PER COMMENTS	DS	PT	DB
P02	19/08/2024	UPDATED AS PER COMMENTS	JS	PT	DB
P01	03/07/2024	ISSUED FOR PLANNING	SN	PT	DB
Rev	Date	Description	By	Chk'd	Rev'd

Drawing Status	Suitability
ISSUED FOR PLANNING	\$1



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Client

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Project Title

VANTAGE DATA CENTRES SUBSTATION
150MVA SUBSTATION

Drawing Title

PROPOSED DORMOUSE
COMPENSATION SITE PLAN

Scale	Designed	Drawn	Checked	Authorised
1:1250	SN	SN	PT	DB
Original Size	Date	Date	Date	Date
A1	05/03/24	05/03/24	13/03/24	26/03/24
Drawing Number	Revision			
5222535-ATK-XX-XX-DR-L-401011	P04			

Internal Project Number: 5165749

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